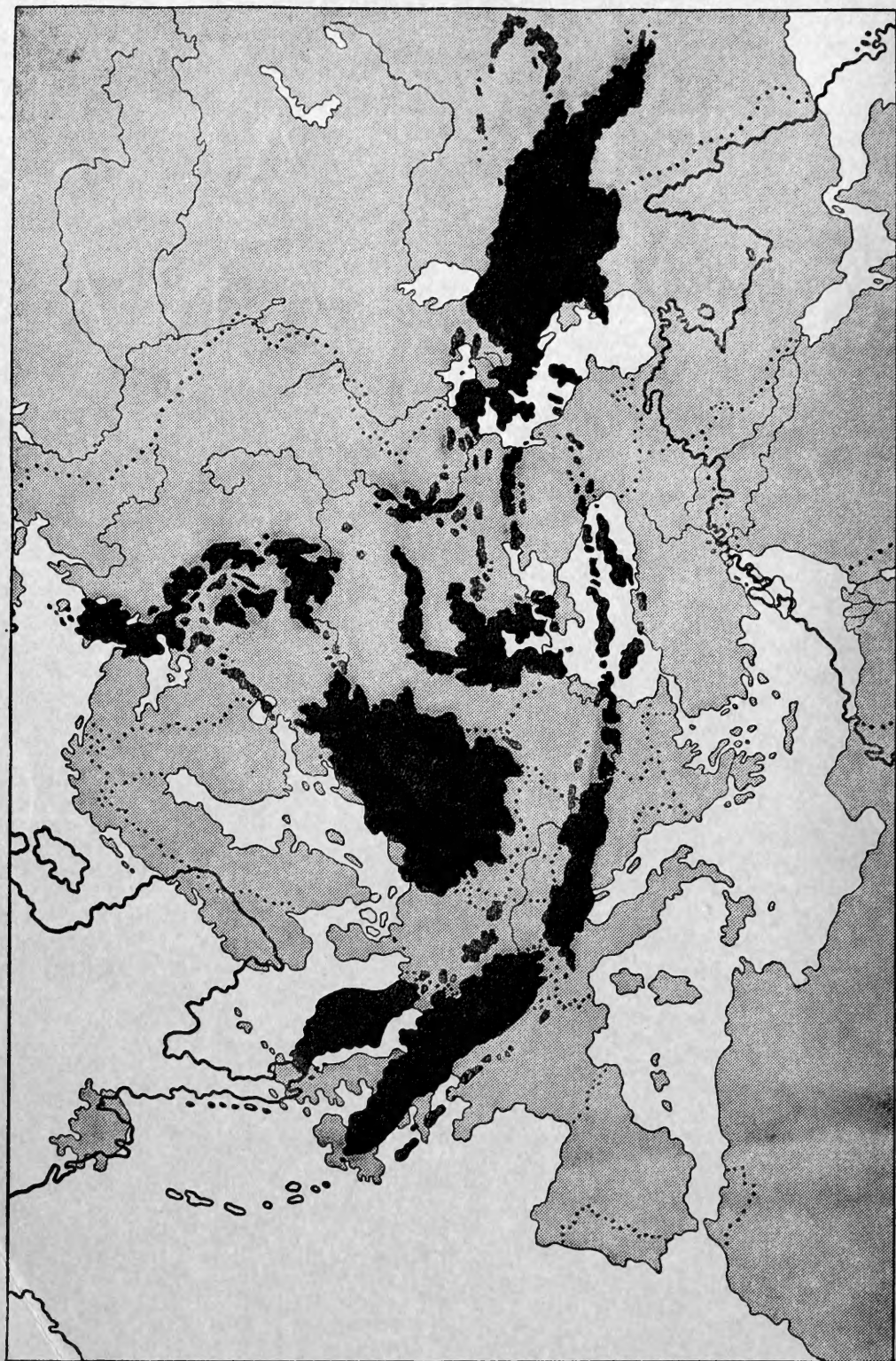


581.991
F66
QK370
F55

Vol. 6
part 4

FLORA MALESIANA

UNDER THE AUSPICES OF
THE BOTANIC GARDENS OF INDONESIA, BOGOR,
AND THE RIJKSHERBARIUM, LEYDEN



ERICACEAE (H. Sleumer, Leyden)

Trees or shrubs, very rarely herbs or fleshy saprophytes. *Leaves* spiral, sometimes opposite or pseudowhorled, simple, entire, crenate or serrate, mostly evergreen and \pm coriaceous (Malesia), exstipulate (stipule-like perulae of axillary buds occur in *Diplycosia* and *Vaccinium p.p.*). *Flowers* bisexual (rarely functionally unisexual; or the plant dioecious in extra-Mal.), characteristically regular, (4-)5 (rarely 6-7)-merous. *Inflorescences* terminal or axillary, entirely covered by perulae in bud, mostly in racemes, these sometimes arranged to panicles or condensed to umbels, or reduced to few-flowered fascicles, or even to a solitary flower. *Sepals* (reduced in *Monotropastrum* and *Wirtgenia*) very rarely free, generally connate below to a calyx tube, the latter free or \pm adnate to the ovary, persistent, whether or not accrescent in fruit, lobes imbricate or open in bud. *Corolla* campanulate to funnel-shaped, urceolate or cylindric, sometimes slightly zygomorphous, caducous, lobed to various degree, lobes imbricate (sometimes \pm contorted), rarely valvate in bud. *Stamens* usually 10 (rarely 5, 8, or up to 20), obdiplostemonous, rarely haplostemonous, inserted at the outer margin of the disk between its lobes, or slightly attached to the base of the corolla; filaments free (Malesia); anthers dorsifixed to almost basifixed, the 2 cells (thecae) not rarely extending into free or connate tubules, these muticous or sometimes (bi)aristate distally by the prolonged back-wall, opening by terminal or introrse, very rarely extrorse pores or slits, not rarely with projecting dorsal appendages or spurs; pollen in tetrads, simple in *Monotropeidae*. *Gynoecium* syncarpous, 5- or pseudo-10-, rarely 2-4- or 6-7-celled. *Disk* hypogynous or epigynous, often fleshy and nectariferous, entire or mostly 5-10-lobed. *Ovary* 1, superior, half-inferior or inferior, generally with as many cells as carpels; placentation central, with 1 or 2 lamellas per cell, each bearing mostly numerous, rarely 1, anatropous or obliquely amphitropous, 1-tegumented ovulus. *Style* 1; stigma obtuse, capitate or peltate, whether or not 5-7-lobed. *Fruit* a 5(-7)-valved, septicidal or (sometimes lately or irregularly) loculicidal capsule, which may be \pm included by the accrescent, \pm fleshy calyx, or a rather dry to fleshy berry (Malesia). *Seeds* usually numerous, small, whether or not winged or tailed at one or both ends; testa thin, often reticulate; embryo cylindric, small, with copious endosperm.

Distribution. About 125 genera with approximately 3500 *spp.*, predominantly woody, distributed all over the world.

In *Malesia* 12 genera, with a total of about 740 *spp.* Five genera are endemic or nearly so, viz *Wirtgenia* and *Pernettyopsis* in the Malay Peninsula, *Costera* in Sumatra, Borneo, the Philippines, Talaud, and Morotai, *Dimorphanthera* in the Philippines, Moluccas, New Guinea and adjacent islands, and *Diplycosia* which occurs throughout Malesia with 1 *sp.* in S. Annam.

Two other genera, viz *Monotropastrum* and *Agapetes*, find their main area of distribution in SE. Asia and Malesia, the latter extending to Queensland, New Caledonia, and Fiji.

Of the remaining genera, two are restricted to the northern hemisphere but have one station in northwest Malesia, viz *Pyrola* (Europe, Asia, N. and Central America) which occurs in N. Sumatra, and *Lyonia* (SE. Asia, N. and Central America) which occurs in the Malay Peninsula.

The other three are still wider distributed. The colossal genus *Rhododendron* is most abundantly developed in Asia, with some dozens of species in N. America and Europe, and extends towards the southeast as far as N. Queensland (1 *sp.*), the Solomon Is. and New Britain (3 *spp.*), with many species in Malesia.

Vaccinium occurs in both temperate and tropical America, in East Africa (Madagascar inclusive), the Pacific, and all over Asia and Malesia, but not in Australia.

The area of *Gaultheria* extends over the Americas, SE. Asia, Malesia, SE. Australia (incl. Tasmania), and New Zealand.

The non-endemic *Ericaceae* found in Malesia show a close alliance with those of SE. Asia, and the same can be said of the few *Ericaceae* found in N. Queensland, the Solomon Is., the New Hebrides, Samoa, and Fiji. Australian-antarctic relations within the Malesian *Ericaceae* are probably expressed only by *Gaultheria mundula* (eastern part of New Guinea), which seems to be nearest to some species of the genus found in SE. Australia (incl. Tasmania), New Zealand, and possibly in temperate S. America.

More than half of the Malesian species occur in New Guinea and are endemic there, two excepted.

Ecology. Malesian *Ericaceae* occur predominantly in the lower and upper montane forest, both terrestrial and epiphytic. Quite a number is found above the timber line, mainly dwarf shrubs in subalpine grassland or even in true alpine vegetation, ascending in Borneo (Mt Kinabalu) and in the Main Range of New Guinea to 4000–4400 m. A few live at low altitudes, as some species of *Vaccinium* on coastal sands, species of *Costera*, or some species of *Rhododendron* on rocks near the sea or even as epiphytes on mangrove trees.

Two saprophytic genera, viz *Monotropastrum* and *Wirtgenia*, are echlorophyllose, humicolous herbs, growing in shady places in the lower montane forest, apparently very rare (or overlooked due to their ephemeral appearance?), and only known from a few places in Sumatra and the Malay Peninsula.

As to climate, *Ericaceae* in general prefer the wet montane to subalpine subtropical and tropical, and the (mostly rather dry) warm-temperate zone; they extend into the arctic and subantarctic zone. They are predominantly found on acid, i.e. sandy, humous or peaty soil. A few are reported from limestone, but it is not clear in how far they grow there on humus-covered soil. For example, STRESEMANN found dense brushwood *Rhododendron* under *Casuarina* on steep limestone ridges in the Ora Mts in W. Ceram, together with *Podocarpus*, *Myrtaceae*, and *Nepenthes*, May 1911. BRASS found in New Guinea several *Rhododendrons* on limestone rock.

Malesian *Ericaceae* are mostly of proportionally small size, but some may under favourable conditions grow into trees up to c. 15 m or are high lianas (*Dimorphanthera*). By their heliophilous preference they occur most abundant as epiphytes in the forest and are not infrequently gregarious or co-dominant terrestrially on steep slopes, volcanic terrain, ridge-crests, glades and other sterile places in the mountains as 'ericoid brushwood'.

In Sumatra FREY-WYSSLING found on the volcano Kerintji above the forest border at 3000 m a brushwood consisting largely of *Gleichenia* and *Ericaceae* (*Vaccinium miquelii*, *Rhododendron retusum* and *Gaultheria leucocarpa*) (Trop. Natuur 22, 1933, 1–10). From the Gajo Lands (Atjeh) VAN STEENIS reported the important role of *Ericaceae* in the brushwood and glades of the high non-volcanic mountains (Tijd. Kon. Ned. Aandr. Gen. 55, 1938, 751, f. 12). On the volcano Dempo in Bencoolen FORBES found *Vaccinium miquelii* dominating the zone above 2500 m where it may be a tree with a diameter of 40 cm (Wanderings, 1885, 209).

On the Javanese volcanoes, especially on the wetter western peaks, *Vaccinium varingiaefolium* and *Rhododendron retusum* are gregarious and essential co-dominants in the brushwood of slopes, crests and peaks, and are even obvious from a far distance when the new shoots expose their pink or red flush. Other co-dominants of this gnarled forest, either mossy or not, are *Rapanea*, *Myrica javanica*, and *Leptospermum flavescens*.

On the mountains of the Malay Peninsula and Borneo *Ericaceae* are common, but they attain their greatest and most profuse development in North Borneo on Mt Kinabalu where again they are important co-dominants in the upper zones.

From the Philippines, Celebes, and the Moluccas no special great importance as constituents of vegetation are known, but in the New Guinean mountains they are as gregarious at high altitude as on Mt Kinabalu, e.g. on Mt Arfak. From the Balim Valley BRASS reported that *Rhododendron brassii* composed nearly pure, greyish stands best developed on forest edges and in glades between low-tree thickets, seldom extending far beyond the territory of conifers (J. Arn. Arb. 22, 1941, 321). He reported from the same area, at the mouth of the Bele Valley, at 2100 m, a distinctive shrub community c. 3–4 m high, of *Vaccinium acrobacteatum* on a patch of loose sand, associated with *Gahnia*, *Myrtaceae*, *Rhododendron inconspicuum* and *R. herzogii*.

On Mt Wilhelmina he found *Vaccinium dominans* in dense, 5–6 m high, often wind-clipped forest, co-dominant with *Rapanea* from 3500–3800 m (*l.c.* 327). On Mt Albert Edward on the Wharton Range, from 3200 m upwards, forests were dominated by *Podocarpus papuanus* and *Libocedrus papuana*, and at higher altitude by a *Vaccinium* with the conifers rising in open stand above the canopy; this forest type was considerably interrupted by grassy glades, hollows and lake basins (*l.c.* 336). The Rev. CRUTTWELL found *Rhododendron christiana*e locally forming pure stands well recognizable at flowering time from the air.

By their heliophile ecology and their ability to stand sterile, acid, or poor soil conditions *Ericaceae* are not rarely found as pioneers or in secondary vegetation in open or fired places, on landslides, in clearings made by man following burning, logging, gold digging, or making roads, on volcanic sands and rock, on lapilli, near craters, on lavastreams, and rockwalls.

In almost every crater or solfatara field in Sumatra, Java, and the Lesser Sunda Is. one can observe that in approaching such terrain the percentage of the Ericaceous component increases, and they are among the lot which comes closest to the sulphur vents, notably *Gaultherias*, *Rhododendron javanicum*, *R. retusum*, *Vaccinium laurifolium*, and *V. varingiaefolium*, often associated with *Dianella javanica*, *Gahnia javanica*, *Pleopeltis feei*, and some *Carex*. The advanced pioneers often attain queerly clipped or prostrate shape, and wind forms (fig. 101–104) as described by VAN STEENIS from Mt Papandajan (Trop. Natuur 24, 1935, 141–145, f. 2–5) and from Mt Idjen (*ibid.* 29, 1940, 182, f. 9). On the solfatara fields of Samosir I. in Lake Toba, N. Sumatra, *Rhododendrons* are conspicuous. *Vaccinium varingiaefolium* is also able to withstand a partial burial by acid volcanic mud and lapilli, as observed on summit of Mt Tjeremai above Cheribon, N. Central Java.

To a certain extent *Ericaceae* may also be fire-resistant as described by JUNGHUHN from Mt Lawu, where he found a pyrogenous grassland thinly set with *Vaccinium varingiaefolium*. On the west slope of the Latimodjong Range, SW. Central Celebes, near Rante Lemo, the large-flowered, 3–4 m high *Rhododendron vanvuurenii* forms pure stands in pyrogenous grassland, at c. 1000 m; also near Rante Pao. LANE-POOLE reported *Vaccinium striicaule* to be able to stand fire in the grasslands of Mt Saruwaged, associated with tree ferns and *Rhododendron*; this *Vaccinium* originally grows below *Dacrydium* and *Libocedrus*, and after these have been burned it stays in the open grassland between 3300 and 4000 m (For. Res. Papua, 1925, 179–180).

The root-system of Malesian *Ericaceae* is, particularly in crater fields and near solfataras, very horizontal, and roots may attain large dimensions in such places. This is of course common to almost all plants growing on sterile rocky, impervious or badly drained soils; it may also be ascribed in part as a reaction to the heat of the deeper soil in crater fields. Such roots have also a distinctly corky bark, and VON FABER holds that this would be a protection to heat (Die Kraterpflanzen Javas, 1927, 71–75, f. 7–9).

The stem-base and upper part of the root of *Vaccinium* is often swollen and superficially resembles a lignotuber. It is obviously a storage organ and is already found in epiphytic seedlings (VON FABER, *l.c.*); such seedlings have also a proportionally very large root-system.

Dispersal. Not much is known about the dispersal of Malesian *Ericaceae* besides what DOCTERS VAN LEEUWEN has observed on Mt Pangrango in W. Java. The very small seeds of *Rhododendron* are presumably dispersed by wind (see what is said *sub Rhododendron* below). The fruits of genera as *Diplycosia*, *Gaultheria*, *Vaccinium*, *Costera*, *Agapetes*, and *Dimorphanthera* are fleshy, and, so far as known, eaten by birds, rodents and small mammals. The seeds are small, and besides in *Rhododendron*, have a hard testa; they may be disposed in a viable state with the excrements of animals within a certain distance. DOCTERS VAN LEEUWEN made observations on bird dispersal of berries of *Vaccinium* and *Gaultheria* on Mt Pangrango in W. Java (Verh. Kon. Ak. Wet. A'dam sect. 2, 31, 1933, 198–212, and in Flora 118/119, 1925, 86). His son, HANS, examined stomach contents of birds on the Central Javanese volcanoes Sumbing and Sindoro and had similar results, the chief birds being species of the genera *Zosteria* and *Merula* (Treubia 10, 1929, 443, 446).

Galls. No *Zooecidia* specific for a distinct genus or species are hitherto known from Malesian *Ericaceae* (*cf.* DOCTERS VAN LEEUWEN, The Zooecidia of the Netherlands East Indies, 1926, 439, and Pangrango, 1933, 198 *seq.*).

Anomalous flowers, due to a fungus or insects, are not rarely found in *Vaccinium* (see there). On the leaves of both *Vaccinium* and *Rhododendron* spots occur due to the parasitic *Exobasi-*

dium, described by RACIBORSKI. In Java this does not lead to the formation of galls; however, very large *Exobasidium* galls are found on *Rhododendron atjehense* in N. Sumatra. Fig. 48.

The roots of *Ericaceae* possess endotrophic mycorrhiza which, according to VON FABER, are spread by seed; they cause gall-like thickened malformations on the roots (Die Kraterpflanzen Javas, 1927, 71-75, f. 7-9).

Wood anatomy. DEN BERGER, Determinatietabel houtsoorten van Malesië, Veenman, Wageningen (1949) 31, 35 (hand lens). METCALFE & CHALK, Anat. Dic. 1 (1950) 823, 831; MOLL & JANSSONIUS 4 (1920) 269; RECORD, Trop. Woods 32 (1932) 11. Primitive features present: conspicuous many-barred scalariform perforation plates in *Rhododendron* and in some species of *Vaccinium*, pits to ray cells opposite, ground tissue composed of fibre tracheids, wood parenchyma practically absent. RECORD *l.c.*: a relationship to the *Theaceae* seems to be strongly indicated. — C.A.R.-G.

Phytochemistry. *Ericaceae* were rather intensively investigated since PLUGGE showed in 1882 and 1883 that many members contain a toxic constituent, called andromedotoxin by him. From the chemical point of view the family may be characterized as follows at present:

(i) Polyphenolic substances and tannins are accumulated by all members investigated. Leucoanthocyanins, flavonols (including derivatives of myricetin), catechins and a number of phenolic β -glucosides like arbutin (*Arbutus*, *Arctostaphylos*, *Pyrola*, *Vaccinium*), monotropitoxin (*i.e.* the former gaultherin, a glucoside of methyl salicylate; in *Gaultheria* and *Monotropa*), betuloside (= rhododendrin; in *Rhododendron*) and lyonoside (in *Lyonia*) represent the polyphenolic group of plant constituents. The tannins are galli- and ellagitannins in some members and condensed tannins in others; many species contain mixtures of both types of tannins.

(ii) Triterpenes, in many instances predominantly free ursolic acid, are deposited in large amounts in the very often thick cuticule of the leaves.

(iii) The well known toxic constituents of the family are diterpenes. Andromedotoxin (= rhodotoxin = grayanotoxin-I), desacetylandromedotoxin (= grayanotoxin-III) and desacetyl-anhydroandromedotoxin (= grayanotoxin-II) are the best known representatives of these principles. They have been demonstrated to be present in members of the genera *Kalmia*, *Rhododendron*, *Andromeda*, *Chamaedaphne*, *Leucothoë*, *Lyonia*, *Pernettya* and *Pieris*, but have not been detected in *Pyroleae* and in *Vaccinioideae*.

The tendency to accumulate still other constituents seems to be more restricted in the family. Many *Ericaceae* bear, besides ordinary trichomes, abundantly glandular hairs. The latter seem to produce often essential oils in quantity. For species of *Cassiope*, *Ledum* and *Rhododendron* investigations of the essential oils were performed. The herbaceous members, reunited by many authors in the separate family *Pyrolaceae*, produce besides arbutin a number of closely related glucosides (homoarbutin, pyrolatin, renifolin). From the latter the naphtoquinone chimaphilin probably arises after enzymatic splitting of the glucoside and oxydation of the aglykon, processes which take place when the plants are dried. Another β -glucoside present in all *Pyrolaceae* (including *Monotropa*) is monotropeoside, which belongs to the so-called pseudoindicans or iridoid plant constituents. It seems highly probably that some members of arborescent *Ericaceae* (*e.g.* *Arbutus*) contain such compounds too.

In concluding we may state that chemistry agrees very well with the inclusion of *Pyrolaceae* in *Ericaceae*. With regard to possible relationships of *Ericaceae* nothing of convincing nature can be said. In many respects chemistry of *Ericaceae* reminds of amentiferous families (*e.g.* *Betulaceae*, *Fagaceae*) on the one hand and *Saxifragaceae*, *Hamamelidaceae*, and *Rosaceae* on the other hand. In the light of present-day knowledge biochemical resemblance between *Ericaceae* and *Theaceae* seems to be less striking than the resemblance between *Ericaceae* and, for instance, *Saxifragaceae sensu lato*. For references I refer to my 'Chemotaxonomie der Pflanzen' vol. 4 (1965). — R. HEGNAUER.

Uses. Apart from ornamental purpose but few useful plants are found among Malesian *Ericaceae*. The hard timber, due to the small size, is only occasionally used for implements. Fruits are reported to be partly sweet or at least palatable in all genera of the subfamily *Vaccinioideae*, but no regular use by men is known except of *Vaccinium myrtilloides* in the Philippines. The leaves of several species of *Gaultheria* have a strong smell and contain wintergreen-oil (methyl-salicylate); they are used externally against rheumatism, or internally as medicinal tea.

In New Guinea the big, scented flowers of *Rhododendron* and the ones of *Dimorphanthera* are locally used for decoration.

Wild *Rhododendron* species from Malesia are cultivated in Europe, N. America, Hawaii, and Australia; their hardiness, even of "alpine" species, in temperate zones is questionable. Seeds or cuttings of wild species of *Rhododendron* for horticultural purposes should be taken and airmailed; the pods should be almost ripe, not yet open, or just apically opening.

Taxonomy. The family *Ericaceae* is taken here in a wide sense, including *Pyrolaceae*, *Monotropaceae*, and *Vacciniaceae*, which are kept as proper families by various authors, though their close connection within the *Ericales* is generally admitted. Of the 5 subfamilies the *Rhododendroideae*, *Arbutoideae*, *Monotropeoideae*, and *Vaccinioideae* are represented in Malesia; the *Ericoideae* are confined to Europe and Africa.

No precursory work on Malesian *Ericaceae* as a whole has been done. J. J. SMITH devoted many papers to Malesian *Ericaceae*. Local revisions have been made by J. J. SMITH and Miss J. AMSHOFF for Java, by H. F. COPELAND for the Philippines, by J. J. SMITH and R. SCHLECHTER for parts of New Guinea, and the genera *Agapetes*, *Dimorphanthera*, *Diplycosia*, *Gaultheria*, and *Vaccinium* for the whole of New Guinea were previously treated by the author.

In connection with the present work precursory revisions and/or supplements for the whole of Malesia (partly including the adjacent regions, as far as this seemed to be necessary) have been published by the author on *Agapetes* (Nova Guinea, Bot. n. 1, 1960, 1-7; Blumea 12, 1964, 344), *Costera* (Blumea 11, 1961, 3-4), *Dimorphanthera* (Nova Guinea, Bot. n. 7, 1961, 73-102; Blumea 12, 1963, 137-142; *ibid.* 12, 1964, 344-345), *Diplycosia* (Reinwardtia 4, 1957, 119-161; Blumea 11, 1961, 4-8; *ibid.* 12, 1963, 116-123; *ibid.* 12, 1964, 342-343), *Gaultheria* (Reinwardtia 4, 1957, 163-188; Blumea 11, 1961, 1-3; *ibid.* 12, 1963, 114-116; *ibid.* 12, 1964, 342), *Rhododendron* (Reinwardtia 5, 1960, 45-231; Blumea 11, 1961, 113-130; *ibid.* 12, 1963, 90-114; *ibid.* 12, 1964, 339-341), and *Vaccinium* (Blumea 11, 1961, 9-112; *ibid.* 12, 1963, 123-137; *ibid.* 12, 1964, 343-344).

The treatment given here is tentative in many respects, especially for Borneo and New Guinea, which islands are hardly more than superficially known in many parts of their mountains which are so rich in *Ericaceae*. Up till now every larger recent collection from these islands has yielded new species and localities, mainly in the genera *Rhododendron* and *Vaccinium*. Therefore, the range of even the more common Bornean and New Guinean *Ericaceae* is still imperfectly known in detail.

Generic delimitation. In general there is no difficulty in the delimitation of the genera in Malesia, but in the *Vaccinioideae* generic distinction is unclear. Though *Costera* and *Dimorphanthera* are distinct 'Sippen' by their discrete area of distribution, the characters by which they are distinguished from *Vaccinium* are of no great importance within the subfamily. The distinction between *Agapetes* and *Vaccinium* is even less distinct, and without a clear geographical background, it is merely based on convenience. As a closer insight in and reconsideration of generic limits would involve a complete revision of the subfamily I have refrained from taking premature steps on a local basis.

Phytography. The descriptions of most species treated in this work are based on herbarium specimens; the size of fleshy organs, as corollas and soft fruits is therefore given in the dry state; $\pm 20\%$ (sometimes up to 40%) must be added to get the size in the fresh state. The author has studied *Ericaceae* in the field during a short stay in the Philippines (Luzon: Mountain Province), in the Malay Peninsula (Cameron Highlands) and in North Borneo (Mt Kinabalu), and a prolonged one in New Guinea (Vogelkop Peninsula, Cycloop Mts, Eastern Highlands, Bululo-Wau area) which enabled him to take measurements of such fleshy organs of numerous species on the spot; these have been added to the descriptions for the use of field collectors.

Notes for collectors. In general both flowers and fruit are necessary for determining the genus; fruiting material alone is generally insufficient for this purpose, and in *Vaccinioideae* it is as worthless as sterile material.

For identification of species within the genera the presence of flowers is a *conditio sine qua non*. Collectors should never collect sterile material in this family.

KEY TO THE GENERA

1. Ovary superior or nearly so, *i.e.* the calyx free at anthesis (if accrescent only seemingly connate with the fruit). Fruit mostly a capsule, rarely berry-like or a true berry. **1. Rhododendron**
2. Fruit a septicidal capsule (RHODODENDROIDEAE-RHODODENDREAE). **1. Rhododendron**
2. Fruit a loculicidal capsule or a berry.
3. Echlorophyllose, saprophytic, humiculous herbs. Leaves scale-like, \pm imbricate along the fleshy stem. Below the petals a whorl of leaves, here called 'sepals'. Roots fleshy. Pollen simple (MONOTROPOIDEAE).
4. 'Sepals' 5. Anthers horseshoe-shaped, the cells linear, confluent only at the apex. Ovary fusiform, gradually narrowed to the rather long cylindrical style. **2. Wirtgenia**
4. 'Sepals' 0-2. Anthers subreniform, the cells subglobular, connected lengthwise. Ovary ovoid or pear-shaped, narrowed to a very short and thick style. **3. Monotropastrum**
3. Shrubs or trees with green leaves. Pollen in tetrads (ARBUTOIDEAE).
5. Calyx small and remaining so, not accrescent nor becoming succulent in fruit. Fruit a capsule.
6. Low suffruticose plants with creeping stem and \pm basal leaves. Raceme solitary, terminal (PYROLEAE) **4. Pyrola**
6. Erect shrubs or trees with many, normally lateral racemes (ANDROMEDEAE) **5. Lyonia**
5. Calyx large from the beginning or \pm accrescent, surrounding the ripe fruit, mostly becoming \pm succulent in fruit. Fruit a capsule or a berry (GAULTHERIEAE).
7. Fruit a berry with scanty pulp. Calyx lobes large from the beginning, as long as or longer than the corolla, \pm spreading, neither accrescent nor becoming fleshy **6. Pernettyopsis**
7. Fruit a capsule, sometimes rather thin-walled and tardily splitting. Calyx lobes small initially and shorter than the corolla, \pm accrescent and succulent in fruit, finally \pm incl. the capsule.
8. Anther-cells not elongate into tubules, mucous, or rarely (bi)aristate by the elongate back-wall of each cell **7. Gaultheria**
8. Anther-cells passing into short or mostly elongate apical tubules, these connate to or free from each other and never aristate. **8. Diplycosia**
1. Ovary inferior or nearly so, *i.e.* the calyx at anthesis at least partly connate with the ovary. Fruit a (sometimes rather dry) berry, crowned by the persistent calyx lobes and the disk (VACCINIOIDEAE).
9. Stamens isomorphous, equal or slightly unequal in length; tubules not expanded apically.
10. Corolla generally small to medium-sized (0.4-1.5, rarely up to 2, occasionally (*Vaccinium pilosilobum*) up to 3 cm) and membranous, rarely somewhat fleshy.
11. Flowers solitary or in few-flowered fascicles which are axillary or not rarely extra-axillary. Pedicels rather long and filiform, not articulate with the calyx (ovary) **9. Costera**
11. Flowers in axillary racemes, sometimes reduced to a solitary flower. Pedicels mostly relatively short and/or stoutish, rarely slender, manifestly articulate with the calyx (ovary). **10. Vaccinium**
10. Corolla generally large and fleshy ((0.8-1.7-4.5 cm). (Pedicels mostly articulate, rarely continuous with the calyx) **11. Agapetes**
9. Stamens manifestly dimorphous and very unequal in length; tubules expanded, *i.e.* conspicuously ear-shaped. **12. Dimorphanthera**

1. RHODODENDRON

LINNÉ, Sp. Pl. 1 (1753) 392; SLEUM. Bot. Jahrb. 74 (1949) 511; Reinwardtia 5 (1960) 47; Blumea 11 (1961) 113; Jahrb. Rhodod. Ges. Bremen (1963) 7; Blumea 12 (1963) 90; *ibid.* 12 (1964) 339. — **Fig. 1—53, 104.**

Evergreen or deciduous (in Mal. 1 sp.) shrubs or small trees, terrestrial or epiphytic, the subsequent new shoots marked by distinct nodes. Stem often thickened at the base; roots not rarely large with soft tips in epiphytic specimens. *Leaves* petioled, rarely sessile, spirally arranged or opposite, or mostly in 3-8-merous pseudowhorls, \pm coriaceous, entire or crenulate, whether or not clothed with scales and/or hairs. *Flowers* in a mostly terminal, sometimes lateral, \pm condensed umbelliform raceme which is occasionally reduced to a single flower. Flower buds with numerous perulae varying in shape and size from the outer to the inner ones, early or late caducous. Bracteoles 2 at the base of each pedicel. *Calyx* cup- or disk-shaped, sometimes merely rim-like, \pm deeply 5(-7)-partite to subentire, often oblique, persistent. *Corolla* tubular or campanulate to funnel-shaped, sometimes salver-shaped, regular or somewhat zygomorphous, 5(-7)-lobed to various degree;

lobes imbricate in bud, erect to expanded, sometimes even horizontally spreading at anthesis. *Stamens* 5–10(–14), inserted at the base of the corolla, often unequal; filaments linear to filiform; anthers dorsifixed, in general introrse, very rarely extrorse, whether or not appendiculate at the base, opening by round terminal or \pm oblique and more elliptic sublateral pores; pollen agglutinate. *Disk* mostly thick and \pm prominent, 5–10(–14)-lobed. *Ovary* superior, 5(–7)-locular, placentas bifid, bearing numerous ovules; style mostly as long as, rarely shorter than the stamens; stigma capitate to turbinate, sometimes almost peltate, crenate to deeply lobed. *Capsule* dehiscent from the top, firstly by whether or not throwing off a soft-celled outer stratum, then dividing its valves into a star-shaped figure, valves thin to very thick, straight or twisting in later stages, the central column persistent. *Seeds* very numerous, minute, whether or not bearing appendages or thread-like tails at both ends; testa thin, reticulate; albumen fleshy.

Distr. Approximately 850 *spp.* in all, of which *c.* 525 occur in Asia (mainly in tropical and subtropical E. and SE. Asia), *c.* 25 *spp.* in N. America, 9 *spp.* in Europe, 1 *sp.* in Australia (N. Queensland), in *Malesia* *c.* 280 *spp.*, about half of them in New Guinea incl. New Britain and the Solomon Is. (Bougainville to Malaita), not extending into the proper Pacific flora. Fig. 1.

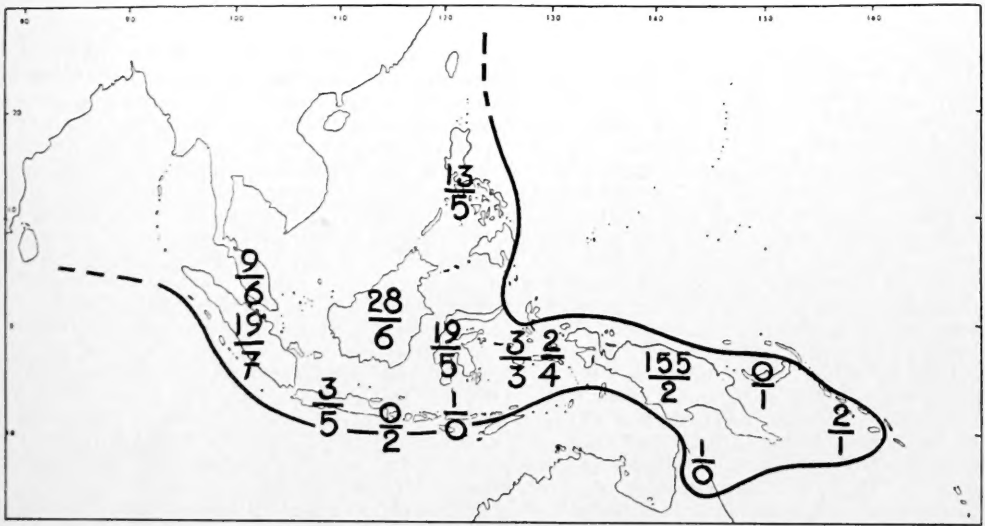


Fig. 1. Distribution of *Rhododendron* in Malesia and Australia. The number above the hyphen indicates the number of endemic species, that below the hyphen the number of non-endemic species in each island or district.

The bulk of the Malesian species belong to the lepidote *sect.* *Vireya*, which outside Malesia has 2 *spp.* in Indochina (*R. triumphans* YERSIN & CHEVAL. and *R. chevalieri* DOP in S. Annam), and 1 *sp.* in Australia (*R. lochae* F. v. M. in NE. Queensland). Only 5 lepidote *spp.* are native in Malesia, all closely related to continental, Asia-centred groups, extending into the Philippines (Luzon), the Malay Peninsula, and Sumatra.

Ecol. Most species occur as terrestrial substage shrubs or as epiphytes in the mountain forest, especially in the moss forest, and only occasionally (and then apparently always as epiphytes) in lowland forest, even in the mangrove (*R. brookeanum* and *R. longiflorum*). Terrestrial in general in the fringes of the upper forest belt and adjacent savannahs, they may grow there occasionally as epiphytes on *Podocarpus* and tree-ferns. They become dwarfs in the alpine zone in grassland and on rocks, reaching altitudes of about 4000 m both in Borneo (Mt Kinabalu) and in New Guinea. In most epiphytic species flowering seems to be rather irregular, so that flowers may be found during the whole year, other (and predominantly the terrestrial) species have a more pronounced flowering time.

Dispersal. Each capsule contains very numerous light seeds, each in most of the Malesian species provided with a narrow wing or tail at both ends. These seeds are apparently easily carried by wind, especially from epiphytic specimens living in the crowns of high forest trees. The fact, that landslides, or artificially cleared ground (abandoned cultures, air strips), or sluiced areas of gold mines in Borneo and New Guinea are often quickly grown with *Rhododendron* species from the neighbouring forests, points to wind as the main factor in natural dispersal.

RIDLEY (Dispersal, 1930, 127) thinks, that these seeds are attached by their tails to the branches of the trees on which they grow, but there is no proof of that.

Pollination. The only observations on pollination in Malesian *Rhododendron* refer to *R. retusum* from Sumatra and Java. According to DOCTERS VAN LEEUWEN "the anthers in the adult bud lie close under the hood formed by the corolla lobes; they are all open, and the pollen hangs in threads from the anthers. In this stage the stigma lies at a distance of about 2 mm below the anthers, and is not yet receptive. The flowers are therefore distinctly protandrous. Not much is changed on the first flowering day; during the second and the third flowering-day the style elongates, and as the now receptive stigma brushes past the anthers, it will come in contact with the pollen-masses hanging down from the latter. Finally the stigma projects 1 or 2 mm beyond the corolla". *R. retusum* has been seen visited by a honey-bird (*Aethopyga eximea*) and bumble-bees (DOCTERS VAN LEEUWEN, Verh. Kon. Ak. Wet. A'dam sect. 2, 31, 1933, 204).

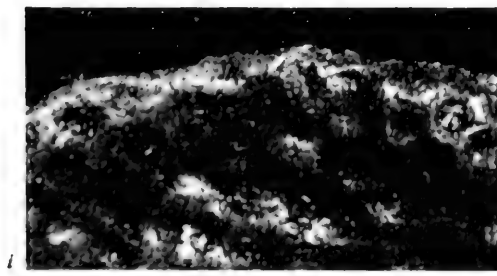
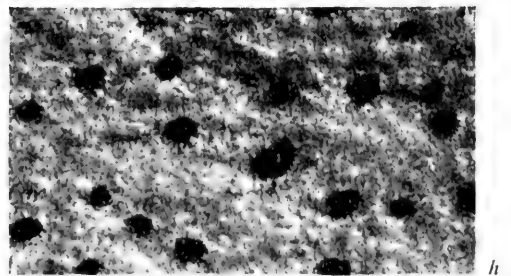
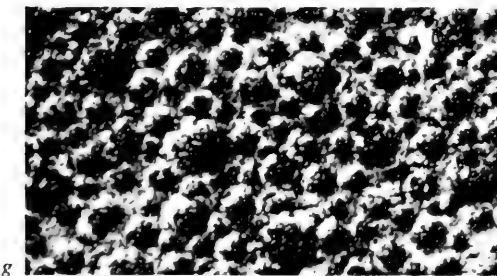
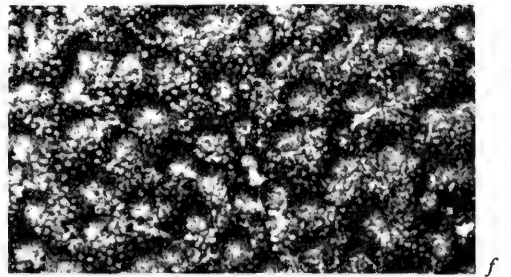
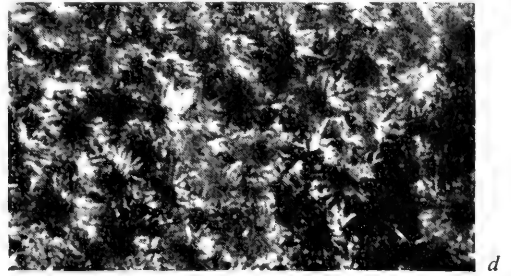
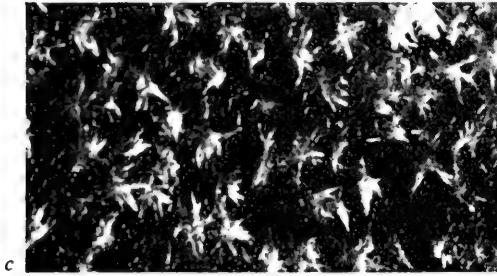
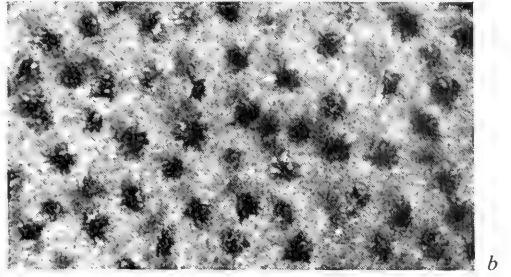
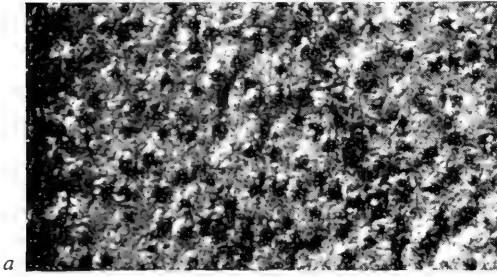
During his stay in New Guinea (Kubor Range, Western Highlands), Mr W. VINK has observed many times at 3600 m altitude that *Rhododendron* flowers were visited by the sooty honey sucker bird *Melidectes fuscus fuscus* (DE VIS), taking honey from the red, tubular corollas.

The salver-shaped, partly sweet-scented flowers of the species belonging to *subsect. Siphonovireya* and *subsect. Solenovireya* suggest, that *Sphingidae* might play a role in visiting and pollinating flowers of these groups at night.

Hybridisation. From experiments with several Malesian species in the past century, it is known that not only crossing between two species, but also multiple crossing between hybrids is rather easily obtained. It can therefore be expected, that hybridisation occurs under natural conditions. Several presumable hybrids have been recognized in herbarium materials, of which one parent must have been *R. malayanum* of the *subsect. Malayovireya* which is so distinct in the peculiar type of its scales from all other subsections of the genus in Malesia. In other cases it was *R. jasminiflorum* of the *subsect. Solenovireya* with its outstanding salver-shaped corolla, which has entered as one parent in hybrids with species of other subsections. Less or almost not recognizable in dry material are hybrids between species of the same subsection or even of the same series, which, however, might be disclosed on the spot among the parental species by a combination of minor characters as colour of the leaves or flowers, which are normally lost in the drying process, or from the habit, which cannot be judged from plants cut into small herbarium samples. It is for that reason, that in this treatment probably several natural hybrids have been described from dried material as proper species, which in future might be recognized as local hybrids in the field.

During my field work in the Arfak Mts I have observed both single specimens and small populations of apparently hybrid origin among or not far from the presumed parents, such as 248. *R. laetum* (corolla pure yellow) × 56. *R. konori* (corolla white to pinkish), 255. *R. zoelleri* (corolla tube yellow, lobes orange) × 57. *R. phaeoepelum* (corolla pure white), 56. *R. konori* (corolla large, white to pinkish) × 62. *R. asperum* (corolla much smaller, white or generally pink), 62. *R. asperum* (the pink form) × 248. *R. laetum* (corolla yellow), and 268. *R. culminicolum* var. *angiense* (corolla pinkish red × 68. *R. phaeochristum* (corolla deep red to carmine). These hybrids were striking at first glance by the intermediate colour of their flowers, white × yellow or orange resulting in pale yellow or pink corollas, pink × yellow in salmon shades of various degree. The pods found on such hybrids were intermediate in size and density of indument, and regularly full of seeds. Hybrids between species of *subsect. Euvireya* (268. *R. culminicolum*

Fig. 3. Main types of scales on the undersurface of leaves and used in the key to the subsections of *Rhododendron* sect. *Vireya*, all × 20. a. Rather small sessile and moderately stellate-incised scales on a dry leaf of *R. inconspicuum*. b. Rather large subsessile (subdendroid) and more deeply stellate scales on a fresh leaf of *R. dianthosum*. c. Stalked (dendroid) scales on a fresh leaf of *R. leucogigas*. d. Tomentum (felt) of densely set dendroid and deeply stellate-lacerate scales on a fresh leaf of *R. beyerinckianum*. e. Dendroid and deeply stellate scales, each scale on top of an epidermal tubercle, on leaf margin of a fresh leaf of *R. bryophilum*. f. Epidermal tubercles (papillae) on old dry leaf of *R. konori*, the scales already gone. g. Scales typical for the species of *subsect. Malayovireya* on a dry leaf of *R. malayanum*. h. Disk-shaped and sessile scales on a dry leaf of *R. retusum*. i-i'. Disk-shaped and sessile scales on upper surface (i) and undersurface (i') of a dry leaf of *R. gaultheriifolium*, also showing the crenulation of the leaf margin by impressed scales (a SLEUMER & VINK 4261, b-e cultivated at Proefstation voor de Boomkwekerij (Experim. Station for the cultivation of trees and shrubs) at Boskoop, Holland, f KOSTERMANS 2248, g MEIJER s.n. from Mt Sago, Sumatra, h VAN OOSTSTROOM 13310, i-i' SLEUMER 4156).



var. angiense, 248. *R. laetum*, 255. *R. zoelleri*) with rather scattered flattish scales, with such of *subsect. Phaeovireya* (62. *R. asperum*, 56. *R. konori*, 68. *R. phaeochristum*) with dense, dendroid scales, showed an intermediate type and/or density of scales on flowers and leaves. The enormous variation in size of corolla and fruit around the Anggi Lakes of *R. konori* is probably due to introgression of local *R. asperum* into the very abundant *R. konori*. Combination of 5-merous species (*R. asperum*, *R. zoelleri*) with normally 7-merous species (*R. konori*, *R. phaeoepulum*) resulted in specimens with 6- or 5- and 6-merous flowers.

Such hybrids have in New Guinea exclusively been found in burned or otherwise devastated places within the surrounding *Castanopsis-Quercus-Nothofagus* forest, where the parental species grow rather scattered and often as epiphytes under natural conditions. Obviously species of the forest invade such open places covered by regrowths of *Pteridium*, *Gleichenia*, grasses, sedges, *Lycopodium*, etc., they may become terrestrial, multiply considerably, can meet each other and thus get a better chance for crossing and back-crossing.

Vern. *Tjantigi*, J, S; New Guinea: *waradé*, Kapauku, *tschop-schai*, Manikiong, *krobua*, Kebar, *rohn*, Mendi.

Uses. Although the wood is hard, no real use is known as apparently the stems are too small in diameter in general. The flowers are occasionally used for decoration purposes by the natives.

Cultivation. The genus plays an important role in horticulture. In the first place, the most hardy species from temperate regions have been cultivated outdoors, but more and more less hardy and more showy ones have been introduced from the tropical and subtropical mountains of SE. Asia into those parts of Europe and America, where the winter is not too strong. W. Malesian *Rhododendrons* such as *R. longiflorum*, *R. javanicum*, *R. malayanum*, and *R. jasminiflorum* have been cultivated in European glasshouses since a hundred years (cf. HENSLOW, J. R. Hort. Soc. 13, 1891, 240-283). Apparently they were disappointing to breeders and amateurs and are today confined to Botanic Gardens. HOLTUM reported on his experience with the cultivation of *R. longiflorum*, *R. jasminiflorum*, and various hybrids at Singapore (M.A.H.A. Mag. 9, 1939, 34-37; *ibid.* 11, 1941, 93-95, with phot.). Seeds germinated and seedlings grew best on finely broken brick mixed with fern-roots (*Asplenium nidus*) or on chopped (tree-)fern-roots only, probably due to the favourable aeration in such a substratum. The first flowering began at c. 2½ years from seed.

A new interest started when the first species of the upper montane part of New Guinea, *R. beyerinckianum*, with its deep blood-red flowers, came into bloom from a seven years old seedling in the Edinburgh Botanical Garden in 1956. Through the Rijksherbarium at Leyden, seeds of about 40 *spp.* of New Guinean *Rhododendron* have been distributed to various nurseries (Boskoop, Seattle) and Botanical Gardens (Edinburgh, Kew, San Francisco) since 1955, several of which (*R. macgregoriae*, *R. wrightianum*, *R. leptanthum*, *R. zoelleri*) have already come into flower. Among others I introduced the big-flowered 238. *R. leucogigas* from the Cycloop Mts in northern New Guinea in 1961 by cuttings, one of which has flowered in 1964 at Boskoop, cf. SCHNEIDER, Jahrb. Deutsch. Rhodod. Ges. Bremen (1965) 29-33, f. 1 (*R. zoelleri*), f. 2-4 (*R. leucogigas*). *R. zoelleri* has been pictured on a stamp of the former Dutch New Guinea.

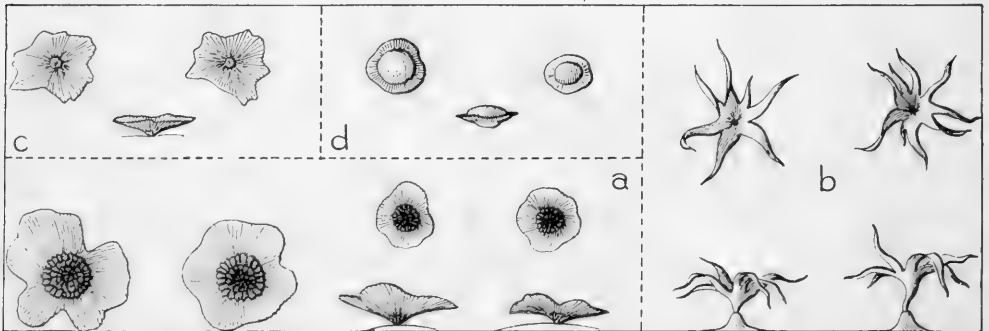


Fig. 2. Main types of scales on the undersurface of leaves and used in the key to the subsections of *Rhododendron sect. Vireya*, all $\times 70$. a. Scale variously lobed, with dark chestnut coloured centre and of two different sizes, exclusively found in *subsect. Malayovireya* (*R. malayanum*). b. Scale deeply stellate-incised or -lacerate and stalked ("dendroid") to various degree (*R. konori*); on top of an epidermal tubercle exclusively found in *subsect. Phaeovireya*. c. Scale moderately substellately angled or dented and sessile (*R. javanicum*). d. Scale entire or almost so and sessile, exclusively found in *subsect. Pseudovireya* (*R. quadrasianum var. cuneifolium*). (a MEIJER s.n., Mt Sago, Sumatra, b. KOSTERMANS 2248, c JUNGHUHN s.n., Java, d SINCLAIR 9084).

Notes. When not stated otherwise all measurements given in the descriptions are taken from dry specimens; to get the full life size of fleshy organs as corollas, fruits, etc., generally $\pm 20\%$ should be added. The colours mentioned are those taken from the collectors labels or observed by me in the field.

For the determination of the lepidote species the detail examination of the various types of scales on which the different subsections are mainly based, and the use of a lens are indispensable. See fig. 2-3.

KEY TO THE SUBGENERA, SECTIONS AND SUBSECTIONS

1. Plants lepidote, *i.e.* covered with scales (= epidermal trichomes) at least on the undersurface of the young leaves, mostly also on the tips of the branchlets and in the floral region. Seeds manifestly appendaged by \pm long tails or wings at both ends. 1. SUBG. RHODODENDRON *sect.* **Vireya**
2. Scales 'disk-shaped', *i.e.* their marginal zone entire or almost so (at most slightly-regularly or mostly irregularly-crenulate) and narrow in relation to the generally darker, often thick or swollen centre. (Scales on the branchlets and/or the pedicels sometimes on top of thick, persistent, epidermal, wart-like protuberances, never so on the blades). — Fig. 2d.
3. Corolla generally short-tubular, rarely funnel-shaped or (tubular-)campanulate; lobes erect or spreading. *Spp.* 1-25 1. *Subsect.* **Pseudovireya**
3. Corolla trumpet-like or salver-shaped, tube elongate and \pm narrow, straight or slightly curved; lobes equalling $\frac{1}{4}$ or less of the total length of the corolla, spreading \pm horizontally. *Spp.* 26-32. 2. *Subsect.* **Siphonovireya**
2. Scales 'star-shaped', *i.e.* their marginal zone distinctly—regularly or irregularly—lobed, dented, incised or lacerate to various degree on the branchlets and the foliage (sometimes less deeply dented or even subentire and more disk-like on the corolla and/or the ovary), narrow to wide in relation to the mostly darker, generally but slightly or not thickened centre. Centre either flat to slightly deepened (scale 'sessile'), or distinctly protracted downwards into a shorter or longer, slender foot, stem or column (scale 'dendroid', *i.e.* stalked). — Fig. 2a-c.
4. Scales in general markedly 'dendroid', and each on top of a distinct and permanent, bluntish or subapiculate, tubercle; upper and/or undersurface of the leaves \pm rough to the touch after the scales are gone. (Marginal zone of the scales usually wide and deeply, often narrowly incised; extreme forms similar to stellate hairs, which, however, are absent). *Spp.* 33-74. — Fig. 2b. 3. *Subsect.* **Phaeovireya**
4. Scales usually 'sessile', rarely 'subdendroid' (sometimes so in *subsect.* **Solenovireya**, rarely in *subsect.* **Euvireya**), and each either on top of a low and rather inconspicuous, apparently not permanent epidermal tubercle, or mostly on no tubercles at all; leaves quite smooth at least at full age on both faces. (Marginal zone of the scales narrow to wide; centre often \pm sunk into the epidermis of the leaves). 4. *Subsect.* **Malayovireya**
5. Centre of the scales rather large and very dark (sooty or dark chestnut or blackish brown). Marginal zone of the scales relatively wide, \pm deeply and broadly obtusely several-lobed, becoming silvery with age. Scales of 2 obviously different sizes, *i.e.* very many smaller and few much larger ones irregularly mixed, all very dense, touching or at least in part overlapping each other. (Scales of a similar type, but smaller, less distinctly unequal and spaced for their greater, overlapping for their smaller number: hybrids of the species of this subsection with species of other subsections). *Spp.* 75-88. — Fig. 2a. 4. *Subsect.* **Malayovireya**
5. Centre of the scales mostly rather small and variously coloured (though never as dark as in *subsect.* **Malayovireya**). Marginal zone of the scales wider or narrower, mostly but moderately (up to \pm halfway) lobed or dented. Scales all equal in size, very dense to very spaced. — Fig. 2c.
6. Scales very dense, touching or slightly overlapping each other, generally rather large, still forming a coherent layer on the undersurface of \pm mature leaves which persists for a rather long time (the pits which remain, when the proper scales have finally gone, dense to very dense, at least denser than in *subsect.* **Euvireya**). *Spp.* 89-102 5. *Subsect.* **Albiovireya**
6. Scales lax to subdense, rarely dense, always distinctly spaced on the undersurface of \pm mature leaves, generally rather small and often early caducous (or the marginal zone early dissolute).
7. Corolla trumpet-like or salver-shaped, the straight or somewhat curved tube elongate and narrow, lobes relatively short, equalling $\frac{1}{4}$ of less of the total length of the corolla and spreading \pm horizontally. *Spp.* 103-136 6. *Subsect.* **Solenovireya**
7. Corolla either tubular, campanulate or funnel-shaped, tube generally wider and shorter than in *subsect.* **Solenovireya**, lobes equalling $\frac{1}{4}$ or more of the total length of the corolla, erect or funnel-shaped, rarely horizontally expanded. *Spp.* 137-276. 7. *Subsect.* **Euvireya**
1. Plants elepidote, *i.e.* without any scales. Seeds whether or not provided with short, irregular, mostly one-sided appendages, but no proper tails at both ends.
8. Flower buds (or inflorescences) strictly terminal (solitary).
9. Flowers and leafy branchlets (new foliate shoots) from different buds, the first from terminal (strictly floral) buds, the latter from lateral buds, *i.e.* from the axils of the leaves of the past season. Hairs, if bristle-like, not flattened.

- 10. Leaves persistent. *Spp.* 277–279. 2. SUBG. HYMENANTHES *sect. Hymenanthès* *subsect. Irrorata*
- 10. Leaves deciduous. *Sp.* 280. 3. SUBG. PENTANTHERA *sect. Pentanthera*
- 9. Flowers and leafy branchlets (new foliate shoots) from the same terminal bud, the latter from the axils of the lowest, scale-like perulae of the recent season. Hairs often bristle-like and flattened. Leaves persistent or deciduous. *Spp.* 281–286. 4. SUBG. TSUTSUTSI *sect. Tsutsutsi*
- 8. Flower buds (or inflorescences), although seemingly ‘terminal’, really lateral (mostly several together), coming from the axil(s) of the uppermost leaf (or leaves). Leaves persistent. *Spp.* 287–288. 5. SUBG. AZALEASTRUM *sect. Choniastrum*

1. Subgenus *Rhododendron*

Rhododendron sect. Eurhododendron ENDL. Gen. (1839) 759 p.p.; DC. Prod. 7 (1839) 721 p.p.; MIQ. Fl. Ind. Bat. 2 (1859) 1057. — *Rhododendron subg. Lepidorrhodion* KOEHNE, Deutsch. Dendrol. (1893) 449; SLEUM. Bot. Jahrb. 74 (1949) 530.

Plants lepidote, i.e. covered with scales (epidermal trichomes) at least on the undersurface of the young leaves, generally also on the branchlets and in the floral region.

1. Section *Vireya*

(BL.) COPEL. f. Philip. J. Sc. 40 (1929) 136, 151; SLEUM. Bot. Jahrb. 74 (1949) 536; Reinwardtia 5 (1960) 50. — *Vireya* BL. Bijdr. (1826) 854; G. DON, Gen. Syst. 3 (1834) 846; STEUD. Nom. Bot. ed. 2, 2 (1841) 774 (*‘Vierya’*). — *Rhododendron subg. Vireya* (BL.) CLARKE in Hook. f. Fl. Br. Ind. 3 (1882) 462; COPEL. f. Am. Midl. Nat. 30 (1943) 604.

Seeds manifestly appendaged by ± long tails or wings at both ends.

Distr. E. Asia, Australia (N. Queensland), and *Malesia*.

1. Subsection *Pseudovireya*

(CLARKE) SLEUM. Bot. Jahrb. 74 (1949) 537; Blumea Suppl. 4 (1958) 47; Reinwardtia 5 (1960) 50. — *Rhododendron subg. Pseudovireya* CLARKE in Hook. f. Fl. Br. Ind. 3 (1882) 464. — *Rhododendron sect. Zygomorphanthe* SCHLTR, Bot. Jahrb. 55 (1918) 145 p.p. — *Rhododendron sect. Discovireya* SLEUM. Bot. Jahrb. 74 (1949) 539.

Scales disk-shaped, i.e. their marginal zone entire or almost so (at most slightly—regularly or mostly irregularly—crenulate) and narrow in relation to the generally darker, often thick or swollen centre, on the branchlets and/or the pedicels sometimes on top of thick, persistent, wart-like stalks. *Corolla* mostly ± shortly tubular, rarely funnel-shaped or (tubular-)campanulate, lobes erect to spreading.

Distr. E. Asia, *Malesia*. Fig. 4.

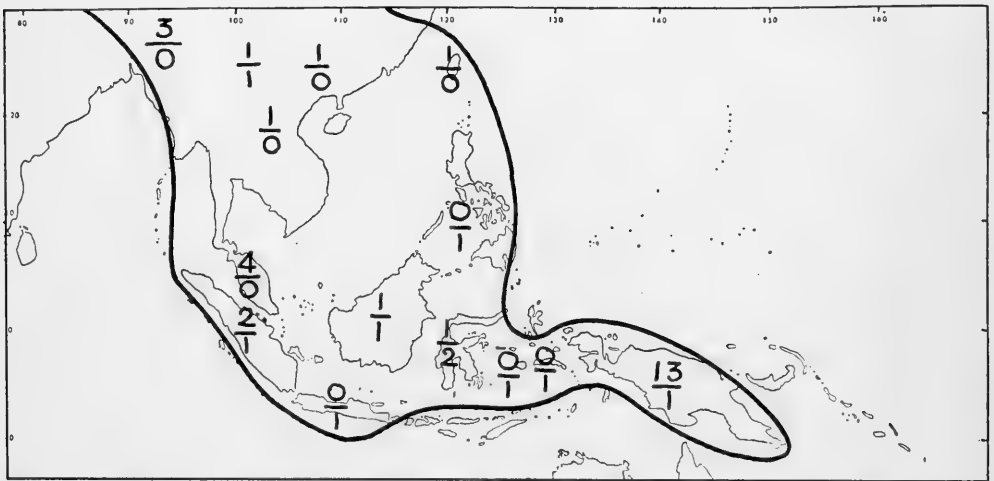


Fig. 4. Distribution of *Rhododendron subsect. Pseudovireya* in Malesia and Asia. The number above the hyphen indicates the number of endemic species, that below the hyphen the number of non-endemic species in each island or district.

KEY TO THE SPECIES

1. Branchlets covered at the tips with scales on stalks (c. 0.5 mm), densely verruculose in the older parts by the remaining stalks when the scales are gone.
2. Calyx long-ciliate, *i.e.* laxly or \pm densely set with rather long whitish hairs at the margin.
3. Leaves obovate to oblong-obovate, arranged in distinct pseudowhorls, (1.5-)2.5-4(-6.5) by (0.8-)1.2-1.8(-3) cm. (Umbels (2-)4-10-flowered) 1. *R. retusum*
3. Leaves lanceolate or oblong-lanceolate, spirally arranged, very dense together, 6-12 by 2-3 mm. 2. *R. taxoides*
2. Calyx very laxly and shortly ciliate, or not ciliate.
4. Flowers solitary or more rarely in twos.
5. Corolla 1-1.3 (rarely up to 1.5) cm long in all. Leaves 4-9 mm long.
6. Leaves entire or nearly so, the margin hardly or not thickened and but slightly revolute.
7. Leaves elliptic or elliptic- or oblong-obovate, obtuse or subacute at apex, laxly lepidote underneath. Pedicels very slender, lepidote and shortly patently hairy 3. *R. pulleanum* var. *pulleanum*
7. Leaves broad-obovate to nearly rounded, often retuse, \pm densely lepidote beneath. Pedicels rather stoutish, densely lepidote, very sparsely or not hairy 4. *R. nummatum*
6. Leaves well visibly crenulate by impressed scales at the \pm thickened margin, ovate or elliptic-ovate, obtusely acuminate 5. *R. gaultheriifolium*
5. Corolla (1.5-)1.7-2.4 cm long in all (when 1.5 cm long, then the leaves at least in part longer than 10 mm). Leaves 6-20 mm long.
8. Leaves elliptic, or ovate- or oblong-elliptic, gradually subacuminate towards the apex, subobtuse. 6. *R. oreites*
8. Leaves narrowly to broadly obovate, or suborbicular, obtuse or retuse at apex.
9. Leaves \pm elongate-obovate, 6-9(-10) by (2-)2.5-4 (rarely in part up to 6) mm 7. *R. erosipetalum*
9. Leaves obovate to broadly obovate or suborbicular, or, if oblong- or elliptic-obovate, the smallest at least 5 mm wide in the same specimen.
10. Leaves obovate-suborbicular, 7-10 by 5-8 mm. 8. *R. hameliiflorum*
10. Leaves obovate or broadly obovate, or oblong- or elliptic-obovate.
11. Leaves 6-10 by 4-6 mm. 3. *R. pulleanum* var. *maiusculum*
11. Leaves (8-)10-25 by (5-)6-12(-18) mm.
12. Anthers 1-1.2(-1.5) mm long. Capsules 1-1.5(-1.8) cm long 9. *R. lindaeum*
12. Anthers 2 mm long. Capsules 7-8 mm long 10. *R. spathulatum*
4. Umbels 3-5-flowered.
13. Leaves minutely, though well visibly crenulate, ovate to elliptic- or oblong-ovate or elliptic, rarely obovate-elliptic, slightly or not revolute at the margin.
14. Leaves 0.7-1.8 by 0.5-1.2 cm; scales very dense, partly touching each other on the undersurface of the leaves; nerves \pm inconspicuous beneath. 11. *R. saruwagedicum*
14. Leaves (1.5-)2-3.5 by (1.2-)1.5-2(-2.2) cm; scales less dense, all distant from each other on the undersurface of the leaves; nerves \pm conspicuous beneath. 12. *R. invasorium*
13. Leaves quite entire, obovate-spathulate or broadly oblanceolate, much revolute at the margin; nerves mostly distinctly prominent beneath 13. *R. perakense*
1. Branchlets covered at the tips with scales on very low stalks, or sessile, inconspicuously verruculose or mostly smooth when the scales are gone.
15. Corolla distinctly funnel-shaped or campanulate.
16. Leaves reticulate beneath. Branchlets dirty brown-velutinous at the tips 14. *R. vanderbiltianum*
16. Leaves not reticulate beneath. Branchlets papillose-puberulous, or not hairy at all at the tips.
17. Leaves oblong-obovate or narrowly elliptic, sometimes almost lanceolate, 0.5-1.1 cm wide. 15. *R. seimundii*
17. Leaves elliptic, or elliptic-suborbicular, or (broadly) obovate, (1.5-)1.8-2.3(-3) cm wide. 16. *R. scortechinii*
15. Corolla tubular or nearly so, at most slightly widened towards the limb.
18. Umbels (4-)6-12-flowered (with longish subpatent hairs at the pedicels when 4- or 5-flowered).
19. Leaves 0.8-1.8 cm by 2-3 mm 17. *R. adinophyllum*
19. Leaves 2.5-3 by 1.2-1.9 cm 18. *R. cyrtophyllum*
18. Flowers solitary or in twos (very rarely up to 4 in an umbel, but then the pedicels not longish subpatent-hairy).
20. Calyx lobes distinct, elongate-subovate-triangular, obtuse, \pm 2 mm 19. *R. ericoides*
20. Calyx lobes broadly ovate-rounded, obtuse, up to 1 mm, or generally rather inconspicuous.
21. Leaves lanceolate, subacute at apex and base, 4-6 by 1.5-2.5 mm. 20. *R. nanophyton* var. *nanophyton*
21. Leaves ovate, or oblong, or elliptic, or (elongate-)obovate, \pm obtuse at apex and/or base.
22. Corolla 2.5-3.2 cm long in all.
23. Ovary densely and exclusively lepidote.

24. Leaves ovate to elliptic-ovate or elliptic, 5-8(-12) by 3-5(-8) mm . . . 21. *R. schizostigma*
 24. Leaves obovate, 1.9-4.3 by 0.7-1.9 cm. 22. *R. meliphagidum*
 23. Ovary densely hairy and lepidote (scales almost covered by the hairs) 23. *R. vinkii*
 22. Corolla 1-1.8 (rarely up to 2.5) cm long in all.
 25. Leaves obovate-oblong, 2.5-4(-6) by 1.5-2(-2.5) mm. 20. *R. nanophyton* var. *petrophilum*
 25. Leaves longer.
 26. Branchlets besides the scales bearing no hairs at all. Corolla lobes distinctly erose-denticulate at apex 24. *R. ciliilobum*
 26. Branchlets besides the scales generally short-pubescent or patent-puberulous at the tips (and may be on the petioles). Corolla lobes entire. 25. *R. quadrasianum*

1. *Rhododendron retusum* [REINW. Verh. Bat. Gen. 9 (1823) 32, *nom. nud.*] (BL.) BENN. in Benn. & Br. Pl. Jav. Rar. (1838) 86 in text, 88, t. 20; DC. Prod. 7 (1839) 724; HASSK. Cat. Hort. Bog. (1844) 161; MOR. Syst. Verz. (1846) 42; PLANCH. Fl. Serres 5 (1849) 477-480 h; ZOLL. Syst. Verz. 2 (1854) 137; HOUTTE, Fl. Serres 10 (1854-55) t. 1044; HOOK. Bot. Mag. (1855) t. 4859; LEMAIRE, Ill. Hort. 2 (1855) t. 70; MIQ. Fl. Ind. Bat. 2 (1859) 1058; *ibid.* Suppl. 1 (1860) 251, 586 (*f. angustifolia*); Ann. Mus. Bot. Lugd.-Bat. 1 (1863) 44; BL. Fl. Jav. Pl. inéd. (1863-83) t. 7 & 7B, f. 2, A & B; BOERL. in Veth, Midden Sumatra 4, 2 (1884) 22; KOORD. Junghuhn Gedenkb. (1910) 185; Exk. Fl. Java 3 (1912) 5, f. 2; KOORD.-SCHUM. Syst. Verz. 1 (1912) fam. 233, p. 106; J.J.S. in K. & V. Bijdr. 13 (1914) 110; RIDL. J. Fed. Mal. St. Mus. 8 (1917) 58; MILLAIS, Rhodod. (1917) 235; KOORD. Fl. Tjib. 3 (1918) 4; HOCHR. Candollea 2 (1925) 491, *incl. var. macranthum* HOCHR. l.c. 492; SP. MOORE, J. Bot. 63 (1925) Suppl. 57; DOCTERS VAN LEEUWEN, Trop. Natuur 16 (1927) 190, f. 33; Pangrango (1933) 204, t. 29A; J.J.S. in Merr. Contr. Arn. Arb. 8 (1934) 122; STEEN. Trop. Natuur 24 (1935) 143; AMSH. in Back. Bekn. Fl. Java (em. ed.) 7 (1948) fam. 162, p. 3; SLEUM. Reinwardtia 5 (1960) 54; STEEN. Endeavour 21 (1962) 189, t. 6; SLEUM. Blumea 12 (1963) 90. — *Vireya retusa* BL. Bijdr. (1826) 856; G. DON, Gen. Syst. 3 (1834) 848. — *Azalea retusa* (BL.) O. KTZE, Rev. Gen. Pl. 2 (1891) 386, 387. — Fig. 104.

KEY TO THE VARIETIES

1. Corolla strictly tubular, 2-2.5(-3) cm long in all, lepidote and hairy outside.
 2. Style lepidote at the base, bearing no hairs at all. 1. var. *retusum*
 2. Style laxly patent-hairy at the base or in the lower half 2. var. *trichostylum*
 1. Corolla tubular-campanulate, c. 1.4 cm long in all, exclusively lepidote outside.
 3. var. *epilosum*

1. var. *retusum*.

Shrub or small tree, (0.3)-2-4(-7) m, in general terrestrial, erect or occasionally creeping as pioneer; stem or trunk nodose, dark brown, irregularly branched; branches grey-corticated. Branchlets terete, younger parts red, densely clad with stalked roundish rather soon caducous scales, the remaining stalks in form of thickish warts, which make the upper 3-4 internodes brownish-blackish verruculose; internodes 2-6 cm. *Leaves* in 4-7-

merous pseudowhorls at the upper nodes, obovate to oblong-obovate, apex rounded or mostly retuse, base cuneate into the petiole, subcoriaceous to coriaceous, dark green and shining above, paler to almost whitish green and \pm dull beneath, laxly to subdensely lepidote on both faces initially, early glabrescent above only (scales disk-like, marginal zone narrow and \pm entire, centre rather large and thick, manifestly impressed), margin \pm distinctly recurved, (1.5)-2.5-4(-6.5) by (0.8)-1.2-1.8(-3) cm, midrib impressed above, strongly raised beneath, nerves 4-6(-8) pairs, lower ones \pm ascendent, higher ones irregularly spreading, all slightly impressed above in fully mature leaves only, otherwise but faintly visible, \pm obsolete beneath, reticulation 0; petiole stoutish, grooved above, lepidote or finally rugose, 1-5 mm. *Umbels* (2)-4-10-flowered; flowers erect in the early bud stage, pendulous afterwards. Outer perulae subulate to ovate-acuminate, inner ones gradually increasing in size and broadly ovate to spatulate, shortly acute, \pm lepidote outside, inner ones sericeous in their lower part, all \pm densely and longish white-ciliate, up to 1.3 by 0.8 cm. Bracteoles linear to filiform, up to 6 mm. Pedicels rather slender, densely \pm patent hairy (to nearly villous), lepidote only at the apex, (0.5)-1.2-1.5(-2) cm. *Calyx* small, oblique, shortly 5-lobed or -dentate, c. 4 mm ϕ , densely lepidote outside, lobes c. 1 mm long ciliate. *Corolla* tubular, light red to intense scarlet, or flame- or orange-red, 2-2.5 (rarely up to 3) cm long in all, tube rather straight-cylindric, base slightly 5-saccate or dilated in form of a ring, 4-6 mm ϕ at the very base, dilated upwards to 8 mm, laxly to rather densely yellow-lepidote and short whitish hairy outside, glabrous inside, lobes erecto-patent or somewhat spreading, broadly oblong to suborbicular, 4-6 by 3-5 mm. *Stamens* 10, alternately slightly unequal, mostly \pm exserted; filaments linear, somewhat widened below, glabrous; anthers broad-oblong, truncate at the top, c. 1.5 by 1 mm. *Disk* glabrous. *Ovary* oblong-conical, 5-angular or -grooved, densely lepidote, not hairy at all, c. 4 mm, rather abruptly narrowed to the style, the latter filiform, lepidote at the base only, otherwise glabrous, accrescent during anthesis, finally slightly exserted; stigma capitate, shortly 5-lobed. *Capsule* erect, oblong-fusiform, lepidote, 1-1.5(-1.8) by 0.4-0.5 cm, on a hairy pedicel 1.8-2.4 cm. *Seeds* oblong, c. 2 mm, winged in two opposite directions, wings membranous, obtusate, irregularly incised distally.

Distr. *Malesia*: Sumatra, Java (especially in W. Java; in central Java only known from Mt

Prahu (Diëng) and Mt Merapi; in E. Java from Mt Ardjuno).

Ecol. In subalpine forests or shrubberies, in mossy *Vaccinium* forest, as well in a soil rich in humus (also in the moss-cushions of old fallen trees) as on sandy, stony or rocky grounds, often near craters and solfatarae, there forming very low and small-leaved, windridden forms, the root-system of which extends near the surface of the ground, the stems able to root; locally not rare, (1350-)1500-3400 m. *Fl.* Jan.-Dec.

Pollination. After DOCTERS VAN LEEUWEN "the flowers are distinctly protandrous. During anthesis the style elongates, and the then receptive stigma brushes past the anthers, coming in contact with the pollen-masses, which hang down from the anthers in threads. In the basal annular part of the corolla nectar is secreted. The flowers are visited by small honey birds (*Aethopyga*) and bumble-bees, which apparently take part in the pollination".

Vern. *Bunga tjanké*, Sumatra (Kerintji), *tjantigi*, J. S., *tjantigi beureum*, S.

2. var. *trichostylum* SLEUM. *Reinwardtia* 5 (1960) 55.

Leaves 1.5-2.5 by 0.7-1.4 cm. Style laxly patent-hairy at the base or in the lower half.

Distr. *Malesia*: N. Sumatra (Atjeh: Goh Lem-buh, Putjuk Angasan, Bur ni Tèlong), on forested slopes, 1350-2700 m.

3. var. *epilousum* J. J. S. *Bull. Jard. Bot. Btzg III*, 13 (1935) 446; SLEUM. *Reinwardtia* 5 (1960) 55.

Corolla tubular-campanulate, c. 1.4 cm long in all, besides the scales not hairy at all outside.

Distr. *Malesia*: Central Sumatra (Padang Highlands: Mt Gombak), once found in low forest at 2330 m.

2. *Rhododendron taxoides* J. J. S. *Nova Guinea* 18 (1936) 92, t. 18, 2; SLEUM. *Reinwardtia* 5 (1960) 55.

Shrub, 0.4-1.5 m. Branchlets very densely set with leaves in their upper and with very numerous scars in the lower defoliate part respectively, and rather densely with caducous scales on short stalks, which remain in form of small, rather dense warts. *Leaves* scattered, lanceolate to oblong-lanceolate, apex obtusely acuminate, base shortly broad-attenuate, obtuse, stiffly coriaceous, shining green above and light green with brown scales beneath, glabrous above at full maturity, beneath rather laxly lepidote, more densely so on the midrib (scales sessile, rounded or nearly so, entire to irregularly undulate, marginal zone rather narrow, centre large, thick, dark and impressed), recurved at the whole margin, not rarely \pm convex in dry specimens, edge somewhat thickened and crenulate by impressed scales, 6-12 by 2-3 mm, midrib very slightly grooved towards the base above, thick and obtusely raised beneath, nerves \pm indistinct; petiole rather thick, lepidote, 1.5-2 mm. *Flowers* mostly in twos, sometimes solitary. *Perulae* narrow-ovate to obovate, apiculate, outer ones laxly lepidote dorsally, inner ones \pm densely sericeous, ciliate, up to 6 by 3 mm. *Bracteoles*

linear, pubescent, up to 5 mm. Pedicels slender, subdensely covered with shortly stalked scales and short hairs, 8-9 mm. *Calyx* oblique, small, disk-shaped, wavy, c. 3 mm ϕ , shortly obtusely 5-lobed, lepidote, margin laxly set with white hairs (c. 0.5 mm). *Corolla* dark red, 1.4-1.5 cm long in all, tubular, somewhat oblique and curved, rather densely lepidote outside except the upper part of the lobes, which bears some sparse hairs, glabrous inside, tube 1-1.2 cm long, c. 2.5 mm ϕ at base, widened up to 5 mm ϕ below the lobes, the latter \pm erect, suborbicular to ovate, subtruncate-obtuse, minutely irregularly crenulate, ciliate, c. 3 by 2-3 mm. *Stamens* 10, unequal, the longest nearly equalling the corolla; filaments filiform, glabrous; anthers subelliptic, c. 1 mm. *Disk* glabrous. *Ovary* obliquely conical, 5-ribbed, c. 2.5 by 1.5 mm, densely lepidote, gradually tapering to the glabrous and c. 1 cm long style; stigma thick-obconical, lobulate. *Capsule* obliquely fusiform, sparsely lepidote, c. 9 by 3 mm.

Distr. *Malesia*: W. New Guinea (Mt Door-man), on open slope or summit on serpentine rocks, 3250-3520 m. *Fl.* Oct.

3. *Rhododendron pulleanum* KOORD. *Nova Guinea* 8 (1912) 879, t. 154, 4; J. J. S. *ibid.* 12 (1914) 130; *ibid.* 18 (1936) 90; SLEUM. *Reinwardtia* 5 (1960) 56. — *R. minimifolium* WERNH. *Trans. Linn. Soc. II, Bot.* 9 (1916) 98 p.p.

var. *pulleanum*.

Terrestrial or epiphytic shrub, up to 2 m, much branched. Branchlets terete, covered in the uppermost part with stalked scales, lower parts glabrescent though still densely verruculose by the remaining stalks, old parts smooth and grey-corticate. *Leaves* \pm scattered or subopposite, rather dense along the branchlets, elliptic or elliptic- or oblong-obovate, apex subacute or mostly obtuse, base \pm cuneate, coriaceous, deep green above, paler beneath, glabrous above, laxly lepidote beneath (scales brownish reddish, sessile, round, rather large, marginal zone narrow, entire or nearly so, centre thick, slightly or not impressed), edge \pm revolute, or whole blade \pm convex above in dry specimens, 4-7(-9) by 2.5-5 mm, midrib \pm obscure above, slightly prominent beneath, nerves obsolete above, faintly visible beneath; petiole rather slender, 1-1.5 mm. *Flowers* solitary. *Perulae* ovate to oblong-ovate, subacute, unequal, up to 7 by 2-4 mm, glabrous, whitish ciliate. *Bracteoles* linear to narrow-spathulate, very shortly hairy, 5-7 mm. *Pedicels* very slender, nearly filiform, densely lepidote and finely patently hairy, c. 7 mm. *Calyx* oblique, lepidote, shortly 5-dented, 3 of the teeth short-triangular (1 mm), 2 other larger (1.5-3 mm), \pm spreading. *Corolla* tubular, red, 1.3-1.5 cm in all, rather densely lepidote outside, glabrous inside, tube cylindrical, straight, 10-12 mm long, 3-4 mm ϕ at base, 5-6 mm ϕ below the lobes, the latter erect, obovate-oblong, 2-3 (rarely up to 4) by 2-2.5 mm. *Stamens* 10, not or slightly exserted; filaments linear, filiform, glabrous; anthers oblong-obovate, truncate, c. 1 mm. *Disk*

glabrous. *Ovary* ovoid-conical, entirely covered with scales, *c.* 3 mm, rather gradually tapering to the style, the latter thickish, lepidote at the very base, glabrous otherwise, attaining *c.* 1 cm in length; stigma subclavate, moderately thickened, indistinctly 10-lobed.

Distr. *Malesia*: W. New Guinea (Nassau Mts).

Ecol. In mossy forest, or mostly in dense low scrub on exposed summits or in open dwarfish moss grown *Vaccinium* forest, 1420–2600(–3450?) m. *Fl.* Jan.–Dec.

var. maiusculum SLEUM. *Reinwardtia* 5 (1960) 56; *Blumea* 11 (1961) 113.

Leaves 6–10 by 4–6 mm. *Corolla* 1.7–2 cm long in all. Pedicels densely lepidote and entirely epilob, otherwise \pm as *var. pulleanum*.

Distr. *Malesia*: Central New Guinea (on open sandy crest of ridge at 2300 m near Lake Habbema and in alpine shrub vegetation on Mt Antares at 3300–3400 m, said to be common in both places). *Fl.* July, Oct.

Note. This variety approaches *R. hameliiflorum* in many respects.

4. *Rhododendron nummatum* J. J. S. Nova Guinea 18 (1936) 91, t. 17, 2; SLEUM. *Reinwardtia* 5 (1960) 56; *Blumea* 11 (1961) 113; *ibid.* 12 (1963) 90; *ibid.* 12 (1964) 339.

Stiff, erect, terrestrial or epiphytic shrub, 0.3–0.5 (rarely up to 1.5) m, much and closely branched. Branchlets slender, terete, tips densely clad with stalked scales, lower parts verruculose where the scales have gone, finally glabrescent and dark greyish blackish corticate. *Leaves* scattered, more dense towards the tips, broad-obovate to nearly rounded, apex rounded-obtuse, not rarely slightly retuse, base \pm broadly attenuate or rounded, coriaceous, somewhat convex above, initially rather densely lepidote on both faces, glabrous above at maturity (scales round, rather large, sessile, marginal zone entire or nearly so, centre thick, slightly or not impressed), margin slightly or not revolute, lamina mostly flat or but slightly convex, 4–9(–13) by 3.5–8(–9) mm, midrib prominent beneath only, otherwise \pm obsolete as are the 2 or 3 nerves; petiole slender, 1–1.5 mm. *Flowers* pendent, solitary, or rarely in twos. Perulæ narrow-ovate, subacute to obtuse, glabrous, ciliate, up to 3 mm. Bracteoles linear-spathulate, short hairy distally, up to 4 mm. Pedicels rather stoutish, densely lepidote (the scales on very short stalks), very sparsely or not hairy, 5–6.5 mm. *Calyx* oblique, small, irregularly 5-lobed, lepidote dorsally, lobes triangular, obtuse, denticulate, up to 0.5 mm. *Corolla* pink or (dark) red, whether or not with yellow at the base, tubular, slightly zygomorphous, tube cylindrical, straight, sparsely to subdensely lepidote outside, glabrous inside, *c.* 1 by 0.35 cm, lobes erect, ovate-orbicular, irregularly denticulate, laxly lepidote outside in their lower half, 1.2–1.8 by 1.5–2 mm. *Stamens* 10, \pm included; filaments linear, slightly dilated towards the base, glabrous; anthers 0.8–1 mm. *Disk* glabrous. *Ovary* cylindrical, 5-ribbed, covered with

rusty scales, *c.* 3 mm, attenuate to the rather thickish style, which is laxly lepidote in its lower half and attains 4–5 mm in length; stigma subclavate-capitate, indistinctly 10-lobed. *Capsule* narrow-oblongoid, 8–13 by 2.5–3 mm, distinctly 5-ribbed.

Distr. *Malesia*: New Guinea (Main Range from Mt Doorman and the Hellwig Mts to Mt Victoria, also on Mt Saruwaged).

Ecol. In sheltered ravine, forest borders, open mossy bush, rest clearings in ridge crest forest, stunted shrubbery on ridge top or open hill side or open clayey ground of old gold workings, on rocks, often together with mosses and lichens when terrestrial, 2060–3250 m. *Fl. fr.* Jan.–Oct.

5. *Rhododendron gaultheriifolium* J. J. S. Nova Guinea 18 (1936) 90, t. 17, 1; SLEUM. *Reinwardtia* 5 (1960) 56; *Blumea* 11 (1961) 113; *ibid.* 12 (1963) 90.

var. gaultheriifolium.

Slender shrub, 0.4–2.5(–5) m, branches numerous, rather stout, erect, terete. Branchlets slender, tips covered with stalked scales, lower parts densely verruculose. *Leaves* scattered, more crowded towards the ends of the branchlets, ovate, rarely elliptic-ovate, shortly obtusely acuminate, base rounded to subtruncate, rigidly coriaceous, light or yellowish green, paler below, subdensely lepidote on both faces (scales \pm round, sessile, entire, centre dark, rather thick and \pm impressed especially on the undersurface), margin \pm thickened and revolute, irregularly crenulate by the impressed scales, (5–)6–9 (rarely and but partly in the same specimen up to 12) by 4–7 mm, midrib slightly impressed above, a little raised beneath, nerves indistinct; petiole lepidote, \pm 2 mm. *Flowers* \pm nodding, solitary or in twos. Outer perulæ subulate and \pm densely lepidote, inner ones ovate-acuminate, apiculate, puberulous and lepidote dorsally in the upper part, \pm puberulous inside, densely ciliate, up to 7 by 4 mm. Bracteoles linear, glabrous, up to 7 mm. Pedicels slender, densely lepidote and \pm laxly minutely pubescent, 5–8(–9) mm. *Calyx* oblique, disk-shaped, densely lepidote outside, obtusely 5-lobed, occasionally one or a few lobes elongate-triangular, acute, up to 1 mm. *Corolla* deep red or sordid to brownish red, sometimes greenish yellow or orange, tubular, somewhat zygomorphous, 11–13 mm long, densely yellow-lepidote outside except a wide margin of the lobes, glabrous inside, lobes besides the scales laxly hairy outside in their upper half and distinctly ciliate, tube straight, somewhat widened upwards, 8–10 mm long, 2.5–3 mm \varnothing at the base, *c.* 5 mm below the lobes, the latter erect or a little spreading, ovate-quadrangular, rounded at the apex and irregularly crenulate-denticulate, *c.* 3 by 2.5 mm. *Stamens* 10, slightly unequal; filaments red, linear at the base, filiform upwards, glabrous, 9–10 mm; anthers *c.* 1 mm. *Disk* glabrous. *Ovary* red, conical, densely lepidote, *c.* 2.5 mm, gradually attenuate to the style, the latter thick, lepidote at base, otherwise glabrous, *c.* 7 mm; stigma shortly club-shaped, irregularly

lobed. *Capsule* erect, narrow-conical, longitudinally 5-ribbed, densely lepidote, 8–9 by 3.5–4 mm, on stoutish pedicel 1–1.5 cm.

Distr. *Malesia*: New Guinea (Oranje Mts, Mt Doorman, and in the Eastern and Western Highlands).

Ecol. In shrubberies bordering the (sub)alpine forest, occupying patches of wet sandy or peaty soil, or on the more sterile peaty ridges, also in grassland above the timber line, between summit rocks, locally common, occasionally dominant, 2900–4150 m. *Fl.* Feb.–Oct.

var. *expositum* SLEUM. Reinwardtia 5 (1960) 56; Blumea 11 (1961) 113.

Shrub of erect ascending or prostrate habit, 0.05–1 m. *Leaves* very coriaceous and shining, (2–)3–4(–5) by 3–4 mm. *Flowers* dark red or orange red. *Capsule* 6–7 by 2.5–3 mm. The alpine form with smaller leaves and capsules.

Distr. *Malesia*: W. New Guinea (Mt Wilhelmina and Mt Antares).

Ecol. Xerophytic shrub on sterile limestone slopes, on exposed sandstone crests or in alpine rocky grassland, locally common, 3300–3800 m. *Fl. fr.* July, Sept.

6. *Rhododendron oreites* SLEUM. Reinwardtia 5 (1960) 57.

var. *oreites*.

Erect, slender, terrestrial, sparsely branched shrub, 2–2.5 m. Branchlets terete, 1.5–2 mm ϕ , tips densely set with stalked scales, glabrescent and verruculose-rugose in the lower parts. *Leaves* scattered, crowded especially at the upper part of the new shoots, oblong-elliptic, gradually subacuminate towards the apex, subobtuse, base broadly attenuate into the petiole or subtruncate-rounded, coriaceous, subsdensely persistently lepidote on both faces (scales round, the narrow marginal zone entire or subentire, centre rather large, thick, somewhat impressed), revolute at the lower part of the edge, which is subcrenulate by the impressed scales, 8–12 by 4–6 (rarely up to 8) mm, midrib slightly impressed above, prominent beneath, nerves very slightly or not visible at all; petiole rather slender, lepidote, c. 2 mm. *Flowers* solitary. Outer perulae triangular, inner ones ovate to oblong, apiculate, firmly membranous, lepidote dorsally at the apex, otherwise glabrous, rather long and densely ciliate, up to 5 by 2.5 mm, often surrounding the base of the pedicel at anthesis or still in fruit. Bracteoles filiform, laxly hairy, c. 6 mm. Pedicels slender, with dense scales on very short stalks, not hairy at all, c. 1 cm at anthesis, up to 1.5 cm in later stages. *Calyx* oblique, cupular, c. 2.5 mm ϕ , shortly 5-lobed, lobes subacute or obtuse, appressed to the corolla, c. 1 mm. *Corolla* tubular, slightly zygomorphic, red, 1.6–1.7 cm long, c. 3 mm ϕ at the base, widened to c. 6 mm below the lobes, densely lepidote outside, glabrous inside, the margin of the lobes excepted, lobes nearly rounded, the marginal part glabrous or very laxly and shortly hairy outside,

glabrous inside, edge crenulate or erose-denticulate, not ciliate, 3–4 mm ϕ . *Stamens* 10, as long as the corolla, slightly unequal; filaments glabrous, linear below, filiform distally; anthers brown, obovate-oblong, c. 1 mm. *Disk* glabrous. *Ovary* shortly ovoid-cylindrical, \pm densely covered with very slightly stalked or sessile scales, c. 4 mm by 1.5 mm, gradually tapering to the rather slender and glabrous style, which equals the corolla at anthesis, but exceeds it in later stages. *Capsule* cylindrical, (0.8–)1–1.2 by c. 0.35 cm, deeply 5-grooved, rather densely lepidote, valves not or slightly twisted.

Distr. *Malesia*: W. New Guinea (Mt Wilhelmina).

Ecol. In subalpine forest or forest borders, or in shrubberies, occupying patches of wet sandy or peaty soil, common, 2900–3650 m. *Fl. fr.* Sept.–Oct.

var. *chlorops* SLEUM. Reinwardtia 5 (1960) 58.

Erect, sparsely branched shrub, 1–2.5 m. *Leaves* elliptic or ovate-elliptic, 11–15 by 5–8 mm. *Corolla* greenish yellow.

Distr. *Malesia*: W. New Guinea (Lake Habbe-ma), once collected, said to be plentiful in a shrubby opening in the forest at 3000 m. *Fl. fr.* Oct.

7. *Rhododendron erosipetalum* J. J. S. Nova Guinea 18 (1936) 91, t. 18, 1; KANEH. & HATUS. Bot. Mag. Tokyo 56 (1942) 479; SLEUM. Reinwardtia 5 (1960) 58; Jahrb. Rhodod. Ges. Bremen (1963) f. 30; Blumea 12 (1963) 90.

Erect and spreading shrublet or shrub, (0.1–)0.5–2 m, epiphytic or terrestrial. Branchlets slender, tips densely clad with stalked scales, lower parts verruculose where the proper scales have gone and the stalks remained. *Leaves* \pm scattered, often somewhat crowded in the upper part of the branchlets, narrow-obovate, apex obtusely attenuate or mostly rounded, not rarely slightly retuse, gradually cuneate at the base, coriaceous, dark green above, paler beneath, glabrous above at full age, rather laxly lepidote beneath (scales round, their marginal zone narrow, entire, the centre darker, thickish, slightly impressed), somewhat revolute at margin, 6–10(–13) by (2–)2.5–3.5(–4, rarely in part up to 6) mm, midrib slightly or obscurely impressed above, raised beneath, nerves obsolete; petiole 1–1.5 mm. *Flowers* solitary. Perulae ovate, apiculate, subsericeous and laxly lepidote dorsally, shortly white-ciliate, up to 4 by 3 mm. Bracteoles filiform, up to 5 mm. Pedicels slender, laxly to subsdensely covered with scales and minute, whitish, \pm patent hairs, 8–10 mm, accrescent to 15 mm in final stages. *Calyx* small, disk-like, 5-angular or shortly obtusely 5-lobed, lepidote. *Corolla* tubular, somewhat curved and a little compressed laterally, deep pink to dark red, all over \pm laxly lepidote, moreover minutely hairy at the upper part of the lobes outside, glabrous inside, (1.5–)1.8–1.9 cm long in all, 3–4 mm ϕ at base, gradually widened to 5–6 mm ϕ below the lobes, the latter unequal, obliquely ovate or

ovate-oblong, \pm rounded at the apex, though minutely denticulate-erose there, 3–4 by 3 mm. *Stamens* 10, unequal, some slightly exerted from the corolla; filaments narrow-linear, glabrous; anthers c. 1.2 mm. *Disk* glabrous. *Ovary* obliquely conical, longitudinally 5-ribbed, densely lepidote, c. 3 mm, tapering to the style, the latter glabrous, somewhat thickened upwards to the club-shaped irregularly lobed stigma, c. 1.3 cm. *Capsule* subcylindric, deeply 5-grooved, (0.8–)1–1.5 by c. 0.3 cm. *Seeds* shortly tailed at both ends, 0.15–2 mm.

Distr. *Malesia*: W. New Guinea (Vogelkop Peninsula: Arfak Mts, Tohkiri, Tamrau and Nettoti Range).

Ecol. Rarely on burnt open summit, mostly on edge of (moss) forest or summit scrub on peaty soil, 1400–2650 m. *Fl. fr.* Jan.–Dec.

Vern. *Mambau*, Kebar.

8. *Rhododendron hameliiflorum* WERNH. Trans. Linn. Soc. II, Bot. 9 (1916) 98; SLEUM. Reinwardtia 5 (1960) 58.

Very low, perhaps creeping shrublet. Branchlets slender, tips densely covered with stalked scales, or verruculose in the lower parts where the scales have gone. *Leaves* scattered or subopposite, broadly obovate to suborbicular, apex rounded or minutely retuse, base broadly attenuate or mostly rounded, coriaceous, rather laxly lepidote initially (scales round, entire, flattish, the large dark centre slightly impressed), early glabrescent above, persistently lepidote beneath, entire, margin not or very slightly recurved, 7–10 by 5–8 mm, midrib impressed above, prominent beneath, nerves \pm obsolete; petiole 1.5–2 mm. *Flowers* solitary or rarely in twos. *Perulae* oblong-obovate, sparsely pubescent dorsally, densely white-ciliate. *Pedicels* slender, densely lepidote, 5–6 mm. *Calyx* small, obscurely 5-lobed. *Corolla* tubular, 1.7–2 cm by 3–4 mm, subdensely lepidote all over outside, glabrous inside, lobes obovate-suborbicular, not erose, c. 4 by 3 mm. *Stamens* 10, nearly equalling the corolla in length; filaments linear, glabrous; anthers 1 mm. *Disk* glabrous. *Ovary* subconical, c. 3 mm, densely lepidote, tapering to the style, which is laxly lepidote in its lower $\frac{1}{4}$, glabrous elsewhere, and equals or slightly exceeds the corolla in length; stigma club-shaped.

Distr. *Malesia*: W. New Guinea (Mt Carstensz), between 2350 and 3350 m, once collected.

9. *Rhododendron lindaeanum* KOORD. Nova Guinea 8 (1912) 878; J. J. S. *ibid.* 12 (1914) 129, *incl. var. latifolium* J. J. S. *l.c.* 130, t. 29A; *ibid.* 12 (1917) 498; *ibid.* 18 (1936) 89; SLEUM. Reinwardtia 5 (1960) 58, *incl. var. psilacrum* SLEUM. *et var. cyclopicum* SLEUM. *l.c.* 59; Blumea 12 (1960) 90. — *R. retusum* [non (BL.) BENN.] WERNH. Trans. Linn. Soc. II, Bot. 9 (1916) 94. — *R. fuchsoides* SCHLTR., Bot. Jahrb. 55 (1918) 147.

var. lindaeanum.

Low shrub, 0.25–2(–3) m, terrestrial or epiphytic; branches stoutish. Branchlets terete, slender, tips densely covered with stalked scales, lower parts verruculose by the remaining stalks. *Leaves* scattered,

mostly \pm densely together at the upper 2 or 3 nodes, sometimes 2–4 arranged in a kind of whorl, obovate to spatulate or sometimes oblong- or elliptic-obovate, apex rounded, not rarely slightly retuse, base cuneate, coriaceous or subcoriaceous, dark green above, greyish green below, a little shining and laxly lepidote or completely glabrescent at maturity above, persistently laxly lepidote beneath (scales red-brown, disk-shaped, marginal zone narrow, entire, centre thick, not or slightly impressed), margin \pm markedly revolute, lamina not rarely \pm convex, (0.8–)1–2.5 by (0.5–)0.8–1.3 (–1.8) cm, midrib \pm distinctly impressed above, prominent beneath, nerves 3–4(–5) pairs, lower 1–2 ones ascending, upper ones spreading, anastomosing, faintly impressed above, somewhat raised beneath, occasionally hardly visible; petiole stoutish, lepidote or verruculose, (1.5–)2–2.5 mm. *Flowers* solitary. *Perulae* unequal, outer ones narrow-ovate, subacute, lepidote outside, inner ones larger, broadly ovate to suborbicular, lepidote and/or greyish sericeous dorsally at least in the upper part, ciliate, up to 7 by 4 mm. *Bracteoles* linear to spatulate, hairy towards the top, up to 7 mm. *Pedicels* slender, densely lepidote and whether or not laxly short hairy, 7–10 mm. *Calyx* minute, oblique, lepidote, obtusely 5-denticulate, whether or not shortly ciliate, lobes c. 0.5 mm, spreading or reflexed. *Corolla* tubular, slightly zygomorphic and laterally compressed, straight, somewhat pouched at the base, deep red to pink, laxly lepidote all over outside, glabrous inside, (1.7–)1.8–2.4 cm long in all, tube 1.6–1.8(–2) cm, c. 2.5 mm ϕ at base, 4–5 mm at the throat, lobes ovate-oblong, obtuse, 3–4(–5) by \pm 2.5 mm, erect or slightly spreading, often provided with minute hairs near the apex outside and ciliate. *Stamens* 10, slightly or not exerted, unequal; filaments filiform, glabrous; anthers blackish purple, oblong-ovate, 1–1.2(–1.5) mm. *Disk* glabrous or rarely slightly hairy. *Ovary* narrowly ovoid-conical, densely lepidote, c. 2.5 by 1.5 mm, gradually tapering to the style, the latter 1–1.3 cm at anthesis, accrescent and slightly exerted in later stages, glabrous, swollen distally to a club-shaped, shortly and irregularly 10-lobed stigma. *Capsule* subcylindrical, 1–1.5(–1.8) by 0.3–0.4 cm, densely lepidote, deeply 5-grooved.

Distr. *Malesia*: New Guinea (Arfak Mts to Mt Saruwaged), many collections.

Ecol. In forest, generally epiphytic, but also terrestrial in swampy, shrub-covered places, or in alpine scrub on exposed summits, on poor, often clayey or sandy soil, 1250–2500(–3200) m. *Fl.* Jan.–Dec.

Vern. *Kieta*, *koglé*, Kapauku, *tambies*, Hattam.

var. bantaengense J. J. S. in Fedde, Rep. 30 (1932) 163; H. J. LAM, Blumea 5 (1945) 576, *in text*; SLEUM. Reinwardtia 5 (1960) 59.

Differs from the typical variety by longer *calyx* lobes (c. 1 mm) which are \pm appressed to the corolla. *Corolla* lobes not ciliate.

Distr. *Malesia*: SW. Celebes (Mt Bantaeng or Peak of Bonthain), in brushwood at 2800–2890 m.

10. *Rhododendron spathulatum* RIDL. J. Str. Br. R. As. Soc. n. 61 (1912) 25; J. Fed. Mal. St. Mus. 6 (1915) 49; Fl. Mal. Pen. 2 (1923) 220; SLEUM. Reinwardtia 5 (1960) 59.

Shrub up to 1.5 m, epiphytic or on moss-covered ground, with slender branches. Branchlets dark brown, slender, the upper 3 or 4 internodes densely clothed with stalked scales, verruculose when the scales have gone, older parts smooth and soon greyish corticate; internodes 0.5–2 cm. *Leaves* in spaced 3–7-merous pseudowhorls at the upper nodes, obovate-spathulate, apex rounded, mostly slightly retuse, base cuneate, coriaceous, laxly impressed-lepidote to glabrous and \pm shining above, more densely and rather minutely lepidote and dull beneath (scales round, marginal zone narrow, entire or nearly so, centre rather dark and thick, manifestly impressed), entire or minutely crenulate, margin flat or slightly revolute, 1–2 by 0.5–1 cm, midrib mostly impressed above in the lower half, prominent beneath, nerves 3–4 pairs, faintly impressed above and raised beneath, or almost invisible; petiole rather slender, \pm 2 mm, lepidote. *Flowers* solitary, or rarely in twos. *Perulae* ovate, subacute, lepidote dorsally upwards, ciliate, up to 5 by 3 mm. *Pedicels* slender, densely lepidote, sometimes also minutely laxly hairy, 6–8 mm. *Calyx* oblique, very small, lepidote, obscurely obtusely 5-lobed. *Corolla* tubular, slightly dilated towards the mouth, \pm zygomorphic and \pm laterally compressed, rather straight, dark red or salmon red, 2–2.2(–2.6) cm long in all, tube 1.8–2.2 cm, c. 3 mm ϕ at base, 5–6 mm below the lobes, laxly lepidote outside, glabrous inside, lobes obovate, somewhat spreading, manifestly ciliate, 4–5 by 2.5–3 mm. *Stamens* 10, unequal, manifestly exserted; filaments glabrous, linear; anthers oblong, 2 by 0.8 mm. *Disk* glabrous. *Ovary* broadly ellipsoid, densely lepidote, epilose, 2.5 by 1.5 mm, gradually attenuate into the glabrous style which is finally long exserted; stigma capitate, indistinctly lobed. *Capsule* short-cylindric or conical, 7–8 by 2.5–3 mm, densely lepidote.

Distr. Malasia: Malay Peninsula (Perak: Mt Kerbau; Pahang: Mt Siku, Ulu Telom).

Ecol. Mossy forest, locally plentiful on Mt Kerbau, 1525–2135 m.

11. *Rhododendron saruwagedicum* FOERSTER in Fedde, Rep. 13 (1914) 222; SCHLTR., Bot. Jahrb. 55 (1918) 148; SLEUM. Reinwardtia 5 (1960) 59, *incl. var. alpinum*; Blumea 11 (1961) 113; *ibid.* 12 (1963) 91; *ibid.* 12 (1964) 339. — Fig. 5.

Small tree or tree-like shrub, rarely up to 12 m high and with a trunk up to 12 cm ϕ , reduced to a small shrub hardly 0.4 m high at alpine altitudes, much branched. Branchlets terete, \pm erect, ultimate parts densely clad with stalked rusty scales, verruculose in the lower parts where the scales have gone. *Leaves* scattered, laxly set, more congested distally, but not in distinct, spaced pseudowhorls, ovate to ovate-elliptic, sometimes oblong-ovate, apex obtusely acuminate, base rounded to subtruncate, coriaceous, \pm shining above, nearly rubiginose and \pm dull beneath,

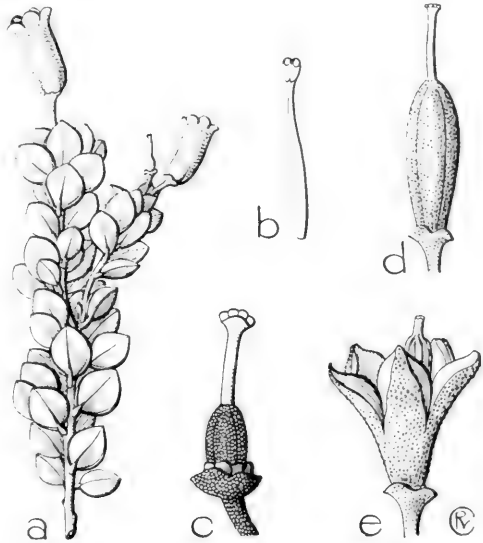


Fig. 5. *Rhododendron saruwagedicum* FOERSTER, small-leaved alpine form. a. Branchlet with flowers, $\times 2/3$, b. stamen, $\times 2$, c. ovary and style, $\times 2$, d. young fruit, $\times 2$, e. ripe fruit, $\times 2$ (a–e PULLEN 223).

densely lepidote above still at maturity, or at least the impressed centre of the scales well visible there, very densely covered with copper-coloured or rusty scales beneath (scales sessile, round, partly in touch with each other, marginal zone narrow and entire or nearly so, centre thickish, manifestly impressed), minutely crenulate by the impressed scales along the subrevolute margin, (0.7–) 1–1.8 by (0.5–) 0.7–1(–1.2) cm, midrib impressed above, rather strongly raised beneath, nerves 3–4 pairs, lower 1–2 curved-ascending, higher ones more spreading, all very slightly impressed above in fully mature leaves, slightly raised beneath, or sometimes hardly visible on both faces; petiole stoutish, lepidote, 1–2 mm. *Flowers* (3–) 4–5 per umbel. Outer perulae elongate-triangular, densely lepidote, inner ones elliptic-ovate to obovate, \pm apiculate, sericeous and lepidote dorsally in the upper part, up to 8 by 6 mm. Bracteoles linear to linear-spathulate, finely hairy, up to 6 mm. *Pedicels* rather stoutish, densely rubiginous-lepidote, not hairy, 6–9 mm. *Calyx* minute, indistinctly obtusely 5-lobed. *Corolla* tubular, slightly zygomorphic, straight or a little curved, rather densely yellow-lepidote outside, completely glabrous inside, dull red, 1.2–1.3(–1.5) cm long in all, c. 3 mm ϕ at base, widened to c. 5 mm at the mouth, lobes 4 or 5, \pm erect, obovate to suborbicular, c. 3 by 2–3 mm, not ciliate, *Stamens* 8 or 10, subequalling the corolla in length; filaments linear, glabrous; anthers \pm obovate, 1 mm. *Disk* glabrous, with thick, prominent lobes. *Ovary* narrow-ellipsoid, all over covered with scales, c. 4 by 1.5 mm, with 4 or 5 longitudinal ribs; style abrupt with the

ovary, glabrous, 5–6 mm, slightly club-shaped distally; stigma shortly 5-lobed. *Capsule* subcylindric, densely lepidote, (11–)13–15 by 3.45–4.5 mm.

Distr. *Malesia*: New Guinea (Morobe Distr.: Mt Saruwaged; Eastern Highlands: Mt Michael; Western Highlands: Kubor Range).

Ecol. Open bush edge or sheltered forest near timberline, or (with smaller leaves) in open (sub-)alpine grassland, 3050–3820 m. *Fl.* March–Oct.

Note. The scales are at least in part rather intermediate between those found in *subsect. Pseudovireya* *subsect. Euvireya*, and *subsect. Albovireya*.

12. *Rhododendron invariorum* SLEUM. *Reinwardtia* 5 (1960) 60; *Blumea* 11 (1961) 113; *ibid.* 12 (1963) 91; *Jahrb. Rhodod. Ges. Bremen* (1963) f. 11.

Erect, stiff shrub, 0.3–1 m. Branchlets densely set with round thickish stalked scales on the younger, somewhat angular and reddish parts (c. 2 mm ϕ), subdensely verruculose in the older ones (3–4 mm ϕ); internodes (1–)2–6 cm. *Leaves* in 3–4-merous pseudowhorls at the upper 2(–3) nodes, 1 or 2 additional ones scattered in the upper third of the internodes, elliptic or more rarely obovate-elliptic, apex rounded, the apical gland rather indistinct, base very broadly attenuate or rounded, rarely very slightly cordate, coriaceous, sordid-olivaceous to dark green and a little shining above, rather densely lepidote on both faces initially, glabrescent above with age, subdensely and persistently lepidote beneath (scales rather small, distant from each other, intensely rufescent, orbicular, entire, the rather large centre much impressed), margin cartilagineous, not revolute, regularly minutely crenulate, (1.5–)2–3.5 by (1.2–)1.5–2(–2.2) cm, midrib narrow and depressed above, as broad and prominent as the petiole in its lower part, gradually less so distally beneath, nerves 4–6 pairs, irregular, curved-anastomosing, impressed above but in mature leaves, prominent beneath, veins laxly reticulate, rather indistinct; petiole flattened, c. 3–4 by 1.5 mm. *Umbels* 3–4-flowered. Flower buds obovoid, c. 1 by 0.5 cm. Outer perulae broadly ovate, inner ones oblong-obovate, obtuse, very densely lepidote at the upper part of the median dorsally, the margin shortly fimbriate, 4–8 by c. 4 mm. Pedicels stoutish, densely substipitate-lepidote, 1–1.5 cm. *Calyx* obliquely disk-shaped, densely lepidote dorsally, obscurely lobed, c. 3 mm ϕ . *Corolla* tubular, deep scarlet or magenta, a little zygomorphous, somewhat dilated apically, 1.5–1.8 cm long in all, densely lepidote outside, glabrous inside, tube 1–1.2 cm, 3–4 mm ϕ at base, lobes erect, obovate, 5–6 by c. 4 mm. *Stamens* 10, unequal, the longer ones attaining half the length of the corolla lobes; filaments linear below, filiform above, quite glabrous; anthers obovate, 1.8 by 0.6 mm. *Disk* glabrous. *Ovary* conical, abrupt with the style, very densely lepidote, c. 4 by 2 mm; style lepidote at the base, glabrous for the rest, 5–6 mm; stigma capitate, shortly 5-lobed.

Distr. *Malesia*: New Guinea (Morobe Distr.:

Wau-Edie Creek area).

Ecol. Common on open gravelly or clayey ground of old gold workings, coloniser in sluiced area, at 1800–2000 m. *Fl.* May–Sept.

13. *Rhododendron perakense* K. & G. J. As. Soc. *Beng.* 74, ii (1905) 76; *RIDL. Fl. Mal. Pen.* 2 (1923) 216; *SLEUM. Reinwardtia* 5 (1960) 60.

Small shrub, up to c. 1.8 m, whether or not epiphytic. Branchlets slender, terete, tips densely covered with stalked scales, otherwise densely verruculose at the upper 3–5 internodes, which are 0.5–4 cm long. *Leaves* in 3–5(–7)-merous pseudowhorls at the apical nodes, early caducous at the lower nodes, obovate-spathulate or broadly oblanceolate, apex rounded-obtuse, sometimes minutely retuse, base cuneate into the petiole, coriaceous, stiff, glabrous above at full maturity, laxly to subdensely and more persistently lepidote beneath (scales sessile, round, entire or undulate at the narrow marginal zone, centre impressed, rather large and thick), edge much recurved, 1.3–1.8(–2) by (0.5–)0.6–1 cm, midrib much impressed above, very stout and prominent beneath, nerves 2–3 pairs, spreading, \pm slightly immersed above, mostly well raised beneath, veins obscure; petiole rather slender, grooved above, lepidote, 2–3 mm. *Flowers* 3–5 per umbel. Outer perulae subulate, lepidote dorsally, inner ones \pm ovate, obtuse, lepidote at the top outside, densely white-ciliate, up to 6 by 3 mm. Bracteoles not seen. Pedicels slender, densely clad with stalked scales, not hairy at all, 6–7 mm long at anthesis, up to 10 mm in fruit. *Calyx* minute, shortly obtusely 5-lobed, densely lepidote. *Corolla* white or bright yellow, tubular below, campanulate distally, laxly lepidote outside, glabrous inside, seen only in not yet fully developed state, at least 10 mm long, shortly 5-lobed. *Stamens* 10; filaments linear, somewhat dilated towards the base, glabrous; anthers c. 1 mm. *Disk* glabrous. *Ovary* conical, c. 2 mm, densely lepidote; style glabrous; stigma subcapitate. *Capsule* subcylindric, 9–10 by c. 2.5 mm, deeply 5-furrowed longitudinally, lepidote, valves a little twisted. *Seeds* very narrow, c. 3 mm incl. the longish tail at both ends.

Distr. *Malesia*: Malay Peninsula (Cameron Highlands).

Ecol. In mossy summit forest, locally common, at c. 1830 m. *Fl. fr.* April, Aug.

14. *Rhododendron vanderbiltianum* MERR. *Not. Nat. Ac. Nat. Sc. Philad.* 47 (1940) 5; *SLEUM. Reinwardtia* 5 (1960) 61. — *Fig. 6*.

Dwarf shrub, up to 1 m high. Branchlets \pm crooked, slender, tips shortly sordid-brownish velvety and very laxly lepidote, older parts glabrous. *Leaves* in 3–7-merous pseudowhorls at the upper 2 or 3 nodes (internodes 0.3–2 cm), ovate or oblong-ovate to elliptic, apex broadly acuminate, acutely apiculate, base broadly cuneate to rounded, coriaceous, shining on both faces especially above, subdensely impressed-lepidote to entirely glabrescent on the upper surface, the puberulous midrib excepted, \pm densely lepidote



Fig. 6. *Rhododendron vanderbiltianum* MERR., Mt Goh Lembuh, 3000 m, N. Sumatra (VAN STEENIS 9039) (VAN STEENIS, 1937).

beneath (scales sessile, roundish, margin entire or nearly so, rarely crenulate, centre large in relation to the marginal zone, thick, dark, impressed), margin cartilaginous, crenulate, very slightly or not revolute, (1-)1.5-2.3 by (0.8-) 1-1.5(-1.7) cm, midrib flat or slightly prominent on both faces, nerves 4-5 pairs, \pm ascending, rather inconspicuous, veins and veinlets obsolete above, but mostly slightly raised beneath, forming a fine dense reticulation; petiole flattened, puberulous, 1.5-2.5 by 1 mm. *Umbels* 2-5-flowered. Perulae ovate to obovate-spathulate, apiculate, glabrous or sericeous and laxly lepidote in the upper dorsal part, densely ciliate to lanate-fimbriate, up to 1 by 0.6 cm. Bracteoles linear-spathulate, \pm laxly hairy, nearly woolly at the very apex, up to 6 mm. Pedicels stoutish, densely lepidote, laxly to subdensely short-hairy, 5-9 mm. *Calyx* small, obtusely 5-dented (1 mm), densely lepidote, sometimes moreover very laxly hairy, not ciliate. *Corolla* funnel-shaped, white to cream or pale lemon,

sometimes bright yellow, 1.8-2.2 cm long in all, deeply 5-lobed, \pm laxly lepidote outside, the margin of the lobes excepted, whether or not slightly to subdensely hairy in longitudinal stripes along the faintly pronounced angles of the corolla tube, which bears a laxly hairy zone inside above the base but is glabrous otherwise inside, tube 0.8-1 cm long. *c.* 3 mm ϕ at base, 7-8 mm at the throat, lobes somewhat unequal, slightly spreading, subobovate-spathulate to suborbicular, *c.* 1.3 by 0.8-1.3 cm. *Stamens* 10, unequal, included; filaments linear, glabrous at the base, patently hairy for 2-4 mm upwards, then again glabrous to the top; anthers broadly oblong, *c.* 2 mm. *Disk* glabrous. *Ovary* conical, the apex truncate, covered with overlapping scales, occasionally bearing also some short hairs at the apex, 2.5-3 by 1.5-2 mm; style abrupt, slender, glabrous, finally attaining nearly 2 cm; stigma short-obconical, rather small, 5-lobed. *Capsule* (perhaps submature) *c.* 6 by 2.5 mm.

Distr. *Malesia*: N. Sumatra (Atjeh, Gajolands: Mts Losir, Lembuh and Kemiri).

Ecol. Open heath scrub or open heathy plains with *Quercus*, *Pinus* and other species of *Rhododendron*, locally common, 2100–3300 m. *Fl.* Jan.-April.

15. *Rhododendron seimundii* J. J. S. Gard. Bull. S. S. 8 (1935) 262; SLEUM. Reinwardtia 5 (1960) 61.

Shrub. Branchlets slender, apical 2 or 3 internodes 0.7–6 cm, patent-papillose-puberulous (lens!), tips moreover laxly clad with sessile scales. *Leaves* in 4–7(–10)-merous pseudowhorks at the upper 1–2(–3) nodes, oblong-obovate to narrow-elliptic, sometimes nearly lanceolate, apex broadly attenuate, mostly obtuse and ending in a small somewhat protruding gland, base attenuate into the petiole, coriaceous, rugulose when dry, shining above, initially laxly lepidote, finally glabrous above, rather dull and laxly lepidote beneath (scales sessile, round, margin entire or nearly so, centre thick, darker, manifestly impressed), edge entire or minutely crenulate by the impressed scales, slightly revolute, 1.3–2.8 by 0.5–1.1 cm, midrib sunk above, strongly raised beneath, nerves obsolete, sometimes faintly visible underneath; petiole rather slender, lepidote and puberulous, 2–3(–4) mm. *Umbels* 2–4-flowered. *Perulae* ovate, obtuse, ± densely short-pubescent dorsally, ± laxly lepidote, ciliate, up to 7 by 4 mm. *Bracteoles* filiform, hairy, up to 6 mm. *Pedicels* slender, ± densely clothed with sessile scales, furthermore whether or not minutely hairy, 9–12 mm. *Calyx* oblique, inequally obtusely 5-lobed, lepidote, not ciliate. *Corolla* funnel-shaped, 1.6–1.9 cm long in all, 1.5–2.5 cm across the limb, laxly lepidote outside, margin of the lobes excepted, glabrous inside, tube 8–9 mm long, c. 2.5 mm ø at base, 4–6 mm below the lobes, the latter obovate, 9–10 by 6–7 mm. *Stamens* 10, very slightly or not exerted; filaments linear, glabrous; anthers oblong, c. 1.5 mm. *Disk* glabrous. *Ovary* ovoid-conical, obtuse, 5-grooved longitudinally, densely lepidote, c. 2.5 by 2 mm, gradually attenuate to the style, which is glabrous and ± 1.6 cm long; stigma capitate, 5-lobulate. *Capsule* 8 by 2.5 mm.

Distr. *Malesia*: Malay Peninsula (Pahang: Mt Tahan), 1675 m. *Fl.* Feb.-March.

16. *Rhododendron scortechinii* K. & G. J. As. Soc. Beng. 74, ii (1905) 76; RIDL. Fl. Mal. Pen. 2 (1923) 219; SLEUM. Reinwardtia 5 (1960) 61. — *R. orion* RIDL. J. Fed. Mal. St. Mus. 5 (1914) 39; Fl. Mal. Pen. 2 (1923) 217.

Epiphytic or terrestrial shrub, sometimes sub-arboreous. Branchlets terete, wrinkled and red-brown at the tips, ± smooth below, the ends rather densely covered with flat scales. *Leaves* in 3–5(–7)-merous pseudowhorks at the upper 2 or 3 nodes (internodes 1.5–5 cm), elliptic to elliptic-suborbicular or (broadly) obovate, apex obtuse to rounded and with a small terminal gland, sometimes a little notched, base narrowed to the petiole, upper surface light green, caducously lepidote,

finally completely glabrous and shining, under-surface yellowish when fresh, paler brown when dry, densely lepidote (scales sessile, round, marginal zone narrow, entire or nearly so, centre thick, dark, rather large and ± impressed), edge strongly recurved, (2.5–)3–5 by (1.5–)1.8–2.5(–3) cm, midrib sulcate above, thick and obtusely prominent beneath, nerves 4–6 pairs, spreading, anastomosing, slightly to deeply depressed above, distinct and normally much raised beneath, veins ± obsolete; petiole grooved above, lepidote, 2–4(–5) by 1.5–2 mm. *Umbels* 4–7-flowered. *Perulae* ovate to spatulate, obtuse, ± sericeous and lepidote in the upper dorsal part, ciliate, up to 7 by 4 mm. *Bracteoles* linear, slightly hairy, up to 5 mm. *Pedicels* 1.5–2 cm, rather stoutish, ± densely lepidote, not hairy at all. *Calyx* short-cupular, lepidote, with 5 ovate, obtuse, whether or not ciliate teeth (1 mm). *Corolla* yellow, sometimes paler or even white, or yellow at the lobes, orange at the tube, widely funnel-shaped, c. 1.8 cm long in all, 1.5–2 cm wide at the limb, ± densely set with dark scales outside except the margin of the lobes, glabrous inside, tube 9–14 mm long, 3–4 mm ø at base, 8–10 mm at the throat, lobes broadly obovate to suborbicular, 6–8 by 5–7 mm. *Stamens* 10, unequal, the longest as long as the corolla or slightly exerted; filaments linear, dilated (0.5 mm) at the base, filiform upwards, glabrous; anthers oblong, c. 1.8 mm. *Disk* glabrous. *Ovary* conical, densely covered with scales, c. 2.8 by 1.8 mm, gradually tapering to the style, the latter glabrous, finally somewhat exerted; stigma turbinate-capitate, slightly 5-lobed. *Capsule* sub-fusiform, (1–)1.3 by 0.35 cm, shortly apiculate, densely lepidote, on pedicel up to 3.2 cm.

Distr. *Malesia*: Malay Peninsula (Main Range from Perak to Selangor).

Ecol. Summit vegetation, 1465–2135 m. *Fl.* fr. Jan.-April.

17. *Rhododendron adinophyllum* MERR. Not. Nat. Ac. Nat. Sc. Philad. 47 (1940) 3; SLEUM. Reinwardtia 5 (1960) 61. — Fig. 7.

Shrub, 1–1.5 m. Branchlets erect, terete, rather stoutish, very densely and ± imbricately set with spiral, ± ascending leaves in their upper and with wartlike scars in the lower defoliate part, tips rather densely covered with very shortly or not stalked scales, lower parts glabrescent, smooth. *Leaves* narrow lanceolate, gradually acuminate, tip obtuse, base attenuate into the petiole, stiff-coriaceous, shining above only, mostly glabrous at full maturity, but sometimes with vestiges of the scales above, rather densely lepidote beneath (scales sessile, ± rounded, margin entire to undulate, narrow, centre rather large and dark, markedly impressed), edge thickened-revolute and crenulate by impressed scales, (8–)11–16(–18) by 2–3 mm, midrib ± impressed above, obtusely raised beneath especially in the lower half, nerves obsolete; petiole rather slender, 1–2 mm. *Umbels* (4–)6–12-flowered. *Perulae* ovate to obovate, apiculate, dorsally lepidote and sericeous in the upper part, fimbriate, up to 7 by 4 mm. *Bracteoles*



Fig. 7. *Rhododendron adinophyllum* MERR., Mt Goh Lembuh, 3000 m, N. Sumatra (VAN STEENIS 9062) (VAN STEENIS, 1937)

filiform, hairy, up to 6 mm. Pedicels slender, all over densely longish and whitish patent-pilose, laxly lepidote upwards, 1-1.3(-1.5) cm. *Calyx* oblique, small, undulate, whitish hairy and lepidote outside and at the margin, glabrous inside, subacutely obtusely 5-lobed (1-1.5 mm). *Corolla* tubular, bright crimson to scarlet, all over subpatently long-hairy and laxly lepidote outside, glabrous inside, tube (10-)12-13 mm, c. 3 mm σ at the base, c. 5 mm below the lobes, the latter straight to subpatent, obovate, apex rounded, 4-5 by 4 mm. *Stamens* 10, slightly or not exerted,

unequal; filaments linear, glabrous; anthers oblong-ellipsoid, c. 1.5 mm. *Disk* glabrous. *Ovary* ovoid-conical, densely clothed with overlapping scales, 2.5-3 by 2 mm, rather abruptly attenuate to the glabrous style (4-5 mm); stigma elongate-obconical, subtruncate. *Capsule* elongate-ovoid to subovate-oblong, densely lepidote, 5-ribbed, c. 11 by 4 mm, crowned by a glabrous style c. 1 cm long with a turbinate-capitate stigma, on a glabrescent pedicel up to 1.8 cm.

Distr. *Malesia*: N. Sumatra (Atjeh, Gajolands: Mts Losir, Lembuh, Putjuk Angasan and Kemiri).

Ecol. In open places, summit heath scrub, 2600-3460 m. *Fl.* Jan.-April.

18. *Rhododendron cyrtophyllum* WERNH. Trans. Linn. Soc. II, Bot. 9 (1916) 97; SLEUM. Reinwardtia 5 (1960) 61.

Shrub. Branchlets rather stoutish, terete, tips densely covered with sessile or very shortly stalked roundish scales, lower parts glabrescent, \pm smooth, internodes 2-4 cm. *Leaves* in 3-5-merous pseudo-whorls at the upper nodes, sometimes scattered but close together, elliptic or ovate-elliptic, apex gradually attenuate, obtuse, apiculate, base rounded or subtruncate, thin-coriaceous, rather stiff, subdensely to laxly lepidote on both faces initially (scales round, entire, marginal zone narrow, centre thick, very little or not impressed), glabrescent above with age, persistently lepidote beneath, edge much revolute, 2.5-3 by 1.2-1.9 cm, midrib slightly impressed above, very prominent beneath, nerves 5-6 irregular pairs, spreading, a little raised above, more distinctly so beneath, reticulation obscure; petiole stoutish, lepidote, 2-3 by 0.8 mm. *Umbels* 5-8-flowered. *Perulae* ovate, obtuse, glabrous except some scales near the top dorsally, up to 10 by 6 mm. Pedicels rather slender, lepidote, 0.7-1.2 cm. *Calyx* oblique, obscurely 5-lobed, c. 2.5 mm σ . *Corolla* pinkish red, tubular below, dilated upwards, c. 3.5 cm long in all, very densely lepidote outside, glabrous inside, tube curved, c. 4 mm σ at base, 7-10 mm below the lobes, the latter \pm spreading, rounded, c. 8 mm σ . *Stamens* 10; filaments linear, sparsely pubescent below, glabrous upwards, c. 2.5 cm; anthers broad-oblong, 2.5 mm. *Disk* glabrous. *Ovary* densely lepidote and laxly patently short-hairy, c. 5 by 2 mm; style rather abrupt with the ovary, glabrous c. 2 cm.

Distr. *Malesia*: New Guinea (Mt Carstensz, along the Utakwa R.), between 2520 and 3050 m. Once collected. *Fl.* Jan.

19. *Rhododendron ericoides* LOW ex HOOK. f. in Hook. Ic. Pl. (1852) t. 887; WALP. Ann. 5 (1858) 446; STAPP, Trans. Linn. Soc. II, Bot. 4 (1894) 198; GIBBS, J. Linn. Soc. Bot. 42 (1914) 104; MERR. En. Born. (1921) 461; SLEUM. Reinwardtia 5 (1960) 61; Blumea 12 (1963) 91; Jahrb. Deutsch. Rhodod. Ges. Bremen (1965) f. 15. — Fig. 8.

var. *ericoides*.

Erect virgate shrub, (1-)2-3 m, reduced to a dwarfed habit and c. 15 cm height at its highest



Fig. 8. *Rhododendron ericoides* LOW ex HOOK. f. *var. ericoides*. Mt Kinabalu, c. 3800 m, N. Borneo (SLEUMER, 1963)

localities, occasionally epiphytic. Branchlets slender, densely set with wartlike leaf-cushions in the lower defoliate parts (no fine pubescence present, which generally is found in 25. *R. quadrasianum*). *Leaves* spirally arranged, very dense and \pm imbricate in the upper part of the branchlets, ericoid, suberect, linear-lanceolate, the very apex with an obtuse glandular point, base attenuate into the petiole, coriaceous, glabrous above, laxly lepidote beneath (scales disk-shaped, entire, centre darker, thick, slightly impressed), margin crenulate by impressed scales, somewhat thickened and slightly or not revolute, 4-7(-10) by \pm 1 mm, midrib very slightly depressed above, swollen underneath, nerves obsolete; petiole thick, 0.5 mm. *Flowers* solitary or in twos, rarely 3 in an umbel, nodding. *Perulae* ovate- to obovate-oblong, lepidote dorsally in the upper part, densely subvillous-fimbriate, especially near the apex, up to 4 by 1.5 mm, early caducous. *Bracteoles* linear-spathulate, long-ciliate upwards, c. 3 by 0.5 mm, early caducous. *Pedicels* rather slender, 5-8 mm, densely lepidote, epilose, \pm hidden among the leaves for the lower half. *Calyx* slightly oblique, lepidote outside, glabrous inside, 5-partite, lobes erect, initially appressed to the corolla, spreading in later stages, narrowly subovate-triangular, obtuse, c. 2 mm long, 1-1.3 mm wide at the base. *Corolla* bright scarlet- or purplish red, tubular, not or slightly oblique and curved, (1-)1.5 cm long in all, subdensely pale greenish lepidote outside, the marginal part of the lobes excepted, glabrous inside, tube 0.8-1 cm long, c. 3 mm ϕ at the base, 4-5 mm at the throat, lobes broadly ovate to rounded, suberect or a little spreading, margin erose-denticulate, 2-3 mm ϕ . *Stamens* 10, \pm equalling the corolla or

slightly exserted, if the corolla lobes are more expanded; filaments filiform, glabrous; anthers c. 0.7 mm. *Disk* glabrous. *Ovary* conical, green, densely lepidote, c. 1.8 mm, gradually attenuate to the red style, the latter glabrous, finally exserted, up to 14 mm; stigma club-shaped. *Capsule* oblong-ovoid, often a little oblique and curved, 6-7 by 2.5-3 mm.

Distr. Malesia: North Borneo (Mt Kinabalu).

Ecol. Shrub in primary mossy forest from 2440 m upwards, abundant, and a very common constituent of the Ericaceous (scrub) forest on exposed sunny places, also in crevices on the open granite core of Mt Kinabalu, running almost to the summit, reduced there to a spreading wind-clipped dwarf shrublet at c. 4000 m. *Fl. fr.* March-Nov.

var. silvicolum SLEUM. Reinwardtia 5 (1960) 62; Blumea 12 (1963) 91.

Differs from the typical plant (with which it has the large calyx lobes in common) by less densely arranged and wider *leaves*, 8-10 by 1.6-1.8(-2) mm. Bushy c. 1 m high undershrub. *Corolla* (pale) red.

Distr. Malesia: North Borneo (Mt Kinabalu).

Ecol. Forest and more open vegetation, 1525-3000 m. Possibly of hybrid origin.

20. *Rhododendron nanophyton* SLEUM. Reinwardtia 5 (1960) 62.

var. nanophyton.

Dwarf shrub. Branchlets erect, slender, tips \pm papillose-puberulous, densely foliate, lower parts set with the scars and the thickish cushions of fallen leaves. *Leaves* scattered, lanceolate, apex short-attenuate, subacuminate, somewhat obtuse at the very top, base cuneate, coriaceous, laxly lepidote on the upper surface for a rather long time, finally glabrescent, persistently lepidote beneath (scales lax to subdense, round, marginal zone narrow, entire or a little wavy, centre dark red-brown, thick, distinctly impressed), not or slightly recurved on edge, crenulate by impressed scales, 4-6 by 1.5-2(-2.5) mm, midrib slightly impressed above, not much raised beneath, nerves obsolete; petiole rather slender, semiterete, c. 1 mm. *Flowers* solitary or in twos. *Perulae* ovate to narrow-ovate, acuminate, minutely pubescent and laxly lepidote in the upper part outside, ciliate, up to 5 by 2 mm. *Bracteoles* filiform, subspathulate at the end and densely ciliate, 4-5 mm. *Pedicels* very slender, densely lepidote, 5-6 mm. *Calyx* minute, disk-shaped, wavy and obscurely 5-lobed at the spreading limb, lepidote outside, glabrous inside. *Corolla* dark brick-red, tubular, somewhat oblique, \pm straight, 1.3-1.4(-1.5) cm long in all, 2.5 mm ϕ at the base, c. 3.5 mm at the mouth, densely set with thickish scales outside, margin of the lobes excepted, glabrous inside, lobes slightly unequal, ovate to nearly rounded, irregularly crenulate (but not erose-denticulate) at the apex, c. 3 by 2 mm. *Stamens* 10, subequal, as long as or slightly longer than the corolla; filaments

linear, dilated towards the base, glabrous; anthers broadly oblong, 1.3–1.5 mm. *Disk* glabrous. *Ovary* conical-ovoid, 5-furrowed, densely lepidote, *c.* 2 by 1.2 mm, gradually tapering to the style, the latter thick-filiform, glabrous, 7–8 mm; stigma shortly club-shaped, rather small.

Distr. *Malesia*: SW. Central Celebes (Lati-modjong Range: Rantemario), in open country at 3100–3300 m, once collected. *Fl.* June.

var. petrophilum SLEUM. *Reinwardtia* 5 (1960) 63.

Differs from the type variety by less distinctly papillose-puberulous branchlets, obovate-oblong leaves 2.5–4(–6) by 1.5–2(–2.5) mm, obtuse and mostly a little retuse at the apex and papillose-puberulous in the lower half, shortly but distinctly ciliate *calyx* lobes, minutely pubescent pedicels and subglobose-obovoid anthers 1 mm.

Distr. *Malesia*: SW. Central Celebes (Lati-modjong Range), frequent on rocks just below the western edge of the plateau of bivouac Heinrich, at 3200–3250 m, once collected. *Fl.* June.

21. *Rhododendron schizostigma* SLEUM. *Reinwardtia* 5 (1960) 63.

Weak shrub, 0.3–1.5 m. Branchlets erect, slender, tips laxly lepidote, lower parts set with the scars and the thick leaf-cushions of the fallen leaves. *Leaves* scattered, dense together and subimbricate, ovate or elliptic-ovate or elliptic, apex shortly obtusely acuminate (terminal gland small), base subtruncate-rounded, or more rarely broadly cuneate, coriaceous, very laxly lepidote and early glabrescent above, laxly and persistently lepidote beneath (scales round or nearly so, margin entire or subentire, centre mostly rather small, not or faintly impressed), edge subcartilagineous and flat, crenulate by depressed scales, (5–)6–8(–12) by (3–)3.5–5(–8) mm, midrib minutely or not impressed above, slightly raised beneath, nerves obscure; petiole *c.* 1 mm. *Flowers* solitary or in twos. *Perulae* ovate-acuminate, membranous, glabrous, glossy, up to 1.3 by 0.8 cm. *Bracteoles* linear-subspatulate, glabrous, up to 1 cm. *Pedicels* stoutish, 10–14 mm at anthesis, densely covered with subsessile scales. *Calyx* minute, oblique, disk-shaped, wavy, lobes obsolete. *Corolla* tubular, bright red, 2.6–2.9(–3.2) cm long in all, 3–4 mm σ at base, *c.* 6 mm below the lobes, very laxly lepidote below, glabrous upwards outside, glabrous inside, tube 2–2.2(–2.5) cm, lobes broad-elliptic, 6–7(–8) by 4–5(–6) mm, margin undulate. *Stamens* 10, unequal, *c.* 2.5 cm; filaments linear, glabrous, somewhat dilated towards the base, filiform upwards; anthers brown, broadly subobovate-elliptic, 1.5–1.7 by 1 mm. *Disk* glabrous, lobes thick and a little prominent. *Ovary* obliquely ovoid-conical, very densely lepidote, *c.* 4 by 2 mm, rather abrupt with the stoutish glabrous style (*c.* 1.5 cm at anthesis); stigma gradually thickened or turbinate, its numerous lobes irregularly club-shaped.

Distr. *Malesia*: New Guinea (Lake Habbema and Hubrecht Mts).

Ecol. In open vegetation, near Lake Habbema plentiful in heavy ground moss in thickets, or in

shrubberies of peaty ridges, 3100–3450 m. *Fl.* Feb., Aug.

22. *Rhododendron meliphagidum* J. J. S. in Fedde, *Rep.* 30 (1932) 162; SLEUM. *Reinwardtia* 5 (1960) 64.

Shrub, up to 5 m. Branchlets terete, tips initially laxly set with sessile scales, finally glabrescent, smooth; internodes 1.5–6.7 cm. *Leaves* scattered, 8–11 together at the 2 or 3 upper nodes, obovate, apex rounded, shortly retuse, base cuneate into the petiole, coriaceous, laxly to subdensely lepidote on both faces initially (scales sessile, round, subentire, centre thick, impressed), \pm glabrescent above with age (marginal zone of the scales then obliterated, the impressed centre remaining visible for a long time), less quickly or not glabrescent beneath, entire, edge distinctly but slightly revolute, 1.9–4.3 by 0.7–1.9 cm, midrib impressed above, strongly raised beneath especially in the lower 2/3, nerves 4–5 pairs, anastomosing, faintly impressed above, not rarely obsolete on both sides; petiole somewhat flattened, grooved above, lepidote, *c.* 2 mm. *Flowers* solitary. Outer *perulae* subulate, densely lepidote, inner ones ovate, acuminate, in part apiculate, puberulous and lepidote dorsally, up to 7 by 3 mm. *Pedicels* rather slender, laxly hairy (especially above the base) and lepidote, 8–10 mm. *Calyx* oblique, small, obtusely 5-lobed (1 mm), lepidote dorsally, margin rather long whitish ciliate. *Corolla* brownish orange or yellow, tubular, slightly oblique, *c.* 3 cm long in all, laxly lepidote outside, glabrous inside, tube *c.* 2.5 cm long, *c.* 4 mm σ at base, *c.* 6 mm below the lobes, the latter ovate, obtuse, erect, 5–6 by 4–5 mm, ciliate. *Stamens* 10, 2.5–2.9 cm; filaments linear, flat, nearly 1 mm wide at the base, filiform upwards, glabrous; anthers suborbicular, *c.* 1 mm. *Disk* glabrous. *Ovary* oblong-conical, densely lepidote, *c.* 3 by 1.8 mm, gradually developing into a rather thick, nearly columnar (1 mm σ), glabrous style, *c.* 2.3 cm long at anthesis; stigma club-shaped.

Distr. *Malesia*: Moluccas: Buru, summit of Mt Togha, at 1800–2050 m, a very common shrub on open spots; Central Ceram, in primeval forest of Mt Murkele, at 2000–2500 m, abundant, on limestone. *Fl.* Feb., July.

23. *Rhododendron vinkii* SLEUM. *Blumea* 12 (1963) 91.

Epiphytic shrub. Branches numerous, divaricate; branchlets terete, 1.5–3 mm σ , densely covered at the ends with suborbicular, sessile or subsessile scales; internodes 2–4(–5) cm. *Leaves* in 3–5-merous pseudowhorls at the upper 2–3 nodes, oblong or obovate-oblong, apex broadly attenuate, obtuse, rarely slightly retuse, base cuneate-attenuate into the petiole, subcoriaceous, densely lepidote on both faces initially, glabrescent with age above, persistently lepidote beneath (scales roundish or almost so, thickish, impressed, distant mutually for 2 or 3 times their diameter), (3.5–)4–6(–7.5) by (1.3–)1.5–2(–2.5) cm, edge slightly revolute especially towards the base of the lamina,

midrib a little impressed above, as thick as the petiole and much prominent, gradually narrowed and less prominent distally below, nerves 6-8 irregular pairs, somewhat impressed above, obscure beneath, reticulation faintly impressed above, or almost inconspicuous at all; petiole subterete, grooved above, densely lepidote, (5-)-6-8 by c. 1 mm. *Umbels* 2- or 3-flowered. Outer perulae ovate, inner ones obovate to spatulate, glabrous dorsally, caducously lepidote-fimbriate, thin, up to 1 cm. Bracteoles filiform. Pedicels slender, rather densely patent-puberulous and lepidote, 1.2-1.8 cm at anthesis, slightly elongate in later stages. *Calyx* obliquely patellar, indistinctly obtusely 5-lobed, c. 2.5 mm \varnothing . *Corolla* subobliquely tubular, light red, 2.5 cm long in all, subdensely set with rather thickish subrotund scales outside, laxly hairy inside, tube erect, c. 2 cm long, 3-4 mm \varnothing at base, c. 6 mm at the throat, lobes spatulate-obovate, c. 5 by 6-7 mm. *Stamens* 10, slightly exerted from the throat; filaments linear and shortly hairy below, glabrescent in the upper 1/4; anthers broad-oblong, hardly 2 mm. *Disk* densely erect-hairy. *Ovary* cylindrical, rather abrupt with the style, c. 4 by 2 mm, yellowish tomentose, the hairs covering the scales; style rather thickish, 1.2-1.6 cm at anthesis, densely patent-hairy below, less so upwards, glabrous but for c. 2 mm below the capitate stigma.

Distr. *Malesia*: W. New Guinea (hinterland of Fak-Fak), 840 m, in primary *Agathis* forest on clayey soil. Once found. *Fl.* Feb.

24. *Rhododendron cililobum* SLEUM. Reinwardtia 5 (1960) 64; Blumea 12 (1963) 92.

Erect shrub. Branchlets rather short, terete, subdensely clad with rubiginous sessile or subsessile scales, not hairy at all. *Leaves* several together at the tips of the branchlets in a kind of pseudowhorl, obovate, apex very shortly retuse, rarely rounded, base cuneate, coriaceous, laxly lepidote above, though \pm glabrescent with age and becoming a little rough, subdensely lepidote beneath (scales nearly round, sessile, marginal zone narrow and thin, subtentire, centre rather large, thick and manifestly impressed), margin very shortly revolute basally, otherwise flat, (1.1-)-1.3-1.8(-2) by (0.5-)-0.6-0.8(-1) cm, midrib faintly sunk above, obtusely raised beneath, \pm evanescent towards the top of the lamina, nerves obsolete above, hardly or not visible beneath; petiole terete, lepidote, subrugose, 2-3 mm. *Flowers* solitary or in twos. Perulae ovate to obovate-spatulate, apiculate, sericeous and lepidote in the upper dorsal part, densely white-fimbriate, up to 6 by 3 mm. Bracteoles filiform, hairy at the apex, up to 5 mm. Pedicels rather slender, densely to more laxly substipitate-lepidote, otherwise whether or not laxly short-hairy, 6-8 (-10) mm. *Calyx* minute, wavy and spreading, or reflexed at the narrow margin, lepidote and very shortly pubescent dorsally, c. 2 mm \varnothing , lobes very short and obtuse. *Corolla* tubular, c. 2 cm long in all, c. 3 mm \varnothing at the base, c. 5 mm below the lobes, laxly lepidote outside, glabrous inside,

lobes ovate to suborbicular, 4 by 3-4 mm, erect initially, finally \pm spreading, manifestly erose-denticulate and ciliate at the apex. *Stamens* 10, \pm as long as the corolla at anthesis, or finally somewhat exerted; filaments filiform, glabrous; anthers 1.3 mm. *Disk* glabrous. *Ovary* subovoid-cylindric, c. 2.5 by 1.5 mm, very densely lepidote, gradually tapering to the style, the latter thick-filiform, glabrous, c. 1.7 cm; stigma club-shaped, irregularly lobed. *Capsule* c. 1.3 by 0.35 cm, obliquely subcylindric, deeply 5-grooved.

Distr. *Malesia*: W. New Guinea (Wissel Lakes region), in heath vegetation at c. 1755 m. Two collections. *Fl.* March, April.

A form without hairs at the calyx and corolla lobes is known from the Balim Valley, at 1600 m.

25. *Rhododendron quadrasianum* VIDAL, Rev. Pl. Vasc. Filip. (1886) 170; MERR. Publ. Gov. Lab. Philip. n. 29 (1905) 43; Philip. J. Sc. 1 (1906) Suppl. 111; *ibid.* 2 (1907) Bot. 292; *ibid.* 3 (1908) Bot. 382; ELM. Leaf. Philip. Bot. 3 (1911) 1106; MILLAIS, Rhodod. (1917) 233; MERR. En. Philip. 3 (1923) 244; MILLAIS, Rhodod. ser. 2 (1924) 218; COPEL. f. Philip. J. Sc. 40 (1929) 139, t. 1; H. J. LAM, Blumea 5 (1945) 574; SLEUM. Reinwardtia 5 (1960) 64. — *R. retusum* (non BENN.) F.-VILL. Nov. App. (1883) 353.

See for further synonyms under the varieties.

KEY TO THE VARIETIES

1. Ovary exclusively lepidote, not hairy at all.
2. Corolla lepidote and, at least laxly, pubescent outside.
3. Corolla 20 (rarely up to 25) mm long, strictly tubular . . . 4. var. **malindangense**
3. Corolla 10-15(-16) mm long, slightly subcampanulate-dilated distally.
4. Pedicels pubescent and \pm densely lepidote at anthesis. Perulae dorsally lepidote and pubescent.
5. Leaves rather broadly and shortly obovate, 15-20(-28) by (5-)-6-8(-10) mm
 2. var. **davaoense**
 5. Leaves \pm elongate-obovate, (10-)-12-20 (-22) by 3-5 (rarely up to 6) mm
 3. var. **rosmarinifolium**
4. Pedicels pubescent and but very sparsely or not lepidote at anthesis. Perulae outside glabrous or almost so.
6. Leaves obovate, (11-)-12-18(-20) by 4-7 (-8) mm . . . 5. var. **marivelesense**
6. Leaves narrow-obovate, 8-10(-11) by 2-3 (-4) mm. . . . 6. var. **intermedium**
2. Corolla mostly exclusively lepidote, rarely lepidote and also with some hairs at the base, or glabrous.
7. Leaves (15-)-17-30 by (7-)-9-13 mm. (Pedicels pubescent and lepidote) 1. var. **quadrasianum**
7. Leaves 6-16(-20) by 2.5-6 mm.
8. Leaves \pm broadly obovate, (3-)-4-5(-6) mm wide. Pedicels lepidote and laxly pubescent, sometimes exclusively lepidote
 7. var. **selebicum**

8. Leaves narrowly and \pm elongately obovate, 2.5–4(–5) mm wide. Pedicels very laxly lepidote, nearly always epilose

8. var. cuneifolium

1. Ovary lepidote and rather densely hairy to almost villous.

9. Leaves narrowly obovate, (5–)9–16 mm long.

10. Leaves 3–5 mm wide . . . **9. var. villosum**

10. Leaves 1–1.5 mm wide.

10. var. angustissimum

9. Leaves broadly obovate, (11–)16–22 by (5–)7–10 mm **11. var. borneense**

1. var. quadrasianum. — *R. quadrasianum* VIDAL, Rev. Pl. Vasc. Filip. (1886) 170; COPEL. f. Philip. J. Sc. 40 (929) 140, t. 1, f. 1, 2 (not typical).

Shrub, 0.3–1(–3) m, occasionally treelet, erect and terrestrial, or rarely epiphytic. Branches greyish, the cork peeling off longitudinally. Branchlets terete, slender, brownish greyish, striate, younger parts generally \pm densely patent-puberulous, tips moreover laxly to subdensely lepidote; internodes 0.5–8(–10) cm, the lower ones leafless. Leaves close together or in 4–8-merous pseudo-whorls at the upper 2–3(–4) nodes, obovate, subsessile, apex broadly obtusely attenuate or mostly rounded, very slightly or not retuse, the terminal gland small and on the undersurface within the edge, base cuneate into the petiole, \pm coriaceous, dark green and shining above, dilutely so beneath, laxly lepidote initially, gradually glabrescent with age above, pits of the scales remaining visible for a long time, subdensely lepidote beneath (scales rather small, round or nearly so, marginal zone narrow, entire to crenulate, centre thick, rusty-brown, \pm distinctly impressed), not rarely provided with a fine puberulence in the lower part of the blade especially when young, margin \pm revolute, (15–)17–30 by (7–)9–13 mm, midrib sunk above, prominent beneath especially in its lower half, nerves 2–4 pairs, curved-ascending and anastomosing, minutely depressed above, slightly raised beneath, not rarely \pm inconspicuous, reticulation 0; petiole very short (blade is decurrent to nearly the base), up to 1.5 mm. Flowers solitary or in twos (sometimes 3, rarely 4 in an umbel). Flower buds ovoid, c. 10 by 6 mm. Outer perulae ovate to suborbicular, inner ones broadly obovate-spathulate, obtuse or minutely apiculate, lepidote and sericeous upwards dorsally, short-ciliate. Bracteoles filiform, glabrous, up to 6 mm. Pedicels rather slender, c. 10 (sometimes up to 15) mm, rather densely shortly patent-pubescent, laxly to subdensely lepidote. Calyx small, disk-shaped, 5-lobed, lepidote and \pm hairy, lobes broad-ovate and obtuse, c. 0.5 mm. Corolla red, tubular in outline, slightly oblique, subcampanulate-dilated upwards, rather shortly 5-lobed, 12–14(–15) mm long in all, \pm shining and subdensely lepidote, moreover with some scattered hairs at the very base (but not hairy all over the tube) outside, glabrous inside, tube c. 10 mm, 2.5–3 mm ϕ at the base, 4–5 mm at the throat, lobes somewhat irregular, broadly elliptic-obovate or suborbicular, 3–4 by 2.5–4 mm, finely subdenti-

culate-erose or entire at the apex. Stamens 10, as long as or slightly shorter than the corolla; filaments linear, glabrous; anthers subglobose, c. 1 mm. Disk glabrous. Ovary obliquely cylindrical, gradually attenuate into the style, c. 2 by 1.5 mm, 5-ribbed, densely lepidote; style glabrous, c. 8 mm; stigma subcapitate, irregularly lobed. Capsule obliquely cylindrical, densely rusty-lepidote, 1–1.2 (–1.5) by 0.25–0.35 cm. Seeds c. 2 mm including the narrow tail at both ends.

Distr. *Malesia*: Philippines (Luzon, Albay Prov.: Mayon Volcano).

Ecol. Rocky open slopes, 1330–2100 m, abundant. Fl. fr. May–June, Sept.

Vern. *Kutmu*.

Note. This is the “typical” form, i.e. the first one described of this rather variable species, collected again and again on Mayon Volcano, but not found elsewhere. Within the general aspect of *R. quadrasianum* s. lat., this is a homogeneous, glabrescent, big-leaved form.

COPELAND f. stated that a special form of *R. quadrasianum* occurs on almost every mountain in the Philippines. I had to reduce his infraspecific taxa to a more reasonable number in order to avoid overlapping.

2. var. davaoense (COPEL. f.) SLEUM. Reinwardtia 5 (1960) 65. — *R. quadrasianum* VIDAL f. *davaoense* COPEL. f. Philip. J. Sc. 40 (1929) 143, t. 1, f. 9, 10. — *R. quadrasianum* VIDAL f. *negrosense* COPEL. f. l.c. 142, t. 1, f. 6.

Treelet or shrub, sometimes epiphytic. Leaves rather broadly and shortly obovate, 15–20(–28) by (5–)6–8(–10) mm. Corolla 10–15(–16) mm long in all, subcampanulate-dilated distally, lepidote and at least laxly pubescent outside. Pedicels pubescent and \pm densely lepidote at anthesis. Ovary only lepidote.

Distr. *Malesia*: Philippines (Mindanao, Leyte, Negros, S. Luzon).

Ecol. Dense moss forest on summits, 1600–2440 m. Fl. fr. Jan.–Dec.

Vern. *Tongog*, Bag., *lasimancahay*, Negros.

3. var. rosmarinifolium (VIDAL) COPEL. f. Philip. J. Sc. 40 (1929) 144, t. 1, f. 13–18; SLEUM. Reinwardtia 5 (1960) 65; Blumea 12 (1964) 92. — *R. rosmarinifolium* VIDAL, Rev. Pl. Vasc. Filip. (1886) 172; RENDLE, J. Bot. 34 (1896) 355; MERR. Publ. Gov. Lab. Philip. n. 29 (1905) 43; Philip. J. Sc. 2 (1907) Bot. 292; *ibid.* 3 (1908) Bot. 382; MILLAIS, Rhodod. (1917) 236; MERR. En. Philip. 3 (1923) 245; MILLAIS, Rhodod. ser. 2 (1924) 225. — *R. cuneifolium* (non STAF) RENDLE, J. Bot. 34 (1896) 355; MERR. Publ. Gov. Lab. Philip. n. 29 (1905) 43. — *R. quadrasianum* VIDAL var. *intermedium* MERR. Philip. J. Sc. 3 (1908) Bot. 382, p.p.; En. Philip. 3 (1923) 244, p.p. — *R. quadrasianum* VIDAL f. *halconense* COPEL. f. Philip. J. Sc. 40 (1929) 141, t. 1, f. 5. — *R. quadrasianum* VIDAL f. *banahaense* COPEL. f. l.c. 145, t. 1, f. 24. — *R. quadrasianum* VIDAL f. *pulogense* COPEL. f. l.c. 144, t. 1, f. 19–23, 28; H. J. LAM, Blumea 5 (1945) 575, p.p.

Shrub, (0.5-)1-2 m, rarely treelet up to 6 m. *Leaves* ± elongate-obovate, (10-)12-20(-22) by 3-5 (rarely up to 6) mm. *Corolla* 10-15(-16) mm long in all, subcampanulate-dilated distally, red to orange, lepidote and at least laxly pubescent outside. Pedicels pubescent and ± densely lepidote at anthesis. *Ovary* only lepidote.

Distr. *Malesia*: Philippines (Mindoro, Biliran, Luzon).

Ecol. Mossy (oak-)forest, also in secondary growth and open places, locally common, 1300-2400 m. *Fl. fr.* Jan.-Dec.

Vern. *Bikbiki, sisisip*, Ig.

4. var. *malindangense* (MERR.) COPEL. *f.* Philip. J. Sc. 40 (1929) 142, t. 1, f. 7, 8; SLEUM. Reinwardtia 5 (1960) 66. — *R. malindangense* MERR. Philip. J. Sc. 3 (1908) Bot. 256, 381; MILLAIS, Rhodod. (1917) 206; MERR. En. Philip. 3 (1923) 244; MILLAIS, Rhodod. ser. 2 (1924) 183.

Shrub, 2 m, or treelet up to 7 m, sometimes epiphytic. *Leaves* oblong-obovate, (15-)20-25(-30) by (5-)6-8(-10, rarely up to 13) mm; petiole 2-3 mm. *Corolla* strictly cylindrical, red, 20(-25) mm long in all, 4-5 mm ø, laxly pubescent and lepidote outside, lobes 5 by 3-4 mm. Anthers 1 mm. Pedicels rather densely pubescent and laxly lepidote. *Ovary* only lepidote.

Distr. *Malesia*: Philippines (Mindanao, Camiguin).

Ecol. Mossy forest, 1000-1600 m. *Fl. fr.* March-Sept.

Vern. *Malágos, Bag., mogá, Sub., tagum-tagúm, Mbo.*

5. var. *marivelesense* (COPEL. *f.*) SLEUM. Reinwardtia 5 (1960) 66. — *R. quadrasianum* VIDAL *f. marivelesense* COPEL. *f.* Philip. J. Sc. 40 (1929) 141, t. 1, f. 3, 4, 25-27.

Mostly small tree. *Leaves* (rather broadly) obovate, (11-)12-18(-20) by 4-7(-8) mm. *Corolla* c. 15 mm long in all, tubular, pubescent and lepidote outside. Pedicels pubescent, practically not lepidote. *Ovary* only lepidote.

Distr. *Malesia*: Philippines (Luzon, Mindoro).

Ecol. Mossy forest, 1200-2500 m. *Fl. fr.* March-Nov.

6. var. *intermedium* MERR. Philip. J. Sc. 3 (1908) Bot. 382, *s. str.*; En. Philip. 3 (1923) 244; COPEL. *f.* Philip. J. Sc. 40 (1929) 143, t. 1, f. 11, 12, 29; SLEUM. Reinwardtia 5 (1960) 66.

Small tree or shrub. *Leaves* narrow-obovate, 8-10(-11) by 2-3(-4) mm. *Corolla* tubular below, subcampanulate distally, c. 10 cm long in all, pubescent and lepidote outside. Pedicels pubescent, practically lepidote. *Ovary* exclusively lepidote.

Distr. *Malesia*: Philippines (Luzon).

Ecol. Open exposed ridges, 2000-2400 m.

Vern. *Kutmu, Ig., tongog*, Bag.

7. var. *selebicum* J. J. S. Bull. Jard. Bot. Btzig III, 13 (1935) 443; Bot. Jahrb. 68 (1937) 199; SLEUM. Reinwardtia 5 (1960) 67. — *R. quadrasianum*

VIDAL *f. monodii* H. J. LAM, Blumea 5 (1945) 576.

Shrub or treelet up to 4 m. *Leaves* ± broadly obovate, 6-14 by (3-)4-5(-6) mm. *Corolla* lepidote, but epilose outside, (10-)12-15 mm long in all, red or orange, sometimes tube yellow, limb orange. Pedicels laxly hairy and laxly to subdensely lepidote, sometimes exclusively lepidote. *Ovary* exclusively lepidote.

Distr. *Malesia*: Central and SE. Celebes.

Ecol. Light forest or open places, 2335-3000 m. *Fl.* June-Nov.

8. var. *cuneifolium* (STAPF) COPEL. *f.* Philip. J. Sc. 40 (1929) 145; SLEUM. Reinwardtia 5 (1960) 67; Blumea 12 (1963) 92; Jahrb. Deutsch. Rhodod. Ges. Bremen (1965) f. 6 — *R. cuneifolium* STAPF, Trans. Linn. Soc. II, Bot. 4 (1894) 198, t. 15, f. B, 3; GIBBS, J. Linn. Soc. Bot. 42 (1914) 104; MILLAIS, Rhodod. (1917) 150; MERR. En. Born. (1921) 461, *p. p.*; MILLAIS, Rhodod. ser. 2 (1924) 121. — *R. quadrasianum* VIDAL *f. pulogense* (non COPEL. *f.*) H. J. LAM, Blumea 5 (1945) 575, *p. p.*

Terrestrial, or sometimes epiphytic shrub or treelet. *Leaves* ± elongate, rather narrow-obovate, 6-16 by 2.5-4(-5) mm. Pedicels laxly lepidote, nearly always epilose. *Corolla* glabrous or nearly so, red, pink, (pale) brick- or salmon-red, 10-15 (-20) mm long in all. *Ovary* only lepidote.

Distr. *Malesia*: North Borneo (Mt Kinabalu) and SW. Central Celebes (once found near Rantepao, N of Makale).

Ecol. On Mt Kinabalu common undershrub in mossy forest clearings, or in ridge or summit scrub forest, (1525-)1650-2865 m, in Central Celebes in grass and fern wilderness at 1200 m. *Fl.* Jan.-Dec.

9. var. *villosum* J. J. S. [ex MERR. En. Born. (1921) 463, *nom. nud.*] Bull. Jard. Bot. Btzig III, 13 (1935) 444; H. J. LAM, Blumea 5 (1945) 576, *incl. f. lutea* H. J. LAM *et f. rubra* H. J. LAM, *l. c.*; SLEUM. Reinwardtia 5 (1960) 67; Blumea 11 (1961) 114; *ibid.* 12 (1963) 92. — *R. cuneifolium* (non STAPF) RIDL. J. Str. Br. R. As. Soc. n. 63 (1912) 61. — *R. cuneifolium* STAPF *var. subspathulatum* (non RIDL.) MERR. Sarawak Mus. J. 3 (1928) 541.

Shrub, apparently epiphytic in general. *Leaves* narrow-obovate, (5-)9-16 by 3-5 mm. *Corolla* pubescent (sometimes rather sparingly so) and lepidote, red or yellow, c. 15 mm long in all. Pedicels lepidote and pubescent. *Ovary* lepidote and rather densely pilose to nearly villous.

Distr. *Malesia*: Borneo.

Ecol. Both in open mossy forest (rather common on Mt Dulit and Mt Kinabalu) and in low scrubby "kerangas" vegetation on bare sandstone rocks (as on summit of Mt Tanggoi), and in elfin woodland on rugged hill crest (Mt Pagon, 1675 m), (820-)1350-1680 (sometimes up to 1900) m. *Fl.* Jan.-Dec.

10. var. *angustissimum* SLEUM. Blumea 12 (1963) 92. — *R. ericoides* (non Low *ex* HOOK. *f.*) BURTT,

Proc. R. Soc., B, 161 (1964) 83, in text. Epiphytic shrublet; branchlets short-pubescent. *Leaves* narrow-oblong-obovate, densely arranged especially towards the top of the young shoots, *c.* 10 by 1–1.5 mm. Pedicels slender, *c.* 5 mm, hairy. *Calyx* lobes very short, ciliate, tube hairy. *Corolla* tubular, slightly dilated distally, red, densely covered with roundish scales, sparsely so by longish white hairs, *c.* 10 by 3–4 mm. *Stamens* exserted; anthers 0.5 mm. *Ovary* subvillous.

Distr. *Malesia*: Borneo (Sarawak: Mt Mulu), in submontane forest, *c.* 1300 m. *Fl.* June.

11. var. *borneense* J. J. S. [ex MERR. En. Born. (1921) 462, *nom. nud.*] Bull. Jard. Bot. Btzg III, 13 (1935) 444; SLEUM. Reinwardtia 5 (1960) 67; Blumea 12 (1963) 92.

Shrub, probably epiphytic in general. *Leaves* ± broad-obovate, (11–)16–22 by (5–)7–10 mm. *Corolla* red, hairy and lepidote outside, *c.* 15 mm long in all. Pedicels hairy and laxly lepidote. *Ovary* densely pubescent and lepidote.

Distr. *Malesia*: Borneo.

Ecol. In primary forest, common on Mt Kemul, 1800 m. *Fl.* Oct.

2. Subsection *Siphonovireya*

SLEUM. Reinwardtia 5 (1960) 68. — *Rhododendron sect. Hadranthe* SCHLTR, Bot. Jahrb. 55 (1918) 157, *p.p.* — Fig. 9-10.

Scales disk-shaped, entire or nearly so (subcrenate), their marginal zone narrower and thinner than the mostly thick centre. *Corolla* salver-shaped, tube elongate and ± narrow, straight or slightly curved, lobes equalling 1/4 or less of the total length of the corolla, spreading ± horizontally.

Distr. *Malesia*: limited to New Guinea. Fig. 16.

KEY TO THE SPECIES

- 1. Leaves distinctly prominent-reticulate underneath. 26. *R. habbema*e
- 1. Leaves obscurely or not reticulate underneath.
- 2. Style lepidote and patent-hairy in the lower third.
- 3. Ovary exclusively lepidote 27. *R. cinchoniflorum*
- 3. Ovary lepidote and hairy.
- 4. Corolla tube 2–2.5 cm; lobes much reflexed. Style widely exserted 28. *R. protandrum*
- 4. Corolla tube *c.* 3 cm; lobes erecto-patent. Style included 29. *R. inundatum*
- 2. Style lepidote to various degree, not hairy at all.
- 5. Corolla tube strictly cylindrical, or but slightly dilated in the upper part.
- 6. Capsule *c.* 10 by 0.5–0.6 cm. Petiole (9–)11–16(–22) mm. Corolla tube 7–8(–8.5) cm 30. *R. agathodaemonis*
- 6. Capsule (2.5–)3–4(–5) by 0.4 cm. Petiole (3–)5–8 (rarely up to 12) mm. Corolla tube 4–5.5 (rarely up to 7) cm 31. *R. herzogii*
- 5. Corolla tube gradually dilated from the base upwards. 32. *R. incommodum*

26. *Rhododendron habbema*e KOORD. Nova Guinea 8 (1912) 877 ('*habbema*'); J. J. S. *ibid.* 12 (1914) 142; *ibid.* 12 (1917) 510; SLEUM. Reinwardtia 5 (1960) 68. — *R. bodenii* WERNH. Trans. Linn. Soc. II, Bot. 9 (1916) 94.

Shrub. Branchlets smooth, tips exclusively laxly lepidote. *Leaves* in 4–9 cm spaced, 3–5-merous pseudowhorks, obovate or obovate-oblong or obovate-elliptic, apex broadly attenuate, mostly ± obtuse, often apiculate by a small protruding gland, base broadly cuneate to truncate-rounded or subcordate, coriaceous, rigid, shining and ± olivaceous above, dull and paler beneath, laxly to subdensely covered with small, ± rounded scales, which are ± immersed on both faces in fully mature leaves, 3.5–6 by 1.5–3 cm, midrib strongly impressed above, much raised beneath, nerves 6–8(–10) pairs, rather straight, inarching near the edge, very slightly impressed above, prominent beneath, reticulation rather inconspicuous or very slightly impressed above, dense and manifestly raised beneath; petiole grooved above, 4–7 by *c.* 1.5 mm. *Umbels* 5–8-flowered. *Perulae*

ovate to obovate, outer ones ± acuminate, inner ones obtuse, ± lepidote outside, glabrous inside, up to 1.5 cm. Bracteoels filiform to linear-spathulate, glabrous, 1–1.5 cm. Pedicels rather slender, ± densely lepidote, (0.6–)0.9–1.5 cm. *Calyx* small, shortly and rather irregularly 5-dentate. *Corolla* salver-shaped, white, tube narrow-cylindric, straight or slightly curved, its base only somewhat dilated (5–6 mm) and 5-pouched, rather densely covered with small rounded scales outside as are the lobes, glabrous inside, (3.3–)4–5(–5.5) cm, lobes obovate, obtuse, 1–1.4 by 0.6–1 cm. *Stamens* 10, unequal; filaments linear, laxly to very laxly hairy, 3.5–4 cm; anthers oblong, 3 by 1 mm. *Disk* glabrous or almost so. *Ovary* subcylindric, 5-ribbed, very densely lepidote, 6–7 by 1.5 mm; style slender, 2.7–3.5 cm, mostly somewhat exserted from the throat, clad with short spreading hairs and scales at the base, exclusively hairy above, the upper part glabrous; stigma turbinate.

Distr. *Malesia*: New Guinea (Main Range from Mt Carstensz to the Hellwig Mts and Mt Goliath).

Ecol. Both in forest on wet mossy ground and on humus- and moss-covered exposed rocks, 2000–3450 m. *Fl.* Jan.–Dec.

27. *Rhododendron cinchoniflorum* SLEUM. Reinwardtia 5 (1960) 68. — Fig. 9.

Shrub. Branchlets rather slender, terete, tips lepidote; internodes 2–8 cm. *Leaves* in 4–6-merous pseudowhorls at the end of the upper internodes, ovate-elliptic or mostly elliptic, apex shortly ± obtusely acuminate, not rarely apiculate by a small gland, base subtruncate-rounded to slightly cordate, coriaceous, subdensely and ± cadu-

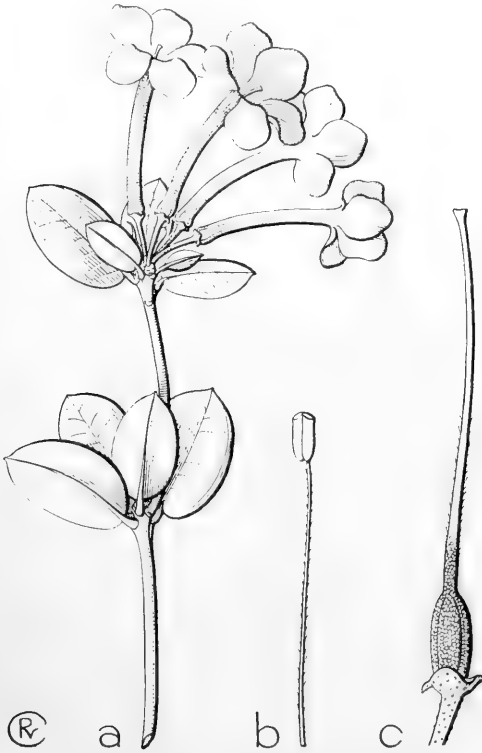


Fig. 9. *Rhododendron cinchoniflorum* SLEUM. a. Habit, $\times \frac{2}{3}$, b. stamen, $\times 2$, c. ovary and style, $\times 2$ (a–c EYMA 5264).

cously lepidote above, densely and persistently so beneath (scales nearly round, ± wavy at the margin, very distinctly impressed, the pits becoming blackish with age), (1.6–)2–2.5(–3) by 1–1.6 cm, midrib impressed above, strongly prominent beneath, nerves 3–4 pairs, very slightly impressed above in fully mature leaves, somewhat prominent in younger ones, generally not well visible, especially beneath, reticulation 0; petiole lepidote, 1.5–3 by 1–1.5 mm. *Umbels* 4–6(–7)-flowered. Outer perulae ovate-acute, inner ones obovate, lepidote dorsally along the middle line, up to 1 by 0.7 cm. Bracteoles linear, c. 6 by 1 mm. Pedicels

rather slender, densely rufous-lepidote, 5–8 mm. *Calyx* disk-like, c. 2.5 mm ϕ , limb spreading or reflexed at anthesis, lepidote outside, glabrous inside, margin undulate and shortly 5-lobed. *Corolla* salver-shaped, colour not known (probably white), tube nearly straight, somewhat 5-saccate at the very base, very densely lepidote outside, glabrous inside, 2.5–3 cm by c. 2.5 mm, lobes ± spreading horizontally, obovate-elliptic, 1–1.2 by 0.8–0.9 cm, laxly lepidote outside, glabrous inside. *Stamens* 10, unequal, not or slightly exerted from the throat; filaments filiform, laxly hairy; anthers broadly oblong, 2–2.5 mm. *Disk* low, ± densely white-hairy. *Ovary* cylindrical-conical, densely exclusively lepidote, c. 4 by 2 mm, abruptly narrowed to the style, slightly 5-ribbed; style c. 2.3 cm, lepidote and shortly patent-hairy in the lower third, gradually glabrescent upwards; stigma shortly turbinate, minutely crenulate.

Distr. *Malesia*: W. New Guinea (near the Wissel Lakes), 2400 m. Once found. *Fl.* Oct.

28. *Rhododendron protandrum* SLEUM. Blumea 11 (1961) 114.

Shrub c. 2.5 m, divaricately branched. Branchlets rather slender, juvenile parts densely lepidote and c. 2 mm ϕ ; internodes (2–)3–6(–8) cm. *Leaves* in 4–5-merous pseudowhorls at the upper 2 or 3 nodes, elliptic, apex ± broadly subacuminate, or sometimes obtusely apiculate, base broadly attenuate or subcuneate, coriaceous, subdensely lepidote initially, glabrescent above with age, ± persistently lepidote beneath (scales small, roundish, marginal zone narrow, centre thick, yellowish, slightly impressed), very narrowly marginate, 3–5 by (1.6–)2–3 cm, midrib narrowly immersed above, as thick as the petiole and much prominent in the lower part beneath, nerves 4(–6) spreading, rather straight pairs, faintly impressed above, very slightly raised beneath, or not rarely ± obsolete on both faces, no reticulation; petiole grooved above, 4–6 by c. 1 mm. *Umbels* 5–8(–10)-flowered. Perulae membranous, glabrous dorsally, glandular fimbriate apically, outer ones ovate, apiculate or obtuse, inner ones obovate-oblong to oblong, up to 1 by 0.8 cm. Bracteoles subspathulate-linear, glabrous, up to 8 by 1 mm. Pedicels slender, 5–7(–10) mm, subdensely lepidote. *Calyx* subobliquely patellar, c. 2.5 mm ϕ , shortly and irregularly 5-lobed. *Corolla* tubular, ± horizontally expanded at the lobes, pure white or greenish white, or pale pink at the tube and white at the lobes, densely lepidote outside, set with short retrorse hairs in the lower third, glabrous for the rest inside, tube straight or slightly curved, c. 2.5 cm, 2–2.5 mm ϕ except the slightly dilated very base, lobes subspathulate-oblong, 5–6 by c. 3 mm, which become ± reflexed in full anthesis. *Stamens* 10, much exerted from the corolla tube early at the anthesis (when the style is still included in the corolla tube), erect, ± recurved with the upper part of the filaments towards the end of the anthesis (when the style becomes much exerted); filaments almost filiform, white, laxly or more densely hairy in the lower 1/4; anthers

oblong, base obtuse, 1.8 by 0.5 mm. *Disk* slightly prominent, laxly erect-hairy at the upper margin only. *Ovary* cylindrical, c. 5 by 1.5 mm, subdensely subappressedly short-hairy and lepidote, tapering to the slender style, the latter lepidote to almost the top and laxly hairy in the lowest 10 mm; stigma subcapitate, very shortly 5-lobed. Submature *capsule* narrow-fusiform, reddish, laxly lepidote and hairy, 2.5–3 cm by 2.5–3 mm, rather deeply 5-furrowed lengthwise.

Distr. *Malesia*: New Guinea (Sibil R. Valley).

Ecol. In shrub vegetation on poor, impervious, white clay, 1260 m, common. *Fl.* June; *fr.* Aug.

29. *Rhododendron inundatum* SLEUM. *Blumea* 12 (1963) 92.

Terrestrial shrub, c. 1 m; branchlets reddish, striate, slightly pruinose when dry, variously obtusely compressed, laxly and \pm caducously lepidote; the 2 ultimate internodes 6–12 cm by 3–4 mm. *Leaves* erecto-patent, in 4–5-merous pseudowhorls at the upper 3 nodes, elliptic to elliptic-obovate, apex very broadly attenuate or mostly rounded, sometimes apiculate, base broadly cuneate to the petiole, coriaceous, green above, yellowish green below, early glabrescent above, still subdensely lepidote with age (scales small, roundish, distant from each other for about their diameter, marginal zone thin, narrow, centre small, much impressed), slightly revolute in dry specimens, 3.5–5.5 by (1.5–)2–3(–3.3) cm, midrib narrowly immersed above, as thick as the petiole at the base, nerves 6–7 pairs, with some additional less conspicuous ones between, rather straight, obscurely anastomosing before the edge, slightly impressed above, a little prominent or indistinct below, no reticulation; petiole 6–9 by 1–1.5 mm. *Umbels* \pm 4-flowered. Outer perulae ovate-acuminate, submucronulate by a protracted apex, densely set with thickish scales and very short hairlets at base and the middle outside, otherwise glabrous, inner ones \pm spatulate, thinner, edge minutely lacerate, up to 1 by 0.6 cm. Bracteoles linear, sparsely lepidote, not hairy, c. 1.2 cm. Pedicels pinkish, \pm densely lepidote, epilose, 1–1.2 cm by c. 0.5 mm. *Calyx* a little oblique, patellar, obscurely lobed, c. 2.5 mm ϕ . *Corolla* tubular below, somewhat expanded at the lobes, white, 4–4.3 cm long in all, subdensely lepidote except the marginal parts of the lobes outside, laxly hairy at the tube inside, tube rather straight, \pm 3 cm, base 2.5–3 mm ϕ , gradually widened to 5 mm at the throat, lobes erecto-patent, obovate-spathulate, c. 1 by 0.7–0.9 cm. *Stamens* 10, reaching halfway the corolla lobes; filaments narrow-linear and densely patently white-hairy in the lower 3/4, filiform and glabrous upwards; anthers oblong, base obtuse, 2 mm. *Disk* hardly prominent, glabrous. *Ovary* subcylindric, densely lepidote and laxly patently white-hairy, 4–5 by c. 1.5 mm, continuous with the style, the latter rather slender, as long as the corolla tube, densely lepidote and laxly patently hairy in the lower, exclusively densely lepidote in the upper half; stigma subcapitate.

Distr. *Malesia*: New Guinea (Balim R. Valley near Wiligimaan), once found.

Ecol. Temporarily inundated grassplain on peaty soil, at c. 1650 m, locally common. *Fl.* June. Vern. *Tumuk*, Dani.

30. *Rhododendron agathodaemonis* J. J. S. in Fedde, Rep. 12 (1913) 209; *Nova Guinea* 12 (1914) 142, t. 37 A; *ibid.* 12 (1917) 510; SLEUM. *Reinwardtia* 5 (1960) 69. — *R. hellwigii* (non WARB.) KOORD. *Nova Guinea* 8 (1912) 878, t. 153.

Shrub or small, compact tree, 1.2–6 m. Branchlets terete, tips laxly to densely rusty-lepidote. *Leaves* in 7–20 cm spaced, 4–5-merous pseudowhorls, elliptic to obovate-elliptic, apex broad-acuminate to obtuse, sometimes apiculate by a small gland or a little retuse, base broadly attenuate into the petiole or mostly rounded-obtuse, coriaceous, rather stiff, entire, somewhat revolute towards the base, sparsely to subdensely minutely lepidote on both surfaces especially beneath (scales round, entire or shallowly undulate at the marginal zone, centre \pm impressed), (3.5–)5–7 (–7.5) by (2.5–)3.5–4.8 cm, midrib slightly impressed above, distinctly raised though somewhat flattened beneath, nerves 6–8(–10) pairs, rather straight, anastomosing with each other and the primary veins near the edge, very slightly impressed above, a little raised or inconspicuous beneath, reticulation obscure; petiole somewhat flattened, sparsely lepidote, (9–)11–16(–22) by 1.5–2 mm, grooved above. *Umbels* showy, (6–)8–10(–12)-flowered. Perulae ovate to obovate, lepidote dorsally, c. 1.5 by 1 cm. Bracteoles filiform below, linear-spathulate upwards, laxly lepidote, c. 12 mm long, 1 mm wide apically. Pedicels rather stoutish, 6–15(–18) mm, \pm densely lepidote. *Calyx* very small, annular, irregularly denticulate. *Corolla* salver-shaped, with a scent of carnations, pure white or somewhat rose tinged at the tube, the latter slightly curved, cylindrical at least below, sometimes somewhat dilated in the upper half, 7–8(–8.5) cm long, c. 3 mm ϕ at the base, 4–6.5 mm in the middle and the upper half, sparsely to subdensely lepidote outside, laxly hairy and not rarely sparingly lepidote in the lower half inside, lobes rounded to obovate, spreading in a right angle, 1–1.5 by 0.8–1.2 cm, laxly lepidote or mostly glabrous outside, glabrous inside, *Stamens* 10, slightly or not exerted from the throat; filaments very slender, subdensely (rarely more laxly) set with spreading hairs in the lower half, glabrous above; anthers orange, oblong, thecae apiculate at base, 3–4 by 0.8 mm. *Disk* glabrous. *Ovary* elongate-conical, densely lepidote, 7–10 by 2 mm; style slender, slightly exerted, rather densely to laxly lepidote almost to the top, epilose; stigma short-turbinate, crenulate. *Capsule* red-brown, cylindrical, attenuate at both ends, obtusely 5-angled, c. 10 by 0.5–0.6 cm.

Distr. *Malesia*: New Guinea (Mts Hubrecht and Wichmann on the southern, and near Habbe-ma Lake on the northern side of the Orange Mts).

Ecol. Moss forest, in damp ground or swampy open places, 3050–3450 m. *Fl.* Feb., Aug., Nov

31. *Rhododendron herzogii* WARB. Bot. Jahrb. 16 (1892) 15, 25; K. SCH. & LAUT. Fl. Schutzgeb. (1901) 487; SCHLTR, Bot. Jahrb. 55 (1918) 160, f. 6; SLEUM. Reinwardtia 5 (1960) 69; Blumea 11 (1961) 115; *ibid.* 12 (1963) 93; Jahrb. Rhodod. Ges. Bremen (1963) f. 13, 18. — *R. carringtoniae* (non F. v. M.) LANE-POOLE, For. Res. Papua (1925) 130; WHITE & FRANCIS, Proc. R. Soc. Queensl. 39 (1928) 68; STONOR, Rhodod. Yearbook 6 (1951) 49, f. 50. — *R. agathodaemonis* (non J. J. S. 1913) J. J. S. Nova Guinea 18 (1936) 99. — **Fig. 10.**

Erect shrub, (0.5–)1–2 m. Branchlets terete, subdensely lepidote at the ultimate internodes (3–13 cm), glabrescent and pruinose below. *Leaves* in 4–6-merous pseudowhorls at the upper nodes,



Fig. 10. *Rhododendron herzogii* WARB. Edie Creek near Wau, E. New Guinea, 1850 m (SLEUMER 4129) (SLEUMER, 1961).

elliptic or obovate-elliptic, sometimes nearly obovate or elliptic-oblong, apex broadly \pm obtusely acuminate, sometimes rather blunt, base broadly cuneate to almost rounded, coriaceous, dark to medium green above, paler to yellowish green beneath, slightly revolute towards the base, subdensely lepidote when young, though early glabrescent above, rather densely and \pm persistently impressed-lepidote beneath (scales roundish, pale yellow, their marginal zone narrow and shallowly irregularly crenate), (2.5–)4–6(–9) by

(1.5–)2–4(–5) cm, midrib slightly grooved above, robust and prominent beneath, nerves (6–)8–10 (rarely up to 12) pairs, slightly curved, \pm parallel to each other, rather obscurely anastomosing, faintly impressed above, raised beneath, reticulation obscure; petiole semiterete, grooved above, lepidote, (3–)5–8 (rarely up to 12) by 1.5–2 mm. *Umbels* 5–10-flowered. Flower buds obovoid-oblong, *c.* 2 by 1 cm, almost whitish green when fresh. *Perulae* ovate to subovate, thin, densely lepidote dorsally except the glabrous marginal part, scales almost transparent-silvery in fresh specimens, up to 1.5 by 1 cm. *Bracteoles* narrow-linear, up to 3 cm. *Pedicels* rather stoutish, densely lepidote, (4–)6–8 mm. *Calyx* very small, oblique, disk-shaped, subentire. *Corolla* salver-shaped, pure white, or slightly pinkish at the tube externally, fragrant, tube straight or very slightly curved, 4–5.5 (rarely up to 7) cm long, *c.* 2.5 mm ϕ at base and middle, dilated upwards to *c.* 3.5 mm, densely lepidote outside, rather densely hairy and sparingly or not lepidote in the lower 2/3 of the inside, lobes spreading, orbicular to elliptic-obovate, 8–9 by 5–6 mm, \pm lepidote outside, glabrous inside. *Stamens* 10, somewhat exerted at least in part beyond the recurved corolla lobes; filaments white, very slender, \pm densely and patently hairy in the lower 2/3 only; anthers orange, oblong, 3–3.5(–4) by 0.8 mm. *Disk* very laxly hairy or glabrous. *Ovary* narrowly cylindrical, very densely lepidote, 6–7 by 1.5 mm, rather abruptly tapering to the style, the latter mostly somewhat exerted from the throat, densely lepidote below, less so upwards, sometimes glabrous distally; stigma green, short-obconical. *Capsule* reddish, cylindrical, rather straight, lepidote, (2.5–)3–4(–5) by 0.4–0.5 cm.

Distr. Malesia: New Guinea (Main Range from the Wissel Lakes to the Owen Stanley Range, and on Mt Saruwaged).

Ecol. Terrestrial, more rarely epiphytic, on earthen cliff faces, landslides, steep eroded banks or slopes, also in mountain forest or heath-scrub, on infertile sandy or clayey soil, not rarely found in (fern) regrowth, as coloniser in sluiced areas or in gullies of old garden land, (1530–)1600–2500 m. *Fl. fr.* Jan.–Dec.

Vern. *Lon, rohn, Enga, kibimuma, Chimbu: Masul, wumbambegon, Wahgi: Minj, numbamb, Hagen: Togoba, ronggehpa, Mairi: Watabung.*

32. *Rhododendron incommodum* SLEUM. Reinwardtia 5 (1960) 70; Blumea 11 (1961) 115; *ibid.* 12 (1963) 93.

Shrub, *c.* 1 m. Branchlets rather slender, subterete, lepidote only at the ultimate internodes (0.5–6 cm). *Leaves* in 3–4-merous pseudowhorls at the upper nodes, elliptic-oblong or mostly elliptic, apex broadly obtusely acuminate, base cuneately attenuate to the petiole, coriaceous, laxly lepidote initially, finally glabrescent above, subdensely and \pm persistently lepidote beneath (scales small, roundish, entire or nearly so, yellowish, \pm impressed), slightly revolute towards the base, 5–7.5 by 2.5–4 cm, midrib a little impress-

ed above, robust and very prominent in the lower part, gradually less so upwards and fading distally beneath, nerves 4-6 pairs in an acute angle with the midrib, obscurely anastomosing, slightly impressed above, respectively raised beneath, reticulation obscure; petiole subterete, rugose, 4-20 by *c.* 1.5 mm. *Umbels* \pm 8-flowered. Bracteoles filiform, very laxly lepidote. Pedicels rather slender, subdensely covered with pale yellow scales, *c.* 10 by 0.5 mm. *Calyx* subobliquely disk-shaped, wavy, very shortly 5-lobed, *c.* 2.5 mm σ . *Corolla* tubular, 5-5.5 cm long in all, red, tube straight or slightly curved, 3.5-4 cm, gradually dilated from *c.* 3 mm σ at the base to *c.* 1 cm at the throat, laxly to subdensely clad with small yellowish scales outside, very laxly hairy and sparingly lepidote inside, lobes obovate or oblong-

obovate, \pm spreading, very laxly lepidote outside, glabrous inside, 1-1.5 by 0.5-0.7 cm. *Stamens* 10, well exerted from the throat; filaments filiform, laxly pubescent especially in their lower part, and glabrous above, or glabrous at all; anthers obovate-oblong, 2-3 by 1 mm, base obtuse. *Disk* glabrous. *Ovary* elongate-conical, very densely lepidote, *c.* 5 by 1.7 mm, gradually tapering to the style, which is laxly lepidote to the top and attains 5 cm; stigma shortly turbinate, rather small.

Distr. *Malesia*: New Guinea (Ogeramngang in the Sattelberg-Saruwaged area, and Purosa in the Okapa area, Eastern Highlands).

Ecol. Locally common, high epiphyte in mixed rain-forest, 1830-1950 m. *Fl.* Sept., Dec.

3. Subsection *Phaeovireya*

SLEUM. Bot. Jahrb. 74 (1949) 539; Reinwardtia 5 (1960) 71. — *Rhododendron sect. Schistanthe* SCHLTR, Bot. Jahrb. 55 (1917) 140, *p.p.* — *Rhododendron sect. Zygomorphanthe* SCHLTR, *ibid.* 55 (1918) 145, *p.p.* — *Rhododendron sect. Hadranthe* SCHLTR, *l.c.* 157, *p.p.* — Fig. 11-15, 31.

Scales \pm dendroid, each on top of a distinct and \pm persistent epidermal tubercle, thus both surfaces or at least the undersurface of the leaves densely tubercled and scabrid or rough to the touch in later glabrescent stages; marginal zone usually wide, deeply, often narrowly incised (then becoming similar to a stellate hair). *Corolla* various, mostly shortly tubular and \pm zygomorphous, rarely elongate and funnel- or salver-shaped.

Distr. *Malesia*: Central Celebes and New Guinea. Fig. 16.

KEY TO THE SPECIES

1. Ovary exclusively and densely stellate-lepidote, *i.e.* no simple hairs present except possibly at the very apex of the ovary and on the style.
 2. Style up to 2 mm. (Leaves 0.8-1.6 by 0.4-0.7 cm, very much revolute).
 3. Anthers dehiscent by anticous pores. Style columnar, 1.5-1.6 mm.
 4. Leaves spirally arranged, equidistant. Corolla *c.* 1.3 cm long in all, lobes 4-5 mm σ . . . 33. *R. eymac*
 4. Leaves in distant pseudowhorls. Corolla (1.5)-1.7-2.2 cm long in all, lobes 7-9 mm σ . . . 34. *R. revolutum*
 3. Anthers dehiscent by posticous pores. Style obconical, 1 mm. Leaves in pseudowhorls. . . 35. *R. extrorsum*
 2. Style at least 5 mm.
 5. Style thick, *c.* 2 mm σ . Ovary 4-5 mm σ . Leaves large, (7-)-10-16 by (3.5-)-6-10 cm.
 6. Corolla deep blood red, 6.5-7(-8) cm. Style 3-3.5(-4) cm . . . 36. *R. hellwigii*
 6. Corolla white or cream, may be with a rose tinge, or pink with a reddish throat, (11-)-11.5-12.5 cm. Style 5.5-6.5 cm . . . 37. *R. superbum*
 5. Style slender, up to 1 mm σ . Ovary up to 2.5 mm σ . Leaves small or mostly medium-sized.
 7. Leaves linear, lanceolate or ovate-lanceolate, 0.3-0.9 (-1.3, very rarely up to 1.6) cm wide.
 8. Corolla glabrous outside . . . 38. *R. prainianum*
 8. Corolla lepidote and/or hairy outside.
 9. Corolla lepidote and hairy outside . . . 39. *R. stelligerum*
 9. Corolla lepidote or hairy outside.
 10. Corolla exclusively lepidote outside.
 11. Pedicels up to 0.5 cm. Style 0.6 cm. . . 40. *R. neriifolium*
 11. Pedicels (0.7-)-1-1.3 cm. Style 1.7-3 cm.
 12. Leaves linear, strongly revolute, (3-)-3.5-5.5 cm by 2-3(-4) mm . . . 41. *R. hooglandii*
 12. Leaves lanceolate to ovate-lanceolate, slightly revolute, 3-7 by (0.3-)-0.6-1(-1.3, very rarely up to 1.6) cm . . . 42. *R. rarum*
 10. Corolla exclusively whitish hairy outside. . . 43. *R. delicatulum*
 7. Leaves of various shape besides linear or lanceolate, 1 cm wide only in the narrowest leaves in the same specimen, and at least in part, or mostly all of them much wider.
 13. Style exclusively laxly \pm patently short-hairy at least at the base, not lepidote at all.

14. Filaments glabrous or practically so. **47. R. dielsianum var. stylotrichum**
 14. Filaments hairy to various degree.
 15. Corolla quite glabrous outside from the beginning. **44. R. bryophilum**
 15. Corolla laxly to subdensely lepidote outside at least initially, may be glabrescent in later stages.
 16. Corolla 3.8–4.5 cm long in all. Anthers 3 mm. **45. R. tuberculiferum**
 16. Corolla 2.6–3 cm long in all. Anthers 2 mm. **46. R. asperrimum**
13. Style bearing no (or practically no) hairs, otherwise whether or not stellate-lepidote.
 17. Style stellate-lepidote only at the very base, or quite glabrous.
 18. Corolla sparsely to subdensely lepidote outside.
 19. Filaments glabrous or practically so. **47. R. dielsianum var. dielsianum**
 19. Filaments laxly papillose-hairy. **46. R. asperrimum**
 18. Corolla completely glabrous outside.
 20. Corolla about halfway 5-lobed, c. 2.5 cm **48. R. stolleianum**
 20. Corolla 5-lobed to 1/3, 3.5–3.8 cm **49. R. psilanthum**
17. Style stellate-lepidote at least in the lower third.
 21. Filaments densely hairy below. Disk \pm densely hairy **50. R. phaeochitum**
 21. Filaments very sparsely hairy or glabrous. Disk glabrous.
 22. Leaves coriaceous, rather stiff, very densely stellate-lepidote ('tomentose') initially (scales persistent a rather long time), \pm distinctly revolute at the margin. **51. R. beyerinckianum**
 22. Leaves subcoriaceous, less densely stellate-lepidote initially (scales \pm fugacious), but slightly or not revolute at the margin.
 23. Leaves ovate or oblong-ovate **52. R. leptanthum**
 23. Leaves (broadly) elliptic to oblong-elliptic, rarely obovate-elliptic **53. R. wariianum**
1. Ovary all over densely set with simple hairs, or distinctly hairy *and* lepidote to various degree.
 24. Corolla (8–)9–14(–16) cm long in all.
 25. Style glabrous except for some hairs and/or scales at the very base.
 26. Ovary subcylindric, densely covered with \pm stiff hairs, the hairs completely hiding the scales. Corolla glabrous outside **54. R. gardenia**
 26. Ovary \pm bottle-shaped, densely covered equally with hairs and scales mixed on the lower (seed-bearing), and exclusively lepidote in the upper (constricted) part and the very base of the style. Corolla laxly lepidote outside **55. R. thaumasianthum**
25. Style lepidote and/or hairy at least in the lower half.
 27. Style predominantly hairy, and laxly stellate-lepidote in about the lower half, gradually more lepidote and less hairy above for about 1/4 of the total length, exclusively stellate-lepidote for some mm above, and glabrous in the uppermost part. Flowers 6–7-merous.
 28. Anthers (8–)10–11(–16) mm **56. R. konori**
 28. Anthers 6(–7) mm **57. R. phaeocephalum**
27. Style densely stellate-lepidote and epilose in the lower 2/3, glabrous above. Flowers 5-merous.
 Anthers 6 mm **58. R. opulentum**
24. Corolla up to 7 cm long in all.
 29. Leaves sessile or subsessile (petioles rarely up to 4 mm).
 30. Style glabrous except for some spreading hairs at the base or in the lower 1/4. Ovary predominantly lepidote, the hairs scattered between the scales.
 31. Corolla 3.8–4.5 cm; anthers 3 mm **45. R. tuberculiferum**
 31. Corolla 2.6–3 cm; anthers 2 mm **46. R. asperrimum**
30. Style hairy *and* lepidote at least halfway. Ovary predominantly hairy, the tomentum \pm covering the scales.
 32. Corolla 2.5–2.8 cm. Leaves 1.6–4 by 1.2–1.7 cm.
 33. Leaves ovate, base slightly cordate. Umbels 3-flowered. Corolla outside laxly lepidote, and sometimes very sparsely hairy too, inside laxly hairy **59. R. spondylophyllum**
 33. Leaves elliptic, base \pm rounded. Flowers solitary. Corolla outside sparsely hairy, inside glabrous. **60. R. melantherum**
32. Corolla generally at least 4 cm long. Leaves (3–)3.5–7.5 by (1.6–)2.4–4.5 cm.
 34. Leaves ovate or elliptic or suborbicular, sometimes obovate-elliptic. (Corolla 4–4.5 cm).
 35. Corolla broadly tubular, \pm zygomorphic; lobes \pm erecto-patent, 1–1.2(–1.5) by 0.8–1 cm. **61. R. cyatheicolum**
 35. Corolla funnel-shaped, \pm regular; lobes widely spreading, 1.5–1.9 cm \varnothing **62. R. asperum**
 34. Leaves oblong-elliptic. (Corolla (4.5–)5–5.5 cm). **63. R. rhodochromum**
29. Leaves distinctly petioled.
 36. Corolla 5-lobed \pm halfway, 2–2.3 cm long **64. R. gilliardii**
 36. Corolla 5–7-lobed up to 1/3 of its total length.
 37. Leaves deeply impressed-reticulate above, sharply prominently so beneath, *i.e.* distinctly bullate.
 38. Leaves (8–)10–18(–22) by 4.5–12(–13) cm. **65. R. bullifolium**
 38. Leaves 5–8 by 3–5 cm **66. R. solitarium**

37. Leaves whether or not slightly impressed-reticulate above, resp. prominently so, *i.e.* not properly bullate.
39. Corolla \pm densely and \pm persistently lepidote outside.
40. Corolla 2.5–3 cm long.
41. Leaves ovate- or subovate-oblong, coriaceous. 67. *R. schoddei*
41. Leaves elliptic- to obovate-oblong, subcoriaceous. 68. *R. phaeochristum*
40. Corolla 4–6 cm long.
42. Leaves oblong, base truncate or slightly cordate. Umbels 4–8(–10)-flowered.
69. *R. haematophthalmum*
42. Leaves broad-elliptic to ovate-elliptic, base broad-attenuate to almost rounded. Umbels 2–3-flowered 70. *R. phaeops*
39. Corolla but laxly and more caducously lepidote, or glabrous outside.
43. Anthers *c.* 2.5 mm. Corolla (3–)3.5(–4) cm. 71. *R. truncicolum*
43. Anthers 3.5–5 mm. Corolla (4–)5–7 cm.
44. Style with a short though distinct purely lepidote zone (as found in 56. *R. konori*) above the lower zone, where hairs and scales are found together or the hairs are predominant.
57. *R. phaeopeplum*
44. Style without such an upper exclusively lepidote zone.
45. Corolla white or pink, narrowly funnel-shaped, regular; tube straight or almost so.
46. Corolla 5-merous. Leaves broad-elliptic, more rarely oblong-elliptic or almost rounded.
72. *R. rappardii*
46. Corolla 6–7-merous. Leaves oblong or elliptic-oblong 73. *R. dianthosmum*
45. Corolla red, tubular, \pm zygomorphous; tube rather straight below, slightly curved and gradually dilated upwards 74. *R. rubellum*

33. *Rhododendron eymae* SLEUM. Reinwardtia 5 (1960) 74.

Dwarf shrub, 10–25 cm. Branchlets divaricate, terete, tips densely covered with rufous squamular scales, otherwise scabrid and dark coloured; internodes 0.5–1.5 cm. *Leaves* scattered and equidistant along the upper internodes, ovate or nearly oblong ovate, apex short-acuminate, acutish, base subtruncate rounded, very coriaceous, rigid, revolute to or nearly to the midrib, very young ones stellate lepidote on both faces, mature ones glabrescent above, though \pm persistently lepidote beneath (scales squamular, the margin deeply stellate-lacerate, subsessile, the minute centre deepened, each scale on top of a persistent epidermal elevation), scabrid. 0.8–1.2 by 0.4–0.7 cm when extended, only 2–3 mm wide in the revolute state, midrib obscure above, a little prominent beneath. nerves obsolete; petiole lepidote, thick, 0.5–1.5 mm. *Flowers* solitary or mostly in twos, rarely in threes. Perulae ovate-acuminate, lepidote at the apex dorsally, glabrous otherwise, up to 1 by 0.6 cm. Bracteoles filiform, glabrous, up to 8 mm. Pedicels densely rufous-squamular-lepidote, (0.7–)1–1.2 cm by *c.* 1 mm at anthesis. *Calyx* small, densely lepidote, irregularly 5-dentate, teeth broad-triangular, subacute, 1 mm, or one or the other of them elongate to 3 mm. *Corolla* tubular below, dilated distally, rather fleshy, sulfurous, *c.* 1.3 cm long in all, tube subcylindric, 8–9 mm long, 3–4 mm ϕ at the base, 5–6 mm at apex, very densely rufous-stellate-lepidote outside, glabrous inside, lobes suberect or a little spreading, subspathulate to orbicular, 4–5 mm ϕ , densely lepidote outside, the margin excepted, glabrous inside. *Stamens* 10, unequal, only partly a little exceeding the corolla tube; filaments filiform, slightly dilated above the base, glabrous; anthers broad-oblong, dehiscent by antinous pores, *c.* 1.5 by 1 mm. *Disk* low, glabrous.

Ovary ovoid-conical, very densely stellate-lepidote, 3–4 by *c.* 2.5 mm, rather abrupt with the style, the latter thick-columnar, glabrous, *c.* 1.6 mm long, stigma subcapitate, very shortly 5-lobed. *Capsule* ovoid, shortly contracted distally, 8–9 by *c.* 5 mm, densely rufous-stellate-lepidote; style persistent, *c.* 1.5 mm; valves not twisted; calyx a little accrescent; fruit-pedicel 1.5–1.8 cm.

Distr. *Malesia*: SW. Central Celebes (Latimodjong Range: Mt Rantemario), 3100–3300 m. Once collected. *Fl. fr.* June.

34. *Rhododendron revolutum* SLEUM. Reinwardtia 5 (1960) 74.

Low shrub, 10–40 cm. Branches mostly much divided; branchlets terete, *c.* 1.5 mm ϕ , tips densely stellate-lepidote and scabrid; internodes 1–3(–4) cm. *Leaves* in 4–6-merous pseudowhorls at the upper 2–3 nodes, \pm narrowly ovate, apex short-acuminate, subacute, base truncate-rounded, coriaceous, very stiff, mostly revolute to the midrib, densely rufous-brown-lepidote on both faces initially (scales irregularly and \pm deeply stellate-incised, the minute centre extended downwards into a stem-like foot, each scale on top of a thickish persistent epidermal tubercle), early glabrescent and scabrid above, lepidote for a long time beneath, 1–1.4 by 0.4–0.7 cm when extended, only \pm 4 mm wide when revolute, midrib very slightly impressed above, obscure beneath as are the nerves; petiole thick, lepidote, 0.5–1 mm. *Flowers* solitary or in twos. Outer perulae ovate-subulate, \pm lepidote dorsally, inner ones narrowly ovate-acuminate, ciliate and set with caducous marginal scales, glabrous otherwise, up to 1 by 0.5 cm. Bracteoles filiform, laxly long-hairy and lepidote, *c.* 1 cm. Pedicels very densely rufous-stellate-lepidote, 1.2–2 cm at anthesis, nearly 1 mm ϕ . *Calyx* subobliquely disk-shaped, densely

rufous-stellate-lepidote, 3–4 mm σ , lobes obtuse, c. 1 mm. *Corolla* tubular-infundibuliform, bright pink, (1.5)–1.7–2.2 cm, tube 0.9–1.4 cm, base rounded and 3–4 mm σ , gradually dilated upwards to 5–6 mm, densely stellate-lepidote outside, glabrous inside, lobes subspathulate-orbicular, wrinkled, 7–9 mm σ , laxly lepidote outside from the base to the middle, otherwise glabrous. *Stamens* 10, unequal, hardly exerted from the throat; filaments linear, slightly dilated above the base, glabrous; anthers oblong elliptic, c. 1.3 mm, dehiscent by anticous pores. *Disk* low, glabrous. *Ovary* ovoid-conical, densely stellate-lepidote, apex obtuse or abrupt with the style, c. 5 by 3 mm. Style columnar, glabrous, c. 1.5 by 0.4–0.5 mm; stigma thick-obconical, slightly 5-lobed. *Capsule* ovoid-ellipsoid, densely stellate-lepidote, c. 8 by 4 mm, crowned by a 2.5 mm long style; stigma manifestly 5-lobed; fruit-pedicle c. 2 cm.

Distr. *Malesia*: W. New Guinea (Lake Habbema), once found.

Ecol. Restricted to crevices and sandy niches on sterile limestone slopes, 3225 m. *Fl.* Aug.

35. *Rhododendron extrorsum* J. J. S. Nova Guinea 18 (1936) 95, t. 19, 2; H. J. LAM, Nat. Tijd. N. I. 89 (1929) 97, f. 54 (phot.); SLEUM. *Reinwardtia* 5 (1960) 75.

Lax shrub, 0.3–1.2 m, with irregular, often tortuous branches covered with grey bark. Branchlets dichotomously ramose, terete, densely rusty-scurfy-lepidote at the tips, glabrescent and scabrous below, blackish when dry; internodes 0.8–2.3(–4) cm. *Leaves* 4–5 per pseudowhorl at the upper 2–3 nodes, with some much reduced ones scattered along the internodes, normal ones ovate, apex short-acuminate, subacute, base rounded-obtuse, coriaceous, stiff, dull light green above, light greenish yellow beneath, strongly revolute, often so to the midrib, very densely stellate-lepidote on both faces initially (scales \pm deeply irregularly lacerate in the marginal zone, not rarely incised to the minute centre, each scale shortly dendroid and on top of a distinct epidermal permanent elevation), rather early glabrescent above, less or later so beneath, finally scabrid, 1–1.6 by 0.4–0.7 cm when expanded, only 0.3–0.5 cm wide in the revolute state, midrib slightly grooved above, somewhat prominent beneath, nerves obscure; petiole stout, lepidote, 2–3 mm. *Flowers* solitary or in twos. *Perulae* ovate, acuminate, ciliolate, scaly along the dorsal middle line, glabrous otherwise, up to 1.5 by 0.5 cm. *Bracteoles* linear to linear-subspathulate, glabrous, up to 1 cm long. *Pedicels* densely rufous-lepidote, c. 5 mm by c. 1 mm. *Calyx* oblique, disk-shaped, very shortly obtusely 5-lobed, densely lepidote, c. 2.5 mm σ . *Corolla* very light lemon-yellow, nearly white, broadly funnel-shaped, 5-lobed halfway or slightly more, c. 1.9 cm long in all, tube wide, gradually dilated from 3–4 mm σ at base to 8–9 mm at the throat, subdensely covered with brown scales outside, glabrous inside, lobes somewhat spreading, wavy, obliquely suborbicular, c. 1.2 cm σ , glabrous except for some scales at the very base outside.

Stamens 10, slightly unequal, 7–8 mm; filaments linear, slightly dilated above the base, pale green, glabrous; anthers red-brown, oblong, dehiscent by distinctly backward pores, c. 1.5 mm. *Disk* obsolete. *Ovary* ovoid-conical, obtuse, c. 4 by 3 mm, densely stellate-lepidote; style abrupt with the ovary, very shortly obconical, hardly 1 mm, glabrous; stigma convex, slightly lobed. *Capsule* ovoid, densely rusty-stellate-lepidote, c. 1.2 by 0.6 cm, pedicel 8 by 1 mm.

Distr. *Malesia*: W. New Guinea (Mt Doorman).

Ecol. Open slope, also in the saddle between the summits, scattered though common, 3500 m. *Fl.* Oct.

36. *Rhododendron hellwigii* WARB. Bot. Jahrb. 16 (1892) 15, 26; K. SCH. & LAUT. Fl. Schutzgeb. (1901) 487; SCHLTR, Bot. Jahrb. 55 (1918) 157; DIELS, *ibid.* 62 (1929) 487; SLEUM. *Reinwardtia* 5 (1960) 76.

Shrub or small tree, terrestrial or apparently usually epiphytic. Branchlets 4–6 mm σ , terete, glabrous except the somewhat flattened or angular and \pm densely rufous-stellate-lepidote tips; internodes 2–8(–15) cm. *Leaves* in 3–5-merous pseudowhorls at the upper 1–2 nodes, or 2 or 3 scattered but near together at the nodes, ovate to ovate-elliptic, sometimes suborbicular, very coriaceous and firm, apex broadly attenuate and obtuse to rounded, base rounded, sometimes slightly cordate, greyish brownish above when dry, brownish beneath, rusty-stellate-lepidote on both faces initially (scales small, irregularly incised, sessile or very shortly stalked, each on top of a minute epidermal tubercle which remains visible for a long time beneath), early glabrescent above with age, rather smooth or often somewhat rough to the touch, more persistently lepidote beneath, edge not revolute, 8–13(–16) by 5–8.5(–10.5) cm, midrib grooved above in the lower half, robust, rather flat, distinctly prominent to nearly the top, nerves 8–10 pairs, rather irregular, the lowest 2 pairs from near the base of the blade, all \pm straight below, curved-anastomosing to the edge, slightly prominent on both faces, veins rather coarse, much less visible, veinlets obscure; petiole robust, a little flattened, grooved above, \pm densely lepidote, (1–)1.2–1.6 (rarely up to 2.5) cm by 3–4 mm. *Umbels* 2–3-flowered. Flower buds ovoid, 3–3.5 by 2.5–3 cm. *Outer perulae* ovate to suborbicular, inner ones broad-spathulate, obtuse or very shortly apiculate, densely covered with short, stoutish, nearly bullate hairs on both faces, glabrescent, remaining scabrous, not ciliate, up to 4 by 3.5 cm. *Bracteoles* linear to subspathulate, hairy or almost hirsute below, glabrous distally, c. 2–3.5 cm by 1–4 mm. *Pedicels* very stout, densely dark rufous-lepidote, 0.6–1(–1.3) cm by 2–2.5 mm. *Calyx* rim-like, very shortly obtusely 5–6-lobed, c. 6 mm σ . *Corolla* broadly funnel-shaped, dark blood red, rather fleshy, 6.5–7 (sometimes up to 8) cm in all, tube slightly dilated upwards and moderately curved, (4–)4.5(–5) cm long, 1–1.3 cm σ at base, 1.7–2 cm at apex, glabrous outside, densely set with short \pm retrorse

hairs inside in the lower half, lobes 6-7, somewhat expanded, broadly spatulate or obovate, (2.5-) 3-3.5 by 2.5-3(-3.5) cm. *Stamens* 12-14, unequal, slightly exerted from the throat; filaments linear (1 mm), clad with retrorse or patent hairs in their lower $\frac{2}{3}$, glabrous and filiform distally; anthers linear-oblong, 7-8 by 1.5 mm, base of each theca shortly obtusely bilobed. *Disk* glabrous, blackish when dry. *Ovary* subovoid-cylindric, c. 10 by 4-5 mm, densely covered with small flattened scales, \pm abruptly attenuate to the curved style, the latter thick, glabrous, sometimes shining, 3-3.5(-4) cm by c. 2 mm; stigma shortly thick-capitate, obscurely 5-6-lobed.

Distr. *Malesia*: E. New Guinea (Finisterre and Saruwaged Mts).

Ecol. Terrestrial on steep slopes among grasses at 1675-2100 m, mostly epiphytic in mountain or mossy forest, 1065-2440 m (also reported up to 4000 m, which seems to be less reliable). *Fl.* Jan.-May, Sept., Oct.

37. *Rhododendron superbum* SLEUM. *Reinwardtia* 5 (1960) 76; *Blumea* 11 (1961) 115; *ibid.* 12 (1963) 95; *ibid.* 12 (1964) 339; *Jahrb. Rhodod. Ges. Bremen* (1963) f. 19, non Hort. ex LAVALLEE, 1877, *nom. nud.* — *R. devrieseanum* vel aff. STONOR, *Rhodod. Yearbook* 6 (1951) 50, f. 48.

Stiff shrub, (0.5-)1.5-2(-6) m. Branchlets terete, (5-)6-7 mm ϕ , tips striate and somewhat flattened in dry specimens, densely fugaciously rusty-stellate-lepidote, older parts glabrescent, \pm scabrid; internodes 5-10 cm. *Leaves* in 4-merous pseudowhorls or scattered and \pm close together at the upper nodes, broad- or ovate-, sometimes subobovate-elliptic, very coriaceous, stiff, erect, apex broad-attenuate and very shortly acuminate or obtuse, base subtruncate-rounded or slightly cordate, \pm dark green above, slightly paler beneath, dull young ones densely covered on both faces with a golden tomentum of rather small scales (scales irregularly stellate-lacerate at the marginal zone, each on top of a distinct persistent epidermal tubercle), early glabrescent above, tardily so beneath, finally very rough on both surfaces, flat, (8-)10-12 by (4.5-)6-8 cm, midrib sulcate above in the lower part, less so apically, stout and \pm flattish beneath, c. 4 mm wide at the base, gradually narrower apically, nerves c. 8 pairs, 2 lowest nearly from the base of the blade, upper ones patently from the midrib, all rather straight below, curved before the edge and anastomosing, a little prominent on both faces, veins still less conspicuous, somewhat impressed above in fully mature leaves, slightly raised beneath, no proper reticulation visible; petioles flattened, grooved above, 1.5-2 cm by 2.5-4 mm. *Umbels* 3-5-flowered. *Perulae* ovate, subcoriaceous, reddish carmine, densely set with coarse thick hairs and rough to the touch outside, up to 5 by 3 cm. *Bracteoles* linear to linear-subspatulate, laxly hairy, up to 5 by 0.5 cm. *Pedicels* robust, densely rusty-stellate-lepidote, (0.8-)1.2-2.4 cm by 2-2.5 mm. *Calyx* oblique, cup-shaped, lepidote dorsally, 7-9 mm ϕ , lobes obtusely deltoid, manifestly

shortly fimbriate, 1.3-2 mm, sometimes much larger and petaloid. *Corolla* funnel- or widely trumpet-shaped, fleshy or waxy in texture, white to cream or very light yellow, sometimes faintly flushed with pink, and shades to deep pink towards the tube, or pink with reddish throat, outside of tube sometimes \pm uniformly pink, scented, (11-) 11.5-12.5 cm long in all, 9-10(-12) cm across the limb in dry, 13-14 cm long in fresh specimens, tube gradually dilated from the base upwards, 6.5-7.5 cm, c. 1 cm ϕ at base, 2-2.5 cm at apex, laxly lepidote or mostly glabrous outside, covered with white, \pm retrorse and rather dense hairs in the lower half inside, glabrous otherwise, lobes 6-7, \pm spreading, broadly obovate or spatulate, 4.5-5 by 3-3.5 cm, glabrous. *Stamens* 12 or 14, slightly longer than the corolla tube, unequal; filaments light green, linear, c. 1 mm wide at the base, very densely \pm patently hairy below, less so or even glabrous and narrower in the upper $\frac{1}{2}$ to $\frac{3}{4}$; anthers linear-oblong, white, 8-9 by c. 1.5 mm, thecae minutely lobulate at the base. *Disk* c. 1 mm high, glabrous. *Ovary* thickly conical-cylindric, densely clad with copper-coloured, stellate scales, c. 11 by 4 mm, not rarely abruptly narrowed to the red or green style, the latter completely glabrous, 5.5-6.5 cm by c. 2 mm; stigma capitate, 7-8 mm across in fresh specimens, obscurely 6-7-lobed. *Capsule* cylindric, shortly narrowed at both ends, widest above the middle, c. 5 by c. 1.3 cm. *Seeds* 7-8 mm including tails.

Distr. *Malesia*: New Guinea (Southern, Western, and Eastern Highlands: Mt Giluwe, Mt Sugarloaf, Yaki Valley, Minj-Nona Divide, Mt Hagen, Bismarck Mts, Marafunga above Goroka; Mt Saruwaged area).

Ecol. Generally epiphytic on the upper branches of large trees, apparently with preference just below the true moss forest level; terrestrial on Mt Michael and Mt Giluwe, in low shrub and on edge of cloud forest, (1525-)2300-3050 m. in Uinba (Minj-Nona Divide) even in fallow native gardens at 1970 m. *Fl. fr.* April-Sept.

Vern. *Marugump*, Enga, *wamp-wamp*, Mendi, *kukump*, Minj.

Note. STONOR described this as growing commonly, but individually, its huge, lily-like flowers making glowing spots of colour among the greens of the innumerable other epiphytes. The flower has an exquisite scent, reminiscent of Carnations or the Regale Lily; he thinks, that this and other high-epiphytic *Rhododendrons* with a delicious scent like *R. agathodaemonis* "are pollinated by the Lory parrots, some of which live in the moss-forests, and the more so as we know parrots to be among the few birds with a sense of smell".

38. *Rhododendron prainianum* KOORD. *Neva Guinea* 8 (1909) 187; SLEUM. *Reinwardtia* 5 (1960) 78.

Epiphytic or terrestrial shrub, up to 2 m. Branchlets terete, slender, c. 1.5 mm ϕ , few-branched, tips very densely covered with rubiginose, stellate scales, glabrescent below; internodes 2-6

cm. *Leaves* in 3-4-merous pseudowhorls, linear-lanceolate or linear, subsessile, straight or sub-falcate, apex gradually attenuate, subacute, base shortly cuneate, subcoriaceous, initially lepidote on both faces (scales stellate-incised at the marginal zone to various degree, dendroid, each scale on top of a minute epidermal persistent tubercle), early glabrescent and scabrid above, tardily so beneath, edge very slightly or not revolute, 5-10 by (0.3-)0.4-0.7 cm, midrib strongly impressed above, prominent beneath, nerves \pm obscure; petiole slender, densely lepidote, 2(-3) mm. *Flowers* solitary or mostly in twos. Perulae ovate, rostrate-acuminate, stellate-lepidote outside mainly at the apex, up to 15 by 6 mm. Bracteoles linear, laxly lepidote, 1-1.5 cm. Pedicels very slender, densely lepidote, 9-11 mm. *Calyx* cup-shaped, c. 2 mm σ , glabrescent outside, with obscure teeth. *Corolla* tubular, slightly zygomorphic, membranous, lilac, glabrous in- and outside, 2.5-2.7 cm long in all, tube cylindric, straight or slightly curved, 1.5-1.8 cm long, c. 3 mm σ at base, not more than 4 mm at apex, lobes spreading, obovate-spathulate to suborbicular, 6-8 by 5-7 mm. *Stamens* 10, 2.5-2.8 cm; filaments linear below, filiform distally, glabrous; anthers broad-oblong, 1.5 by 1 mm. *Disk* finely short-pubescent at the upper margin. *Ovary* elongate-conical, very densely rufous-stellate-lepidote, c. 3-4 by 1 mm, gradually tapering to the slender style (1.5-2 cm), which is lepidote in the lower $\frac{1}{2}$ to $\frac{1}{3}$, bearing sometimes several short hairs in the middle (practically epilose), glabrous apically; stigma short-obconical.

Distr. *Malesia*: New Guinea (Hellwig Mts; Orion Mts; Sibil R. Valley).

Ecol. On poor clayey soil, at 900-1300 m. *Fl.* May-Aug.

39. *Rhododendron stelligerum* SLEUM. *Blumea* 11 (1961) 115.

Shrub, 1-1.5 m, with sparse erect, much branched twigs. Branchlets slender, tips very densely covered with rusty stellate scales, older parts glabrescent, ashy; internodes (1.5-)3-7 cm by 1.5-2 mm. *Leaves* in 4-5-merous pseudowhorls at the upper (2-3) nodes, sublinear-lanceolate, attenuate at both ends, apex subacute, coriaceous, initially very densely clothed with rusty stellate scales, glabrescent and remaining rough to the touch above with age, more persistently lepidote beneath (scales partly covering each other, each on top of a minute, persistent epidermal tubercle, marginal zone rather wide, deeply and irregularly stellate-incised or -lacerate, ends of the laciniae filiform, centre rather large, dark chestnut brown, tapering downwards into a kind of short stem or foot), much revolute at the edge, (2-)2.5-4.5 cm long, (0.3-)0.4-0.8 cm wide in the revolute state, midrib hardly indicated above, obtuse and much prominent beneath, nerves inconspicuous; petiole very densely lepidote, 4-6 by c. 1 mm. *Flowers* 2 or 3 per umbel, rarely solitary. Flower buds ovoid-oblong, c. 1 cm; outer perulae broadly subulate, more inner ones ovate, subabruptly

narrowed into an acumen of 2-3 mm, slightly keeled and lepidote in the upper part dorsally, innermost ones ovate-oblong, obtuse, \pm glabrous dorsally, all densely lepidote-fimbriate, up to 1 by 0.5 cm. Bracteoles filiform, laxly caducously lepidote, up to 1 cm. Pedicels entirely covered with almost golden stellate scales, 1.2-1.6 cm by 0.7-1 mm. *Calyx* disk-shaped, suboblique, shortly 5-lobed (or one or two lobe(s) sometimes elongated into a narrow lacinia up to 8 mm), c. 2.5 mm σ , densely lepidote dorsally. *Corolla* tubular below, gradually subcampanulate-dilated upwards, not rarely somewhat curved, markedly zygomorphous, deep pink when fresh, magenta in dry specimens, subdensely set with golden stellate scales and \pm crisp, white hairs outside at the tube and the base of the lobes, glabrous for the rest, 3.5-4 cm long in all, tube (2-)2.5-3.2 cm long, 5-6 mm σ at base, 7-9 mm at throat, lobes erecto-patent, broadly spathulate or obovate, 0.7-1(-1.2) by 0.6-0.8 cm. *Stamens* 10, unequal, \pm long exerted from the tube, the longest attaining half the corolla lobes; filaments linear, 1 mm wide below, 0.5 mm wide in the upper part, quite glabrous; anthers obovate-oblong, 2-2.5 by 1.5 mm. *Disk* slightly prominent, glabrous. *Ovary* subcylindric, c. 5 by 2.5 mm, very densely clothed with deeply stellate-incised golden scales, but no hairs, gradually narrowed into the style, which is covered with dense or more laxly arranged scales and hairs to the lower $\frac{3}{4}$, glabrous for the rest; stigma thick-turbinate, shortly 5-lobed. *Capsule* subcylindric, slightly curved, densely stellate-lepidote, not hairy at all, 2-2.5 by 0.4 cm, splitting into 5 twisted and sub-reflexed valves. *Seeds* very narrow, almost filiform, 4 mm, long-tailed at both ends.

Distr. *Malesia*: New Guinea (Star Mts: on Mt Antares), once collected.

Ecol. In semi-alpine shrub-vegetation, 3000 m. *Fl.* July.

40. *Rhododendron neriifolium* SCHLTR. *Bot. Jahrb.* 55 (1918) 149; SLEUM. *Reinwardtia* 5 (1960) 78.

"Epiphytic shrub. Branchlets elongate, flaccid, terete, laxly foliate, densely stellate-lepidote. *Leaves* opposite, linear-lanceolate or nearly linear, apex acute, base nearly rounded, lepidote on both faces initially, glabrescent above, entire, 3.5-7 by 0.5-0.9 cm; petiole 2-3 mm. *Flowers* solitary. Perulae and bracteoles not known. Pedicels densely stellate-lepidote, up to 5 mm. *Calyx* disk-shaped, densely stellate-lepidote, very shortly 5-lobed, 2.5-3 mm σ . *Corolla* tubular, bright pinked to purplish, zygomorphous and slightly curved, rather densely stellate-lepidote outside, glabrous inside, 2.7-3.3 cm, lobed to the upper $\frac{1}{5}$, lobes suborbicular, erecto-patent. *Stamens* 10, very slender, up to 2.5 cm; filaments filiform, laxly hairy; anthers oval, c. 2 mm. *Ovary* oblongoid, densely stellate-lepidote, c. 6 mm. Style subulate, laxly hairy, 6 mm; stigma capitate, 6-gibbous."

Distr. *Malesia*: New Guinea (Schrader Mts), in mountain forest at c. 2070 m. *Fl.* May-June.

Note. Neither type material preserved nor collected; description after the original diagnosis.

41. *Rhododendron hooglandii* SLEUM. Reinwardtia 5 (1960) 75; Blumea 12 (1964) 339. — Fig. 31 b—c.

Straggling, much branched shrub, 0.7–1.8 m, also epiphytic. Branchlets densely set with stalked scales, warty and rough to the touch at the ultimate 1–2 internodes, early covered with greyish or whitish cork below; internodes 2–6(–8) cm. Leaves in 4–6-merous pseudowhorls at the upper 1–2(–3) nodes, linear, apex subobtusate, base narrowed to the petiole, coriaceous, densely covered on both faces with yellowish stalked, deeply stellate-incised scales which go early, leaving the stalks, thus making the surface of the lamina scabrous, revolute to near the midrib, (3–)3.5–5.5 cm by 2–3(–4) mm, midrib faintly impressed above, as thick as the petiole and somewhat prominent beneath, nerves not visible; petiole stoutish, densely stalked-lepidote, (4–)5–8 mm. Umbels (1–)2-flowered. Outer perulae subulate, inner ones ovate-subacuminate, almost blunt, lepidote along the dorsal middle line, glabrous otherwise, lepidote-fimbriate, 3–7 by 1–4 mm. Bracteoles filiform, minute. Pedicels rather robust, densely and exclusively clothed with yellowish stalked scales, c. 1 cm. Calyx obliquely patellar, very obtusely and shortly 5-lobed, densely set with nearly sessile scales, c. 3 mm σ . Corolla tubular, somewhat curved and zygomorphous, pinkish red, 2.8–3 cm long in all, densely covered outside with sub-stipitate or sessile, subentire to variously dented scales, glabrous inside, tube 2–2.3 cm, c. 5 mm σ at base, hardly dilated upwards, lobes broadly obovate, 5–8 mm σ . Stamens 10, as long as or slightly longer than the corolla; filaments linear, glabrous; anthers subquadrate-oblong, 1.5 by 1 mm. Disk glabrous. Ovary nearly conical, gradually tapering to the style, very densely lepidote, not hairy at all, c. 5 by 2 mm. Style red, rather slender, with some scales at the very base, glabrous for the rest, c. 2 mm; stigma subcapitate, greenish yellow, 5-lobed. Capsule c. 1.8 cm.

Distr. *Malesia*: New Guinea (Eastern Highlands: Goroka Subdistr., Kerigomma; Western Highlands: Upper Minj R. Valley, Minj-Nona Divide).

Ecol. Forest grassland edge or alpine thickets, not common, 3000–3410 m. Fl. July.

42. *Rhododendron rarum* SCHLTR. Bot. Jahrb. 55 (1918) 150; SLEUM. Reinwardtia 5 (1960) 78; Jahrb. Rhodod. Ges. Bremen (1963) f. 17; Blumea 12 (1963) 97; *ibid.* 12 (1964) 339. — Fig. 11.

Epiphytic slender shrub, up to 1 m high, much branched. Branchlets terete, 1–2 mm σ , laxly leaved, tips densely rusty-squamular-lepidote, older parts glabrescent, somewhat scabrid and early covered with greyish cork; internodes (1.5–) 3–10 cm. Leaves opposite or mostly in 3–5-merous pseudowhorls at the upper 3–4 nodes, often different in size in the same whorl, with some much reduced leaflets between them, in general larger in the lower whorls, lanceolate to ovate-lanceolate, apex gradually long-acuminate, sub-acute, base very broadly attenuate or mostly \pm rounded, subcoriaceous, rather thin, deep green

above, pale green below with brown sparse scales, densely lepidote initially on both faces (scales \pm deeply stellate-incised, \pm dendroid, each scale on top of a minute epidermal persistent tubercle), rather early glabrescent above, persistent for some time beneath, finally also glabrescent there, a little rough to the touch on both sides in later stages, slightly revolute at the margin especially towards the base, 3–7 by (0.3–)0.6–1(–1.3, rarely in part in the lowest ones up to 1.6) cm, always widest in the lower third, midrib faintly impressed above, prominent beneath, nerves obscure; petioles slender, densely lepidote, (1–)2–3 mm. Flowers solitary or in twos, sometimes in 3–4-flowered umbels. Flower buds ovoid, acute. Outer perulae spreading, subuliform, inner ones ovate, rather abruptly subulate-acuminate, ciliate, all densely but \pm fugaciously squamular-stellate-lepidote outside, glabrous inside, up to 1 by 0.6 cm. Bracteoles linear to filiform, \pm glabrous, up to 1 cm. Pedicels slender, densely stellate-lepidote, (0.7–)1–1.3 cm. Calyx small, disk-like, c. 2 mm σ , not or very shortly obtusely lobed, lepidote dorsally. Corolla (deep) pink, crimson to scarlet or blood red, tubular in the lower $\frac{2}{3}$, expanded at the limb, rather manifestly zygomorphous, (2.3–)2.5–3.5(–3.8) cm in all, tube slightly curved, (1.8–)2–2.5(–2.7) cm long, 3–4 mm σ at base, gradually widened to 6–8 mm at apex, \pm densely stellate-lepidote and epilose outside, glabrous or very laxly hairy inside, lobes broad-obovate to suborbicular, (6–)7–9 by 6–8(–9) mm. Stamens 10, unequal, well exerted from the throat, in part as long as the corolla; filaments narrow-linear, glabrous below, very laxly hairy in the middle, glabrous distally; anthers oblong, c. 2 by 1 mm. Disk glabrous or very minutely pubescent at the upper margin. Ovary subcylindric, densely stellate-lepidote, c. 6 by 2–2.5 mm, gradually tapering to the style, the latter stoutish, generally lepidote in the lower $\frac{1}{3}$ and exclusively laxly patent-hairy above to or almost to the top, rarely \pm glabrescent, \pm equalling the corolla in length not before the latter is developed; stigma clavate-capitate, obscurely 5-lobed. Capsule narrow-oblong, 3–4 by 0.4–0.5 cm, valves twisted. Seeds c. 4 mm including the tails.

Distr. *Malesia*: New Guinea (Western and Eastern Highlands: Mt Hagen, Nondugl; Bismarck Mts).

Ecol. Low epiphytic on tree trunks or rotten stumps in mountain forest, also in light moss-forest, 1585–3350 m, plentiful locally. Fl. April–Nov.

Vern. *Sezupezip*, Enga, *Kepilam, wambuberi*, Enga, *Poio, remono kire*, Kaugel.

43. *Rhododendron delicatulum* SLEUM. Reinwardtia 5 (1960) 78.

var. delicatulum.

Epiphytic shrub, 30–50 cm. Branchlets very slender, 1–2 mm σ , terete, laxly foliate, tips densely stellate-lepidote, glabrescent below; internodes 3–6 cm. Leaves in 3–4-merous pseudowhorls at the upper nodes, linear-lanceolate, apex gradu-



Fig. 11. *Rhododendron rarum* SCHLTR. Marafunga near Goroka, 2400 m, E. New Guinea (SLEUMER4137) (SLEUMER, 1961).

ally acuminate and somewhat curved, subacute, base broadly attenuate into the petiole to nearly rounded, subcoriaceous, the very young ones rather densely covered on both faces with deeply stellate-incised, sessile or shortly dendroid scales, these on top of persisting epidermal tubercles, early glabrescent and rough to the touch above, tardily so beneath, slightly revolute at the margin, (3-)4-6.5 by 0.4-0.7 cm, mostly widest below the middle, midrib sunk above, prominent beneath, nerves obsolete; petiole lepidote, c. 2 by 0.5-0.7

mm. Umbels \pm 3-flowered. Outer perulae subulate, inner ones ovate, with a subulate acumen for the ultimate 3-10 mm, rather densely stellate-lepidote dorsally, \pm glabrous internally, fimbriate, up to 2 by 0.6 cm. Bracteoles linear-subspathulate, very laxly hairy, up to 1.5 cm by 1 mm. Pedicels slender, densely rufous-stellate-lepidote, c. 1.2 cm. Calyx small, oblique, annular, membranaceous, obscurely lobed, stellate-lepidote dorsally, shortly fimbriate, c. 2 mm ϕ . Corolla tubular below, widened at the limb, somewhat zygomorphous,

pink, *c.* 2.7 cm long in all, tube 1.5–1.8 cm long, *c.* 3 mm σ at base, *c.* 6 mm at apex, equally subdensely shortly whitish hairy (but not lepidote) outside, \pm laxly hairy inside, lobes 5, suberect-patent, broadly obovate-spathulate or suborbicular, 5–7 by 5–6 mm. *Stamens* 10, almost equalling the corolla in length; filaments filiform, very laxly hairy below, glabrous distally; anthers broad-oblong, 1.3 by *c.* 0.8 mm. *Disk* very shortly yellowish hairy at the upper margin, glabrous below. *Ovary* conical-cylindric, densely dark rusty-stellate-lepidote, 5 by 1.8 mm, gradually tapering to the style, which is rather slender, as long as the corolla and covered with spreading yellowish hairs to the top; stigma subcapitate.

Distr. *Malesia*: W. New Guinea (Bernhard Camp, Idenburg R.), in mossy forest at 1800 m. Once collected. *Fl.* Jan.

var. lanceolatoides SLEUM. *Blumea* 11 (1961) 116. *Leaves* wider, ovate-lanceolate, (2.5)–3.5–5 by 0.7–1.2 cm.

Distr. *Malesia*: W. New Guinea (Star Mts), on peaty soil at 1500 m. Once collected. *Fl.* July.

44. *Rhododendron bryophilum* SLEUM. *Reinwardtia* 5 (1960) 79; *Blumea* 12 (1963) 97.

Shrub, epiphytic in high trees. Branchlets slender, 1–2 mm σ , terete, laxly leaved, tips brown, densely covered with caducous star-shaped scales, older parts glabrescent and verruculose; internodes 2–6(–8) cm. *Leaves* opposite or in 3–4-merous pseudowhorls at the upper 3 or 4 nodes, oblong, apex short-attenuate, subobtuse, base broadly attenuate or mostly subtruncate-rounded, thinly coriaceous, subdensely lepidote on both faces initially (scales minute, deeply stellate-incised and subdendroid, early caducous, each on top of a persistent epidermal tubercle), rather early glabrescent and subdensely tuberculate or scabrid, slightly or not revolute at the margin, 4–5.5 by (1–)1.3–2.2 cm, widest in the middle, midrib lepidote for a long time, very slightly sunk above, prominent beneath, nerves 4–5(–6) pairs, curved-anastomosing, faintly visible on both faces; petiole flattened, 2(–3) by *c.* 1 mm, lepidote. *Umbels* \pm 3-flowered. Perulae ovate to obovate-spathulate, apiculate or obtuse, membranous, glabrous, minutely fimbriate, up to 8 by 6 mm. Bracteoles filiform, subglabrous, up to 1 cm. Pedicels very slender, densely minutely stellate-lepidote, epilose, 10–12 by 0.4 mm. *Calyx* suboblique, small, obscurely 5-lobed, stellate-lepidote outside, *c.* 2 mm σ . *Corolla* tubular, distinctly zygomorphous, pale salmon, thin, 3.5–4 cm long, quite glabrous outside, laxly hairy at the tube inside, tube cylindrical, curved, (1.8–)2.2–2.8 cm, 4–5 mm σ at base, widened to 7 mm at the throat, lobes spatulate, 10–12 by *c.* 7 mm. *Stamens* 10, nearly equalling the corolla in length; filaments narrow-linear, glabrous immediately above the base, laxly hairy upwards, but again glabrous distally; anthers oblong, 1.8–2 by 1 mm. *Disk* very shortly hairy at the upper margin, glabrous elsewhere. *Ovary* elongate-ovoid, densely and exclusively stellate-

lepidote, *c.* 4 by 1.5 mm, gradually attenuate to the style, the latter relatively thick, laxly covered with short, subpatent hairs to nearly the top, *c.* 1.8 cm; stigma shortly club-shaped.

Distr. *Malesia*: N. New Guinea (Cycloop Mts), in forest, 1065–1830 m. *Fl.* March–June.

45. *Rhododendron tuberculiferum* J. J. S. *Med. Rijksherb.* 25 (1915) 4; *Nova Guinea* 12 (1917) 504; *ibid.* 12 (1918) t. 199 a, 203 b–f; SLEUM. *Reinwardtia* 5 (1960) 80.

Shrub, 1–1.5 m. Branchlets terete, 2–3 mm σ , tips clad with dendroid stellate scales, older parts glabrescent and densely verruculose; internodes 1.8–11 cm. *Leaves* 5–7 crowded towards the upper 2–3 nodes, or in pseudowhorls, ovate to ovate-elliptic or oblong-elliptic, rarely lanceolate, coriaceous, stiff, \pm erecto-patent, apex obtusely acuminate or obtuse, sometimes apiculate, base rounded-obtuse to slightly cordate, sessile, strongly rufous-lepidote on both faces when very young (scales \pm stellate, sessile or subdendroid, each on top of a minute epidermal permanent tubercle), early glabrescent especially above, manifestly verruculose and rough to the touch on both faces, slightly to strongly recurved at the margin, (1.7–)2–4.8 by (0.9–)1.2–2.1 cm, midrib sunk above, prominent beneath, nerves obscure; petiole densely lepidote or early verruculose, 1–4 by 1.5–2 mm. *Umbels* 2–5(–6)-flowered. Outer perulae triangular, subulate-acuminate at the apex, inner ones ovate-acuminate to spatulate and shortly apiculate or obtuse, glabrous on both sides, subdentate, up to 1.8 by 0.6 cm. Bracteoles linear, glabrous, up to 2 cm by *c.* 1 mm. Pedicels rather slender, densely lepidote, 1.5–2.5 (sometimes up to 3.2) cm. *Calyx* disk-shaped, oblique, lepidote dorsally, very shortly obtusely 5-lobed, *c.* 4 mm σ . *Corolla* \pm zygomorphous, tubular below, funnel-shaped towards the limb, red, 3.8–4.5 cm, \pm densely lepidote outside, margin of the lobes excepted, laxly hairy to the lower $\frac{2}{3}$ of the tube inside, glabrous for the rest, tube cylindrical, 2.5–3.2 cm, slightly curved, 4–6 mm σ at base, widened to \pm 8 mm at apex, lobes 5 (rarely 6) suborbicular, retuse, 9–12 mm σ . *Stamens* 10 (rarely 12), subequal, 2.8–3.5 cm; filaments linear, rather laxly hairy below, less so upwards, glabrous distally; anthers oblong, base obtuse, *c.* 3 by 1 mm. *Disk* minutely pubescent, or practically glabrous. *Ovary* elongate-conical, very densely lepidote, with some hairs between the scales in the upper part respectively at the base of the rather abrupt style, *c.* 7 by 2.5 mm. Style patently hairy at base, otherwise glabrous, *c.* 1.7 cm; stigma capitate.

Distr. *Malesia*: W. New Guinea (Wichmann and Hubrecht Mts), in open places at 3000–3100 m. *Fl.* Feb.

46. *Rhododendron asperrimum* SLEUM. *Blumea* 12 (1963) 97.

Epiphytic, sometimes scandent, divaricately branched shrub. Branchlets rather slender; internodes 3–5(–7) cm by *c.* 2 mm. *Leaves* in 3–4-merous pseudowhorls at the upper 2–3 nodes,

subsessile, ovate, apex very broadly attenuate to rounded, base a little cordate, coriaceous, covered by a tomentum of rufous dendroid stellate scales as are the branchlets and petioles initially (scales stellate-incised or -lacerate to almost the centre, the latter small, protracted downwards into a short stipe, each on top of an epidermal marked elevation), early glabrescent with age above, more tardily so beneath, rough to the touch by the persistent epidermal warts, which are paler than the blade, (2-)2.5-4(-4.5) by (1.5-)2-2.8(-3.2) cm, midrib impressed above, prominent beneath, nerves subinconspicuous on both sides, no reticulation; petiole 2 by 1.5 mm. *Umbels* (3-)4-6-flowered. *Perulae* thin, ovate to spatulate, laxly caducously lepidote or finally glabrous, up to 1.5 by 0.7 cm. *Bracteoles* linear to filiform, glabrous, c. 1 cm. *Pedicels* rather slender, very densely stellate-lepidote, not hairy, 1.1-1.5 cm. *Calyx* obliquely patellar, shortly or hardly 5-lobed, densely lepidote dorsally, 2-3 mm \varnothing . *Corolla* tubular, zygomorphous towards the limb, pink to purplish, 2.6-3 cm long in all, initially densely, later more laxly lepidote or finally \pm glabrescent outside, laxly papillose-hairy at the tube inside, tube curved, c. 2 cm long, 4-5 mm \varnothing , slightly dilated towards the throat, lobes unequal, erecto-patent, obovate-spatulate, c. 1 by 0.6 cm. *Stamens* 10, subequalling the corolla in length; filaments linear, laxly papillose-hairy in the lower half, glabrous above; anthers obovate-elliptic, base obtuse, 2 by 1.3 mm. *Disk* glabrous below, hairy at the upper margin. *Ovary* subcylindric, c. 4 by 1.5 mm, densely set with rufous stellate scales and more laxly with paler hairs, rather abrupt with the style, the latter lepidote and hairy at the very base, and exclusively laxly patently hairy in the lower $\frac{1}{4}$ (rarely glabrous even there), glabrous for the rest; stigma subcapitate.

Distr. Malesia: NW. New Guinea (Wandammen Peninsula: Wondiwoi Mts).

Ecol. Primary forest, 800-1800 m. *Fl.* March.

47. *Rhododendron dielsianum* SCHLTR, Bot. Jahrb. 55 (1918) 150; SLEUM. Reinwardtia 5 (1960) 80; Blumea 12 (1963) 97. — *R. laureola* SCHLTR, Bot. Jahrb. 55 (1918) 151.

var. dielsianum.

Epiphytic or terrestrial shrub, 0.3-0.9(-1.5) m, much branched. Branchlets erecto-patent, terete, 1.5-3 mm \varnothing , tips densely rusty-stellate-lepidote, or almost -tomentose, older parts glabrescent, rather smooth, brownish; internodes 1.5-8 cm. *Leaves* opposite or mostly in 3-4-merous pseudo-whorls at the upper 2-3 nodes, elliptic-oblong or oblong, apex short-acuminate, apiculate, subacute, base broadly attenuate into the petiole, or rarely subrotundate, subcoriaceous, densely stellate-lepidote on both faces initially (scales rather small, deeply stellate, sessile or shortly dendroid and on top of rather low persistent epidermal elevations), early glabrescent above, tardily beneath especially near or on the midrib, finally glabrescent and a little rough to the touch

on both faces, margin not or slightly revolute, 3-5.5 by (0.8-)1.2-2 (sometimes up to 2.7) cm, midrib somewhat sunk above, prominent beneath, nerves c. 6 pairs, very faintly impressed above, raised beneath, mostly subinconspicuous on both faces; petiole rather slender, (2-)3-5 mm. *Flowers* solitary or in twos, sometimes in 3(-5)-flowered umbels. Outer *perulae* subulate, inner ones ovate-subulate to ovate-apiculate, caducously stellate-lepidote in the upper half, short-fimbriate, up to 1.5 by 0.6 cm. *Bracteoles* filiform, subglabrous, up to c. 1 cm. *Pedicels* slender, densely rusty-stellate-lepidote, 1-1.3 cm at anthesis. *Calyx* slightly or not oblique, disk-shaped, densely stellate-lepidote dorsally, c. 2.5 mm \varnothing , very shortly obtusely 5-lobed. *Corolla* tubular to about $\frac{4}{5}$ of its total length, slightly curved and zygomorphous, sparsely lepidote outside, glabrous or sparsely pubescent inside, (pale) pink, (2.5-)3-3.5 cm, tube 2-2.5 cm long, slightly saccate and 4-5 mm \varnothing at the base, dilated to 8-10 mm at apex, lobes broad-spatulate to suborbicular, somewhat expanded, c. 6-8 by 5-7 mm. *Stamens* 10, unequal, the longest nearly equalling the corolla; filaments linear to filiform, glabrous or very slightly hairy; anthers c. 2 by 1 mm. *Disk* rather prominent, glabrous. *Ovary* subcylindric, densely stellate-lepidote, 5-6 by 1.5 mm, gradually tapering to the slender style, which is glabrous or lepidote at the very base only, and slightly exceeds the throat; stigma subcapitate, slightly 5-gibbous.

Distr. Malesia: E. New Guinea (Upper Sepik R. region; Kani, Finisterre and Saruwaged Mts; Kuno area: Tagan R.; once found in the SE, part near Ueli).

Ecol. Epiphyte on tall trees in ravines and wooded slopes, in dense shade, terrestrial in secondary grassland, 1200-1940 m. *Fl.* May-Sept.

Vern. Raubiu, Ueli.

var. stylotrichum SLEUM. Reinwardtia 5 (1960) 80; Blumea 11 (1961) 116.

Slender erect shrub, 1.5-3 m. *Corolla* pink. Differs from *var. dielsianum* by the style which is laxly set with short spreading hairs in its lower half.

Distr. Malesia: New Guinea (Eastern Highlands: Upper Dunantina Valley and the road between Kami and Lufa).

Ecol. Hillside secondary grasslands, at 1700-1920 m, locally common. *Fl.* Aug.

Vern. Hakessa, hongkempa, sosomepari, Asaro: Kefamo, gagin, Chimbu: Masul.

48. *Rhododendron stolleanum* SCHLTR, Bot. Jahrb. 55 (1917) 143; SLEUM. Reinwardtia 5 (1960) 80.

"Epiphytic, much branched shrub, c. 1 m. Branches and branchlets erecto-patent, terete, lepidote-tomentellous initially. *Leaves* opposite, lanceolate to lanceolate-ligulate, apex acute or obtuse, base broadly cuneate or rounded, coriaceous, sparsely brown-lepidote above, covered beneath with a brown lepidote tomentum initially, 4-8 by 1.2-3.2 cm; petiole 3-4 mm. *Umbels* 2-4-flowered. *Pedicels* slender, densely lepidote-

tomentellous, 1.3–1.5 cm. *Calyx* patelliform, very shortly and bluntly 5-lobed, c. 3 mm σ . *Corolla* tubular, 5-lobed \pm halfway, c. 2.5 cm long in all, glabrous outside, minutely puberulous inside, lilac, lobes obliquely obovate-oval, obtuse, glabrous on both faces. *Stamens* 10, c. 2 cm long; filaments filiform, sparsely puberulous or almost glabrous; anthers oblong, c. 1.5 mm. *Ovary* narrow-oblong, very densely and shortly stellate-lepidote-tomentellous, c. 8 mm including the subulate glabrous style; stigma obliquely capitate, 5-gibbous."

Distr. *Malesia*: E. New Guinea (Upper Sepik R. region: camp 'Felsspitze', c. 141° 30'–4° 10'), in low mountain forest.

Note. As the holotype specimen is lost and no isotype is preserved, the above given description is a translation of the original, rather incomplete one. The position of *R. stolleanum* both in and within *subsect. Phaeovireya* thus remains somewhat doubtful; yet most of the characters given are those of *R. dielsianum*.

49. *Rhododendron psilanthum* SLEUM. Reinwardtia 5 (1960) 81.

Shrub. Branchlets slender, c. 2 mm σ , terete, tips densely rusty-stellate-lepidote, early glabrescent and smooth elsewhere; internodes c. 6.5 cm. *Leaves* opposite or in 3-merous pseudowhorls, elliptic or oblong-elliptic, apex shortly subacutely acuminate, apiculate, base attenuate into the petiole, subcoriaceous, stellate-lepidote on both faces initially (scales minute, deeply incised, dendroid, on top of minute epidermal tubercles), early glabrescent above, tardily so beneath, but finally glabrous and somewhat rough on both faces, edge slightly revolute, 3.5–4.5 by 1.3–2(–2.2) cm, midrib a little impressed above, raised beneath, nerves inconspicuous; petiole densely lepidote, 5–6 by c. 1 mm. *Umbels* 3-flowered. Pedicels slender, very densely stellate-lepidote, 1.2–1.5 cm by c. 0.5 mm. *Calyx* minute, oblique, in form of a short cup, subentire, c. 2 mm σ . *Corolla* tubular below, dilated at the limb, slightly zygomorphic, red, completely glabrous in- and outside, 3.5–3.8 cm in all, tube c. 2.5 cm, at the base 5-gibbous and 4–5 mm σ , widened to c. 8 mm at apex, lobes expanded, broadly obovate-spathulate, 1–1.2 by 0.8–1 cm. *Stamens* 10, slightly unequal, c. 3 cm; filaments narrow-linear, glabrous; anthers obovate-oblong, c. 2.2 by 1 mm, very shortly biappendiculate at the base. *Disk* prominent, glabrous. *Ovary* subovoid-cylindric, c. 4 by 2 mm, very densely stellate-lepidote, rather abruptly attenuate into the style, the latter 2.5 cm in length, stellate-lepidote at the very base, otherwise entirely glabrous; stigma subcapitate.

Distr. *Malesia*: SW. Central Celebes (Latimodjong Range, Pintealón, spur of Mt Pokapindjang), on the ridge at 2400–2600 m. Once found. Fl. June.

50. *Rhododendron phaeochitum* F. v. M. Trans. R. Soc. Vict. n.s. 1, 2 (1889) 23; SLEUM. Reinwardtia 5 (1960) 83; Blumea 12 (1964) 339.

Epiphytic shrub, c. 1 m high, branches stout,

5–6 mm σ . Branchlets slender, about 2 mm σ , densely dark rufous-stellate-lepidote at the upper 1 or 2 internodes, glabrescent and densely verruculose or scabrid below; internodes (2–)3–8 cm. *Leaves* opposite or 3(–4) in a pseudowhorl or crowded near the upper nodes, elliptic or mostly obovate-elliptic, apex \pm rounded-obtuse, apiculate, base broadly cuneate into the petiole or rounded, coriaceous, rather stiff, initially covered with a close dark rufous tomentum of stellar scales on both faces (scales very small, deeply incised, subsessile, each on top of a minute epidermal tubercle), early glabrous and somewhat lustrous, finally smooth above, lepidote for a long time beneath, ultimately glabrescent there but remaining manifestly verruculose and rough to the touch, entire, edge slightly revolute, 4–6.5 (rarely up to 14) by 2.5–4 (rarely up to 7) cm, midrib slightly impressed above, rather stout and prominent beneath, nerves 5–6(–7) pairs, straight below only, irregularly curved-ascending and anastomosing in the upper part, faintly prominent in young, a little sunk above in fully mature leaves, prominent beneath, reticulation rather dense and conspicuous, visible on both sides; petiole densely stellate-lepidote, 5–8 by 1–1.5 mm. *Umbels* 2–4 (–5)-flowered. Perulae membranous, ovate to obovate-spathulate, \pm obtuse, glabrous, caducously fimbriate, up to 1.5 by 0.8 cm. Bracteoles linear-spathulate, subglabrous, up to 1.5 cm by 1 mm. Pedicels densely stellate lepidote (seemingly stellate-hairy), 1.4–2.5 cm by 1 mm. *Calyx* reduced to an almost annular membrane, irregularly dentate, stellate-lepidote dorsally, fimbriate, c. 3 mm σ . *Corolla* tubular below, expanded at the limb, \pm zygomorphic, pink to deep red, subdensely stellate-lepidote outside both on the tube and the base and mediane of the lobes, laxly hairy in the lower half of the tube inside, 3.5–4.5(–5) cm in all, tube slightly curved, 2–2.5(–3) cm long, 4–5 mm σ at base, widened to c. 8 mm at apex, lobes broad-obovate to suborbicular, (8–)10–15 by 8–12 mm. *Stamens* 10, slightly unequal, mostly a little exerted from the corolla; filaments linear and densely pubescent below, filiform and glabrous distally; anthers oblong, 2.5–3 by 1 mm. *Disk* \pm densely white-hairy at the upper margin. *Ovary* cylindrical, densely and exclusively rusty-stellate-lepidote, 5–7 by 2–3 mm, tapering to the stoutish style, which is nearly as long as the stamens and equally rusty-stellate-lepidote and may be very laxly hairy at least in its lower half, often to nearly the top, glabrous otherwise; stigma broadly obconical-capitate.

Distr. *Malesia*: E. New Guinea (Western and Eastern Highlands: Nondugl, Chimbu Divide, Goroka region; originally from Mt Musgrave in Central Distr.).

Ecol. Epiphytic, or terrestrial on ridges (also limestone ridges), 2135–2560 m. Fl. April–Dec.

Vern. *Tegwa*, Chimbu.

51. *Rhododendron beyerincklanum* KOORD. Nova Guinea 8 (1912) 876, t. 150; J. J. S. *ibid.* 12 (1914) 137; *ibid.* 12 (1917) 504, incl. *var. longipetiolatum*

J. J. S. *l.c.*; *ibid.* 18 (1936) 94; SLEUM. Reinwardtia 5 (1960) 81; Blumea 11 (1961) 116; *ibid.* 12 (1963) 98. — *R. dasylepis* SCHLTR. Bot. Jahrb. 55 (1918) 153, f. 4; STONOR, Rhodod. Yearbook 6 (1951) 50, f. 53. — *R. schultzei* SCHLTR. Bot. Jahrb. 55 (1918) 154. — *R. saavedranum* DIELS, *ibid.* 62 (1929) 486. — *R. chrysoplepon* SLEUM. *ibid.* 74 (1949) 540.

Slender terrestrial or epiphytic, occasionally scandent shrub or treelet, 0.5–2.5 (rarely up to 4) m, loosely branched, erect. Branchlets stoutish to rather slender, often only 1.5 mm ϕ at apex, densely to very densely covered with rusty stellate scales in form of a detersile tomentum, which goes early in the older parts, these brownish and scabrid by numerous fine tubercles; internodes 1.5–8 (sometimes up to 15) cm. *Leaves* opposite or mostly in 3–5(–7)-merous pseudowhorls, often rather variable in shape and size in the same whorl, lanceolate-oblong to oblong or obovate-oblong to elliptic, sometimes ovate or broad-elliptic, subovate or suborbicular, apex broadly gradually attenuate, apiculate, subacute or mostly obtuse, base broad-attenuate into the petiole or rounded, coriaceous or at least rather stiff, erecto-patent, very densely rufous-lepidote ('tomentose') on both faces initially (scales irregularly stellate-lacerae up to the centre, dendroid, easily removable, each on top of a minute epidermal persistent tubercle), early glabrescent and somewhat shining and scabrid above, tardily so beneath, though finally glabrescent and scabrid here too, \pm dark olivaceous green above, paler and more brownish beneath, margin mostly strongly revolute and more densely and/or more persistently stellate-lepidote than the intervenium beneath, generally (3–)4–6 by (1–)1.5–3.5 cm, occasionally up to 10 by 5 cm in the lower leaves, midrib slightly impressed above, robust and much prominent beneath, nerves (4–)5–6(–7) pairs, rather straight below, curved-anastomosing before the edge, very slightly impressed above respectively raised beneath, often inconspicuous or completely covered by the tomentum beneath, reticulation dense, visibly prominent on both faces in fully mature leaves, occasionally \pm impressed above; petiole densely stellate-lepidote, (3–)5–11 (sometimes up to 20) by *c.* 2 mm. *Umbels* 2–4(–5)-flowered. Outer perulae subulate, completely covered with rusty stellate scales, inner ones ovate-acuminate, apiculate, lepidote at the dorsal upper part only, fimbriate, up to 1 by 0.5–0.7 cm. Bracteoles linear and glabrous or caducously lepidote below, subspathulate and laxly hairy apically, up to 1 cm. Pedicels densely and exclusively rusty-stellate-lepidote, at anthesis 1–1.5 cm by 0.7–1 mm, up to 2.2 cm in fruit. *Calyx* patellar, densely stellate-lepidote, shallowly obtusely 5-lobed, 3(–4) mm ϕ . *Corolla* tubular basally, widening distally, somewhat zygomorphous, mostly pink to deep purplish pink or dark red, sometimes pale pink or cream, rarely greenish or white, densely covered with \pm caducous golden-brown stellate scales on the tube and the lower part of the lobes outside, completely glabrous inside, (2.5–)3–3.5 cm in all when dry (up to 4.5 cm when fresh!),

tube straight or slightly curved, (1.5–)2–2.5 cm long, 4–6(–7) mm ϕ at base, somewhat dilated towards the mouth, lobes erecto-patent, suborbicular, 7–10(–12) by 6–9(–11) mm. *Stamens* 10, unequal, mostly not quite equalling the corolla in length, sometimes finally exerted; filaments linear, \pm reddish, glabrous or rarely laxly hairy; anthers obovate-oblong, 2–2.5 by 1.2 mm, brown to dark red. *Disk* low, glabrous, *i.e.* epilose as far as not covered with stellate scales initially. *Ovary* elongate-conical or -subobovoid, densely stellate-lepidote, 6–8 by 2.5–3 mm, rather abruptly tapering to the stoutish style, the latter as long as the stamens and exclusively stellate-lepidote to the top at anthesis, but accrescent and glabrescent from the top backwards in later stages; stigma broad-obconical, slightly 5-lobed. *Capsule* thick-fusiform, often a little wider in the upper half, densely rusty-lepidote, 2–4 cm by 5–6 mm, crowned by the style remains. *Seeds* very narrow, tailed at both ends, 3–4 mm.

Distr. Malesia: New Guinea (Main Range from the Wissel Lakes to Mt Victoria, also in the Nassau and Bismarck Mts, and on and around Mt Saruwaged).

Ecol. Epiphytic both in mossy forest and on fern trees in grassland, terrestrial in more open mossy *Nothofagus-Podocarpus-Pandanus* forest and along banks of creeks in open alpine grassland, or on edges of *Equisetum-Carex* bog, locally common as undergrowth in openings or native rest clearings within the stunted moss forest or on (may be old) landslides, occasionally a small shrub growing on exposed cliff face, 1500–3615 m, reported from Mt Saruwaged between 3600 and 4000 m. Said to grow also on limestone. *Fl. fr.* Jan.–Dec.

Vern. Kibimume, Chimbu: Masul, *djilimp, wumbemp,* Wahgi: Minj, *wambu,* Hagen: Togoba, *kwonem,* Chimbu: Goromagua, *oganga,* Hagen: Wankl, *kume, tikoro,* Mendi, *rohn,* Enga.

Note. *R. beyerinckianum* is conceived here in a broad sense, comprising forms with larger leaves and apparently longer capsules (3–4 cm) in the mossy forest zone, and such with smaller and narrower leaves, respectively shorter capsules (2–2.5 cm) from open country above 2800 m, and forms which differ much in the colour of the corolla, ranging from pure white over light yellow and pink to (the normal) dark red, of which the paler colours generally are found in specimens with larger leaves, apparently growing at lower altitude and/or in shadowy places. The species recently has come into cultivation, *i.e.* the smaller leaved and dark red flowering form from the Western and Eastern Highlands.

Nearest to *R. phaeochitum* of which the fruit is not yet known, and possibly to be united with that species in the future.

52. *Rhododendron leptanthum* F. v. M. Trans. R. Soc. Vict. n.s. 1, 2 (1889) 24, *in obs.*; SLEUM. Reinwardtia 5 (1960) 83; Blumea 11 (1961) 116; *ibid.* 12 (1963) 98; Jahrb. Rhodod. Ges. Bremen (1963) f. 9, 10, *non* HAYATA, 1915. — **Fig. 12.** Small, rather straggling shrub, 0.5–2(–3) m,

terrestrial or epiphytic, with thick roots and pendulous branches. Branchlets rather slender, c. 1.5 mm at the densely red-brown stellate-lepidote tips, glabrescent and a little scabrid in older parts; internodes 2–12 cm. *Leaves* opposite or mostly in 3–4-merous pseudowhorls, ovate or oblong-ovate, apex gradually = shortly acuminate, subacute, base = rounded, subcoriaceous, firm, equally subdensely lepidote on both faces (scales small, deeply stellate-lacerate and short-dendroid, each on top of minute paler, often nearly white

flowered. Perulae membranous, ovate-acuminate, outer smaller ones = densely lepidote, inner larger ones glabrous, fimbriate, up to 1.2 by 0.6 cm. Bracteoles linear-spathulate, = glabrous, up to 1.5 cm by 2 mm. Pedicels rather slender, densely stellate-lepidote, 0.7–1.3 cm by 0.5–0.8 mm. *Calyx* in form of a low cup, c. 2.5 mm ϕ , very shortly obtusely 5-dentate. *Corolla* tubular, slightly zygomorphous, deep pink to salmon or carmine, (2–)2.5–3(–3.4) cm long in all, laxly to subdensely stellate-lepidote outside except a wide



Fig. 12. *Rhododendron leptanthum* F. v. M. Epiphytic shrublet, showing thick roots, Edie Creek near Wau, E. New Guinea, 1850 m (SLEUMER 4127) (SLEUMER, 1961).

tubercles beneath, the latter less distinct on the upper surface), early glabrescent above, ultimately so beneath, margin but slightly or not revolute, (2–)3–6.5(–7) by (1.3–)1.5–3(–3.2) cm, midrib impressed above, prominent beneath, nerves in 5–7 pairs, rather straight, anastomosing near the edge, slightly impressed above, somewhat raised beneath, veins laxly reticulate, mostly rather distinctly raised beneath, finer reticulation of the veinlets visible above, inconspicuous beneath; petiole 2–4 (–5) mm, densely lepidote. *Umbels* 2–3(–5)-

marginal part of the lobes, glabrous inside, tube slightly curved, 1.5–2 cm, (3–)4–5 mm ϕ at base, widened to 7–8 mm at apex, lobes broad-spathulate to suborbicular, (5–)7–10(–12) by 6–9(–12) mm. *Stamens* 10, subequalling the corolla in length, slightly unequal; filaments red when fresh, narrow-linear, glabrous or with some scattered hairs; anthers c. 1.6 by 1 mm. *Disk* glabrous. *Ovary* elongate-conical, densely rufous-stellate-lepidote, 3–5 by 1.5–2 mm, gradually tapering to the style, the latter stellate-lepidote to or almost to the top,

± as long as the stamens; stigma broadly obconical capitate. Submature capsule fusiform, curved, c. 4 cm by 3 mm, densely stellate-lepidote, on fruit-pedicle 1.5–2 cm.

Distr. *Malesia*: E. New Guinea (Morobe to Milne Bay Distr.).

Ecol. Terrestrial on rocks or dry exposed cliff face, or in opening of *Castanopsis* forest, epiphyte on big branches of high trees or fallen trunks in mossy forest on *Nothofagus*, sometimes gregarious, 1370–2250 m. *Fl.* Jan.–Oct.

Vern. *Zavi*, Gerebi: Movo.

53. *Rhododendron wariatum* SCHLTR, Bot. Jahrb. 55 (1918) 151; LANE-POOLE, For. Res. Papua (1925) 130; WHITE & FRANCIS, Proc. R. Soc. Queensl. 39 (1928) 68; SLEUM. Reinwardtia 5 (1960) 83.

Small epiphytic or terrestrial shrub, creeping on the ground, occasionally erect and up to 5 m, with lax, spreading branches. Branchlets slender, terete, the upper 1–2 internodes densely rusty-stellate-lepidote, early glabrescent and rather smooth elsewhere; internodes 1–10 cm. *Leaves* opposite or mostly in 3–4-merous pseudowhorls, elliptic or oblong-elliptic, sometimes broad-elliptic or rarely subobovate-elliptic, apex broadly attenuate, acute to nearly rounded, base ± rounded, subcoriaceous, though mostly rather firm, lepidote initially on both faces (scales deeply and irregularly stellate-incised, subsessile or short-dendroid, each on top of a minute epidermal tubercle), early glabrescent above, rather tardily so beneath, rather smooth then as the remaining tubercles are not much conspicuous, faintly or not recurved at margin, (2.5–)3–5(–7) by (1.3–)1.5–3(–4.4) cm, midrib impressed above, prominent beneath, nerves 5–7 pairs, very slightly impressed above and raised beneath, often ± inconspicuous, as are the veins and veinlets; petiole densely stellate-lepidote, mostly rather flattened, 2–5 by c. 1 mm. *Flowers* solitary, or in 2–3(–6)-flowered umbels. Outer perulae narrowly to broadly ovate-acuminate, ± densely stellate-lepidote outside, inner ones obovate-spathulate and ± glabrous, fimbriate, up to 1.5 by 0.6 cm. Bracteoles linear-subspathulate, glabrous, up to 1.2 cm. Pedicels rather slender, densely rusty-stellate-lepidote, (1–)1.2–1.5 cm by c. 0.5 mm. *Calyx* small, very shortly cup-shaped and obtusely 5-lobed, c. 3 mm ø. *Corolla* tubular basally, dilated at the limb, ± distinctly zygomorphous, waxy white with pinkish flush or pale pink to rose, 3–3.5(–4) cm in all, laxly stellate-lepidote outside, glabrous inside, tube curved, 2–2.5 cm long, c. 4 mm ø at base, dilated to c. 6 mm at throat, lobes broad-spathulate to suborbicular, 9–12 by 7–9(–11) mm. *Stamens* 10, unequal, as long as or slightly longer than the tube; filaments red, narrow-linear, glabrous or very laxly hairy; anthers broad-oblong, c. 1.5(–2) by 0.8 mm. *Disk* prominent, glabrous. *Ovary* subcylindric, densely stellate-lepidote, 5–6 by 1.5 mm, gradually attenuate to the style, the latter slender, c. 1.5 cm, stellate-lepidote at anthesis at least in the lower half, often to 4/5 of the total length, gla-

brescent distally; stigma short-obconical.

Distr. *Malesia*: E. New Guinea (Morobe to Milne Bay Distr.).

Ecol. Epiphyte in *Nothofagus* forest, also terrestrial on limestone precipices or in moss forest rest clearings and heath-like vegetation, 1065–2600 m, locally common. *Fl.* Jan.–Dec.

Vern. *Rohn*, Enga: Kepilam.

54. *Rhododendron gardenia* SCHLTR, Bot. Jahrb. 55 (1918) 158; SLEUM. Reinwardtia 5 (1960) 83.

Epiphytic or terrestrial shrub, 1–2.5 m. Branchlets terete, stout, 6–8 mm ø, glabrous and pruinose in the older parts, fugaciously rusty-stellate-lepidote at the tips; internodes 15–20 cm. *Leaves* opposite or ± in 3(4–)-merous pseudowhorls at the upper 2 nodes, patent, elliptic or oblong-elliptic, rarely subobovate-elliptic, apex shortly obtusely acuminate, not rarely rounded or a little retuse, base broad-attenuate into the petiole to rounded, very coriaceous, stiff, subdensely lepidote initially on both faces (scales minute, ± deeply stellate-lacerate and ± manifestly dendroid, each on top of a paler minute epidermal elevation), early glabrescent and rough to the touch by the persistent tubercles on both sides, especially beneath, slightly or not revolute at the narrowly cartilaginous margin, 8–15 by 5.5–9 cm, midrib robust in the lower half of the blade, and ± impressed above, very prominent beneath, flattish and wrinkled in dry specimens, nerves 8–10 pairs, ± straight below, curved and indistinctly anastomosing before the edge, very slightly prominent on both faces or somewhat sunk above, often becoming inconspicuous towards the edge, no proper reticulation visible; petiole lepidote initially, 2–3(–4) cm by 2.5–4 mm. *Umbels* 3–4-flowered. Bracteoles linear, laxly hispid-hairy, up to 2.5 cm by 2 mm. Pedicels stout, cylindric, densely covered with rufous sessile scales, moreover laxly hispid-hairy in the upper part and more densely so immediately below and at the calyx, 1–1.5(–2) cm by 2–2.5 mm. *Calyx* oblique, cup-shaped, lepidote and hirsute outside, ± glabrous inside, 8–10 mm ø, irregularly obtusely 5–8-lobed, lobes ciliate, 2–3 mm. *Corolla* funnel-shaped, snow-white or suffused with pink especially at the tube, rather fleshy, fragrant, 10–11 cm long and across the limb, tube straight, c. 5 cm long, 8–10 mm ø at base, gradually dilated to 1.5–2.5 cm at apex, glabrous outside, ± densely clothed with retrorse whitish hairs in its lower half to 3/4 inside, lobes 5–8, spreading, broadly obovate-cuneate, 5–6 by 3–4(–5) cm, glabrous. *Stamens* 10–16, slightly unequal, c. 7 cm long at full anthesis; filaments linear and densely patent-hispid-villous below, glabrous and filiform distally; anthers linear-oblong, 10–12 by 1.5 mm, base obtuse. *Disk* prominent, very densely hairy. *Ovary* oblongoid-cylindrical, densely covered with subappressed, yellowish, ± stiff hairs, which cover completely the numerous scales, c. 1.3 cm by 5 mm, rather abruptly attenuate to the robust style, which is glabrous except some hairs at the very base, c. 6 cm by 1.5 mm; stigma large, subcapitate,

obtusely 5-8-gibbous, c. 4 mm σ .

Distr. *Malesia*: New Guinea (Sepik R. region and Bele R. Valley 25 km NE. of Lake Habbema).

Ecol. High epiphyte in forest, but also a terrestrial shrub in sandy openings in mossy forest on crest of mountain ridge, 1400-2300 m. Fl. June-July, Oct.-Nov.

55. *Rhododendron thauasianthum* SLEUM. *Blumea* 12 (1963) 98. — *R. magnificum* SLEUM. *Reinwardtia* 5 (1960) 84, non F. K. WARD, 1935.

Shrub, apparently epiphytic. Branchlets flattened at the ultimate internodes (10 cm), densely covered with fugacious rusty-stellate scales, glabrescent. Leaves laxly scattered in the upper half of the upper internode, the highest 2 leaves opposite or 3 in a pseudowhorl, elliptic or subovate-elliptic, thick-coriaceous and rigid, apex nearly rounded, base subtruncate-rounded, very young ones lepidote on both sides (scales small, stellate-lacerate, dendroid, each on top of a distinct epidermal tubercle), early glabrescent above, tardily so beneath, at full maturity very densely set with pale tubercles, and correspondingly very rugose or scabrid on both surfaces, edge \pm manifestly revolute, 8-13 by (4-)5-7 cm, midrib as thick as the petiole below, gradually narrower towards the apex of the lamina, slightly impressed above, prominent beneath, nerves c. 8 pairs, rather straight and markedly raised below, \pm evanescent upwards on both sides, no proper reticulation; petiole a little flattened, grooved above, 2-2.5 cm by 3-4 mm, densely lepidote respectively finally verruculose. Umbels 3-5-flowered. Outer perulae ovate, obtuse, scabrid by numerous \pm bullate, stiff, short hairs in- and outside, c. 2 by 1-1.5 cm, middle ones obovate, 2.5-4 by 2-3 cm and equally rough, innermost ones spatulate, clad with longer, stiff and \pm appressed hairs at the base dorsally, minutely tubercled upwards, 4-7 by 2.5-3 cm. Bracteoles linear-spathulate, c. 5 cm long, c. 2 mm wide at the apex, subdensely hispidulous. Pedicels densely rusty-stellate-lepidote, not hairy at all, (6-)10-15 by 2-2.5 mm. Calyx annular, membranous, very short, wavy, obscurely lobed, lepidote outside, glabrous inside, lobes very laxly and shortly whitish ciliate. Corolla funnel-shaped, fleshy, colour not known (white or pinkish?), laxly stellate-lepidote at the tube outside, rather densely clad with retrorse hairs in the lower half of the tube inside, c. 9 cm long in all, tube rather straight, c. 5 cm long, c. 0.8 cm σ at base, dilated to c. 1.5 cm at apex, lobes 7, obovate-spathulate, c. 4 by 2-2.5 cm. Stamens 14, 7-8 cm long; filaments linear and densely \pm patently subvillos below, more laxly hairy upwards, glabrous distally; anthers linear-oblong, 10-11 by 1.5 mm, base obtuse. Disk densely white-hairy. Ovary cylindrical and densely hairy and lepidote below, constricted upwards in form of a bottleneck and exclusively lepidote there, c. 2 mm long, c. 5 mm σ below, 2.5 mm σ in the upper part. Style seemingly abrupt with the ovary due to the thick lepidote "tomentum" at its very base, but really gradually continuing the ovary, completely

glabrous above the base, blackish when dry, c. 6.5 cm; stigma thick-capitate, 7-lobulate.

Distr. *Malesia*: New Guinea (Wissel Lakes), once found.

Note. Similar to *R. konori*, but style completely glabrous.

56. *Rhododendron konori* BECC. *Malesia* 1 (1878) 200; SLEUM. *Reinwardtia* 5 (1960) 85; *Blumea* 11 (1961) 116; *ibid.* 12 (1963) 98; *Jahrb. Rhodod. Ges. Bremen* (1963) f. 14, 38. — *R. tovernae* F. v. M. *Vict. Nat.* 1 (1884) 101, *reimpr.* *Gard. Chron.* 22 (1884) 712, f. 127; *Descr. Not.* 4 (1885) 12; STEIN, *Jahresber. Schles. Ges. Vaterl. Cult. f.d. Jahr 1885* (1886) 412; SLEUM. *Reinwardtia* 5 (1960) 119; *Blumea* 11 (1961) 117. — *R. devrieseanum* KOORD. *Nova Guinea* 8 (1909) 185; *ibid.* 8 (1912) 876, t. 151; J. J. S. *ibid.* 12 (1914) 141 ('*devriesianum*'); GIBBS, *Arfak* (1917) 170; KANEH. & HATUS. *Bot. Mag. Tokyo* 56 (1942) 478. — *R. devrieseanum ssp. astrapiae* FOERSTER in Fedde, *Rep.* 13 (1914) 224. — *R. astrapiae* FOERSTER ex SCHLTR, *Bot. Jahrb.* 55 (1918) 160. — Fig. 13, 14.

Shrub, (0.5-)1-2(-4) m, or treelet, 2-4(-6) m, stems mostly few, 2.5-8 cm σ , terrestrial or epiphytic. Branches few, suberect, up to 4 cm across. Branchlets robust, terete, 3-9 mm σ , the upper 1 or 2 internodes caducously stellate-lepidote, lower parts glabrescent, somewhat rough to the touch, finally smooth, often pruinose in dry specimens; internodes 6-20 cm, sometimes with several, much reduced scattered early caducous leaflets. Leaves scattered in the upper third of the upper 1 or 2(-3) internodes, rather close together, sometimes crowded into 3-5-merous pseudowhorls, elliptic or oblong-elliptic, more rarely oblong or ovate-oblong, apex shortly subacuminate-attenuate, rather blunt, often rounded, base broadly attenuate to rounded, more rarely subcordate, coriaceous and stiff, dark green above, yellowish green beneath, densely covered with a rufous detersile tomentum on both faces when young (scales deeply stellate-lacerate, \pm dendroid, each on top of a paler permanent epidermal tubercle), \pm glabrescent at maturity on both sides, the midrib excepted, which remains lepidote for a long time, \pm rough or even scabrid to the touch on both sides, margin slightly or not revolute, (7-)10-18(-21) by (4-)5-8(-9, sometimes up to 12) cm, midrib as stout as the petiole at base, rather flat or even slightly impressed in its middle above, strongly prominent in the lower half beneath, nerves (7-)8-10(-12) pairs, rather straight and marked below, curved and less visible towards the edge, \pm anastomosing, slightly impressed above in fully mature leaves, somewhat raised beneath, often rather obscure on both faces, reticulation \pm inconspicuous; petiole \pm semiterete, densely lepidote, rough in later stages, (1-)1.5-3(-3.5) cm by (2-)3-4(-5) mm. Umbels (3-)5-8(-12)-flowered. Flower buds ovoid, 5-8(-11) by 3-4(-5) cm. Outer perulae ovate, inner ones oblong-ovate to obovate-spathulate, \pm scabrid outside by minute stiff bullate hairs or their remaining warty bases, up to 7.5 by 3 cm, often

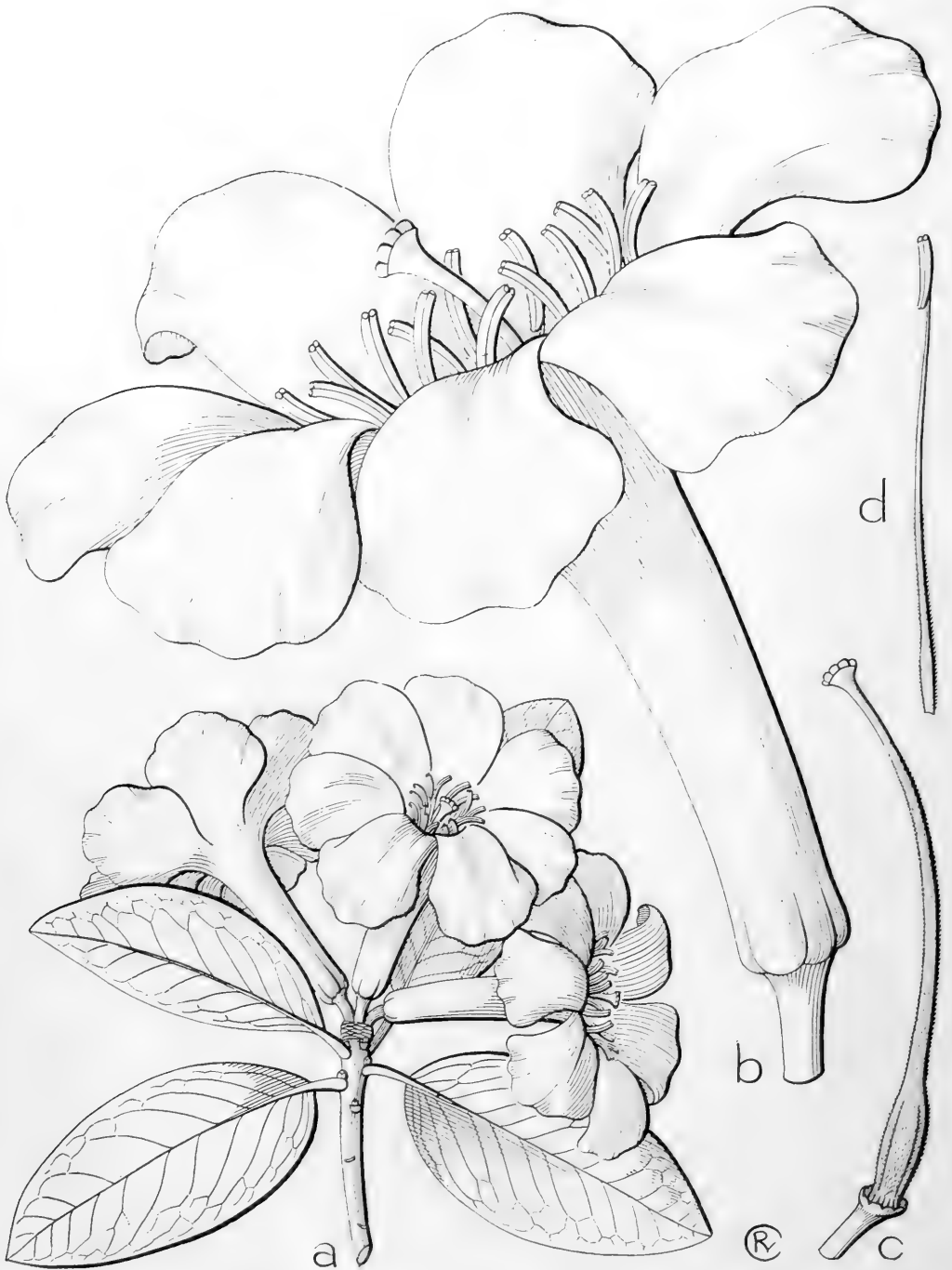


Fig. 13. *Rhododendron konori* BECC. a. Habit, $\times \frac{1}{3}$, b. flower, $\times 1$, c. ovary and style, $\times \frac{2}{3}$, d. stamen, $\times \frac{2}{3}$ (a-d CRUTTWELL 1010 and a drawing made by him from a fresh specimen).

of a dull carmine colour outside, sometimes more pinkish. Bracteoles linear-spathulate, often lacerate distally, subdensely hairy, white, up to 5 cm by 1-2(-4) mm. Pedicels densely rufous-stellate-lepidote, and whether or not hairy below the calyx, (4-)6-15 by 2.3(-4) mm. *Calyx* rather manifestly oblique, patelliform, shortly (1-2 mm) irregularly and obtusely (6-)7-lobed or -dented, one or the other lobe sometimes up to 1.5 cm, stellate-lepidote dorsally and often set with some stiff hairs, whitish ciliate or fimbriate, 6-9(-10) mm across. *Corolla* tubular below, funnelform-expanded towards the lobes, fleshy, pure white, often pinkish in later stages especially distally, or sometimes pale to rather deep pink from the beginning, or pinkish only at the sinuses to the lobes, with a sweet fragrance of carnations especially at night, (8-)9-14(-16) cm long in all when dry, 12-16(-17, rarely up to 19) cm long when fresh, variable in length probably due to growing going on during anthesis, provided with some sparse stellate scales at the tube, or completely glabrous outside, \pm densely covered with whitish retrorse hairs in the lower half of the tube inside, tube cylindrical, or sometimes slightly 7-angled, (6-)7-8 (-11) cm long, 0.6-1(-1.5) cm ϕ at base, widened to (1-)1.5-2 cm at apex, lobes 6 or 7, spreading, obovate-spathulate to suborbicular, often sinuous distally, (3.5-)4-5(-7) by (2.2-)2.5-4(-5) cm in dry, 5-8 by 4-6 cm in fresh specimens. *Stamens* 12 or 14, unequal, mostly exerted for 1-2 cm from the tube; filaments densely hairy and linear below, glabrous and almost filiform in the upper third; anthers orange or yellowish, linear-oblong, (8-)10-11(-13, rarely up to 16) by c. 1.5 mm. *Disk* densely white-hairy. *Ovary* subcylindric, somewhat attenuate towards the base, densely clad with yellowish, stiff, \pm forward directed hairs which cover numerous scales, 10-15 by 4-5(-7) mm, rather abruptly attenuate to the thick style, the latter white to reddish, 4-6(-8.5) cm first, accrescent rapidly during and still after anthesis, attaining almost the length of the corolla in later stages, \pm densely hairy and laxly stellate-lepidote in the lower half, gradually more lepidote and less hairy in the following $\frac{1}{4}$, finally exclusively, \pm caducously lepidote for some mm, glabrous in the distal $\frac{1}{5}$ to $\frac{1}{4}$ part. *Stigma* yellow, capitate, shortly 6- or 7-lobed, 5-7 mm ϕ . *Capsule* \pm fusiform, 6-9(-12) by 1.2-1.5(-1.8) cm, widest a little below the middle, gradually attenuate to the apex, rough by the remaining hairs and numerous minute tubercles, topped by the persistent style, which attains (4.5-)5.5-9 (sometimes even 15) cm, the stigma lobes up to 2 by 1 mm then. *Fruit-pedicel* 2-3 cm by 3-4 mm. *Capsule* finally splitting from the top in form of ligneous, irregularly twisted walls, of which the outer part has gone before. *Seeds* narrow-fusiform, flattened, 6-8(-10) mm including the tails at both ends, c. 0.03 mm wide.

Distr. Malesia: New Guinea (Tamrau, Nettoti and Arfak Mts in the Vogelkop Peninsula, from Mt Genofa near Kaimana, Wissel Lakes area, Hellwig and Star Mts, Upper Sepik R. region,

Western and Eastern Highlands and on and around Mt Saruwaged, in the SE. known as far as the Maneau Range) and Fergusson I.

Ecol. Epiphytic in montane forest, terrestrial as substage in *Nothofagus* and *Castanopsis-Quercus* forest and forest edge of clearings, in open fern regrowth (there found often with smaller flowers and fruits), on burned open summits, also on peat bogs, swamps or marsh, generally on poor clayey soil or humus, 750-2400(-2500) m. *Fl.* Jan.-Dec.

Vern. Soksai kokohugwe, Arfak, *tejai*, Hattam, *wagadei*, *waradé*, Kapauku, *wennieran*, Arguni, *wayam*, Maneau Ra.

Note. *R. konori* has been recently introduced into horticulture from various places in New Guinea, especially from the Arfak Mts, where it grows in abundance around the Anggi Lakes. It apparently hybridizes there locally with *R. asperum*, which is often found on the same places. Such hybrids have smaller, 6- or 7-merous corollas and more ovate and more shortly petioled leaves than are found in typical *R. konori*. It is possible that most or all forms of *R. konori* in the Arfak Mts with such smaller corollas and smaller fruits are due to introgression of *R. asperum*, though the leaves may be typical *R. konori*. In one place with abundant *R. konori* and 248. *R. laetum*, I found a fruiting specimen which was apparently intermediate in leaves (apex more pointed, midrib red: *laetum* characters), in the epidermal tubercles of the leaves (less prominent than in *R. konori*) and in the fruit (shorter, and more densely hairy than in *R. konori*).

57. *Rhododendron phaeopeplum* SLEUM. Reinwardtia 5 (1960) 92; Blumea 12 (1963) 99; Jahrb. Rhodod. Ges. Bremen (1963) f. 40.

Terrestrial shrub. Branchlets terete, 3-5 mm ϕ , densely rusty-stellate-lepidote at the upper internodes, glabrescent otherwise and densely papillate-verruculose, rather smooth to the touch, often pruinose in dry specimens; internodes 3-10 cm. *Leaves* in 3-5-merous pseudowhorls at the upper 1-2 nodes, elliptic or ovate-elliptic, apex broad-attenuate, obtuse to nearly rounded, apiculate at the very top, base generally obtuse or rounded, not rarely slightly cordate, thick-coriaceous, very stiff, erecto-patent, very young ones densely rusty- or brown-lepidote (scales irregularly stellate-lacerate, nearly squamular, the segments ending in something like a hair, each subsessile on top of an epidermal tubercle, which persists for a long time beneath), mature ones olivaceous, dull, \pm glabrescent, often rather smooth above, rusty-brown and covered with a thick detersile tomentum of star-shaped scales (no proper hairs!) beneath, finally glabrescent also there and very densely tubercled and scabrid, distinctly revolute at the margin in dry specimens, 4-7(-10) by (2-)2.5-4.5 (-5) cm, midrib \pm flat, dilated and a little raised in the lower part, very slightly impressed in the middle, evanescent towards the top of the lamina above, very stout below as a continuation of the petiole, gradually decreasing upwards beneath,



Fig. 14. *Rhododendron konori* BECC. Mt Sensenemés, 2550 m, Anggi Gigi Lake, Arfak Mts, NW. New Guinea (SLEUMER, 1962).

nerves 8-10 pairs, lower ones irregular, upper ones rather straight, \pm raised above, nearly inconspicuous beneath in fully mature leaves, reticulation absent; petiole somewhat flattened above, lepidote, (5-)-8-12(-20) by 1.5-3 mm. *Umbels* 4-6-flowered. Perulae rigidly membranaceous, outer ones ovate, \pm obtuse, laxly lepidote dorsally and puberulous below, c. 2 by 1.5 cm, inner ones oblong-spathulate, \pm densely shortly subsericeous-hirsutulous on both faces, ciliate, up to 4 by 1.5 cm. Bracteoles linear to linear-spathulate, very laxly pubescent, up to 4 cm by 1-3 mm. Pedicels very densely rusty-stellate-lepidote, whether or not with some hairs immediately below the calyx, 1.2-2.3 cm by 1.5-2 mm at anthesis. *Calyx* oblique, disk-shaped, 4-5 mm σ , wavy and shortly obtusely 5-6-lobed, ciliate. *Corolla* narrowly funnel-shaped, scented, white or pinkish, 6-7 (rarely up to 8) cm long in dry, (7-)-8-9 cm in fresh specimens, tube very laxly stellate-lepidote or entirely glabrous outside, densely set with longish, retrorse hairs in the lower $\frac{3}{4}$ inside, \pm straight, 4-4.5 cm long, 5-8 mm σ at base, c. 1.5 cm at throat, lobes 6 or 7, spreading, broadly obovate-spathulate, (2-)-3.5(-4.5) by 1.8-2.3(-3) cm. *Stamens* 12 or 14, unequal, \pm equaling the tube; filaments linear, densely patently yellowish hairy below, more laxly so and slender upwards, glabrous and filiform at the top; anthers oblong, 6(-7) by 1 mm, base obtuse. *Disk* low, laxly to densely pubescent. *Ovary* nearly fusiform, gradually attenuate to the style, c. 10 by 3.5 mm, very densely clothed with yellowish, forward directed, stiff hairs, which \pm cover the scales. Style \pm as long as the stamens, thick and longitudinally 12- or 14-ribbed below as is the ovary, densely hairy and lepidote there (the scales well visible), upwards almost exclusively clad with dark rusty or brown stellate scales and a few or practically no hairs for c. 2 mm, more slender and quite glabrous for about 10 mm below the thick-capitate, 6-7-gibbous stigma. *Capsule* fusiform, densely hairy and lepidote, (4-)-5-6 by 1 cm, crowned by the 4-5 cm long style.

Distr. *Malesia*: New Guinea (Wissel Lakes region and Arfak Mts, above the Warjori R.).

Ecol. Heathland and open, fern-covered crest within the *Nothofagus-Castanopsis* forest, 1300 m.

Note. *R. phaeocephalum* is something like a small edition of *R. konori*, and possibly in the Wissel Lakes region a hybrid of *R. konori* with a related species of the same subsection with smaller flowers, may be 72. *R. rappardii*. Above the Warjori R., part of the specimens I found matched the type from the Wissel Lakes almost completely, but others had petioles up to 2 cm long, larger and usually less cordate leaves, and less densely hairy perulae. All specimens had 6- or mostly 7-merous, pure white flowers. Quite a number of natural, \pm intermediate hybrids with the 5-merous, orange-red flowered 255. *R. zoelleri*, which is abundant on the same place, showed pale pink, 5- and 6-merous corollas on the same specimen, longer, more acuminate, thinner, \pm glossy leaves, on which the epidermal tubercles are much less

distinct than in the species of *subsect. Phaeovireya* in general, and longer, more slender pedicels. A few specimens of *R. zoelleri*, typical besides white corollas with yellowish hue all over or at least at the tube, found in the same place, are probably due to a slight introgression of *R. phaeocephalum*. Up to now, such "white" *R. zoelleri* had not yet been found despite the fact that it is one of the widespread and much collected species in New Guinea.

58. *Rhododendron opulentum* SLEUM. Reinwardtia 5 (1960) 85.

Epiphytic shrub, 1 m. Branchlets subterete, tips densely rufous-stellate-lepidote, older parts glabrescent and scabrid by minute tubercles; internodes 10-20 cm. *Leaves* laxly alternate in the upper half of the apical internodes, oblong-elliptic or broad-oblong, coriaceous, apex short-acuminate, subacute or subobtuse, base very broadly attenuate to rounded, the very young ones \pm densely rufous-lepidote above and beneath (scales minute, deeply stellate-incised, short-dendroid, each on top of a minute pale epidermal tubercle, the proper scale going early), mature ones glabrescent except the midrib, densely minutely tubercled and very rough to the touch, margin but slightly wavy or revolute, 6-10 by 3-4 cm, midrib rather stout, flattened, a little raised and sunk in the lower part above, well prominent beneath, nerves c. 10 pairs, rather dense together, irregular, \pm straight below, anastomosing near the edge, slightly prominent on both surfaces, veins laxly prominent-reticulate, finer reticulation of the veinlets rather obscure; petiole \pm flattened, c. 1 cm by c. 2.5 mm, densely lepidote, rough in later stages. *Umbels* 7-8-flowered. Middle and inner perulae spatulate, densely whitish subsericeous-hirsute in- and outside, up to 4.5 by 2 cm. Bracteoles linear, very densely subappressedly whitish hairy, up to 3 cm by 2 mm. Pedicels densely appressed-hairy and laxly fugaciously stellate-lepidote, 8-10 by c. 1.5 mm. *Calyx* very oblique, annular, obscurely 5-6-lobed or -dentate, densely hairy and lepidote dorsally, c. 4 mm σ . *Corolla* elongate-tubular below, expanded at the 5 lobes, fragrant, pink at the tube, shading to white at the lobes, 9-10 cm long in all, 4-5 cm σ at the limb, glabrous outside, rather densely clothed with longish retrorse hairs at the tube up to almost the throat inside, tube cylindrical, 6-7 cm long, 4-5 mm σ at base, gradually dilated to c. 8 mm at apex, lobes broadly obovate to suborbicular, 2.5-3 by 1.8-2.5 cm, glabrous. *Stamens* 10, exceeding the tube for c. 1 cm; filaments linear and densely set with retrorse hairs below, more laxly hairy upwards, filiform and glabrous in the ultimate $\frac{1}{4}$; anthers elongate-oblong, base obtuse, c. 6 by 1.2 mm. *Disk* white-hirsute. *Ovary* elongate-cylindrical, very densely stellate-lepidote and \pm laxly short-hairy (the hairs \pm hidden by the scales), 10-12 by c. 2.5 mm, gradually attenuate to the style, the latter 5-6 cm long, rather thick below, very densely stellate-lepidote and epilose to the lower 3-4 cm, more slender and completely glabrous for the rest; stigma large, capitate, manifestly 5-gibbous.

Distr. *Malesia*: W. New Guinea (Bernhard Camp, Idenburg R.), once found as a frequent epiphyte on large trees in mossy forest at 1800 m. *Fl. Jan.*

59. *Rhododendron spondylophyllum* F. v. M. Trans. R. Soc. Vict. n.s. 1, 2 (1889) 23; SLEUM. Reinwardtia 5 (1960) 86.

Shrublet. Branchlets slender, 1–1.5 mm ϕ , tips densely lepidote, elsewhere densely finely verrucose and scabrid; internodes 3–6 cm. *Leaves* in 3–4-merous pseudowhorls at the upper 1–2 nodes, ovate, apex shortly obtusely acuminate, base slightly cordate, \pm sessile, coriaceous and stiff at maturity, glabrous and densely verruculose above, densely lepidote for a long time beneath at least near the midrib (scales coarsely and irregularly incised at the margin, dendroid, each on top of a small permanent lighter tubercle), finally glabrescent and very rough beneath too, margin sub-revolute, (1.6–)2–3 by 1.2–1.7 cm, midrib manifestly grooved above, prominent beneath, nerves \pm obscure; petiole 0.5–1 by 1 mm. *Umbels* 3-flowered. Pedicels densely set with dark brown, short-dendroid, star-shaped, squamular scales, 6–8 by 0.7 mm. *Calyx* reduced to a narrow membrane, lepidote and very laxly hairy dorsally, obscurely 5-lobed, c. 2.5 mm ϕ . *Corolla* cylindrical below, expanded at the limb, somewhat zygomorphous, 2.5–2.8 cm in all, colour not known (probably pink or red), tube 1.8–2 cm long, laxly lepidote and sometimes very sparsely hairy outside, laxly \pm retrorsely hairy in the lower $\frac{2}{3}$ inside, c. 4 mm ϕ at base, c. 6 mm at throat, lobes broadly spatulate to suborbicular, lepidote outside in the lower half, glabrous otherwise, \pm 8 mm ϕ . *Stamens* 10, nearly as long as the corolla; filaments linear, laxly patent-hairy in the lower half; anthers broad-oblong, 2 by 1 mm. *Disk* almost glabrous. *Ovary* conical, yellowish tomentose (hairs covering the scales), c. 4 by 2 mm, gradually attenuate to the rather slender style, which is densely yellowish hairy (with sparse scales) in its lower $\frac{2}{3}$ to $\frac{3}{4}$, glabrous distally, and up to 1.2 cm long; stigma rather small, turbinate.

Distr. *Malesia*: New Guinea (Mt Knutsford, Owen Stanley Range), once found.

60. *Rhododendron melantherum* SCHLTR, Bot. Jahrb. 55 (1918) 152; SLEUM. Reinwardtia 5 (1960) 86.

“Epiphytic shrublet, c. 50 cm, much branched. Branchlets erecto-patent, densely foliate, terete, densely rufous-lepidote in the young parts; internodes short. *Leaves* opposite, elliptic, subsessile, apex obtusely acuminate, base cuneate, \pm laxly rufous-stellate-lepidote beneath, glabrescent above, 2.4–4 by 1.2–1.7 cm; petiole rufous-lepidote, 2–4 mm. *Flowers* solitary. Pedicels slender, densely rufous-lepidote, c. 1.5 cm. *Calyx* rufous-lepidote, very shortly 5-lobed, c. 2.5 mm ϕ . *Corolla* tubular, manifestly zygomorphous, dark blood red, slightly curved and dilated to c. 1 cm ϕ at apex, sparsely puberulous outside, glabrous inside, 2.7 cm long in all, lobes obovate-suborbicular, truncate-obtuse,

c. 7 mm ϕ . *Stamens* 10, c. 2.3 cm; filaments filiform, sparsely hairy; anthers oblong, blackish red, 2.5 mm. *Ovary* oblongoid, slightly 5-grooved lengthwise, densely rufous-tomentellous. Style filiform, shortly finely hairy, almost attaining the stamens in length; stigma capitate, 5-gibbous.”

Distr. *Malesia*: New Guinea (Schrader Mts), once found in mountain forest at c. 2070 m. *Fl. June.*

Note. No type material preserved; description after the original diagnosis.

61. *Rhododendron cyatheicolum* SLEUM. Reinwardtia 5 (1960) 86.

Epiphytic shrub, 30–40 cm; branches rigid. Branchlets terete, 2–5 mm ϕ , tips stellate-lepidote, older parts glabrescent and densely verruculose; internodes 3–8 cm. *Leaves* in 3–5-merous pseudowhorls at the upper 2 nodes, ovate, subsessile, apex broadly attenuate, obtuse, base rounded or subcordate, coriaceous, rigid, the very young ones very densely rufous-stellate-lepidote (scales rather small, subsessile or short-dendroid, very early caducous), yellowish beneath, scabrid by numerous minute whitish tubercles beneath, less so or rather smooth above, edge \pm manifestly revolute, 3–4.2 by 2–2.5 cm, midrib slightly sunk above, prominent beneath, more stoutish towards the base, nerves c. 6 pairs, rather inconspicuous above, somewhat raised beneath, reticulation not visible; petiole 1–2 by c. 2 mm. *Umbels* 4–5-flowered. Perulae membranous, outer ones ovate, apiculate, with a prominent dorsal rib, lepidote at the apex outside, glabrous otherwise, fimbriate, inner ones ovate-oblong to obovate or truncate-spathulate, glabrous, up to 1.5 by 0.8 cm. Bracteoles narrow-linear below, subspathulate at the apex, up to 1.5 by 0.1 cm, laxly hairy. Pedicels densely stellate-lepidote, not hairy at all, 1.5–2 cm by 0.8 mm. *Calyx* disk-shaped, very shortly obtusely 5-lobed, wavy, lepidote and laxly hairy dorsally, ciliate, 4–5 mm ϕ . *Corolla* broad-tubular, somewhat zygomorphous, pink, 4–4.5 cm, minutely stellate-lepidote and with some hairs here and there outside, the margin of the lobes excepted, laxly sub-patently hairy at the tube inside, tube a little curved, c. 3 cm long, 5–6 mm ϕ at base, dilated to 10 mm at apex, lobes obovate, erect-spreading, 1–1.2(–1.3) by 0.8–1 cm. *Stamens* 10, \pm as long as the corolla; filaments linear below, rather densely hairy in the lower third, glabrescent and filiform distally; anthers subobovate-oblong, 3 by 1 mm, base very shortly biappendiculate. *Disk* glabrous. *Ovary* ovoid-conical, densely yellowish hairy (hairs \pm strigose, directed forward, \pm covering the scales), 5–6 by 3–4 mm, rather abruptly attenuate to the style, the latter thickish, densely hairy and laxly lepidote below, upwards more laxly hairy and lepidote, the ultimate glabrous 6–8 mm excepted, as long as or a little longer than the corolla; stigma capitate.

Distr. *Malesia*: New Guinea (Wharton Range, Murray Pass), once collected; common epiphyte on grassland tree-ferns, at 2840 m. *Fl. June–Sept.*

62. *Rhododendron asperum* J. J. S. Nova Guinea 12 (1914) 137, t. 34; KANEH. & HATUS. Bot. Mag. Tokyo 56 (1942) 478; SLEUM. Reinwardtia 5 (1960) 87; Blumea 12 (1963) 99; Jahrb. Rhodod. Ges. Bremen (1963) f. 36. — Fig. 15.

Terrestrial shrub, 0.5–1(–2) m. Branchlets stoutish, tips flattened or obtusangular, densely stellate-lepidote, terete in the lower parts, 2–4 mm ϕ , densely verruculose and rough to the touch; internodes 3–10 cm. *Leaves* in dense 5–10-merous pseudowhorls at the upper 2–3 nodes, ovate or elliptic or suborbicular, sometimes obovate-elliptic, subsessile, apex obtusely or mostly rounded, base

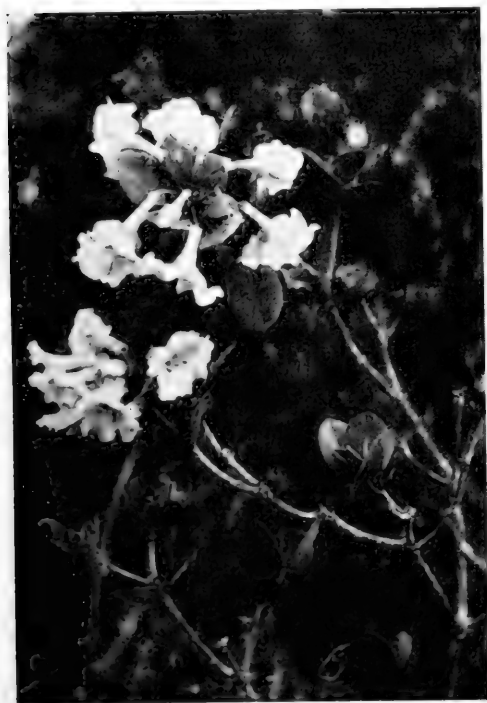


Fig. 15. *Rhododendron asperum* J. J. S. Mt Sense-nemés, 2500 m, Anggi Gigi Lake, Arfak Mts, NW. New Guinea (SLEUMER & VINK 4303) (SLEUMER, 1962).

broadly rounded or mostly shortly cordate, coriaceous, rigid, greyish green to dark green above, rusty below, densely stellate-lepidote on both faces initially (scales small, deeply incised, each subsessile on top of a small persistent elevated light point), early glabrescent above, later so beneath, scabrid by numerous minute tubercles on both faces especially beneath, edge manifestly recurved in dry specimens, (2–)3–5.5(–7) by (1.5–)2–4.5(–5.5) cm, midrib a little sunk above, strongly obtusely prominent in its lower half beneath, gradually less so towards the apex of the blade, nerves in 5–9 pairs, spreading irregularly,

faintly anastomosing before the edge, very slightly impressed in fully mature leaves above, somewhat prominent beneath, veins \pm inconspicuous; petioles somewhat flattened, 1–2.5 by 1–2 mm. *Umbels* 5–9-flowered. Perulae membranous, outer ones smaller, ovate to suborbicular, shortly subulate-acuminate, \pm lepidote and puterulous dorsally at the apex, inner ones larger, obovate to spatulate, \pm glabrous, up to 2 by 1 cm. Bracteoles linear, laxly hairy or nearly glabrous, up to 2 cm by 1 mm. Pedicels red, densely stellate-lepidote, (1.5–)2–3 cm by c. 1 mm. *Calyx* \pm oblique, in form of a flat cup, densely lepidote outside, very shortly obtusely 5-lobed, c. 4 mm ϕ . *Corolla* funnel-shaped, \pm regular, white or pink (sometimes deeply pink, or tube of a more intense colour than the lobes), scented, (3.5–)4–4.5 cm long and wide at the limb, laxly lepidote outside at the tube and the base of the lobes, \pm sparsely hairy inside at the tube, glabrous otherwise, tube (2–)2.3–2.8 cm, c. 4 mm ϕ at base, gradually widened to 1 cm at apex, lobes much spreading, suborbicular, 1.5–1.9 cm ϕ . *Stamens* 10, somewhat exerted from the throat; filaments linear, \pm laxly hairy in the lower $\frac{1}{2}$ to $\frac{2}{3}$, glabrous above; anthers oblong, (2.5–)3–4 by 1 mm. *Disk* low, hirtellous at the upper margin only. *Ovary* cylindrical-conical, densely covered with whitish \pm spreading hairs and stellate scales (these \pm hidden between and below the hairs), gradually attenuate to the style, which is rather slender, clad with spreading hairs and some scales in the lower $\frac{1}{2}$ to $\frac{2}{3}$, glabrous apically, 2–2.3 cm long; stigma capitate. *Capsule* subcylindrical, densely rusty stellate-lepidote and hairy, 1.5–1.8 by 0.6–0.8 cm.

Distr. *Malesia*: New Guinea (Arfak Mts).

Ecol. In heath formation on ridge, edge of degraded *Nothofagus* forest, or burnt open summit, on poor clayey soil, granite and quartzite, 2150–2750 m. *Fl.* Jan., April, July.

Note. Forms local hybrids with 248. *R. laetum*, characterized by glossy, shortly acuminate leaves with less distinct epidermal tubercles, perulae densely hairy dorsally and c. 2.5 cm long, pedicels lepidote and pubescent, anthers c. 4 mm long, ovary densely hairy; corolla in all shades from pale greenish yellow to pink salmon (then often with yellow or greenish hue in the lower part of the tube).

63. *Rhododendron rhodochroum* SLEUM. Reinwardtia 5 (1960) 87.

Shrub. Branchlets 5–7 mm ϕ , terete, obtusangular at the upper internodes, tips apparently very early glabrescent, very densely verruculose and rough; internodes 4–13 cm. *Leaves* scattered and dense together in the upper third of the upper 3–4 internodes, or in 3–5-merous pseudowhorls, oblong-elliptic, apex broadly attenuate and obtuse, sometimes apiculate, base slightly cordate, coriaceous, rigid, rufous-stellate-lepidote on both faces when very young (scales minute, subsessile, each on top of a paler permanent epidermal tubercle), early glabrescent above, more tardily so beneath, finally glabrescent there too and

very rough to the touch on both sides, \pm revolute at the margin in dry specimens, (3-)4-7.5 by 1.6-3.5 cm, midrib somewhat impressed in its lower, \pm flat in its distal part above, continuing the stout petiole beneath and thus very prominent below, less so apically, nerves 8-10 pairs, spreading, faintly raised on both sides, \pm evanescent towards the edge, often inconspicuous beneath as are the veins; petiole 2-4 by 1.5-2.5 mm. *Umbels* 3-8-flowered. Perulae membranous, ovate-oblong to obovate, \pm obtuse, outer ones \pm lepidote dorsally, inner ones glabrous, up to 1.5 by 0.8 cm. Bracteoles linear, glabrous, up to 1.5 cm. Pedicels densely rufous-stellate-lepidote, c. 2 cm by c. 1 mm. *Calyx* disk-shaped, \pm reflexed, densely lepidote dorsally, lobes subobtuse, 1-1.5 mm, not ciliate. *Corolla* tubular, somewhat curved and zygomorphic, pink, subdensely stellate-lepidote at the tube and the lower part of the lobes outside, laxly hairy at the tube inside, (4.5-)5-5.5 cm in all, tube 3.3-4 cm long, 5-6 mm ϕ at base, 9-10 mm at apex, lobes erecto-patent, broadly obovate, 1-1.5 by 1-1.3 cm. *Stamens* 10, unequal, c. 1 cm exerted from the tube; filaments linear below, subdensely hairy at the base, laxly so in the middle, glabrous and filiform distally; anthers obovate-oblong, obtuse at the base, 3-3.5 by 1.3 mm. *Disk* glabrous below, hairy at the upper margin. *Ovary* ovoid-conical, densely hairy and stellate-lepidote, 6-8 by c. 3 mm, rather abrupt with the style, the latter densely patently hairy and laxly lepidote in the lower half, glabrous upwards, as long as the stamens or slightly exceeding them; stigma thick, oblique, capitate, distinctly 5-gibbous.

Distr. Malesia: W. New Guinea (Lake Habema), at 3225 m, common in more open mossy thickets on peat ridges, associated with *R. haematoththalmum*. *Fl.* Aug.

64. *Rhododendron gilliardii* SLEUM. Reinwardtia 5 (1960) 88.

Shrub; epiphytic or terrestrial? Branchlets terete, slender, 2 mm ϕ , nodose, tips densely rufous-stellate-lepidote, very early glabrescent elsewhere, early covered with greyish bark; internodes 1.5-2.5 cm. *Leaves* opposite or in 3-merous pseudowhorls at the upper node, broad-elliptic, apex almost rounded, apiculate, base very broadly attenuate or rounded, subcoriaceous, immature ones densely rufous-lepidote on both faces (scales \pm deeply and irregularly incised at the marginal zone, each sessile on top of an epidermal tubercle), mature ones glabrescent, rather smooth and shining above, lepidote for a long time, finally glabrescent and somewhat rough by the permanent tubercles beneath, the very edge slightly revolute, 3-5 by 2-3.3 cm, midrib a little sunk above, prominent beneath especially in the lower part, nerves c. 8 pairs, \pm patent and parallel to each other, curved-anastomosing before the edge, minutely impressed above, slightly raised beneath, veins not much conspicuous, or only beneath so in the glabrescent parts of the lamina; petiole lepidote, 5-6 by c. 1 mm. *Umbels* 4-6-flowered.

Perulae and bracteoles not known. Pedicels very densely stellate-lepidote, 2-2.8 cm by c. 0.5 mm at anthesis. *Calyx* minute, disk-shaped, obtusely shortly 5-lobed, c. 2.5 mm ϕ . *Corolla* (colour not known, possibly white or yellowish) tubular in the lower, 5-lobed and expanded in the upper half, 2-2.3 cm in all, densely rufous-stellate-lepidote at the tube and the base of the lobes outside, laxly set with retrorse hairs at the tube inside, glabrous otherwise, tube c. 1 cm long, 5-pouched and c. 5 mm ϕ at base, somewhat contracted above, but again 5-6 mm ϕ at apex, lobes obovate-spathulate, sometimes a little retuse, 1-1.3 by 0.7-0.8 cm. *Stamens* 10, nearly as long as corolla; filaments linear and densely \pm patently whitish hairy below, more slender and glabrous apically; anthers obovate-oblong, c. 2 mm. *Disk* very shortly pubescent at the upper margin, glabrous otherwise. *Ovary* elongate-conical, c. 4 by 2 mm, densely subappressed-hairy and lepidote (the scales well visible among the hairs), gradually tapering to the style, the latter rather slender, \pm densely patent-hairy and less densely lepidote to the lower $\frac{2}{3}$, glabrous for the rest; stigma broad-capitate.

Distr. Malesia: E. New Guinea (Western Highlands: Mt Hagen), once found near timber line, 2285-3655 m. *Fl.* July.

Note. Remembers *R. macgregoriae* in the size and the form of leaves and flowers, but is completely distinct by the peculiar stellar scales on distinct tubercles, which are typical for *subsect. Phaeovireya*.

65. *Rhododendron bullifolium* SLEUM. Blumea 12 (1963) 93.

Erect, few-stemmed shrub, 3-4 m, or treelet, 4-6 m, trunk 2-3 m by 5 cm. Branchlets terete, 3-10 mm ϕ , covered with a rather persistent, though detersile tomentum of rufous stellate scales; internodes 6-20(-26) cm. *Leaves* in (4-) 6-merous pseudowhorls at the upper 2 or 3 nodes, elliptic or mostly ovate-elliptic, more rarely broad-elliptic or ovate, slightly inequilateral, apex very shortly subacuminate, obtusate or rounded, base on the whole rounded, coriaceous, dark green and glossy above, paler and dull beneath, young ones completely covered with a thick tomentum of stellate rufous scales, mature ones glabrescent early above, less quickly so beneath especially along midrib and nerves (scales \pm dendroid, marginal zone \pm deeply incised or lacerate, the small centre deepened or prolonged downwards into a kind of foot), (8-)10-18(-22) by 4.5-12 (-13) cm, bullate both in the fresh and dry state, margin flat, midrib as thick as the petiole below, and hardly prominent in the lower, \pm impressed in the upper part above, nerves irregular, 10-14 pairs, curved anastomosing before the edge, much impressed above, prominent beneath as are the veins, veinlets more distinct and reticulate towards the leaf margin; petiole densely stellate-lepidote initially, 2.5-5 cm by 2.5-3.5 mm. Immature buds c. 2 by 2 cm, each containing 10-12 flowers; perulae ovate, outer ones subacuminate,

inner ones obtuse, substrigose-sericeous, on both faces and lepidote dorsally. Immature *corolla* densely lepidote at the tube outside, glabrous at the lobes. Fruit-pedicle densely lepidote, c. 2.5 cm by 1.5 mm. Young *fruit* 2.5 cm long, fusiform, densely set with scales and pale stoutish hairs, as is the style, of which only the lower part (for c. 3 cm) is known. Twisted valves of the mature fruit (3-)4-5.5 cm.

Distr. *Malesia*: New Guinea (Arfak Mts, Mt Sarumot, Anggi Gigi Lake), once found.

Ecol. Undershrub or -tree in transitional zone of *Castanopsis* to *Nothofagus* forest, at 2050-2100 m. Fr. Jan.

66. *Rhododendron solitarium* SLEUM. *Blumea* 12 (1963) 94.

Erect, terrestrial shrub, sprawling, one- or few-stemmed, 1-1.5 m, branches few and short; branchlets and young shoots covered with a rusty tomentum of stellate scales, which is \pm detersile and disappears rather early; internodes 4-7 cm. *Leaves* in 4-6-merous pseudowhorls at the upper 3(-4) nodes, oblong-elliptic or \pm broadly elliptic, sometimes subobovate-elliptic, apex \pm rounded, not rarely slightly retuse, base broad-attenuate to rounded, dark green and glossy above, yellowish green below, mature ones glabrescent above, remaining lepidote for a certain time below especially at midrib and nerves (scales \pm dendroid, marginal zone stellate-nerved to various degree, the small centre deepened and protracted downwards into a short foot, the latter on top of an epidermal tubercle), 5-8 by 3-5 cm, bullate, midrib as wide as the petiole and hardly prominent in the lower, gradually narrower and \pm impressed in the upper part above, on the undersurface thick as the petiole at the base, gradually narrower and less prominent distally, nerves in 7-9 pairs, irregular and not rarely deeply forked, \pm transverse and straight from the midrib, becoming curved upwards, anastomosing quite a distance before the edge dissolving into a coarse network of veins, all nerves and veins deeply impressed above, \pm sharply prominent beneath, veinlets much less conspicuous; petiole densely lepidote initially, (0.8-)1-1.5 cm by 1.5-2.5 mm. *Umbels* 4-6-flowered. Bracteoles linear to subspathulate, caducously lepidote-fimbriate, 1-1.5 cm by 1-2 mm. Pedicels densely rufous-lepidote, c. 1.5 cm by 1 mm at anthesis. *Calyx* obliquely patellar, c. 3 mm σ , lobes sometimes elongate. *Corolla* tubular below, widely funnelform-expanded at the lobes, white, densely stellate-lepidote outside, the marginal part of the lobes excepted, densely set with retrorse hairs at the tube inside, 5-5.5 cm long in all, tube slightly curved, c. 4 cm long, c. 4 mm σ at base, c. 7 mm at apex, lobes obovate-spathulate, c. 1.5 by 1-1.5 cm. *Stamens* 10, c. 5 mm exerted from the throat; filaments linear, laxly hairy in the lower $\frac{3}{4}$, glabrous above; anthers oblong, base obtuse, 3-3.5 mm. *Disk* glabrous below, tomentose upwards. *Ovary* subcylindric, c. 10 by 2.5 mm, densely set with yellowish hairs and scales; style continuous with the ovary, densely to more laxly

hairy and lepidote in the lower $\frac{3}{4}$ part only, slightly exceeding the corolla tube.

Distr. *Malesia*: E. New Guinea (Morobe Distr.: Edie Creek and Merri Creek; common on Mt Kaindi).

Ecol. Growing solitary in eroded gold workings, on rather open, *Vaccinium*- and grass-covered slopes, at c. 1850 m. Fl. June.

67. *Rhododendron schoddei* SLEUM. *Blumea* 12 (1963) 95.

Terrestrial shrub, c. 2 m. Branchlets rather slender, divaricate, densely set with sessile rusty scales at the upper internode only; internodes 2-4.5 cm. *Leaves* in 3-4-merous pseudowhorls at the upper 1-2 nodes, ovate- or subovate-oblong, apex gradually or shortly attenuate, tip bluntish, base \pm rounded, young ones subdensely lepidote on both faces, mature ones coriaceous, glabrescent and shining above, paler and more longer remaining lepidote below (scales rusty, subdendroid, marginal zone stellate-dented or -lacerate to various degree, centre small, often a little deepened and prolonged downwards into a short foot, on top of a low epidermal tubercle), subrevolute, (3-)3.5-5(-6) by 1.5-2.3 cm, midrib narrowly impressed above, stout in the lower part, gradually decreasing and finally \pm evanescent distally below, nerves 6-8 pairs \pm right from the midrib, curved-anastomosing towards the edge, slightly impressed above, hardly prominent or obscure beneath, no reticulation; petiole reddish, subdensely lepidote, 1.5-2 cm by c. 1 mm. *Umbels* (2-)3-flowered. Perulae ovate-acuminate, appressedly lepidote dorsally. *Calyx* obliquely patellar, lepidote dorsally, shortly 5-lobed, c. 3 mm σ . *Corolla* deep pink, broadly tubular below, expanded at the lobes, subdensely to densely lepidote at the tube outside, laxly hairy there inside, c. 2.5 cm long in all, tube straight, 1.8-2 cm, 4-5 mm σ at base, 6-7 mm at apex, lobes obovate-spathulate, shortly retuse, 6-8 mm σ . *Stamens* 10, subequalling the corolla; filaments linear and laxly hairy below, more filiform and glabrous distally; anthers oblong, each theca with a short basal apiculus, c. 2.5 mm. *Disk* prominent and glabrous except the upper hairy margin. *Ovary* subconical-cylindric, c. 5 by 2.5 mm, slightly 5-angular, densely lepidote and short-hairy, more densely and longer hairy at the angles, continuous with the style, the latter rather slender, hairy in the $\frac{1}{2}$ - $\frac{1}{2}$ lower part, glabrous for the rest; stigma rather thickish.

Distr. *Malesia*: New Guinea (Western Highlands: Lagaip Valley).

Ecol. On limestone ridge in heath-like vegetation at c. 2600 m. Fl. Aug.

68. *Rhododendron phacochrismum* SLEUM. *Blumea* 12 (1963) 95; *Jahrb. Rhodod. Ges. Bremen* (1963) 27, in text.

Terrestrial shrub, (1-)2-3(-4) m; branches erect, deeply divided; branchlets slender, tips covered with a rusty tomentum of stellate scales; internodes (2-)3-6(-10, rarely up to 18) cm. *Leaves* in (3-)4-5(-6)-merous pseudowhorls at the

upper 2-3 nodes, elliptic to obovate-oblong, apex obtusely attenuate or subacuminate, base \pm cuneate into the petiole, subcoriaceous, dark green and shining above, yellowish green below, young ones clad with a rather detersile rusty tomentum of star-shaped scales initially, early glabrescent with age above, less so below especially at midrib and nerves (scales dendroid, marginal zone deeply stellate-incised or -lacerate, cupular-depressed towards the minute centre, the latter prolonged downwards into a very slender stem, which rests on a distinct epidermal tubercle), slightly revolute at the very edge, (3-4-7(-9) by 2-3(-4) cm, midrib narrowly impressed above, thick-prominent in the lower, decreasingly so in the upper part below, nerves 6-8(-9) pairs, rather irregular, curved-anastomosing before the edge, very slightly impressed or not rarely obscure above, hardly prominent beneath; petiole densely lepidote initially, 8-12(-15) by 1.5-2 mm. *Umbels* 2-3(-4)-flowered. Floral buds subglobose, 1-1.5 cm ϕ , perulae thin, outer ones ovate, densely stellate-lepidote at the dorsal midline, caducously lepidote-fimbriate, *c.* 1 cm, inner ones subspathulate, \pm glabrous dorsally, up to 1.2 cm. Bracteoles subspathulate-linear, glabrous, *c.* 1 cm by 1-1.5 mm. Pedicels rather slender, densely stellate-lepidote, *c.* 1 cm at anthesis. *Calyx* obliquely patellar, minutely 5-lobed, lepidote dorsally, *c.* 2.5 mm across. *Corolla* curved-tubular, expanded at the lobes, zygomorphous, pale to more deeply carmine, 2.5-3 cm long in all in dry, 3.5-4 cm in fresh specimens, thin-fleshy, glossy and densely set with golden scales outside, laxly hairy at the tube inside, tube 1.5-2 cm long, *c.* 3 mm ϕ at base, 5 mm at throat, lobes subspathulate-obovate, *c.* 1 cm ϕ . *Stamens* 10, attaining \pm half the corolla lobes; filaments linear, densely to more laxly hairy in the lower $\frac{3}{4}$ part, glabrous above; anthers obovate-oblong, dark purple to almost blackish when fresh, base obtuse, 2 by 1 mm. *Disk* prominent, hairy only at its upper margin. *Ovary* subcylindric, 5 by 2.5 mm, densely set with rusty stellate scales and paler, \pm appressed hairs, tapering to the style, the latter *c.* 1.2 cm, base slightly hairy, glabrous for the rest; stigma subclavate. *Fruit* fusiform, densely lepidote and hairy, 2(-2.5) cm by 4-5 mm.

Distr. Malesia: W. New Guinea (Vogelkop Peninsula: Tamrau, Nettoti and Arfak Mts).

Ecol. In understorey of *Nothofagus* forest, 1800-2250 m, often sterile. *Fl.* Jan.

Vern. Tschotschai, Manikiong, *aruwo*, Hattam.

Note. A natural hybrid of *R. phaeochristum* with apparently 268. *R. culminicolum* var. *angiense* was found once in the Arfak Mts near Lake Anggi Gita, 1900 m; in the general appearance, in the star-shaped scales and in flowers it shows the characters of the first, and in the wider, more obovate and blunt leaves (which show a less dense tomentum of stellate scales and no trace of epidermal tubercles) the characters of the latter. On Mt Gwamongga near Lake Anggi Gigi at 2550 m a sterile plant has been collected, very similar in leaf-characters to *R. phaeochristum*, but

tubercles much less distinct than normally found in this species, probably also due to an ingression of a species of *ser. Javanica*.

69. *Rhododendron haematophthalmum* SLEUM. Reinwardtia 5 (1960) 89.

Erect rigid shrub, 1.5-2.5 m high. Branchlets terete, upper internodes 2-8 cm by 2-3 mm, lower ones 3-7 mm ϕ , stellate-lepidote at the innovations, otherwise very early glabrescent, and very rugose by innumerable minute tubercles. *Leaves* mostly scattered, close together at the upper node, more rarely along the internode, or in a 3-5-merous pseudowhorl, \pm oblong, apex short-acuminate, apiculate or obtuse, base truncate-rounded, not rarely slightly cordate, very coriaceous, rigid, erecto-patent, densely clad with minute, stellate, short-dendroid scales (each on top of a paler epidermal tubercle) when very young, early glabrescent and very densely scabrid by the persistent tubercles on both faces, margin \pm revolute, 5-9 by 2-3.5 cm, midrib as thick as the petiole below, \pm flattened and but slightly prominent in its lower, \pm sunk in its upper part above, nerves 7-10 pairs, irregular, spreading, rather straight, indistinctly anastomosing, \pm inconspicuous above, slightly raised or \pm evanescent beneath; petiole subterete, rugose, 7-17 by 2-3 mm. *Umbels* 4-8(-10)-flowered. Perulae ovate to obovate or spathulate, obtuse, membranous, glabrous, up to 2 by 1 cm. Bracteoles linear, apex subspathulate, glabrous, up to *c.* 2 cm by 1 mm. Pedicels very densely rusty-stellate-lepidote, epilose, (1.5-2-3.5 cm by 1 mm at anthesis. *Calyx* oblique, disk-shaped, irregularly 5-dentate, densely lepidote dorsally, epilose, *c.* 4 mm ϕ , lobes short, obtuse, not ciliate, or may be 1-2 lobes elongate-deltoid, acute, up to 3 mm. *Corolla* manifestly zygomorphous, tubular below, dilated at the limb, red, densely rufous-stellate-lepidote outside, the margin of the lobes excepted, very shortly hairy at the tube inside, (4-)-4.5-5.5 cm long in all, tube \pm curved, 2.5-3.5 cm, 5-6 mm ϕ at base, widened to *c.* 10 mm at apex, lobes irregularly broad-obovate or suborbiculate, 1.5-2 by 0.9-1.5 cm. *Stamens* 10, unequal, nearly as long as the corolla; filaments linear, laxly \pm patently hairy below, glabrous distally; anthers forming a purple centre in the throat of the corolla, broad-oblong to obovate-oblong, 3.5-4 by 1.3-1.5 mm. *Disk* glabrous. *Ovary* cylindric, subabruptly attenuate to the style, densely shortly patent-hairy and lepidote (the scales well visible among the hairs), 5-6 by *c.* 3 mm. Style rather stout, \pm equalling the stamens, subdensely to laxly patently hispid-pubescent in the lower half, with some scales between the hairs, otherwise glabrous; stigma thick-capitate, manifestly 5-gibbous.

Distr. Malesia: W. New Guinea (Lake Habbema).

Ecol. Common on edges of mossy thickets, frequent in shrubberies of peaty ridges or peaty treeless area in forest or in mossy thickets, 3000-3225 m. *Fl.* Aug., Oct.

70. *Rhododendron phaeops* SLEUM. *Reinwardtia* 5 (1960) 90.

Epiphytic shrub, 1 m. Branchlets terete, 2–3 mm σ , tips stellate-lepidote, otherwise densely minutely verrucose and rough to the touch, early covered with cork; internodes 3–6 cm. *Leaves* in 3–4-merous pseudowhorls at the upper 2 or 3 nodes, broad-elliptic or ovate-elliptic, apex shortly attenuate, obtuse, base very broadly attenuate to nearly rounded, coriaceous, rigid, stellate-lepidote initially on both faces (scales small, dendroid, on top of persistent epidermal tubercles, caducous), early glabrescent and scabrid by numerous tubercles on both faces especially beneath, edge but shortly revolute, 5–8 by 3–5 cm, midrib as thick as the petiole, somewhat prominent and grooved along the midline in its lower $\frac{2}{3}$, impressed for the rest above, nerves 6–8 pairs, irregular, rather straight below, obscurely curved-anastomosing before the edge, very slightly immersed above, prominent beneath, veins lax, faintly sunk above, raised or \pm obsolete beneath; petiole grooved above, densely lepidote, 1–1.5 cm by c. 2 mm. *Umbels* 2–3-flowered. Pedicels densely rusty-stellate-lepidote, 1.5–2 cm by c. 1 mm. *Calyx* disk-shaped, densely lepidote, epilose, 5–6 mm σ , with 5 distinct irregular elongate-triangular subacute teeth, these white-ciliate, spreading, 2–4 mm. *Corolla* zygomorphous, tubular below, gradually widened upwards, red, 5.5–6 cm long in all, densely rusty-stellate-lepidote outside the margin of the lobes excepted, subdensely clothed with slender, whitish, rather longish retrorse hairs at the entire tube inside, tube curved, 6 mm σ at base, c. 15 mm at throat, lobes broad-spathulate to suborbicular, 1.5–2 cm σ , glabrous inside, *Stamens* 10, unequal; filaments linear, wider and \pm densely patent-pilose below, narrower and glabrescent to glabrous above, 4.5–5.5 cm; anthers brown when fresh, broad-oblong, 5–5.5 by nearly 2 mm. *Disk* glabrous. *Ovary* obovate-cylindric, densely clad with subappressed, yellowish, stiff hairs which cover the scales, c. 7 by 3 mm, \pm abrupt with the style, the latter rather stout, densely hairy and laxly lepidote below, more laxly patent-hairy and more densely lepidote upwards, glabrous at the upper 5 mm below the capitate stigma.

Distr. *Malesia*: W. New Guinea (Bernhard Camp, Idenburg R., c. 139°–3° 30'), once found, in mossy forest at 2150 m. *Fl.* Feb.

71. *Rhododendron truncicolum* SLEUM. *Reinwardtia* 5 (1960) 91.

Small shrub, epiphytic on tree trunks. Branchlets slender, 1.5–2.5 mm σ , caducously lepidote at the tips, otherwise minutely verrucose, covered with grey cork in the older parts; internodes 2–4 cm. *Leaves* in 3–4-merous pseudowhorls at the upper nodes, elliptic, apex broad-attenuate, subapiculate, base broad-attenuate to rounded, subcoriaceous, mature ones glabrescent or with remains of former scales, otherwise with minute elevated points above, lepidote for a long time beneath along the midrib (scales stellate, sessile on top of pale persistent epidermal tubercles), otherwise

glabrescent and somewhat rough to the touch, quite flat, (2.5–)3–4 by 1.4–2.4 cm, midrib flat or slightly sunk above, prominent beneath especially towards the base of the blade, much more slender than the petiole, nerves c. 6 pairs, irregular, rather straight below, anastomosing with each other and the veins before the edge, the latter forming a lax network which is equally raised on both faces, veinlets rather inconspicuous; petiole a little flattened, grooved above, densely lepidote, 4–6 by 1–1.3 mm. *Umbels* 3-flowered. Perulae membranous, ovate to obovate, apiculate, papillose or glabrous dorsally, up to 1.5 by 0.6 cm. Bracteoles filiform, very laxly hairy or glabrous, up to 1.5 cm. Pedicels densely rusty-stellate-lepidote, epilose, 1–1.3 cm by c. 0.6 mm. *Calyx* disk-shaped, hardly lobed, c. 2.5 mm σ , densely lepidote and sparsely pubescent dorsally, sparsely ciliate. *Corolla* zygomorphous, tubular, rosy-pink, (3–)3.5–4 cm long in all, laxly stellate-lepidote outside at the tube and the base of the lobes, laxly hairy inside at the tube, glabrous elsewhere, tube slightly curved, 2–2.5 cm long, 4–5 mm σ at base, 8–10 mm below the lobes, these broadly obovate-spathulate, 1–1.5 by 0.8–1 cm, irregularly wavy and crenulate. *Stamens* 10, unequal, attaining \pm half the length of the corolla lobes; filaments linear, laxly patent-hairy below, glabrous in the upper third; anthers broad-oblong, 2.5 by 1 mm, thecae very shortly apiculate at the base. *Disk* glabrous below, pubescent at the upper margin. *Ovary* cylindric, densely lepidote and laxly pubescent, c. 4 by 1.8 mm, rather abrupt with the style, the latter slender, slightly exceeding the tube, laxly patently hispidulous and densely lepidote in the lower third, glabrous for the rest; stigma thickly turbinate-capitate.

Distr. *Malesia*: New Guinea (Mt Dayman/Mt Maneao, Milne Bay Distr.), once found in forest at c. 2135 m. *Fl.* June.

72. *Rhododendron rappardii* SLEUM. *Reinwardtia* 5 (1960) 93; *Blumea* 12 (1963) 99.

Terrestrial shrub, 1.2–2.5 m. Branchlets terete, upper internodes 4–10 cm by 2 mm, subdensely caducously rusty-stellate-lepidote initially, glabrescent, covered with numerous minute pustules and rather scabrid to the touch, pruinose at the older parts (3–5 mm σ), which are smooth respectively early covered by an ashy cork. *Leaves* in 3–5-merous pseudowhorls at the upper 3 or 4 nodes, broad-elliptic, more rarely oblong-elliptic or nearly rounded, apex broad-attenuate, obtuse or rounded, base very broadly attenuate or mostly rounded, rather thinly coriaceous, though firm, fugaciously rusty-or brown-lepidote on both faces initially (scales rather small, irregularly stellate-lacerate, \pm dendroid, each on a minute epidermal tubercle), very early glabrescent and \pm smooth above, finally glabrate also beneath, but permanently rugulose by numerous minute tubercles, entire, the edge slightly or not revolute, (3.5–)4–7(–7.5) by (2.5–)3–5 cm, midrib dilated and grooved in the basal, becoming very narrow and \pm impressed in the upper part above, thick

and obtusely prominent beneath, nerves 5-6(-8) pairs, at an acute angle, rather straight below, less conspicuous towards the edge, minutely impressed in fully mature leaves above, not or but little raised beneath, veins \pm indistinct; petiole subterete, lepidote, 6-12(-15) by *c.* 2 mm. *Umbels* 5-8-flowered. Outer perulae ovate, obtuse, lepidote in the middle outside, otherwise papillate-puberulous, 1-1.5 by 0.7-1 cm, inner ones oblong to spatulate, densely and longer subsericeous-pubescent on both sides, up to 3 by 1.5 cm. Bracteoles linear, \pm laxly hairy, up to 2.5 cm by *c.* 1 mm. Pedicels stoutish, densely rusty-stellate-lepidote, subdensely or laxly hairy at least below the calyx, (5-)-8-12 by nearly 1 mm at anthesis. *Calyx* oblique, disk-shaped, rather small, lepidote and pubescent dorsally, ciliate, very shortly 5-lobed, 2-3 mm ϕ . *Corolla* narrow funnel-shaped, regular, white or pink, very sparsely stellate-lepidote or mostly glabrous outside, \pm densely clad with \pm longish retrorse hairs at the tube inside, 4-5 (rarely up to 5.5) cm long in all, tube \pm straight, gradually widened towards the mouth, 3-4 mm ϕ at base, 6-8 mm at the throat, lobes 5, irregular, obovate spatulate, 1.2-1.5(-1.8) by (0.6-)-0.8-1.2 cm. *Stamens* 10, \pm attaining halfway the corolla lobes; filaments linear and almost villous below, rather abruptly glabrescent upwards, glabrous and filiform distally; anthers elongate-oblong, 3.5-4 by 1 mm, base minutely biappendiculate. *Disk* low, \pm pubescent. *Ovary* cylindrical, gradually attenuate to the style, 6-8 by 2.5-3 mm, densely clad with appressed, yellow, stiff hairs which cover the scales. Style nearly as long as the stamens, rather thick below, \pm densely patent-hairy and \pm laxly lepidote to the lower $\frac{3}{4}$ (less densely hairy distally), more slender and glabrous for the rest; stigma capitate.

Distr. Malesia: W. New Guinea (Wissel Lake region).

Ecol. In primary or mostly in secondary forest, on \pm steep slopes, 1750-1850(-2300) m, on peaty or clayey soil or stony clay, derived from limestone or sandstone, locally common. *Fl.* Jan., March, May, Oct.

Vern. Wajadé, waradé, waradei, Kapauku.

73. *Rhododendron dianthosmum* SLEUM. *Blumea* 12 (1963) 100; *Jahrb. Rhodod. Ges. Bremen* (1963) 10, *in text*.

Epiphytic, much branched shrub, 0.5-2 m; branchlets rather slender, densely lepidote, early glabrescent and pruinose; internodes (4-)-6-16 cm. *Leaves* in 3(-4)-merous pseudowhorls at the upper 2 or 3 nodes, oblong or elliptic-oblong, apex shortly subacuminate-attenuate, bluntish, base broadly attenuate to rounded, coriaceous, young ones densely rufous-stellate-lepidote, mature ones glabrescent, on both faces set with numerous epidermal tubercles and rough to the touch (scales dendroid, marginal zone incised to or almost to the small centre, the latter deepened or prolonged into a short foot), (7-)-9-14 by 3-5.5 cm, edge a little recurved, midrib not much prominent in the lower, gradually flattish in the upper part above,

as thick as the petiole in the basal, gradually decreasing in the upper part below, nerves 8-10 (-12) pairs, irregular, \pm inarched before the edge, slightly prominent on both faces, veins laxly reticulate, not much conspicuous; petiole densely lepidote initially, 1-1.5 cm by 2-2.5 mm. *Umbels* 4-6-flowered. Perulae a sordid red, outer ones ovate, more inner ones elliptic-ovate and apiculate, innermost ones broadly spatulate, lepidote and/or appressed-hairy to various degree, 1-3.5 by 1-1.5 cm. Bracteoles linear, glabrous, *c.* 2 cm by 1-2 mm. Pedicels exclusively and very densely rusty-stellate-lepidote, 1-1.5 cm by *c.* 1.5 mm. *Calyx* obliquely patellar, *c.* 3 mm across. *Corolla* tubular below, \pm horizontally spreading at the lobes, 6-7-merous, pure white, with a scent of carnation, glabrous outside, short-hairy at the tube inside, 5-6 (when fresh *c.* 7) cm long in all, tube 2.5-3.5 (when fresh 3-4) cm, 6-7-pouched at the base and *c.* 6 (when fresh *c.* 10) mm ϕ , lobes spatulate, 3 or 4 of them generally smaller than the others, 2-2.5 (when fresh 3-3.5) by 1-2 cm. *Stamens* exerted from the throat for *c.* 1 cm; filaments linear, densely or more laxly hairy in the lower $\frac{3}{4}$, glabrous distally; anthers elongate-oblong, base obtuse 3.5-4 by almost 1 mm. *Disk* glabrous below, tomentose at the upper margin. *Ovary* subcylindric, 8-10 by 2-3 mm, covered by a tomentum of whitish to yellowish, forward-directed hairs, which cover the scales; style continuous, rather slender, *c.* 3 cm, densely or more distally laxly hairy in the lower $\frac{3}{4}$, glabrous for the rest, no scales visible; stigma capitate, 2.5-3 mm across.

Distr. Malesia: N. New Guinea (Cycloop Mts).

Ecol. In primary forest, 800-1400 m, descending along ravines to *c.* 500 m. *Fl.* May-July.

74. *Rhododendron rubellum* SLEUM. *Reinwardtia* 5 (1960) 94. — *R. phaeochitum* (non F. v. M.) WRIGHT, *Kew Bull.* (1899) 104.

Erect branching tree, up to 5 m. Branchlets terete, 2-3 mm ϕ , densely stellate-lepidote at the upper 1 or 2 internodes, glabrescent and early covered with ashy cork below; internodes 3-8 cm. *Leaves* in 4-5-merous pseudowhorls at the upper 1 or 2 nodes, elliptic-oblong or oblong, apex short-acuminate, apiculate, base broadly cuneate or rarely rounded, coriaceous, immature ones densely rusty- or brown-lepidote (scales rather large, very narrowly stellate-incised in form of stellate hairs, dendroid, each on top of an epidermal tubercle), early glabrescent and rough by the persistent tubercles above, clothed for a long time beneath with a nearly woolly tomentum formed by the scales which when gone leave the under-surface too tubercled and scabrid, dark green and dull above, paler beneath, slightly or not revolute at the margin, 4-8.5(-9.5) by 2.5-3.5(-4.5) cm, midrib flat or minutely impressed above, as stout as the petiole and very prominent in the lower, gradually less prominent distally beneath, nerves 6-8 pairs, starting at an acute angle, rather straight below, curved and anastomosing before the edge, forming a lax network with the veins,

nerves slightly impressed above, raised beneath, veins hardly sunk above, raised beneath, no proper reticulation; petiole grooved above, densely lepidote, 1–1.7 cm by 1.5–2 mm. *Umbels* 6–8-flowered. Outer perulae ovate, subobtuse, inner ones spatulate, both densely subsericeous-hirtellous on both sides, up to 1.8 by 1 cm. Bracteoles linear to very narrowly spatulate, \pm densely hirsutulous, up to 1.3 cm by 3 mm. Pedicels densely rusty-stellate-lepidote, otherwise not hairy or only so immediately below the calyx, 0.8–1.5 by 1 mm. *Calyx* \pm deeply 5-dentate, rather densely pubescent and lepidote dorsally, lobes irregularly triangular, subacute, long-fimbriate, 1.5–2 mm. *Corolla* tubular, \pm zygomorphous, bright red, (4.5–)5–6 cm at full anthesis, very laxly lepidote or glabrous at the tube outside, laxly set with retrorse hairs at the tube inside, tube rather straight below, slightly curved and gradually dilated upwards, c. 4 cm long, c. 4 mm ϕ at base, c. 8 mm at throat, lobes erecto-patent, irregular, obovate-spatulate, sometimes nearly orbicular, 1.2–1.6(–2) by 1–1.5(–1.7) cm. *Stamens*

10, slightly shorter than the corolla, unequal; filaments linear and \pm densely patent-hairy below, gradually less so above, completely glabrous at the ultimate 6–10 mm; anthers elongate-oblong, base obtuse, c. 4.5 by 1 mm. *Disk* glabrous at least in the lower part. *Ovary* elongate-cylindric, gradually tapering to the style, very densely hairy in the lowest 1 mm (which may be the upper margin of the disk), densely rufous-lepidote and hairy on the proper ovary (scales more numerous than the hairs, and thus well visible), 8–10 by 2.5–3 mm. Style as long as or a little longer than the tube, laxly pubescent and very sparsely lepidote in the lower $\frac{1}{3}$ to $\frac{2}{3}$, glabrous for the rest; stigma thickly turbinate-subcapitate. *Capsule* 3–3.5 by c. 0.6 cm, densely rufous-hirsute and lepidote. *Seeds* filiform, 3–4 mm, with a very narrow tail on both ends.

Distr. *Malesia*: E. New Guinea (Wharton and Owen Stanley Ranges).

Ecol. In forests, said to be common at the Murray Pass (Wharton Range) at 2840 m. *Fl.* June–Sept.

4. Subsection *Malayovireya*

SLEUM. *Blumea* Suppl. 4 (1958) 48; Reinwardtia 5 (1960) 95. — *Rhododendron* ser. *Malayanum* COPEL. *f. Am. Midl. Nat.* 30 (1943) 605, in text, nom. nud. — Fig. 17–18.

Scales sessile, flat, slightly impressed, generally of two different sizes (i.e. very many smaller, and fewer much larger ones, irregularly mixed), all very dense, touching or partly overlapping each other, the centre very dark (sooty to blackish brown) and large in relation to the paler marginal zone, the latter irregularly several-lobed or -incised up to the centre (the broad lobes again, but more shortly lobed) and becoming silvery in later stages.

Distr. S. Siam, *Malesia* (excluding Lesser Sunda Is. and New Guinea). Fig. 16.

Note. Scales of the same type, but less distinctly unequal and spaced for their greater, partly overlapping each other for their smaller number, point to hybrids with species of other subsections, viz *Pseudovireya*, *Solenovireya*, and *Euvireya*. The influence of the *Malayovireya* parent is easily recognized by the dark chestnut colour of the scales, chiefly of their centre, whilst the influence of the other parent generally results in reducing the size of and increasing the distance between the scales. Species with such \pm intermediate type of scales are kept in *subsect. Malayovireya*. Species as 181. *R. pyrrhophorum* and 179. *R. ripleyi* var. *cryptogonium* show the *Malayovireya*-influence to a minor degree and are placed in *subsect. Euvireya*. See also the note under *subsect. Albovireya*.

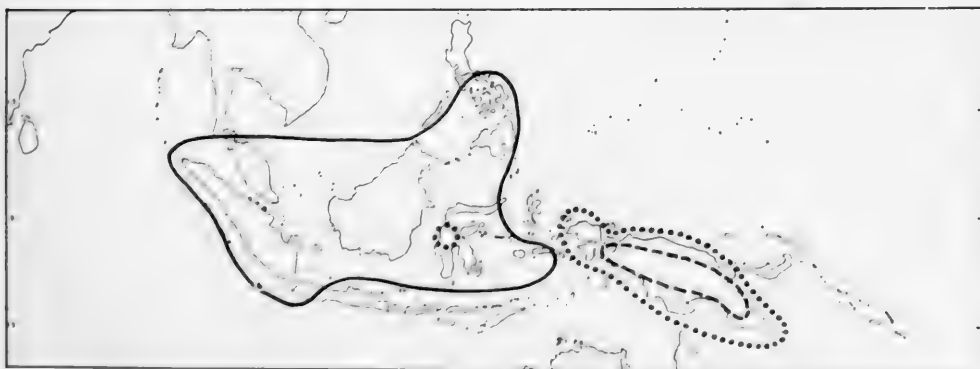


Fig. 16. Distribution of *Rhododendron* *subsect. Malayovireya* (—————), *subsect. Phaeovireya* (.....) and *subsect. Siphonovireya* (-----).

KEY TO THE SPECIES

1. Scales very dense, all or most of them touching, respectively partly covering each other, very different in size, *i.e.* many smaller ones mixed with few other ones of almost double their size.
2. Leaves linear to lanceolate-linear, up to 10 cm by 4 mm.
3. Inflorescences 4–6-flowered. Corolla \pm campanulate, 1.2–1.4 cm; lobes 8–10 by 7–9 mm.
 3. Inflorescences 1–3 (very rarely 4)–flowered. Corolla \pm tubular, 2–2.4 cm; lobes 5–6 (–7) by 3–4 (–5) mm. **75. *R. himantodes***
 2. Leaves of various shape, at least 6 mm wide. **76. *R. vinicolor***
4. Leaves sessile or nearly so (petiole up to 4 by 3 mm), base rounded to subcordate-auriculate. (Filaments pubescent at the base).
5. Corolla glabrous or rarely very sparsely lepidote in the lower part of the tube outside, 2.4–2.7 (–3.2) cm. Pedicels shorter than the corolla. **77. *R. durionifolium***
5. Corolla \pm densely lepidote outside at least at the tube, *c.* 2 cm. Pedicels as long as or mostly longer than the corolla **78. *R. fallacinum***
4. Leaves manifestly petioled, base mostly cuneate to rounded, very rarely subcordate.
6. Inflorescences exclusively terminal.
 7. Filaments glabrous.
 8. Style thick, rather short, as long as or shorter than the proper ovary, hardly half as long as the corolla **79. *R. apoanum***
 8. Style slender, \pm twice as long as the proper ovary, \pm as long as the corolla.
 - 80. *R. malayanum* var. *malayanum***
 7. Filaments \pm densely short-pubescent in the lower $\frac{1}{2}$ or $\frac{1}{3}$.
 9. Corolla besides some scales laxly short-pubescent outside . . . **80. *R. malayanum* var. *pubens***
 9. Corolla besides some scales not hairy outside.
 10. Corolla 4–4.5 cm **81. *R. nortoniae***
 10. Corolla up to 3.2 cm.
 11. Leaves \pm distinctly bullate. Pedicels lepidote, not hairy.
 12. Leaves ovate or elliptic-ovate, sometimes ovate-lanceolate, base mostly rounded, or rarely attenuate. Corolla short-pubescent inside in the lower half of the tube . . . **82. *R. acuminatum***
 12. Leaves elliptic-lanceolate, base acute or obtuse. Corolla similar but glabrous at the insertions of the filaments **83. *R. fortunans***
 11. Leaves not bullate. Pedicels finely patent-hairy under and between the scales.
 - 80. *R. malayanum* var. *pilosifilum***
 6. Inflorescences both terminal and axillary. **80. *R. malayanum***
1. Scales all or for their greater number spaced from each other, much less different in size. Presumably hybrids with species of other subsections.
13. Leaves linear-lanceolate, (2.8–)3–4 (–5) cm by (3–)4–5 (rarely up to 8) mm . . . **84. *R. lineare***
13. Leafshape otherwise, (4.5–)6–12 (–16) by (2–)2.5–4 (–5.5) cm.
14. Filaments glabrous.
 15. Leaves oblong-obovate, apex rounded or slightly retuse **85. *R. obscurum***
 15. Leaves lanceolate to elliptic-lanceolate, rarely elliptic, gradually attenuate towards the sub-acute apex **86. *R. variolosum* var. *variolosum***
14. Filaments rather densely patent-pubescent at least in the lower third.
16. Ovary and base of the style exclusively lepidote; style glabrous for the rest. Corolla very laxly lepidote or glabrous outside. **86. *R. variolosum* var. *andersonii***
16. Ovary densely lepidote and whether or not laxly patent-pubescent; style patent-pubescent to various length.
17. Ovary lepidote and laxly pubescent; style manifestly patent-pubescent to its lowest 2 mm, glabrous for the rest. Corolla practically glabrous outside. Leaves acutely attenuate at both ends (225. *R. javanicum* var. *teysmannii* \times *R. malayanum*) **87. *R. wilhelminae***
17. Ovary lepidote, epilose or nearly so; style subdensely lepidote and laxly patent-pubescent in the lower $\frac{2}{3}$, glabrous for the rest. Corolla laxly lepidote and patent-pubescent outside. Leaves shorter or longer acuminate at the apex, rounded to subcordate at the base (136. *R. jasminiflorum* var. *punctatum* \times *R. malayanum*) **88. *R. hybridogenum***

75. *Rhododendron himantodes* SLEUM. Bot. Jahrb. 71 (1940) 145; Reinwardtia 5 (1960) 97.

var. himantodes.

Large epiphytic shrub, with lax spreading branches; branchlets slender, at the upper internodes very densely covered with scales of the *R. malayanum* type, which are also found on

leaves and flowers; internodes 1–4 (–5.5) cm. *Leaves* in 4–5-merous pseudowhorls at the end of the upper 2 or 3 (–4) internodes, linear, elongate, apex subacute, base obtuse, \pm coriaceous, green above, paler grey-green and with a brownish midrib beneath, initially entirely covered with scales which disappear above with age, but remain beneath, margin strongly revolute to nearly the

top, 5-9(-10) cm by 2-4 mm, midrib deeply impressed, very prominent beneath, nerves obscure; petiole densely lepidote, stoutish, 2-3 mm. *Flowers* 4-6 per umbel. Perulae ovate to obovate-spathulate, the upper dorsal part and/or the median lepidote, ciliate, up to 10 by 6 mm. Bracteoles narrow-linear, glabrous or laxly lepidote, up to 8 mm. Pedicels slender, densely lepidote, 1.5-2 cm at anthesis. *Calyx* minute, oblique, obsolete 5-lobulate or -denticulate, densely lepidote. *Corolla* campanulate to infundibuliform-campanulate, deeply 5-lobed, 1.2-1.4 cm in all, snow-white with brown dots, membranous, tube broadly tubular-campanulate, 3-6 mm long, at the base with 5 small pouches c. 2.5 mm ϕ , rather densely lepidote outside, \pm densely hairy inside, lobes obovate-spathulate, \pm spreading, glabrous outside in the upper part as well as inside, lepidote at the base outside, 8-10 by 7-9 mm. *Stamens* 10; filaments linear, 4-5 mm, white-hairy especially at the very base; anthers c. 2.5 by 0.3 mm. *Disk* glabrous. *Ovary* conical, entirely covered by scales, 4-5 by 2 mm, gradually tapering to the glabrous style, the latter slightly curved, c. 4 mm; stigma capitate. *Capsule* narrow-oblong, lepidote, c. 1.5 cm. *Seeds* 7-8 mm including the tail-like appendages.

Distr. *Malesia*: North Borneo (Mt Kinabalu).

Ecol. In mossy forest, crest of ridge, 1525-2135 m. *Fl.* Feb.-Oct.

var. lavandulifolium SLEUM. Reinwardtia 5 (1960) 97.

Leaves 3-4.5 cm by c. 2 mm. *Flowers* only seen in bud, very light yellow.

Distr. *Malesia*: E. Borneo (Mt Kemul), epiphyte in mountain forest, 1800 m. *Fl.* Oct.

76. *Rhododendron vinicolor* SLEUM. Reinwardtia 5 (1960) 98.

Epiphytic shrub. Branchlets elongate, terete, slender, completely covered with scales of the *R. malayanum* type as they occur also on the inflorescences and the leaves. *Leaves* rather laxly scattered along the branchlets, more densely so distally, linear or narrow-lanceolate, apex gradually attenuate, obtuse, base narrowed into the petiole, subcoriaceous or coriaceous, still at age very densely covered with scales which are pallid on the upper, red-brown on the undersurface of the leaves, strongly revolute, 3-6(-7) by (2-)-3-4 mm, midrib impressed above over its entire length, very prominent beneath, nerves obsolete; petiole densely lepidote, 2-3 by 0.5 mm. *Umbels* 1-3 (very rarely 4)-flowered. Perulae ovate, subapiculate, densely lepidote dorsally, rather long white-ciliate, up to 5 by 3 mm. Bracteoles narrow-subulate, glabrous, up to 1 cm long, base c. 1 mm wide. Pedicels very slender, densely lepidote, 6-8(-12) mm. *Calyx* minute, disk-like, shallowly or not lobed, \pm wavy, densely lepidote. *Corolla* wine-red or reddish purple, tubular, 2-2.4 cm in all, tube cylindrical, \pm curved, gradually attenuate towards the slightly 5-saccate base, 2-2.5 mm ϕ at base, c. 4 mm at throat, laxly and \pm caducously lepidote

outside, glabrous inside, lobes somewhat spreading, obovate, lepidote on the dorsal midline, glabrous elsewhere, 5-6(-7) by 3-4(-5) mm. *Stamens* 10, 1.7-1.9 cm; filaments narrow-linear, filiform distally, slightly unequal, glabrous; anthers broadly obovate, c. 1.5 mm. *Disk* glabrous. *Ovary* obconical-cylindric, densely lepidote, c. 4 by 1.5 mm, gradually passing into the style, the latter slender, lepidote in the lower third or only at the base, (8-)-10-12 mm; stigma shortly club-shaped and obscurely lobed.

Distr. *Malesia*: Sumatra (Atjeh: Mt Lembuh region; Tapanuli: near Sidikalang).

Ecol. In flat forest ridges with cold solfatara fields and on narrow ericoid ridge, 1100-1500 m. *Fl.* Feb.-March.

77. *Rhododendron durionifolium* BECC. *Malesia* 1 (1878) 202; RIDL. *J. Str. Br. R. As. Soc.* n. 63 (1912) 61; MERR. *En. Born.* (1921) 461; SLEUM. *Reinwardtia* 5 (1960) 98; *Blumea* 11 (1961) 116; *ibid.* 12 (1963) 100. — *R. mjobergii* MERR. *Sarawak Mus. J.* 3 (1928) 542.

Treelet or shrub, terrestrial or mostly epiphytic. Branchlets terete, stout, entirely covered in the younger parts with initially chestnut to dark golden squamular scales of the *R. malayanum* type, as they are found also in the inflorescences and the leaves; internodes 3-16 cm by (2-)-3-4 mm. *Leaves* 3-4(-5) in each of the spaced pseudowhorls, or only 2-4 not properly whorled in the apical part of the upper internode, sessile or nearly so, lanceolate to ovate-lanceolate, apex \pm long-acuminate to short-caudate, base rounded or mostly subcordate-auriculate, coriaceous, showing very thin silvery dots or small pits above, entirely and persistently covered with red-brown scales beneath, margin repand-denticulate to nearly entire, slightly revolute, (8-)-11-15 (-17) by (2-)-2.5-4 (-6.5) cm, midrib distinctly impressed above, very stout and prominent beneath, nerves 6-9 pairs, rather straight and spreading below, \pm curved and anastomosing towards the edge, slightly impressed above in mature leaves only, \pm indistinct beneath, veins laxly reticulate and mostly minutely impressed above only; petiole densely lepidote, up to 4 by 3 mm, but mostly very short or almost 0. *Flowers* 8-10(-14) per umbel; floral buds ovoid, large, 2-2.5 by 1.2-1.5 cm, their outer perulae ovate, obtuse to subapiculate, base truncate, subcoriaceous, subpuberulous outside, lepidote along the upper part of the dorsal mediane, finely whitish ciliate, up to 2 by 1.2 cm, inner ones \pm spatulate and smaller. Bracteoles filiform, papillose-pubescent, often subspathulate and barbulate-ciliate at the apex, up to 1.5 cm long. Pedicels densely lepidote, 1-1.5 cm by c. 1 mm at anthesis. *Calyx* very small, formed by the uppermost thickened cup-shaped part of the pedicel. *Corolla* yellow to orange, or scarlet red, funnel-form, 2.4-2.7(-3.2) cm, mostly completely glabrous, rarely with a few (apparently rather early caducous) scales on the lower part of the tube outside, glabrous or slightly pubescent at the base of the tube inside, tube \pm straight,



Fig. 17. *Rhododendron fallacinum* SLEUM. a. Habit, $\times \frac{2}{3}$, b. flower, $\times 1$, c. ovary and style, $\times 2$, d. stigma, $\times 5$, e. stamen, $\times 3$, f. fruit, $\times \frac{4}{3}$, g. seed, $\times 10$, h-k. subsequent outer to inner perulæ, $\times \frac{4}{3}$ (a and f-g GRISWOLD 122, b-e DARNTON 585, h-k CLEMENS 27106, 27800, 32714).

1.2–1.5 cm long, c. 3 mm σ at the slightly 5-pouched base, c. 4–5 mm at throat, lobes \pm spreading, obovate to nearly rounded, \pm as long as the corolla tube, 8–11 mm wide. *Stamens* 10, slightly unequal, c. 2 cm; filaments linear, flattened and rather densely whitish hairy in the lower part, filiform and glabrous distally; anthers oblong, c. 3.5 by 0.5–0.8 mm, not rarely somewhat curved. *Disk* glabrous. *Ovary* elongate-conical, 5–6(–8) by 1.5 mm, densely lepidote, gradually tapering to the style which is rather stout and lepidote in the lower half, 7–8(–10) mm; stigma capitate at anthesis, slightly 5-lobed, lobes accrescent into separate club-shaped spreading parts afterwards. *Capsule* cylindrical, often somewhat curved, 2.5–3.5(–4.5) cm by 3–4 mm, densely lepidote, slightly 5-ribbed. *Seeds* 4–5 mm including the filiform tails; fruit-pedicle 1–1.5 mm σ , up to 2.5 cm long.

Distr. *Malesia*: Borneo (Sarawak, Central and SE. Borneo).

Ecol. Generally in moss forest, also found in low scrubby vegetation on bare sandstone rocks of B. Tanggou summit, apparently but locally common, 800–2400 m. *Fl.* May, Aug.–Nov.

78. *Rhododendron fallacinum* SLEUM. Reinwardtia 5 (1960) 99; *Blumea* 12 (1963) 100; *Jahrb. Deutsch. Rhodod. Ges. Bremen* (1965) f.7 & 8. — *R. durionifolium* (non BECC.) STAFF, *Trans. Linn. Soc. II, Bot.* 4 (1894) 197. — *Fig. 17.*

Treelet or shrub, sometimes a tree, generally terrestrial, more rarely epiphytic, up to 6 m. Branchlets terete, robust, densely covered with the dark brown scales of the *R. malayanum* type which equally are found in the inflorescences and on the leaves; internodes 2–9 (sometimes up to 30) cm. *Leaves* 3–4(–6) per pseudowhorl at the upper nodes, sessile or subsessile, ovate-oblong or subovate-lanceolate, apex shortly to rather long acuminate or subcaudate, subacute, base mostly slightly cordate-auriculate, (7–)10–16 by (2–)2.5–6(–7) cm; petiole up to 3 by 3 mm. *Inflorescences* 10–30-flowered. Outer perulae ovate, inner ones obovate-spathulate, \pm caducously lepidote in the upper part of the mediane outside, otherwise papillate-puberulous, densely whitish ciliate, up to 2 by 1 cm. Bracteoles filiform and papillous below, spatulate and subvillous-ciliate above, up to 1.5 cm. Pedicels rather stoutish, mostly 2–3(–4) cm already at anthesis, rarely a little shorter then, densely lepidote. *Calyx* disk-like, minute, obsolete lobed, c. 2 mm σ . *Corolla* funnel-shaped, light red, rose-purplish or red-orange, deep orange pink with a deep pink centre, also bright red, rarely dark red or pale scarlet, scentless, c. 2 cm long, subdensely brownish lepidote at the tube and the lower part of the lobes outside, otherwise completely glabrous, tube straight, 7–10 by c. 3 mm σ at the slightly 5-saccate base, lobes obovate-spathulate to almost rounded, slightly emarginate, 1–1.6 by 0.8–1.1 (–1.3) cm. *Stamens* 10, \pm unequal, c. 1.8 cm; filaments linear, slightly dilated towards the base and rather densely and \pm patently hairy there,

filiform and glabrescent upwards; anthers elongate-oblong, c. 3 by 0.3 mm. *Disk* glabrous. *Ovary* elongate-conical, densely lepidote, 6–7 by 1.5 mm, gradually extending into the glabrous style (c. 10 mm); stigma shortly turbinate-subcapitate, shortly 5-lobed initially, ultimately 5-clubbed. *Capsule* golden brown or purple, cylindrical, not rarely a little curved, 2.5–3 cm by c. 3 mm; fruit-pedicle rather slender, 2.5–3.5(–4) cm.

Distr. *Malesia*: Borneo (North Borneo: Mt Kinabalu; Mt Trus Madi).

Ecol. In mossy forest in damp shaded places, but also on ridge crests or open exposed places, among ferns and scrub rather frequent, 1220–2600 m. *Fl. fr.* Jan.–Dec.

Note. Sterile specimens hardly distinguishable from those of *R. durionifolium* BECC.

79. *Rhododendron apoanum* STEIN, *Gartenflora* 34 (1885) 194, t. 1196; *Jahresber. Schles. Ges. Vaterl. Cult. f. d. Jahr* 1885 (1886) 414–416; VIDAL, *Rev. Pl. Vasc. Filip.* (1886) 172; MERR. *Publ. Gov. Lab. Philip. n.* 29 (1905) 43; *Philipp. J. Sc.* 3 (1908) Bot. 380; ELM. *Leafl. Philip. Bot.* 3 (1911) 1107; MILLAIS, *Rhodod.* (1917) 115; MERR. *En. Philip.* 3 (1923) 243; MILLAIS, *Rhodod. ser.* 2 (1924) 83; COPEL. *f. Philip. J. Sc.* 40 (1929) 146; SLEUM. *Reinwardtia* 5 (1960) 99; *Blumea* 11 (1961) 116. — *Rhododendron sp.* VIDAL, *Sinopsis Atl.* (1883) 30, t. 60, f.E. — *R. jasiniflorum* (non HOOK.) F.-VILL. *Nov. App.* (1883) 353.

Lax erect shrub, rarely subsucculent, mostly epiphytic, c. 1 m, stems usually several from the same root, profusely branched above the middle, the suberect twigs greyish brown. Branchlets terete, the upper internodes (2–7 cm) densely covered with dark rusty scales of the *R. malayanum* type, which are also found on inflorescences and leaves. *Leaves* close together towards the end of the upper internodes in a 3–5-merous pseudowhorl, lanceolate to elliptic-lanceolate, sometimes rather obovate-lanceolate or oblong, variable in shape and size, apex gradually or subabruptly acuminate, subacute or obtuse, base broadly to narrowly attenuate into the petiole, \pm coriaceous, dull green above, initially densely lepidote on both faces, glabrescent only above with age, small pits remaining visible for a long time, entire to feebly dentate towards the apex, shortly revolute at the edge especially towards the base, (5–)6–11 by (1.5–)2–4 cm, midrib slightly impressed above, very prominent beneath in the lower part of the lamina, nerves 6–7 pairs, irregularly spreading, upper ones rather straight, all anastomosing, very slightly depressed above in fully mature leaves, somewhat raised or almost faintly visible beneath, reticulation 0; petiole semiterete, lepidote (0.9–) 1–1.5 cm by 2–3 mm, grooved above, *Flowers* 6–15 per umbel. Perulae ovate, obtuse, outer ones densely lepidote in the dorsal mediane outside, inner ones progressively larger and less lepidote, all finely greyish sericeous the margin excepted, densely white-ciliate, up to 1 by 0.8 cm. Bracteoles filiform, short-hairy, apex slightly spatulate and barbate, up to 1 cm. Pedicels rather stoutish,

densely lepidote, 7–11 mm. *Calyx* c. 2 mm σ , shortly 5-lobed, all over lepidote. *Corolla* tubular 1.6–2 cm, purple to blood red, sometimes shiny bright red and a bit waxy, very laxly lepidote outside at least at the sinuses of the lobes, tube straight, 1.1–1.5 cm long, 2–3 mm σ at the slightly 5-pouched base, lobes subpatent, broadly obovate to nearly rounded, 5–7 by 4–6 mm. *Stamens* 10, about $\frac{2}{3}$ as long as the corolla; filaments linear, flat, glabrous; anthers broad-oblong, c. 1.7 mm. *Disk* glabrous. *Ovary* subovoid-conical, 4–5 by 2 mm, densely lepidote; style as long as or shorter than the ovary, rather thick, lepidote at the base, glabrous in the upper half; stigma thick-capitate. *Capsule* fusiform, 2–2.2 by c. 3 mm. *Seeds* c. 2 mm including the filiform appendages.

Distr. *Malesia*: Philippines (Mindanao: Mt Apo and other higher peaks).

Ecol. Moss forest on peaks and ridges, 1380–2930 m, apparently not rare on Mt Apo. *Fl.* March, May–Oct.

Vern. *Kalumping-busau, malagos, malagos-tabusa, Bag., saring-singon, Mbo.*

80. *Rhododendron malayanum* JACK, Mal. Misc. 2 (1822) 17, reimpr. HOOK. Bot. Misc. 1 (1834) 369; DC. Prod. 7 (1839) 725; PLANCH. Fl. Serres 5 (1849) 477–480 h; MIQ. Fl. Ind. Bat. 2 (1859) 1059; Suppl. 1 (1860) 251; HOOK. Bot. Mag. (1873) t. 6045; BECC. Malesia 1 (1878) 205; CLARKE in Hook. f. Fl. Br. Ind. 3 (1882) 462; HENSLow, J. R. Hort. Soc. 13 (1891) 262, f. 42 (*fol.*), 43g (*fl.*); RIDL. J. Str. Br. R. As. Soc. n. 23 (1891) 145; *ibid.* n. 39 (1903) 15; K. & G. J. As. Soc. Beng. 74, ii (1905) 78; RIDL. J. Linn. Soc. Bot. 38 (1908) 313, reimpr. J. Fed. Mal. St. Mus. 2 (1908) 120; *ibid.* 4 (1909) 44; KOORD.-SCHUM. Syst. Verz. (1912) fam. 233, p. 106; KOORD. Exk. Fl. Java 3 (1912) 6; RIDL. J. Fed. Mal. St. Mus. 5 (1914) 39; J. J. S. in K. & V. Bijdr. 13 (1914) 103; RIDL. J. Fed. Mal. St. Mus. 6 (1915) 157; MILLAIS, Rhodod. (1917) 206; MERR. En. Born. (1921) 462; BURK. & HOLTT. Gard. Bull. S. S. 3 (1923) 57; RIDL. Fl. Mal. Pen. 2 (1923) 219; J. Mal. Br. R. As. Soc. 87 (1923) 75; BURK. & HENDERS. Gard. Bull. S.S. 3 (1925) 390; SP. MOORE, J. Bot. 63 (1925) Suppl. 57; HOCHR. Candollea 2 (1925) 492; HENDERS. J. Mal. Br. R. As. Soc. 5 (1927) 256; J. Fed. Mal. St. Mus. 13 (1927) 5; J. J. S. in Merr. Contr. Arn. Arb. 8 (1934) 122; BURK. Dict. (1935) 1903; SYMINGTON, J. Mal. Br. R. As. Soc. 14 (1936) 355; J. J. S. Bot. Jahrb. 68 (1937) 201; HUTCH. in Craib, Fl. Siam. En. 2 (1938) 317; STEEN. Bull. Jard. Bot. Btzg III, 17 (1948) 387; AMSH. in Back. Bekn. Fl. Java (em. ed.) 7 (1948) fam. 162, p. 3; HENDERS. Mal. Nat. J. 6 (1950) 262; MERR. J. Arn. Arb. 33 (1952) 243; SLEUM. Blumea Suppl. 4 (1958) 48; Reinwardtia 5 (1960) 100; Blumea 11 (1961) 117; STEEN. Endeavour 21 (1962) 189, t. 3; SLEUM. Blumea 12 (1963) 101; Jahrb. Deutsch. Rhodod. Ges. Bremen (1965) f. 2. — *R. tubiflorum* R. (EINWARDT) in Bl. Cat. Gew. Pl. Btzg (1823) 72, *nom.nud.*; DC. Prod. 7 (1839) 725; HASSK. Cat. Hort. Bog. (1844) 162; MORITZL, Syst. Verz. (1846) 42; PLANCH. Fl. Serres 5 (1849) 477–480 h;

ZOLL. Syst. Verz. 2 (1854) 137; MIQ. Fl. Ind. Bat. 2 (1859) 1059; Ann. Mus. Bot. Lugd.-Bat. 1 (1863) 44, t. II A; BL. Fl. Jav. Pl. inéd. (1863–83) t. 5. — *Vireya tubiflora* BL. Bijdr. (1826) 855; DON, Gen. Syst. 3 (1834) 848. — *Azalea tubiflora* BL. ex DC. Prod. 7 (1839) 725 *in syn.* — *R. fuscum* BL. Pl. Jav. Pl. inéd. (1863–83) t. 7 C, f. 1, cf. STEEN. Bull. Jard. Bot. Btzg III, 17 (1948) 388. — *Azalea malayana* (JACK) O. Ktze, Rev. Gen. Pl. 2 (1891) 387.

KEY TO VARIETIES AND FORMS

1. Inflorescences exclusively terminal.
2. Filaments glabrous. **1. var. malayanum**
2. Filaments \pm densely short-pubescent in basal $\frac{1}{3}$ – $\frac{1}{2}$.
3. Corolla besides some scales laxly short-pubescent outside **2. var. pubens**
3. Corolla besides some scales glabrous. **3. var. pilosifilum**
1. Inflorescences both terminal and axillary.
4. Filaments glabrous.
5. Leaves oblong-lanceolate, \pm acute at apex and base **5a. var. axillare f. axillare**
5. Leaves elliptic or ovate.
6. Leaves broadly elliptic, apex shortly obtusely attenuate, base \pm truncate. **5b. var. axillare f. latifolium**
6. Leaves ovate, apex shortly obtusely acuminate, base rounded **5c. var. axillare f. ovatum**
4. Filaments \pm densely short-pubescent in the lower $\frac{1}{3}$ – $\frac{1}{2}$ **4. var. infrapilosum**
- 1. var. malayanum.**

Erect, straggling shrub, not rarely crooked, terrestrial or frequently epiphytic, sometimes treelet up to 5 m. Branchlets terete, slender, tips as all parts of the plant very densely covered with flat, \pm roundish scales of two different sizes, very manifest to the naked eye; scales very close, touching or partly overlapping each other, the marginal zone thin, brownish, becoming \pm silvery with age, \pm irregularly and mostly deeply crenate or lobed or cleft, the centre dark chestnut-brown to sooty, large in relation to the marginal zone, leaving a small dark pit when the scale has gone; internodes 2–10 cm. *Leaves* subopposite or in a 3–6-merous pseudowhorl at the end of the upper 1–3 internodes, \pm ascending, oblong- to lanceolate-elliptic, sometimes lanceolate or oblanceolate, variable in shape and size, always attenuate at both ends, apex mostly gradually short-acuminate, the very apex obtuse by a small gland, base acutely attenuate into the petiole, coriaceous, dark green and shining above, rubiginose to copper-coloured beneath, entirely covered with scales on both faces initially, glabrescent above with age, persistently lepidote beneath, entire or indistinctly repand-denticulate in the upper half, not rarely slightly revolute especially towards the base, (4–) 5–10(–15) by (1–) 1.5–3(–4) cm, midrib somewhat depressed above, bold and prominent beneath in the lower part, gradually less so distally, nerves in (5–) 6–8 pairs, \pm irregular, mostly rather

straight, anastomosing before the edge, a little sunk in mature leaves, not rarely rather obscure above, slightly or not raised beneath, reticulation mostly not visible; petiole stout, grooved above, \pm semiterete, densely lepidote, (1-)1.2-1.8(-2.2) cm. *Umbels* exclusively terminal, (3-)4-8-flowered; flowers pendulous. Perulae ovate-triangular or ovate to spatulate, densely lepidote dorsally in their middle, otherwise glabrous or finely sericeous, densely whitish ciliate, 0.3-0.8(-1) by 0.2-0.4 (-0.6) cm. Bracteoles filiform, slightly dilated at the apex and barbate there, otherwise glabrous, up to 1.5 cm. Pedicels rather slender, \pm densely pubescent to nearly short-velutinous, the hairs mostly completely covered by the scales, 6-9(-15) mm. *Calyx* \pm oblique, small, 5-dentate or -lobed, densely lepidote, lobes \pm obtuse, sometimes up to 1 mm. *Corolla* tubular in general, somewhat dilated towards the lobes which are \pm spreading in full anthesis, waxy and glossy, bright red to scarlet-crimson or purplish, rarely salmon-red or rose-pink, sometimes yellowish at the tube, subdensely or mostly sparsely lepidote outside, at least at the sinuses of the lobes, glabrous inside, (1.5)-1.7-2.2 (-2.4, rarely up to 2.8) cm, tube \pm straight or slightly curved, somewhat laterally compressed, slightly 5-saccate and 3(-4) mm ϕ at base, 4-5 mm at throat, lobes broadly obovate to nearly rounded, 5-7 by c. 4 mm. *Stamens* 10, unequal, as long as or slightly longer than the corolla tube; filaments linear, nearly filiform above, glabrous, \pm papillose; anthers broad-oblong, 1.2-1.6 mm. *Disk* glabrous where not covered with scales. *Ovary* oblong-conical, densely lepidote, 4-5 by 1.5-2 mm, tapering to the style, the latter slender, equalling or mostly slightly surpassing the stamens in length, or slightly exerted from the throat of the corolla, 1-1.5(-2) cm, mostly lepidote in the lower $\frac{1}{4}$ to $\frac{1}{3}$, rarely so to $\frac{1}{2}$, or glabrous except the very base; stigma shortly club-shaped. *Capsule* subcylindric, 2.2-2.6(-2.8) by 3(-4) mm. *Seeds* very narrow, 5 mm including the tails.

Distr. S. Siam, in *Malesia*: Sumatra, Malay Peninsula, W. Java, Borneo, Celebes.

Ecol. Usually epiphytic in primary and secondary rain-forest from (550-)1000-2400 (in Celebes and Sumatra up to 3000) m, but also terrestrial on peaty soil, stony or sandy ground, quartzite cliffs, hard sandstone ridges or exposed rocks or crests, on slopes or margins of craters, where sub-alpine scrub vegetation dominates, in mossy heath forest on Mt Kinabalu, not rarely common locally. *Fl.* Jan.-Dec.

Vern. *Api-api*, *kaju si lattom hunik*, M, Tapanuli, *bungai rorong*, Iban.

Note. The flowers of *R. malayanum* are apparently constantly somewhat larger in Celebes, compared with those of the other islands, attaining the largest size given above.

2. var. pubens SLEUM. Reinwardtia 5 (1960) 102. — *R. malayanum*; J. J. S. in Fedde, Rep. 30 (1932) 164, p.p.

Corolla distinctly short-pubescent in- and outside, 3 cm. Filaments pubescent below. *Leaves*

8-12 by 2.5-5 cm. *Inflorescences* terminal.

Distr. *Malesia*: Moluccas (W. Ceram: Ora Mts), 1000 m, rare on steep limestone ridge, once found. *Fl.* May.

3. var. pilosifilum SLEUM. Reinwardtia 5 (1960) 102; Blumea 11 (1961) 117. — *R. malayanum*; J. J. S. in Fedde, Rep. 30 (1932) 164, p.p.

Pedicels finely patent-hairy. *Corolla* rose, glabrous. Filaments laxly to subdensely hairy in the lower half. *Inflorescences* terminal.

Distr. *Malesia*: Moluccas (Central Ceram and Buru), 1075-1700 m, on peat moor respectively light summit forest on limestone, and in N. Borneo on Mt Kinabalu rare among bracken, scrub and grasses at c. 2440 m. *Fl.* Dec., Feb., March.

4. var. infrapilosum SLEUM. Reinwardtia 5 (1960) 103; Blumea 12 (1963) 101.

Leaves subovate- or subelliptic-lanceolate, not rarely obtuse to subcordate at the base, 9-17 by 3-4.5 cm. Filaments laxly to subdensely hairy in the lower $\frac{1}{3}$ - $\frac{1}{2}$. *Inflorescences* both terminal and axillary.

Distr. *Malesia*: Borneo (Sarawak and Central Borneo at Sarawak border), 1700-1830 m. *Fl.* Oct.-Dec.

5a. var. axillare J. J. S. Ic. Bog. 4 (1919) 74, note, *f. axillare*; SLEUM. Reinwardtia 5 (1960) 103; Blumea 11 (1961) 117.

Inflorescences both terminal and axillary on the same specimen. *Leaves* oblong-lanceolate, 12-20 by 4-6 cm.

Distr. *Malesia*: Borneo; here and there, possibly together with the typical variety. Such forms with both terminal and axillary inflorescences are limited to Borneo.

5b. var. axillare J. J. S. *f. latifolium* SLEUM. Reinwardtia 5 (1960) 103.

Leaves (broadly) elliptic, apex shortly obtusely attenuate, base \pm truncate-obtuse, 9-14 by (4-)5-7.5 cm. *Inflorescences* both terminal and axillary.

Distr. *Malesia*: Borneo (Sarawak and SE. Borneo). *Fl.* Oct.

5c. var. axillare J. J. S. *f. ovatum* SLEUM. Reinwardtia 5 (1960) 103.

Leaves ovate, base rounded, 9-15 by 5-8 cm. *Inflorescences* both terminal and axillary.

Distr. *Malesia*: Borneo (Sarawak, Brunei and Central Borneo).

Ecol. In Brunei found gregarious as a terrestrial plant in extreme heath ('kerangas') forest at low level (c. 260 m), in heath forest at 550 m, and in mossy forest ('elfin woodland') at 1525 m, always on deep peat between hard sandstone boulders on sharp narrow ridges. *Fl.* April.

Vern. *Bungai rorong*, Iban, Brunei.

81. Rhododendron nortoniae MERR. Philip. J. Sc. 1 (1906) Suppl. 220; *ibid.* 3 (1908) Bot. 380;

ELM. Leaf. Philip. Bot. 3 (1911) 1107; MILLAIS, Rhodod. (1917) 218; MERR. En. Philip. 3 (1923) 244; MILLAIS, Rhodod. ser. 2 (1924) 195; COPEL. f. Philip. J. Sc. 40 (1929) 149, t. 2, f. 2-4; SLEUM. Reinwardtia 5 (1960) 103. — *R. catanduanense* MERR. in Copel. f. Philip. J. Sc. 40 (1929) 149, t. 2, f. 5-6.

Epiphytic shrub. Branches terete, brown; branchlets (as inflorescences and leaves) densely covered with dark brown scales of the type observed in *R. malayanum*. Leaves in pseudowhorls at the upper nodes, lanceolate to oblong-lanceolate or narrow-elliptic, acuminate to the rather slender long apex, attenuate to the acute base, coriaceous, glabrous and shining above, densely lepidote beneath, very similar to those of *R. malayanum* and *R. apoanum*, with slightly recurved margin, (5-)8-15 by 1.5-3.5 cm, midrib impressed above, prominent beneath, nerves 5-6 distant pairs, ascending, slightly impressed above and raised beneath, reticulation obscure; petiole stoutish, densely lepidote, c. 1 cm. Umbels \pm 12-flowered. Perulae ovate to oblong-ovate, subacute, glabrous dorsally, ciliate, 1-1.7 cm. Bracteoles filiform. Pedicels rather slender, patent-puberulous, not lepidote (seen only in fruit-stage), 1-1.5(-2) cm. Calyx disk-like, c. 3 mm ϕ , obscurely and obtusely lobed, lobes short-ciliate. Corolla tubular, crimson or scarlet, 4-4.5 cm, glabrous outside, pubescent inside along the 5 main nerves, tube cylindrical, c. 3.5 cm, scarcely widened distally, slightly curved, 6-7 mm ϕ , lobes broad-obovate to nearly rounded, 8-10 by 6-8 mm. Stamens 10, slightly unequal, as long as the corolla or slightly exserted; filaments filiform, densely brownish pubescent in the lower third; anthers oblong, 3.5 mm (in the Negros specimen only 2 mm). Disk glabrous. Ovary narrow-oblong, densely lepidote; style elongated, filiform, densely lepidote in the lower half only, nearly as long as the corolla; stigma turbinate. Capsule cylindrical, slightly curved, densely rusty-lepidote, (4-)5-8 by c. 3 mm. Seeds 4-5 mm long including the filiform tails.

Distr. *Malesia*: Philippines (Mindanao: near Lake Lanao, 800 m; Catanduanes: Mt Mariguindon, 270 m; S. Negros: Cuernos Mts).

Vern. *Malágos*, Catand.

Note. There are slight differences between the 3 specimens from the above mentioned localities in size of leaves, anthers, and capsules.

82. *Rhododendron acuminatum* HOOK. f. in Hook. Ic. Pl. (1852) t. 886; WALP. Ann. 5 (1858) 446; BECC. Malesia 1 (1878) 207, *p.p.*; STAPP, Trans. Linn. Soc. II, Bot. 4 (1894) 197; GIBBS, J. Linn. Soc. Bot. 42 (1914) 104; MERR. En. Born. (1921) 460; SLEUM. Reinwardtia 5 (1960) 104; Blumea 12 (1963) 101; Jahrb. Deutsch. Rhodod. Ges. Bremen (1965) f. 13. — Fig. 18.

Small tree or shrub, c. 3, rarely up to 6 m. Branches few, robust. Branchlets short, much divaricate, upper parts subterete to obtusely angular especially towards the end of each internode; upper internodes 3-7 cm, densely dark



Fig. 18. *Rhododendron acuminatum* HOOK. f. Mt Kinabalu, 2600 m, N. Borneo (SLEUMER 4691) (SLEUMER, 1963).

lepidote at the ends, more silvery so below. Leaves 3-5(-6) close together at the upper nodes or condensed in pseudowhorls, ovate or elliptic-ovate, sometimes ovate-lanceolate, apex rather short-acuminate, \pm obtuse, base mostly rounded, sometimes very broadly attenuate, stiff coriaceous, dark green and glossy above, densely scaly on both faces initially, glabrescent above (pits of the gone scales remaining visible), permanently covered beneath with scales of the type found in *R. malayanum*, edge not or slightly revolute, 6-10 (-12) by 2.5-5(-6) cm, midrib strongly impressed above, very thick and rigid beneath, continuing the petiole and gradually narrower apically, nerves 6-8 pairs, spreading, straight or slightly curved to the edge, distinctly anastomosing, \pm deeply depressed above, \pm strongly prominent beneath, veins laxly reticulate and \pm manifestly impressed above, not or slightly raised beneath, the whole lamina thus rather coarsely \pm bullate at least in the dry state; petiole subterete, grooved above, densely lepidote, (1-)1.2-2 cm by 2-3 mm. Flowers (7-)10-15 per umbel. Flower buds ovoid, c. 2.5-1.5 cm. Perulae ovate, truncate at the base, obtuse at the apex, greenish, all over covered with a very fine brownish or greyish puberulence outside, moreover lepidote outside along the mediane and/or at the apex, but glabrous at the thin margin, up to 2 by 1.3 cm. Bracteoles linear to filiform, subspathulate-dilated at the top, patent-puberulent, up to 1.5 cm. Pedicels rather stoutish, densely scaly, puberulent among the scales, 8-12 mm in flower. Calyx cup-shaped, shallowly 5-lobed, c. 2.5 mm ϕ , densely lepidote. Corolla tubular-subinfundibuliform, red, scarlet or purple to deep pinkish orange, 2.5-2.8 cm, subdensely to sparsely and caducously brownish lepidote, finally \pm glabrescent outside, shortly subdensely pubescent at the lower half of the tube inside, tube 1.5-1.7(-2) cm, rather straight, cylindrical, c. 4 mm ϕ at the slightly 5-pouched base, somewhat widened to the mouth, lobes subpatent,

obovate to almost rounded, (6-)8-10 by 5-8 mm. *Stamens* 10, unequal, c. 2 cm; filaments linear, flattened to nearly the top, rather densely whitish patent-hairy in the lower third; anthers broad-oblong, 2.5-2.8 by 1 mm, no basal appendages. *Disk* glabrous. *Ovary* cylindrical, c. 5 by 2 mm, densely squamular-lepidote, gradually tapering to the rather stoutish style, which is lepidote in its lower half; stigma thick, turbinate, with several lobes. *Capsule* cylindrical, short-attenuate at both ends, densely lepidote, 3-3.5 cm by 4-5 mm.

Distr. *Malesia*: North Borneo (Mt Kinabalu).

Ecol. In mossy forest and scrub forest, on ridge top, 1830-3350 m, not rare. *Fl.* Jan.-Dec.

83. *Rhododendron fortunans* J. J. S. Bull. *Jard. Bot. Btzg III*, 1 (1920) 401, t. 49; SLEUM. *Reinwardtia* 5 (1960) 104; *Blumea* 12 (1963) 101.

Shrub. Branchlets stoutish, subangular, upper parts (as inflorescences and leaves) densely squamular brown-lepidote as in *R. malayanum*; internodes 2-7 cm. *Leaves* 3-5 crowded near the end of the upper node, \pm set in a pseudowhorl, sometimes subopposite, elliptic-lanceolate, apex rather long subcaudate-acuminate, subacute, base acutely attenuate into the petiole or rarely obtuse, coriaceous, dark olivaceous to brownish when dry above, dark rubiginose beneath, lepidote on both faces initially, glabrescent above with age (dark pits of the fallen scales left), completely covered with dark brown scales beneath, edge slightly revolute especially to the base, (6.5-)7-13 by 2.3-4 cm, midrib very stout beneath, gradually decreasing apically, nerves 5-10 pairs, \pm patent and partly rather straight, manifestly anastomosing, very impressed above and prominent beneath, veins laxly reticulate, lamina \pm markedly bullate; petiole somewhat flattened, grooved above, densely lepidote, 5-10(-12) by 2-3 mm. *Umbels* 10-13-flowered. Flower buds ovoid, large, perulae ovate to obovate-spathulate, outer ones all over puberulent, lepidote in the upper part, inner ones lepidote only, up to 2.4 by 1.2 cm. Bracteoles linear below, spatulate towards the apex, ciliolate, up to 1.6 cm. Pedicels rather stoutish, densely lepidote, 1.5-2 cm. *Calyx* suboblique, small, cup-shaped, shortly obtusely 5-lobed, lepidote. *Corolla* white, widely funnel-shaped, c. 1.5 cm long in all, c. 2 cm \varnothing at limb, 5-lobed, tube 3-4 mm long, very densely brownish lepidote at the tube and the lower half of the lobes outside, densely pubescent at the tube inside except the spots where the filaments are inserted, glabrous at the lobes inside, lobes suborbicular, 9-12 mm \varnothing . *Stamens* 10, c. 9 mm; filaments linear, glabrous at the very base, short-villous above, more laxly pubescent upwards to the top; anthers elongate, c. 3 mm, thecae divergent below, each bearing a basal conical obtuse lobe or appendice. *Disk* glabrous. *Ovary* conical, 2.5 by 1.7 mm, densely lepidote, gradually attenuate into a rather thick glabrous style (2.5 mm); stigma thick, turbinate. *Capsule* short-cylindric, c. 2.3 by c. 0.3 cm; fruit-pedicel c. 2 cm.

Distr. *Malesia*: Central Borneo (top of B.

Radja in the Schwaner Mts), c. 2000 m, said to be common there. *Fl.* Oct., Dec.

Ver n. *Daun tali*, *kaju tari*, Daj.

84. *Rhododendron lineare* MERR. *J. Str. Br. R. As. Soc. n.* 76 (1917) 108; *En. Born.* (1921) 462; SLEUM. *Reinwardtia* 5 (1960) 104; *Blumea* 11 (1961) 117.

Epiphytic or terrestrial shrub, up to 2 m. Branchlets slender, terete, irregular; internodes 1.5-6 cm, the upper 2-4 ones densely lepidote. *Leaves* in 3-5-merous pseudowhorls, mostly present only at the end of the uppermost 2 nodes, linear to linear-lanceolate, gradually attenuate towards the obtuse apex, base very broadly attenuate, or mostly subtruncate-rounded, coriaceous, glabrous and shining above in the mature state, densely lepidote beneath (scales in general of the type which is found in *R. malayanum*, but much less distinctly of two different sizes, although larger ones are present, the majority are small spaced ones with relatively few ones partly overlapping), margin somewhat cartilaginous, wavy, mostly revolute in dry state, (2.8-)3-4(-5) cm by (3-)4-5 (very rarely up to 8) mm, midrib strongly impressed on the upper surface, sharply prominent beneath, nerves obscure; petiole rather thick, densely lepidote, c. 2 mm. *Umbels* 2-3 (rarely up to 4)-flowered. Flower buds elongate-ovate, subacute, outer perulae narrow ovate, inner ones obovate-oblong to subspathulate, all short-acuminate, densely lepidote dorsally in their upper part, densely whitish ciliate towards the apex, up to 1.5 cm by 7 mm. Bracteoles narrow linear, barbate-ciliate at the top, up to 1.2 cm. Pedicels rather stoutish, covered with squamular scales which are easily detached, 8-10 mm. *Calyx* very small, oblique, disk-shaped, c. 2 mm \varnothing , obscurely lobed, densely lepidote. *Corolla* infundibuliform, i.e. tubular below, campanulate above, bright (primrose) yellow with reddish brown external spots (scales!), c. 2 cm, densely lepidote at the tube, laxly so on the lower half of the lobes outside, glabrous inside, tube straight, cylindrical, 7-8 mm, c. 3 mm \varnothing at the slightly saccate base, lobes spreading, oblong-obovate, apex rounded, 10-12 by 6-7 mm. *Stamens* 10, slightly unequal, nearly as long as the corolla; filaments filiform above, dilated towards the base, rather densely whitish patent-hairy in the lowest 3 mm; anthers narrow-oblong, c. 3 mm by 0.5 mm, thecae somewhat pointed at the base. *Disk* rather thick, glabrous. *Ovary* subcylindric, c. 4 by 1.5 mm, densely lepidote, gradually tapering to a rather thickish style, which is almost as long as the corolla and lepidote in its lower half; stigma rather thick-obconical, distinctly 5-lobed. *Capsule* cylindrical, densely lepidote, 1-1.2 cm by c. 2.5 mm.

Distr. *Malesia*: Borneo (Sarawak; Brunei).

Ecol. Moss forest, epiphytic or on moss covered ground, 360-1230 m. *Fl.* June-Oct.

85. *Rhododendron obscurum* SLEUM. *Reinwardtia* 5 (1960) 104.

Shrub, c. 3 m. Branchlets subdensely minutely rufous lepidote; ultimate internodes c. 3 cm by

2 mm. *Leaves* in 3-4-merous pseudowhorls at the upper 2 or 3 nodes, oblong-obovate, apex rounded or mostly slightly retuse, base \pm broadly cuneate, coriaceous, lepidote initially on both faces, at full maturity \pm glabrescent above, subdensely and persistently lepidote beneath (scales minute, the thin marginal zone variously dented, the centre but little impressed, rather large and of the chestnut-brown colour typical for those of *R. malayanum*), flat, 4.5-7.5 by (2-)2.3-3 cm, midrib narrow and immersed above, as thick as the petiole beneath at the base and much prominent, gradually less so apically, nerves 7-9 pairs, suberect below, curved anastomosing towards the edge, minutely impressed above, somewhat raised or nearly invisible beneath, no reticulation; petiole a little flattened, grooved above, densely lepidote, 6-8 by c. 2 mm. *Umbels* \pm 3 flowered. Flower bud scales ovate-acuminate, subsericeous-puberulous on both sides, white-ciliate, c. 7 by 4 mm. Pedicels rather slender, laxly lepidote, 1.4-1.8 cm. *Calyx* oblique, disk-shaped, very shortly or not lobed, lepidote dorsally, c. 2.5 mm ϕ . *Corolla* tubular, slightly curved, gradually widened to the mouth, pink, 2.6-3 cm long in all, laxly lepidote outside, glabrous inside, tube c. 2 cm, at the base 3-4, at the apex c. 6 mm ϕ , lobes obovate, suberect, 0.7-1 by 0.4-0.5 cm. *Stamens* 10, unequal, the longer ones nearly as long as the corolla; filaments linear, glabrous; anthers oblong-obovate, c. 1.5 by 0.7 mm. *Disk* glabrous. *Ovary* elongate-conical, densely lepidote, c. 4 by 1.5 mm, gradually tapering to the slender, somewhat exerted style; stigma subcapitate. *Capsule* c. 1 cm.

Distr. *Malesia*: Malay Peninsula (Pahang: top of Mt Benom), 2105 m, once found. *Fl.* May.

Note. Apparently a natural hybrid of *R. malayanum* with a species of *subsect. Pseudovireya* (13. *R. perakense*, 16. *R. scortechinii*, or 10. *R. spatulatum*).

86. *Rhododendron variolosum* BECC. *Malesia* 1 (1878) 206; MERR. En. Born. (1921) 463; Sarawak Mus. J. 3 (1928) 543; SLEUM. Reinwardtia 5 (1960) 105; Blumea 12 (1963) 101.

var. variolosum.

Terrestrial or epiphytic shrub, 0.5-0.8 m, or treelet up to 1.6 m; branchlets subterete, rather stout; internodes 2-12 cm, upper ones densely squamular-lepidote, lower ones glabrous, minutely tubercled. *Leaves* scattered, rather close together in the upper part of the upper nodes, lanceolate to elliptic-lanceolate, rarely elliptic, gradually attenuate towards the apex and base, apex subacute, the very base mostly obtuse before running into the petiole, coriaceous, glabrous and shining above in mature state, some scattered scales excepted (fallen scales leaving no distinct pits), densely covered beneath with scales (these in general of the type found in *R. malayanum*, but the larger ones sparse and less different in size than in *R. malayanum*, rather small and largely spaced initially, but some touching or overlapping, all distinctly impressed), narrowly revolute, (7-)8-12(-16) by (2-)2.5-4

(-5.5) cm, midrib deeply depressed above, strongly raised beneath, nerves 10(-12) pairs, rather straight, curved-anastomosing before the edge, all slightly impressed above, prominent beneath as are the reticulate veins; petiole flattened, grooved above, densely lepidote, (1-)1.5-2.5 cm by 2-3 mm. *Umbels* terminal and axillary (the latter apparently not well developed), 5-8(-12)-flowered. Flower buds oblong-ellipsoid, acuminate, perulae ovate-oblong to subspathulate, outer ones acutely acuminate, lepidote upwards dorsally, up to 1.5 by 0.7 cm. Bracteoles filiform, glabrous, up to 1 cm. Pedicels nodding, slender, densely lepidote, 1-1.5 (-2) cm. *Calyx* disk-shaped, rather oblique, wavy, obscurely lobed, densely lepidote, c. 3 mm ϕ . *Corolla* pink, or scarlet with yellow tube, infundibuliform, 2.5-2.8(-3) cm, very laxly lepidote or glabrous outside, entirely glabrous inside, tube cylindrical, \pm straight, saccate at the base, 1.2-1.5 cm, 3-4 mm ϕ at the base, 6 mm at throat, lobes obovate-spathulate, rounded-obtuse, spreading, 1.1-1.3(-1.5) by 0.6-0.8 cm. *Stamens* 10, unequal, 1.7-2 cm; filaments linear, glabrous; anthers almost rectangular, c. 2 by 0.7 mm. *Disk* glabrous. *Ovary* elongate-conical, densely lepidote, c. 5 by 1.5 mm, deeply 5-ribbed, gradually tapering to a rather thick style as long as the stamens and lepidote in its lower $\frac{2}{3}$, glabrous elsewhere; stigma short-turbinate or subcapitate, shortly 5-lobed.

Distr. *Malesia*: Borneo (Sarawak: Mt Pueh, c. 1500 m; N. Borneo: on crest of Mt Trus Madi, c. 2600 m).

var. andersonii (RIDL.) SLEUM. Reinwardtia 5 (1960) 105; Blumea 11 (1961) 117; *ibid.* 12 (1963) 101. — *R. andersonii* RIDL. Kew Bull. (1914) 209; MERR. En. Born. (1921) 460.

Filaments rather densely patent-hairy in the lower third. *Corolla* sometimes pubescent inside at the tube, of a pink to deep red colour, often with yellow corolla tube or base.

Distr. *Malesia*: Borneo (Sarawak, Central Borneo, and Mt Kinabalu in North Borneo).

Ecol. In open exposed crest of spur, among bracken, scrub and grasses, rare on Mt Kinabalu, where it grows from 2345 to 2440 m, and almost certainly a natural hybrid of *R. malayanum* with a yellow-flowered species of *ser. Javanica*.

Vern. *Bunga klangin*, Iban.

87. *Rhododendron wilhelminae* HOCHR. Candollea 2 (1925) 493; SLEUM. Reinwardtia 5 (1960) 106.

Shrub, c. 2 m. Branchlets somewhat flattened at the ends, lepidote; internodes 5-8 cm. *Leaves* in 4-5-merous pseudowhorls at the upper 1 or 2 nodes (one leaf mostly inserted a little below the node), broadly lanceolate, apex subacutely acuminate, base cuneate, coriaceous, lepidote on both faces initially, \pm glabrescent and shining with age, persistently lepidote beneath (scales rather flaky, dense but spaced 1-3 times their own diameter, light brown marginal zone rather narrow, irregularly dented or lobed, centre relatively large, dark chestnut-brown as in *R. mala-*

yanum), edge slightly recurved especially towards the base of the lamina, 8–10 by 2.6–3.7 cm, midrib slightly impressed above, much prominent beneath, nerves 8–9(–10) pairs, slightly raised beneath only, reticulation obsolete; petiole \pm flattened, lepidote, 8–15 by c. 2 mm. *Umbels* \pm 4-flowered. Flower buds elongate-ovoid, c. 1.7 by 0.5 cm. Perulae oblong-ovate, subobtusate, glabrous in- and externally, white-ciliate towards the apex, up to 1.5 by 0.7 cm. Bracteoles linear. Pedicels rather stoutish, \pm densely lepidote and finely patent-pubescent, 1.2–1.6 cm. *Calyx* oblique, very shortly subacutely lobed, or occasionally one lobe elongated up to 2 mm. *Corolla* tubular-funnelform, c. 3.5 cm long in all, c. 2.5 cm ϕ at the limb, carmine, practically glabrous outside, tube c. 1.8 cm, base somewhat pouched and 4–5 mm ϕ , widened to c. 6 mm at throat, lobes obovate-spathulate, c. 1.5 by 1 cm. *Stamens* 10, very unequal, the longest c. 2.6 cm; filaments linear below, somewhat broadened above the base, \pm densely patently hairy in the lower third, narrower and glabrous towards the top; anthers elongate-obovate, c. 2.5 by 0.5 mm, containing pollen. *Disk* hairy on the upper margin, glabrous below. *Ovary* subcylindric, densely lepidote and laxly finely patent-pubescent, c. 4 by 1.5 mm; style continuous, subdensely patent-pubescent for c. 2 mm at the base, glabrous for the rest, c. 2.2 cm; stigma distinctly 5-lobed.

Distr. *Malesia*: W. Java (Mt Salak), c. 1350 m, once found in shrubbery near the crater, very rare. *Fl.* Oct.

Note. The characters of *R. wilhelminae* show a combination of those of 225. *R. javanicum* var. *teysmannii* and *R. malayanum*, which both are found on Mt Salak, and suggest a natural hybrid of these species.

A garden-hybrid "Monarch" (of the formula *jasminiflorum* > *javanicum* \times *longiflorum* \times *brookkeanum*) has been crossed with *R. malayanum*; the flower of this hybrid, figured by HENSLOW, J. R. Hort. Soc. 13 (1891) 276, f. 44 n, reminds much of that of *R. wilhelminae*.

88. *Rhododendron hybridogenum* SLEUM. Reinwardtia 5 (1960) 106.

Shrub. Branchlets rather slender, densely lepidote; internodes 4–7.5 cm by c. 2 mm. *Leaves* in 4-merous pseudowhirls at the upper 2 nodes,

subovate-elliptic, apex shorter or longer subacutely acuminate, base rounded or mostly slightly cordate, coriaceous, rather densely set with small scales or their relics above at maturity, very densely and persistently lepidote beneath (scales rather small, often contiguous, narrow marginal zone dented or lobed to various degree, centre slightly impressed, relatively large and of the chestnut or russet-brown colour found in *R. malayanum*), slightly revolute towards the base, 4.5–6 by (2–)2.5–2.9 cm, midrib much dilated at the base only, further up abruptly narrowed and slightly impressed above, as thick as the petiole at the base, gradually narrower and less prominent distally beneath, nerves (6–)8–10 pairs, slightly curved, inarching near the edge, faintly depressed above, slightly raised beneath, no reticulation; petiole densely lepidote, somewhat flattened, 4–6 by c. 2 mm. *Umbels* \pm 8-flowered. Perulae ovate-acuminate, apiculate, subsericeous dorsally, lepidote towards the top, obscurely ciliolate, up to 8 by 6 mm. Bracteoles linear, subglabrous, 5 mm. Pedicels subdensely lepidote, more laxly short-patent-pubescent, 1–2 cm by 0.5 mm at anthesis. *Calyx* obliquely disk-shaped, indistinctly lobed, c. 3 mm ϕ . *Corolla* tubular, said to be yellowish, c. 3 cm long in all, outside laxly lepidote and especially in the lower half laxly patent-pubescent, inside finely hairy, tube but a little widened upwards, c. 2 by 0.3 cm, lobes obovate-spathulate, \pm expanded, c. 1 by 0.5–0.6 cm. *Stamens* 10, unequal, c. 2.5 cm; filaments linear, densely hairy below, less so towards the middle, narrower and glabrous above; anthers obovate-oblong, c. 1.5 by 0.7 mm. *Disk* somewhat prominent, hairy at the upper margin, glabrous otherwise. *Ovary* elongate-ovoid, continuous with the style, very densely lepidote, with a hair here and there between the scales, c. 5 by 2 mm; style slender, c. 2.8 cm, subdensely lepidote and laxly patent-pubescent to the lower $\frac{2}{3}$, glabrous for the rest; stigma subcapitate, distinctly 5-lobed.

Distr. *Malesia*: Malay Peninsula (Pahang: Cameron Highlands). Once found. *Fl.* Oct.

Note. *R. hybridogenum* most certainly is a natural hybrid of *R. malayanum* and 136. *R. jasminiflorum* var. *punctatum*, and exactly intermediate between these species, which (both terrestrial) are not rare in the Cameron Highlands.

5. Subsection *Albovireya*

SLEUM. Reinwardtia 5 (1960) 107. — *Rhododendron* sect. *Zygomorphante* SCHLTR., Bot. Jahrb. 55 (1918) 145, p. p. — Fig. 20—21.

Scales very dense, in general rather large, touching or slightly overlapping each other, forming a coherent layer on the undersurface of (sub)mature leaves, which is persistent for a rather long time. *Corolla* of various shape.

Distr. *Malesia*: Sumatra, Java, Celebes, Philippines (Luzon), New Guinea. Fig. 19.

Note. It is not clear whether the *Albovireya* group is a natural entity, and deserves as such the rank of a subsection, or that it should be merged as a series into *subsect. Euvireya*. Presumable hybrids of *R. malayanum* with species of *subsect. Euvireya* show a similar dark red to copper coloured layer of very dense, partly overlapping scales on the undersurface of the leaves. Possibly such apparently rare species

as *R. lampongum* and *R. cernuum* are of hybrid origin, less probably *R. album* and *R. aequabile*. As the area of *R. malayanum* does not extend farther than Ceram and Buru in the East, the New Guinean species of *subsect. Albovireya* cannot be hybrids; they form a rather coherent group with those of Celebes within the subsection.

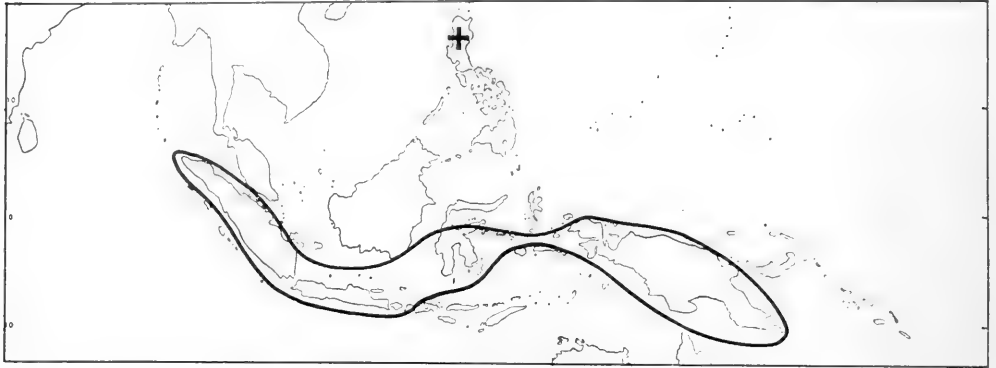


Fig. 19. Distribution of *Rhododendron subsect. Albovireya*.

KEY TO THE SPECIES

1. Ovary densely exclusively lepidote.
2. Corolla \pm campanulate. (Leaves 4.5–12.5 by 1.3–5 cm; petiole 0.9–3.5 cm).
3. Leaves lanceolate to narrow-elliptic; nerves and veins distinctly raised above. Filaments rather longish and patently hairy in the lower third 89. *R. album*
3. Leaves elliptic; nerves and veins slightly impressed above. Filaments glabrous 90. *R. aequabile*
2. Corolla \pm tubular.
4. Petiole 1.5–2 cm 91. *R. proliferum*
4. Petiole 0–6 (rarely up to 8) mm.
5. Leaves subcoriaceous to coriaceous (nerves mostly visible on both faces or at least on the upper- or undersurface). Style \pm as long as or shorter than the ovary.
6. Leaves \pm long cuneate-attenuate to a distinct petiole. 92. *R. zollingeri*
6. Leaves broadly attenuate or mostly subtruncate or obtuse, sometimes rounded at the base, petiole (very) short to 0.
7. Corolla (1.3–)1.5–1.6 cm, but slightly oblique, lobes equal. Ovary obovoid-obconical. Capsule c. 6 mm ϕ 93. *R. laguncularpum*
7. Corolla 1–1.2 (rarely up to 1.3) cm, more distinctly oblique, lobes unequal. Ovary ovoid-conical. Capsule 4–5 mm ϕ .
8. Perulae lepidote and shortly subsericeous-pubescent dorsally, manifestly ciliate. 94. *R. yelliotii*
8. Perulae caducously lepidote along the dorsal median, or quite glabrous and \pm lustrous, fimbriate, no proper hairs present at all. More densely lepidote forms of 183. *R. inconspicuum* (*subsect. Euvireya ser. Buxifolia*).
5. Leaves \pm rigidly coriaceous (nerves \pm obscure). Style longer than the ovary.
9. Leaves elliptic or mostly subovate- or oblong-, rarely ovate-elliptic, (1.5)–1.8–2.7(–3.7) by (0.6)–0.8–1.4(–1.6) cm, base \pm subtruncate-rounded; petiole distinct, subterete. (2–)3–6(–8) by 1.5–2 mm 95. *R. correoides*
9. Leaves oblong to narrowly obovate-oblong, 1.8–2.4 (rarely up to 3) by (0.4)–0.6–0.8(–1) cm, base cuneate into the very short, much flattened petiole (up to 2 by 1–1.5 mm), or almost sessile. 96. *R. comptum var. comptum*
1. Ovary lepidote and \pm densely and patently hairy.
10. Corolla campanulate or funnellform-campanulate, yellow, lobes \pm as long as the tube.
11. Leaves ovate-lanceolate to oblong-elliptic, 2–4(–4.5) cm wide. Corolla funnellform-campanulate, 1.8–2 cm. 97. *R. lampongum*
11. Leaves lanceolate, 1–1.5 (rarely up to 1.7) cm wide. Corolla broad-campanulate, 1–1.2 cm. 98. *R. cernuum*
10. Corolla tubular or funnellform-tubular, pink to scarlet, lobes (mostly much) shorter than the tube.
12. Leaves coriaceous with well visible, either prominent or impressed lateral nerves.
13. Leaves (4.5–)6–9 by (3–)3.5–5(–5.5) cm. Corolla 3.3–3.8 cm long in all 99. *R. pudorinum*

13. Leaves 1.5-4 by 1-2.6 cm.
 14. Corolla 2.3-2.5(-2.6) cm long in all, laxly to subdensely lepidote outside 100. *R. arenicolum*
 14. Corolla (2.8-)3-3.2 cm long in all, glabrous outside. 101. *R. giulianettii*
 12. Leaves thicker and more rigid, the nerves faint or not visible.
 15. Leaves oblong to obovate-oblong. 97. *R. comptum* var. *trichodes*
 15. Leaves elliptic or more rarely oblong or subovate-elliptic 102. *R. versteeгии*

89. *Rhododendron album* BL. Cat. Hort. Btzg (1823) 72; DC. Prod. 7 (1839) 721; PLANCH. Fl. Serres 5 (1849) 477-480 h; HOOK. Bot. Mag. (1857) t. 4972; PLANCH. Belg. Hort. 8 (1858) 70, f. 20; MIQ. Fl. Ind. Bat. 2 (1859) 1058; Ann. Mus. Bot. Lugd.-Bat. 1 (1863) 43; BL. Fl. Jav. Pl. inéd. (1863-83) t. 3; KOORD. Exk. Fl. Java 3 (1912) 4; J. J. S. in K. & V. Bijdr. 13 (1914) 101; KOORD. Fl. Tjib. 3 (1918) 3; STEEN. Bull. Jard. Bot. Btzg III, 17 (1948) 387; AMSH. in Back. Bekn. Fl. Java (em. ed.) 7 (1948) fam. 162, p. 4; SLEUM. Reinwardtia 5 (1960) 108; STEEN. Endeavour 21 (1962) 189, t. 7, non HOFFMANNSEGG, 1824, nec BUCH.-HAM. ex D. DON, 1825. — *Vireya alba* (BL.) BL. Bijdr. (1826) 855; G. DON, Gen. Syst. 3 (1834) 848.

Epiphytic shrub, up to 1 m. Branchlets stoutish, densely covered with brown-golden scales at the upper 3-4 internodes, the latter 4-8 (rarely up to 13) cm long, ultimate ones subangular and striate lengthwise in dry specimens, lower ones terete. Leaves in 4-5-merous pseudowhorls at the upper 3-4 nodes, lanceolate to narrow-elliptic, acuminate and subacute at the apex and base, coriaceous, rather stiff, sparsely lepidote initially, becoming entirely glabrous in mature state and slightly shining above, dull brown beneath and densely rufous- or rubiginose-lepidote (scales rather small, flat, very dense, touching or slightly overlapping each other, forming a \pm continuous layer for a rather long time, the marginal zone wide in relation to the small darker centre, \pm deeply and irregularly crenate to moderately incised, finally caducous, the centre depressed, remaining pits small, rather close to each other), entire, the edge markedly revolute in dry specimens, 5-12.5 by 1.3-3(-3.5) cm, midrib manifestly impressed the entire length above, robust and prominent beneath, nerves 7-10 pairs, irregular, \pm spreading, rather straight below, anastomosing towards the edge, slightly though manifestly raised above, obscure beneath; petiole stout, grooved above, very densely lepidote, 1.2-3(-3.5) cm. Umbels 7-12-flowered. Flower buds subglobose, abruptly contracted into a long beak (5 mm). Perulae ovate-triangular, apex subulate-acuminate, lepidote dorsally, up to 1.4 by 0.5 cm. Bracteoles linear, lepidote, up to 1 cm. Pedicels rather slender, 1-2(-2.3) cm, densely lepidote. Calyx disk-shaped, lepidote dorsally, lobes broadly ovate, obtuse, appressed to the corolla, 1-1.5 mm. Corolla campanulate, cream or pale yellow, rarely yellowish pinkish, 1.2-1.5 cm (c. 2 cm when fresh) in all, 3-4 mm σ at base, c. 1.5 cm at limb, laxly golden-lepidote outside, glabrous inside except for the lowest 2 mm which are laxly pubescent, lobes transverse-oval to suborbicular, 7-8 by 9-10 mm.

Stamens 10, c. 1.1 cm; filaments linear, patent-hairy in the lower third, glabrous above; anthers broad-oblong, c. 1.8 mm. Disk glabrous. Ovary conical, exclusively and densely lepidote, c. 3 by 1.5 mm, tapering to the style, the latter rather thick, 6-7 mm, lepidote in the lower half, glabrous for the rest; stigma thick, annular, deeply 5-lobed. Capsule fusiform, 2 cm by 4 mm, densely lepidote, on fruit-pedicle 2-2.3 cm. Seeds 5-6 mm including the tails.

Distr. *Malesia*: W. Java (Mts Salak, Gedeh, and vicinity), reported from Central Java (Kedu: Dieng, leg. JUNGHUHN), but not recollected there.

Ecol. Mountain forest, 1200-1700 m, not rare locally. Fl. Sept.-Jan.

Vern. *Tjantigi koneng*, J.

90. *Rhododendron aequabile* J. J. S. Bull. Jard. Bot. Btzg III, 13 (1935) 451; SLEUM. Reinwardtia 5 (1960) 109. — *R. album* (non BL.) RIDL. J. Fed. Mal. St. Mus. 8 (1917) 58.

Much branched tree or large shrub, 1.5-4 m. Branchlets stout, terete, densely dark rufous-lepidote at the upper 2 longitudinally striate internodes; internodes 3.5-16 cm. Leaves in 6-9-merous pseudowhorls at the ultimate 2 or 3 nodes, elliptic, apex shortly acuminate or apiculate, subacute to rather obtuse, base \pm long-attenuate into the petiole, stiff-coriaceous, glabrous at maturity above, very densely dark rufous-lepidote all over the undersurface (scales very similar to those of *R. album*), entire, the edge \pm revolute in dry specimens, 4.5-10(-11) by (1.7-)2.5-5 cm, midrib depressed over its entire length, strongly convex-prominent beneath, nerves 6-10 pairs, irregularly spreading, rather straight below, anastomosing towards the edge, slightly but distinctly depressed above, a little or not raised beneath, veins rather indistinct, faintly impressed above; petiole grooved on both sides, densely lepidote, 0.9-2.8 cm by 1.8-3 mm. Umbels 6-12-flowered. Outer perulae ovate-acuminate, abruptly subulate in the upper half, \pm lepidote outside especially at the acumen, up to 2.2 cm by 1 cm, inner ones linear-spathulate, apex erose, glabrous, up to 1.5 cm by 3 mm. Bracteoles filiform, up to 1 cm. Pedicels thickened at apex, curved, densely lepidote, epilose, 1-1.5 cm by 1 mm. Calyx rather small, oblique, disk-shaped, angular, 3-4 mm σ , margin indistinctly lobed, wavy, densely lepidote dorsally. Corolla tubular below, widened distally, i.e. campanulate in outline, brick red to carmine, laxly to subdensely lepidote at the tube and the lower part of the lobes outside, glabrous inside, 1.7-2(-2.5) cm long in all, tube 1-1.2 cm, 4-5 mm σ at base,

8–10(–15) mm at throat; lobes obovate-orbicular, slightly retuse, repand or wavy at the apex, 6–9(–11) by 5–9(–11) mm. *Stamens* 10; filaments linear, glabrous, 1–1.3 cm; anthers broad-oblong, 2–2.2 by 1 mm. *Disk* glabrous. *Ovary* conical-ovoid, densely lepidote, epilose, c. 4 by 3.5 mm, abruptly attenuate to the style, the latter rather thick, glabrous, 8–10 mm; stigma very thick, broad-conical or subcapitate, 2 mm ϕ , 5-lobulate. *Capsule* elongate-ellipsoid, (1.4–)1.6–2(–2.2) cm by 6–7 mm, slightly 5-ribbed, densely lepidote, on fruit-pedicle 1–1.7 cm by 1–1.5 mm. *Seeds* 4 mm including the tails.

Distr. Malasia: Sumatra (Westcoast to Benkulen: Mts Singgalang, Kerintji, and Pesagi).

Ecol. Dense (subalpine) forest, also in *Vaccinium* forest, (1220–)2300–2870 m. *Fl.* Jan.–June, *fr.* May–June.

91. *Rhododendron proliferum* SLEUM. *Blumea* 12 (1963) 101.

Erect, terrestrial, few-branched shrub, 1.5–2 m. Branchlets purplish, obtusangular, tips very densely and rather persistently lepidote; innovations not rarely with numerous basal, long-persistent thin perulae, as are found in the flower buds, due to a median foliar proliferation of the inflorescence; internodes (3–)6–10 cm by 4–6 mm. *Leaves* in (8–)10–12-merous pseudowhorls at the upper 2 or 3 nodes, erect, a little spreading (uppermost whorl \pm concealing the inflorescence or infructescence), subspathulate-obovate or obovate-oblong, apex broadly attenuate to almost rounded, base cuneate to and somewhat decurrent along the petiole, young ones covered by scales on both faces, mature ones coriaceous, firm, glabrous above, very densely and subpersistently lepidote beneath (scales subequal, partly covering each other, brown to reddish brown and shining, marginal zone thin, rather wide, irregularly sub-stellate-angular, -lobed or -dented, centre small, impressed, leaving dark pits when the scale is gone), entire, slightly convex in dry specimens, (6–)7–10.5 by (2–)2.5–4.5(–5) cm, midrib rather narrowly impressed above, as thick as the petiole and obtusely prominent beneath, nerves 7–9 pairs, lower ones in an acute, upper ones in a wide angle from the midrib, obscurely inarching before the edge, faintly immersed above, a little prominent or obscure beneath, no reticulation; petiole dorsally compressed and grooved, very densely lepidote, 1.5–2 cm by c. 3 mm. *Umbels* (4–)6–10-flowered (to conclude from the young infructescences known); perulae numerous, thin, purplish, persistent for a long time, outer ones elongate-deltoid to ovate-acuminate and lepidote dorsally, inner ones elongate-oblong to -spathulate, up to 4 by 2 cm. Pedicels densely lepidote, 2.5–3.2 cm by c. 1 mm in fruit. *Calyx* but slightly oblique, patellar, shortly 5-lobed, c. 5 mm across. *Corolla* (only known in withered state on the young fruit) tubular below, expanded at the lobes, apparently slightly zygomorphic and red when fresh, c. 3 cm long in all, lepidote at the base of the tube outside, otherwise glabrous, tube c. 2 cm by 4–5

mm, lobes obovate, c. 5 mm ϕ . *Stamens* 10; filaments linear (1 mm) below, narrower upwards, glabrous, c. 2.7 cm; anthers subobovate-elliptic, base obtuse, c. 3.5 by 1.5 mm. *Disk* prominent, glabrous. *Ovary* in a developed state (or young fruit) very densely set with rubiginous stellate scales, tapering to the style, which is lepidote at the base, glabrous for the rest, 2–2.5 cm; stigma subpetalate, 2–2.5 mm ϕ . *Fruit* thick-fusiform, with 5 thick ribs, densely lepidote, finally 2–2.5 cm by 6–8 mm.

Distr. Malasia: W. New Guinea (Arfak Mts: on Mt Gwamongga, Anggi Gigi Lake), once collected.

Ecol. Dense submossy forest, on steep slope below summit, 2550 m, apparently rare. *Fr.* Jan.

92. *Rhododendron zollingeri* J. J. S. Ic. Bog. 4 (1910) 73, t. 322; KOORD. Exk. Fl. Java 3 (1912) 6; BACK. Bull. Jard. Bot. Btzg II, 12 (1913) 28 ('*zollingerianum*'); J. J. S. in K. & V. Bijdr. 13 (1914) 108; MILLAIS, *Rhodod.* (1917) 265; J. J. S. Bull. Jard. Bot. Btzg III, 4 (1922) 240, *incl. var. latifolium* J. J. S.; HOCHR. *Candollea* 2 (1925) 492; MALM in Fedde, Rep. 34 (1934) 284; J. J. S. Bot. Jahrb. 68 (1937) 200; H. J. LAM, *Blumea* 5 (1945) 577; AMSH. in Back. Bekn. Fl. Java (em. ed) 7 (1948) fam. 162, p. 3; SLEUM. *Reinwardtia* 5 (1960) 109; STEEN. *Endeavour* 21 (1962) 189, t. 5. — *R. tubiflorum* (non BL.) MOR. Syst. Verz. (1846) 42. — *R. album* (non BL.) ZOLL. Syst. Verz. 2 (1854) 137. — *R. malayanum* (non JACK) KOORD. *Junghuhn Gedenkb.* (1910) 185. — **Fig. 20.**

Much-branched, erect treelet or shrub, (0.2–) 1–4 m. Branchlets rather slender, terete, rather densely reddish lepidote at the upper 1–2, glabrescent at the lower internodes, the latter (1.5–) 2.5–6(–8, rarely up to 10) cm, finally greyish corticate. *Leaves* in (4–)5–6-merous pseudowhorls or at least close together at the upper 2–3 nodes, not rarely an odd leaf much lower inserted than the others, lanceolate to obovate- or elliptic-lanceolate, apex shortly acuminate, subacute or sometimes rather obtuse, not rarely minutely glandular-apiculate, base \pm narrowly attenuate into the petiole, \pm coriaceous, initially lepidote on both faces, glabrescent or glabrous above at maturity (scales leaving small pits), densely lepidote beneath (scales rather small, dense to very dense, similar to those of *R. album*, but paler and a little smaller, marginal zone finally disappearing, remaining pits minute and dense), somewhat revolute at the edge, (3–)3.5–5.5(–7) by (1–)1.2–1.6(–2.2, very rarely up to 3) cm, midrib impressed above, prominent beneath, reddish there in fresh specimens, nerves 5–6(–7) pairs, lower ones steeply ascending, upper ones more spreading, curved, indistinctly anastomosing, faintly impressed above, minutely but mostly well visibly raised beneath, veins obscure on both sides; petiole semiterete, grooved above, lepidote, 2.5–5 by 1–1.5 mm. *Inflorescence* terminal (if also axillary ones are present, these reduced). *Umbels* (3–)5–6(–8)-flowered. Perulae ovate to obovate, obtuse, thin, lepidote dorsally towards the apex,



Fig. 20. *Rhododendron zollingeri* J. J. S., $\times \frac{1}{2}$. In debris of solfatara up to the indicated line, Jang plateau, Welirang summit, 2950 m, E. Java (VAN STEENIS 10968).

glabrous otherwise, up to 8 by 4 mm. Bracteoles filiform, glabrous, up to 6 mm. Pedicels slender, densely lepidote, 1–1.5 cm, accrescent in fruit up to 2.2 cm. *Calyx* cup-shaped, oblique, c. 3 mm ϕ , irregularly 5-lobed or -dented, 2 lobes narrow-triangular, subacute, up to 2 mm, the other ones smaller, all densely lepidote. *Corolla* tubular, 1.4–1.5 cm long in all, brick red to scarlet, subdensely lepidote outside, margin of the lobes excluded, glabrous inside, tube c. 1 cm long, 3–4 mm ϕ at base, slightly dilated towards the limb, lobes suborbicular, c. 4 mm ϕ , straight. *Stamens* 10, nearly as long as the corolla tube; filaments linear, glabrous; anthers broadly obtusely obovate, c. 1 by 1 mm. *Disk* glabrous. *Ovary* conical, 5-ribbed, densely rufescent-lepidote, 3–4 by 2–2.5 mm, rather abruptly attenuate to the style which is glabrous, only 4–5 mm long and bears a subcapitate 5-lobed stigma. *Capsule* thick-fusiform or subcylindric, sometimes slightly curved in the upper part, densely lepidote, 1.3–1.5 (–1.8) by (0.5–)0.6 cm, crowned by the short style. *Seeds* c. 3 mm including the tails.

Distr. Malesia: Central and E. Java (Kedu, Besuki, Madiun), Lesser Sunda Is (Bali, Lombok), Central and SW. Celebes, Philippines (Luzon, Prov. Benguet: Mt Bandschan, not recollected there).

Ecol. Bare open slopes or ridges, exposed summits, volcanic rocks or crater walls, in fern-, grass- and scrub-vegetation or open forest, in *Casuarina* forest, on dry places, on sandy, stony, or ashy soil, also near solfataras, common locally, (1200–)1800–3090 m. *Fl. fr.* predominantly in the dry season April–Oct.

Vern. Kémbang gëni lanang, mëntigi, rangkapëllë, J, tasi, Toradja: Tai, *kajukalëng, lassa-lassa*, Makassar: Kondje, *kënjëri*, Bali.

93. *Rhododendron lagunclicarpum* J. J. S. Bot. Jahrb. 68 (1937) 200; SLEUM. Reinwardtia 5 (1960) 110.

Much-branched shrub or treelet, up to 2 m. Branchlets slender, erect or erecto-patent, tips rather densely covered with both subsessile and stalked star-shaped scales, lower parts verruculose and rough to the touch by the remaining stalks or rib-like and \pm longitudinally arranged emergences; internodes 4–11 cm, upper ones bearing 7–12 leaves which are rather close together in the upper third or half. *Leaves* suborbicular to elliptic, rarely subovate elliptic, broadly obtusely attenuate to rounded at the apex and base, the apex with a small glandular tip, coriaceous, \pm glabrous above at full maturity, but rather densely pitted, not rough to the touch, undersurface all over rufous-lepidote (scales small, sessile, very dense and touching each other, marginal zone \pm irregularly incised, centre rather deeply impressed), very densely pitted in later glabrescent stages, margin slightly or not revolute, finally crenulate by the impressed scales, 1–2 (–2.5) by (0.6–)0.9–1.6 cm, midrib slightly sunken above, somewhat raised beneath, not rarely becoming indistinct distally, nerves 4 (–6) pairs, irregularly spreading

and curved-ascending, anastomosing, slightly depressed above as are some of the veins, faintly raised beneath; petiole semiterete, grooved above, lepidote, 1–2 by 1–1.5 mm. *Umbels* 4–5 (–8)-flowered. Outer perulae ovate to suborbicular-ovate, subacuminate, inner ones spatulate, obtuse, thin, lepidote dorsally towards the apex which is finely fimbriate or denticulate, not pubescent, up to 8 by 5 mm. Bracteoles linear-spatulate, glabrous, up to 8 mm. Pedicels densely covered with sessile or very shortly stalked scales, 1–1.3 cm, becoming rather stoutish in fruit and accrescent to 2.2 cm. *Calyx* \pm oblique, disk-shaped, 3–4 mm ϕ , lepidote dorsally, limb spreading, wavy and irregularly minutely dented (sometimes one tooth longer than the others). *Corolla* tubular, straight or slightly curved, shortly 5-lobed, densely lepidote outside margin of the lobes excepted, glabrous inside, (1.3–)1.5–1.6 cm long in all, yellow to light salmon, tube 1–1.2 cm long, 4–5 mm ϕ at base, 5–6 mm just below the lobes, the latter rather regular, suborbicular, 4–5 mm ϕ , irregularly crenate at the margin, not rarely retuse. *Stamens* 10; filaments narrowly linear, or almost filiform, glabrous, 1–1.2 cm; anthers suborbicular, c. 1 mm. *Disk* glabrous. *Ovary* broadly obovoid-obconical, densely lepidote, 3–4 by 2.5–3 mm; style abrupt with the ovary, stoutish, glabrous, 3–4 mm; stigma subcapitate, shortly 5-lobed. *Capsule* obovoid-fusiform, conspicuously 5-ribbed, densely rusty-lepidote, 1.3–1.5 by c. 0.6 cm at full maturity, style not accrescent.

Distr. Malesia: SW. Central Celebes (Lati-modjong Range: Mt Pokapindjang and its spurs), locally not rare in mountain heath, 2800–3000 m. *Fl. fr.* June.

94. *Rhododendron yelliottii* WARB. Bot. Jahrb. 16 (1892) 25 (*'yelliottii'*); K. SCH. & LAUT. Fl. Schutzgeb. (1901) 487; SCHLTR, Bot. Jahrb. 55 (1918) 147, f. 3; HOOGL. Blumea Suppl. 4 (1958) 233; SLEUM. Reinwardtia 5 (1960) 110; Blumea 11 (1961) 117; *ibid.* 12 (1963) 102.

Erect, much-branched and mostly compact shrub or small tree, 1–2.5 (–5) m. Branchlets terete, rather slender, tips densely covered with shortly stalked, stellate, dilutely rusty scales, lower parts rather scabrid; internodes not marked. *Leaves* scattered, rather densely set along the branchlets, elliptic to ovate-elliptic, rarely partly ovate or obovate in the same specimen, apex mostly broadly obtusely attenuate, sometimes rounded, the terminal gland small but mostly somewhat protruding beyond the edge, base rounded or truncate-subcordate, coriaceous, greyish dark green and shining above, pale brownish silvery or not rarely dilutely yellowish beneath, glabrous or very laxly lepidote above at full maturity, the caducous scales having left but very shallow pits, very densely lepidote beneath (scales \pm light yellowish brownish, small, \pm touching each other, forming a coherent layer initially, marginal zone lobed or incised to various degree, centre small, rather deeply depressed), distinctly minutely crenate at the margin by impressed scales, mostly

somewhat revolute, 1.1–2.5(–3) by 0.6–1.5(–2) cm, midrib slightly impressed above, manifestly obtusely raised beneath, nerves 4–6(–8) pairs, rather regular, \pm straight below, curved towards the edge and anastomosing distally, very slightly impressed above, faintly raised beneath, veins obscure; petiole a little flattened, minutely grooved above, lepidote, 1–2(–3) by c. 1 mm. *Umbels* 3–5-flowered. Outer perulae ovate, subacute, inner ones spatulate, obtuse, all lepidote dorsally and shortly subsericeous-pubescent, finely though well visibly ciliate, up to 8 by 5 mm. Bracteoles linear-subspatulate, glabrous or barbate apically up to 8 mm. Pedicel slender, 0.8–1.3 cm in anthesis, to 1.8 cm in fruit, densely covered with subsessile scales. *Calyx* disk-shaped, \pm oblique, 2.5–3.5 mm σ , very densely lepidote outside, irregularly obtusely 5-lobed or -dented. *Corolla* tubular, widened towards the limb, \pm zygomorphous and not rarely somewhat curved, mostly (blood-) red or pale red or deep red within, yellow-brown externally, sometimes pale yellow-green, densely yellowish scaly outside, glabrous inside, 1–1.2 (rarely up to 1.3) cm in all, tube c. 8 mm long, 2.5–3 mm σ at base, 4–5 mm below the limb, lobes suberect, unequal, obliquely suborbicular, c. 3 mm σ , often shortly retuse, irregularly crenulate. *Stamens* 10, \pm as long as the corolla tube; filaments narrow-linear, glabrous; anthers subglobose, c. 1 mm. *Disk* glabrous. *Ovary* ovoid-conical, c. 5 by 2.5 mm, densely lepidote, broadly attenuate into a stoutish glabrous style (3–4 mm); stigma capitate, 5-lobulate. *Capsule* 1.2–1.5 by 0.4–0.5 cm, crowned by the relatively short style. *Seeds* c. 4 mm including the tails.

Distr. *Malesia*: New Guinea (Finisterre Mts, Mt Saruwaged region, Mt Wilhelm and vicinity, Owen Stanley Range).

Ecol. Epiphytic in mountain forest, but mostly terrestrial in (*Podocarpus-Libocedrus*-)forest fringe growth, on steep slopes or exposed rocks or grassland above the forest line, often along streams, (1300–)1800–3680 m. *Fl. fr.* Jan.–Dec.

Vern. *Kutengaigai*, Chimbu; Waimambuno, *wubamp*, Minj; Kamang, *kitsch*, Hagen; Togoba.

Note. For differences with 183. *R. inconspicuum* (subsect. *Euvireya*) see under that species.

95. *Rhododendron correoides* J. J. S. Med. Rijks-herb. 25 (1915) 2; Nova Guinea 12 (1917) 500; *ibid.* 12 (1918) t. 195; SLEUM. Reinwardtia 5 (1960) 110. — *R. coniferum* WERNH. Trans. Linn. Soc. II, Bot. 9 (1916) 97.

Shrub with erect branches, (0.25–)1–4 m. Branchlets obtusangular, tips densely clothed with subsessile or very shortly stalked scales, glabrescent and early covered with greyish cork below; internodes (1–)2–8 cm. *Leaves* either scattered and approximate in the upper $\frac{2}{3}$ of the upper two internodes, or crowded in more distinct 5–7-merous pseudowhorls, elliptic or mostly subobovate or oblong-, rarely ovate-elliptic, apex broadly obtusely attenuate, sometimes rounded, apiculate by a small terminal gland, base very broadly attenuate to subtruncate-rounded, firmly

coriaceous, densely lepidote initially on both faces, glabrescent in later stages and hardly pitted above, very densely and more persistently lepidote beneath (scales similar to those in *R. album*, but slightly smaller and paler, flat, marginal zone finally dissolute, centre moderately sunk, leaving dense pits), edge thickened and crenulate by impressed scales, (1.5–)1.8–2.7(–3.7) by (0.6–)0.8–1.4(–1.6) cm, midrib slightly depressed above, bluntly raised beneath especially in the lower part, evanescent distally, or sometimes entirely inconspicuous, nerves 3–4(–6) pairs, curved-ascending, faintly impressed or nearly obscure above, indistinct beneath; petiole subterete, slightly grooved above, lepidote, (2–)3–6(–8) by 1.5(–2) mm. *Umbels* (2–)3–5-flowered. Outer perulae ovate-acuminate, subacute, inner ones oblong to obovate-spatulate, membranous and lustrous, laxly lepidote on the dorsal midline or keel, up to 2 by 1 cm. Bracteoles linear-subspatulate, glabrous, 1–1.5 cm. Pedicels very densely lepidote, epilose, 1–1.5(–2) cm by c. 1 mm, forming an angle with the calyx. *Calyx* very shortly cup-shaped, oblique, densely lepidote dorsally, 2.5–3 mm σ , \pm obscurely lobed. *Corolla* tubular below, dilated towards the limb, (dark) yellow with orange base, or orange-red, or reddish brown, rarely brownish yellow tinged with green, (1.5–)1.8–2.6 (rarely up to 3) cm long in all, subsdensely or laxly lepidote at the tube and the middle of the lobes outside, glabrous otherwise and inside, tube (1–)1.2–1.8(–2.2) cm long, 3–4 mm σ at the subsaccate base, 5–6 mm across the throat, lobes broad-elliptic or suborbicular, suberect or \pm spreading, 5–8(–10, rarely up to 11) mm σ . *Stamens* 10, unequal, \pm as long as the corolla tube; filaments linear, glabrous; anthers broadly obovate-oblong, 2–2.5 by 1.3–2 mm. *Disk* slightly prominent, glabrous. *Ovary* conical, densely lepidote, c. 4 by 2.5–3 mm (at the base), rather abrupt with the style initially, less so in later stages; style stoutish, lepidote at the very base, glabrous otherwise, as long as the corolla or finely exerted; stigma thick, subturbinate-capitate, 5-lobed. *Capsule* subcylindric, apex long-attenuate, base short-attenuate, c. 1.5 by 0.4 cm, on fruit-pedicel up to 3.5 cm.

Distr. *Malesia*: New Guinea (Main Range from Mt Carstens, Hubrecht and Orange Mts to Mt Wilhelmina).

Ecol. Subalpine forest, marginal forest shrubberies and in open vegetation, also on ridge crests, not rarely on mossy or peaty soil, locally common, 3100–3800 (possibly up to 4300) m. *Fl. fr.* Feb., Aug.–Dec.

96. *Rhododendron comptum* C. H. WRIGHT, Kew Bull. (1899) 103; SLEUM. Reinwardtia 5 (1960) 111. — Fig. 21.

var. comptum.

Low shrub. Branchlets slender, firm, obtusangular and longitudinally striate, densely covered with sessile scales initially, glabrescent and smooth with age; internodes 2–6(–8) cm. *Leaves* alternate,

scattered over the whole length or at least the upper half of the upper 1–2 internodes, oblong to (narrowly) obovate-oblong, coriaceous, stiff, apex shortly attenuate, subapiculate, or sometimes nearly rounded, base cuneate into the very short petiole, densely lepidote on both faces initially, glabrescent and \pm shining above with age, under-surface more persistently lepidote (scales of the type found in *R. album*, very dense, touching each other, flat, thin, rather small, rufescent initially, becoming silvery with age, centre moderately

1.2–1.8 cm by 1–1.5 mm. *Calyx* shortly cup-shaped, oblique, forming an angle with the pedicel, c. 3.5 mm ϕ , densely lepidote outside, obsolete and bluntly lobed, but one lobe may be more distinct sometimes. *Corolla* tubular below, campanulate distally, 2–2.4 cm long in all, presumably red, laxly lepidote outside, glabrous inside, tube 1.2–1.5 cm long, c. 4 mm ϕ at base, c. 5 mm at the mouth, lobes suborbicular, \pm spreading, 7–9 mm ϕ . *Stamens* 10, \pm as long as the corolla tube; filaments linear, glabrous; anthers obovate to suborbicular, c. 1.3 mm ϕ . *Disk* glabrous. *Ovary* very densely lepidote, conical, 4–5 mm long, c. 3 mm ϕ at base, tapering to or subabrupt with the style, the latter \pm as long as the corolla, stoutish, lepidote, in its lower $\frac{1}{4}$ – $\frac{1}{3}$, glabrous for the rest; stigma large, capitate, 5-lobed.

Distr. Malesia: New Guinea (Owen Stanley Range: Mts Scratchley and Victoria), 3050–3960 m.

var. trichodes SLEUM. Reinwardtia 5 (1960) 111. *Ovary* densely lepidote and patently hairy, otherwise not different from *var. comptum*.

Distr. Malesia: E. New Guinea (Mt Albert Edward), twice found on exposed, rocky bluffs in open grassland, 3680 m. *Fl.* May–July.

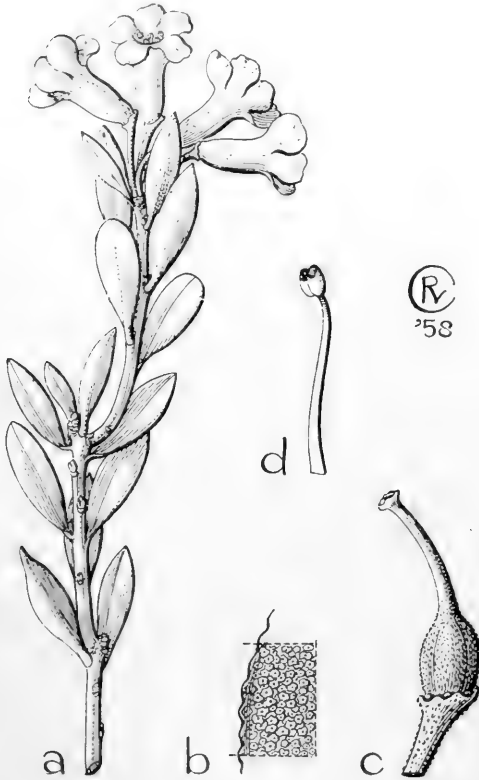


Fig. 21. *Rhododendron comptum* C. H. WRIGHT *var. comptum*. a. Branchlet with flowers, $\times \frac{2}{3}$, b. undersurface of leaf, $\times 6$, c. ovary and style, $\times 2$, d. stamen, $\times 2$ (a–d MACGREGOR anno 1889).

impressed), tardily glabrescent, densely pitted then, 1.8–2.4 (rarely up to 3) by (0.4–)0.6–0.8(–1) cm, edge densely crenulate by impressed scales, not revolute, midrib a little sunk above, but slightly and obtusely raised beneath, \pm obscure apically, nerves obscure; petiole much flattened, 0–2 by c. 1.5 mm, grooved dorsally, lepidote. *Umbels* 3–4-flowered. Outer perulae ovate-oblong, subacuminate, inner ones oblong to oblong-obovate, lepidote at a broad midline dorsally, glabrous for the rest, up to 2 by 1 cm. Bracteoles linear, glabrous, c. 1.5 cm. Pedicels very densely lepidote, pilose,

97. *Rhododendron lampongum* MIQ. Fl. Ind. Bat. Suppl. 1 (1860) 251, 585 (*descr.*); SLEUM. Reinwardtia 5 (1960) 111. — *Azalea lamponga* (MIQ.) O. KTZE, Rev. Gen. Pl. 2 (1891) 387.

Shrub. Branchlets rather robust, terete, tips densely fuscous-lepidote, glabrescent below; internodes (1–)3–11 cm. *Leaves* in 5–6-merous pseudowhirls at the upper 2 nodes, ovate-lanceolate to oblong-elliptic, apex shortly to subcaudate-acuminate, subacute, base attenuate to the petiole, coriaceous, stiff, dark green above, brownish greenish underneath, practically glabrous above at maturity, dark fuscous- or rubiginose-lepidote beneath (scales exactly of the same type as in *R. album*, very dense, leaving small pits), (4–)5–9.5 by 2–4 (–4.5) cm, margin \pm revolute in dry specimens, midrib strongly impressed above, very prominent beneath, nerves c. 8 pairs, irregular, \pm spreading, straight below, anastomosing towards the edge, slightly sunk above in quite mature leaves, minutely or not raised beneath, veins \pm perceptible above only; petiole subterete, grooved above, densely lepidote, 1–2.5 cm by 1.5–3 mm. *Umbels* 5–6-flowered; flower buds ovate-apiculate as in *R. album*. Outer perulae ovate, abruptly and rather longish apiculate or subulate, inner ones oblong-spathulate, obtuse, all lepidote dorsally, up to 1.6 by 0.6 cm. Bracteoles linear, laxly lepidote, up to 1.5 cm. Pedicels stoutish, \pm densely rufous-lepidote and laxly short-hairy, 1–1.5 cm. *Calyx* small, obtusely shortly 5-lobed, densely lepidote, c. 4 mm ϕ . *Corolla* campanulate from a basal tube, 1.8–2 cm long in all, yellow, laxly lepidote on the tube and near the sinuses to the lobes, base of the tube 3–4 mm ϕ and somewhat pouched, lobes broadly obovate-spathulate, spreading, 7–9 by 6–8 mm. *Stamens* 10; filaments linear, patently

long-hairy in the lower third, glabrous elsewhere, 1.4–1.6 cm; anthers broadly oblong, 2 by 1 mm. *Disk* glabrous at the base, densely whitish hairy upwards. *Ovary* obovoid-cylindric, i.e. attenuate at the base, c. 4 by 2 mm, densely lepidote and patently hairy, gradually narrowed to the style, the latter nearly as long as the corolla, slender, lepidote and patently hairy in the lower, conspicuously hairy in the middle, glabrous in the upper third; stigma subcapitate, indistinctly lobed. Submature *capsule* obovoid-fusiform, long-attenuate to the base, broadest in the upper third, c. 1.8 by 0.3 cm, subdensely lepidote and patently hairy, pedicel c. 1.5 cm.

Distr. *Malesia*: Sumatra (Padang Highlands: Mt Gombak; Lampongs: Mt Radja Bassa), in low forest, 1370–2330 m. *Fl.* Nov.

98. *Rhododendron cernuum* SLEUM. Reinwardtia 5 (1960) 111.

Shrub, 1 m. Branchlets divaricate, nodose, tips rufescent-lepidote; internodes 1.5–8 cm. *Leaves* in \pm 4-merous pseudowhorls at the upper 1 or 2 nodes, lanceolate, shortly or long acuminate-attenuate at both ends, coriaceous, glabrescent above with age, the remaining scales flat and not impressed, densely and \pm persistently lepidote beneath (scales similar to those of *R. album*, centre sunk), edge slightly revolute in dry specimens, (4–)5–9 by 1–1.5 (rarely up to 1.7) cm, midrib impressed above, rather thick-prominent beneath, nerves 6–8 pairs, straight and \pm spreading, whether or not minutely depressed above, obscure beneath; petiole subterete, lepidote, (6–)10–15 by c. 1.5 mm. *Umbels* \pm 5-flowered. Outer perulae ovate to subrotundate, abruptly subulate-attenuate at the apex, densely lepidote dorsally, inner ones ovate to subspathulate, obtuse, up to 8 by 5 mm. Bracteoles filiform, laxly lepidote, up to 6 mm. Pedicels slender, nodding, densely lepidote, 1–1.5 cm. *Calyx* suboblique, almost cup-shaped, c. 2.5 mm σ , margin spreading or reflexed, irregularly shortly and obtusely 5-lobed. *Corolla* broadly campanulate, yellow, 1–1.2 cm long in all, 2–3 mm σ at base, c. 10 mm at limb, subdensely lepidote outside margin of the lobes excepted, glabrous inside, lobes broad-obovate, 5–6 by 4–5 mm, shortly retuse or irregularly crenate distally. *Stamens* 10, nearly as long as the corolla; filaments linear, long patently hairy in the lower third, glabrous above; anthers 1.7 mm. *Disk* prominent, very shortly hairy at the upper margin, glabrous below. *Ovary* ovoid-conical, densely patently hairy and lepidote, c. 2.5 by 1.7 mm; style rather abrupt, lepidote at the very base, glabrous otherwise, 4–5 mm; stigma rather large, subcapitate, 5-lobulate.

Distr. *Malesia*: S. Sumatra (Benkulen: Mt Belirang and Mt Kaba).

Ecol. On Mt Belirang on dry sulphur-stone slope, 1500 m, rare, *Fl.* July–Aug.

99. *Rhododendron pudorinum* SLEUM. Reinwardtia 5 (1960) 112.

Treelet, 4 m. Branchlets robust, 5–7 mm σ ,

obtusangular in the new, densely rufous-lepidote shoots, subterete, early glabrescent and greyish corticate in the older parts; internodes 12 cm long or more. *Leaves* laxly scattered along the upper 1 or 2 internodes, broad-elliptic, sometimes nearly rounded or obovate-elliptic, apex shortly (0.5 cm) acuminate or apiculate, not rarely blunt, base broadly cuneate to the petiole, or more rarely subtruncate-rounded, coriaceous, glabrous and impressed-punctulate above at full age in dry specimens, very densely copper-coloured or rubiginose-lepidote beneath (scales rather small, of the type in *R. album*), entire or obscurely crenulate, edge slightly revolute, (4.5–)6–9 by (3–)3.5–5(–5.5) cm, midrib thick and somewhat prominent at the base, gradually flattened and finally grooved distally above, rather flat and but slightly raised beneath, nerves c. 8 pairs, rather steeply ascending, slightly prominent (but a little depressed in the middle) above, slightly raised beneath, veins laxly reticulate, nearly obscure above, more visible beneath; petiole flattened and grooved dorsally, initially lepidote, (0.8–)1.5(–2) cm by 2–3(–4) mm. *Umbels* 8–15-flowered; terminal flower buds (i.e. the normal ones) broad-ovoid, c. 2 by 1.5 cm, lateral ones in the axils of the upper leaves much reduced in size. Outer perulae suborbicular, inner ones broadly spatulate, obtuse, sericeous on both sides margin excepted, moreover lepidote dorsally, up to 1.3 cm. Bracteoles linear-spathulate, c. 1 cm by 2 mm, densely long-hairy. Pedicels densely lepidote, epilose, 2–2.5 cm by c. 0.8 mm. *Calyx* disk-shaped, thick-membranous, c. 4 mm σ , wavy and indistinctly lobulate at the margin, densely lepidote dorsally, almost fimbriate by the scales which project beyond the margin. *Corolla* elongate-funnelform, pink, 3.3–3.8 cm long in all, laxly to very laxly lepidote outside at the tube and the middle of the lobes, glabrous inside, tube 2–2.5 cm, straight, c. 4 mm σ at base, 6–7 mm at the mouth, lobes broadly obovate to nearly rounded, not rarely slightly retuse, 1.1–1.4 by 1–1.2 cm. *Stamens* 10, somewhat longer than the corolla tube, unequal; filaments linear below, filiform distally, quite glabrous; anthers broadly subobovate-oblong, 2.5 mm. *Disk* thick, blackish when dry, glabrous. *Ovary* obconical, c. 5 mm long, 3 mm σ in the upper part, slightly less below, very densely clothed with subpatent, short yellowish hairs and scales (the latter covered by the hairs), shortly contracted into the style, the latter hairy and lepidote at the very base, glabrous otherwise, stoutish, c. 2 cm long at anthesis; stigma shortly turbinate-capitate, but faintly lobed. *Capsule* subcylindric, apex acuminate, base somewhat attenuate, slightly thicker in the upper third, densely hairy and lepidote, 2.5–3 cm by c. 6 mm; style c. 2.5 cm; fruit-pedicel 2.5–4 cm, glabrescent.

Distr. *Malesia*: SW. Central Celebes (Lati-modjong Range: Mt Pokapindjang and its spur to Tinábang).

Ecol. In low forest, 2500–3000 m. *Fl.* June.

100. *Rhododendron arenicolum* SLEUM. Reinwardtia 5 (1960) 113.

Shrub. Branchlets slender, terete, tips more densely lepidote than lower parts; internodes 3–8 cm. *Leaves* scattered in the upper half of the upper 1–2 internodes, elliptic, rarely subovate-elliptic, apex very shortly acuminate or nearly apiculate, with a blunt terminal gland, base subtruncate to rounded, coriaceous, glabrous and somewhat rugose above with full age, very densely reddish brown-lepidote beneath at least initially (scales similar to those in *R. album* and forming the same coherent layer, centre but slightly impressed), finally glabrescent beneath too, densely pitted then, margin not or but very slightly revolute, minutely crenulate, (2–)2.5–4 by 1.5–2.6 cm, midrib flat above, slightly prominent beneath, nerves 5–7 pairs, lower 2–3 pairs from or from somewhat above the base, the other higher from the midrib, all straight below, curved distally and obscurely anastomosing, faintly sunk above, a little raised beneath, veins subobscure; petiole lepidote, 3–4 by c. 1.5 mm, flattened dorsally. *Umbels* 7–9-flowered; flower buds broadly ovoid, c. 1.5 by 1 cm. Outer perulae ovate, inner ones subspathulate, blunt, whitish sericeous and lepidote along the dorsal midline, up to 1.5 by 1 cm. Bracteoles filiform below, up to 2 mm subspathulate-dilated distally, pubescent, up to 1 cm. Pedicels densely rusty-lepidote, epilose, 1.5–2.7 cm by 0.5 mm. *Calyx* disk-shaped, c. 3.5 mm \varnothing , densely lepidote dorsally, margin wavy and patent, indistinctly bluntly 5-lobed. *Corolla* tubular below, dilated towards the limb, pink, 2.3–2.5(–2.6) cm long in all, laxly to subdensely lepidote outside at the tube and the middle of the lobes, tube 1.2–1.5 cm, a little pouched and 3–4 mm \varnothing at base, 6–7 mm below the lobes, the latter broadly obovate or nearly rounded, retuse or irregularly crenulate, spreading, 8–11 mm. *Stamens* 10, slightly exceeding the corolla tube in length; filaments filiform, glabrous or with some sparse hairs; anthers oblong, 1.2 by 0.8 mm. *Disk* glabrous. *Ovary* thick-conical, 4–5 by 2–2.5 mm, very densely lepidote and densely shortly patently hairy; style abrupt with the ovary, rather thick, glabrous, 5–6 mm; stigma large, almost turbinate, manifestly 5-lobed.

Distr. *Malesia*: SW. Central Celebes (Latimodjong Range).

Ecol. On open sandy ridges, 2600–3000 m. *Fl.* June.

101. *Rhododendron giulianettii* LAUT. in K. Sch. & Laut. Nachtr. (1905) 338; SLEUM. Reinwardtia 5 (1960) 114. — *R. papuanum* (non BECC.) C. H. WRIGHT, Kew Bull. (1899) 104.

Small shrub. Branchlets rather slender, \pm densely covered with shortly stalked scales in the younger, scabrous verruculose in the lower parts. *Leaves* scattered, mostly at the upper third of the upper internodes (2–8 cm), elliptic to ovate-elliptic, sometimes nearly rounded, apex broadly attenuate, obtuse to rounded, not apiculate, base \pm rounded, abruptly contracted into the petiole,

which is somewhat winged by the decurrent blade in its upper half, coriaceous, densely lepidote on both faces initially, early glabrescent above, the rather flat scales leaving but small and shallow pits on the upper surface, very densely rusty-lepidote beneath (scales rather small, of the type as in *R. album*, but some of the scales not rarely darker in colour, the undersurface thus becoming \pm spotted), margin slightly revolute, (1.5–)1.7–2.8 by 1–1.8 cm, midrib a little impressed above, faintly raised beneath, nerves 4–5 pairs, lower ones steeply curved upwards, upper ones more spreading, all rather irregular, indistinctly anastomosing, slightly depressed above, obscure below; petiole flattened, grooved above, lepidote, c. 3 by 1–2 mm. *Umbels* \pm 4-flowered. Perulae ovate, obtuse, outer ones lepidote dorsally, inner ones larger, glabrous, not hairy or sericeous at all, up to 1 by 0.7 cm. Bracteoles filiform, glabrous, up to 1 cm. Pedicels stoutish, densely rufous-squamular-lepidote, 1–1.4 cm. *Calyx* \pm obliquely disk-shaped, 3–4 mm \varnothing , margin wavy and obscurely dented, densely lepidote dorsally. *Corolla* tubular below, dilated at the lobes, apparently red, completely glabrous in- and outside, (2.8–)3–3.2 cm long in all, tube cylindrical, straight, slightly dilated upwards, (1.8–)2–2.2 cm, 4–5 mm \varnothing at base, 6–7 mm at the mouth, lobes nearly rounded, \pm spreading, c. 1 cm \varnothing , mostly somewhat retuse. *Stamens* 10, unequal, 2.5–3 cm; filaments linear, dilated below (1 mm), nearly filiform distally, glabrous; anthers 2.6–3 by 1 mm. *Disk* conspicuous, glabrous. *Ovary* conical, 5 by 2.5 mm, densely shortly patently hairy and lepidote, rather gradually attenuate to the style, the latter stoutish, glabrous the lepidote base excepted, c. 2.4 cm; stigma broad-conical, lobes inconspicuous.

Distr. *Malesia*: E. New Guinea (Owen Stanley Range: Mt Scratchley), 3050–3960 m. Once found.

102. *Rhododendron versteegii* J. J. S. Med. Rijks-herb. 25 (1915) 2; Nova Guinea 12 (1917) 501; *ibid.* 12 (1918) t. 196; SLEUM. Reinwardtia 5 (1960) 114; Blumea 11 (1961) 117.

Erect shrub, 0.2–0.35 (sometimes up to 1) m, sparsely branched. Branchlets stoutish, terete, densely covered with sessile scales, early glabrescent and smooth then; internodes 2–8(–12) cm. *Leaves* scattered, \pm dense but distant from each other in the upper $\frac{1}{2}$ – $\frac{2}{3}$ of the upper internode, obovate or elliptic-obovate, elliptic or more rarely oblong- or subovate-elliptic, apex broadly attenuate and bluntish or rounded, base subtruncate-rounded, or broadly attenuate, thick-coriaceous, flat or but slightly convex, very densely lepidote on both faces initially, tardily glabrescent above, lepidote for a longer time beneath (scales small, very dense, of the type of *R. album*, first rusty, then silvery, marginal zone finally dissolved, centre leaving shallow pits), marginate, manifestly densely crenulate by impressed scales, (1–)1.5–3(–4) by (0.6–)0.8–1.4(–2) cm, midrib narrowly grooved above, thick and obtusely prominent in the lower, gradually obscure towards the upper part of the lamina beneath, nerves 3–4

pairs, faintly impressed above, or mostly \pm inconspicuous on both faces; petiole \pm flattened, grooved above, lepidote, 2-3(-4) by 1-2 mm. *Umbels* (2-)3-5-flowered. Outer perulae ovate-oblong, subacuminate or obtuse, inner ones oblong to oblong-spathulate, membranous, lepidote on a broad dorsal midline, glabrous otherwise, up to 1.9 by 0.8 cm. Bracteoles linear to linear-subspathulate, glabrous, up to 1.6 cm. Pedicels erect, forming an angle with the calyx (the flower nodding), very densely rusty-lepidote, epilose, 0.9-2 cm by 0.8 mm. *Calyx* very oblique, disk-shaped, densely lepidote, 4-5 mm σ , margin wavy, obtusely 5-lobed, one or the other lobe sometimes elongate. *Corolla* tubular below, widened towards the limb, (2.5-)3-3.5 cm long in all, laxly to subdensely lepidote outside at the tube and the dorsal midline of the lobes, glabrous inside, tube (1.8-)2-2.2 cm, somewhat angular, red, 4-5 mm σ at the slightly pouched base, 6-8 mm at the mouth, lobes red, yellow, or partly yellow and partly red (tinged red outside), obovate

to suborbicular, somewhat spreading, (1-)1.2-1.4 by 1-1.3 cm. *Stamens* 10, unequal, the longest nearly as long as the corolla; filaments linear, glabrous; anthers obovate-oblong, c. 2.5 by 1 mm. *Disk* prominent, glabrous. *Ovary* shortly conical, very densely lepidote and hairy (the spreading hairs covering \pm the scales), 5-6 by 2.5-3 mm, rather abrupt with the style initially, less so in later stages; style slender, \pm as long as the corolla, densely lepidote and laxly to sparsely hairy in the lower $\frac{1}{3}$ to $\frac{2}{5}$, glabrous for the rest; stigma capitate, distinctly 5-lobed. *Capsule* oblong-conical, 5-ribbed, densely lepidote and hairy, (1.3-)1.5-2 by 0.5-0.6 cm, broadest below the middle, pedicel 2-3 cm by 1-1.5 mm.

Distr. *Malesia*: W. New Guinea (Quarles Valley to Mt Wilhelmina and Habbema Lake).

Ecol. Grassy edges of *Podocarpus* forest, alpine grassland or boggy slopes, scattered through open mossy thickets of exposed ridges, 3200-3950 m, sporadic, but locally common, in wet shallow sandy or peaty soil. *Fl.* Feb., Sept.

6. Subsection *Solenovireya*

COPEL. f. Philip. J. Sc. 40 (1929) 136, 158; SLEUM. Bot. Jahrb. 74 (1949) 537, p.p.; Reinwardtia 5 (1960) 114. — *Rhododendron sect. Hadranthe* SCHLTR, Bot. Jahrb. 55 (1918) 157, p.p. — Fig. 23-25.

Scales star-shaped to various degree, mostly flat, rarely subdendroid, rarely each on top of a low, hardly permanent epidermal tubercle, \pm equal in size, distant from each other. *Corolla* tubular, salver-shaped, tube straight or slightly curved, long and narrow, lobes relatively short (at most $\frac{1}{4}$ as long as the total corolla), spreading \pm horizontally.

Distr. *Malesia* (excluding Java and Lesser Sunda Is). Fig. 22.



Fig. 22. Distribution of *Rhododendron* subsect. *Solenovireya*.

KEY TO THE SPECIES

1. Ovary densely and exclusively (or at least seemingly so) lepidote.
2. Style lepidote or glabrous.
3. Style glabrous. Leaves 3.5-6 cm wide.
4. Leaves \pm broadly elliptic or obovate-, rarely oblong-elliptic; nerves 10-12(-14) pairs, rather close to each other. Perulae lepidote in the upper part dorsally, not hairy at all . . . 103. *R. multinervium*
4. Leaves oblong-elliptic; nerves 6-8 \pm distant pairs. Perulae densely sericeous on both faces, otherwise very laxly or not lepidote . . . 104. *R. natalicium*
3. Style lepidote to the top. Leaves 1.8-2.7(-3) cm wide. 105. *R. ruttanii*

2. Style laxly hairy 106. *R. rhodosalpinx*
1. Ovary manifestly (mostly densely) set with shorter or longer hairs, or ovary both hairy and lepidote.
5. Leaves \pm persistently soft-pubescent beneath, or very tardily glabrescent . . . 107. *R. stapfianum*
5. Leaves initially with some scattered hairs at the base and early glabrescent, or mostly not hairy at all.
6. Leaves linear, 3–5 cm by 3–5 mm 108. *R. chamaepitys*
6. Leaves of other shape, much wider.
7. Anthers (5–8 mm) with a distinct, elongate apiculus or caudate appendix (0.5–1.5 mm) at the base of each cell.
8. Anthers 7–8 mm. Corolla tube slightly gradually dilated towards the lobes, the latter 2.5–3 cm ϕ .
109. *R. macrosiphon*
8. Anthers 5–6(–7) mm. Corolla tube rather equally wide from the base to the lobes, the latter 1–1.5 cm ϕ .
9. Corolla subdensely lepidote outside. Leaves \pm densely reticulate on both faces, veinlets \pm distinct. 110. *R. carringtoniae*
9. Corolla glabrous outside. Leaves much less or hardly reticulate, veinlets obscure.
10. Corolla c. 7 cm long in all 111. *R. carstense*
10. Corolla (8.5–)9–10(–10.5) cm long in all. 112. *R. syringoideum*
7. Anthers (2–6 mm) provided with a very short obtuse knob-like apiculus (0.3 mm) or truncate-obtuse at the base.
11. Leaves manifestly, *i.e.* \pm densely and prominently or depressedly reticulate on both faces or at least underneath (well visible both in younger and older leaves).
12. Corolla tube (7–)8–8.8 cm. Leaves cuneate to obtuse at the base, manifestly petioled.
113. *R. maius*
12. Corolla tube generally up to 6.5 cm (if attaining 7 cm, leaves cordate at the base, subsessile or very shortly petioled).
13. Leaves \pm acutely attenuate or cuneate at the base. Style hairy at the base, glabrous for the rest.
114. *R. cruttwellii*
13. Leaves broadly attenuate, obtuse or truncate-rounded or (sub)cordate at the base.
14. Style hairy and lepidote nearly to the top. Leaves ovate or elliptic-ovate, apex acuminate. Umbels 8–13(–15)-flowered 115. *R. archboldianum*
14. Style hairy and lepidote in the lower $\frac{2}{3}$ or less.
15. Umbels (8–)15–20-flowered. Style hairy in the lower $\frac{1}{5}$ – $\frac{1}{6}$. Leaves elliptic or obovate-elliptic, apex \pm obtuse 116. *R. pleianthum*
15. Umbels up to 7-flowered.
16. Flowers solitary or in twos. Style hairy to the middle. Leaves subovate-elliptic, subsessile.
117. *R. oliganthum*
16. Umbels 3–7-flowered.
17. Style hairy but for c. 5 mm above the base. Leaves ovate or subovate-rounded, sessile or nearly so 118. *R. carrii*
17. Style hairy up to the middle, or sometimes even to the lower $\frac{2}{3}$. Leaves broad-, oblong- or subobovate-elliptic.
18. Leaves 7–9(–10) by 4–5(–6) cm. Petiole (6–)8–12 mm 119. *R. armitii*
18. Leaves 4–7 by 2.5–3.5(–5, rarely up to 6) cm.
19. Leaf base subtruncate-rounded, or sometimes subcordate; petiole 2–4 mm. Corolla tube very slightly or not widened upwards. Anthers c. 2.5 mm 120. *R. tuba*
19. Leaf base distinctly (rather deeply) cordate; petiole 0–1 mm. Corolla tube distinctly gradually dilated upwards. Anthers 3.5–4 mm. 121. *R. rhodoleucum*
11. Leaves but indistinctly and laxly (prominently or impressedly) reticulate when young, less so when fully mature, or without a trace of reticulation.
20. Corolla tube laxly to densely short-hairy, otherwise whether or not lepidote outside.
21. Corolla tube (5–)5.5–6.5 cm 122. *R. pubitubum*
21. Corolla tube 3–4.5 cm.
22. Leaves 8–12 by 3–5 cm 123. *R. pseudotrichanthum*
22. Leaves 2.5–6 (rarely up to 7.5) by (1–)1.5–3 cm.
23. Corolla lobes ciliate. Disk glabrous. 124. *R. amabile*
23. Corolla lobes not ciliate. Disk pubescent. 136. *R. jasminiflorum*
20. Corolla pilose outside (except some scattered hairs which may occur at the very base), otherwise whether or not lepidote.
24. Corolla tube at least 4.5 cm, mostly longer.
25. Leaves sessile or nearly so (petiole 0–2, rarely up to 4 mm), in general \pm obtuse, rounded or subcordate at the base.
26. Anthers c. 1.8 mm 125. *R. radians*
26. Anthers 4.5–5 mm 116. *R. pleianthum*
25. Leaves distinctly petioled, in general attenuate to cuneate at the base.
27. Leaves acutely attenuate at both ends. Pedicels stoutish, c. 2 mm . . . 126. *R. oreadam*

27. Leaves obtusely acuminate (or attenuate) to rounded at apex.
 28. Pedicels rather slender, *c.* 0.5 mm σ .
 29. Pedicels 9–20 mm. Umbels 5–6(–7)-flowered. 127. *R. cinerascens*
 29. Pedicels 4–8 mm. Umbels (8–)10–12(–14)-flowered 128. *R. brachypodarium*
 28. Pedicels stoutish, 1–2 mm σ , 3–7 mm long.
 30. Corolla 5.7–7 cm long in all. 129. *R. goodenoughii*
 30. Corolla (8.5–)9–10(–10.5) cm long in all. 112. *R. syringoideum*
 24. Corolla tube 2–4 (rarely in part up to 4.5) cm.
 31. Corolla tube \pm manifestly and gradually narrowed from the base upwards. Leaves subsessile.
 32. Pedicels all over densely lepidote and laxly short-hairy. Corolla \pm densely lepidote outside at least initially. Leaves elliptic-oblong or -obovate 130. *R. pneumonanthum*
 32. Pedicels lepidote in the distal part only, otherwise densely hairy. Corolla laxly lepidote or glabrous outside from the beginning. Leaves broadly elliptic, subovate- to suborbicular-elliptic, or orbicular 131. *R. orbiculatum*
 31. Corolla tube equally wide all over or slightly and gradually widened from the base upwards. Leaves distinctly petioled, but short-petioled to subsessile in *R. jasminiflorum p.p.* and *R. orbiculatum*.
 33. Corolla tube subsdensely to densely lepidote outside.
 34. Scales on the undersurface of the leaves subdendroid, *i.e.* the centre \pm deepened into a kind of stalk, which itself rests on a low epidermal tubercle. Corolla tube 2–2.5 cm, its scales stellate 132. *R. edanoi*
 34. Scales on the undersurface of the leaves sessile in minute epidermal depressions. Corolla tube 2–2.5 cm, its scales thick and roundish 133. *R. loranthiflorum*
 33. Corolla tube laxly lepidote to glabrous outside.
 35. Corolla tube 2–2.3 cm 134. *R. retrorsipilum*
 35. Corolla tube (3–)3.5–4(–4.3) cm.
 36. Pedicels very slender, practically glabrous. Style laxly hairy and lepidote in the lower half, otherwise exclusively lepidote to the top 135. *R. subpacificum*
 36. Pedicels rather stoutish, lepidote and/or hairy to various degree.
 37. Style laxly lepidote and hairy in the lower third, otherwise exclusively hairy to almost the top. Leaves petioled (*c.* 8 mm). 136. *R. jasminiflorum*
 37. Style laxly hairy except the glabrous uppermost part, sparsely or not lepidote. Leaves subsessile 131. *R. orbiculatum*

103. *Rhododendron multinervium* SLEUM. Reinwardtia 5 (1960) 117; Blumea 11 (1961) 117; *ibid.* 12 (1963) 102. — Fig. 23.

Shrub or small tree, 1.5–3 m, terrestrial or epiphytic. Branchlets divaricate, tips rather densely lepidote initially; internodes 4–6 cm. Leaves arranged in 3-merous pseudowhorls, obovate-elliptic or \pm broadly, rarely oblong-elliptic, apex very shortly and \pm abruptly obtusely acuminate, base broadly attenuate into the petiole, lepidote initially, glabrescent with age above, rather densely and \pm persistently lepidote beneath (scales small, marginal zone substellate-dentate, centre becoming blackish), entire, slightly revolute towards the base of the blade, (5–)6–8 by 3.5–6 cm, midrib very slightly impressed above, robust and strongly prominent beneath, nerves 10–12(–14) pairs rather close and \pm parallel to each other, \pm straight below, obscurely anastomosing before the edge, with some other less distinct nerves between them, all a little prominent on both faces, reticulation lax and faintly raised underneath only; petiole grooved above, somewhat flattened, lepidote, 6–8 by *c.* 1.5 mm. Umbels \pm 5-flowered. Outer perulae broadly ovate, inner ones spatulate, all \pm densely lepidote in the upper part outside, not hairy at all, lepidote-ciliate, 1–2 by 0.8–1.4 cm. Bracteoles filiform. Pedicels rather slender, densely lepidote, 6–8 mm. Calyx oblique, disk-shaped, very shortly lobed and

wavy, *c.* 2.5 mm σ . Corolla salver-shaped, white, sweetly scented, tube straight, glabrous or laxly lepidote outside, scales more dense at the sinuses of the lobes, subsdensely hairy in the lower half, glabrescent upwards inside, 3.5–4 cm long, at the base *c.* 2, in the middle 2.5–3 mm σ , very slightly or not dilated at the mouth, lobes spreading, obovate-elliptic, 8–12 by 6–8 mm. Stamens 10, slightly exerted from the throat; filaments linear below and rather densely patent-hairy to the lower $\frac{2}{3}$, filiform and glabrous above, unequal; anthers 2.5 by 0.9 mm. Disk rather densely and shortly white-hairy. Ovary elongate columnar, shallowly 5-ribbed, very densely covered with thickish, almost round scales, 5–6 by 1.5 mm, \pm gradually tapering to the slender and glabrous style (3 cm); stigma short-obconical, crenulate. Capsule elongate-fusiform, subsdensely lepidote, 3–3.5 by 0.4–0.5 cm.

Distr. *Malesia*: New Guinea (Western Highlands; Sepik Distr.).

Ecol. On grassy slopes or in *Castanopsis*- or *Nothofagus*-forest, 1370–2050 m. Fl. April, Aug.–Oct.

Vern. *Aretma*, Anona.

104. *Rhododendron natalicum* SLEUM. Reinwardtia 5 (1960) 118.

Shrub, possibly epiphytic. Branchlets flattened, tips subsdensely substellate-lepidote; internodes



Fig. 23. *Rhododendron multinervium* SLEUM. a. Branch with flowers, $\times \frac{2}{3}$, b. ovary and style, $\times \frac{4}{3}$, c. stamen $\times \frac{4}{3}$ (a-c HOOGLAND & PULLEN 5863).

7–15 cm. Leaves in \pm 4-merous pseudowhorls, oblong- or lanceolate-elliptic, apex shortly gradually acuminate, subacute, base broadly attenuate, subcoriaceous or coriaceous, entire, subrevolute, entirely glabrescent above at maturity, laxly lepidote beneath (scales very small, fuscous, irregularly incised in the marginal zone, the centre slightly impressed), 7–10 by 3.5–4.5(–5) cm, midrib slightly but distinctly impressed above, much prominent beneath to $\frac{3}{4}$ of its lower part, less so distally, more densely lepidote than the intervenium beneath, nerves 6–8 pairs, rather distant from each other, at an acute angle from the midrib, \pm straight below, rather obscurely curved-anastomosing near the edge, somewhat raised above (but impressed in the very middle), \pm prominent beneath, reticulation obscure; petiole subdensely lepidote, grooved above, 1–1.5 cm by 1–1.5 mm. Umbels \pm 8-flowered. Outer perulae ovate, inner ones spatulate, all subsericeous on both faces, otherwise not or but very laxly lepidote, long-ciliate, up to 2.5 cm by 6–8 mm. Bracteoles nearly filiform and glabrous below, narrow-spatulate and hairy distally, up to 2 cm. Pedicels stoutish, rather densely substellate-lepidote, 10–12 mm. Calyx very oblique, irregularly shortly and obtusely 5-lobed, lepidote, c. 2.5 mm ϕ . Corolla salver-shaped, snow-white, tube straight or slightly curved, c. 4.5 cm by 3–4 mm, faintly or not dilated

towards the mouth, subdensely substellate-lepidote outside, rather densely, shortly and patently whitish hairy in the lower third, gradually glabrescent distally; inside, lobes elliptic-obovate to obovate-spatulate, spreading, laxly lepidote outside, glabrous inside, 1–1.2 by 0.8–1 cm. Stamens 10, unequal, exerted, c. 5.5 cm; filaments linear and densely patently hairy below, less hairy and finally glabrous to the top; anthers oblong, obtuse base, c. 3 by 0.8 mm. Disk subdensely short-hairy. Ovary elongate-conical, densely set with almost roundish scales, c. 8 by 1.5 mm, tapering to the style, which is lepidote at the very base, glabrous otherwise, and \pm equals the corolla tube in length; stigma narrowly short-obconical. Capsule elongate-cylindric, curved, shortly attenuate at both ends, laxly lepidote, 4–4.5 by 0.4 cm.

Distr. *Malesia*: New Guinea (Sattelberg region, Morobe Distr.: Ogeramngang; Mt Saruwaged), in forest hills at 1770–2440 m. Fl. March, fr. May.

105. *Rhododendron rutenii* J. J. S. in Fedde, Rep. 30 (1932) 170; SLEUM. Reinwardtia 5 (1960) 119.

Shrub. Branchlets terete, tips only sparsely lepidote; internodes 1.7–4.5 cm. Leaves 4–5 per pseudowhorl, cuneate-obovate, rarely oblong- or elliptic-obovate, apex broadly attenuate, obtuse to rounded, sometimes slightly retuse, base cuneate-

attenuate, mostly rather acute, coriaceous, laxly lepidote initially, glabrescent above, more densely and persistently lepidote beneath (scales very small, the marginal zone narrow and \pm coarsely dentate, each scale on top of a minute epidermal elevation), margin somewhat revolute in dry specimens, (3-)4-5.5(-6.5) by 1.8-2.7(-3) cm, midrib impressed above, manifestly raised beneath, nerves 6-8 pairs, rather straight below, curved and anastomosing before the edge, slightly impressed above, rather inconspicuously raised beneath, reticulation obscure; petiole semiterete, grooved above, lepidote, 3-7 by c. 1.5 mm. *Umbels* 6-12 (-14)-flowered. Well developed perulae and bracteoles not known. Pedicels rather slender, \pm densely lepidote, 1-1.8 cm. *Calyx* small, obliquely disk-shaped, lobes obsolete. *Corolla* salver-shaped, white to light red, tube cylindrical, straight, 3-3.5 cm by c. 2 mm, laxly lepidote outside, laxly hairy in the lower part inside, lobes spreading, subrotundate-obovate, laxly lepidote outside, glabrous inside, 1-1.3 by 0.6-0.8 cm. *Stamens* 10, slightly exserted; filaments nearly filiform, laxly hairy above the base only; anthers 2 by 0.9 mm. *Disk* sparsely hairy in the upper half. *Ovary* elongate-cylindric, c. 5 by 2 mm, gradually attenuate into the slender style (c. 3 cm), the latter rather densely lepidote up to almost the top; stigma shortly broad-turbinate, subcrenulate. *Cap-sule* lepidote, c. 2 cm by 3 mm. *Seeds* c. 2 cm by 0.03 mm.

Distr. *Malesia*: Moluccas (Central Ceram: Mt Murkele), twice collected.

Ecol. Primary forest, abundant on limestone, 1900-2500 m. *Fl.* July.

106. *Rhododendron rhodosalpinx* SLEUM. *Blumea* 11 (1961) 121.

Shrub. Branchlets rather slender, c. 2 mm ϕ , tips densely lepidote; internodes 1-2(-4) cm. *Leaves* in (3-)-4-merous pseudowhorls at the 2(-3) upper nodes, elliptic or subobovate-elliptic, apex broadly attenuate and blunt, or almost rounded, sometimes faintly retuse, base broadly attenuate to the petiole or subcuneate, coriaceous, firm, glabrous with age above, subdensely lepidote beneath (scales small, marginal zone substellate-dented, minute centre rather deeply impressed), distinctly revolute at the edge, (3-)-4-5 by (1.5-)-1.8-2.6 cm, midrib very narrowly impressed above, as thick as the petiole and much prominent below, gradually decreasing distally beneath, nerves c. 3 pairs, a little raised beneath only, or not rarely inconspicuous, no reticulation; petiole slightly flattened, grooved above, lepidote, 4-6 by 1 mm. *Umbels* 3-flowered. Pedicels subdensely lepidote, minutely (lens!) patently-puberulous, 1.7-2.1 cm by c. 0.8 mm. Bracteoles linear, c. 1 cm. *Calyx* subobliquely disk-shaped, very shortly and irregularly 5-lobed, c. 2.5 mm ϕ , lepidote dorsally. *Corolla* salver-shaped, apparently red, subdensely substellate-lepidote at the tube and the lower part of the lobes outside, laxly hairy at the tube below inside, otherwise glabrous, tube straight, 3-3.5 cm long, (3-)-4 mm ϕ at base, 5-6 (-7) mm at the base of the

lobes, the latter \pm spreading, obovate, 1-1.2 by c. 0.8 cm. *Stamens* 10, equalling or in part exceeding the corolla; filaments narrow-linear, patently laxly hairy in the lower half, glabrous above; anthers narrow-oblong, base obtuse, 2.5 by 1 mm. *Disk* glabrous. *Ovary* subcylindric, closely covered with scales, which touch or even overlap each other (and possibly hide some short hairs), c. 6 by 1.7 mm, gradually tapering to the style, the latter rather slender, \pm as long as the corolla, lepidote in the lower third, moreover laxly patently short-hairy in the lower $\frac{2}{3}$, glabrous above; stigma capitate, shortly 5-lobed.

Distr. *Malesia*: W. New Guinea (Swart R. Valley, c. 138° 15'-3° 30'), once found at 1600-2000 m. *Fl.* April.

107. *Rhododendron stapfianum* HEMSLE. ex PRAIN, *Bot. Mag.* (1911) *sub t.* 8372; MILLAIS, *Rhodod.* (1917) 247; SLEUM. *Reinwardtia* 5 (1960) 119; *Blumea* 11 (1961) 117; *ibid.* 12 (1963) 102. — *R. lacteum* STAPE, *Trans. Linn. Soc. II, Bot.* 4 (1894) 197, t. 15, f.A 1-2; MERR. *En. Born.* (1921) 461, non FRANCH. 1886.

Epiphytic shrub. Branchlets terete, densely softly greyish tomentellous and laxly caducously stellate-lepidote at the upper 3-5 internodes, glabrescent below; internodes 1.5-3(-4) cm. *Leaves* scattered, mostly close together towards the apex of the internodes, not rarely in (3-)-4-7-merous pseudowhorls at the very nodes, linear-oblong, sessile or nearly so, apex \pm obtuse, base truncate, coriaceous or subcoriaceous, shortly soft-hirtellous on both faces, longer and more densely patent-hairy at the margin and along the midrib beneath, never completely glabrescent, furthermore initially covered with rusty scales beneath (scales star-shaped, minute, on epidermal, finally \pm disappearing protuberances, very deeply incised similar to a stellate hair, rather early caducous for their greater number), margin strongly revolute, (2.5-)-3-5(-5.6) by (0.6-)-1-1.5 (-1.7) cm, midrib impressed above, manifestly obtusely raised beneath the full length, nerves obsolete; petiole 1-2 by 1-1.5 mm. *Umbels* 5-7-flowered. Perulae ovate to spatulate-obovate, sericeous outside, up to 2 by 1.5 cm, forming a thick obovate bud (3 by 1.5 cm) before the anthesis. Bracteoles linear to linear-subspatulate, laxly hairy, up to 3 cm by 0.5-1.5 mm. Pedicels rather stoutish, densely whitish tomentulose and caducously lepidote, (3-)-4-6(-8) mm, thickened towards the calyx. *Calyx* minute, shortly cup-shaped, densely hairy, lobes rather obsolete. *Corolla* salver-shaped, white or very lightly suffused with pale violet, or pale pink, tube \pm straight, subdensely white-hairy and very laxly stellate-lepidote outside, glabrous inside, (4-)-4.5-5.5 cm by c. 2.5 mm, lobes obovate to oblong-elliptic, \pm spreading horizontally, glabrous on both faces, 1-1.5 by 0.6-0.7 cm. *Stamens* 10, exserted for 5-6 mm; filaments linear, glabrous or practically so; anthers broad-oblong, (1-)-1.5 by 0.8 mm. *Disk* hairy. *Ovary* cylindrical, densely clad with fulvous or whitish greyish appressed hairs which completely

cover the scales, (6-)7-8 by 1.5-2 mm, gradually tapering to the style, the latter rather slender, exerted, subdensely hairy and laxly lepidote to nearly the top, 4(-5) cm; stigma short-obconical, lobulate. *Capsule* reddish, 3-3.5 by 0.4 cm, oblong-fusiform, slightly 10-ribbed, crowned by the rest of the style, subdensely rufous-tomentellous and stellate-lepidote.

Distr. *Malesia*: Borneo (Mt Kinabalu; and Mt Palimasan in W. Kutai).

Ecol. Mossy ridge forest, (800-)1065-1525 m. *Fl.* Jan.-Dec.

108. *Rhododendron chamaepitys* SLEUM. Bot. Jahrb. 71 (1940) 144; Reinwardtia 5 (1960) 119; Blumea 12 (1963) 112.

Shrub. Branchlets terete, tips rather densely papillose-puberulous, glabrous elsewhere; internodes 3-5 cm. *Leaves* in 7-10-merous, spaced pseudowhorls, linear or oblong-linear, apex obtuse, base broadly attenuate, coriaceous, glabrous above at full age, subdensely stellate-lepidote beneath (scales incised at the marginal zone almost to the small centre, each on top of a very minute epidermal elevation, \pm early caducous), strongly revolute parallel to the margin, 3-5 cm by 3.5-5(-7) mm in revolute state, midrib impressed above, somewhat raised in its lower part beneath, nerves obscure; petiole 1-1.5 by 1 mm. *Umbels* 4-6-flowered. Perulae ovate to ovate-lanceolate, long-acuminate, acute, glabrous, ciliate, 5-7 mm. Bracteoles linear, up to 1 cm. Pedicels slender, densely rusty-lepidote and very shortly pubescent, 8-10 mm. *Calyx* obliquely disk-shaped, wavy and indistinctly 5-lobed, c. 2.5 mm σ . *Corolla* salver-shaped, colour not known, tube (3-)3.5-4 cm, 2-3 mm σ at base, a little wider at the throat, laxly rufescent-lepidote outside, pubescent at the base inside, lobes rounded, very laxly lepidote outside, glabrous inside, wavy, c. 8-10 by 5-7 mm. *Stamens* 10, slightly exerted from the throat; filaments filiform, glabrous; anthers broadly oblong, 1.5 by 1 mm. *Disk* glabrous. *Ovary* elongate-conical, 5-6 by 1.5 mm, densely lepidote and short-pubescent; style slender, laxly pubescent and lepidote to almost the top, 4-4.5 cm; stigma capitate. *Capsule* oblong-fusiform, densely lepidote sparsely hairy, 2.5 by 0.4 cm.

Distr. *Malesia*: Borneo (Sarawak: Mt Lambia or Lambir), 300-450 m. *Fl.* May, fr. June.

109. *Rhododendron macrosiphon* SLEUM. Blumea 11 (1961) 118.

Subcaudant shrub, c. 4 m. Branchlets robust, caducously lepidote, pruinose; internodes 6-9 cm. *Leaves* in 4-5-merous pseudowhorls at the upper nodes, obovate-elliptic, broadly to very broadly attenuate towards the apiculate apex, or apex obtuse, rarely rounded, base cuneate and slightly decurrent into the petiole, very coriaceous, rigid, similar to those of *R. scabridibracteum* in form and nervation, glabrous above with age, densely lepidote beneath (scales minute, variously stellate-dented in the hyaline, early caducous, marginal zone, centre thick, rather small, deeply impressed),

\pm flat, 7-10 by (4-)4.5-6 cm, midrib narrowly impressed above, as stout as the petiole and much prominent in the lowest part, decreasing upwards beneath, nerves 6-7 irregular pairs, with shorter ones (or veins) between them, all \pm spreading and anastomosing, strongly impressed above, not much raised beneath, reticulation faintly sunk above, slightly prominent or sometimes rather obscure beneath; petiole semiterete, grooved above, densely lepidote initially, (2-)2.5 by c. 0.3 cm. *Umbels* 8-10-flowered. Outer perulae not known, inner ones elongate-spathulate, hirsutulous on both faces, up to 3 cm. Pedicels very densely lepidote, (4-)5-8 by c. 1.5 mm. Bracteoles linear, glabrous, up to 2.5 cm. *Calyx* obliquely disk-shaped, irregularly 5-lobed, densely lepidote dorsally, 5-6 mm σ . *Corolla* tubular below, rather abruptly expanded at the lobes, white, subdensely or more laxly lepidote at the tube and the median part of the lobes outside, with dense appressed white retrorse hairs (c. 1 mm) at the tube inside, glabrous otherwise, tube 6-7 cm long, c. 5 mm σ at base, gradually dilated to 1-1.5 cm across the throat, lobes subspathulate-obovate or sub-orbicular, 2.5-3 by 2.5(-3) cm. *Stamens* 10, exerted for 1-1.5 cm from the throat; filaments linear (1 mm) and densely clothed with retrorse hairs below, more laxly hairy and slender upwards, glabrous and filiform for the ultimate 1.5 cm; anthers elongate-oblong, 7-8 by 1.5 mm; each theca narrowed into a distinct basal appendix (c. 1 mm). *Disk* thick, 10-lobed, more densely hairy at than between the lobes. *Ovary* cylindrical, c. 1.5 by 0.3 cm at anthesis, densely covered with rather coarse yellowish, forward directed hairs which cover the scales, gradually tapering to the style, the latter 1.5-2 mm σ below, gradually decreasing upwards, hirsute for the lower $\frac{2}{3}$, more laxly hairy and \pm caducously lepidote above, glabrous for the ultimate 10 mm; stigma capitate, c. 2 mm σ , lobes thick.

Distr. *Malesia*: Central New Guinea (Star Mts: near the mouth of the Minam R. into the Bon R.), one collection.

Ecol. In a depression on peaty ground in primary forest, 1500 m, rather common locally. *Fl.* July.

110. *Rhododendron carringtoniae* F. v. M. Vict. Nat. 4 (1887) 110, *reimpr.* Bot. Centralbl. 33 (1888) 55; Descr. Not. 9 (1890) 63; SLEUM. Reinwardtia 5 (1960) 120.

Tall shrub, up to 5 m. Branchlets terete, stoutish, tips rather densely covered with thin scales; upper internodes 2-3 cm. *Leaves* scattered or mostly in 3-4-merous pseudowhorls, obovate to elliptic-obovate, apex very broadly obtusely attenuate or mostly rounded, broadly attenuate towards the base, the very base rounded or mostly truncate, rarely broadly subcuneate, stiff-coriaceous, practically glabrous above at full age, subdensely to laxly lepidote beneath (scales thin, their marginal zone \pm persistent, \pm shallowly and irregularly dentate, centre small, impressed), slightly or not recurved at the margin, (3.5-)4-7 by (2.5-)3-4.5 cm, midrib

somewhat impressed above in its lower half, strongly prominent beneath, but less so towards the apex of the blade, nerves 6-8 pairs, often forked before the edge, both anastomosing among each other and with the stronger veins, the latter laxly reticulate, prominent as are the nerves on both faces, veinlets reticulate, less manifestly, but well visibly raised on both faces; petiole somewhat flattened and grooved above, lepidote, 2-5(-6) by 2-2.5 mm. *Umbels* about 6-flowered. *Perulae* roundish to obovate-spathulate, dorsally lepidote, not or only laxly short-pubescent, up to 2.5 by 1.5 cm. *Bracteoles* linear. *Pedicels* stoutish, subdensely lepidote, 5-8 mm. *Calyx* rim-like, membranous, irregularly and very shortly 5-dentate, fimbriate, c. 2 mm σ . *Corolla* salver-shaped, white, tube cylindrical, slightly curved, 5-6(-7) cm long, rather equally 4.5-5.5 mm across, subdensely lepidote outside, copiously set from the base to the middle with short \pm spreading hairs, glabrescent upwards inside, lobes obovate to broadly elliptic-orbicular, spreading, 1-1.5 by (0.6-)-1-1.3 cm, very laxly lepidote outside, glabrous inside. *Stamens* 10, in part slightly exerted; filaments linear, densely clad with spreading hairs below, gradually glabrescent distally; anthers subobovate-oblong, 5-6 (rarely -7) by 1-1.2 mm, base of each theca with a distinct spur-like subobtusate or acute appendix (0.5-1 mm). *Disk* densely hairy. *Ovary* narrow-cylindrical, slightly attenuate towards the base, densely covered with yellowish whitish, ascending hairs which cover numerous scales, c. 1 cm by 1.5 mm, gradually attenuate to the rather thick style (5.5-6.5 cm), which is hairy and \pm densely lepidote except the glabrous 6 mm below the shortly turbinate stigma. *Capsule* narrow-cylindrical, short-attenuate at both ends, with 5 thick ribs, subdensely hairy and lepidote, c. 5 cm by 6 mm. *Seeds* with very narrow appendages.

Distr. Malesia: SE. New Guinea (Owen Stanley Range: Mts Obree and Victoria; Mt Dayman).

Ecol. In open hillside, declivities, along rocky river banks, 1830-2440 m. *Fl.* Jan., June.

111. *Rhododendron carstensense* WERNH. *Trans. Linn. Soc. Bot. II, Bot. 9* (1916) 96; SLEUM. *Reinwardtia* 5 (1960) 132.

Shrub. Branchlets subangular, pruinose, smooth, early glabrescent; internodes 7-10 cm. *Leaves* in 3-4-merous pseudowhorls, elliptic to obovate-elliptic, apex obtusely and very broadly attenuate to rounded, base short-attenuate into the petiole, glabrous above at maturity, subdensely lepidote beneath (scales small, marginal zone irregularly dentate, centre a little impressed), 6.5-10 by 4-5.5 cm, midrib somewhat sunk above, rather strongly prominent beneath, nerves 8-10 pairs, rather irregular, straight below, curved anastomosing before the edge, slightly impressed above, not much prominent beneath, veins laxly reticulate, raised beneath only, veinlets \pm obscure; petiole grooved above, 1-1.5 cm by c. 2 mm. *Umbels* 6-9-flowered. *Perulae* obovate-lanceolate, dorsally

densely sericeous in the middle and with longer and \pm appressed hairs in the lower part on both faces, up to 4 by 1.8 cm. *Bracteoles* filiform, pubescent, 3-5 cm. *Pedicels* stoutish, lepidote, c. 5 mm. *Calyx* minute, oblique, annular, obscurely 5-lobed. *Corolla* salver-shaped, c. 7 cm long in all, tube cylindrical, hardly widened upwards, c. 5.5 by 0.7 cm, glabrous outside, densely hairy inside in the lower half, lobes obovate-subrotundate, c. 1.7 by 1.4 cm, glabrous. *Stamens* 10, somewhat exerted from the throat; filaments linear, densely hairy to $\frac{4}{5}$, glabrous distally; anthers oblong, c. 6 by 1 mm, each cell caudate-appendiculate (1-1.5 mm) at base. *Disk* subglabrous. *Ovary* elongate-cylindrical, c. 7 by 1.8 mm, very densely clothed with yellowish hairs, gradually tapering to the style, the latter yellowish pubescent in the lower third, glabrous otherwise; stigma thick-obconical.

Distr. Malesia: W. New Guinea (Mt Carstensz), once found at 1675-2040 m.

112. *Rhododendron syringoides* SLEUM. *Blumea* 12 (1963) 104.

Terrestrial or sometimes epiphytic shrub, c. 2 m. Branches robust, erecto-patent; branchlets obtus-angular or laterally compressed, upper 2 internodes laxly stellate-lepidote, (5-)-8-12 cm by 3-5(-6) mm. *Leaves* in 5-6-merous pseudowhorls at the upper 3-6 nodes or mostly laxly arranged in the upper third of the internodes, broadly elliptic or subovate- or subobovate-elliptic, apex broadly attenuate to rounded, sometimes slightly retuse, base broadly attenuate to rounded, or rarely even subcordate, coriaceous and stiff, laxly set with rufescent scales on both faces initially (scales angular or dented to various degree, slightly impressed with the small centre), 6-9 by 4-5.5 (-6) cm, a little revolute at the very edge, especially towards the base, midrib thick and prominent, gradually becoming flattish distally above, much raised below, less so towards the apex of the blade below, nerves 7-8 pairs, rather irregular, in part deeply forked, rather indistinctly anastomosing before the edge, slightly impressed above, prominent below, veins obscurely reticulate below; petiole 1-2 cm by c. 2 mm. *Umbels* 8-12(-14)-flowered. Outer *perulae* ovate to roundish, c. 2 cm across, inner ones spatulate, up to 3.5 by 1.8 cm, innermost ones elongate-spathulate, up to 5 by 1 cm, all dorsally laxly short-hairy to glabrescent, internally more densely and longer appressedly substrigose. *Bracteoles* subspathulate-linear, hairy especially along the margin, 4-5 cm by 2-5 mm. *Pedicels* laxly lepidote, 5-7 by 1.5-2 mm. *Calyx* much oblique, patellar or only rim-like, obscurely lobed, c. 5 mm across. *Corolla* trumpet-shaped, known only in a rather withered state, apparently fleshy and white when fresh, a little zygomorphous, scantily lepidote or glabrous outside, subdensely hairy for $\frac{3}{4}$ of the tube inside, (8.5-)-9-10(-10.5) cm long in all, tube slightly curved, 5-6 mm σ at base, gradually dilated to 6-8 mm at the mouth, lobes \pm spreading, oblong-obovate, 1-1.5 by c. 0.8 cm. *Stamens* 10, almost equalling the corolla;

filaments linear and hairy for *c.* $\frac{3}{4}$ below, narrower and glabrous above; anthers narrow-oblong, wider distally, 5–6 by 1–1.3 mm, base of each cell protracted into a subacute 0.3–0.4 mm long apiculus. *Disk* hardly prominent, glabrous. *Ovary* elongate-cylindrical, 12–15 by 3 mm in a developed state, densely set with whitish or yellowish appressed hairs, which cover the scales, tapering to the rather slender style, which is almost as long as the corolla, and densely covered with hairy and scales below, less hairy and more lepidote upwards, glabrous for the ultimate centimetre; stigma 5-lobed, *c.* 1.5 mm ϕ . *Fruit* apparently up to 5 cm by 7 mm.

Distr. Malesia: W. New Guinea (Arfak Mts: Mt Saru-mot, Anggi Gigi Lake).

Ecol. Both epiphytic in rather dense forest and terrestrial in \pm open devastated *Nothofagus* summit forest or scrub, 2200–2350 m. *Fr.* Jan.

113. *Rhododendron maius* (J. J. S.) SLEUM. *Reinwardtia* 5 (1960) 120; *Blumea* 11 (1961) 119. — *R. carringtoniae* F. v. M. *var. maius* J. J. S. *Nova Guinea* 12 (1917) 511; *ibid.* 12 (1918) t. 205.

Terrestrial or epiphytic shrub, up to 2 m. Branchlets robust, terete, tips laxly lepidote; the only internode known 14 cm by 4.5 mm. *Leaves* 6–10 in a pseudowhorl, oblong to elliptic-oblong, apex broad-attenuate, obtuse, base broadly cuneate to subtruncate-obtuse, coriaceous, margin slightly revolute, subdensely minutely impressed-punctulate above with age, subdensely and \pm persistently lepidote beneath (scales dark, marginal zone coarsely dentate or incised, centre somewhat impressed), (4.7–)6–8.7 by (2.2–)2.5–3.4(–4) cm, midrib slightly impressed above, strongly prominent beneath, though more slender towards the apex of the lamina, nerves 9–10 pairs, lower 4–5 ones slightly curved, upper ones more straight, all \pm branched distally and anastomosing with each other and the rather laxly arranged veins, nerves and veins slightly impressed above, rather prominent beneath, the finer reticulation \pm dense and visibly prominent beneath; petiole lepidote, (4–)6–10 by *c.* 1.5 mm. *Umbels* (5–)12–15-flowered. *Perulae* ovate to obovate, short-pubescent and lepidote outside, up to 2.5 by 1.5 cm. *Bracteoles* linear to spatulate, 1–2 cm by 0.5–2.5 mm, sparsely pubescent or glabrous. *Pedicels* thickened below the oblique calyx, subdensely covered with thin rufescent scales, 2–2.5 cm by 1 mm. *Calyx* small, *c.* 6 mm ϕ , 5-dentate, teeth irregularly triangular, obtuse or acute, one of them mostly longer (up to 2 mm). *Corolla* salver-shaped, white at the lobes, pinkish at the tube, or even darkening to red at the base, carnation-scented, tube slightly curved, subcylindrical, 8–8.8 cm long, 3–4 mm ϕ at base, gradually dilated to 6.5 mm at the throat, laxly appressed-lepidote outside (scales thin, irregularly dentate), inside rather densely hairy in the lower, more laxly so in the upper part, lobes obovate to orbicular, rounded, glabrous except some scales which may be found at the sinuses or the base of the lobes, 1.4–1.7 by 1.1–1.7 cm. *Stamens* 10, somewhat exerted from the

throat; filaments linear, laxly hairy in the lower half, gradually glabrescent upwards, at last completely glabrous; anthers narrow-oblong, 3.5 by 1 mm, base obtuse. *Disk* laxly appressed-puberulous or nearly glabrous. *Ovary* cylindrical or elongate-conical, 11–12 by 2 mm, densely subappressed-tomentose by coarse yellowish hairs, which cover the scales, tapering gradually to the style, the latter 5–5.5 cm, rather densely patent-hairy below, laxly hairy and lepidote in the middle, glabrous in the upper third; stigma capitate-turbinate, crenulate.

Distr. Malesia: W. New Guinea (Hubrecht Mts and Habbema Lake). A form with but 5-flowered umbels on Mt Wilhelm.

Ecol. In open places or on open banks of a stream within the mossy forest, 2770–3000 m. *Fl.* Feb.–Oct.

114. *Rhododendron cruttwellii* SLEUM. *Reinwardtia* 5 (1960) 120; *Blumea* 12 (1964) 339. — **Fig. 24.**

Small tree, 4.5–6 m. Branchlets subterete; internodes (2.5–)4–14 cm, upper ones laxly lepidote, lower ones greyish corticate. *Leaves* in 5–7-merous pseudowhorls, part of them reduced in size, normal ones obovate-elliptic or lanceolate, sometimes elliptic-lanceolate, apex shortly \pm gradually acuminate, subacute, with a small terminal gland, base \pm acutely attenuate or cuneate to the petiole, subcoriaceous or coriaceous, dark green and shining above, paler and rather dull beneath, glabrous above, laxly to subdensely lepidote beneath (scales in the rather broad and very thin marginal zone variously dentate or lacerate, the centre small, somewhat sunk and longer persistent), entire, subrevolute, (5.5–)6–12.5 by 3–6 cm, midrib slightly depressed above, raised beneath, nerves 8–10 pairs, lower ones irregular, upper ones more straight and subparallel, curved-anastomosing with each other in a certain distance from the edge, prominent on both faces, reticulation dense and slightly but well visibly raised on both faces; petiole \pm flattened, grooved above, lepidote, 6–12 by 1.5–2 mm. *Umbels* 4–7(–9)-flowered. *Perulae* ovate-acuminate, laxly lepidote in the middle dorsally, furthermore sericeous all over the upper- and undersurface, glandular-ciliate, up to 1.5 by 1 cm. *Bracteoles* narrow-linear, glabrous, up to 1.5 cm. *Pedicels* stoutish, laxly patent-hairy, lepidote especially in the upper third, 1–1.5(–2) cm, obliquely thickened below the calyx. *Calyx* small, margin membranaceous, indistinctly 5-lobed, rather glabrous, very laxly ciliate, *c.* 2.5 mm ϕ . *Corolla* salver-shaped, pure white, tube slightly curved, a little 5-saccate at the very base, but slightly dilated towards the mouth, (5–)5.5–6 cm, at the base 3–4 mm ϕ , in the middle *c.* 5 mm, sparsely lepidote outside, \pm densely hairy in the lower half, glabrous distally inside, lobes spreading, broadly obovate to suborbicular, 1–1.3 by 0.9–1.3 cm, glabrous. *Stamens* 10, somewhat exerted from the throat; filaments linear, hairy in the lower half, glabrous above; anthers oblong, base obtuse, 2–2.3 by 1 mm. *Disk* very low, glabrous. *Ovary* cylindrical,

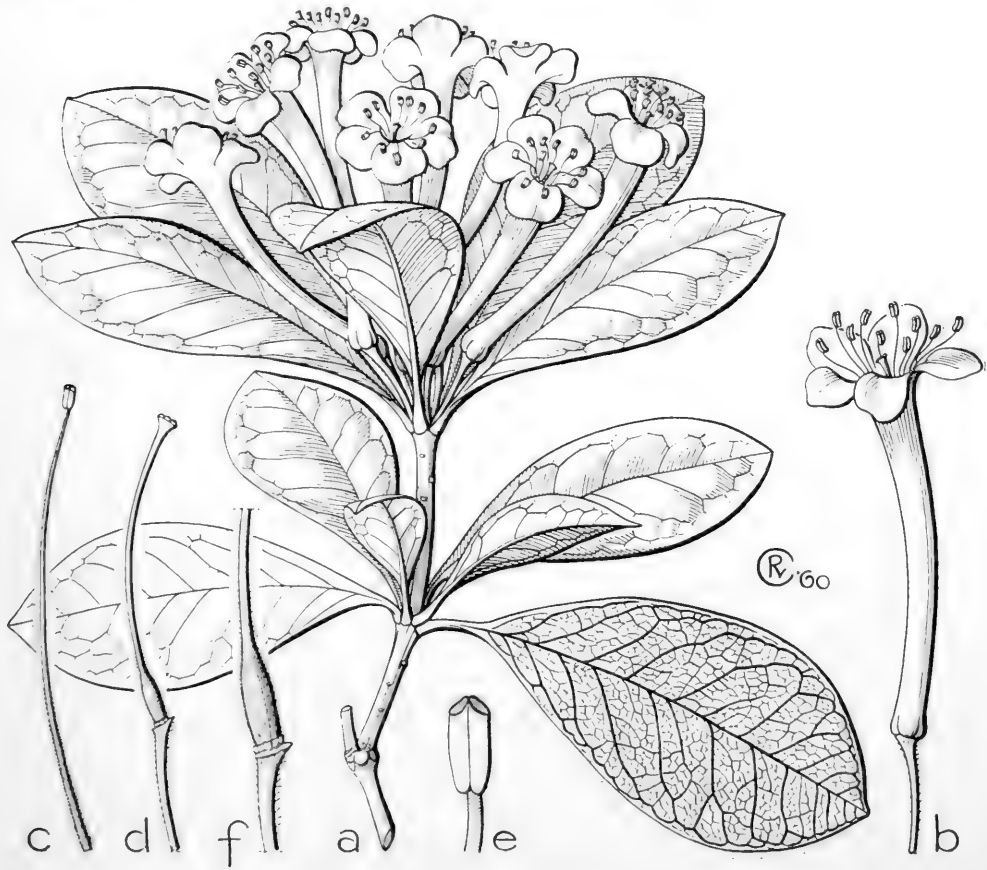


Fig. 24. *Rhododendron cruttwellii* SLEUM. a. Branch with flowers, $\times \frac{2}{3}$, b. flower, $\times 1$, c. stamen, $\times 1$, d. ovary and style, $\times 1$, e. anther, $\times 4$, f. ovary, $\times 2$ (a-f CRUTTWELL 1020).

gradually narrowed to the slender style, densely covered with subpatent whitish or greyish hairs, no scales, 6-7 by 1.5 mm; style exserted, c. 6 cm, at the base laxly hairy for c. 6 mm, completely glabrous otherwise; stigma turbinate-capitate, crenulate.

Distr. *Malesia*: SE. New Guinea (Maneao Range: Mt Maneao, Mt Yauyama; Mt Simpson).

Ecol. In thin evergreen forest, edge of small patch of wood in gully, among non-calcareous rocks in shades, on moss-covered ground, 1860-2600 m. Fl. June-Aug.

115. *Rhododendron archboldianum* SLEUM. Reinwardtia 5 (1960) 121.

Tall shrub, epiphytic or rarely terrestrial. Branchlets terete, stout; internodes 6-16 cm, ultimate ones subdensely lepidote, lower ones glabrescent. Leaves in 5-7-merous pseudowhorls, in which 3-4 leaves are normal, the rest smaller (reduced), apparently with some very small and early caducous leaflets along the internodes, their

scars only seen; normal leaves ovate to elliptic-ovate, not rarely somewhat unequal, apex short-acuminate, subacute, base broadly attenuate or mostly subtruncate-rounded, sometimes subcordate, coriaceous, subdensely lepidote on both faces (scales tardily caducous above, persistent for a long time beneath, flat, small, the margin irregularly and \pm deeply dentate, the centre not immersed), entire, subrevolute below, (4-)5-11 by (2-)3-6 cm, midrib slightly depressed above, thick-prominent beneath in the lower, less so in the upper part, nerves 8-10(-12) pairs, slightly curved, \pm irregular, anastomosing with each other and the veins before the edge, faintly impressed or elevated above, raised beneath, reticulation dense, more visible beneath only; petiole a little flattened, grooved above, subdensely lepidote, (4-)6-9 (sometimes up to 13) by 1.5-2 mm. Umbels 8-13(-15)-flowered. Perulae ovate to broadly obovate, laxly lepidote and sericeous dorsally, up to 1 by 0.7 cm. Bracteoles narrow-linear, glabrous or laxly lepidote, up to 1.5 cm.

Pedicels stoutish, rather densely lepidote, obliquely thickened below the calyx, 8–11 mm. *Calyx* very small, rim-like, wavy, indistinctly 5-lobed. *Corolla* salver-shaped, rose, tube cylindrical, slightly curved, gradually dilated from the base to the limb, 4.5–5 cm long, c. 2.5 mm ϕ at base, 3.5–4.5 mm higher, a little constricted at the throat, laxly to subdensely lepidote outside, \pm densely hairy inside to nearly the throat, lobes broadly spatulate to nearly rounded, 1–1.2 by 0.8–1.2 cm, laxly lepidote outside at the base and median, glabrous inside. *Stamens* 10, exserted; filaments linear below, filiform above, short-hairy to nearly the top; anthers oblong, base obtuse, 3.5–4 by 1 mm. *Disk* glabrous below, densely hairy at the upper margin. *Ovary* cylindrical, gradually tapering to the style, 7–8 by c. 2 mm, densely appressed-hairy and lepidote (scales \pm covered by the tomentum and not well visible); style \pm as long as the corolla tube, covered with subpatent hairs and scales to nearly the top; stigma thick, short-obconical.

Distr. Malesia: SE. New Guinea (Mts Tafa and Suckling).

Ecol. Usually epiphytic in ridge forests, occasionally terrestrial in clearings, 2400 m.

116. *Rhododendron pleianthum* SLEUM. Reinwardtia 5 (1960) 122; Blumea 11 (1961) 119; *ibid.* 12 (1963) 103.

Small tree or shrub, terrestrial, 2–4(–6) m. Branchlets very robust, terete, tips laxly stellate-lepidote, 5–7 mm ϕ ; internodes 9–16 cm. *Leaves* at the upper 1 or 2 nodes in 5–7-merous pseudowhorls, elliptic or obovate-elliptic, apex rounded or very broadly attenuate and blunt, base slightly but distinctly cordate, coriaceous, \pm rigid, glabrous above at full age, laxly lepidote beneath (scales stellate-incised at the thin, early dissolute marginal zone, centre small, but slightly impressed), finally minutely impressed-punctulate beneath, flat, (6.5–)7–10(–14) by (4–)4.5–6.5(–9) cm, midrib dilated below, gradually narrowed upwards, impressed for the whole length above, thick and obtusely prominent beneath, 2–3 mm broad at the base, nerves c. 8 pairs, irregular, \pm spreading, divided and anastomosing before the edge, impressed above, prominent beneath, veins and veinlets forming an impressed lax reticulation above, which is but faintly raised or \pm obscure beneath; petiole flattened, glabrous 2–4(–6) by 2–3 mm. *Umbels* (8–)15–20-flowered. Outer perulae ovate, inner ones oblong-spathulate, obtuse, at the back densely, inside more laxly shortly strigose or almost sericeous, up to 2 by 1 cm. Bracteoles linear-subspathulate, more densely short-hairy at the dorsal middle line, c. 2 cm by up to 2 mm. Pedicels densely lepidote and very shortly pubescent, c. 2 cm by 1 mm at anthesis. *Calyx* disk-shaped, slightly oblique, c. 4 mm ϕ , subglabrous dorsally, shortly subacutely 5-lobed, or occasionally with irregular 2–9 mm long teeth or laciniae, which are glabrous or very shortly pubescent, c. 1 mm wide at base. *Corolla* long-tubular below, \pm expanded at the lobes,

8–9 cm long in all, initially very laxly and caducously lepidote outside, laxly hairy at the tube inside, white or cream, suffused with pink distally, or dark pink, tube rather straight, (5.5–)6–7 cm long, 0.4–0.5 cm ϕ at base, gradually dilated upwards to 0.7–0.9 cm, lobes obovate-spathulate, c. 2 cm across. *Stamens* 10, slightly longer than the corolla tube, unequal; filaments linear, subdensely or towards the apex more laxly hairy in the lower $\frac{3}{4}$, glabrous for the rest; anthers elongate-oblong, base obtuse, 4.5–5 by 1–1.2 mm, a little curved. *Disk* prominent, glabrous. *Ovary* elongate-cylindrical, gradually tapering to the style, very densely yellowish-hairy or -tomentose, rather laxly lepidote (scales \pm covered by the hairs), c. 8 by 2–2.5 mm; style nearly as long as the corolla tube, for about 10 mm subdensely to laxly hairy and lepidote above the base (the scales well visible among the hairs), glabrous otherwise; stigma turbinate-capitate. *Capsule* elongate-fusiform, densely hairy and lepidote, (5–)6–8 by c. 0.7–0.8 cm.

Distr. Malesia: New Guinea (Western, Eastern and Southern Highlands: Mts Hagen, Kerigomna, Wilhelm, Otto, and Giluwe).

Ecol. On edge of mossy forest-grassland, in ridge crest scrub or on high bank above creek, locally common, 2680–3260 m. *Fl.* July–Oct.

Vern. Wambu, Mendi.

117. *Rhododendron oliganthum* SLEUM. Reinwardtia 5 (1960) 123.

Shrub, c. 1.2 m. Branchlets terete, slender, tips densely rufous-lepidote; upper internodes 1.5–3 cm. *Leaves* nearly opposite or in a pseudowhorl of 3 at the upper node only, subsessile, subovate-elliptic, apex shortly acuminate, obtuse, base truncate to rounded or subcordate, coriaceous, glabrous above at maturity, laxly lepidote beneath (scales thin, marginal zone irregularly dentate or incised, centre slightly impressed), margin somewhat recurved, (3–)3.5–5 by (1.5–)2–3 cm, midrib faintly impressed or nearly flat above, strongly raised beneath in the lower part, less so towards the apex of the lamina, nerves c. 8 pairs, rather straight, curved-anastomosing near the edge, prominent on both faces, veins laxly reticulate, raised specially beneath together with the veinlets; petiole 1–2 by 1–1.5 mm. *Flowers* solitary or in twos, terminal. Pedicels stoutish, oblique thickened below the calyx, rather densely lepidote and very shortly pubescent, 2.8–3 cm at anthesis. *Calyx* minute, shortly 5-lobed and wavy, c. 2.5 mm ϕ . *Corolla* broadly salver-shaped, intensely rose when fresh, tube cylindrical, straight, 3.5–3.7 cm long, at base c. 4 mm ϕ , slightly dilated to 5–6 mm at the mouth, laxly lepidote and very laxly short-hairy outside, subdensely hairy inside in the basal part, less so upwards, glabrous at the throat, lobes \pm spreading, broadly obovate to nearly rounded, 1–1.2 cm ϕ , lepidote outside at the base, otherwise glabrous. *Stamens* 10, somewhat exserted from the throat; filaments linear, subdensely to laxly hairy to the lower $\frac{2}{3}$, glabrous distally; anthers oblong, base obtuse, c. 2.6 by 1 mm. *Disk* pubescent especially at the upper margin.

Ovary elongate-conical, densely hairy and lepidote, *c.* 7 by 2 mm, with 5 longitudinal furrows, gradually tapering to the style, the latter slightly exserted, *c.* 3.5 cm, laxly hairy and very laxly lepidote up to the middle, glabrous above; stigma thickly turbinate-capitate.

Distr. *Malesia*: SE. New Guinea (Mt Victoria: NW of the "Gap"), in crest forest, at 2895 m. *Fl.* Jan.

118. *Rhododendron carrii* SLEUM. *Reinwardtia* 5 (1960) 124.

Epiphytic shrub. Branchlets terete, tips glabrous or very laxly lepidote; internodes (2.5)–4–9 cm. *Leaves* in 3–4-merous pseudowhorls at the upper 3–4 nodes, ovate to subovate-rounded, apex broadly and shortly acuminate, rather obtuse, base manifestly subauriculate-cordate, sessile or nearly so, rigidly coriaceous, seemingly glabrous, but laxly set with minute irregularly star-shaped scales beneath (lens!) (leaving a minute point in the slightly impressed centre), flat, (4–)4.5–5.5 (–6) by (2.5–)3–5 (–5.5) cm, midrib flat or slightly impressed above, stout and very prominent beneath in the lower part, less so towards the apex of the lamina, nerves *c.* 10 pairs, 2–3 of them from the base of the blade, the other from the midrib, all curved-ascending and anastomosing near the edge, prominent on both faces, reticulation rather dense and well visible especially beneath; petiole *c.* 1 by 1.5 mm. *Umbels* 4–5-flowered. Bracteoles linear. Pedicels stoutish, subdensely to laxly thin-lepidote, (1.3–)1.5–2.5 cm, thickened at apex. *Calyx* small, oblique, membranous, shortly (1 mm) obtusely 5-lobed, shortly fimbriate, *c.* 2 mm σ . *Corolla* salver-shaped, white, tube slightly curved, dilated gradually upwards, 5.5–6 cm long in full anthesis, at base *c.* 3.5 mm σ , below the lobes *c.* 7 mm, laxly sub-stellate-lepidote outside, densely clad inside with retrorse hairs in the lower third or half, upwards more laxly so with spreading hairs, glabrous below the throat, lobes \pm spreading, rounded-ovate, 1.2–1.5 by 1–1.5 cm, glabrous on both faces. *Stamens* 10, a little exserted; filaments narrow-linear, densely hairy at the base, more laxly and patently so in the middle, glabrous distally; anthers oblong, base obtuse, 2.8–3 by 1 mm. *Disk* densely short-hairy especially above. *Ovary* elongate-conical, densely clothed with appressed yellowish hairs and laxly clad with scales (\pm covered or hidden by the hairs), *c.* 10 by 2 mm, gradually extended into the style, the latter exserted, (5.5–)6–6.5 cm, laxly hairy and lepidote at the base for *c.* 5 mm only, glabrous otherwise; stigma thick-turbinate, crenulate.

Distr. *Malesia*: SE. New Guinea (Mt Victoria: NW of the "Gap"), once found on open hill side, 2440 m. *Fl.* Jan.

119. *Rhododendron armitii* F. M. BAILEY, Bot. Bull. Queensl. Dep. Agr. 10 (1895) 39; SLEUM. Reinwardtia 5 (1960) 124.

Shrub, dichotomously branched; bark whitish. Branchlets terete, tips sparsely to subdensely clad

with stellate scales; internodes 3–7 (rarely up to 12) cm. *Leaves* in \pm 4-merous pseudowhorls at the end of the branchlets, broadly elliptic to subobovate-elliptic, apex very shortly obtusely attenuate, base rounded in general, the very base truncate to slightly subcordate, coriaceous, firm, subdensely lepidote on both faces initially, early glabrescent above (only hair-like flakes, being the remains of the scales, present for a longer time), more persistently lepidote beneath (scales thin, rusty, not rarely on very minute rather flat epidermal elevations which are still visible when the scales have gone being paler than the intervenium, marginal zone thin, irregularly deeply incised, centre very small), flat, 7–9 (–10) by 4–5 (–6) cm, midrib impressed above, very prominent beneath especially towards the base, nerves 8–10 pairs, rather straight basally, sometimes bifurcate half their length, obscurely curved-anastomosing before the edge, somewhat raised above (but impressed in the middle), prominent beneath, veins laxly reticulate, more visible beneath, veinlets obscure; petiole semiterete, grooved above, lepidote, (6–)8–12 by *c.* 2.5 mm. *Umbels* *c.* 5-flowered. *Perulae* ovate to obovate-spathulate, densely hairy and laxly lepidote outside, fimbriate, up to 3 cm by 1.5 cm. Bracteoles linear-spathulate, laxly hairy, *c.* 2 cm by up to 2.5 mm. Pedicels subdensely lepidote, somewhat hairy only below the oblique calyx, 1.8–2.5 cm by *c.* 1 mm. *Calyx* distinct, lepidote and laxly hairy outside, glabrous inside, deeply 5-lobed, lobes deltoid, subacute, 2–3 by *c.* 2 mm at base, fimbriate, finally reflexed. *Corolla* salver-shaped, white touched with sea-shell pink, tube straight or slightly curved, 5.5–6.5 cm by 6–7 mm σ , a little wider at the 5-accute base and somewhat expanded below the mouth, very laxly (caducously) lepidote or practically glabrous outside, densely long-hairy inside in the lower third, less densely so above, glabrous in the upper third, lobes broad-obovate to nearly rounded, spreading, glabrous, 1.8–2.2 by 1.3–1.7 cm. *Stamens* 10, slightly exserted from the throat; filaments linear (*c.* 1 mm) and densely patently hairy in the lower third, glabrescent above, filiform and completely glabrous in the upper third; anthers oblong, 4 by 1 mm, base obtuse. *Disk* glabrous. *Ovary* elongate-conical, 5-ribbed, *c.* 1.2 by 0.3 cm, densely set with subappressed yellowish or whitish hairs, which cover some scales, gradually tapering to the style, the latter stoutish and \pm densely hairy and very laxly lepidote in the lower, glabrous and more slender in the upper half; stigma broad-obconical, distinctly 5-lobed.

Distr. *Malesia*: SE. New Guinea (Mt Dayman), once found on the summit, 2710 m. *Fl.* March.

120. *Rhododendron tuba* SLEUM. *Reinwardtia* 5 (1960) 125.

Terrestrial shrub, 2–5 m. Branchlets somewhat flattened, laxly lepidote, pruinose when dry; internodes 3–8 (–10) cm. *Leaves* in 4–5-merous pseudowhorls at the upper 1 or 2 nodes, elliptic to oblong-elliptic, apex broadly acuminate, subacute, terminal gland not protruding beyond the leaf

margin, towards the base \pm broadly attenuate, very base subtruncate or rounded, sometimes subcordate, coriaceous, subdensely lepidote on both faces initially, glabrescent above and dark olivaceous-green at full age, more persistently lepidote beneath (scales rather small, stellate-dented in the thin and early dissolute marginal zone, centre minute and impressed), finally laxly set with fine blackish pits beneath, flat, (4-)4.5-7 by 2.5-3.5 (-5, rarely up to 6) cm, midrib depressed above, thick, broad and prominent in the lower part beneath, narrowed upwards, nerves 6-8 irregular pairs divided and anastomosing before the edge, slightly impressed above, a little though distinctly raised beneath, reticulation rather obscure above, well visible, subdense and prominent beneath; petiole flattened, 2-4 by 1.5-2 mm. *Umbels* (4-) 5-7-flowered. Outer perulae ovate, inner ones obovate, ending in an apiculus or sharp point (1-3 mm), membranous, caducously lepidote at the tips dorsally, glabrous otherwise, a little shining, lepidote-ciliate, up to 1.5 by 1 cm. Bracteoles filiform below, somewhat subspathulate-dilated distally, very laxly lepidote or glabrous, up to 1.5 cm. Pedicels laxly stellate-lepidote, epilose, 1.2-2 cm by c. 1 mm. *Calyx* very obliquely disk-shaped, membranous, subglabrous, c. 4 mm ϕ , with 5 irregular short teeth (c. 1 mm) or longer laciniae (up to 4 mm). *Corolla* salver-shaped, laxly lepidote outside, laxly hairy in the lower $\frac{3}{4}$ of the tube inside, 6.5-7.5(-8) cm long in all, salmon-pink at the tube, white at the lobes, tube mostly slightly curved, 5.5-6.5 cm long, c. 5 mm ϕ at the base, not or very slightly dilated upwards, lobes \pm spreading, obovate, 1-1.5 by 0.8-1.2 cm. *Stamens* 10, unequal, subequalling the corolla; filaments linear, laxly hairy in the lower $\frac{3}{4}$, glabrous for the rest; anthers subobovate-oblong, base contracted to a very short apiculus, c. 2.5 by 0.7 mm. *Disk* slightly prominent, hairy in the upper, glabrous in the lower part. *Ovary* cylindrical, gradually tapering to the style, densely whitish hairy or -tomentose, minutely lepidote (the small scales covered by the hairs), c. 8 by 2.5 mm; style rather slender, as long as the stamens, laxly set with longish white hairs and scales in the lower half; stigma yellow, capitate, shortly 5-lobed.

Distr. *Malesia*: SE. New Guinea (N. side of summit of Mt Dayman).

Ecol. In margin of moss forest, at 2500-2750 m. Fl. June-Aug.

Note. *R. tuba* is in many respects intermediate between *R. carringtoniae* and *R. rhodoleucum*, both also known from the Maneau Range, and possibly a local natural hybrid between them.

121. *Rhododendron rhodoleucum* SLEUM. Blumea 11 (1961) 119.

Stiff, straggly shrub, (1-)1.5-3(-4) m, much branched distally. Branchlets rather robust, laxly lepidote at the upper internodes (3.5 cm by 2 mm), older parts early covered with thin ashy cork. *Leaves* in 4-6-merous pseudowhorls at the upper 1 (or rarely 2) nodes, (broadly) elliptic to subobovate-elliptic, (sub)sessile, apex shortly and

broadly attenuate, obtuse, more rarely almost rounded, base \pm deeply cordate, coriaceous, \pm shining glabrous with age above, laxly lepidote beneath (scales flat, rather small, thin marginal zone rather wide, variously dented or angled, small centre slightly impressed), flat, (3-)4-7 by (2-)2.5-5(-6) cm, midrib narrowly impressed above, at base as wide as the petiole, decrescent distally, not much prominent beneath, nerves 6-8 irregular pairs, with several equally spreading and anastomosing veins between them, all conspicuously raised on both faces, as is the rather dense reticulation; petiole 0-1 mm. *Umbels* (4-) 5-6-flowered. Bracteoles almost filiform. Pedicels stoutish, subdensely or more laxly stellate-lepidote, epilose, c. 1.5 cm. *Calyx* very obliquely disk-shaped, indistinctly 5-lobed, 2.5-3 mm ϕ , \pm lepidote dorsally. *Corolla* tubular, rather straight or a little curved, laxly lepidote at the tube outside, densely set with patent or retrorse hairs below, more laxly so upwards inside, lobes \pm glabrous, tube red at the base, fading upwards to pink or salmon-pink, lobes white, tube 6-7(-7.5) cm long, 4-5 mm ϕ at base, gradually widened to c. 1 cm below the lobes, lobes \pm spreading, obovate to subrotund, 1.5-2 cm. *Stamens* 10, a little exerted from the throat; filaments linear (c. 1.2 mm) and subdensely hairy below, narrower and more laxly subpatent-hairy upwards, glabrous in the upper $\frac{1}{4}$; anthers yellow, narrow-oblong, 3.5-4 by c. 1 mm, base obtuse. *Disk* hairy in the upper margin. *Ovary* subcylindric, 7-8 by 2 mm, densely appressed-hairy and lepidote, tapering to the style, the latter rather slender, densely or more laxly hairy and laxly lepidote in the lower $\frac{2}{3}$, exclusively sparsely lepidote for 3-4 mm above, glabrous for the rest; stigma thick-turbinate, shortly 5-lobed. *Capsule* fusiform, c. 3.5 by 0.5 cm.

Distr. *Malesia*: New Guinea (Milne Bay Distr.: 3 peaks of the Maneau Range).

Ecol. On edge of (stunted) mossy forest, sometimes on very steep escarpments, 2290-2750 m, locally abundant. Fl. May-Oct.

122. *Rhododendron pubitubum* SLEUM. Reinwardtia 5 (1960) 126.

Shrub. Branchlets dark brown when dry, \pm pruinose, tips laxly or very laxly lepidote; internodes 4-11 cm. *Leaves* in 3-5-merous pseudowhorls, elliptic or obovate elliptic, sometimes obovate, apex very broadly attenuate, obtuse to nearly rounded, occasionally very shortly retuse, broadly attenuate towards the base, the very base rounded, not rarely subcordate, subsessile, coriaceous, glabrous above at maturity, laxly to subdensely lepidote beneath (scales thin, marginal zone irregularly dentate or bitten, \pm persistent centre blackish and sunk), subrevolute, 3-6 by 2.2-3.5(-4.2) cm, midrib slightly depressed above, much prominent beneath, evanescent distally, nerves 6-8 pairs, straight from the midrib at an acute angle, subparallel, curved anastomosing before the edge, very slightly impressed or \pm obsolete above, prominent beneath, reticulation

lax and slightly visible beneath only; petiole 1–2 by 1–2 mm. *Umbels* 10–12-flowered. Perulae orbiculate to obovate, densely short-subsericeous on both faces, up to 1.5 by 1 cm. Bracteoles linear, densely rather longish patent-hairy, up to 1.5 cm by 0.5 mm. Pedicels stoutish, 8–12 mm, densely and patently greyish pubescent. *Calyx* minute, margin narrow, membranaceous, wavy and very shortly obtusely 5-lobed, somewhat hairy outside, glabrous inside. *Corolla* salver-shaped, white, scented, tube cylindrical, straight, somewhat 5-saccate at the very base, barely dilated towards the mouth, (5–)5.5–6.5 cm by c. 2.5 mm, rather densely pubescent outside, subdensely to laxly and patently hairy inside in the lower $\frac{4}{5}$, lobes \pm spreading, spatulate-obovate, hairy outside along the middle line, otherwise glabrous, 1–1.2 cm by 5–9 mm. *Stamens* 10, a little exerted; filaments narrow-linear, rather densely hairy below, more laxly so upwards, glabrous in the upper $\frac{1}{5}$; anthers broadly obovate-oblong, base obtuse, 1.8 mm. *Disk* glabrous below, pubescent at the upper margin. *Ovary* elongate-conical, densely covered with subpatent whitish hairs and scales (these covered or hidden by the tomentum), c. 5 by 1.8 mm, rather abruptly narrowed to the style; style as long as or a little shorter than the corolla tube, subdensely hairy and laxly lepidote below (the scales well visible there), laxly hairy in the middle, glabrous for the last 10 mm below the short-obconical stigma.

Distr. *Malesia*: Central Celebes (Masamba Distr.), two collections.

Ecol. In open places, on whether or not peaty soil on granite, 1700–2000 m. *Fl.* July–Aug.

123. *Rhododendron pseudotrichanthum* SLEUM. *Blumea* 12 (1964) 340. — *R. trichanthum* SLEUM. *Reinwardtia* 5 (1960) 127, non REHD. *J. Arn. Arb.* 26 (1945) 480.

Shrub. Branchlets robust, subterete; internodes 3–6 cm, upper ones rather densely lepidote and laxly hairy. *Leaves* in 3–4-merous pseudowhorls, oblong or elliptic-oblong, somewhat inequilateral, apex very broadly attenuate to rounded, not rarely minutely retuse, base very broadly attenuate to nearly rounded, thick-coriaceous, firm, glabrous above some hairs excepted, which are found at the very base, laxly lepidote beneath (scales small, \pm deeply substellate-dentate, flat, centre red brown, small, slightly impressed), subrevolute, 8–12 by (3–)3.5–5 cm, midrib distinctly impressed above, stout and prominent beneath in the lower part, less so distally, nerves 6–8 pairs, rather spaced, \pm straight below, curved-anastomosing before the edge, very slightly impressed above, a little prominent beneath, reticulation rather indistinct; petiole glabrous or clad with some hairs, rough, grooved above, 6–13 by 2–4 mm. *Umbels* 7–10-flowered. Perulae ovate, glabrous, irregularly shortly subserrate, up to 1.3 by 1 cm. Bracteoles linear, laxly hairy, c. 1 cm. Pedicels rather slender initially, finally more stoutish, densely clad with \pm patent greyish hairs or nearly villous, very laxly lepidote, 2–3 (sometimes up to 4) cm at

anthesis. *Calyx* annular, inconspicuous, c. 2 mm σ . *Corolla* salver-shaped, dilutely red-violet when fresh, tube cylindrical, c. 3.5 cm long, at base somewhat inflated and 5-saccate, 3–4 mm σ , hardly or not widened towards the mouth, densely clothed all over with soft greyish hairs outside, equally so inside in the lower half, lobes obovate-rounded, spreading, 1–1.2 by 0.5–0.7 cm, rather densely hairy outside margin excepted, glabrous inside. *Stamens* 10, unequal, \pm as long as the corolla; filaments linear, flattened, densely whitish hairy to the lower $\frac{1}{3}$, glabrous for the rest; anthers oblong, base obtuse, 2.5 by 0.8 mm. *Disk* subglabrous. *Ovary* cylindrical, 5-ribbed, very densely covered with subpatent hairs or almost villous, 4–6 by 1.5–2 mm, tapering to the slender style, which attains c. $\frac{2}{3}$ of the length of the corolla and is laxly set with spreading hairs in its lower third; stigma narrow-obconical.

Distr. *Malesia*: Central E. Borneo (summit of Mt Kemul).

Ecol. In ridge forest, on humous, peaty soil, 1800–1850 m. *Fl.* Oct.

124. *Rhododendron amabile* SLEUM. *Reinwardtia* 5 (1960) 127.

Shrub. Branchlets subterete and densely lepidote at the ultimate, glabrous at the lower internodes (2.5–9 cm). *Leaves* in \pm 4-merous pseudowhorls, subsessile, oblong or oblong-elliptic, sometimes elliptic, apex broadly attenuate, subobtusely, base subtruncate-rounded to subcordate, coriaceous, caducously lepidote, finally completely glabrous above, \pm persistently and laxly lepidote beneath (scales irregularly dentate at margin, flat, each on top of a minute epidermal elevation), subrevolute, 2.5–6 by (1.2–)1.5–2.3(–2.8) cm, midrib flat or faintly impressed above, stout and very prominent beneath in the lower $\frac{2}{3}$, less so upwards, nerves 7–8 pairs, rather straight below, curved-anastomosing near the edge, hardly visible above, somewhat raised beneath, reticulation \pm inconspicuous; petiole lepidote, 2–3 by c. 1.5 mm. *Umbels* 7–9-flowered. Perulae ovate-acuminate, acute, outer ones lepidote and subdensely sericeous dorsally, inner ones sericeous only, up to 1.4 by 0.9 cm. Bracteoles linear to subspatulate-linear, laxly hairy, up to 1 cm by 1 mm. Pedicels rather densely lepidote and shortly subpatently greyish pubescent, 7–10(–12) by c. 0.5 mm. *Calyx* minute, membranous, wavy, irregularly fimbriate, c. 2.5 mm σ . *Corolla* salver-shaped, white below, rose coloured towards the limb, tube cylindrical, straight, 3–3.3 cm, base rather distinctly 5-gibbous and c. 2.5 mm σ , slightly dilated towards the mouth, laxly short-hairy and caducously lepidote outside (scales completely gone at full anthesis), short-hairy in the lower half inside, glabrous otherwise, lobes slightly spreading, obovate-spatulate, 1–1.2 by 0.7–0.8 cm, hairy outside at the base, otherwise glabrous, though manifestly ciliolate. *Stamens* 10, slightly exerted; filaments linear, hairy in the lower third, glabrous above; anthers oblong, 1.8–2 by 0.7 mm, base obtuse. *Disk* prominently 10-gibbous, glabrous. *Ovary* subcylindrical, densely

hairy and lepidote, 6–7 by 1.6 mm, rather abruptly narrowed to the style, the latter almost attaining the limb of the corolla, hairy and scaly to nearly the top; stigma thick, turbinate-capitate.

Distr. *Malesia*: Central Celebes (Masamba Distr.: near Limbung), c. 1700 m, rather common in secondary forest on stony and peaty soil. One collection. *Fl.* Aug.

125. *Rhododendron radians* J. J. S. Bull. Bot. Btzg III, 1 (1920) 403, t. 51; SLEUM. *Reinwardtia* 5 (1960) 130.

var. radians.

Shrub. Branchlets terete, tips laxly pubescent and lepidote; internodes 3–12.5 cm. *Leaves* 5–12 per pseudowhorl, ovate to ovate-oblong, subsessile, apex shortly obtusely attenuate, sometimes nearly rounded, base slightly to distinctly cordate, coriaceous, glabrous except the very base and the midrib above at maturity, laxly lepidote beneath (scales \pm coarsely dentate or lacerate at the marginal zone, each mostly on top of a minute epidermal elevation, their \pm persistent dark centre impressed), slightly or not revolute at the base, (2–)2.5–5.5 by 1–2.2(–2.9) cm, midrib impressed above, prominent beneath, nerves 6–8 pairs, distinctly anastomosing, slightly impressed above and prominent beneath in the oldest leaves, often \pm obscure, reticulation inconspicuous; petiole laxly lepidote and pubescent, c. 1(–2) by 1–2 mm. *Umbels* 7–20-flowered. Outer perulae ovate-acuminate, acute, \pm glabrous dorsally, inner ones \pm spathulate, obtuse, rather laxly sericeous dorsally and internally, up to 1 by 0.8 cm. Bracteoles linear, patent-hairy, up to 1.5 cm by 0.5 mm. Pedicels rather stoutish, densely greyish-patent-pubescent, not lepidote, 7–13 mm. *Calyx* small, oblique, margin wavy and shortly 5-lobed. *Corolla* salver-shaped, white, tube straight-cylindric, (5–)5.5–6 cm, equally c. 3 mm wide, laxly to very laxly lepidote and epilose outside, subdensely to laxly short-hairy to $\frac{3}{4}$ of the lower part inside, glabrous distally, lobes spreading, broad-obovate-spathulate, very laxly lepidote outside, glabrous inside, 1–1.3 by 0.7–0.9 cm. *Stamens* 10, slightly exerted from the throat; filaments linear, laxly hairy to $\frac{3}{4}$ of their length, filiform and glabrous apically; anthers obovate-oblong, base obtuse, c. 1.8 by 1 mm. *Disk* glabrous at the base, but hairy within the upper part. *Ovary* subcylindric, 5 by 1.8 mm, densely \pm patently hairy (and lepidote, but scales covered or hidden by the hairs), rather abruptly narrowed to the finally exerted style, which is laxly patent-pubescent to the lower $\frac{5}{8}$ and bears some scales in its lower part; stigma turbinate, rather small.

Distr. *Malesia*: Central Celebes (Mt Sinadji), one collection.

var. minahasae SLEUM. *Reinwardtia* 5 (1960) 130. — *R. verticillatum* (non Low) KOORD. Minah. (1898) 514; KOORD.-SCHUM. Syst. Verz. 3 (1914) 100. — *R. jasminiflorum* (non HOOK.) SARASIN, *Reisen in Celebes* 1 (1905) 63.

Scales more deeply stellate-incised at the marginal zone, subdendroid, each on top of a more distinct minute epidermal elevation than in *var. radians*. Outer perulae \pm obtuse, subsericeous at the apex or practically glabrous, somewhat shining. Style hairy and lepidote up to almost the top.

Distr. *Malesia*: NE. Celebes (Minahasa, on several volcanoes).

Ecol. In low forest, on volcanic grit or sandy soil, 1500–1700 m.

Vern. *Tente-in-talun*, Tt., Minahasa.

Note. The corolla of the type specimen from Mt Soputan is given as white and very fragrant by the collector, and other collections from that region also seem to have had white corollas, as far as this can be concluded from the dried material. Only KOORDERS says, that his specimen, also collected on Mt Soputan, has dark red corollas, but no corollas are preserved in his herbarium. BOESVELD, the collector of the type specimen of *var. minahasae*, says on the label, that he has found “a similar *Rhododendron* on Mt Klabat with red corollas”, but I have seen no material from there which would agree with that. It remains open whether *var. minahasae* has always white flowers, or if, possibly, both white- and red-flowered forms exist together.

126. *Rhododendron oreadam* WERNH. Trans. Linn. Soc. II, Bot. 9 (1916) 98; SLEUM. *Reinwardtia* 5 (1960) 132. — *R. filamentosum* WERNH. Trans. Linn. Soc. II, Bot. 9 (1916) 97.

Shrub. Branchlets subangular, rather slender, tips subdensely lepidote, glabrescent below. *Leaves* in \pm 3-merous pseudowhorls, lanceolate, sometimes broadly lanceolate, subinequilateral, apex acutely acuminate, base acutely attenuate, subcoriaceous, practically glabrous above at maturity, rather laxly stellate-lepidote beneath (scales thin, irregularly dentate or incised, flat centre small, faintly impressed), flat, 8–14 by (2.6–)3–4(–5) cm, midrib slightly impressed above, prominent beneath, nerves 8–12 pairs, rather dense together, curved-anastomosing before the edge, obscurely impressed above, raised beneath, veins and veinlets subinconspicuous on both faces; petioles laxly lepidote, 8–10 by 1.5 mm. *Umbels* compact, 8–12-flowered. Perulae ovate to broadly obovate, lepidote outside in the upper half, short-hairy otherwise on both faces in the upper, longer and appressedly so in the lower part, up to 3 by 1.8 cm. Bracteoles filiform, laxly hairy, up to 3 cm. Pedicels stoutish, lepidote, c. 2 mm. *Calyx* small, obtusely 5-lobed, c. 2.5 mm ϕ . *Corolla* salver-shaped, probably white when fresh, tube cylindrical, straight, c. 4.5 cm long, c. 4 mm ϕ at the slightly swollen base, not much (up to 8 mm) widened towards the throat, practically glabrous outside, pubescent to nearly the lobes inside, the latter broad-elliptic or elliptic-obovate, 1.6–1.8 by 0.9–1.3 cm, glabrous. *Stamens* 10, slightly exceeding the corolla tube; filaments linear and densely patent-pubescent in the lower half, gradually glabrescent above; anthers oblong, base obtuse,

c. 4 by 1 mm. *Disk* short-hairy in the upper part. *Ovary* cylindrical, 8–10 by 1.7 mm, densely covered with longish, \pm appressed, forwardly directed hairs and some scales between, gradually attenuate to the style, which is but laxly covered with the type of hairs found on the ovary to $\frac{2}{3}$ its lower part, glabrous above, c. 4 cm at full anthesis; stigma shortly broad-obconical, indistinctly 5-lobed.

Distr. *Malesia*: W. New Guinea (Mt Carstensz), 1095–1495 m.

127. *Rhododendron cinerascens* SLEUM. Reinwardtia 5 (1960) 130; Blumea 12 (1963) 103.

Shrub, c. 2 m. Branchlets terete, rather slender, ashy, tips laxly lepidote; internodes 2.5–10 cm. *Leaves* 4–6 per pseudowhorl, lanceolate-oblong to obovate-oblong, apex shortly obtusely acuminate, rarely subrotundate, base cuneate into the petiole, coriaceous, subdensely lepidote initially on both faces (scales thin, flat, irregularly incised at the marginal zone, small centre impressed), finally glabrescent above, \pm persistently lepidote beneath, entire, flat, 4–5.5 by (1.2–)1.5–2(–2.3) cm, midrib shallowly impressed above, prominent beneath especially in the lower part, nerves 6–8 pairs, rather inconspicuous on both faces; petiole \pm flattened, grooved above, lepidote initially, 6–10 by c. 1.3 mm. *Umbels* 5–6(–7)-flowered. *Perulae* ovate to obovate-spathulate, laxly lepidote dorsally and sericeous apically, glabrous internally, ciliate and set with scales at the margin, up to 1.5 by 0.7 cm. *Bracteoles* filiform to subspatulate-linear, 1–1.5 cm by c. 1 mm. *Pedicels* rather slender, densely lepidote, laxly and very shortly hairy, 9–20 by 0.5 mm. *Calyx* small, very oblique, in form of a thin, wavy, irregularly 5-dentate rim, one or the other teeth elongate to 2–4 mm. *Corolla* salver-shaped, white, 5–6 cm long in all, tube cylindrical, straight or slightly curved, (3.7–)4–5 cm, c. 2.5 mm σ at base, gradually dilated to 3–3.5 mm at the throat, rather densely lepidote, not hairy outside, laxly pubescent inside in the lower third only, lobes spreading, spatulate-obovate, c. 1 by 0.6–0.7 cm, \pm laxly lepidote outside, glabrous inside. *Stamens* 10, well exerted from the corolla tube; filaments filiform, hairy in the lower half only; anthers oblong, base obtuse, c. 2.5 mm. *Disk* very shortly hairy at the upper margin. *Ovary* elongate-cylindrical, c. 5 by 1.2 mm, subdensely lepidote and subappressed-hairy, gradually narrowed to the style, the latter exerted for c. 1 cm, lepidote and subpatently hairy for 3 cm above the base, otherwise lepidote only to nearly the top; stigma shortly obconical-capitate.

Distr. *Malesia*: W. New Guinea (Wissel Lakes area), in secondary forest on *Sphagnum*, 1750 m. Two collections. *Fl.* April–May.

Vern. *Warade*, Kapauku.

128. *Rhododendron brachypodarium* SLEUM. Blumea 12 (1963) 103; Jahrb. Rhodod. Ges. Bremen (1963) 23, in text, f. 27. — Fig. 25.

Epiphytic or terrestrial shrub, 1–2(–3) m.

Branchlets densely lepidote, greyish pruinose when dry; upper internodes (2–)3–10 cm by 2–3 mm. *Leaves* \pm reflexed, in 4(–5)-merous pseudowhorls at the 2–3(–4) upper nodes, elliptic or more often obovate-elliptic, rarely obovate, apex broadly attenuate, obtuse or rounded, base more broadly or narrowly cuneate, coriaceous, subdensely lepidote on both faces initially, rather early glabrescent above with age, more tardily so beneath (scales flattish, marginal zone angular or dentate to various degree, centre rather small, slightly impressed), entire, hardly revolute, (4–)5–7(–8) by 2–3.5(–4) cm, midrib thick and grooved in the lower, becoming flat and slightly impressed or even evanescent distally above, as thick as the petiole at the base, gradually decrescent upwards beneath, nerves 7–10 pairs, very slightly depressed or obscure above, indistinctly curved-anastomosing and a little raised beneath, reticulation subinconspicuous; petiole very densely lepidote initially, tardily glabrescent, 6–10(–12) by 1.5–2 mm. *Umbels* (8–)10–12(–14)-flowered. *Perulae* greenish when fresh, outer ones ovate, firm, lepidote at apex and margin, fimbriate, inner ones much thinner, broadly spatulate, up to 2 by 1.3 cm, very laxly hairy in the lower part on both faces, otherwise glabrous. *Bracteoles* filiform, laxly hairy, up to 1.8 cm. *Pedicels* densely stellate-lepidote, 4–8 by 0.5 mm. *Calyx* much oblique, rim-like, obscurely lobed, lepidote dorsally, c. 2 mm across. *Corolla* narrowly tubular, pure white, 4–5.5(–6) cm long in all, \pm densely stellate-lepidote outside, short-hairy at the tube inside, tube straight, 3.5–4(–5) cm by 2–2.5 mm, hardly dilated distally, lobes spreading or a little reflexed, obovate-oblong, c. 1 by 0.4–0.5 cm. *Stamens* 10, exceeding the corolla tube for c. 1 cm; filaments narrow-linear and densely hairy for the lower $\frac{3}{4}$, more slender and glabrous for the rest; anthers narrow-oblong, (3–)4 mm, base obtuse. *Disk* slightly prominent, laxly short-hairy. *Ovary* narrowly cylindrical, c. 8 by 1.3 mm, whitish or yellowish tomentose (the hairs covering the scales), tapering to the style, the latter slender, exerted from the throat for c. 5 mm, densely hairy below, more laxly hairy and densely lepidote above in the lower $\frac{2}{3}$ part, densely and exclusively lepidote for the rest; stigma obcuneate, glabrous.

Distr. *Malesia*: W. New Guinea (Vogelkop Peninsula: Tamrau, Tohkirri, and Nettoti Range).

Ecol. Both in *Castanopsis* and *Nothofagus* forest, also in mossy crest or riverine forest, 1200–2000 m. *Fl.* Oct.–Dec.

Note. The flowers become fragrant towards the evening.

129. *Rhododendron goodenoughii* SLEUM. Reinwardtia 5 (1960) 131.

Shrub. Branchlets 3–6 mm σ , terete, pruinose in the older parts, glabrous, tips sparsely lepidote; internodes 4–10 cm. *Leaves* in 4–6-merous pseudowhorls, elliptic to obovate-elliptic, apex very shortly acuminate, sometimes nearly rounded, base attenuate to the petiole and a little winged, coriaceous, firm, glabrous above at maturity,



Fig. 25. *Rhododendron brachypodarium* SLEUM., Tohkiri Mts East, 1400 m, NW. New Guinea (VAN ROYEN & SLEUMER 7065) (SLEUMER, 1961).

laxly lepidote beneath (scales small, irregularly dentate or incised at the margin, centre very small impressed), 7-11 by 4-6 cm, midrib but slightly impressed above, very prominent below, less so towards the apex of the lamina beneath, nerves 7-9 pairs, the lowest 2 from the base of the blade, all at an acute angle from the midrib, rather straight below, curved and obscurely anastomosing distally, faintly impressed above, prominent beneath, \pm obscure sometimes towards the edge, no reticulation; petiole flattened, grooved above, lepidote initially, a little rough, 7-15 by 2-3 mm. *Umbels* \pm 10-flowered. Perulae ovate, rather blunt, outer ones rather densely lepidote and very shortly hairy dorsally, longer and appressed-pubescent internally and lepidote at the apex only, up to 2.5 by 1.8 cm. Bracteoles narrow-linear, nearly glabrous, up to 1.5 cm by c. 0.5 mm. Pedicels subdensely lepidote, not hairy at all, 3-5(-7) by c. 1 mm. *Calyx* small, very oblique, indistinctly lobed, c. 2.5 mm ϕ . *Corolla* salver-shaped, probably white when fresh, 5.7-7 cm long in all, tube cylindrical, slightly curved, 4.5-5(-5.5) cm, c. 4 mm ϕ at the 5-pouched base, c. 6 mm at the throat, subglabrous outside below, very laxly lepidote in the upper part, subdensely hairy downwards internally, glabrescent distally, lobes spreading, obovate-rounded, 1.2-1.5 by 1-1.3 cm, very laxly lepidote outside at the base, otherwise glabrous. *Stamens* 10, \pm equalling the corolla in length; filaments linear, subdensely hairy in the lower $\frac{2}{3}$, nearly filiform and glabrous above; anthers oblong, 5-6 by 1 mm, each theca bearing a very short basal apiculus. *Disk* subglabrous. *Ovary* elongate-cylindric, densely clothed with yellowish, appressed hairs and scales (the latter covered or hidden by the hairs), 7-8 by c. 2 mm, gradually narrowed to the rather stoutish style, the latter c. 5 cm, densely clad with scales and forward directed hairs in the lower $\frac{2}{3}$ only, glabrous for the ultimate 1-1.5 cm; stigma thick-obconical.

Distr. *Malesia*: SE. New Guinea (Mt Good-enough), one collection.

130. *Rhododendron pneumonantherum* SLEUM. Reinwardtia 5 (1960) 132. — *R. jasminiflorum* (non Hook.) RIDL. J. Str. Br. R. As. Soc. n. 63 (1912) 60; MERR. Sarawak Mus. J. 3 (1928) 541.

Epiphytic shrub. Branchlets terete, very densely rusty stellate-lepidote at the upper 2-3 internodes, glabrescent and a little rough below; internodes 2.5-6 (rarely up to 10) cm. *Leaves* 4-6 per pseudowhorl, elliptic-oblong or -obovate, apex blunt, nearly rounded, sometimes very shortly retuse, base rounded or mostly slightly cordate, subsessile, coriaceous, rather densely stellate-lepidote initially on both faces (scales rather early caducous, each on top of a minute epidermal elevation, often almost cup-like, margin deeply incised, centre faintly impressed), glabrous above at maturity, lepidote beneath for a longer time, finally glabrescent and rather smooth to the touch, slightly revolute at the margin, (4.5-)-5-7.5(-9) by (2-)-2.5-4(-5) cm, midrib distinctly sunk above, very

prominent beneath in its lower part, less so towards the apex of the lamina, nerves in 6-8 pairs, rather inconspicuous on both faces, no reticulation; petiole densely lepidote, 1-2 (rarely up to 3) by 1.5-2 mm. *Umbels* (6-)-8-15-flowered. Perulae ovate to obovate-spathulate, obtuse, laxly lepidote dorsally, up to 1 by 0.7 cm. Bracteoles linear, glabrous, up to 1.5 cm. Pedicels rather stoutish, densely stellate-lepidote, furthermore clad with very short hairs, 1.5-2 cm. *Calyx* minute, obscurely wavy or lobulate, hardly 2.5 mm ϕ . *Corolla* salver-shaped, white or suffused with rose or light violet, but faintly scented, tube cylindric, straight, 3-3.5 cm long, shortly 5-gibbous and c. 3.5 mm ϕ at the base, somewhat swollen in the lower half (c. 4.5 mm ϕ), narrowed to c. 2.5 mm at the throat, \pm densely lepidote (scales \pm caducous), not pubescent outside, laxly hairy in the lower third, glabrous otherwise internally, lobes spreading, broad-obovate, 1-1.4 by 0.6-0.9 cm, sparsely lepidote outside at the base and along the midline, glabrous inside. *Stamens* 10, shortly exerted; filaments linear, laxly hairy above the base only; anthers oblong, truncate at each end, 2.2-2.5 mm. *Disk* glabrous below, short-pubescent above. *Ovary* elongate-cylindric, densely lepidote and subdensely very shortly patent-pubescent, c. 6 by 1.8 mm, gradually narrowed to the style, the latter somewhat exerted, rather densely or laxly lepidote and hairy in the lower half, glabrous above, c. 3 cm; stigma capitate.

Distr. *Malesia*: Borneo (Sarawak and SE. Borneo).

Ecol. In montane (mossy) forest, 1700-2400 m, once said to have been found at only 35 m. *Fl.* May, Oct.-Nov.

131. *Rhododendron orbiculatum* RIDL. J. Str. Br. R. As. Soc. n. 63 (1912) 60; MERR. EN. BORN. (1921) 462; SLEUM. Reinwardtia 5 (1960) 206; Blumea 11 (1961) 127; *ibid.* 12 (1963) 112. — *R. suaveolens* SLEUM. Bot. Jahrb. 71 (1940) 147; Reinwardtia 5 (1960) 133.

Treelet or shrub, sometimes epiphytic, 0.3-3 m. Branchlets terete or subangular, tips laxly lepidote, older parts glabrous; internodes 2-6.5(-8) cm. *Leaves* 3-4(-5) per pseudowhorl, or 2 leaves nearly opposite, subsessile, orbicular, broad-elliptic, or subovate- to suborbicular-elliptic, apex \pm rounded or very broadly obtusely attenuate, apiculate by a thick, a little protruding gland, base rounded or mostly slightly to manifestly cordate, coriaceous, firm, at maturity glabrous above, laxly lepidote beneath (scales small, thin, margin \pm deeply substellate-incised or -lobed, centre dark, \pm impressed), flat, (2-)-4-10(-12) by (2-)-4-6(-9) cm, midrib flat or impressed in the lower part only above, slightly raised or mostly \pm flat beneath, nerves (5-)-7-8 pairs, slightly curved and rather indistinctly inarching before the edge, a little raised, though often sunk in the middle, above, \pm obscure beneath, reticulation obsolete; petiole 1-2 by (2-)-3-4 mm. *Umbels* (4-)-5-7(-9)-flowered. Outer perulae ovate-acuminate, laxly lepidote dorsally, inner ones larger, ovate to spatulate,

blunt, glabrous, up to 2 by 1 cm. Bracteoles linear to filiform, glabrous, up to 1.5 cm. Pedicels rather stoutish, all over densely clothed with \pm patent greyish whitish hairs, lepidote only just below the calyx, (1-)1.5-2 (sometimes up to 3.5) cm. *Calyx* small, margin, thin, laxly lepidote and may be pubescent outside, very shortly obtusely 5-lobed. *Corolla* \pm salver-shaped, white or pale pink, scented, (5.5-)6-6.5 cm long in all, tube \pm cylindrical, 3.5-4 cm long, at the base 5-pouched and 4-5 mm σ , often gradually slightly narrower towards the lobes, laxly lepidote or glabrous outside, very laxly hairy in the lower half inside, lobes spreading, broadly obovate to suborbicular, glabrous, (1-)1.5-2 (rarely up to 2.5) cm σ . *Stamens* 10, hardly exerted; filaments linear, laxly hairy above the base, subfiliform and glabrous in the upper half; anthers oblong, apex truncate, each cell with a short basal apiculus, 2.5-3.5 by 1 mm. *Disk* subglabrous below, puberulous above. *Ovary* elongate-conical, 6-8 by 1.5-2 mm, densely set with short spreading hairs and scales, the latter \pm covered by the hairs (more discernible towards the apex of the ovary), gradually tapering to the style, the latter laxly hairy except the uppermost part, scarcely or not lepidote, widely exerted; stigma subturbinate, deeply 5-lobed. *Capsule* narrow-fusiform, 5-ribbed, laxly lepidote and hairy, c. 4 by 4 mm, pedicel 3-5 cm.

Distr. *Malesia*: Borneo (Sarawak; Brunei; North Borneo: Mt Kinabalu).

Ecol. On Mt Kinabalu often epiphytic and with larger leaves in ridge forest between 1220 and 2135 m. In N. Sarawak and Brunei rarely epiphytic, generally terrestrial and found on extreme hill 'kerangas', i.e. low scrubby vegetation on bare sandstone rocks, eroding into white sand, or in elfin woodland on rugged hill crest, 800-1750 m, locally abundant. *Fl.* Jan.-Dec.

Vern. *Kaju ala*, M.

132. *Rhododendron edanoi* MERR. & QUISUMB. Philip. J. Sc. 83 (1953) 333; SLEUM. Reinwardtia 5 (1960) 134.

Shrub, c. 1 m. Branchlets terete, very densely and \pm scurfy rusty-stellate-lepidote at the uppermost internodes, glabrescent below; internodes 2-5.5 cm. *Leaves* 4-6 in a pseudowhorl, oblong-elliptic to obovate-oblong, apex very broadly attenuate, obtuse to rounded, base broadly attenuate to the petiole, coriaceous, glabrous and somewhat lustrous above when old, densely lepidote beneath (scales rather early caducous, each on top of a minute epidermal elevation, which remains for a rather long time underneath, margin deeply irregularly incised, centre very small), subrevolute, (2.5-)3-5.5 by 1.5-2.5 cm, midrib impressed above, strongly raised beneath, nerves 4-6 pairs, rather straight-ascending, anastomosing, slightly impressed above, faintly prominent or obscure beneath, reticulation obsolete; petiole semiterete, grooved above, lepidote, 5-7 by c. 1.5 mm. *Umbels* \pm 7-flowered. Perulae ovate to elliptic or spatulate, densely lepidote outside in

the upper third, glabrous elsewhere, up to 1.5 by 0.7 cm. Bracteoles linear to subspathulate, up to 1.5 cm. Pedicels rather slender, densely stellate-lepidote and laxly short-hairy, 9-12(-15) mm. *Calyx* disk-like, small, suboblique, membranous, margin narrow and obscurely 5-lobed. *Corolla* salver-shaped, white, tube cylindrical, straight or but slightly curved, 2-2.5 cm in all, 2.5-3 mm σ , densely stellate-lepidote outside, laxly hairy inside in the lower third, glabrous upwards, lobes spreading, elliptic to broadly obovate, 0.8-1 by 0.6-0.7 cm, outside laxly lepidote, inside glabrous. *Stamens* 10, slightly exerted; filaments linear, subdensely hairy above the base, glabrous for the rest; anthers oblong, base obtuse, 3 by 1 mm. *Disk* densely hairy. *Ovary* cylindrical, 5 by 1.8 mm, densely lepidote and short-hairy, rather abruptly attenuate to the style, the latter c. 2.5 cm, pubescent and lepidote in the lower third, laxly pubescent in the middle, glabrous in the upper half; stigma obconical-subcapitate.

Distr. *Malesia*: Philippines (Palawan: Mt Mantalingahan, Brooke's Point), in moss forest at 1725 m. *Fl.* May.

133. *Rhododendron loranthiflorum* SLEUM. Notizbl. Berl.-Dahl. 12 (1935) 485; Reinwardtia 5 (1960) 134; Blumea 11 (1961) 120.

Epiphytic, much branched shrub. Branchlets smooth, older parts terete and pruinose, tips subangular or flattened and \pm densely rusty-lepidote; internodes 1.5-12 cm. *Leaves* in 3-5-merous pseudowhorls, sometimes only 2 opposite on the same node, obovate, apex broadly obtusely attenuate or mostly \pm rounded, base cuneate, subcoriaceous, lepidote on both faces initially, glabrous above with age, subdensely and \pm persistently lepidote beneath (scales thin, irregularly and rather shallowly dentate or lacerate at the margin, centre slightly impressed), subrevolute, 3.5-5(-6) by 2-2.5 cm, midrib faintly impressed above, prominent beneath especially in the lower part, nerves 4-5 pairs, indistinct on both faces, reticulation obscure; petiole rather slender, 5-7 mm. *Umbels* 4-5-flowered. Perulae ovate, thin, very laxly lepidote or glabrous, up to 7 by 4 mm. Bracteoles filiform, glabrous, 6-7 mm. Pedicels slender, laxly lepidote, not hairy at all, c. 10 mm. *Calyx* minute, disk-shaped, indistinctly 5-lobed. *Corolla* salver-shaped, white, tube cylindrical, somewhat curved in anthesis, 2-2.5 cm by 2.5-3 mm, densely lepidote outside (the scales thickish, subentire), laxly papillose-hairy in the lower half inside, lobes ovate-oblong, spreading in a nearly right angle, lepidote outside, glabrous inside, c. 5 by 2.5 mm. *Stamens* 10; filaments filiform, shortly hairy in the lower $\frac{2}{3}$, nearly as long as the corolla tube; anthers oblong, base obtuse, 2 mm. *Disk* low, glabrous. *Ovary* subcylindrical, slightly 5-ribbed, densely lepidote (scales thickish, subentire) and very shortly subpatently hairy, gradually tapering to the style, the latter c. 2.2 cm, lepidote and hairy in the lower part, exclusively hairy above respectively glabrous below the thick subcapitate stigma. *Capsule* cylindrical, slender, curved, attenuate

apically, 5-ribbed, \pm densely rusty-lepidote and short-hairy, 4–4.5 cm by c. 3 mm, on fruit-pedicle c. 1.5 cm.

Distr. Melanesia: New Britain (headwaters of Matabunu Creek, epiphyte in high rain-forest, 180 m) and in the Solomon Is. (Bougainville, near Koniguru, Buin, in rain-forest at c. 1000 m).

134. *Rhododendron retrorsipilum* SLEUM. *Blumea* 11 (1961) 120; *ibid.* 12 (1963) 103.

Epiphytic shrub. Branchlets rather slender, c. 2 mm ϕ , subdensely lepidote initially, very early glabrescent and greyish corticate; upper 3–4 internodes (1–)2–4 cm, lower ones hardly longer. *Leaves* in \pm 3-merous pseudowhirls at the upper 1 or 2 nodes, elliptic, apex and base broadly obtusely attenuate or more often almost rounded, coriaceous, subdensely lepidote initially on both faces, earlier glabrescent above than beneath, not rough to the touch (scales subdendroid, each on top of a minute or very minute, finally \pm evanescent epidermal tubercle, small, marginal zone deeply stellate-incised, centre minute, deepened and protracted into a shorter or longer foot), hardly revolute at the very edge, 4–6.5 by 2.5–4.2 cm, midrib very narrowly impressed above, as thick as the petiole and much raised in the basal part beneath, gradually narrowed and less prominent upwards and longitudinally striate beneath, nerves c. 5 pairs, spreading, rather straight, faintly or not impressed above, a little raised beneath, no reticulation; petiole 6–8(–10) by 1–1.5 mm. *Umbels* \pm 6-flowered, glabrous in all outer parts. Floriferous buds ovoid-oblongoid, 2.3 by 0.8 cm, outer perulae ovate, hardly 4 mm, inner ones gradually larger, up to 1.5 cm, subdensely set with sessile scales in the upper dorsal part, fimbriate. Pedicels rather slender, finely short-pubescent, 5–8 mm. Bracteoles linear, up to 1 cm. *Calyx* suboblique, disk-shaped, c. 2.5 mm ϕ , irregularly 5-lobed, lobes broadly deltoid, subacute, rather long whitish fimbriate, \pm reflexed at anthesis. *Corolla* salver-shaped, white, tube 2–2.3 by c. 0.3 cm, subdensely set with retrorse white hairs to nearly the mouth inside, lobes narrow-spathulate, \pm horizontally spreading, 8–10 by 3–4 mm. *Stamens* 10, very unequal, the shortest a little, the longest (3.5 cm) much exserted from the corolla tube; filaments filiform, densely clothed with white retrorse hairs almost to the top; anthers narrow-oblong, 3 by c. 0.7 mm; cells subapiculate-protracted at base, obtuse. *Disk* not much prominent, glabrous at the very base, hairy above. *Ovary* elongate-cylindric, 5–6 by c. 1.5 mm, densely set with appressed, forward directed hairs and with scales (which are almost hidden by the hairs), gradually narrowed to the style, the latter slender and a little longer than the corolla tube, densely hairy below, more laxly so and more distinctly lepidote upwards, glabrous but for the ultimate part below the capitate 5-lobed stigma.

Distr. *Malesia*: E. New Guinea (Morobe Distr.: range above Markham Point near Lae), at 600–900 m. *Fl.* Jan.–Feb.

135. *Rhododendron subpacificum* SLEUM. *Blumea* 12 (1963) 105.

Epiphytic shrub. Branchlets slender; internodes (1–)2–6 cm. *Leaves* in 3–4-merous pseudowhirls at the upper 2–3 nodes, oblong-obovate, apex broadly attenuate to rounded, base cuneate to the petiole, subcoriaceous, glabrous above, laxly lepidote beneath (scales small, flat, thin, margin angular or dented to various degree, centre small, slightly depressed), hardly revolute, (3.5–)4–5.5 by 1.5–2.3 cm, midrib narrowly impressed above, prominent above, prominent beneath, nerves 3–4 pairs, curved-inarching, rather obscure above, a little raised beneath, no reticulation; petiole (2–)3(–4) by 1 mm. *Umbels* 3-flowered. Bracteoles linear, glabrous, up to 6 mm. Pedicels slender, laxly caducously lepidote, glabrescent, or already glabrous in flowering time, 1–1.2 cm. *Calyx* patellar, shortly 5-lobed and wavy, reflexed, c. 2 mm across. *Corolla* salver-shaped, white, thin, scented, c. 4 cm long in all, tube straight, c. 3.5 cm by 3 mm, laxly stellate-lepidote outside, papillose-hairy in the lower third inside, lobes almost horizontally spreading, oblong-obovate, laxly lepidote outside, 6–8 by c. 4 mm. *Stamens* 10, subequalling the corolla; filaments filiform, papillose-hairy in the lower half, otherwise glabrous; anthers oblong, base obtuse, 1.5 mm. *Disk* glabrous below, otherwise densely hairy. *Ovary* cylindric, c. 6 by 1.5 mm, subdensely set with forward directed hairs and scales, tapering to the slender style, which is lepidote and hairy for the lowest 5 mm, and exclusively set with roundish scales almost to the slightly thickened stigma.

Distr. Melanesia: Solomon Is. (New Georgia group, Vangunu I.).

Ecol. On narrow ridge with stunted forest on crater rim at c. 600 m. *Fl.* Dec.

136. *Rhododendron jasminiflorum* HOOK. *Bot. Mag.* (1850) t. 4524; *Miq. Fl. Ind. Bat.* 2 (1859) 1059; CLARKE in *Hook. f. Fl. Br. Ind.* 3 (1882) 463; HENSLow, J. R. *Hort. Soc.* 13 (1891) 252, 262, f. 38, f. 42 (*fol.*), f. 43c (*fl.*); RIDL, J. *Str. Br. R. As. Soc. n.* 23 (1891) 145; K. & G. J. *As. Soc. Beng.* 74, ii (1905) 77; KOORD. *Exk. Fl. Java* 3 (1923) 7; RIDL, J. *Fed. Mal. St. Mus.* 7 (1916) 45; MILLAIS, *Rhodod.* (1917) 195; RIDL, *Fl. Mal. Pen.* 2 (1923) 218; BURK. & HOLTZ. *Gard. Bull. S.S.* 3 (1923) 57; HENDERS. J. *Mal. Br. R. As. Soc.* 5 (1927) 256; *Mal. Nat. J.* 6 (1950) 251, f. 244; SLEUM. *Reinwardtia* 5 (1960) 128. — *R. elongatum* BL. *Fl. Jav. Pl. inéd.* (1863–83) t. 7 B, f. 1; STEEN. *Bull. Jard. Bot. Botz III*, 17 (1948) 388. — *Azalea jasminiflora* (HOOK.) O. KTZE, *Rev. Gen. Pl.* 2 (1891) 387.

KEY TO THE VARIETIES

1. Corolla tube laxly to densely short-hairy.
2. Leaves rather narrow to ovate-oblong, cuneate to subcordate at the base. Branchlets puberulous 3. *var. heusseri*
2. Leaves wider, elliptic to broadly subovate-elliptic, rounded to cordate at the base.

- Branchlets not puberulous 2. *var. punctatum*
 1. Corolla epilose outside, except some scattered hairs which may occur at the very base.
 3. Corolla hairy or papillose inside in the lower half only 4. *var. copelandii*
 3. Corolla tube hairy inside for the full length.
 4. Leaves obovate-elliptic to broadly elliptic, sometimes suborbicular, base \pm rounded to cordate. 1. *var. jasminiflorum*
 4. Leaves oblong, base broadly cuneate.
 5. *var. oblongifolium*

1. *var. jasminiflorum*.

Small, mostly epiphytic shrub, sometimes terrestrial, also scrambling, up to 2.5 m. Branchlets subterete, upper internodes 1.5–4 cm, \pm densely substellate-lepidote, lower ones up to 9 cm and glabrescent. *Leaves* in 3–5-merous pseudowhorls at the upper nodes, broadly obovate-elliptic or elliptic, sometimes suborbicular, mostly widest in the middle, apex broadly obtusely (rarely sub-acutely) acuminate, or rounded, base truncate-rounded or mostly slightly cordate, subsessile, coriaceous, dark green and a little glossy above, paler and rather dull beneath, initially lepidote but readily glabrescent above, rather laxly substellate-lepidote all over the undersurface, which may be rather rough to the touch (scales sometimes subdendroid, with an irregularly and \pm deeply dentate or incised margin, normally each on top of a minute and blunt epidermal elevation, faintly impressed in it with the centre), margin \pm revolute in dry specimens, 2.5–5(–6) by (1–) 1.5–3.2(–3.6) cm, midrib slightly impressed above, strongly raised beneath, nerves *c.* 5 pairs, rather straight, anastomosing, mostly \pm inconspicuous on both faces or faintly prominent only, reticulation obscure; petiole mostly but 2–3, occasionally up to 7 mm long, 1.5–2 mm σ , lepidote. *Umbels* (3–)5–8(occasionally up to 20)-flowered. *Perulae* reddish when fresh, ovate to obovate-spathulate, obtuse, glabrous or rarely laxly lepidote near the top, irregularly ciliate, \pm shining, up to 1 by 0.6 cm. Bracteoles linear, glabrous, up to 1 cm by 0.6 mm. Pedicels rather slender, densely and patently short-hairy and substellate-lepidote, 8–11 mm. *Calyx* obscurely obtusely 5-lobed, *c.* 2 mm σ . *Corolla* salver-shaped, very fragrant like *Narcissus*, pure white, or flushed pink below the throat, tube cylindrical, \pm straight, base slightly 5-gibbous, laxly lepidote (but not hairy) outside, laxly hairy from the base to near the mouth inside, 3.5–4 (–4.3) cm by 3–4 mm, lobes spreading horizontally, broadly obovate-spathulate, very laxly or not lepidote outside, glabrous inside, 0.8–1.2(–1.5) by 0.6–1(–1.1) cm. *Stamens* 10, somewhat exerted from the throat, unequal; filaments linear, laxly hairy to nearly the top; anthers broadly oblong, truncate at both ends, *c.* 1.8 by 1 mm. *Disk* densely covered with short greyish hairs. *Ovary* oblong-cylindric, densely lepidote and short-hairy, *c.* 5 by 1.8 mm, rather abruptly tapering to the style, the latter nearly as long as the corolla, laxly lepidote in the lower third, and laxly hairy to nearly the top; stigma short-obconical or sub-

capitate. *Capsule* narrow-ellipsoid, short attenuate at both ends, obtusely 5-ribbed, laxly short-hairy and lepidote, 1.8–2.8 cm by 4–5 mm.

Distr. Malesia: Malay Peninsula (Johore: Mt Ophir).

Ecol. In ridge forest, low scrub, and epiphytic, or sometimes terrestrial on rocks in more open places, 1160–1525 m. *Fl.* Dec.

2. *var. punctatum* RIDL. J. Fed. Mal. St. Mus. 4 (1909) 42; SLEUM. Reinwardtia 5 (1960) 129. — *R. jasminiflorum* (*non* HOOK. *s. str.*) RIDL. J. Fed. Mal. St. Mus. 6 (1915) 157; *ibid.* 7 (1916) 45. — *R. jasminiflorum* HOOK. *var. maculatum* RIDL. Fl. Mal. Pen. 2 (1923) 218; BURK. & HOLTT. Gard. Bull. S.S. 3 (1925) 390.

Shrub or treelet, up to 3 m. *Leaves* elliptic to broadly subovate-elliptic, base rounded to subcordate. *Corolla* white or flushed pink, with \pm conspicuous bright pink spots in the throat, tube laxly short-hairy all over outside, moreover whether or not laxly lepidote. *Perulae* \pm sericeous dorsally. Pedicels more slender and longer (mostly 1.5–2.5 cm), making the umbel less compact than in *var. jasminiflorum*.

Distr. Malesia: Malay Peninsula (Kedah: Kedah Peak, in the Main Range from Perak/Pahang: Cameron Highlands, down to Selangor: Mt Moyang, also in the Taiping Hills and on Mt Tahan).

Ecol. In dwarf mossy forest, damp ridges, open patch of swamps, 855–1830 m, rather common in the Cameron Highlands. *Fl.* predominantly Oct.–Dec., *fr.* March.

3. *var. heusseri* (J. J. S.) SLEUM. Reinwardtia 5 (1960) 129. — *R. retusum* [*non* (BL.) BENN.] STEEN. Arch. Hydrobiol. Suppl. 11 (1932) 318, f. 21, 22 (*phot. veg.*). — *R. longiflorum* LINDL. *var. heusseri* J. J. S. Bull. Jard. Bot. Btzg III, 13 (1935) 447.

Much branched shrublet, 50 cm to 1 m, with both lepidote and puberulous branchlets. *Leaves* in 5–13-merous pseudowhorls, rather narrow-oblong to ovate-oblong, base cuneate to subcordate, puberulous above along the midrib. *Corolla* sparsely lepidote and subdensely \pm patently short-pubescent outside, with an immense variety in colours of a pure white, ivory, a pale sulphur and an intense red, and many grades of salmon between pale yellow and red, furthermore all grades between red and white, as known from the cultivated *Azaleas*.

Distr. Malesia: Sumatra (Atjeh: Gajolands; East Coast: Sibolangit and near Pematang Siantar; around Lake Toba, especially Samosir Peninsula).

Ecol. In open rocky places on old, dry volcanic soil, apparently always near solfataras, capable to stand the gasses of SO₂, 750–1525 m. *Fl.* predominantly in June–July.

Vern. Bunga batu, M.

Note. Possibly a hybrid between *R. jasminiflorum* and *R. longiflorum*, but certainly nearer to the first, with which it agrees considerably in the leaves and the flowers, the influence of the latter

mainly visible in the red and yellow colour which breaks through to various degree. It is stated that the specimens with pure colours are 50 cm high in the Samosir Peninsula, whereas the specimens with intermediate colours are more luxuriant and reach 1 m in height.

4. *var. copelandii* (MERR.) SLEUM. Reinwardtia 5 (1960) 130. — *R. copelandii* MERR. Publ. Gov. Lab. Philip. n. 29 (1905) 42; Philip. J. Sc. 3 (1908) Bot. 381; ELM. Leaflet. Philip. Bot. 3 (1911) 1105; MILLAIS, Rhodod. (1917) 148; *ibid.* ser. 2 (1924) 117; MERR. En. Philip. 3 (1923) 243; COPEL. f. Philip. J. Sc. 40 (1929) 158, t. 7, f. 1-5.

Similar to *var. jasminiflorum*, but *corolla* hairy inside in the lower half only.

Distr. *Malesia*: Philippines (Mindanao: summit of Mt Apo), in thickets, 2350-3100 m. Fl. March-Nov.

Vern. *Malagos, malambaho, Bag.*

5. *var. oblongifolium* SLEUM. Reinwardtia 5 (1960) 130. — *R. verticillatum* (non LOW ex LINDL.) BECC. Malesia 1 (1878) 204. — *R. jasminiflorum* (non HOOK. s. str.) MERR. En. Born. (1921) 461.

Leaves oblong, apex obtuse, base obtuse or truncate-rounded, 4-7.5 by 1-2.8 cm; petiole 4-6, rarely up to 7 mm. *Corolla* white, laxly lepidote and epilose outside, laxly hairy inside the entire length of the tube. Perulae glabrous or laxly lepidote, ± shining.

Distr. *Malesia*: Malay Peninsula (P. Tioman, Pahang; Mt Blumut, in Johore) and Borneo (Sarawak).

Ecol. Normally in mountain forest, once found almost at sea-level in the delta of the Sarawak River, rather common on the summit of Mt Santubong.

7. Subsection *Euvireya*

COPEL. f. Philip. J. Sc. 40 (1929) 137, 159; SLEUM. Bot. Jahrb. 74 (1949) 541; Reinwardtia 5 (1960) 134, s. lat. — Fig. 27-45.

Scales 'star-shaped' to various degree, mostly (rather) small, already distant from each other on the young leaves, the thin marginal zone ± irregularly dented or lobed, often early dissolute (the remaining centre then giving the impression of a disk-shaped scale).



Fig. 26. Distribution of *Rhododendron* subject. *Euvireya*.

Distr. S. Indochina, Australia (N. Queensland), and *Malesia*. Fig. 26.

KEY TO THE SERIES

- 1. Leaves very small in general, 0.3-1 (rarely in the same specimen partly up to 2) by 0.2-0.6 (rarely up to 0.8) cm. *Spp.* 137-147. 1. ser. *Linnacoidea*
- 1. Leaves all or at least for the greater part (in the same specimen) more than 1.6 cm long.
- 2. Compact dwarf shrub, forming tussocks or mats. Leaves linear-lanceolate to oblanceolate. Flowers solitary (rarely in twos); pedicel stout, erect, distinctly emerging beyond the foliage; flower nodding. *Sp.* 148. 2. ser. *Saxifragoidea*
- 2. Erect shrubs or treelets.

- 3. Leaves linear to narrow-lanceolate, in general (at least partly) not exceeding 7 mm in width.
- 4. Leaves 20 or more in each pseudowhorl, 1–1.5 mm wide. *Sp.* 149 3. *ser. Taxifolia*
- 4. Leaves opposite or 3–8(–15) in each pseudowhorl, 3–7(–11) mm wide. *Spp.* 150–153. 4. *ser. Stenophylla*
- 3. Leaves generally much wider, not linear or narrow-lanceolate.
- 5. Stamens 5. *Sp.* 154 5. *ser. Citrina*
- 5. Stamens (7–)10(–14).
- 6. Leaves medium-sized, *i.e.* 1–4 (sometimes partly in the same specimens up to 6.5) cm long. *Spp.* 155–196. 6. *ser. Buxifolia*
- 6. Leaves generally larger, *i.e.* all or at least for the greater part in the same specimen longer than 4 cm. *Spp.* 197–276. 7. *ser. Javanica*

1. Series *Linnaeoidea*

SLEUM. *Reinwardtia* 5 (1960) 134. — *Rhododendron sect. Linnaeopsis* SCHLTR, Bot. Jahrb. 55 (1917) 144, f. 2. — *Rhododendron subsect. Linnaeopsis* (SCHLTR) SLEUM. *ibid.* 74 (1949) 541. — Fig. 27–29. *Leaves* very small, 3–10 (rarely in part up to 20) by 2–6(–7, rarely up to 8) mm. Slender, often dwarf, terrestrial or epiphytic shrubs.
 Distr. *Malesia*: limited to New Guinea.

KEY TO THE SPECIES

- 1. Ovary all over densely (predominantly) hairy and less densely lepidote.
- 2. Style at anthesis relatively short, *i.e.* ± as long as the ovary, glabrous or hairy at the base only. Corolla campanulate to broadly funnellform-campanulate, deeply 5-lobed, exclusively lepidote outside. Very slender creeping or decumbent shrublet 137. *R. anagalliflorum*
- 2. Style at anthesis at least two times as long as the ovary, hairy in the lower 2/3 to 3/4, glabrous for the rest. Corolla ± tubular, laxly lepidote and laxly to subdensely hairy outside. Erect (sometimes scandent) shrub up to 2 m 138. *R. womersleyi*
- 1. Ovary exclusively and densely lepidote.
- 3. Style shortly ± patently hairy nearly to the top. 139. *R. gracilentum*
- 3. Style with scales or some subpatent hairs at the base only, otherwise glabrous, or glabrous all over.
- 4. Style at anthesis as long or shorter than the ovary, ± stoutish.
- 5. Compact dwarf cushion-like shrublet with short, densely foliate branchlets. Corolla 1–1.2 cm long in all. 140. *R. caespitosum*
- 5. Slender erect or creeping shrublets, divaricate, with slender elongate branchlets. Corolla (1.5–) 1.8–2.3 cm long in all.
- 6. Leaves opposite or in 3–5(–7)-merous pseudowhorls at the upper 1–3 nodes, entire or nearly so, elliptic or subovate- or obovate-elliptic, ± apiculate. 141. *R. microphyllum*
- 6. Leaves alternate, scattered along the upper part of the branchlets, conspicuously crenate or crenulate, ovate to ovate-lanceolate or -elliptic, subacuminate. 142. *R. pusillum*
- 4. Style at anthesis about double as long as or longer than the ovary, ± slender.
- 7. Leaves opposite or in 3–5(–7)-merous pseudowhorls at the upper 1–3 nodes. Corolla up to 1.8 cm in all.
- 8. Corolla 1.5–1.8 cm long. Leaves narrow-elliptic or elliptic, 5–8 by 4–6 mm, apex subacute in general 143. *R. musciola*
- 8. Corolla 1–1.2 cm long. Leaves broad-elliptic or subobovate-elliptic, 6–10(–12) by (3–)4–7(–8) mm, apex obtuse-rounded 144. *R. parvulum*
- 7. Leaves scattered along the upper part of the branchlets. Corolla 2.2–3 cm long in all.
- 9. Leaves 3–6(–7) by 2.5–4 mm, very slightly or not recurved at the margin 145. *R. oxycoccoides*
- 9. Leaves 6–10 by 4–7 mm, ± distinctly recurved at the somewhat thickened or cartilagineous margin.
- 10. Leaves ovate, apex acuminate, subacute. 146. *R. disterigmoides*
- 10. Leaves ovate-elliptic to ovate-oblong, apex ± obtuse in general, but not rarely shortly apiculate. 147. *R. coelorum*

137. *Rhododendron anagalliflorum* WERNH. Trans. Linn. Soc. II, Bot. 9 (1916) 94; SLEUM. *Reinwardtia* 5 (1960) 136; *Blumea* 11 (1961) 121; *ibid.* 12 (1963) 106; *ibid.* 12 (1964) 340. — *R. linnaeoides* SCHLTR, Bot. Jahrb. 55 (1917) 144, f. 2.
 Dwarf epiphytic shrublet, 5–10 (rarely up to 30) cm, much divaricately branched, prostrate or creeping. Branchlets very slender, 0.5–1 mm ø, densely clothed with shortly stipitate ('dendroid')

or subsessile stellate-incised scales in the youngest, ± verruculose in the older glabrescent parts; internodes 0.5–2.5 cm. *Leaves* opposite or in 3–5-merous pseudowhorls at the upper 3–4 nodes, elliptic or oblong- or subobovate-elliptic, apex subacute or rarely more obtuse, base ± broadly cuneate, subcoriaceous, initially lepidote on both sides, glabrous above at maturity, laxly persistently lepidote beneath (scales light brown, flat or

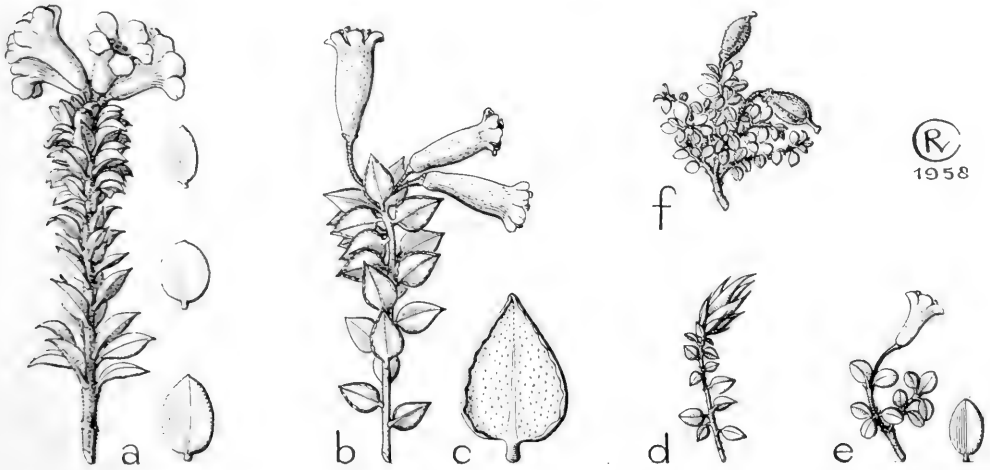


Fig. 27. *Rhododendron womersleyi* SLEUM. a. Branchlet with flowers and 3 single leaves, $\times \frac{2}{3}$. — *R. disterigmoides* SLEUM. b. Branchlet with flowers, $\times \frac{2}{3}$, c. leaf, $\times 2$. — *R. oxycoccoides* SLEUM. d. Branchlet with flower bud, $\times \frac{2}{3}$. — *R. parvulum* SLEUM. e. Branchlet with flower, $\times \frac{2}{3}$, and a single leaf, $\times 1 \frac{1}{3}$. — *R. caespitosum* SLEUM. f. Branchlet with immature fruit, $\times \frac{2}{3}$ (a NGF 8918 WOMERSLEY, b-c BRASS 9022, d BRASS 12184, e EYMA 5203, f BRASS 9039).

slightly concave, marginal zone obtusely stellate-incised, centre small, not impressed), not or only slightly revolute, 3–7 (occasionally up to 14) by 2.5–3.5 (occasionally up to 6) mm, midrib and nerves inconspicuous; petiole slender, 1–1.5 mm. *Flowers* solitary. Outer perulae narrow-ovate-acuminate, inner ones oblong-acuminate, apex \pm subulate-attenuate, very finely puberulous or glabrous dorsally, fimbriate by stalked scales, 3–7 by 1–3 mm, often persistent for a rather long time. Bracteoles linear, 4–5 mm. Pedicels very slender, rather densely clothed with dendroid stellate scales, otherwise whether or not finely pubescent, (4–)7–12(–15) mm. *Calyx* obliquely cup-shaped, shortly obtusely 5-lobed, c. 2 mm ϕ . *Corolla* campanulate or broadly funnelform-campanulate, thin, 5-lobed half or almost so, red or pinkish, 12–18(–22) mm long and across the limb (20–30 mm when fresh), base 3–6 mm ϕ , laxly to subdensely stellate-lepidote outside, the upper part of the lobes excepted, glabrous inside, lobes obovate-oblong, erecto-patent or \pm expanded, obtuse. *Stamens* 10, unequal, the longest equalling \pm half the corolla, or slightly longer; filaments linear, glabrous; anthers broad-oblong, c. 0.7 mm. *Disk* glabrous. *Ovary* broadly subovoid-cylindric, densely clad with short, spreading hairs, less densely with scales between these hairs, 2–2.5 mm by 1.5 mm, slightly 5-ribbed; style rather abrupt with the ovary, thickish initially, glabrous or sparsely hairy at the very base, 2.5–3 mm; stigma thick-capitate, 5-gibbous. *Capsule* fusiform, (1.2–)1.5–2 cm by 3–4 mm, short-hairy and lepidote. *Seeds* 3–4 mm including the tails.

Distr. Malesia: New Guinea (Main Range

from Mt Carstensz to Mt Victoria).

Ecol. In montane forest, open grassland or alpine thickets, epiphytic on moss clumps on trees, or trailing over fallen logs, 1190–3000 (–3540) m. *Fl.* Jan.–Dec.

138. *Rhododendron womersleyi* SLEUM. *Reinwardtia* 5 (1960) 136; *Blumea* 11 (1961) 121; *ibid.* 12 (1963) 106; *ibid.* 12 (1964) 340. — *R. aff. inconspicuum* STONOR, *Rhodod. Yearbook* 6 (1951) 51, f. 52. — Fig. 27a.

Stiff, terrestrial, sometimes scrambling shrub, very rarely epiphytic on mossy trunk, 0.5–2 m; branches loose, erect, rather stout, divaricately branched chiefly distally. Branchlets 1–2 mm ϕ , te-rete, tips densely clothed with brownish, stellate, shortly stalked scales, glabrescent below and verruculose, early covered with greyish cork. *Leaves* rather densely set along the upper part of the branchlets, ovate to ovate-elliptic, sometimes subovate-elliptic-oblong, apex short-acuminate, subacute, base broad-attenuate to rounded, coriaceous, dark green above, paler beneath, subdensely lepidote on both faces initially, glabrescent and often a little shining above at maturity, persistently subdensely or more laxly lepidote beneath (scales rather large, flat, marginal zone irregularly obtusely stellate-incised, centre hardly impressed), margin distinctly crenulate by the impressed scales, not or very slightly revolute, 5–8(–10, rarely up to 15) by 4–6(–7, rarely up to 10) mm, midrib \pm distinctly sunk, faintly prominent beneath, nerves subobscure; petiole stoutish, 1–1.5(–2) mm. *Flowers* nodding, solitary or in twos, rarely in threes. Outer perulae ovate-acuminate, shortly subulate or apiculate, inner ones narrower,

otherwise very similar, glabrous dorsally, margin densely shortly subglandular-fimbriate and caducously lepidote, 6–14 by 3–6(–8) mm. Bracteoles filiform, *c.* 5 mm. Pedicels stoutish, rather densely clothed with very shortly stalked stellate scales and more laxly with very short papillose hairs, 8–12(–15) mm at anthesis, slightly longer in fruit. *Calyx* disk-shaped, spreading or reflexed, *c.* 2.5 mm σ , lobes broadly triangular, obtuse, lepidote and finely hairy, *c.* 1 mm. *Corolla* nodding, tubular, slightly dilated at the limb, bright or deep red to scarlet, 2–2.3(–2.6, rarely –3) cm long in all, 3–3.5 cm across the limb, laxly stellate-lepidote outside at the tube and the lower part of the lobes, moreover sparsely to subdensely hairy there (or certainly so in the lower half of the corolla tube), glabrous inside, tube subcylindric, 1.3–1.7(–2) cm long, 3–4(–6) mm σ at base, widened to 5–10 mm σ at throat, lobes erecto-patent, obovate subrotundate, 4–5(–6) mm σ . *Stamens* 10, slightly longer than the corolla tube, slightly unequal; filaments filiform, glabrous; anthers oblong, *c.* 1.5 mm. *Disk* prominent, hairy. *Ovary* subcylindric, densely patently and shortly whitish hairy and subdensely lepidote, *c.* 4 by 1.5 mm, gradually tapering to the slender style, which nearly equals the corolla in length and is set with spreading fine hairs in the lower $\frac{2}{3}$ to $\frac{3}{4}$, glabrous above; stigma club-shaped or subcapitate, shortly 5-gibbous. *Capsule* fusi-form, hairy, greyish purplish when almost ripe, 1.5–2 cm by 3–4 mm. *Seeds* 4 mm including the tails.

Distr. *Malesia*: E. New Guinea (Eastern, Western and Southern Highlands; Morobe Distr.: Rawlinson Range).

Ecol. Mostly in open mossy forest or forest edge with grassland, more rarely in grassland above the timber-line, fairly common locally, 3200–3960 m. *Fl.* Feb.–Sept. Hybridizes with 191. *R. atropurpureum* on Mt Wilhelm.

Vern. *Balimbar*, Enga: Poio, *kik'borli*, *kobu*, Mendi.

139. *Rhododendron gracilentum* F. v. M. Trans. R. Soc. Vict. n.s. 1, 2 (1889) 22; SLEUM. Reinwardtia 5 (1960) 137; Blumea 11 (1961) 121; Jahrb. Rhodod. Ges. Bremen (1963) f. 12 — Fig. 28.

Erect, ascending or subprostrate small shrub with divaricate branchlets, (10–)20–40(–60) cm high, generally terrestrial, rarely epiphytic. Branchlets 1–1.5 mm σ , tips subdensely clad with rusty, stellate, shortly stipitate scales, elsewhere glabrescent and verruculose; internodes 0.5–1.5 (rarely up to 4) cm. *Leaves* opposite or in 3–7-merous pseudowhorls at the upper 3–4 nodes, often somewhat recurved, subovate- or elliptic-lanceolate or lanceolate, apex short-acuminate, mostly subacute, base acutely attenuate, coriaceous, olivaceous-green above, dilutely so beneath, glossy and rugulose above, laxly lepidote on both faces initially, glabrescent above with age, persistently lepidote beneath (scales irregularly and rather obtusely stellate-incised at the margin, centre not impressed), a little wavy and subcrenulate by the

\pm impressed scales on the very margin in dry specimens, not or only slightly recurved, (6–)8–12 (sometimes up to 20) by 2–5(–8) mm, midrib subinconspicuous above, slightly obtusely raised beneath, nerves obsolete; petiole rather slender, 1–1.5 mm. *Flowers* solitary, or rarely in pairs, pendent. Flower buds narrow-ovoid, *c.* 6 by 2 mm. *Perulae* ovate to oblong-ovate, acute or with a short subulate acumen, glabrous dorsally, margin shortly gland-fringed and set with early caducous scales, up to 6 by 3 mm. Bracteoles filiform, glabrous, *c.* 5 mm. Pedicels slender, densely clothed with shortly stalked substellate scales and less densely with very short hairs, 6–10 mm. *Calyx* membranous, deeply 5-lobed, stellate-lepidote outside, lobes deltoid, subacute, *c.* 1 mm. *Corolla* cylindric, red, rose red or dark pink, laxly

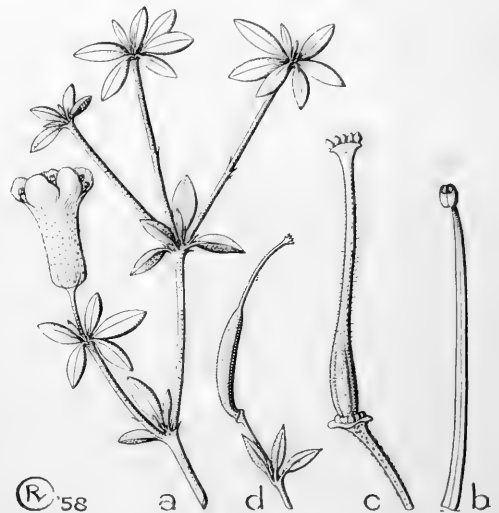


Fig. 28. *Rhododendron gracilentum* F. v. M. a. Habit, $\times \frac{2}{3}$, b. stamen, $\times 2$, c. ovary and style, $\times 2$, d. submature fruit, $\times \frac{2}{3}$ (a WOMERSLEY s.n., b–c LAM 7747, d NGF 9529 WHITE).

covered with deeply stellate pale brown scales outside, glabrous inside, 1.8–2.4 cm long in all, tube 1.2–1.5 cm long, *c.* 3 mm σ at base, *c.* 5 mm at throat, lobes erecto-patent or finally much spreading, obovate-suborbicular, 4–6 mm σ . *Stamens* 10, unequal, the longest nearly as long as the corolla; filaments narrowly linear, glabrous; anthers subquadrate, truncate, 1.5 by 1.2 mm, connective swollen and darker in colour. *Disk* prominent, glabrous. *Ovary* oblong-cylindric, 3–4 by 1–1.5 mm, densely and exclusively lepidote, gradually attenuate to the slender style, which nearly attains the corolla tube in length and is set with fine, subpatent, short, whitish hairs nearly up to the clavate-capitate stigma. *Capsule* erect, oblique, oblong, a little curved, glabrescent, 1.5–2.2 by 0.3 cm, on slender pedicel *c.* 1.5 cm.

Distr. *Malesia*: E. New Guinea (Central Distr.: Mt Musgrave; Morobe Distr.: Edie Creek above Wau).

Ecol. Terrestrial on open low vegetation on rather dry slopes or clayey ground of old gold mine workings, also epiphytic in *Nothofagus* forest or in summit growth, 2000-2745 m. *Fl.* May-Oct.

140. *Rhododendron caespitosum* SLEUM. Reinwardtia 5 (1960) 137. — Fig. 27f, 29.

Dwarf, epiphytic shrublet, up to 10 cm, much branched; compact, forming cushions; branches short, robust, rooting. Branchlets very short, slender, substipitate-stellate-lepidote in the younger parts, glabrescent and minutely verrucose below. *Leaves* dense, scattered or subopposite, elliptic, apex short-acuminate, subacute or subobtuse, base attenuate, coriaceous, laxly to subdensely lepidote initially on both faces (scales rufescent, marginal zone irregularly stellate-incised, centre faintly impressed), glabrescent with age, smooth and somewhat lustrous above, dull and persistently

lepidote beneath, entire or subcrenulate at the slightly cartilaginous margin by impressed scales, 3-6 by 2-3 mm, midrib and nerves obscure; petiole rather slender, c. 1 mm. *Flowers* solitary. *Perulae* ovate-acuminate, apiculate, glabrous dorsally, subglandular-fimbriate and set with early caducous scales along the margin, up to 6 by 3 mm. *Bracteoles* filiform, c. 4 mm. *Pedicels* rather stoutish, densely clothed with rusty very shortly stalked stellate scales, but no hairs, 5-6 mm. *Calyx* short-cupular, obscurely 5-lobed, very densely lepidote, c. 2 mm ϕ . *Corolla* tubular, of a delicate pink, 1-1.2 cm long in all, subdensely stellate-lepidote outside, the upper part of the lobes excepted, glabrous inside, tube 8-9 mm long, c. 2.5 mm ϕ at base, slightly widened apically, lobes erecto-patent, obovate-orbicular, 3-4 mm ϕ . *Stamens* 10, nearly as long as the corolla tube; filaments filiform, glabrous; anthers broad-oblong, 0.5 mm. *Disk* glabrous. *Ovary* thickly obovoid-cylindric, very densely stellate-lepidote and set with minute papillae between the scales, c. 3 by 1.5 mm; style abrupt with the ovary, slenderly columnar, glabrous, c. 2 mm; stigma thick-capitate. *Capsule* obovoid-cylindric, densely stellate-lepidote, 8-10 by c. 3.5 mm, the 5 valves rather thin, not twisted. *Seeds* with rather short tails on both ends, c. 2 by 0.3 mm.

Distr. *Malesia*: W. New Guinea (Mt Wilhelm-Lake Habbema vicinity).

Ecol. Forming cushions on trunk of tree-ferns in alpine grassland, 2400-3225 m. *Fl.* Aug.-Sept.

141. *Rhododendron microphyllum* J. J. S. Bull. Jard. Bot. Btzig II, 8 (1912) 51; Nova Guinea 12 (1914) 131, t. 29 c; SLEUM. Reinwardtia 5 (1960) 138. — *R. minimifolium* WERNH. Trans. Linn. Soc. II, Bot. 9 (1916) 98, p.p.

Epiphytic slender shrublet, 20-30 cm, rooting, divaricately branched. Branchlets c. 1 mm ϕ , terete, tips \pm caducously lepidote, scales rufous, shortly stipitate, stellate, older parts glabrescent, verruculose for a while, early becoming smooth and greyish corticate; internodes (0.6-)1-5 cm. *Leaves* in 3-6-merous pseudowhorls, broadly elliptic to obovate-elliptic, sometimes suborbicular, apex short-acuminate, subacute, or rather obtuse, not rarely apiculate, base broad-attenuate, coriaceous, laxly lepidote on both sides initially (scales irregularly stellate-lacerate, flat, those of the under-surface somewhat impressed), \pm glabrescent above with age, persistently lepidote underneath, margin narrowly cartilaginous or thickened, subcrenulate by impressed scales, (3-)5-9 by (2-)3-6 mm, midrib slightly impressed above, somewhat raised beneath, or obsolete as are the nerves; petiole stoutish, 1-2 (rarely up to 3) mm. *Flowers* solitary, nodding. Flower buds narrow-ovoid, acuminate. Outer perulae subulate or ovate-lanceolate, densely lepidote outside, inner ones broader, ovate-acuminate, glabrous dorsally or nearly so, shortly glandular-fimbriate by a row of early caducous scales, up to 6 by 3 mm. *Bracteoles* filiform, c. 5 mm. *Pedicels* slender, densely clothed with rufous, dendroid, \pm deeply star-shaped



Fig. 29. *Rhododendron caespitosum* SLEUM. forming a cushion on stem of a grassland treefern (*Cyathea tomentosissima* COPEL.). Lake Habbema, 3225 m, New Guinea (BRASS 9039) (BRASS, 1938).

scales, no hairs, (6-)10-17 mm. *Calyx* obliquely disk-shaped, slightly obtusely 5-lobed, densely stellate-lepidote outside, *c.* 3 mm ϕ . *Corolla* broadly tubular-subcampanulate, purplish red or pale red, laxly to subdensely rufous-stellate-lepidote outside, the upper part of the lobes excepted, glabrous inside, 1.8-2.1 cm long in all at full anthesis, tube 1.2-1.5 cm long, *c.* 4 mm ϕ at base, gradually widened to 6-8 mm at throat, lobes \pm orbicular and spreading, 5-7 mm ϕ . *Stamens* 10, unequal, the longest nearly as long as the corolla tube; filaments linear, glabrous; anthers subquadrate, *c.* 1.5 mm. *Disk* glabrous. *Ovary* cylindrical-conical, densely stellate-lepidote, *c.* 4 by 2 mm; style rather abrupt with the ovary, short-columnar, thickish, glabrous or with some sparse subpatent hairs at the very base, *c.* 3.5 mm; stigma subcapitate, distinctly 5-lobed. Immature *capsule* fusiform, 1.5 cm by 2.5 mm, densely lepidote.

Distr. *Malesia*: W. New Guinea (Main Range from Mt Carstenz to Mt Goliath and Mt Wilhelm-Lake Habbema).

Ecol. On moss-covered trees in subalpine forest, locally common. *Fl.* March-April, Aug.

142. *Rhododendron pusillum* J. J. S. Med. Rijks-herb. n. 25 (1915) 1; Nova Guinea 12 (1917) 498; *ibid.* 12 (1918) t. 193; SLEUM. Reinwardtia 5 (1960) 138. — *R. candidapiculatum* WERNH. Trans. Linn. Soc. II, Bot. 9 (1916) 96.

Dwarfed shrublet of weak, ascendent habit, 6-25(-50) cm; main branches few, stout, 3-4 mm ϕ . Branchlets coming irregularly from the branches, much more slender than these (1-1.5 mm ϕ), often curved-ascending, densely subimbricately leaved at least in their upper part, tips \pm densely clothed with sessile and substipitate, rusty-stellate scales, older parts verruculose, early covered with cork. *Leaves* ovate-lanceolate or ovate-elliptic, apex short-acuminate, subacute, mostly with a paler apiculus, base attenuate to the petiole or sometimes nearly rounded, often complicate in the upper part, stiff-coriaceous, laxly lepidote on both faces initially (scales irregularly stellate-incised, flattish, not or slightly impressed), glabrescent above with age, \pm persistently lepidote beneath, margin mostly distinctly crenate or crenulate at least in the upper half, flat, somewhat cartilaginous and paler than the proper lamina, 4-8(-10) by 2-3(-4), occasionally up to 6) mm, midrib slightly sunk above, respectively raised beneath, often obscure as are the nerves; petiole rather stoutish, 1-2 mm. *Flowers* 1-2(-3), nodding from an erect pedicel. Flower buds ovoid, 10-12 by *c.* 5 mm. Perulae membranous, ovate-acuminate, shortly subulate or apiculate, outer ones lepidote dorsally, inner ones completely glabrous, up to 12 by 6 mm. Bracteoles linear, up to 8 mm. Pedicels rather stoutish, densely set with stipitate stellate scales, no hairs, (6-)10-15(-20) mm. *Calyx* disk-shaped, very shortly subacutely 5-dentate, densely lepidote, 2-3 mm ϕ . *Corolla* tubular-subcampanulate, suboblique, initially red, changing to orange at

later stages, (1.5-)1.8-2.3 cm long in all, very laxly lepidote in the lower part or mostly glabrous outside, glabrous inside, tube 1-1.6 cm, base rounded, 3-4 mm ϕ , dilated gradually to 5-6 mm at throat, lobes erecto-patent or somewhat spreading, obliquely obovate-suborbicular, slightly retuse, 5-7(-9) mm ϕ . *Stamens* 10, unequal, \pm half as long as the corolla; filaments linear, glabrous; anthers suborbicular, said to be blackish, *c.* 1.2 mm. *Disk* glabrous. *Ovary* ovoid-conical, densely stellate-lepidote, 3-4 by 2 mm; style subabrupt with the ovary, columnar, glabrous, 2-3 (sometimes up to 4) mm; stigma capitate, 5-lobed.

Distr. *Malesia*: New Guinea (Main Range from Mt Carstenz to the Oranje Mts, frequent on Mt Wilhelm and vicinity).

Ecol. Alpine grassland, on exposed sandstone, in shallow sandy soil or on peat soil at base of rocks, also in shrubby borders of subalpine forest, 3200-3900 m, locally common. *Fl.* Sept.-Feb.

143. *Rhododendron muscicola* J. J. S. Nova Guinea 18 (1936) 93, t. 19, 1; SLEUM. Reinwardtia 5 (1960) 138.

Weak, divaricately branched shrub. Branchlets slender, 1-1.5 mm ϕ , terete, tips densely set with stellate, shortly stalked scales, older parts glabrescent, verruculose; internodes 0.9-3 cm. *Leaves* in 5-7-merous pseudowhorls at the upper 2-3 nodes, normally narrow-elliptic or elliptic, occasionally subobovate-elliptic, apex short-acuminate, subacute, or rarely more obtuse, base attenuate into the petiole, very coriaceous, laxly lepidote on both faces when young (scales irregularly and rather shallowly obtusely stellate-incised), glabrescent above at maturity, persistently and \pm impressedly lepidote beneath, margin cartilaginous and somewhat paler than the lamina, \pm entire, flat, 5-8 by 4-6 mm, midrib and nerves obscure; petiole stoutish, 1-1.5 mm. *Flowers* solitary. Flower buds ovoid, *c.* 7 by 3 mm. Perulae ovate to ovate-oblong or obovate, subulate-acuminate, minutely sericeous and lepidote dorsally, ciliate, up to 8 by 3.5 mm. Bracteoles filiform, glabrous, *c.* 5 mm. Pedicels very slender, densely substipitate-stellate-lepidote and laxly papillose-hairy, 8-13 mm. *Calyx* obliquely cup-shaped, 5-lobulate, *c.* 2.5 mm ϕ . *Corolla* narrow funnelform-campanulate, red, 1.5-1.8 cm long in all, laxly lepidote outside, the upper part of the lobes excepted, glabrous inside, tube 1-1.2 cm long, 2.5-3 mm ϕ at base, gradually dilated to *c.* 5 mm at throat, lobes irregularly suborbicular, 4-5 mm ϕ . *Stamens* 10, unequal, somewhat exerted from the corolla tube; filaments linear, a little dilated at the base, glabrous; anthers subobovate, 1-1.5 mm. *Disk* set with some hairs at upper margin, not much prominent. *Ovary* oblong-conical, longitudinally 5-ribbed, *c.* 3.5 by 1.5 mm, densely stellate-lepidote, gradually tapering to the style, the latter rather slender, nearly as long as the corolla, with some sparse, spreading, yellowish hairs at base, elsewhere glabrous, or glabrous all over; stigma subclavate-capitate.

Distr. *Malesia*: W. New Guinea (Nassau Mts, W. side), once found at 2600 m in moss-grown forest. *Fl.* Oct.

144. *Rhododendron parvulum* SLEUM. Reinwardtia 5 (1960) 139. — Fig. 27e.

Small weak shrublet, only some branchlets known, these slender, 0.6–1 mm σ , tips densely clad with dark, rusty, substipitate scales, glabrescent elsewhere, minutely tuberculate and rough to the touch; internodes 1.2–4 cm. *Leaves* in 3–4-merous pseudowhorls or opposite at the upper 2–3 nodes, broad-elliptic to subobovate-elliptic, apex rounded-obtuse, base very broadly attenuate or rounded, coriaceous, very young ones laxly to subdensely lepidote on both faces, glabrescent above with age, lepidote for a longer time beneath (scales irregularly stellate-lacerate, flat, slightly impressed), dull, margin paler than the blade, subcartilaginous, entire or subcrenulate by the impressed scales, 6–10(–12) by (3)–4–7(–8) mm, midrib and nerves obsolete; petiole rather slender, lepidote, c. 1 mm. *Flowers* solitary or in twos. *Perulae* narrow ovate-acuminate, manifestly and subdensely appressed-hairy, glandular-fimbriate and initially set with a row of (early caducous) scales along the margin, up to 6 by 2.5 mm. *Pedicels* very slender, densely clothed with substipitate, deeply stellate-incised scales and very short slender subpatent hairs, 7–10 mm at anthesis. *Calyx* disk-shaped, 2 mm σ , deeply obtusely 5-lobed, lepidote dorsally. *Corolla* tubular, 1–1.2 cm long in all, subdensely stellate-lepidote outside, upper half of lobes excepted, glabrous inside, tube c. 8 mm, c. 2.5 mm σ at base, widened to 3.5 mm at throat, lobes \pm spreading, suborbicular, c. 4 mm σ . *Stamens* 10, unequal, the longest reaching \pm halfway the corolla lobes; filaments filiform, glabrous; anthers obovate, hardly 1 mm. *Disk* glabrous. *Ovary* obconical-cylindric, very densely stellate-lepidote, c. 2 by 1.2 mm, gradually attenuate to the rather slender style (c. 3.5 mm); stigma clavate-subcapitate.

Distr. *Malesia*: W. New Guinea (Wissel Lakes region: summit of Mt Mutaro). One collection. *Fl.* Sept.

145. *Rhododendron oxycoccoides* SLEUM. Reinwardtia 5 (1960) 139. — Fig. 27d.

Epiphytic shrublet. Branchlets much divaricate, 0.5–1 mm σ , tips densely rusty-stellate-lepidote, older parts glabrescent and smooth. *Leaves* laxly scattered along the distal part of the branchlets, ovate, short-acuminate, subacute or more obtuse, base broadly rounded, coriaceous or subcoriaceous, initially lepidote on both sides (scales irregularly stellate-incised, not or faintly immersed), early glabrous above, \pm persistently lepidote beneath, margin a little thickened, slightly or not recurved, 3–6(–7) by 2.5–4 mm, midrib and nerves invisible; petiole rather slender, 0.5–1 mm. *Flowers* solitary. *Perulae* membranous, ovate-lanceolate, inner ones long subulate-acuminate, quite glabrous and shining, up to 1.5 by 0.5 cm. *Pedicels* rather slender, 4–6 mm, densely stellate-

lepidote. *Calyx* disk-shaped, limb very short, wavy, lepidote outside, c. 2.5 mm σ . *Corolla* tubular, slightly zygomorphous, pink, thin, 2.5–2.7 cm long in all, glabrous in- and outside, tube 1.8–2 cm, c. 3 mm σ at base, widened to c. 5 mm σ at throat, lobes erecto-patent, suborbicular, 5–7 mm σ . *Stamens* 10, unequal, the longest reaching halfway the corolla lobes; filaments linear, glabrous; anthers subquadrate, 1–1.2 mm. *Disk* prominent, glabrous. *Ovary* subcylindric, densely lepidote, 3.5 by 2 mm, gradually tapering to the rather slender style (c. 1.4 cm); stigma capitate.

Distr. *Malesia*: New Guinea (Bernhard Camp, Idenburg R., c. 139°–3° 30'), once found in stunted, mossy forest on an exposed summit, 2100 m. *Fl.* Jan.

146. *Rhododendron disterigmoides* SLEUM. Reinwardtia 5 (1960) 140. — Fig. 27b-c.

Terrestrial shrub, 30–80 cm, with robust erect branches. Branchlets rigid, rather stout, 1.5–2 mm σ , tips clad with rufescent substipitate stellate scales, older parts glabrous, not or not much rugose, early covered with greyish cork. *Leaves* subdensely scattered on the youngest part of the branchlets, ovate, apex acuminate, apiculate but rather blunt, base rounded, thick-coriaceous, persistently laxly lepidote beneath (scales rather small, irregularly stellate-incised, faintly or not impressed), margin thickened and a little paler than the lamina, distinctly revolute, crenulate by impressed scales, 6–10 by 4–6 mm, midrib obtusely prominent beneath, obsolete above as are the nerves; petiole thickish, c. 1 mm. *Umbels* 2–4-flowered. *Pedicels* rather slender, densely substipitate-stellate-lepidote, not hairy, 8–12 mm. *Calyx* very shortly cupular, shortly obtusely 5-lobed, densely lepidote dorsally, c. 2.5 mm σ . *Corolla* tubular, deep red, 2.2–2.3 cm long in all, laxly to subdensely lepidote at the tube outside, glabrous inside, tube c. 1.7 cm long, 4 mm σ at base, widened to c. 7 mm at throat. *Stamens* 10, unequal, \pm as long as the corolla or a little exserted; filaments linear, glabrous; anthers broadly obovate-oblong, c. 1.8 by 1 mm. *Disk* glabrous. *Ovary* subconical-cylindric, very densely lepidote, 4–5 by 2 mm, gradually tapering to the glabrous, columnar style (8–9 mm); stigma sub-clavate-capitate.

Distr. *Malesia*: W. New Guinea (Lake Habbema), common in shrubberies on peaty ridges, 3225 m. One collection. *Fl.* Aug.

147. *Rhododendron coelorum* WERNH. Trans. Linn. Soc. II, Bot. 9 (1916) 96; SLEUM. Reinwardtia 5 (1960) 140; Blumea 11 (1961) 121.

Apparently decumbent terrestrial shrublet, c. 15 cm. Branchlets slender, firm, tips covered with stipitate stellate scales, older parts glabrescent, laxly verruculose, early covered with greyish cork. *Leaves* rather densely scattered along the upper branchlets, ovate-elliptic to ovate-oblong, apex shortly obtusely acuminate or apiculate, base \pm rounded, thick-coriaceous, mature ones glab-

rous, rugulose and a little lustrous above, laxly lepidote beneath (scales irregularly obtusely stellate-lobed, slightly or not impressed), margin thickened, \pm entire, manifestly revolute in dry specimens, 6–10 by 4–7 mm, midrib slightly impressed above and raised beneath, nerves obscure; petiole thickish, 1–1.5 mm. *Flowers* 1–2 (–3–4). Pedicels rather slender, subdensely stellate-lepidote, epilose, 15–17 mm. *Calyx* disk-shaped, obscurely 5-lobed, lepidote outside, c. 2.5 mm ϕ . *Corolla* tubular, slightly oblique, 2.5–3 cm long in all, laxly stellate-lepidote outside at the tube,

glabrous inside, 5–6 mm ϕ at base, widened to c. 1 cm at throat, lobes erecto-patent, suborbicular, 5–6 mm ϕ . *Stamens* 10, unequal, \pm as long as the corolla; filaments linear, glabrous; anthers suborbicular, 1.5 mm. *Disk* prominent, glabrous. *Ovary* subcylindric, densely lepidote, c. 6 by 2 mm, gradually attenuate to the slender, quite glabrous style, which is nearly as long as the corolla; stigma obconical-capitate.

Distr. *Malesia*: New Guinea (Mt Carstensz), at 3200–3810 m. One collection. *Fl.* Jan.

2. Series Saxifragoidea

SLEUM. Reinwardtia 5 (1960) 141. — Fig. 30, 34 d–e.

Compact shrub, forming cushions or mats, very densely foliate. *Leaves* linear-lanceolate or oblanceolate. *Flowers* solitary, or more rarely in twos, nodding from the apex of a robust, upright pedicel which is much outstanding above the foliage.

Distr. *Malesia*: monotypical in New Guinea.



Fig. 30. *Rhododendron saxifragoides* J. J. S. Mt Sugarloaf summit area, 3650 m, E. New Guinea (HOOGLAND & PULLEN 7131) (HOOGLAND, 1960).

148. *Rhododendron saxifragoides* J. J. S. Med. Rijksherb. n. 25 (1915) 3; Nova Guinea 12 (1917) 503; *ibid.* 12 (1918) t. 198; SLEUM. Reinwardtia 5 (1960) 141; Blumea 11 (1961) 121. — *R. aff. fuchsoides* STONOR, Rhodod. Yearbook 6 (1951) 51, f. 51. — Fig. 30, 34 d-e.

Completely dwarf, rooting shrub, 5–15 (rarely up to 30) cm high, forming tussocks, large cushions or dense mats. 0.3–1 m σ , much divaricately branched, woody parts \pm in the ground. Branchlets stout, mostly abbreviate and very short, stellate-lepidote at the \pm free apex which is densely packed with somewhat spreading leaves, sometimes more elongate, somewhat decumbent and showing 2 internodes, the leaves then in 6–10-merous pseudowhorls at the apex and the ultimate node. *Leaves* linear-lanceolate or oblanceolate, apex short-acuminate, not rarely apiculate or almost mucronate, gradually attenuate to the \pm flattened base, very coriaceous and stiff, a little shining especially above, practically glabrous above at maturity, laxly lepidote beneath (scales rather small, marginal zone irregularly and often \pm obtusely dentate or angular, centre a little sunk), margin \pm revolute in dry specimens, (1.6–) 2.3–4 (very rarely up to 5.5) by 0.3–0.5 (–0.7, very rarely up to 0.8) cm, midrib impressed above, obtusely prominent beneath, nerves 2–3 steeply ascending pairs, very slightly sunk above, or often inconspicuous as they are beneath; petiole flattened, darker brown than the lamina in dry specimens, 3–6 (–8) by 1–2 mm. *Flowers* solitary, or rarely in twos, nodding at first, erect in later stages. *Perulae* ovate, subulate-acuminate, membranous, lepidote initially, early glabrescent dorsally, laxly fimbriate, up to 1.5 by 0.5 cm. *Bracteoles* linear, glabrous, fimbriate, up to 1 cm. *Pedicels* erect, reddish, 1–1.5 mm σ , laxly to subdensely lepidote, sometimes also laxly set with

short hairs, which go in later stages, (2.5–)4–6 (–7) cm at anthesis. *Calyx* oblique, disk-shaped, wavy and obtusely 5-lobed (sometimes with longer, up to 2 mm, subacute lobes), often fringed with subglandular hairs, c. 4 mm σ , lepidote and whether or not short-hairy. *Corolla* obliquely tubular below, expanded at the lobes, blood-red, pale scarlet or pinkish red, rather densely stellate-lepidote outside, the margin of the lobes excepted, puberulous at the tube inside, 2.5–3 cm long in all, tube broad-cylindric, slightly curved, (1.7–) 2–2.5 cm long, base c. 5 mm σ , widened to 8–10 mm at apex, lobes broadly spatulate or suborbicular, c. 1 by 0.7–0.9 cm. *Stamens* 10, subequal, attaining about half the length of the corolla lobes, purple; filaments linear, laxly patent-hairy to the lower third, glabrous for the rest; anthers broad-oblong-obovate, c. 2.5 mm. *Disk* prominent, glabrous. *Ovary* conical, a little constricted at base, rather abruptly tapering to the style, 5–6 by 2.5–3 mm, velutinous and lepidote, hairs covering the scales; style as long as or slightly shorter than the stamens, stoutish, hairy at the base, glabrous elsewhere; stigma rather large, oblique. *Capsule* erect, thick-fusiform, short-hairy and lepidote, 1.5–2 by (0.5–)0.7–0.8 cm, splitting from apex into 5 valves, axis and style persistent for a long time, valves reflexed, somewhat twisted, rather thick; fruit-pedicel 6–11 cm. *Seeds* tailed on both ends, c. 2.5 mm.

Distr. Malesia: New Guinea (Main Range from Mt Carstensz to the Oranje Mts; Western and Southern Highlands: Hagen Range, Mt Giluwe, Mt Sugarloaf).

Ecol. Alpine grassland, occasionally on shrubby ridges, 3225–4000 m, locally abundant and a conspicuous feature in bogs or forest glades, on peaty soil. *Fl. fr.* Aug.–Dec.

Vern. Kamungunjari, Enga: Poio, kinwi, Mendi.

3. Series *Taxifolia*

SLEUM. Reinwardtia 5 (1960) 141.

Leaves linear, 1–1.5 mm wide, in dense \pm 20-merous pseudowhorls.

Distr. Malesia: Philippines (Luzon).

149. *Rhododendron taxifolium* MERR. Philip. J. Sc. 30 (1926) 419; COPEL. f. *ibid.* 40 (1929) 156, t. 6; SLEUM. Reinwardtia 5 (1960) 141.

Epiphytic shrub, c. 1 m. Branches terete, glabrous. Branchlets slender, papillose-puberulent and sparingly lepidote; internodes 1–3 (rarely up to 5) cm. *Leaves* crowded to dense pseudowhorls at the upper 3–4 nodes, 20 or more together, linear, sessile or nearly so, rather rigid and coriaceous, brown when dry, paler and \pm shining beneath, apex obtuse, base attenuate into the petiole, glabrous above at full maturity, laxly lepidote beneath (scales flat, small, seemingly disk-shaped, but in fact irregularly lobed to various degree in the marginal zone, centre small, somewhat impressed), margin shallowly crenulate by impressed scales, flat, (1.8–)2–3.5 cm by 1–1.5 mm, midrib very slightly impressed above and obtusely

raised beneath, nerves obsolete; petiole 0–2 mm, not clearly distinct from the lamina. *Flowers* solitary or in twos. *Perulae* membranous, broad-ovate, abruptly subulate at the apex, glabrous dorsally, margin set with caducous scales, up to 1.2 by 0.6 cm. *Bracteoles* linear, very laxly hairy and lepidote, c. 6 mm. *Pedicels* slender, pubescent and laxly lepidote, c. 1 cm. *Calyx* disk-shaped, lepidote and pubescent outside, obtusely and shortly 5-lobed, 3–4 mm σ . *Corolla* tubular-subcampanulate, white, thin, 2–2.2 cm long in all, sparingly substellate-lepidote outside, a broad margin of the lobes excepted, pubescent within, tube c. 1 cm long, at base c. 4 mm σ , widened to 7–8 mm at apex, lobes broad-obovate, apex rounded, c. 1 by 0.8 cm. *Stamens* 10, subequal, \pm as long as the corolla tube; filaments linear, subdensely to laxly patent hairy to nearly the



Fig. 31. *Rhododendron stenophyllum* HOOK. f. a. Habit, $\times \frac{2}{3}$. — *R. hooglandii* SLEUM. b. Habit, $\times \frac{2}{3}$, c. detail of upper resp. undersurface of leaf with epidermal tubercles, $\times 6$ (a GRISWOLD 121, b-c HOOGLAND & PULLEN 5576).

top; anthers oblong, c. 2 mm. Disk glabrous. Ovary subcylindrical, densely patently white-hairy, with apparently but a few scales between the hairs, c. 3 by 1.5 mm; style columnar, hairy below, glabrous distally, c. 5 mm; stigma subcapitate.

Capsule c. 1 cm.

Distr. *Malesia*: Philippines (Luzon: Mt Pulog), twice found on trees in the mossy forest at c. 2700 m. Fl. Feb.-March.

4. Series *Stenophylla*

SLEUM. Reinwardtia 5 (1960) 141. — *Rhododendron* sect. *Zygomorphanthe* SCHLTR., Bot. Jahrb. 55 (1918) 145, p.p. — Fig. 31—32.

Leaves linear or narrow-lanceolate, opposite or in 3-8 (sometimes up to 15)-merous pseudowhorls, 3-7 (rarely up to 11) mm wide (at least 1.3 cm long, mostly much longer).

Distr. *Malesia*: Borneo and New Guinea.

KEY TO THE SPECIES

- 1. Ovary densely whitish tomentellous, the hairs covering the small scales . . . 150. *R. stenophyllum*
- 1. Ovary densely and exclusively lepidote.
 - 2. Leaves (1.3-)1.6-2 cm long 151. *R. myrsinites*
 - 2. Leaves longer than 2.7 cm.
 - 3. Leaves 1.5-3 mm wide 152. *R. subulosum*
 - 3. Leaves 4-7(-11) mm wide 153. *R. purpureiflorum*



Fig. 32. *Rhododendron stenophyllum* HOOK. f. Mt Kinabalu, 2130 m (SLEUMER 4685) (SLEUMER, 1963).

150. *Rhododendron stenophyllum* HOOK. f. ex BECC. Malesia 1 (1878) 203 *in obs.*, *nom. nud.*; BURBIDGE, *The Garden of the Sun* (1880) 274, fig., *descr. abbrev.*, *fig. repr.*: *The Garden* 18 (1880) 546; STAPF, *Trans. Linn. Soc. II, Bot.* 4 (1894) 196; GIBBS, *J. Linn. Soc. Bot.* 42 (1914) 104; MILLAIS, *Rhodod.* (1917) 248; MERR. *En. Born.* (1921) 463; J. J. S. *Bull. Jard. Bot. Botz III*, 13 (1935) 452, *incl. var. angustifolium* J. J. S. *l.c.*; SLEUM. *Reinwardtia* 5 (1960) 142; *Blumea* 11 (1961) 122; *ibid.* 12 (1963) 106; *Jahrb. Deutsch. Rhodod. Ges. Bremen* (1965) f. 9, *non* MAKINO, 1910. — **Fig. 31a-32.**

Lanky shrub, (0.3-)0.6-1(-1.2) m, with slender stem, epiphytic or on the ground, sparsely and divaricately branched. Branchlets terete, 1-1.5 mm σ , dilutely brown, upper internode set with some sparse scales initially, early practically glabrous;

internodes (1.5-)2-10 cm. New flush starting with several scattered, scarios, subulate, early caducous thin leaves, ending with normal persistent leaves, these \pm condensed into (6-)8-15-merous pseudowhorls at the upper (1-)2-5 nodes, narrow-linear, apex \pm acute, often subsetaceous or nearly pungent, base attenuate into the very short and broad, hardly distinguishable petiole, subsessile, coriaceous, dark glossy green, glabrous and rugulose above, medium green and very laxly lepidote beneath (scales small, flat, sub-orbicular, thin marginal zone variously angled or obtusely dented, centre dark, not impressed), finally glabrescent on both faces, edge thinned out, flat, not revolute, (4-)5-8 (rarely up to 11) cm by (1-)2-3 (rarely up to 4) mm, midrib impressed above, prominent beneath, nerves obscure; petiole broad, flattened, 0-2 (rarely up to 4) mm. *Flowers*

nodding, mostly in twos, rarely solitary. Flower buds narrow-ovoid, 2–2.5 by 0.6–1 cm, outer few perulae subulate, more inner ones ovate-acuminate, ending in a subulate acumen, inner ones ovate-oblong and \pm shortly subulate to obtuse, all firmly membranous, brownish reddish when fresh, glabrous and somewhat lustrous, up to 2.8 by 0.8 cm. Bracteoles filiform, glabrous, c. 1 cm. Pedicels stoutish, laxly substellate-lepidote and \pm densely puberulous, 0.6–1.2 cm by c. 1 mm. *Calyx* patellar, rather fleshy, wavy, very shortly and obtusely 5-lobed, c. 4 mm ϕ , laxly lepidote, furthermore puberulous at the base. *Corolla* narrow-campanulate to broadly funnel-shaped, of a shining waxy texture, flame coloured, *i.e.* bright to dark red or of a clear orange-scarlet, sometimes light red or orange, often with orange tinge especially in the interior, or red towards the base, 2–2.5 (rarely up to 3) cm long in all, glabrous in- and outside, tube 1–1.5 (–1.7) cm long, base 4–6 mm ϕ , gradually widened to 8–10 mm, lobes broadly obovate-spathulate, slightly spreading, subretuse, 0.8–1.2 (–1.4) by 0.6–0.8 cm. *Stamens* 10, \pm equalling the corolla tube in length; filaments linear, broadened and laxly pubescent at the base or the lower $\frac{1}{4}$; anthers narrow-oblong, shortly bilobed at the base, 3–4 by 1–1.3 mm. *Disk* prominent, glabrous. *Ovary* cylindrical or subovoid, abrupt with the style, densely shortly whitish pubescent and minutely lepidote, 4–5 by 2–2.5 mm; style glabrous, 6–9 mm; stigma obconical or subcapitate. *Capsule* subcylindrical, slightly curved, reddish-purplish, laxly covered with very small scales, more densely with spreading hairs, c. 3 by 0.4 cm, on fruit-pedicel c. 1.5 cm.

Distr. *Malesia*: Borneo (Mts Kinabalu, Batu Tiban, Trus Madi, and Kemul).

Ecol. Primary forest, locally plentiful but mostly sterile, on Mt Kinabalu a very common shrub in the upper montane oak forest, also in mossy forest, on mountain ridges, or on low rock cliff at river's edge, in light shade, 1525–2500 m, sparsely up to 3350 m. *Fl.* Jan.–Dec.

151. *Rhododendron myrsinites* SLEUM. Reinwardtia 5 (1960) 142.

Epiphytic shrub, 0.5 m; branches 2–3 mm ϕ . Branchlets c. 1 mm ϕ , subdensely substellate-lepidote; internodes 2–4 (–5) cm. *Leaves* in 3–5-merous pseudowhorls at the upper 2 or 3 nodes, or close together in the upper third of the internodes, lanceolate, apex short-acuminate and plicate, minutely apiculate, base broadly attenuate into the petiole, coriaceous, laxly lepidote on both faces initially, glabrous above in later stages, persistently lepidote beneath (scales variously substellately incised or lobed in the marginal zone, centre minute and slightly impressed), edge subcrenulate by somewhat impressed scales, subrevolute, (1.3–)1.6–2 by 0.3–0.4 cm, midrib slightly sunk above, prominent beneath, nerves obsolete; petiole slender, lepidote, c. 2 mm. *Flowers* solitary or in pairs. Perulae membranous, red-brown, shining, ovate, in the upper 5–6 mm subulate-acuminate, glabrous, up to 2 by 0.6 cm.

Pedicels slender, densely stellate-lepidote, c. 1.8 cm. *Calyx* much oblique, disk-shaped, obscurely lobed, c. 2 mm ϕ . *Corolla* tubular, rather fleshy, red, quite glabrous in- and outside, c. 3.5 cm long in all, tube slightly curved, 2.5 cm, base saccate, c. 4 mm ϕ , widened to c. 8 mm at apex, lobes erecto-patent, broadly obovate, 8–9 by 5–6 mm. *Stamens* 10, unequal, the longest slightly longer than the corolla tube; filaments linear, glabrous; anthers obovate, 1–1.3 mm. *Disk* glabrous. *Ovary* subcylindrical-fusiform, very densely lepidote, epilose, c. 6 by 2 mm, gradually tapering to the style, the latter rather slender, lepidote at the base only, glabrous elsewhere, c. 1.4 cm; stigma capitate.

Distr. *Malesia*: New Guinea (Bernhard Camp, Idenburg R.), on tall trees in mossy forest, at 2150 m. Once found. *Fl.* Feb.

152. *Rhododendron subulosum* SLEUM. Reinwardtia 5 (1960) 143.

Weak epiphytic shrublet, 20–30 cm; stem c. 3 mm ϕ , few-branched, roots much thickened, c. 5 mm ϕ . Branchlets 1–1.5 mm ϕ , glabrous below, subdensely clothed with star-shaped and shortly stalked, caducous scales, respectively tardily glabrescent and minutely warty at the tips or the ultimate internode; internodes 1–4 cm. *Leaves* in 3–5-merous pseudowhorls at the upper 1 or 2 nodes, linear, apex acute or nearly so, base narrowed to the petiole, coriaceous, dark green and somewhat glossy above, paler beneath, glabrous above with age, laxly lepidote beneath (scales variously angular or obtusely dented in the marginal zone, centre much darker and hardly impressed), edge slightly revolute, (3.5–)4–8 cm by 1.5–3 mm, midrib \pm distinctly sunk above, very prominent beneath, red, nerves obscure; petiole subterete, red, much darker than the lamina in dry specimens, 2–4 by c. 0.5 mm. *Umbels* 1–3-flowered. Outer perulae subulate, more inner ones narrow-ovate-subulate, innermost ones ovate, abruptly subulate-acuminate in the upper half and acute, glabrous dorsally, reddish, up to 2 by 0.5 cm. Pedicels slender, very densely stellate-lepidote, 5–7 mm. *Calyx* obliquely disk-shaped, margin membranaceous and very shortly 5-dented, lepidote dorsally, c. 2 mm ϕ . *Corolla* tubular, probably red, c. 1.5 cm long in all, glabrous in- and outside, tube c. 1 cm long, 2–3 mm ϕ , but faintly dilated upwards, lobes broadly obovate-suborbicular, c. 4 mm ϕ . *Stamens* 10, 1.4–1.6 cm; filaments filiform, glabrous; anthers subglobose, c. 1.5 mm ϕ . *Disk* prominent, glabrous. *Ovary* subcylindrical, very densely stellate-lepidote, c. 3 by 1.3 mm, abrupt with the style, the latter rather slender, glabrous, 5–6 mm; stigma club-shaped. *Capsule* c. 1.5 by 0.4 cm, valves reflexed and twisted. *Seeds* very narrow, tailed at both ends, 2–3 mm; fruit-pedicel c. 1.7 mm.

Distr. *Malesia*: New Guinea (Doormantop), ridge at 1450 m. Once collected. *Fl.* Nov.

153. *Rhododendron purpureiflorum* J. J. S. Med. Rijksherb. n. 25 (1915) 3; Nova Guinea 12 (1917)

502; *ibid.* 12 (1918) t. 197; SLEUM. Reinwardtia 5 (1960) 143. — *R. podocarpoides* SCHLTR, Bot. Jahrb. 55 (1918) 149.

Epiphytic shrub, 20–50 cm; branches numerous, terete, rather slender. Branchlets 1–1.5 mm σ , subdensely clothed with rufous stellate scales; internodes (1.8–)2.5–5.5 cm. *Leaves* in 3–6-merous pseudowhorls at or near the upper 3–4 nodes (several much reduced ones as subulate bracts along the upper internodes), linear-lanceolate, apex obtuse or subacute, base attenuate into the petiole, rather coriaceous, lepidote on both faces initially, glabrescent above with age, laxly persistently lepidote beneath (scales irregularly, often obtusely lobed or dented in the marginal zone, flat, rather pale, centre faintly or not sunk), margin flat, 2.7–4.5(–7) cm by 4–6(–7, sometimes up to 11) mm, midrib impressed above, rather strongly obtusely prominent beneath, nerves obscure; petiole lepidote, stoutish, 2–4(–5) mm. *Umbels* 2–4-flowered. Pedicels slender, subdensely

rufous-stellate-lepidote, 1.2–1.5 cm. *Calyx* disk-shaped, oblique, lepidote, very shortly obtusely 5-lobed, c. 2.5 mm σ . *Corolla* tubular, somewhat zygomorphous, red-lilac or pale pink, very laxly substellate-lepidote or glabrous outside, glabrous inside, 2.7–3.2 cm long in all, tube subcylindric, 1.7–2.2 cm, at the 5-saccate base c. 4 mm σ , widened to 6–7 mm at apex, lobes erecto-patent, broad-obovate, 7–8(–9) by 5–6 mm. *Stamens* 10, unequal, the longest equalling or somewhat exceeding the corolla tube; filaments linear, glabrous; anthers obovate, c. 1.5 mm. *Disk* much prominent, glabrous. *Ovary* fusiform, attenuate at the base, gradually tapering to the style, densely lepidote, c. 4 by 1.6 mm; style slender, glabrous, \pm equalling the stamens; stigma suboblique, capitate, purple.

Distr. *Malesia*: New Guinea (Perameles and Schrader Mts, and near Bernhard Camp, Idenburg R.).

Ecol. Mossy forest on tall trees, 1100–2150 m. *Fl.* Dec., Feb., May–June.

5. Series Citrina

SLEUM. Reinwardtia 5 (1960) 144.

Differs from all other series of *subsect. Euvireya* by having only 5 stamens.

Distr. *Malesia*: Sumatra, Java, and Bali.

154. *Rhododendron citrinum* (HASSK.) HASSK. Cat. Hort. Bog. (1844) 161; MORITZI, Syst. Verz. (1846) 42; WALP. Rep. 6 (1847) 420; HOOK. Bot. Mag. (1854) t. 4797; ZOLL. Syst. Verz. 2 (1854) 137; PLANCH. Fl. Serres 10 (1854–55) 5, t. 970; WALP. Ann. 5 (1858) 452; MIQ. Fl. Ind. Bat. 2 (1859) 1058; Ann. Mus. Bot. Lugd.-Bat. 1 (1863) 43, *incl. β albiflorum* MIQ. *l.c.*; KOORD. Teysmannia 10 (1899) 450; Exk. Fl. Java 3 (1912) 4; KOORD.-SCHUM. Syst. Verz. 1 (1912) fam. 233, p. 106; J. J. S. in K. & V. Bijdr. 13 (1914) 94; KOORD. Fl. Tjib. 3 (1918) 3; STEEN. Bull. Jard. Bot. Btzg III, 17 (1948) 387, 388; AMSH. in Back. Bekn. Fl. Java (em. ed.) 7 (1948) fam. 162, p. 4; SLEUM. Reinwardtia 5 (1960) 144; STEEN. Endeavour 21 (1962) 189, t. 2. — *Azalea citrina* HASSK. Flora 25 (1842) Beibl. p. 30; O. KTZE, Rev. Gen. Pl. 2 (1891) 387. — *R. zippelii* BL. Fl. Jav. Pl. inéd. (1863–83) t. 4. — *R. jasminiflorum* (non HOOK.) KOORD. Junghuhn Gedenk. (1910) 184, *cf.* HALLIER *f.* Med. Rijksherb. n. 1 (1910) 35.

var. citrinum.

Rather small, epiphytic, divaricately branched shrub, 0.7–2 m. Branchlets 1–1.5(–2) mm σ , terete, tips \pm densely clothed with flattish rufescent scales, glabrescent below, greyish corticated in the older parts; internodes 2–5 cm. *Leaves* in 4–5-merous pseudowhorls at the upper 1–2(–3) nodes, unequal in the same pseudowhorl, elliptic, oblong-elliptic or nearly lanceolate, rarely obovate-elliptic, apex \pm broadly acuminate, subacute or mostly obtuse (terminal gland very small), base attenuate to the petiole, coriaceous, dark green and glossy above, dilutely green with brown scales beneath, densely lepidote initially in the

youngest leaves, early glabrescent on the upper surface, which is a little wrinkled in dry specimens, more persistently and subdensely lepidote beneath (scales distant, flat, rather small, variously obtusely angled or more deeply dented in the marginal, early dissolute zone, dark centre small, somewhat impressed), finally \pm glabrescent beneath too, margin slightly revolute in dry specimens, (1.5–)2.5–5(–6.5) by (1–)1.5–2.5(–2.7, rarely up to 4) cm, midrib slightly impressed above, prominent beneath, nerves 5–8 pairs, widely spreading, anastomosing, faintly raised beneath, often inconspicuous; petiole lepidote, rather slender, semiterete, (3–)4–9(–12) mm. *Umbels* 2–4(–5)-flowered, occasionally reduced to a solitary flower. *Flowers* a little fragrant, nodding. Flower buds ovoid, outer perulae ovate-acuminate, finely sericeous dorsally, the middle line set with early caducous scales, inner ones oblong to spatulate, glabrous dorsally, all fimbriate along the margin or at the top only, up to 10 by 3 mm. Bracteoles filiform, practically glabrous, up to 8 mm. Pedicels red, slender, puberulent and laxly lepidote below, more densely so upwards, c. 1.5 cm at anthesis. *Calyx* oblique, obtusely 5-lobed (lobes 1–2 mm, or sometimes one or the other lobe a little longer), lepidote dorsally, 3–4 mm σ . *Corolla* broadly funnelform-campanulate, pale or creamy yellow, yellowish white, or lemon, lobed nearly halfway, 1.5–1.7 cm long in all, outside very laxly lepidote or almost glabrous in the Javanese, subdensely lepidote in the Balinese specimens, glabrous inside, tube c. 4 mm σ at base, gradually dilated to 6 mm at apex, lobes \pm spreading, somewhat unequal, obovate-spatulate, apex rounded, very slightly or not retuse, 7–8 mm.

Stamens 5, unequal, a little exerted from the corolla tube, c. 1.2 cm; filaments linear, glabrous, red or orange; anthers oblong, deeply emarginate on both ends, 2.2–2.5(–2.8) by c. 1 mm, yellow or orange, dorsiflex, the connective white. *Disk* very prominent, glabrous. *Ovary* obliquely oblong-ellipsoid, somewhat 5-angled respectively -ribbed, lepidote at the base, glabrous for the rest, c. 4 by 1.5 mm, green, initially gradually tapering to the slender glabrous style (5–6 mm), but rather abrupt in later stages; stigmatinate-subcapitate. *Capsule* obliquely cylindrical, shortly attenuate at both ends, slightly curved, red, deeply 5-grooved, glabrous, 2–2.5 cm by 4 mm. *Seeds* very narrow, c. 4 mm including the filiform tails at both ends.

Distr. *Malesia*: W. Java and Bali.

Ecol. In very humid primary forest, subalpine forest or forest border, (1000–)1450–2400(–2900) m. *Fl.* Sept.–March.

Vern. *Tjantigi*, S.

Note. Reported for Central Java and possibly growing on Mt Diëng; no specimens seen.

var. discoloratum SLEUM. *Reinwardtia* 5 (1960) 145. — *R. citrinum* (non HASSK. s. str.) MIQ. *Fl. Ind. Bat. Suppl.* 1 (1860) 251, 586; RIDL. *J. Fed. Mal. St. Mus.* 8 (1917) 58; SP. MOORE, *J. Bot.* 63 (1925) *Suppl.* 57. — *R. multicolor* (non MIQ.) SP. MOORE, *l.c.*

Corolla laxly to subdensely lepidote outside, mostly orange red to bright scarlet, rarely light lemon yellow. *Ovary* not rarely completely or for a long time covered with scales.

Distr. *Malesia*: Sumatra (Atjeh: West Coast; Palembang; Lampong).

Ecol. In mossy (*Vaccinium*-)forest, on ridges, 1220–2500 m.

Vern. *Mata kunai*, M.

6. Series *Buxifolia*

SLEUM. *Reinwardtia* 5 (1960) 145. — *Rhododendron sect. Zygomorphanthe* SCHLTR, *Bot. Jahrb.* 55 (1918) 145, p.p. — *Rhododendron subsect. Malesia* COPEL. *f. Philip. J. Sc.* 40 (1929) 136, 152. — *Rhododendron subsect. Linearanthera* COPEL. *f. l.c.* — *Rhododendron subsect. Astrovireya* SLEUM. *Bot. Jahrb.* 74 (1949) 539. — Fig. 33–37.

Leaves medium-sized, (0.6–)1–4 (rarely in part in the same specimen up to 7) by (0.4–)1–2 (rarely in part in the same specimen up to 2.5, very rarely up to 3) cm, of various form other than linear or narrow-lanceolate.

Distr. *Malesia*.

KEY TO THE SPECIES

1. Ovary hairy and lepidote to various degree (scales sometimes sparse or ± covered (hidden) by the hairs).
 2. Filaments manifestly ± patently hairy at least in the lower third.
 3. Corolla broadly tubular-campanulate (tube straight, ± equally wide), lobes erect and short, equalling but $\frac{1}{4}$ – $\frac{1}{5}$ of the total length of the corolla. Leaves obovate-lanceolate, (1.6–)2–3.5 by (0.4–)0.5–0.7(–0.8) cm. 155. *R. frey-wysslingii*
 3. Corolla open-campanulate, funnel-shaped or tubular (tube widened towards the lobes and often ± curved), lobes erect or expanded, equalling $\frac{1}{4}$ – $\frac{1}{2}$ of the total length of the corolla.
 4. Corolla short, open-campanulate 156. *R. pubigermen*
 4. Corolla ± elongate, funnelliform, tubular-funnelform or tubular-(zygomorphous).
 5. Umbels 2–4(–6)-flowered.
 6. Style hairy at least in the lower third, mostly up to almost the top.
 7. Corolla white.
 8. Style hairy and lepidote 245. *R. luraluense*
 8. Style exclusively hairy 157. *R. vidalii*
 7. Corolla pink, or red (scarlet).
 9. Corolla elepidote, glabrous or laxly hairy outside. 158. *R. hatamense*
 9. Corolla lepidote, otherwise whether or not hairy outside.
 10. Corolla hairy and lepidote outside. 159. *R. vandeursenii*
 10. Corolla exclusively lepidote outside to various degree.
 11. Style hairy in the lower third. 268. *R. culminicolum*
 11. Style hairy in the lower $\frac{1}{2}$ – $\frac{3}{4}$, or almost to the top.
 12. Corolla 2.5 cm. Nervation of the leaves subinconspicuous on both faces.
 160. *R. cornu-bovis*
 12. Corolla at least 3.6 cm. Nervation of the leaves much impressed above, prominent beneath.
 268. *R. culminicolum var. nubicola*
 6. Style hairy at the base only (up to $\frac{1}{6}$ of its total length), or mostly entirely glabrous.
 13. Style as long as the ovary.
 14. Umbels 2–3-flowered. Leaves 3–4.5 by 1.2 cm. 161. *R. planecostatum*
 14. Flowers solitary. Leaves 1.5–2.3 (–2.7) by 0.5–0.8(–1) cm 162. *R. bagobonum*
 13. Style distinctly longer than the ovary.
 15. Anthers dorsally glabrous.

16. Corolla exclusively lepidote, or glabrous outside, no hairs present at all.
17. Corolla yellow. Leaves gradually long-acuminate at apex 163. *R. nieuwenhuisii*
17. Corolla pink to red. Leaves broadly and/or shortly acuminate, or obtuse at apex.
18. Leaves quite entire.
19. Corolla laxly lepidote outside 268. *R. culmicolum*
19. Corolla completely glabrous outside, (2.5-)3(-3.2) cm 261. *R. arfakianum*
18. Leaves minutely though distinctly crenulate.
20. Corolla completely glabrous outside. 164. *R. pseudobuxifolium*
20. Corolla lepidote to various degree outside 165. *R. commonae*
16. Corolla exclusively hairy, or hairy *and* lepidote outside.
21. Leaves linear to linear-oblong, revolute to or almost to the midrib, 2-2.5(-4) cm by 1.5-2(-3) mm in the revolute state. Umbels 2-3-flowered 166. *R. abietifolium*
21. Leaves elliptic, or elliptic- or obovate-oblong, revolute to various degree, at least 4 mm wide. Umbels 5 (or more)-flowered.
22. Leaves elliptic- or obovate-oblong, base \pm cuneate to the petiole, (4-)6-10(-13) mm wide 167. *R. sheilae*
22. Leaves elliptic, base broadly attenuate to rounded, 15-20(-26) mm wide. 198. *R. rugosum* var. *coriifolium*
15. Anthers dorsally \pm densely hairy. 168. *R. pauciflorum*
5. Umbels 7-12-flowered
23. Leaves quite entire. Corolla densely lepidote outside 169. *R. psammogenes*
23. Leaves manifestly crenulate. Corolla laxly hairy *and* lepidote outside 198. *R. rugosum* var. *coriifolium*
2. Filaments glabrous or practically so.
24. Style hairy at least in the lower $\frac{1}{3}$, mostly so to or almost to the top.
25. Corolla (2-)2.5(-2.8) cm long in all. Branchlets verruculose.
26. Leaves thick-coriaceous, rigid, apex \pm rounded, a terminal gland not visible, nerves \pm distinctly prominent in fully mature leaves. Corolla red. 170. *R. vitis-idaea*
26. Leaves thin-coriaceous, apex mostly acuminate, rarely rounded, the terminal gland mostly forming an outstanding apiculus, nerves subinconspicuous. Corolla white, pink at the throat. 171. *R. rhodostomum*
25. Corolla 3.5-5(-6) cm long in all, red. Branchlets smooth or almost so.
27. Corolla exclusively stellate-lepidote at the tube outside 268. *R. culmicolum* var. *nubicola*
27. Corolla stellate-lepidote *and* hairy outside. 159. *R. vandeursenii*
24. Style hairy at the base only (up to $\frac{1}{8}$ of its total length), or quite glabrous.
28. Corolla practically glabrous outside.
29. Umbels 3-4-flowered. Leaves 2.5-3.5(-4) by 1.2-1.8(-2) cm. Petiole flattened, 1.5-3 by 1-1.5 mm. 172. *R. alternans*
29. Flowers solitary. Leaves (2-)2.2-3 by (0.7-)0.8-1 cm. Petiole subterete, 3-4(-5) by c. 0.8 mm. 173. *R. leptomorphum*
28. Corolla laxly to subdensely lepidote outside.
30. Leaves cuneately decurrent into the \pm flattened petiole.
31. Leaves entire or faintly crenulate, 1.5-2.5(-3) by 0.8-1.5 cm. Corolla 1.5-1.8(-2) cm long in all. 174. *R. pseudonitens*
31. Leaves more manifestly crenulate, (2-)2.5-3.5(-4) by (0.8-)1-1.5 cm. Corolla 3-3.5 cm. 175. *R. helodes*
30. Leaves (manifestly crenulate) \pm truncate at the very base, hardly or not decurrent, the petiole well distinguishable, a little or not flattened 165. *R. commonae*
1. Ovary exclusively lepidote (but hairs may be present on the style).
32. Style hairy to various degree (not lepidote).
33. Style patent-hairy per c. 2 mm above the base. Leaves obovate, 1.2-1.8 by (0.5-)0.7-1.1(-1.3) cm. Filaments glabrous 176. *R. papuanum*
33. Style with a ring of short patent hairs at its very base. Leaves oblong-obovate, 2.3-3.5 by 0.7-1.2 cm. Filaments pubescent at the base. 179. *R. ripleyi* var. *basitrichum*
32. Style exclusively lepidote up to the middle, or mostly quite glabrous.
34. Filaments laxly to subdensely and \pm patently hairy or at least papillose-puberulous below.
35. Corolla (tubular-funnelform) yellowish white, rather densely hairy at the tube inside. 177. *R. acrophilum*
35. Corolla pink-red to scarlet, glabrous inside.
36. Corolla up to 3 cm long in all.
37. Corolla \pm open campanulate, c. 2 cm. Leaves oblanceolate, apex slightly notched, lacking a terminal gland. Disk glabrous 178. *R. banghamiflorum*
37. Corolla funnelform-campanulate, 2.5-3 cm. Leaves oblong-obovate or oblong-elliptic, rarely elliptic or subobovate-elliptic, apex bluntish, ending in a whether or not protruding gland. 179. *R. ripleyi*

36. Corolla 5–5.5 cm long in all (subfunnel-form-tubular) 180. *R. alticolum*
 34. Filaments completely glabrous.
 38. Corolla widely campanulate. Leaves oblanceolate 181. *R. pyrrophorum*
 39. Corolla tubular or funnel-shaped. Leaves of other shape.
 39. Style \pm as long as or shorter than the ovary. Corolla (strictly tubular) 1–1.3(–1.6) cm long in all.
 40. Leaves in general elliptic-oblong, 2.3–3.5(–4) by (0.8–)1–1.5 cm; petiole 3–5 mm.
 182. *R. lutesquamatum*
 40. Leaves in general ovate-elliptic, or elliptic, (1–)1.2–2.4(–3.5) by 0.6–1.5(–2) cm; petiole 1–2 (rarely up to 3) mm 183. *R. inconspicuum*
 39. Style much longer than the ovary. Corolla longer than 2 cm.
 41. Corolla glabrous outside or practically so.
 42. Leaves subsessile, \pm imbricately arranged, *i.e.* the pseudowhorls very close together, petiole 1–2 by 3–4 mm 184. *R. lamii*
 42. Leaves manifestly petioled, scattered or in manifestly spaced pseudowhorls; petiole (2–)3–5 by 1–2.5 mm.
 43. Corolla 2–2.5 cm long in all. Calyx and pedicels exclusively lepidote.
 44. Branchlets smooth. Leaves \pm obovate, 3–4.5(–5) by 1.5–2(–2.3) cm . 185. *R. porphyranthes*
 44. Branchlets verruculose. Leaves lanceolate to subobovate-oblong, 1.5–2 by 0.6–1 cm.
 186. *R. simulans*
 43. Corolla 3.5–5.5 cm long in all.
 45. Calyx and pedicels exclusively lepidote.
 46. Leaves (1.8–)2–2.7 by (1–)1.4–1.9 cm; nerves subinconspicuous . . . 187. *R. ultimium*
 46. Leaves 3–4(–5) by 1.8–2.7 cm; nerves conspicuous above or mostly so on both faces.
 188. *R. brassii*
 45. Calyx and pedicels lepidote *and* shortly pubescent.
 47. Umbels 2-flowered, or rarely a solitary flower. 189. *R. subuliferum*
 47. Umbels 3–6-flowered 190. *R. scarlatinum*
 41. Corolla laxly or mostly subdensely lepidote outside.
 48. Corolla (3–)4–5(–5.5) cm long in all.
 49. Leaves broadly elliptic or ovate-elliptic, sometimes subobovate-elliptic, base rounded or mostly slightly cordate 191. *R. atropurpureum*
 49. Leaves obovate or rarely oblong-obovate, base cuneate 189. *R. subuliferum*
 48. Corolla (2–)2.5–3 (rarely up to 3.5) cm long in all.
 50. Leaves densely arranged in much approximate 5–8-merous pseudowhorls, broad-elliptic, \pm rounded or subcordate at the base, manifestly crenulate. 192. *R. buxifolium*
 50. Leaves laxly arranged, in distinctly spaced pseudowhorls, \pm attenuate at the base, sub-crenulate to entire.
 51. Perulae small, up to 0.8 by 0.4 cm 193. *R. wrightianum*
 51. Perulae rather large, 1–2 by 0.4–0.9 cm, laxly lepidote, or mostly glabrous dorsally.
 52. Branchlets distinctly verruculose. Leaves elliptic, sometimes subovate- or subobovate-elliptic, 2–2.8(–3) by (0.8–)1–1.4 cm; petiole 2–3 by 1.5–2 mm. Corolla 2.5–3 cm.
 194. *R. subcrenatum*
 52. Branchlets smooth.
 53. Leaves oblong to elliptic- or subobovate-oblong, (2–)2.3–3.8 (rarely up to 5) by 1–1.6 cm; petiole 3–5(–7) by 1–1.5 mm. Corolla 2–2.6 cm 195. *R. rubrobracteatum*
 53. Leaves narrow-oblong, or elliptic-oblong, 2–2.5 by 0.5–0.9 cm; petiole 2–3 by 0.7–1 mm. Corolla 3(–3.5) cm 196. *R. calosanthes*

155. *Rhododendron frey-wysslingii* J. J. S. in Merr. Contr. Arn. Arb. 8 (1934) 123; SLEUM. Reinwardtia 5 (1960) 149.

Small terrestrial, much branched shrub, up to 75 cm. Branchlets terete, tips sparsely to subdensely covered with stellate \pm sessile scales, older glabrescent parts first minutely verruculose, early becoming smooth; internodes 0.3–3.5 cm. *Leaves* in dense 5–8-merous pseudowhorls at the upper 1–3 nodes, obovate-lanceolate, apex obtuse or rounded, base cuneate into the petiole, \pm coriaceous, young ones cinnamon-lepidote on both faces, mature ones glabrescent above, lepidote for a long time beneath (scales small, flattish, narrow marginal zone subentire or mostly irregularly shallowly lobed, centre relatively large, somewhat

impressed), finally \pm glabrescent beneath too, margin very slightly revolute, (1.6–)2–3.5 by (0.4–)0.5–0.7(–0.8) cm, midrib impressed above, obtusely raised beneath in the lower half, becoming \pm obsolete distally, nerves obsolete; petiole lepidote, flat, 1–2 mm. *Flowers* solitary or more rarely in twos, nodding. Perulae narrow ovate-acuminate, long-subulate, membranous, laxly lepidote and papillose at apex, glabrous below, margin set with \pm caducous scales, up to 6 by 2 mm, early caducous. Pedicels rather stoutish, 1–1.3 cm in anthesis, densely set with stellate scales and sparingly very shortly hairy. *Calyx* small, disk-shaped, thin, shortly 5-dented, c. 3 mm ϕ , lepidote and often short-hairy dorsally. *Corolla* broadly tubular-campanulate, thin, red,

1.4–1.6 cm long in all, \pm densely covered with subentire, thickish scales outside, laxly long-hairy in the lower half of the tube inside, tube broad-cylindric, 1–1.2 cm, rounded and c. 5 mm ϕ at base, slightly widened to apex, lobes ovate, subacute, somewhat expanded, c. 3.5 by 3.5 mm. *Stamens* 10, subequal, somewhat exceeding the corolla tube; filaments linear, dilated at the base, \pm densely patently hairy to nearly the top; anthers subquadrangular, truncate, c. 1.4 mm. *Disk* glabrous. *Ovary* ovoid-conical, densely lepidote and villous, the hairs predominant, covering the scales at first, c. 4 by 2 mm, rather abrupt with the style, the latter 7–8 mm at anthesis, covered to the lower $\frac{2}{3}$ with whitish hairs; stigma capitate. *Capsule* subcylindric, laxly hairy and lepidote, c. 1.3 by 0.4 cm. *Seeds* 4 mm, the long tails included.

Distr. Malesia: N. Sumatra (Gajo Lands: Bur ni Tèlong and Rêdèlong Volcano), on slopes, 1800–2000 m. *Fl.* Jan., June, Sept.

156. *Rhododendron pubigerum* J. J. S. in Merr. Contr. Arn. Arb. 8 (1934) 122; SLEUM. Reinwardtia 5 (1960) 149.

Small, generally epiphytic shrub, up to 1.2 m; branches slender, divaricate. Branchlets terete, c. 1 mm ϕ at the upper internodes, which are \pm densely substellate-lepidote and finely patent-puberulous; internodes (1)–2–6 cm. *Leaves* in (4)–6–10-merous pseudowhorls at the upper 2–3 nodes, oblong- or lanceolate-obovate, apex obtuse-rounded, base gradually cuneate, coriaceous, rather stiff, lepidote on both sides initially, glabrous above at full maturity, subdensely and more persistently lepidote beneath (scales flat, pale brown, marginal zone relatively narrow, irregularly and shallowly incised, centre small, \pm conspicuously impressed), margin \pm revolute in dry specimens, (1.3)–1.8–3(–4.5, rarely up to 5.5) by (0.5)–0.7–1.2(–1.5) cm, midrib impressed above, strongly prominent in the lower half beneath, nerves obsolete; petiole \pm flattened, lepidote, 1(–2) mm. *Flowers* 1–2(–3). Flower buds ovoid, c. 0.8 by 0.6 cm; perulae suborbicular-ovate, outer ones obtuse, inner ones subacuminate, glabrous and lustrous dorsally, margin set with caducous scales, up to 7 by 5 mm. Bracteoles linear-subspathulate, glabrous, c. 8 mm. Pedicels rather slender, densely lepidote and minutely pubescent, 1–1.6 cm. *Calyx* oblique, shortly cup-shaped, shortly 5-dented or -lobed, c. 3 mm ϕ . *Corolla* open-campanulate, gradually attenuate from the limb to the base, nearly halfway 5-lobed, rather fleshy, red, scarlet or crimson, 1.7–1.9(–2.3) cm in all, laxly or subdensely substellate-lepidote outside, margin of the lobes excepted, glabrous inside, tube straight, 8–10 mm, at base rounded and 4–6 mm ϕ , lobes broadly obovate-spathulate, subtruncate, slightly spreading, 10–12 by 7–10 mm. *Stamens* 10, alternately unequal, the longer ones attaining \pm half the length of the corolla lobes; filaments linear, patently hairy in the lower $\frac{1}{4}$ – $\frac{1}{3}$, glabrous for the rest; anthers broad-oblong or subquadrate, 2 mm. *Disk* prominent, glabrous.

Ovary ovoid, c. 3.5 by 2.5 mm, densely set with longish subpatent hairs which cover the scales; style very abrupt with the ovary, glabrous, (5–) 6–8 mm; stigma subcapitate. *Capsule* subovoid-elliptic, subdensely long-hairy, laxly lepidote, 1.2–1.7 cm, the valves twisted.

Distr. Malesia: Sumatra (East and West Coast).

Ecol. In rain-forest, mossy forest or light, also secondary, jungle, 1200–2560 m. *Fl.* Jan.–Dec., *fr.* June.

157. *Rhododendron vidalii* ROLFE, J. Bot. 24 (1886) 348; MERR. Publ. Gov. Lab. Philip. n. 29 (1905) 43; Philip. J. Sc. 1 (1906) Suppl. 111; *ibid.* 3 (1908) Bot. 381; MILLAIS, Rhodod. (1917) 258; BROWN, Min. Prod. Philip. For. 3 (1921) 218; MERR. En. Philip. 3 (1923) 245; MILLAIS, Rhodod. ser. 2 (1924) 257; COPEL. f. Philip. J. Sc. 40 (1929) 152, t. 4, f. 3–4, t. 5; SLEUM. Reinwardtia 5 (1960) 151; Blumea 12 (1963) 106; Jahrb. Rhodod. Ges. Bremen (1963) f. 3. — *R. verticillatum* (non Low ex LINDL.) VIDAL, Rev. Pl. Vasc. Filip. (1886) 171; CERON, Cat. Pl. Herb. Manila (1892) 106. — *R. lussoniense* RENDLE, J. Bot. 34 (1896) 356; MERR. Publ. Gov. Lab. Philip. n. 29 (1905) 43; MILLAIS, Rhodod. (1917) 204; *ibid.* ser. 2 (1924) 179. — *R. whiteheadii* RENDLE, J. Bot. 34 (1896) 356; MERR. Publ. Gov. Lab. Philip. n. 29 (1905) 43; Philip. J. Sc. 3 (1908) Bot. 381; MILLAIS, Rhodod. (1917) 262; *ibid.* ser. 2 (1924) 260; MERR. En. Philip. 3 (1923) 245; COPEL. f. Philip. J. Sc. 40 (1929) 154, t. 4, f. 5–11. — *R. curranii* MERR. Philip. J. Sc. 3 (1908) Bot. 255, 381; MILLAIS, Rhodod. (1917) 151; *ibid.* ser. 2 (1924) 121; MERR. En. Philip. 3 (1923) 243. — Fig. 33.

Terrestrial or epiphytic shrub, stiff-woody, 0.8–2(–3) m, with grey bark; branches divaricate. Branchlets 1–2 mm ϕ , greyish corticate in the older parts, tips laxly lepidote and \pm patent-puberulent; internodes 1.5–5 cm. *Leaves* crowded in 3–5(–7)-merous pseudowhorls at the upper 1–2(–3) nodes, oblanceolate to obovate-oblong, more rarely (broadly) obovate, apex rounded or subemarginate, base cuneate to the petiole, coriaceous, medium-green and rather shining above, paler beneath, laxly to subdensely lepidote on both faces when young (scales flat, rufescent, the relatively narrow marginal zone irregularly \pm obtusely stellate-lobed, seemingly roundish, when the marginal zone has gone and the centre has become blackish with age, the latter slightly or not impressed, early \pm disappearing above, remaining for a longer time beneath), \pm glabrescent with age on both sides, edge slightly recurved, (1.5)–2–4 (in part sometimes up to 5.5) by (0.8)–1–1.5 (–2, very rarely up to 3) cm, midrib impressed above, prominent beneath, nerves 4–6 pairs, faintly visible above, slightly raised beneath, veins subinconspicuous; petiole \pm flattened, lepidote, 2–3(–5) mm. *Umbels* 2–3(–4)-flowered, sometimes reduced to a single flower. Flower buds narrow-ovoid, c. 1.5 cm. Perulae membranous, glabrous or mostly subdensely to sparingly sericeous and laxly lepidote dorsally, short glandular-fimbriate,

outer ones broad-ovate, short-acuminate, subacute, inner ones larger, ovate-oblong to spatulate, up to 1.5 by 1 cm. Bracteoles filiform, laxly hairy, up to 12 mm. Pedicels rather slender, laxly caducously substellate-lepidote, furthermore mostly laxly to subdensely shortly patently hairy (but sometimes entirely epilose!), (1.2-)1.5-2.5 cm at anthesis. *Calyx* small, disk-shaped, obscurely dented, c. 3 mm \varnothing , lepidote and \pm short-hairy dorsally. *Corolla* funnel-shaped, white (or apparently sometimes crimson, possibly due to hybridizing with a red-flowered other species), fragrant, (2.2-)2.5-3 cm long in all, limb c. 3 cm \varnothing , laxly lepidote at the tube and the lower half of the lobes outside, laxly to subdensely hairy at the tube out- and inside, tube straight, (1-)1.5 cm, at base c. 4 mm \varnothing , gradually widened to 8-10 mm at apex, lobes spreading, broadly cuneate-spathulate, obtuse, 0.8-1.3 by c. 1 cm. *Stamens* 10, subequal, attaining half the corolla lobes; filaments linear and \pm densely subpatently hairy in the lower half, filiform and glabrous distally; anthers narrow-oblong, c. 3 by 1 mm. *Disk* prominent, glabrous below, short-hairy at the upper margin. *Ovary* subfusiform-cylindric, densely patent-hairy, the hairs covering small scales, c.

5 by 2 mm, rather abruptly tapering to the style, which is patently hairy in its lower $\frac{1}{3}$ - $\frac{2}{3}$, glabrous towards the top, and \pm as long as the stamens; stigma turbinate-capitate. *Capsule* subcylindric, somewhat oblique and curved, subattenuate at the base, 1.5-2 by 0.4-0.5 cm, densely pubescent, the valves becoming recurved and twisted. *Seeds* c. 3 mm including the long-tailed appendices on both ends.

Distr. Malesia: Philippines (Luzon).

Ecol. Mostly in moss forest, but also terrestrial on banks in rather barren places or grassland, epiphytic on large, moss covered trees or terrestrial on shrubby mountain side or exposed ridges, locally not rare, 1000-2100 m. *Fl.* Jan.-Dec.

Vern. *Lofong*, *lopang*, *tingei*, Bon., *ballaybay*, *kaykayyin*, *ayalea*, If.

Uses. The plant is used as a cure for itches.

158. *Rhododendron hatamense* BECC. *Malesia* 1 (1878) 202; *J. J. S. Nova Guinea* 12 (1914) 135; *SLEUM. Reinwardtia* 5 (1960) 153; *Blumea* 12 (1963) 106.

Low shrub, c. 0.5 m, branches divaricate. Branchlets irregular, slender, tips laxly lepidote; internodes 0.8-6 cm. *Leaves* in 3-5(-6)-merous



Fig. 33. *Rhododendron vidalii* Rolfe. Mt Polis, 2000 m, Luzon, Philippines (STEINER 2175) (SLEUMER, 1961).

pseudowhorls at the upper 1-2 nodes, ovate-elliptic to elliptic, apex short-acuminate or broad-attenuate, obtuse or sometimes rounded, or apiculate, base broad-cuneate or attenuate, thin-coriaceous, glabrescent above with age, subdensely lepidote for a long time beneath (scales small, flat, substellate, faintly sunk), finally \pm glabrescent beneath with only the blackish small pits remaining, margin slightly cartilaginous, mostly rather distinctly revolute, 2-4(-7) by (0.9-) 1.5-2 (rarely up to 3.5) cm, midrib impressed above, prominent beneath, nerves 4(-6) pairs, rather straight below, \pm looping near the edge, finely sunk above, \pm distinctly raised beneath, or subobscure as are the veins; petiole flattish, 2-3(-4) mm. *Umbels* 2-4(-6)-flowered. Perulae ovate-acuminate, short-subulate, membranous, glabrous, margin fimbriate by caducous scales, up to 10 by 5 mm. Bracteoles filiform, up to 1 cm. Pedicels rather slender, densely lepidote and patently hairy to subvillous, 1-1.8(-2.4) cm. *Calyx* disk-shaped, often reflexed, obscurely 5-lobed, c. 3 mm ϕ , lepidote and hairy dorsally. *Corolla* tubular-funneliform, suboblique, c. 2.5 cm long in all, bright to dark red or crimson, waxy and glossy, laxly pubescent, chiefly in the lower half, or sometimes glabrous, and certainly bearing no scales outside, laxly patently hairy in the lower half of the tube inside, tube subcylindric, c. 1.5 cm long, 4-5 mm ϕ at base, a little widened upwards, lobes much spreading, broadly obovate-spathulate, c. 0.8-1.2 cm. *Stamens* 10, equalling halfway the corolla lobes; filaments linear, laxly patently hairy above the base to the lower $\frac{1}{4}$, glabrous above; anthers dark purple to almost blackish, oblong-obovate, 2 mm. *Disk* glabrous. *Ovary* subovoid, densely shortly set with spreading hairs or tomentulose, the hairs covering the scales, c. 5 by 3 mm, tapering to the style, the latter \pm equalling the stamens, hairy to near the top; stigma subcapitate.

Distr. *Malesia*: New Guinea (Vogelkop Peninsula: Arfak, Tamrau and Nettoti Mts).

Ecol. Epiphytic in mossy *Nothofagus* forest, 1550-1900 m, apparently very scattered or rare. *Fl.* Oct.-March.

Vern. *Bingnoi*, Hattam.

159. *Rhododendron vandeursenii* SLEUM. *Blumea* 11 (1961) 123; *ibid.* 12 (1963) 108.

Erect epiphytic or terrestrial shrub, 0.5-1 m; upper internodes rather slender, lepidote, 0.4-4 (-6) cm, lower ones early glabrescent. *Leaves* in 3-4-merous pseudowhorls at the upper 2(-3) nodes, obovate or elliptic-obovate, apex rounded, sometimes faintly retuse, base cuneate to the petiole, \pm convex above, coriaceous, laxly lepidote on both faces initially, glabrous and a little glossy above with age, rather dull and subdensely lepidote beneath (scales flattish, hyaline marginal zone variously dented or incised, early dissolute, centre thick and more persistent, scales thus sometimes seemingly rotund and entire), edge much revolute, (1.5-)2-4(-5) by (0.8-)1-1.8 (rarely up to 2.5) cm, midrib flat and rather inconspicuous above,

thick and obtusely prominent below, decreasing upwards beneath, nerves c. 5 irregular pairs, slightly prominent beneath only, or hardly visible, no reticulation; petiole lepidote initially, 3-4(-5) by c. 1 mm. *Flowers* pendent, solitary, rarely in twos. Perulae broadly ovate, subacuminate-apiculate, keeled and lepidote dorsally, manifestly fimbriate, known up to 6 mm. Pedicels rather stoutish, 1.3-2.3 cm, laxly to subdensely stellate-lepidote and laxly subpatently hairy. *Calyx* \pm obliquely disk-shaped, shortly subacutely 5-lobed, lepidote dorsally, 2.5-3.5 mm ϕ . *Corolla* tubular, not much subcampanulate-dilated upwards, 4.5-5 (-5.5) cm in all, red or deep crimson, laxly stellate, lepidote and short-hairy at least in the lower part outside, practically glabrous inside, tube rather straight or slightly curved, 3.5-4.3 cm, 4-5 mm ϕ at base, widened to 1.2-1.5(-2) cm at apex, lobes erect, broadly subspathulate-obovate or almost rounded, 8-10 by 6-8 mm. *Stamens* 10, \pm as long as the corolla; filaments linear (1 mm), laxly hairy or almost glabrous; anthers broad- or subobovate-oblong, 2.7-3 by c. 1 mm, base obtuse. *Disk* glabrous below, hairy at the upper margin. *Ovary* subcylindric, densely set with subpatent hairs and with scales, 6-7 by 2 mm, tapering to the style, the latter \pm as long as the corolla, laxly subpatently hairy in the lower $\frac{1}{2}$ to $\frac{1}{2}$, elepidote; stigma thick-turbinate.

Distr. *Malesia*: New Guinea (Central Highlands).

Ecol. Mossy, primary and secondary forest, 2285-2770 m. *Fl.* July.

160. *Rhododendron cornu-bovis* SLEUM. *Reinwardtia* 5 (1960) 152.

Small, straggling shrub, up to 2 m, with rather slender, divaricate branches. Branchlets subterete, c. 1 mm ϕ , tips \pm flattened and densely clothed with rufescent stellate scales; internodes 1.5-4 (-6) cm. *Leaves* in 4-6-merous pseudowhorls at the upper 2-3 nodes, obovate-oblong to obovate, apex broadly attenuate, obtuse or rounded, base cuneate into the petiole, coriaceous, firm, youngest ones lepidote on both faces, early glabrescent above, persistently subdensely lepidote beneath (scales rather large, flat, irregularly stellate-lacerate in the marginal zone, centre slightly impressed), edge slightly recurved, 2.5-3.5(-4) by 0.8-1.4 cm, midrib grooved above, prominent beneath, nerves 3-4 pairs, subinconspicuous, often obsolete beneath; petiole lepidote, 2-3(-4) mm. *Umbels* 2-3-flowered. Perulae broad-ovate to ovate-oblong, rather obtuse, glabrous dorsally, margin fimbriate by caducous scales, up to 8 by 5 mm. Bracteoles filiform, very laxly lepidote, c. 5 mm. Pedicels rather slender, subdensely stellate-lepidote and sparsely very shortly patent-pubescent, 1-1.4 cm. *Calyx* disk-shaped, oblique, lepidote and short-pubescent dorsally, indistinctly 5-dented, 2.5 mm ϕ . *Corolla* obliquely tubular-funnel-shaped, c. 2.5 cm long in all, pinkish red or crimson, subdensely or more laxly clothed with rufescent substellate scales outside, laxly hairy at the tube inside, tube slightly curved, 1.2-1.4 cm, at base

4–5 mm σ , widened to 6–8 mm at apex, lobes \pm spreading, obovate-spathulate, 9–10 by 6–7 mm. *Stamens* 10, subequal, reaching halfway the corolla lobes; filaments filiform, laxly patently hairy to the lower $\frac{2}{3}$, glabrous elsewhere; anthers broad-oblong, c. 1.6 mm. *Disk* prominent, glabrous. *Ovary* subcylindric, densely shortly whitish greyish hairy and lepidote, the scales \pm covered by the hairs, c. 5 by 2 mm; style a little oblique, gradually narrowed from the ovary, laxly patently hairy in its lower half, elepidote, glabrous for the rest, nearly equalling the corolla in length; stigma subcapitate. Submature *capsule* subfusiform-cylindric, somewhat curved, densely hairy and lepidote, 2.2 by 0.4 cm.

Distr. Malesia: W. New Guinea (Waigeou I.: top of Mt Nok: Buffelhoorn), rather common there in mossy forest shrub vegetation at 860 m. *Fl.* June.

161. *Rhododendron planecostatum* SLEUM. Reinwardtia 5 (1960) 153.

Epiphytic, much branched shrub. Branchlets terete, tips appressedly lepidote, glabrous below; internodes 2–4 cm. *Leaves* in 3–5-merous pseudowhorls at the upper 1–2 nodes, oblong-elliptic or subovate-oblong, apex shortly acuminate, rather obtuse, base cuneate, coriaceous, glabrous above at full maturity, subdensely lepidote beneath (scales irregularly stellate-dented or -incised in the marginal zone, centre minute, slightly impressed), somewhat recurved at the edge in dry specimens, 3–4(–4.5) by 1–2 cm, midrib slightly grooved above the base, but \pm flattish distally on the upper, dilated below and gradually narrowed distally on the undersurface, paler than the lamina and flat or faintly sunk there, nerves c. 6 pairs, irregular, slightly raised above, rather inconspicuous beneath, reticulation 0; petiole much flattened, 3–4 by c. 1.5 mm. *Umbels* 2–3-flowered. Flower buds narrow-ovoid, 1.7–2 by 0.8 cm. *Perulae* ovate-acuminate, subacute, membranous, glabrous dorsally, very shortly fimbriate, up to 1.7 by 0.7 cm. *Bracteoles* linear, glabrous, c. 1 cm. *Pedicels* rather robust, (7–)10–15 mm, laxly caducously lepidote and more densely clothed with short subpatent hairs. *Calyx* disk-shaped, very shortly 5-dented, subglabrous, 2.5 mm σ . *Corolla* tubular, c. 2 cm long in all, thin, said to be of a beautiful red, glabrous outside, laxly hairy in the lower half of the tube inside, tube 1.3–1.4 cm long, at base 4–5 mm σ , widened to 6–7 mm at apex, lobes erecto-patent, broadly obovate, 6–7 by c. 5 mm. *Stamens* 10, very unequal, 1.2–1.5 cm; filaments linear and densely patent-pubescent in the lower third, glabrous and filiform for the rest; anthers obovate-oblong, 2 mm. *Disk* glabrous. *Ovary* thick-cylindric, densely appressedly hairy, practically elepidote, c. 4 by 2 mm; style rather abrupt with the ovary, glabrous, slender, 4 mm; stigma subclavate-capitate.

Distr. Malesia: Borneo (Mt Kinabalu), epiphyte on big tree over the Liwago R., 1830–2135 m. Once found. *Fl.* Dec.

162. *Rhododendron bagobonum* COPEL. f. Philip. J. Sc. 40 (1929) 151, t. 4, f. 1–2; SLEUM. Reinwardtia 5 (1960) 154; Blumea 12 (1963) 106. — *R. cuneifolium* STAPF var. *subspathulatum* RIDL. J. Str. Br. R. As. Soc. n. 33 (1900) 23; MERR. En. Born. (1921) 461. — *R. galioides* J. J. S. Bull. Jard. Bot. Btzig III, 13 (1935) 445.

Epiphytic shrublet up to 0.6 m, widely branched. Branchlets slender, terete, tips only laxly lepidote and whether or not patent-puberulous; internodes 0.9–5 cm. Young shoots with linear, rather long persistent rammenta. *Leaves* in (6–)8–12-merous pseudowhorls at the upper 2–4(–6) nodes, spathulate-lanceolate, apex short acuminate, obtuse or subacute, base long-cuneate into the petiole, subcoriaceous, but stiff, glabrescent above, laxly to subdensely and \pm persistently lepidote beneath (scales irregularly dented or lobed at the thin marginal zone, centre rather small, slightly impressed), entire to faintly wavy or crenulate, but slightly revolute at the very edge in dry specimens, 1.5–2.3(–2.7) by 0.5–0.8(–1) cm, midrib \pm flat above, slightly raised in the lower half beneath, nerves obscure; petiole 0.5–1.5 mm. *Flowers* solitary. *Perulae* narrow ovate-acuminate or lanceolate, shortly subulate, membranous, glabrous, up to 1.4 by 0.3 mm. *Bracteoles* linear-spathulate, c. 5 mm. *Pedicels* stoutish, densely shortly patently hairy and lepidote, 4–6 mm. *Calyx* disk-shaped, obscurely obtusely 5-lobed, sparsely lepidote and hairy, 2.5 mm σ . *Corolla* tubular, red or scarlet, sometimes red tinged orange, laxly lepidote outside, laxly hairy in the lower half of the tube inside, c. 1.2 cm long in all, tube straight, c. 9 mm long, at base 4–5 mm σ , somewhat narrowed below the lobes, the latter suberect, ovate to suborbicular, c. 2.5 mm σ . *Stamens* 10, as long as the corolla tube; filaments flat linear, laxly patently hairy in the lower half; anthers obovate, 1 mm. *Disk* very low, glabrous. *Ovary* subovoid-cylindric, densely pubescent and lepidote (scales covered by the hairs), 4–5 by 2.5 mm; style rather abrupt with the ovary, slenderly columnar, glabrous, c. 4 mm. Submature *capsule* cylindric-subfusiform, 2–2.5 cm by 3.5–4.5 mm, with a very short (4 mm) subsistent style, laxly hairy and lepidote, on a stoutish fruit-pedicel 9–12 mm. *Seeds* narrow-fusiform, c. 3 mm including the long tails.

Distr. Malesia: Borneo, Philippines (Mindanao).

Ecol. In primary (moss) forest on mountain ridges, also in heath forest, locally common on Mt Kinabalu mostly in open sunny places, 900–2135 m. *Fl.* Jan.–Dec.

Vern. Mogang-bagobo, Philippines.

163. *Rhododendron nieuwenhuisii* J. J. S. Ic. Bog. 4 (1910) t. 323; MERR. En. Born. (1921) 462; SLEUM. Reinwardtia 5 (1960) 154; Blumea 11 (1961) 122; *ibid.* 12 (1963) 107.

Slender, generally epiphytic shrub. Branchlets elongate, terete, 1–1.5 mm σ , tips densely rusty-stellate-lepidote; internodes (2–)3–7 cm. *Leaves* in 3–5(–6)-merous pseudowhorls at the upper 3–4 nodes, together with subulate \pm persistent

ramenta (c. 0.7 cm), lanceolate, rarely ovate-lanceolate, apex gradually long-acuminate and often somewhat curved, subacute, base attenuate, acute or subobtusate, subcoriaceous, \pm densely lepidote on both faces initially, finally glabrescent above, more persistently lepidote beneath (scales rusty, sessile, deeply and rather regularly stellate-incised at the marginal zone, centre small, not impressed), edge slightly or not recurved, 2.5–5.5 (rarely up to 6.5) by 0.7–1.8(–2) cm, midrib sunk above, very prominent beneath, nerves 7–11 pairs, subpatent, a little raised above and impressed beneath, lamina thus becoming \pm bullate between the nerves, veins \pm obscure; petiole subterete, grooved above, densely lepidote, 3–5 by c. 1 mm. Flowers solitary or in twos. Flower buds ovoid, outer perulae subulate, inner ones larger, ovate-acuminate, acute, stellate-lepidote dorsally, fimbriate, up to 2 by 0.7 cm. Pedicels rather robust, mostly stellate-lepidote, 3–5 mm. *Calyx* oblique, shortly 5-dented, lepidote dorsally, c. 2.5 mm σ . *Corolla* tubular-funnel-shaped, deep bright yellow, 5-parted to $\frac{1}{2}$ – $\frac{3}{5}$, c. 2.8 cm long in all, tube subcylindric, straight, 1–1.2 cm long, at base 4 mm σ , slightly dilated upwards, laxly stellate-lepidote outside, glabrous inside, lobes obovate, glabrous, 1.2–1.6(–1.8) by (0.8–)1–1.6 cm. *Stamens* 10, c. 1.8 cm; filaments filiform, glabrous to c. 3 mm above the base, nearly villous for the following 4–6 mm, again glabrous distally; anthers linear-oblong, 3.5–4.5 by 0.8 mm. *Disk* prominent, hairy at the upper margin. *Ovary* subcylindric, villous, the hairs covering the scales, c. 6 by 2 mm, seemingly abrupt with the style, the latter thickish, c. 1 cm; stigma club-shaped, oblique, deeply 5-lobed. *Capsule* fusiform-cylindric, densely villous, c. 1.8 by 0.35 cm.

Distr. *Malesia*: Borneo.

Ecol. In dense forest, along river, also in 'heath-forest', (100–)350–800 m, as far as indicated on the collector's labels, possibly at higher altitudes in Central Borneo. *Fl.* Sept.–Nov.

164. *Rhododendron pseudobuxifolium* SLEUM. Reinwardtia 5 (1960) 154.

Low, apparently not much branched shrub. Branchlets short, stiff, 1.5–2 mm σ , laxly puberulous and \pm caducously lepidote; internodes 2–4 cm. *Leaves* crowded in the distal part of the upper 1–2 internodes, or in oligomerous pseudowhorks, elliptic, apex broad-attenuate, obtuse, not rarely minutely apiculate, base broadly attenuate or nearly rounded, coriaceous, rigid, glabrous, blackish-punctulate and somewhat shining above, dull and laxly lepidote for a rather long time beneath (scales flat, variously angular or sub-stellately dented in the marginal zone, centre small and impressed), finally \pm glabrescent on both faces, edge distinctly cartilaginous and crenulate, 1–1.8 by 0.7–1 cm, midrib narrow-impressed above, robust and obtusely prominent beneath, nerves 3–4 pairs, curved and looping near the edge, faintly impressed above, slightly raised beneath, often hardly visible; petiole slightly flattened, 2–3 by c. 1 mm. *Umbels* 3–4-flowered.

Perulae ovate-oblong to broadly oblong-subspatulate, apiculate or mucronulate, rigidly membranous, purplish and lustrous when dry, glabrous dorsally, margin caducously lepidote, 1.3–2 by 0.6–0.9 cm. Pedicels densely substellate-lepidote and very shortly pubescent, 1.5–2 cm by c. 1 mm. *Calyx* membranous, disk-shaped, margin wavy and reflexed, very shortly obtusely 5-lobed, c. 3 mm σ . *Corolla* tubular below, expanded at the limb, c. 3 cm long in all, wine-red, quite glabrous outside, laxly hairy in the lower $\frac{2}{3}$ of the tube inside, tube straight, c. 2 cm, at base 5 mm σ , slightly dilated upwards, lobes obovate, \pm spreading, c. 1 by 0.8 cm. *Stamens* 10, very unequal, the longest hardly equalling the corolla tube; filaments linear, laxly hairy in the lower third, glabrous for the rest; anthers broadly oblong-elliptic, c. 2 by 1 mm. *Disk* glabrous. *Ovary* ovoid-conical, densely clothed with whitish hairs, which are directed upwards and cover the scales, rather abrupt with the style, the latter \pm slender, glabrous, some hairs at the very base excepted, c. 8 mm; stigma capitate, deeply 5-lobed.

Distr. *Malesia*: SW. Central Celebes (Lati-modjong Range: Mt Rantemario), once found at 3300 m. *Fl.* June.

165. *Rhododendron commonae* FOERSTER in Fedde, Rep. 13 (1914) 223; SCHLTR., Bot. Jahrb. 55 (1918) 154; LANE-POOLE, For. Res. Papua (1925) 130; WHITE & FRANCIS, Proc. R. Soc. Queensl. 39 (1928) 68; DIELS, Bot. Jahrb. 62 (1929) 487; SLEUM. Reinwardtia 5 (1960) 163; Blumea 11 (1961) 124; *ibid.* 12 (1963) 108; Jahrb. Rhodod. Ges. Bremen (1963) f. 26. — *R. stonori* SLEUM. Reinwardtia 5 (1960) 155. — Fig. 34a-c-35.

Compact, stiff, not rarely flat-topped terrestrial shrub, (0.2–)0.5–1.5 (rarely up to 6) m; branches covered with a grey or blackish, peeling cork. Branchlets stoutish, upper parts angular, reddish purplish and stellate-lepidote, older ones (those of the past season) with numerous blackish minute pits besides the numerous thick cushions of the fallen leaves; internodes (1.5–)2–4.5 cm. *Leaves* spirally arranged, most of them rather dense together in the upper half, but in part scattered in the lower part of the ultimate shoot, not in proper pseudowhorks, elliptic to obovate-elliptic, rarely more obovate or obovate-oblong, apex shortly broad-acuminate or \pm rounded, apical gland thickish and a little or hardly prominent, base \pm broadly attenuate (very base subtruncate), not or hardly decurrent into the petiole, coriaceous, stiff, olivaceous-green or -brownish and \pm shining when dry above, paler (yellowish to brownish) and \pm dull beneath, provided with numerous blackish pits (scars of former scales) above with age, rather densely and subpersistently lepidote beneath (scales distant, hyaline marginal zone irregularly stellate-lobed or -incised to various degree, centre small, rather dark and deeply sunk), glabrescent (and pitted) finally beneath too, edge somewhat cartilaginous and subrevolute, distinctly subserrulate-crenulate, (1.2–)2–3.5(–4.3) by (0.8–)1.2–2 cm, midrib impressed above, broad



Fig. 35. *Rhododendron commonae* FOERSTER. Swampy place at Lake Aunde, Mt Wilhelm, 3550 m, E. New Guinea (SLEUMER 4166) (SLEUMER, 1961).

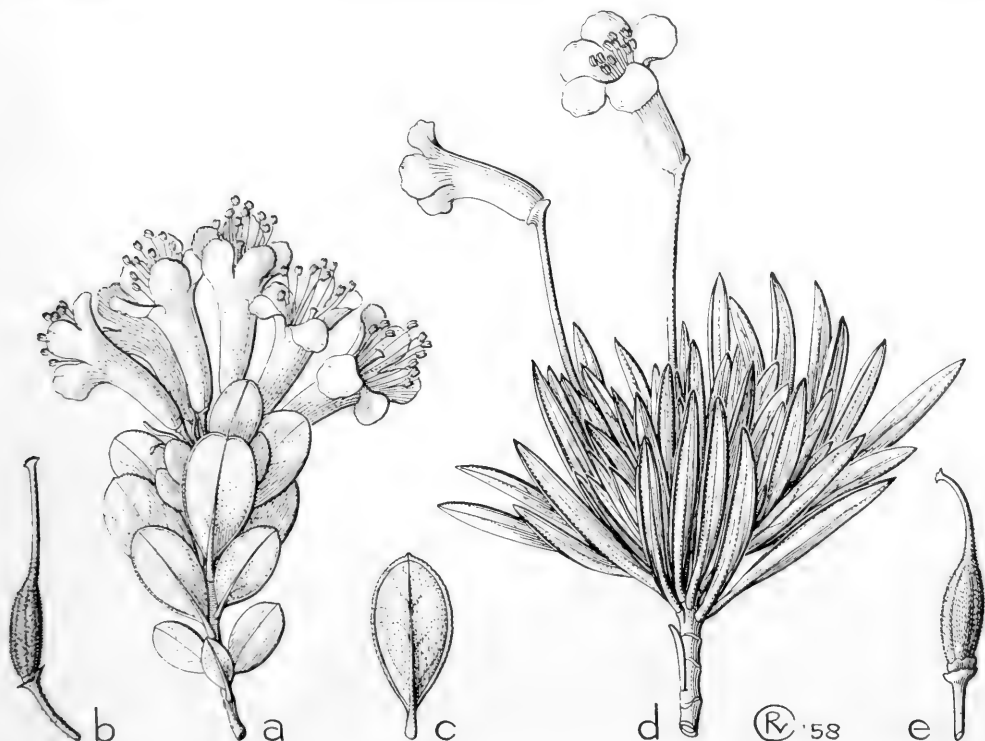


Fig. 34. *Rhododendron communeae* FOERSTER. *a.* Habit, $\times \frac{2}{3}$, *b.* ovary and style, $\times \frac{2}{3}$, *c.* leaf from underneath, showing the crenulate margin, $\times 1$. — *R. saxifragoides* J. J. S. *d.* Habit, $\times \frac{2}{3}$, *e.* submature fruit with style, $\times \frac{2}{3}$ (*a-c* HOOGLAND & PULLEN 6044, *d* BRASS 21106, *e* BRASS & MEIJER DREES 10184).

and obtusely prominent in the lower half, upwards less so and \pm obscure distally beneath, nerves 4-6 pairs, irregular, curved-ascending, looping near the edge, slightly impressed in fully mature leaves above, faintly raised or hardly visible beneath, veins subinconspicuous; petiole thick, hardly or not flattened, 2-4(-5) by 1-1.5 (rarely up to 2) mm. *Umbels* (3-)-4-6-flowered. Outer perulae subulate, intermediate ones ovate-acuminate, abruptly subulate in the upper $\frac{1}{4}$ - $\frac{1}{2}$, innermost ones obovate-spathulate, shining, glabrous or lepidote along the dorsal midrib and at the apex (never hairy!), irregularly short-fimbriate, up to 15 by 11 mm. Bracteoles linear, up to 12 by 1 mm. Pedicels stoutish, laxly to rather densely rusty-stellate-lepidote, epilose or with sparse papillose hairs between the scales, 12-18 mm at anthesis. *Calyx* oblique, lepidote at the base, deeply 5-lobed, *c.* 4 mm σ , lobes narrow-deltoid or subulate to linear-subspathulate, acute or obtuse, glabrous, or occasionally long-fimbriate at apex, irregular both in shape and length, normally *c.* 1 mm, occasionally 2-5(-8) mm long and 1-1.5 mm wide at the base, appressed to the corolla, subsistent. *Corolla* tubular, \pm oblique and curved, (2-)-2.5-3(-3.5) cm long in all,

deep blood-red to purplish or crimson, laxly to subdensely stellate-lepidote at the tube and the lower part of the lobes outside, glabrous or short-hairy inside, tube *c.* 2 cm, (4-)-5-6 mm σ at the 5-pouched or swollen base, up to 1 cm at apex, lobes obliquely subspathulate-orbicular, 6-8(-10) mm σ , markedly veined. *Stamens* 10, as long as the corolla, or slightly exerted; filaments linear, glabrous or laxly shortly papillose-hairy; anthers obovate-oblong, 2-2.3 by 1 mm. *Disk* prominent, glabrous. *Ovary* subcylindric, densely covered with rather short grey hairs which cover small scales, 5-6(-7) by 2-3 mm, abrupt with the style, the latter stoutish, glabrous or with some hairs at the base, nearly equalling the stamens; stigma obliquely capitate. *Capsule* subfusiform-cylindric, oblique, 2-2.5 by *c.* 0.6 cm, subdensely short-hairy and lepidote. *Seeds* *c.* 3 mm, the tails included.

Distr. *Malesia*: New Guinea (Western, Eastern and Southern Highlands; Mt Saruwaged and vicinity).

Ecol. Grassland and edge of *Papuacedrus* forest, in open semi-swampy places, also on crests of high ridges, stony ground, 2600-3990 m, becoming microphyllous at high altitudes, flowering freely in fully exposed position, locally plenti-

ful. *Fl. fr.* Jan.-Dec.

Vern. *Rohn*, Enga: Kepilam, *wamangali*, Enga: Poio, *kuwabe*, *kwab*, Mendi.

166. *Rhododendron abietifolium* SLEUM. *Blumea* 11 (1961) 122; *ibid.* 12 (1963) 106; *ibid.* 12 (1964) 340; *Jahrb. Deutsch. Rhodod. Ges. Bremen* (1965) f. 18.

Small shrub, *c.* 1 m. Branchlets slender, tips lepidote, early glabrescent and rather shining, longitudinally striate lengthwise in dry specimens; internodes (1-)2-3(-4) cm. *Leaves* 8-10(-12) close together for 2-3 mm towards the end of the upper 2-3 nodes, almost in pseudowhorls, linear or linear-oblong, apex very shortly apiculate, or obtuse, sometimes subtuse, base attenuate into the petiole, coriaceous, rather stiff, lustrous and glabrous above, paler and laxly lepidote beneath (scales rather small, sessile, marginal zone narrow and variously stellate-dented or -divided, darker centre rather small, not much impressed), revolute \pm up to the midrib beneath, edge slightly wavy or very shallowly crenulate, 2-3 (sometimes up to 4) cm long, equally 1.5-3(-5) mm wide in the revolute state, midrib deeply impressed above, thick-prominent between the revolute parts of the lamina beneath, nerves and veins faintly impressed above, obscure beneath; petiole slender, flattened, laxly lepidote, 2-3 mm. *Umbels* 2-3-flowered. Outer perulae subulate, inner ones ovate with subulate acumen to ovate-oblong and shortly acuminate, caducously lepidote fimbriate, puberulent to glabrous dorsally, 6-10 by 3-8 mm. Bracteoles linear, glabrous, irregularly incised distally, *c.* 1 cm by 0.5 mm. Pedicels slender, densely patently long-hairy, laxly and caducously lepidote, 1-1.5 cm. *Calyx* patellar, hardly 5-lobed, wavy and \pm reflexed, hairy dorsally, *c.* 2 mm across. *Corolla* broadly tubular below, subcampanulate-dilated towards the limb, brownish red in fresh, intensely carmine at the lobes, paler at the tube in dry specimens, 2.5-3 cm long in all, subdensely set with soft, whitish, patent hairs and almost elepidote at the tube, sparsely lepidote and not hairy at the lobes outside, practically glabrous inside, tube 1.5-1.8 cm long, *c.* 4 mm ϕ at the slightly 5-saccate base, *c.* 1 cm at apex, lobes broadly obovate-spathulate, *c.* 1 by 0.6-0.8 cm. *Stamens* 10, \pm half as long as the corolla; filaments linear, patently hairy for the lower $\frac{1}{4}$ - $\frac{1}{3}$, glabrous above; anthers broad-oblong, 2-2.5 by 1 mm, each cell provided with a small basal red apiculus or gland. *Disk* prominent, glabrous. *Ovary* subconical-cylindric, densely subappressedly white-hairy, caducously lepidote, *c.* 3 by 1.5 mm, rather abrupt with the style, the latter slender, quite glabrous, *c.* 1.3 cm; stigma shortly turbinate. *Capsule* thickly obovoid-cylindric, densely short-hairy and laxly lepidote, *c.* 1.2 by 0.4-0.5 cm, on fruit-pedicle 2 cm by 1 mm.

Distr. *Malesia*: North Borneo (Mt Kinabalu: Mesilau East route).

Ecol. In summit shrubberies at 3160-3650 m, rather frequent locally. *Fl.* July-Dec., *fr.* Aug.

Note. Forms with longer and wider, narrow-

oblong, less revolute leaves (3.5-5 by 0.6-1 cm), repeatedly collected on the east shoulder of Mt Kinabalu between 3050 and 3650 m, might be hybrids with either *R. sheilae* or *R. rugosum* respectively its var. *coriifolium*.

167. *Rhododendron sheilae* SLEUM. *Blumea* 11 (1961) 122; *ibid.* 12 (1963) 107; *ibid.* 12 (1964) 340.

Terrestrial shrub, up to 1.8 m, much branched distally. Branchlets slender, densely lepidote at the tips, glabrescent below; internodes 1-3(-4) cm, upper ones 1.5-2 mm ϕ . *Leaves* in (4-)5-6(-8)-merous pseudowhorls at the upper 2-3 nodes, narrow-oblong to obovate- or elliptic-oblong, broadly attenuate towards the apex, which is obtuse or rarely rounded, or even sometimes faintly retuse, cuneate towards the petiole, coriaceous, erecto-patent, \pm caducously lepidote initially, glabrous and glossy with age above, rather laxly and persistently lepidote beneath (scales small, flat, marginal zone rather narrow, early dissolute, variously dented or angular, centre minute, slightly though distinctly and persistently impressed), minutely crenulate along the margin, 1.5-2.5 (rarely up to 4) by (0.4-)0.6-1 (rarely up to 1.3) cm, midrib impressed, obtuse and much prominent beneath, nerves 4-5 pairs, not much conspicuous; petiole densely lepidote, (1-)2-3 by *c.* 1 mm. *Umbels* (3-)4-6-flowered. Perulae ovate-acuminate, apiculate, lepidote dorsally, *c.* 1.5 cm. Bracteoles subfiliform, glabrous, *c.* 8 mm. Pedicels stoutish, rather densely patently short-hairy and more laxly and \pm caducously lepidote as is the calyx, 1.2-2 cm, somewhat accrescent after flowering time. *Calyx* obliquely patellar, subobscurely 5-lobed or -wavy, *c.* 3 mm ϕ . *Corolla* \pm funnel-shaped, broadly tubular below, dilated towards the spreading lobes, deep purple red, subdensely to more laxly lepidote and shortly white-hairy at the tube and the base of the lobes outside, laxly hairy in the lower part of the tube inside, glabrous for the rest, 2.5-3.2 cm long in all, tube cylindric, *c.* 1.5 cm, 4-6 mm ϕ below, widened to 9-10 mm at apex, lobes broadly obovate, 1-1.3 by *c.* 1 cm. *Stamens* 10, subequal, reaching about halfway the corolla lobes; filaments linear, slightly dilated and laxly hairy below, glabrous for the upper $\frac{2}{3}$; anthers broadly oblong, *c.* 2.5 by 1 mm, each theca \pm distinctly protracted into a short basal apiculus. *Disk* prominent, hairy but for the upper margin. *Ovary* conical-cylindric, 3-4 by 2-2.5 mm, densely white-hairy and more laxly set with small subrotund, finally \pm caducous scales especially distally, abrupt with the style, the latter thickish, hardly exerted from the corolla tube, quite glabrous; stigma thick-turbinate, very shortly 5-lobed.

Distr. *Malesia*: North Borneo (eastern shoulder of Mt Kinabalu, mainly at junction of the Mesilau East and the Royal Society Expedition (1961) route, just below pinnacles of main massif).

Ecol. On fairly flat crest of ridges or boulders, in dense vegetation of low trees and shrubs of

equal height, at 3240–3670 m, very local. *Fl. fr.* Aug.

Note. Presumably a more or less intermediate hybrid between *R. abietifolium* and *R. buxifolium* var. *robustum*. Almost ripe capsules were found to be full of seeds.

168. *Rhododendron pauciflorum* K. & G. J. As. Soc. Beng. 74, ii (1905) 75; RIDL. Fl. Mal. Pen. 2 (1923) 219; SLEUM. Reinwardtia 5 (1960) 156. — *R. elegans* RIDL. J. Linn. Soc. Bot. 38 (1908) 314, repr. J. Fed. Mal. St. Mus. 2 (1908) 120; *ibid.* 6 (1915) 49, 157; Fl. Mal. Pen. 2 (1923) 220.

var. *pauciflorum*.

Small, epiphytic shrub, with swollen roots and divaricate branches. Branchlets 1–2 mm σ ; upper internodes laxly lepidote and patent-puberulous, 1.5–3 cm. *Leaves* in 3–6-merous pseudowhorls at the upper 2–3 nodes, obovate to obovate-elliptic, more rarely oblanceolate-elliptic, apex rounded, sometimes retuse, or broadly attenuate, rarely apiculate or subacuminate, base \pm broadly cuneate to the petiole, coriaceous, dark to medium green and a little shining above, paler and dull beneath, initially lepidote on both faces, glabrescent above with age, more persistently and subdensely lepidote beneath (scales irregularly lobed or dented at the thin marginal zone, centre \pm distinctly impressed), margin narrowly cartilaginous, a little recurved in dry specimens, 2–3 by 1–1.5 (–1.8) cm, midrib impressed above in the lower $\frac{2}{3}$, broad and obtusely prominent beneath, nerves 3–4 pairs, faintly impressed above and raised beneath, mostly rather inconspicuous; petiole flattened, laxly pubescent initially, glabrescent, 1–2 by c. 1 mm, sometimes hardly discernible from the lamina. *Flowers* solitary or in twos. *Perulae* few, ovate-acuminate, short-subulate or mucronate, acute, glabrous or very finely sericeous dorsally, fimbriate along the margin by caducous scales, up to 1.4 by 0.4 cm, persistent for a long time. *Bracteoles* filiform, up to 1 cm. *Pedicels* rather stoutish, densely short-hairy and stellately lepidote, 8–12 mm. *Calyx* obliquely cup-shaped, shortly obtusely 5-dented, c. 2.5 mm σ . *Corolla* narrow-tubular campanulate, bright red or rose-red, 1.5–1.8 (–2.2) cm long in all, 1.5 cm σ at the limb, mostly sparingly caducously lepidote, rarely quite glabrous outside, glabrous inside, tube straight, 1–1.3 cm, base rounded 4–6 mm σ , gradually widened to 7–8 mm at apex, lobes spreading, broad-obovate to suborbicular, 4–5 mm σ . *Stamens* 10, alternately longer for the length of an anther, the longest slightly surpassing the corolla tube; filaments linear, laxly to subdensely set with longish, spreading, white hairs to the top and on the back of the anther, i.e. on the connective; anthers broad-oblong, 1.5–2 mm. *Disk* low, glabrous. *Ovary* ovoid-conical, densely clothed with scales and whitish hairs, 3–4 by 2 mm; style abrupt with the ovary, glabrous or with some hairs at the very base, 5–6 mm; stigma subcapitate. *Capsule* subcylindric, subdensely hairy and lepidote, (1–)1.5 (–2) by 0.4–0.5 cm, splitting

into 5 thin, somewhat twisted valves.

Distr. *Malesia*: Malay Peninsula (Main Range from Mt Kerbau to Mt Batu Puteh; also on Mt Tahan).

Ecol. Mossy forest, on peaty soil, 1370–2135 m, apparently rather common but rarely in flower. *Fl.* Feb.–Nov.

var. *calocodon* (RIDL.) SLEUM. Reinwardtia 5 (1960) 156. — *R. calocodon* RIDL. J. Fed. Mal. St. Mus. 5 (1914) 38; Fl. Mal. Pen. 2 (1923) 219, f. p. 220.

Corolla laxly covered with rather long whitish hairs outside.

Distr. *Malesia*: Malay Peninsula (Main Range in Selangor: Mt Mengkuang Lebak, Mt Nuang), 1465–1770 m. *Fl.* Feb., May.

Vern. *Lubang pasir*, Selangor.

169. *Rhododendron psammogenes* SLEUM. Reinwardtia 5 (1960) 150.

Small, erect, terrestrial shrub, up to 1 m. Branchlets terete, laxly covered with minute pale scales at the tips, glabrous below; internodes 3–8 (–10) cm. *Leaves* elliptic, broadly attenuate towards the apex which is subacuminate or often almost rounded and very shortly apiculate, base broad-attenuate, more rarely subrotundate, coriaceous, rather stiff, initially lepidote on both faces, gradually glabrescent above, subdensely lepidote beneath (scales dilutely rufescent, minute, variously lobed or dented in the marginal zone, centre impressed), slightly revolute at the edge, 2.5–4 (–5.5) by 1.4–2.8 cm, midrib impressed above, stout and prominent beneath in its lower part, less prominent distally, nerves 5–6 pairs, irregular, rather straight below, \pm obscurely anastomosing, slightly or faintly impressed above, slightly or not raised beneath, veins hardly visible; petiole \pm flattened, thickish, 2–4 mm. *Umbels* 7–9-flowered. *Outer perulae* ovate, inner ones ovate-oblong to subspathulate, membranous, caducously lepidote dorsally, or early glabrous, margin fimbriate or very shortly irregularly lacerate, up to 1 by 0.5 cm. *Bracteoles* linear, laxly lepidote, c. 1 cm. *Pedicels* rather slender, densely clothed with thick, variously lobed scales, 2.5–3 cm at anthesis. *Calyx* oblique, patellar, c. 3 mm σ , irregularly 5-dented, teeth normally short (1 mm), but sometimes up to 3 mm elongate-triangular and acute. *Corolla* funnel-shaped, suboblique, white or of a pale yellow, thin, 3–3.3 cm long in all, densely set with thickish, suborbicular or variously dented scales outside margin of the lobes excepted, subdensely clad with whitish \pm spreading hairs in the lower half of the corolla tube inside, tube cylindric, 1.8–2 cm, at base 3–4 mm σ , hardly widened upwards, lobes spreading, obovate-spathulate, shallowly retuse, 1–1.2 by 0.7–0.8 cm. *Stamens* 10, unequal, attaining \pm half the corolla lobes; filaments linear and \pm densely patently hairy below, much more slender and glabrous distally; anthers oblong, c. 2.5 mm. *Disk* glabrous below, shortly yellowish pubescent at the upper margin. *Ovary* subcylindric, densely

clothed with scales and white, upwards directed hairs, *c.* 5 by 2 mm, gradually attenuate to the style, the latter rather slender, laxly patently hairy and lepidote in the lower $\frac{1}{3}$ to $\frac{1}{2}$, glabrous in the upper part, as long as or slightly longer than the stamens; stigma thick, subturbinate-capitate.

Distr. *Malesia*: W. New Guinea (Balim R. Valley), once found at 2100 m, amongst bracken in unfertile sandy soil. *Fl.* Dec.

Note. A similar form, differing in a higher lepidote style, which is hairy to $\frac{1}{3}$ only, is found in the Lake Habbema region, on sandy soil in forest opening.

170. *Rhododendron vitis-idaea* SLEUM. Reinwardtia 5 (1960) 156.

Slender, epiphytic shrub, 0.6–2 m high. Branchlets 1–2 mm \varnothing , tips densely set with stalked stellate scales, glabrescent and densely verruculose downwards, a little rough to the touch, epilose; internodes 2.5–6 cm. *Leaves* in 3–5-merous pseudowhorls at the upper 2–3 nodes, obovate-elliptic or obovate, sometimes oblong-obovate, apex very broadly attenuate or mostly rounded, not apiculate, base cuneate to the petiole, coriaceous, rigid, subdensely or laxly lepidote on both faces initially, glabrous and shining above with age, lepidote for a long time beneath (scales flat, irregularly stellate-incised at the marginal zone, centre impressed), finally \pm glabrescent and set with impressed blackish points on the under-surface, margin cartilaginous, slightly recurved in dry specimens, 1.5–2.5 (–3.5) by (0.8–)1–1.5 (–2) cm, midrib minutely sunk above, obtusely prominent beneath, nerves *c.* 3 pairs, obsolete above, somewhat raised and curved-anastomosing beneath in full-grown leaves, reticulation 0; petiole subterete, lepidote, 2 (–3) by 0.8–1 mm. *Flowers* solitary. *Perulae* narrow-ovate-acuminate, acute, membranous, glabrous dorsally, margin short-fimbriate by caducous scales, up to 8 by 4 mm, persistent for a long time. *Pedicels* slender, \pm densely clothed with rufous stellate scales and very short spreading hairs, (0.8–)1–1.5 cm. *Calyx* very obliquely disk-shaped, shortly obtusely 5-lobed, *c.* 2.5 mm \varnothing , lepidote outside. *Corolla* tubular, bright red or scarlet, membranous, tube laxly stellate-lepidote and minutely papillose-pubescent outside, glabrous inside, somewhat curved, 1.5–2 cm, at base 3–4 mm \varnothing , gradually dilated to 5–6 mm at apex, lobes \pm spreading, broad-obovate or suborbicular, 5–7 mm \varnothing . *Stamens* 10, slightly exceeding the corolla tube; filaments linear, glabrous; anthers obovate-oblong, 1.8–2 by 1 mm. *Disk* prominent, glabrous below, pubescent at the upper margin. *Ovary* subcylindric, slightly attenuate at the base, gradually tapering to the style, densely shortly patent-hairy and subdensely lepidote, *c.* 4 by 1.5 mm; style slender, \pm as long as the stamens, patently hairy in the lower half; stigma subcapitate.

Distr. *Malesia*: E. New Guinea (Owen Stanley Range; Morobe Distr.: Rawlinson Range).

Ecol. Forest or open hill side, 2195–2590 m. *Fl.* Jan.

171. *Rhododendron rhodostomum* SLEUM. Reinwardtia 5 (1960) 157.

Epiphytic shrub, 0.3–0.6 m; branches divaricate. Branchlets terete, 1–1.5 mm \varnothing , tips densely set with substellate and shortly stalked scales, older parts glabrescent and manifestly verruculose, a little rough to the touch; internodes 2–4 (–6) cm. *Leaves* in 4–5-merous pseudowhorls at the upper 1–2 (–3) nodes, elliptic or obovate-elliptic, rarely broadly obovate-oblong, sometimes obovate, apex broad-attenuate, or rarely nearly rounded (very tip apiculate or mucronulate by a very short thickened gland), base cuneate into the petiole, thin-coriaceous, very young ones lepidote on both sides, mature ones glabrescent and rather dull above, subdensely lepidote for a long time beneath (scales variously dented, angular or obtusely lobed in the narrow marginal zone, thickish and rather large centre impressed, becoming blackish), edge slightly revolute, 2–3.5 by 1–1.8 (–2.1) cm, midrib slightly impressed above in its lower part and raised beneath, nerves sub-inconspicuous; petiole flattened, lepidote, 1–3 (occasionally up to 5) mm. *Flowers* solitary. *Perulae* ovate-acuminate, \pm mucronulate or subulate, membranous, lepidote at the tips dorsally, glabrous elsewhere, margin with caducous scales and subglandular-fimbriate, up to 12 by 5 mm. *Bracteoles* filiform, glabrous, 8 mm. *Pedicels* rather slender, very densely rufous-stellate-lepidote, not hairy at all, *c.* 1 cm. *Calyx* oblique, disk-shaped, lepidote dorsally, very shortly obtusely 5-lobed, *c.* 2.5 mm \varnothing . *Corolla* tubular, fleshy, white, the throat pink, 2.3–2.7 cm long in all, subdensely substellate-lepidote at the tube outside, glabrous inside, tube cylindrical, slightly curved, *c.* 2 cm, base 6–7 mm \varnothing , \pm dilated upwards, lobes broad-obovate or suborbicular, 6–7 mm \varnothing , glabrous, not ciliate. *Stamens* 10, nearly equalling the corolla in length; filaments flattened and linear, glabrous, anthers subobovate-oblong, 2.5 by 1 mm, cells often contracted at the base into a short apiculus. *Disk* prominent, puberulous at the upper margin, glabrous elsewhere. *Ovary* subcylindric, densely very shortly greyish hairy and substellately lepidote, *c.* 5 by 2 mm, gradually attenuate to the style, the latter rather slender, patently hairy in the lower half, glabrous for the rest, \pm equalling the corolla in length; stigma club-shaped. Immature *capsule* fusiform, 2 by 0.3 cm, dense puberulous and laxly lepidote.

Distr. *Malesia*: E. New Guinea (Mt Saruwaged and Rawlinson Range).

Ecol. In mossy bush or mossy bush margin, 1525–3655 m. *Fl.* Feb.–March, June.

172. *Rhododendron alternans* SLEUM. Reinwardtia 5 (1960) 159.

Terrestrial or epiphytic shrub, 2–3 m, divaricately branched. Branchlets terete, 2–3 mm \varnothing , tips laxly stellate-lepidote, older parts early glabrescent and smooth; internodes 4–8 cm. *Leaves* close together in the upper third of the upper internode, *i.e.* the uppermost ones opposite or in a 3 (–4)-

merous pseudowhorl, the other 2 or 3 spiral and somewhat distant from each other, elliptic or ovate-elliptic, more rarely subobovate- or oblong-elliptic, apex shortly and broadly subacuminate, or more rarely almost rounded (apical gland hardly prominent), base broad-attenuate or mostly subtruncate, sometimes subtruncate or subcordate, coriaceous, youngest ones subdensely lepidote on both faces, fully mature ones glabrescent above, remaining lepidote for a long time beneath (scales substellately dented or obtusely lobed in the rather wide marginal zone, centre minute, slightly impressed), cartilaginous at the paler margin, entire or faintly crenulate by impressed scales, 2.5-3.5(-4) by 1.2-1.8(-2) cm, midrib dilated below, impressed above, prominent in the lower half, becoming hardly visible towards the apex of the blade beneath, nerves *c.* 5 pairs, spreading, slightly conspicuous above only; petiole flattened, 1.5-3 by 1-1.5 mm. *Umbels* 3-4-flowered. Outer perulae ovate, subacuminate or obtuse, inner ones ovate-oblong to subspathulate, all sericeous dorsally and fimbriate by caducous scales, not ciliate, up to 1.8 by 0.7 cm. Bracteoles linear, very laxly hairy, up to 1.5 cm. Pedicels rather slender, densely clad with rufous substellate scales and very short whitish hairs, 1.5-2 cm. *Calyx* oblique, disk-shaped, margin wavy and obscurely lobed, lepidote and very shortly hairy, *c.* 2.5 mm ϕ . *Corolla* tubular, red, glabrous in- and outside, 3-3.5 cm long in all, tube cylindrical, rather straight, 2-2.5 cm, at the 5-pouched base *c.* 4 mm ϕ , dilated to 6-7 mm at apex, lobes \pm spreading, obovate-spathulate or nearly orbicular, 7-9 mm ϕ . *Stamens* 10, unequal, the longest nearly as long as the corolla; filaments linear, glabrous; anthers oblong, 2.7 by 1 mm, base sometimes very shortly biappendiculate. *Disk* prominent, glabrous. *Ovary* thick, subovoid-conical, densely clothed with rather short and subpatent yellowish hairs and with scales between these hairs, 4 by 2.5 mm, abrupt with the style, the latter slender, quite glabrous, \pm as long as the stamens; stigma subcapitate. *Capsule* subcylindric, attenuate at both ends, 2-2.8 by *c.* 0.5 cm, subdensely hairy and laxly lepidote, on fruit-pedicel *c.* 2 cm by 1 mm.

Distr. Malesia: Central Celebes (summit of Mt Kambuno), terrestrial in shrub vegetation, or epiphytic in low forest, *c.* 3000 m, common. *Fl.* July.

173. *Rhododendron leptomorphum* SLEUM. Reinwardtia 5 (1960) 160.

Terrestrial shrub, *c.* 2 m high. Branchlets 1.5 mm ϕ , densely stellate-lepidote at the upper internodes, glabrescent and smooth in the lower parts. *Leaves* in \pm 4-merous pseudowhorls at the upper 1-2 nodes, narrow-elliptic or oblong-elliptic, apex shortly acuminate, subacute, base attenuate to the petiole, coriaceous, glabrous and rugulose above at maturity, brown and subdensely lepidote beneath (scales flat, irregularly crenate or substellate-lobed in the marginal zone, the rather large centre impressed), cartilaginous margin

slightly revolute, wavy and subcrenulate, (2-)-2.2-3 by (0.7-)-0.8-1 cm, midrib very narrowly impressed below on the upper surface and prominent beneath, darker coloured, nerves subinconspicuous; petiole subterete, lepidote, 3-4(-5) by *c.* 0.8 mm. *Flowers* solitary. Pedicels densely stellate-lepidote, less densely puberulous, 1.5-2 cm by *c.* 0.6 mm. *Calyx* disk-shaped, limb membranous, reflexed and obscurely dented, *c.* 4 mm ϕ . *Corolla* tubular, scarlet, slightly oblique, *c.* 3 cm long in all, glabrous or with several stellate scales at its base outside, glabrous inside, tube nearly straight, 1.9-2.2 cm, at base slightly saccate, *c.* 6 mm ϕ , dilated to *c.* 1 cm at apex, lobes broadly obovate-spathulate to suborbicular, 8-10 by 7-9 mm. *Stamens* 10, unequal, the longest reaching halfway the corolla lobes; filaments linear below, filiform distally, glabrous; anthers broad-oblong, *c.* 2.5 by 1.2 mm. *Disk* prominent, glabrous. *Ovary* subcylindric, densely shortly yellowish hairy, no scales visible, 4 by 1.8 mm, \pm gradually attenuate to the style, the latter stoutish, quite glabrous, *c.* 2.3 cm or slightly exceeding the stamens; stigma turbinate-capitate.

Distr. Malesia: Eastern Central Celebes (summit of Mt Lumut), once found at *c.* 2280 m. *Fl.* Sept.

174. *Rhododendron pseudonitens* SLEUM. Blumea 11 (1961) 124. — *R. nitens* SLEUM. Reinwardtia 5 (1960) 162, non HUTCH. 1936.

Terrestrial shrub, erect-branching or spreading, usually less than 1 m, but occasionally attaining 2 or more m. Branchlets divaricate, stiff, angular and subdensely appressedly stellate-lepidote at the tips, subterete and glabrescent below; internodes 2-6 cm. *Leaves* spiral and crowded in the upper half or third of the upper 1-2 internodes, the uppermost leaves forming almost a pseudowhorl, obovate or oblong-obovate, apex very broadly and obtusely attenuate or rounded, sometimes very shortly emarginate, base cuneate to the petiole, coriaceous, stiff, glabrous and rugulose above, \pm dull, smooth and subdensely lepidote for a long time beneath (scales small, flat, variously stellate-incised at the marginal zone, centre minute, impressed, blackish), margin very narrowly cartilaginous and revolute, \pm entire, 1.5-2.5(-3) by 0.8-1.5 cm, midrib impressed above, obtusely, thick-prominent in the lower part beneath, nerves *c.* 6 pairs, curved-ascendent and anastomosing, but in full mature leaves impressed above, hardly or not visible beneath, veins laxly reticulate-impressed above; petiole flattened, grooved above, lepidote, 2-3 by 1-1.5 mm, on a thick leaf-cushion. *Umbels* 4-8-flowered. Perulae ovate-acuminate, apex shortly subulate, membranous, lepidote at the dorsal mediane, margin set with early caducous scales, up to 8 by 4 mm. Bracteoles linear, glabrous, *c.* 8 mm. Pedicels rather slender, subdensely clothed with appressed stellate scales, 1.5-2 cm by 0.6 mm at anthesis. *Calyx* oblique, deeply and rather irregularly 5-lobed, lobes narrow-deltoid, acute, appressed to the corolla, membranous, glabrous, (2-)-3-4 mm. *Corolla* tubular, sub-

oblique, dark red, 1.5–1.8(–2) cm in all, densely stellate-lepidote at the tube outside, glabrous inside, tube c. 1.5 cm, base \pm dilated, c. 4 mm ϕ , widened to c. 6 mm at apex, lobes oblique, expanded, suborbicular, c. 5 mm ϕ . *Stamens* 10, subequal, slightly exceeding the corolla tube; filaments linear, glabrous; anthers subquadrate, 1.5 mm. *Disk* glabrous. *Ovary* subcylindric, deeply 5-grooved longitudinally, densely very shortly whitish greyish hairy, with small scales between the hairs, c. 4 by 2 mm; style rather abrupt with the ovary, nearly as long as the stamens, glabrous or with sparse hairs at the very base; stigma oblique, capitate, very shortly 5-lobed. *Capsule* thick-fusiform, oblique at the base, puberulous and lepidote, rather early glabrescent, 1.5–1.8 by 0.6 cm. *Seeds* 2.5 mm including the tailed appendages.

Distr. Malesia: New Guinea (Central Distr.: Murray Pass, Wharton Range), said to be abundant in open grasslands or in glades in forest on top of range, at 2840 m. *Fl.* June–Sept.

175. *Rhododendron helodes* SLEUM. Reinwardtia 5 (1960) 161.

Terrestrial shrub, with robust, divaricate branches, 0.5 m high. Branchlets terete, c. 3 mm ϕ , densely clad with appressed substellate scales at the distal part, glabrescent below; internodes 3.5–8 cm. *Leaves* in 4–6(–8)-merous pseudowhorls at the upper 2–3 nodes, oblong or lanceolate-oblong, rarely subobovate-oblong in the same specimen, apex shortly broad-acuminate, subacute or bluntish, rarely really blunt, apiculate by a gland protruding \pm beyond the margin of the lamina, base \pm broadly and cuneately decurrent into the petiole, rigidly coriaceous, laxly impressed-lepidote or \pm glabrescent above in mature state, more distinctly and persistently lepidote beneath (scales distant from each other on the intervenium, more dense and \pm touching each other towards the base of the lamina and on the petiole, marginal hyaline zone rather large and variously stellate-dentate or -lobed, early disappearing, centre rather small, much impressed), finally glabrescent beneath too leaving lax, impressed, blackish points, margin narrow-cartilaginous, irregularly crenulate by impressed scales or subentire, (2–) 2.5–3.5(–4) by (0.8–)1–1.5 cm, midrib impressed in the lower $\frac{2}{3}$ above, and dilated and obtusely prominent beneath, gradually disappearing apically, 2 pairs of nerves suprabasal and high-ascending, 2–3 other ones from the midrib, not much conspicuous; petiole much flattened, 3–5 by 2–3 mm. *Umbels* (1–)2–4-flowered. Outer perulae few, short, ovate-subulate, inner ones more numerous, broadly obovate-spathulate, shortly acuminate, subacute, first densely rufescent-lepidote, early glabrescent, up to 1.8 by 0.7 cm. Pedicels very densely covered with rufous or copper-coloured stellate scales, but no hairs, 2–3 cm by c. 1 mm. *Calyx* disk-shaped, c. 5 mm ϕ , lepidote dorsally, the membranous margin reflexed and irregularly lobed or lacerate, lobes up to 1 mm and \pm appressed to the corolla. *Corolla* tubular, red or

yellowish red, 3–3.5 cm long in all, subdensely stellate-lepidote outside margin of the lobes excepted, glabrous inside, tube slightly curved, 2–2.5 cm, base saccate-dilated, 6–7 mm ϕ , slightly attenuate above, gradually dilated again to 10–12 mm at apex, lobes erect or somewhat spreading, broadly spatulate or suborbicular, very slightly emarginate, 0.9–1.1 by 0.7–0.9 cm. *Stamens* 10, unequal, the longest as long as the corolla tube; filaments linear, glabrous; anthers obovate, 2 mm. *Disk* prominent, glabrous. *Ovary* subcylindric, rather abrupt with the style, very densely clothed with whitish or yellowish, subhirsute hairs, which are directed forwards and cover numerous scales, c. 8 by 3 mm; style rather slender, c. 2 cm, surpassing the stamens, short-hairy for the lowest 2 mm, glabrous for the rest; stigma capitate.

Distr. Malesia: New Guinea (Lake Habbema region).

Ecol. In low shrubberies on long-grass marshes, open boggy slopes, locally frequent, at 3225 m. *Fl.* Aug.

176. *Rhododendron papuanum* BECC. Malesia 1 (1878) 201; SLEUM. Reinwardtia 5 (1960) 163; Blumea 12 (1963) 108; Jahrb. Rdodod. Ges. Bremen (1963) f. 31. — ? *R. wrightianum* KOORD. var. *piliferum* J. J. S. Nova Guinea 12 (1914) 131. — Fig. 36.

Much branched, epiphytic or terrestrial shrublet, 20–50 cm, with fleshy roots. Branchlets 1–2 mm ϕ , the upper 1–2 internodes subdensely set with minute rufescent stalked scales, glabrescent and minutely verruculose or a little scabrid to the touch in the lower parts, finally quite glabrous; internodes 2–7 cm. *Leaves* in 4–6 merous pseudowhorls at the upper 2–3 nodes, obovate, apex rounded, rarely slightly retuse, base broad-cuneate, coriaceous, glabrous above at full age, subdensely lepidote beneath (scales rather small, variously angled or substellately lobed at the marginal zone, centre dark, small and distinctly impressed), margin slightly revolute, (1–)1.2–1.8 by (0.5–)0.8–1.1(–1.3) cm, midrib impressed above, obtusely prominent in the lower $\frac{1}{2}$ – $\frac{3}{4}$ beneath, \pm disappearing distally, nerves obsolete; petiole somewhat flattened, lepidote, c. 2 by 0.6–1 mm. *Umbels* (1–)2–3-flowered. Perulae membranous, ovate to ovate-oblong, obtuse, glabrous dorsally, fimbriate by caducous scales, up to 6 by 3 mm. Bracteoles filiform, glabrous, up to 6 mm. Pedicels slender, erect, densely clad with shortly stalked stellate rusty scales, practically epilose, c. 1.5 cm at anthesis, up to 2.5 cm in fruit. *Calyx* rusty-lepidote. c. 2.5 mm ϕ , irregularly 5-dented, lobes 1–1.5 (one or two of them up to 2.5) mm, subacute, spreading or reflexed. *Corolla* tubular, deep pink to purplish red or carmine, glossy, 1.3–1.5 cm long in all, subdensely lepidote outside, glabrous inside, tube straight, 0.8–1 cm long, at base c. 3 mm ϕ , slightly widened to apex, lobes suborbicular, 4–5 mm ϕ , \pm spreading at anthesis. *Stamens* 10, c. 1.2 cm; filaments linear, glabrous; anthers obovate, 1 mm. *Disk* low, glabrous. *Ovary* subcylindric, densely stellate-lepidote, completely



Fig. 36. *Rhododendron papuanum* BECC. Mt Nettoti, 1750 m, NW. New Guinea (VAN ROYEN & SLEUMER 7410) (SLEUMER, 1961).

epilose, with 5 deep longitudinal furrows, 4.5 by 1.5 mm, subabrupt with the style, the latter slender, lepidote at the base, laxly patently hairy for the following 2 mm, glabrous for the rest, 6–7 mm in all; stigma dilated, obliquely short-obconical. Submature *capsule* subobovoid-fusiform, densely lepidote, 1.8–2.3 by *c.* 0.4 cm, surmounted by the style (8–10 mm).

Distr. *Malesia*: New Guinea (Vogelkop Peninsula: Arfak, Nettoti and Tamrau Mts, possibly also in the Oranje Mts).

Ecol. Terrestrial in open places on moss-cushions, or epiphyte in mossy forest, (1525–) 1800–2550 m. *Fl.* July–Dec.

177. *Rhododendron acrophilum* MERR. & QUISUMB. Philip. J. Sc. 82 (1953) 333; SLEUM. Reinwardtia 5 (1960) 163.

Shrub, 1 m; branches slender, divaricate. Branchlets 1–2 mm ϕ , terete, covered with flattish, stellate scales at the upper 1–2 internodes, glabrescent in the lower parts; internodes 1.5–4 cm. *Leaves* in \pm 4-merous pseudowhorls at the upper

3–7 nodes, oblong-elliptic, or sometimes rather obovate-elliptic, apex short-acuminate, subacute or subobtuse (terminal gland not protruding beyond the leaf-margin), base \pm broadly cuneate to the petiole, coriaceous, young ones subdensely lepidote on both faces (scales irregularly stellate-lobed or -lacerate at the marginal early disappearing zone, centre slightly impressed), glabrescent above in later stages, more tardily so beneath, edge slightly revolute, 2.5–5 by 1–2 cm, midrib very slightly impressed above, obtusely prominent at least in the lower half beneath, nerves 6–8 pairs, ascending, slightly raised on both sides; petiole flattened, lepidote, 1–2.5 by 1–1.5 mm. *Flowers* mostly solitary, rarely in twos. *Perulae* ovate-oblong to oblong, membranous, lepidote dorsally, especially towards the top, up to 2 by 0.6 cm. *Pedicels* stoutish, subdensely stellate-lepidote, epilose, *c.* 1 cm. *Calyx* obliquely thickened, disk-shaped, obscurely lobed, *c.* 3 mm ϕ . *Corolla* tubular-funnel-shaped, yellowish white, *c.* 3 cm long in all, 5-lobed halfway, sparsely stellate-lepidote all over outside, rather densely whitish

hairy at the lower $\frac{2}{3}$ of the tube inside, tube slightly dilated upwards, 4–5 mm ϕ at the pouched base, lobes erecto-patent, obovate-spathulate, c. 1.5 by 1.2 cm. *Stamens* 10, unequal, 1.7–2 cm; filaments linear and \pm densely white-hairy in the lowest 5–6 mm, glabrescent or glabrous and filiform towards the top; anthers narrow-oblong, thecae very shortly appendiculate, 2.7–3 by 0.8–1 mm. *Disk* glabrous, prominent. *Ovary* cylindrical, rather abrupt with the style, very densely stellate-lepidote, c. 5 by 2 mm; style stout, completely glabrous or with some scales at the very base, 1–1.4 cm; stigma turbinate, with 5 rounded lobes. Submature *capsule* subfusiform-cylindric, rather densely lepidote, 3.5 by 0.5 cm, on pedicel c. 2 cm by 1–1.3 mm.

Distr. *Malesia*: Philippines (Palawan), once found in mossy forest on top of Mt Mantalingahan, Brooke's Point, at c. 1725 m. *Fl.* May.

178. *Rhododendron banghamiorum* (J. J. S.) SLEUM. *Reinwardtia* 5 (1960) 163. — *R. pubigerum* J. J. S. *var. banghamiorum* J. J. S. in Merr. Contr. Arn. Arb. 8 (1934) 123.

Shrub, c. 1.2 m, slenderly branched. Branchlets subterete, laxly lepidote, c. 2 mm ϕ ; internodes 2–5 cm. *Leaves* oblanceolate, set in 5–7-merous pseudowhorls at the upper 2–5 nodes, apex rounded, shortly retuse, base cuneate to the petiole, which is winged to nearly the base by the decurrent lamina, coriaceous, initially subdensely lepidote on both faces, glabrescent above, persistently lepidote beneath (scales small, marginal zone irregularly stellate-lacerate, rather early dissolute, centre small, red brown, impressed), margin mostly slightly revolute, entire or subcrenulate by impressed scales, 2–3.5 by (0.5–) 0.6–1 cm, midrib impressed above, obtusely prominent in the lower half beneath, becoming flat towards the apex of the lamina, nerves and reticulation obscure; petiole flattened, 1–2 by c. 1 mm. *Umbels* 2–3-flowered, sometimes reduced to a solitary flower. *Perulae* ovate-subacuminate, glabrous and shining dorsally, ciliolate, up to 6 by 4 mm. *Bracteoles* filiform below, subspathulate distally, glabrous, c. 8 mm. *Pedicels* rather slender, densely stellate-lepidote, epilose, 1.2–1.5 cm. *Calyx* shortly cup-shaped, mostly very oblique, c. 3 mm ϕ , densely lepidote, lobes obtuse, c. 1 mm. *Corolla* \pm open campanulate, membranous, rose-red, c. 2 cm long in all, lobed \pm half-way, laxly lepidote outside, quite glabrous inside, tube 3–4 mm ϕ at base, gradually widened to c. 1 cm at apex, lobes obovate-subspathulate, 6–7 mm wide. *Stamens* 10, slightly unequal, c. 1.2 cm; filaments linear, subdensely \pm patently hairy below; anthers broadly obovate-oblong, c. 2 by 1.2 mm, obtuse. *Disk* glabrous. *Ovary* ovoid-conical, \pm abrupt with the style, very densely lepidote, c. 4 by 2 mm; style slender, glabrous, 6–8 mm at anthesis; stigma subturbinate-capitate.

Distr. *Malesia*: N. Sumatra (Gajo Lands: Redelong Volcano), c. 1830 m. One collection. *Fl.* Jan.

179. *Rhododendron ripleyi* MERR. Not. Nat. Ac. Nat. Sc. Philad. 47 (1940) 4; SLEUM. *Reinwardtia* 5 (1960) 164.

KEY TO THE VARIETIES

1. Style quite glabrous.
2. Disk hairy at the upper margin. Scales light coloured. **1. var. ripleyi**
2. Disk quite glabrous. Scales dark chestnut brown **2. var. cryptogonium**
1. Style with a ring of short patent hairs at its very base **3. var. basitrichum**

1. var. ripleyi.

Shrub, 1.2–2.5 m; branches terete, divaricate. Branchlets 1–2 mm ϕ , the upper 1–2 internodes subdensely set with flattish scales, older parts quite glabrous, finally covered with a thin grey cork; internodes 2–5 cm. *Leaves* in 4–8-merous pseudowhorls at the upper 2–5(–6) nodes, but mostly 1–2 leaves a little lower than the others, oblong-obovate to oblong-elliptic, rarely elliptic or subobovate-elliptic, apex \pm obtuse, or apiculate by a protruding obtuse gland, base cuneate to broad-attenuate, coriaceous, rather densely lepidote initially on both sides, glabrescent above with age, \pm persistently and distally lepidote beneath (scales small, of a rather light colour, the thin narrow marginal zone irregularly crenate or lobed, centre darker, much impressed, a blackish pit in old leaves), margin finely crenulate by impressed scales and \pm distinctly recurved, (2–)2.5–3.5 by (0.7–)1–1.5(–1.8) cm, midrib slightly impressed above, somewhat prominent but in general rather flattish beneath, nerves 4–5 pairs, spreading, impressed above in old leaves, \pm inconspicuous beneath, or \pm obsolete on both faces; petiole \pm flattened, lepidote, 2–3(–5) by 1–2 mm. *Umbels* (1–)2-, sometimes 3(–4)-flowered. *Perulae* ovate-elliptic, short-acuminate, membranous, glabrous dorsally, very shortly fimbriate, often persistent at the base of the pedicels, up to 1 by 0.5 cm. *Bracteoles* linear, glabrous, up to 1 cm. *Pedicels* stoutish, \pm densely appressedly substellate-lepidote, epilose, 1–2 cm at anthesis. *Calyx* shortly cup-shaped, margin obtusely shallowly 5-lobed, c. 3.5 mm ϕ , lepidote outside. *Corolla* funnellform-campanulate, the base contracted into a short and broad tube, 2.5–3 cm long in all, rose-red, laxly substellate-lepidote outside, glabrous inside, tube c. 1.5 cm long, gradually widened from the base (c. 4 mm ϕ) to 1 cm at apex, lobes subpatent, spathulate-obovate to suborbicular, 0.8–1.3 by 0.6–0.8(–1) cm. *Stamens* 10 (sometimes 8), unequal, the longest reaching halfway the corolla lobes; filaments linear, \pm densely set with longish, white, subpatent hairs for c. 2 mm above the base, glabrous for the rest; anthers broad-oblong, base of each cell somewhat saccate, 2 by nearly 1 mm. *Disk* prominent, short-hairy at the upper margin only. *Ovary* ovoid-conical, abrupt with the style, densely stellate-lepidote, epilose, c. 3.5 by 2 mm; style rather slender, quite glabrous, 8–13(–17) mm; stigma capitate, \pm deeply 5-lobed.

Distr. *Malesia*: N. Sumatra (Gajo Lands: Mt Losir).

Ecol. In mossy jungle, 2500 m. *Fl.* April.

2. *var. cryptogonium* SLEUM. *Reinwardtia* 5 (1960) 164.

Differs by a quite glabrous *disk*, below sparsely to very sparsely hairy filaments and darker scales. *Leaves* as in *var. ripleyi*, but up to 6 by 2.3 cm. *Flowers* cerise red or scarlet.

Distr. *Malesia*: N. Sumatra (Gajo Lands), 1850–3000 m, in ridge scrub, locally common. *Fl.* Jan., Feb.

Note. The dark chestnut scales suggest a hybrid of *R. ripleyi* with *R. malayanum*; they are very dense in the youngest, not yet full developed leaves, touching each other as in *R. malayanum*.

3. *var. basitrichum* SLEUM. *Reinwardtia* 5 (1960) 164.

Style with a ring of short patent hairs at its very base. *Leaves* oblong-obovate, 2.3–3.5 by 0.7–1.2 cm, with a distinct apical gland as in *var. ripleyi*. *Corolla* scarlet.

Distr. *Malesia*: N. Sumatra (Gajo Lands: Mt Kemiri), in ridge scrub at 2800 m. *Fl.* March.

Note. Possibly a hybrid of *R. ripleyi* with *R. pubigermen*.

180. *Rhododendron alticolum* SLEUM. *Reinwardtia* 5 (1960) 164.

Small tree with sparse foliage. Branchlets divaricate, nodose, caducously appressed-lepidote at the upper internodes, older parts early covered with ashy cork; internodes 1.5–2.5 cm long, 1.5–2.5 mm \varnothing . *Leaves* in 3–4-merous pseudowhorls at the upper 1–2 nodes, obovate or elliptic-obovate, apex very broadly attenuate and obtuse or not rarely rounded, base broadly attenuate to the petiole, coriaceous, rather rigid when full-grown, dark green above, yellow-green beneath, glabrescent above, rather laxly lepidote beneath for a long time (scales small, marginal zone very thin, early dissolute, variously dented or lobed, centre minute, dark, impressed), edge narrowly cartilaginous, (2–)2.5–4 by (1.2–)1.5–2.3(–2.7) cm, midrib narrow and impressed above in the lower, flat or slightly raised in the upper part above, as thick and prominent as the petiole, gradually less so apically, nerves in 6–7(–8) pairs, \pm irregularly curved-ascending, anastomosing, faintly impressed in old leaves above, a little prominent beneath, reticulation lax, visible beneath only; petiole somewhat flattened, grooved above, 5–7(–9) by 1–1.5 mm. *Umbels* (1–)2–3-flowered. *Perulae* ovate-acuminate, laxly lepidote dorsally. *Bracteoles* filiform below, slightly dilated above, c. 1 cm. *Pedicels* rather slender, laxly lepidote, 1.5–2 cm. *Calyx* obliquely patellar, irregularly and shortly 5-dented, c. 4 mm \varnothing . *Corolla* tubular in general, somewhat funnellform-dilated towards the limb, 5–5.5 cm long in all, apparently red, laxly sub-stellate-lepidote at the tube outside, glabrous inside, tube slightly curved, c. 4 cm long, at base c. 5 mm \varnothing , widened upwards to c. 1 cm, lobes

\pm expanded, obovate-spathulate, c. 1.5 by 1–1.3 cm. *Stamens* 10, unequal, the longest attaining half the length of the corolla lobes; filaments linear and laxly papillose-puberulous below, more filiform and quite glabrous distally; anthers oblong-obovate, c. 2.5 by 1 mm. *Disk* very prominent, glabrous. *Ovary* obovoid-cylindric, very densely lepidote, c. 6 by 2 mm, rather abruptly tapering to the style, the latter rather slender, lepidote but at the very base, glabrous for the rest, slightly exerted; stigma thick, subcapitate. *Capsule* subcylindric, narrowed towards the base, exclusively subdensely lepidote, submature 2.2 by 0.5–0.6 cm.

Distr. *Malesia*: New Guinea (Central Distr.: Mt Albert Edward), once found, c. 3600 m. *Fl.* May–July.

Note. Growths together with *R. culminicolum var. culminicolum*, and differs from it by larger corollas and an entirely epilose ovary. Possibly only a variety of *R. culminicolum* or a local hybrid of it with another species.

181. *Rhododendron pyrrophorum* SLEUM. *Reinwardtia* 5 (1960) 165.

Slender, much divaricately branched shrub. Branchlets terete, c. 1 mm \varnothing , laxly to subdensely set with flat appressed scales but at the ultimate internodes, epilose, older parts glabrescent and smooth; internodes 2–6 cm. *Leaves* in 5–7-merous pseudowhorls at the upper 1–2 nodes, oblanceolate, apex rounded-obtuse, base cuneate and somewhat decurrent into the petiole, coriaceous, very young ones subdensely but distantly lepidote on both faces, mature ones glabrescent, blackish punctulate, minutely rugose and \pm dull above, subdensely persistently lepidote beneath (scales irregularly crenate, lobed or shortly incised in the marginal chestnut brown zone, centre darker and slightly sunk), edge shortly distinctly revolute, 2.5–4 (–4.5) by 0.5–1(–1.2) cm, midrib markedly sunk above, stoutish and much prominent beneath, nerves inconspicuous; petiole flattened, densely lepidote, 2–4 by c. 1 mm. *Flowers* solitary or in twos. *Perulae* ovate-oblong, membranous, glabrous dorsally, lustrous, margin with early caducous scales, up to 8 by 4 mm. *Bracteoles* linear-filiform, glabrous, c. 6 mm. *Pedicels* rather slender, densely stellate-lepidote, epilose, 1–1.5 mm. *Calyx* patellar, very oblique, obscurely sub-acutely 5-lobed, densely lepidote dorsally, 2.5 mm \varnothing . *Corolla* campanulate, thin, fiery red, 5-lobed halfway, 1.5–1.8 cm long in all, tube at base c. 4 mm \varnothing , gradually dilated to c. 1.5–2 cm at apex, subdensely or more laxly stellate-lepidote outside, glabrous inside, lobes broadly obovate-spathulate, slightly spreading, 6–8 mm wide. *Stamens* 10, unequal, reaching halfway the corolla lobes; filaments linear, slightly dilated at the base, becoming filiform distally, quite glabrous; anthers elliptic, c. 1.8 by 1 mm. *Disk* prominent, glabrous. *Ovary* ovoid-conical, very densely stellate-lepidote, 3 by 1.5 mm, very abrupt with the style, the latter rather slender, glabrous, c. 8 mm; stigma obconical, deeply 5-lobed.

Distr. *Malesia*: N. Sumatra (Gajo Lands: Mt Goh Lembuh), once found on forest ridge, 1850 m. *Fl.* Feb.

182. *Rhododendron lutesquamatum* SLEUM. Reinwardtia 5 (1960) 166; *Blumea* 11 (1961) 125; *ibid.* 12 (1963) 108.

Slender shrub up to 3 m, with stiff, erect, at apex divaricate branches. Branchlets 1–2 mm σ , densely clothed with subsessile, yellowish, substellate scales in the young, somewhat flattened parts, lower parts terete, glabrescent, brownish and a little rough to the touch; internodes (2–)4–7 cm. *Leaves* in 3-merous pseudowhirls at the upper 4–6 nodes (one or the other leaf occasionally on the internode), or opposite, mostly elliptic-oblong, or partly subovate- or obovate-elliptic, shortly acuminate towards the apex, the very apex \pm obtuse, base attenuate to the petiole, \pm coriaceous, medium green above, very pale below, in submature state subdensely set with yellow scales which are thickened and raised above, somewhat impressed beneath, at maturity glabrescent and \pm smooth above, \pm persistently lepidote beneath (scales rather small, dense but not touching each other, markedly impressed, variously substellate-dented or lobed in the thin, early caducous marginal zone, centre minute), margin very shortly revolute and minutely crenulate by impressed scales, (2.3–)2.5–3.5(–4) by (0.8–)1–1.5 cm, midrib narrowly impressed above, much prominent below in the lower, less so in the upper part, nerves 4–5 pairs, slightly raised beneath only, or subinconspicuous; petiole subterete, lepidote, 3–5 by *c.* 1 mm. *Umbels* 3–4-flowered. Outer perulae ovate, inner ones ovate-oblong, dorsally lepidote at the apex, glabrous elsewhere, margin set with caducous scales, up to 7 by 4 mm. Bracteoles filiform, up to 6 mm. Pedicels stoutish, *c.* 10 mm at anthesis, very densely clothed with yellow substellate scales. *Calyx* patellar, obscurely lobed or wavy, densely lepidote externally, *c.* 3 mm σ . *Corolla* tubular, suboblique, *c.* 10 mm long in all, tube at base *c.* 3 mm σ , hardly dilated distally, red or pale pink, very densely yellow-lepidote at the tube, laxly so at the lobes outside, glabrous inside, lobes 4, erecto-patent, suborbicular, *c.* 3.5 mm σ . *Stamens* 10, *c.* 8 mm; filaments filiform, base dilated, glabrous; anthers obovate-truncate, 1 mm. *Disk* glabrous. *Ovary* subcylindric, very densely clad with substellate, yellow scales, 3 by 2 mm; style abrupt, slender, glabrous, 4 mm; stigma subcapitate, shortly 5-lobed. *Capsule* cylindric, very densely lepidote, 1.3–1.5 by 0.5 cm, valves finally recurved and twisted.

Distr. *Malesia*: E. New Guinea (Morobe Distr.: Edie Creek Road, above Wau), 1830–2060 m, frequent there on land slides respectively old gold workings and high, clayey road banks. *Fl.* fr. May–July.

183. *Rhododendron inconspicuum* J. J. S. Med. Rijksherb. n. 25 (1915) 1; Nova Guinea 12 (1917) 499; *ibid.* 12 (1918) t. 194; KANEH. & HATUS. Bot. Mag. Tokyo 56 (1942) 479; SLEUM. Reinwardtia

5 (1960) 167; *Blumea* 11 (1961) 125; *ibid.* 12 (1963) 108.

Erect, slender, rather compact shrub, 1–3(–5) m, or slender tree, occasionally up to 10 m, much divaricately branched; bark pale green. Branchlets stoutish, 1.5–2 mm σ , terete, reddish, upper internodes densely covered with substellate \pm stalked scales, lower ones glabrescent, minutely warty and rough to the touch, early covered with cork; internodes 1.5–4 cm. *Leaves* partly assembled at or near the upper 3–4 nodes in 3-merous pseudowhirls, partly scattered in the upper half of the internodes, elliptic or ovate-elliptic, more rarely ovate, or partly obovate- or oblong-elliptic, apex broadly attenuate, obtuse or sometimes rounded, base cuneate to rounded, rarely subcordate, coriaceous, rather dark green above, much paler and often yellowish green or brownish beneath, very densely lepidote initially on both faces, early glabrescent but rather densely marked with blackish minute pits above, more persistently and densely lepidote beneath (scales roundish to angular, distant, or only partly touching each other with the thin, \pm large marginal zone, which goes rather early and is irregularly crenate or shortly substellate-lobed, centre dark yellow, \pm thickish and a little impressed), margin subcartilaginous, \pm distinctly crenulate, slightly or not revolute, (1–)1.2–2.4(–3.5) by (0.6–)0.8–1.5(–2) cm, midrib narrowly sunk above, much prominent beneath in the lower part, less so distally, nerves 4–6(–8) pairs, spreading, faintly impressed above and raised beneath in fully mature leaves, often \pm inconspicuous; petiole somewhat compressed dorsally, densely lepidote, 1–2 (rarely up to 3) mm. *Umbels* 3–5(–7)-flowered. Perulae ovate, outer ones acute or apiculate, inner ones \pm obtuse, thin-membranous, with some scales on the dorsal middle line, or quite glabrous and shining, margin very shortly irregularly dented or fimbriate (not ciliate!), up to 10 by 4 mm. Bracteoles linear below, subspathular apically, scantily lepidote, up to 1 cm. Pedicels rather slender, very densely set with substipitate scales, (8–)10–14 mm. *Calyx* disk-shaped, irregularly, very shortly and obtusely 5-lobed, densely lepidote dorsally, 2.5–3.5 mm σ . *Corolla* obliquely wide-tubular, 1.1–1.3(–1.6) cm long in all, pink, red, or bright crimson, very densely covered with thickish, substellate, yellow scales outside, glabrous inside, tube rather straight, 0.7–1.2 cm long, at base *c.* 4 mm σ , widened to *c.* 6 mm at apex, lobes \pm erecto-patent, obliquely suborbicular, 3–4.5 mm σ . *Stamens* 10, unequal, \pm reaching halfway the corolla lobes; filaments filiform, glabrous; anthers obovate-subquadrate, 1 mm. *Disk* low, glabrous. *Ovary* ovoid-conical, very densely set with thickened suborbicular scales, 3–4 by 1.5–2 mm, rather abruptly tapering to the style, the latter stoutish, quite glabrous, \pm as long as the ovary; stigma subcapitate, deeply 5-lobed. *Capsule* subfusiform-cylindric, longitudinally 5-ribbed, somewhat curved, (1.2–)1.5–1.7 cm by 4–5 mm, densely lepidote, crowned by the subsersistent style (4–5 mm). *Seeds* *c.* 3 mm including the fine tail-like

appendages.

Distr. *Malesia*: New Guinea (Vogelkop Peninsula; Arfak Mts; along the Main Range to Mt Dayman in Milne Bay Distr.).

Ecol. In mossy forest or forest openings, or in *Vaccinium*-shrubbery, apparently not rarely in woody growth of old landslides, also on edge of deep gully or very steep mountain side with grassy slopes, shrubs and stunted trees in full sun, often on infertile sandy soil, sometimes on limestone ridges, locally common, 1800–3400 m. *Fl. fr.* Jan.–Dec.

Vern. *Kanamungar, rohn*, Enga: Poio and Kepilam.

Note. Similar in habit to 94. *R. yelliottii* WARB. (subsect. *Albovireya*) and sharing with that species many foliar and floral characters. The main differences between the two species are: in *R. inconspicuum* the scales on the undersurface of the mature leaves are \pm dense, but in general distant from, and touching each other but occasionally or for a small number; the perulae are caducously lepidote along the dorsal middle line, fimbriate, but not properly pubescent at all, mostly quite glabrous and \pm shining, whilst in *R. yelliottii* the scales are much denser, generally all of them touching each other; the perulae are lepidote and shortly subsericeous-pubescent dorsally, the margin manifestly ciliate. Much related to *R. luteosquamatum*, which is perhaps only a variety of *R. inconspicuum*.

184. *Rhododendron lamii* J. J. S. Nova Guinea 18 (1936) 96, t. 20, 1; SLEUM. Reinwardtia 5 (1960) 168.

Lax shrub with long branches, up to 2 m. Branchlets terete, 5–6 mm ϕ , upper internodes laxly lepidote, lower ones with the thick cushions of fallen leaves and an irregularly warty cork; internodes 0.8–1.7 cm. *Leaves* in crowded 6–7-merous pseudowhorls, broad-elliptic-obovate, apex broadly subacuminate or mostly obtuse to rounded, with a thick and somewhat protruding gland, base broadly attenuate and decurrent into the petiole, subsessile, stiff-coriaceous, initially subdensely lepidote on both faces (scales small, marginal zone narrow, irregularly substellate-lobed or -crenate, centre slightly or hardly sunk), early glabrescent above, less quickly so beneath, edge distinctly crenulate, a little or not recurved, 1.8–3.3 by (0.8–)1–1.8 cm, midrib faintly impressed above, rather flat beneath, nerves 4–6 pairs, erecto-patent, rather obscure on both sides, reticulation subinconspicuous; petiole flattened, 1–2 by 3–4 mm. *Umbels* 3–4-flowered. Perulae relatively large, membranous, glabrous dorsally, outer ones ovate, apiculate, c. 1 by 0.8 cm, more inner ones ovate-oblong, 2–3.5 by c. 1.5 cm, innermost ones oblong-obovate or -spathulate, up to 5 by 2 cm, not fimbriate. Bracteoles linear, glabrous, up to 2 cm by 1 mm. Pedicels rather densely lepidote, epilose, c. 1 cm by 1 mm at anthesis. *Calyx* oblique, disk-shaped or rim-like, shortly subacutely 5-lobed, c. 4 mm ϕ . *Corolla* funnel-shaped, dark red, rather fleshy, glabrous in-

outside, 5-lobed nearly halfway, c. 3 cm long in all, tube at base c. 4 mm ϕ , gradually dilated to c. 1 cm at apex, limb spreading to 4.5 cm ϕ , lobes obovate-suborbicular, 1.2–1.5 cm ϕ . *Stamens* 10, unequal, slightly exserted; filaments linear, dilated above the base, glabrous; anthers obovate, base subacutely attenuate into 2 appendages which are very close together, c. 3.5 by 1.8 mm. *Disk* prominent, glabrous. *Ovary* subcylindric, 6 by 2.5–3 mm, very densely lepidote, tapering to the stoutish glabrous style, which somewhat exceeds the stamens in length; stigma obconical, distinctly lobed. *Capsule* thick-fusiform, c. 2.5 by 0.7 cm, on pedicel nearly 3 cm by 2 mm.

Distr. *Malesia*: W. New Guinea (Mt Doorman), on open slope with rocks, 3280 m. *Fl. fr.* Oct.

185. *Rhododendron porphyranthes* SLEUM. *Blumea* 12 (1963) 108.

Weak, erect, 1-few-stemmed, terrestrial shrublet, 0.3–0.5 m, few-branched distally. Branchlets slender, young ones purplish, laxly lepidote; internodes 3–9 cm by 1–2 mm. *Leaves* 4–6 on each of the upper 2–3 internodes, 3 or 4 of them laxly arranged in the upper third of the internode, 1 or 2 near the top, obovate to elongate-obovate, apex rounded, sometimes a little emarginate, base cuneate to the petiole, immature ones subdensely or more laxly lepidote on both faces, mature ones thin-coriaceous, shining, early glabrescent above, tardily so beneath (scales rather small, flattish, marginal zone angular or stellate-dented to various degree, centre small and impressed), edge slightly revolute and subcrenulate by impressed scales, 3–4.5(–5) by 1.5–2(–2.3) cm, midrib slightly grooved in the lower, flat in the upper part above, as thick as the petiole at the base, gradually decreasing upwards beneath, nerves 3–4 pairs, rather obscure, no reticulation; petiole winged in the upper part by the decurrent lamina, subterete below, (6–)7–10 by c. 1 mm. *Umbels* 2-flowered. Flower bud oblongoid, c. 2 by 0.8 cm; outer perulae ovate, distinctly keeled, inner ones obovate to spatulate, all shining and laxly lepidote dorsally, fimbriate by early caducous scales, up to 1.2 by 0.7 cm. Pedicels slender, subdensely substellate-lepidote, 1 cm. *Calyx* oblique, patellar, wavy, c. 2 mm across. *Corolla* subcampanulate-tubular, \pm zygomorphous, nodding, waxy, magenta in fresh specimens, lustrous, quite glabrous, c. 2.3 cm long in all, tube rather straight, 1.5–1.8 cm, at base c. 3 mm ϕ and distinctly 5-pouched, dilated to c. 6 mm at apex, lobes erect, broadly obovate-spathulate, 6–8 mm ϕ . *Stamens* 10, reaching halfway the corolla lobes; filaments linear, glabrous; anthers subovate-elliptic, base obtuse, c. 2 by 1.5 mm. *Disk* prominent, glabrous. *Ovary* subcylindric, 2.5 by 1.2 mm, tapering to the style, the latter rather slender, glabrous, 7–8 mm; stigma clavate.

Distr. *Malesia*: W. New Guinea (Arfak Mts: Mt Sarumot near Iray, Anggi Gigi Lake), one collection.

Ecol. *Nothofagus* forest at 2320 m, locally rare. *Fl.* Jan.

186. *Rhododendron simulans* SLEUM. Reinwardtia 5 (1960) 168. — *R. wrightianum* KOORD. var. *ovalifolium* J. J. S. Nova Guinea 18 (1936) 94, p.p.

Shrub, c. 0.7 m; branches rather robust, covered with a blackish bark. Branchlets terete, tips densely set with stalked scales, lower parts glabrescent, rather densely verruculose and somewhat scabrid, 1.5–2 mm ϕ ; internodes 2–6 cm. *Leaves* crowded at the ultimate 2–3 nodes or in 3–4 merous pseudowhorls, lanceolate or oblong or subobovate-oblong, apex short-acuminate, subacute, the terminal gland hardly prominent, cuneate towards the base in the petiole and \pm decurrent, the very base often subtruncate, thick-coriaceous, stiff, fully mature ones here and there with a flat scale above, or mostly quite glabrescent, subdensely lepidote beneath (scales variously angular or lobed, flat, centre small, impressed in minute elevations of the epidermis), margin cartilaginous, distinctly revolute especially towards the base, 1.5–2 by 0.6–1 cm, midrib impressed above, robust in the lower part and \pm as thick as the petiole beneath, gradually narrowed upwards, nerves inconspicuous; petiole subterete, 2–3 by c. 1 mm. *Umbels* 2(–3, very rarely up to 4)-flowered. Perulae membranous, outer ones subulate, inner ones ovate-acuminate, apex subulate-attenuate, quite glabrous and glossy, up to 2 by 0.6 cm. Pedicels stoutish, densely set with rufous stellate scales, no hairs, c. 1.5 cm. *Calyx* obliquely disk-shaped, red, very shortly irregularly 5-dented, lepidote dorsally, c. 3 mm ϕ . *Corolla* tubular below, funnel-shaped apically, rather fleshy, bright or fiery red, with a scale here and there, or mostly glabrous outside, glabrous inside, c. 2.5 cm long in all, tube rather straight, 1.6–2 cm long, base 5-saccate, c. 5 mm ϕ , widened to 7–10 mm at apex, lobes a little spreading, broadly obovate or suborbicular, 7–10 mm ϕ . *Stamens* 10, subequal, 2.2–2.4 cm long; filaments linear, c. 1 mm wide at the base, glabrous; anthers elliptic, 2–2.5 by 1 mm. *Disk* very prominent, glabrous. *Ovary* subovoid-cylindric, very densely rufous-stellate-lepidote, \pm gradually attenuate to the style, c. 5 by 2.5 mm; style stoutish, glabrous, c. 1.7 cm; stigma thick-obconical, manifestly 5-lobed. *Capsule* subcylindric, 2–2.3 by 0.6 cm, the thin valves twisted, pedicel c. 2 cm by 1 mm.

Distr. *Malesia*: New Guinea (Mt Doorman), on steep open slopes with rocks, 3300–3500 m. Fl. Oct.

187. *Rhododendron ultimium* WERNH. Trans. Linn. Soc. II, Bot. 9 (1916) 99; SLEUM. Reinwardtia 5 (1960) 169.

Small shrub. Branchlets c. 2 mm ϕ , pruinose and subdensely covered with substellate scales at the ultimate internodes, glabrescent, with numerous thick cushions of fallen leaves; internodes 2.5–6(–8) cm. *Leaves* rather densely spirally arranged along the upper internodes, broad-elliptic to elliptic-obovate, apex \pm rounded, with a small protruding apical gland, base broad-attenuate to the petiole, coriaceous, stiff, rather laxly to subdensely lepidote initially on both

sides, early glabrescent above, \pm persistently lepidote beneath (scales rather small, flat, suborbicular, marginal zone large, thin, variously angled or substellate-dented or crenate, centre small, dark faintly impressed), margin minutely crenulate and slightly revolute, (1.8–)2–2.7 by (1–)1.4–1.9 cm, midrib slightly impressed above, broad and obtusely prominent beneath in the lower part, nerves subinconspicuous; petiole subterete or somewhat flattened, 2–3(–4) by 1–2 mm. *Umbels* (2–)3–4-flowered. Outer perulae ovate, inner ones obovate to spatulate, apex short-acuminate, or obtuse, membranous, entirely glabrous, outer ones 1–1.5, inner ones 2–2.5 by 0.8–1.5 cm. Bracteoles linear, glabrous, up to 1.8 by 1 mm. Pedicels densely substellate-lepidote, epilose, 1.2–1.5 cm by 0.8 mm. *Calyx* obliquely disk-shaped, obscurely lobed, lepidote dorsally, c. 3 mm ϕ . *Corolla* funnel-shaped in outline, 3.5–4.5 cm long in all, rose-red, rather fleshy, glabrous in- and outside, tube straight, 2–2.5(–3) cm long, at base c. 5 mm ϕ , widened to 9–10 mm at apex, lobes broad-obovate to suborbicular, erectopatent, 1.4–1.7 by 1.2–1.3(–1.5) cm. *Stamens* 10, unequal, reaching \pm halfway the corolla lobes; filaments linear, glabrous; anthers obovate-oblong, c. 2.8–3 by 1.3–1.5 mm, each cell ending in a short basal apiculus. *Disk* prominent, glabrous. *Ovary* subcylindric, densely substellate-lepidote, c. 6 by 2.5 mm, tapering to the style, the latter lepidote at the base, glabrous for the rest, slightly longer than the stamens; stigma short-obconical.

Distr. *Malesia*: New Guinea (Mt Carstensz), 3200–4100 m, twice found.

188. *Rhododendron brassii* SLEUM. Reinwardtia 5 (1960) 170.

Lax, suberect shrub, 1–2.5 m. Branches 6–8 mm ϕ , greyish corticate. Branchlets subterete, reddish and pruinose when dry, smooth, tips laxly clothed with small substellate early caducous scales; internodes 5–16 cm. *Leaves* spiral, rather equidistant along the upper internodes, elliptic or elliptic-oblong-obovate, apex broadly obtusely attenuate or rounded, apiculate by a thick \pm prominent gland, cuneate towards the base and somewhat decurrent on the petiole, coriaceous, stiff, apparently lepidote initially on both faces, very early glabrescent and with minute pits above, \pm persistently and subdensely lepidote beneath (scales small, suborbicular, variously substellate-angular or -dented in the marginal zone, centre minute, slightly impressed), edge cartilaginous and distinctly subserrulate-crenulate, 3–4(–5) by 1.8–2.7 cm, midrib impressed above especially at base and obtusely prominent beneath, nerves 6–8 pairs, ascending at an angle of c. 45°, slightly but markedly impressed above, raised or subinconspicuous beneath, veins laxly reticulate, visible mostly beneath only; petiole flattened, 3–6 by 1.5–2 mm. *Umbels* 3–5(–6)-flowered. Flower buds ovoid-oblong, 3.5 by 1.2 cm, perulae membranous, quite glabrous, outer ones ovate, obtuse and shorter, inner ones ovate-oblong, subacuminate, 2–3.5 by c. 1.5 cm. Bracteoles linear, c. 2 cm by

1-1.5 mm. Pedicels laxly substellate-lepidote below, densely to very densely so upwards, epilose, c. 2 cm by c. 1 mm. *Calyx* very obliquely disk-shaped, shortly (1 mm) obtusely 5-lobed, lepidote dorsally, 4-5 mm σ . *Corolla* funnellform-tubular, somewhat oblique and fleshy, orange at the tube, yellowish at the lobes, or (greenish) yellow or orange suffused with red, glabrous in- and outside, (4-)4.5-5(-5.5) cm long in all, tube c. 3 cm long, rather straight, at base a little pouched, 5-6 mm σ , widened to 1-1.5 cm at apex, lobes erecto-patent, broadly obovate-spathulate or suborbicular, 1.2-1.5 by 1-1.5 cm. *Stamens* 10, very unequal, the longest reaching halfway the corolla lobes; filaments linear, glabrous; anthers obovate-elliptic, 2.5-3 by 1.3-1.5 mm, cells with a basal apiculus. *Disk* prominent, glabrous. *Ovary* subovoid-cylindrical, very densely clothed with rufous suborbicular or variously angled and flat scales, c. 5 by 2.5 mm, gradually tapering to the style, the latter rather slender, laxly lepidote at the base for c. 1 cm, glabrous for the rest, shortly exerted from the corolla at anthesis; stigma thick-capitate. Submature *capsule* obliquely fusiform-cylindric, 1.5 by 0.6 cm; pedicel c. 3 cm by 1.5 mm.

Distr. *Malesia*: W. New Guinea (Lake Habbema vicinity and Wamena R. on N. slope of Mt. Wilhelmina).

Ecol. Shrubby forest borders, or grassy edges of *Podocarpus* forest, or open shrubberies on a ridge, locally plentiful, 3200-3225 m. *Fl.* Aug.-Sept.

189. *Rhododendron subuliferum* SLEUM. Reinwardtia 5 (1960) 171.

Epiphytic or terrestrial shrub, 1-2 m. Branches terete, c. 5 mm σ , with grey bark. Branchlets c. 2 mm σ , rather densely clothed with rufous substellate and very shortly stalked scales at the upper internodes, early glabrescent in the lower parts, which are a little rough to the touch; upper internodes 1-3, lower ones 3-9 cm. *Leaves* in 4-6-merous pseudowhorls at the upper 1-2 nodes, obovate, more rarely oblong-obovate, apex \pm rounded-obtuse, sometimes minutely emarginate, the apical gland subinconspicuous, base cuneate to the petiole, coriaceous, rigid, fully developed ones glabrous, and densely rugulose above, densely lepidote beneath (scales variously angular or obtusely substellate-dented in the thin and early caducous marginal zone, small persistent centre thickened, reddish brown and slightly impressed), margin subcartilaginous, minutely crenulate or wavy and subentire, slightly or not revolute, 2-3(-3.5, very rarely up to 4) by 1-1.5 (-2.2) cm, midrib slightly impressed above, obtusely thick-prominent in the lower part beneath, nerves 3-4 pairs, subinconspicuous; petiole lepidote, flattened, 3-4 by 1-1.5 (rarely up to 2) mm. *Flowers* in twos, rarely solitary. Outer perulae narrow-subulate, 1-1.5 cm long, inner ones ovate, tapering into a subulate acumen, 0.8-1.2 by 0.5-0.6 cm, membranous, glabrous dorsally, margin with early caducous scales, often still present at anthesis. *Bracteoles* filiform, c. 1 cm.

Pedicels rather slender, densely clothed with substellate scales and very short hairs, 1.2-1.5 cm by 0.6 mm. *Calyx* patellar, oblique, very shortly irregularly 5-dented and revolute, lepidote and pubescent externally, ciliolate, c. 3 mm σ . *Corolla* tubular, (4-)4.5-5(-5.5) cm long in all, very laxly and caducously lepidote or quite glabrous outside, glabrous inside, dark red, tube 3-4 cm long, straight, at the base with 5 minute pouches, 4-5 mm σ , gradually dilated to 0.8-1(-1.3) cm at apex, lobes erect, broadly spathulate-obovate or suborbicular, 1-1.3(-1.5) by 0.8-1.3 cm. *Stamens* 10, unequal, the longest a little exerted from the corolla; filaments linear, 1 mm wide at the base, glabrous; anthers broad-oblong or obovate-oblong c. 3 by 1 mm, cells obtuse or provided with an indistinct basal apiculus. *Disk* prominent, glabrous. *Ovary* subcylindric, densely substellate-lepidote, 6-8 by c. 2 mm, gradually attenuate to the style, the latter quite glabrous, as long as or slightly longer than the corolla; stigma subcapitate.

Distr. *Malesia*: New Guinea (Bele R. Valley, NE. of Lake Habbema).

Ecol. High epiphyte, frequent in midmountain forest or, apparently terrestrially, frequent in old sandy clearings of mossy forest, at 2300 m. *Fl.* Oct.-Nov.

190. *Rhododendron scarlatinum* SLEUM. Reinwardtia 5 (1960) 168.

Apparently small and slender shrub; branches with grey bark and thick cushions of the fallen leaves. Branchlets terete, 1-1.5 mm σ , laxly substellate-lepidote and pruinose at the upper internodes, lower parts glabrescent and smooth; internodes 2.5-5 cm. *Leaves* partly crowded in pseudowhorls at the upper 1-2 nodes, partly spirally arranged along the internodes, elliptic, apex \pm rounded, not rarely very shortly apiculate, base nearly rounded or broadly attenuate, thin-coriaceous, firm, laxly lepidote initially, glabrescent and a little rugose with age above, laxly and \pm persistently lepidote beneath (scales flat, suborbicular, variously angular or irregularly dented in the rather wide chestnut coloured marginal zone, centre minute, darker, hardly impressed), margin subcartilaginous, undulate-crenulate or subentire, 2-3 by 1-1.8 cm, midrib very narrowly impressed above, broader, \pm flattened and faintly or not prominent beneath, nerves subinconspicuous; petiole compressed dorsally, 2-3 by 1-2 mm. *Umbels* 3-6-flowered. *Bracteoles* filiform, glabrous, c. 1.3 cm. Pedicels subdensely clothed with stellate scales and very short patent hairs, 1.5-2 cm by 0.5 mm. *Calyx* disk-like, irregularly and very shortly 5-dented (but one or the other tooth may be elongated), lepidote and hairy dorsally, c. 3 mm σ . *Corolla* tubular, scarlet, c. 3.5 cm long in all, glabrous in- and outside, tube straight, cylindric, c. 2.5 cm long, base 5-pouched, 5-6 mm σ , hardly widened upwards, lobes erecto-patent, broadly obovate-spathulate, c. 1 by 0.7-0.8 cm, very slightly retuse, *Stamens* 10, unequal, 2.7-3.3 cm; filaments linear, glabrous; anthers oblong-



Fig. 37. *Rhododendron atropurpureum* SLEUM. Mt Wilhelm, E slope at 3600 m, E. New Guinea (SLEUMER 4160) (SLEUMER, 1961).

obovate or nearly obovate, 3 by 1.5 mm, cells attenuate towards the base, apiculate at the very base. *Disk* prominent, glabrous. *Ovary* subovoid-cylindrical, very densely substellate-lepidote, epilose, rather abrupt with the style, the latter slender, glabrous, 2.8–3.2 cm; stigma obconical. Immature *capsule* subcylindric, 1.5 by 0.4 cm.

Distr. *Malesia*: Central Celebes (Latimodjong Range: W. slope of Mt Rante Mario), once found in forest, 2950 m. *Fl.* June.

191. *Rhododendron atropurpureum* SLEUM. Reinwardtia 5 (1960) 172; Blumea 11 (1961) 125; Jahrb. Rhodod. Ges. Bremen (1963) f. 25; Blumea 12 (1963) 109; *ibid.* 12 (1964) 340. — **Fig. 37.**

Erect shrub up to 3 m. Branchlets c. 2.4 mm ϕ , densely clad with substellate, shortly stalked rufescent scales and very short papillose hairs at the upper internodes, older parts glabrescent and minutely warty; internodes 3.5–9 cm. *Leaves* spirally arranged in the upper $\frac{2}{3}$ of 2 internodes, the upper 2–3 leaves \pm in a pseudowhorl, broad-elliptic or ovate-elliptic, sometimes subobovate-elliptic, apex broad-attenuate, subacuminate or mostly \pm rounded-obtuse, the thick apical gland a little prominent, base rounded or mostly slightly cordate, coriaceous, rigid, fully mature ones still with the remains of scales, a little rough, finally entirely glabrous above, subdensely lepidote beneath (scales small, membranous marginal zone irregularly crenate or denticulate, early dissolute – scales seemingly orbicular then –, centre persistent, rather large and thick, blackish red and markedly impressed), margin indistinctly cartilaginous and manifestly crenulate, flat, 1.7–2.6 (–3) by (1.2–)1.5–2.2 cm, midrib reddish chestnut brown and more densely (or for a longer time) lepidote than the rest of the upper surface, slightly impressed above, robust and obtusely prominent beneath, nerves 3–4(–5) pairs, spreading, faintly impressed above, slightly raised beneath, often subinconspicuous above or rarely so on both faces; petiole flattened, densely lepidote, 4–5 by 1–1.5 mm. *Umbels* 2–3-flowered. Outer perulae ovate, blunt, inner ones obovate, glabrous, lepidote-ciliate, 1–1.5 by 0.8–1.2 cm. Pedicels very densely clothed with dark rufous stellate-incised and shortly stalked scales, no hairs, 1–1.5 cm by 1 mm. *Calyx* patellar, shortly obtusely 5-lobed, 3–4 mm ϕ , densely lepidote outside. *Corolla* tubular-funnel-shaped, suboblique, red to crimson when fresh, becoming magenta in the drying process, (3.5–)4–4.5 cm long in all, densely clad with thickish, substellate scales outside, margin of the lobes excepted, glabrous inside, tube rather straight, 2.5–3 cm long, base with 5 small pouches, 5–6 mm ϕ , widened to 1–1.3 cm at apex, lobes \pm spreading, broad-obovate or sub-orbicular, slightly retuse, 1–1.5 by 1–1.3 cm. *Stamens* 10, unequal, reaching \pm halfway the corolla lobes; filaments linear, 1.5 mm wide at base, glabrous; anthers broadly elliptic-oblong, 3.5–4 by 1.5 mm, each cell bearing a short basal apiculus. *Disk* prominent, glabrous. *Ovary* ovoid-conical, gradually attenuate to the style, exclusively

very densely substellate-lepidote, 5–6 mm long, c. 3 mm σ at base; style nearly equalling the stamens, subdensely to laxly lepidote in its lower third, glabrous for the rest; stigma subturbinate-capitate. *Capsule* fusiform-cylindric, shortly attenuate at base, longer so towards apex, a little oblique, 2–2.5 by 0.6 cm, densely lepidote.

Distr. *Malesia*: E. New Guinea (Eastern Highlands: Mt Wilhelm, where it hybridizes with 138. *R. womersleyi*; Western Highlands: Mt Kinkain), common here in edge of subalpine forest or alpine shrubbery, at 3590–3840 m. *Fl.* June–Sept.

Vern. *Kage*, Chimbu.

192. *Rhododendron buxifolium* LOW ex HOOK. f. in Hook. Ic. Pl. (1852) t. 890; WALP. Ann. 5 (1858) 146; STAFF, Trans. Linn. Soc. II, Bot. 4 (1894) 197; MILLAIS, Rhodod. (1917) 131; MERR. En. Born. (1921) 460; SLEUM. Reinwardtia 5 (1960) 173; Blumea 12 (1963) 109; Jahrb. Deutsch. Rhodod. Ges. Bremen (1965) f. 14.

var. buxifolium.

Shrub, (1.2–)3–5 m, becoming smaller and flat-topped at high altitudes. Branches at the ends c. 6 mm ϕ , terete, with blackish bark. Branchlets stoutish, upper 1–2 internodes brownish, initially laxly clothed with substellate scales and sometimes also with very fine papillose hairs, lower parts early glabrescent, lower ones greyish corticate and with thick cushions of fallen leaves; internodes 1–3(–4) cm. *Leaves* dense, in much approximate 5–8-merous pseudowhorls at the upper 3–4 nodes, broad-elliptic, sometimes subovate- or obovate-elliptic, apex broadly attenuate, often rounded-obtuse, sometimes slightly emarginate, the apical gland rather inconspicuous, base rounded to subcordate, stiff-coriaceous, subdensely lepidote on both faces initially, rather early glabrescent or with minute pits above, more persistently lepidote beneath (scales irregularly crenate or lobed in the thin, early dissolute marginal zone, persistent orbicular centre small, thick, dark brown to blackish, rather deeply impressed), edge distinctly crenulate, not properly revolute, 1–2 by 0.6–1.2 cm, midrib narrow and slightly sunk above, broad and obtusely prominent beneath, nerves 5–6 pairs, somewhat irregular, spreading, \pm joined near the edge, slightly impressed above in old leaves, \pm inconspicuous beneath, veins lax and faintly sunk above, obsolete beneath; petiole flattened, rugose, 1.5–2.5 by 1–1.5(–2) mm. *Umbels* (2–)3–5 (sometimes up to 8)-flowered. Outer perulae ovate, the dorsal midrib tapering to a short subulate acumen, finely sericeous and laxly to subdensely lepidote externally, inner ones ovate-obtuse to spatulate and mostly \pm glabrescent, up to 1.5 by 1 cm. Bracteoles linear below, subspathulate distally, up to 2 cm by 1 mm. Pedicels \pm densely substellate-lepidote, whether or not with very sparse short hairs, (1–)1.5–2 (sometimes up to 2.5) cm by 0.7 mm. *Calyx* obliquely disk-shaped, very shortly irregularly 5-lobed or -dented, often \pm revolute, 3–4 mm ϕ . *Corolla* broad-funnel-shaped or subcampanulate, sub-

oblique, pink to deep red or rich carmine, waxy, scentless, subdensely lepidote outside, glabrous inside, 2.5(-3) cm long in all, tube \pm straight, c. 1.5 cm long, at the somewhat pouched base 4-5 mm ϕ , widened to \pm 1 cm, lobes mostly \pm spreading, obovate-spathulate, 1-1.5 by 1-1.3 cm. *Stamens* 10, subequal, \pm equalling the tube; filaments linear, glabrous; anthers oblong, (2-)2.5-3 by 1 mm, cells obtuse or mostly narrowed into a short, \pm distinct basal apiculus. *Disk* prominent, glabrous. *Ovary* subovoid-conical, apex obtuse and much abrupt with the style, very densely substellate-lepidote (but occasionally with some very sparse hairs on some or other ovary in the same specimen), c. 4-5 by 2-3 mm; style glabrous, \pm as long as the stamens; stigma subclavate-capitate. *Capsule* thickly ovoid-fusiform, oblique, 1-1.2 by 0.5-0.6 cm, lepidote, finally \pm glabrescent, crowned by the rest of the then thick style. *Seeds* c. 2.5 mm including the tails.

Distr. *Malesia*: North Borneo (Mt Kinabalu).

Ecol. In Ericaceous forest above 2745 m, but apparently more frequent within shrub vegetation in open places on granite amongst rocks, on crests of ridges, in fissures up to the very top of Mt Kinabalu at 4096 m. *Fl.* Jan.-Dec.

var. robustum SLEUM. Reinwardtia 5 (1960) 173; Blumea 12 (1963) 109. — *R. verticillatum* (non Low ex LINDL.) Low ex HOOK. *f.* in Hook. Ic. Pl. (1852) t. 884; WALP. Ann. 5 (1858) 447, *p.p.*; STAFF, Trans. Linn. Soc. II, Bot. 4 (1894) 197; MERR. En. Born. (1921) 463, *p.p.*

A form with larger leaves, 1.8-3(-3.5) by 1.2-2 (-2.5) cm, otherwise not distinct.

Distr. *Malesia*: North Borneo (Mt Kinabalu) with the normal form.

Ecol. A constituent of the Ericaceous forest, but also in open places (upper limit of scrub forest at slanting rock) on granite, sometimes together with *var. buxifolium*, (2440-)3350-3800 m.

193. *Rhododendron wrightianum* KOORD. Nova Guinea 8 (1912) 880; J. J. S. *ibid.* 12 (1914) 130, *incl. var. ovalifolium* J. J. S. *l.c.* 131, t. 29B; *ibid.* 18 (1936) 94; SLEUM. Reinwardtia 5 (1960) 173; Blumea 11 (1961) 125.

KEY TO THE VARIETIES

1. Perulae sericeous and \pm lepidote outside, at least in the upper part.
 2. Leaves 1-1.5(-2) by 0.5-0.9 (rarely up to 1.5) cm. Pedicels lepidote, otherwise whether or not papillose 1. *var. wrightianum*
 2. Leaves (1.3-)2-3(-4) by 0.7-1.7 cm. Pedicels lepidote and rather densely short-pubescent.
 2. *var. cyclopense*
 1. Perulae outside laxly lepidote, not hairy at all. Leaves 1-2 by 0.6-1.2(-1.5) cm. Pedicels lepidote, otherwise whether or not very shortly pubescent 3. *var. insulare*
1. *var. wrightianum*.
Small diffuse, terrestrial or epiphytic shrub, 0.2-1 m. Branches much divaricate, 2-4 mm ϕ .

Branchlets subterete, 1-2 mm ϕ , densely set with shortly stalked, stellate scales at the upper 1-2 internodes, not hairy, lower parts glabrescent and warty by the remaining stalks of the then gone scales, finally greyish corticate; internodes (1-) 2-4(-6) cm. Leaves in 3(-5)-merous pseudowhorls at the upper 1-3(-4) nodes, obovate-oblong to obovate, apex mostly obtuse or rounded, base \pm broadly cuneate, coriaceous, laxly lepidote beneath (scales irregularly crenulate or substellately dented at the rather narrow marginal, early dissolute zone, centre dark, proportionally large and somewhat impressed), margin subcrenulate by impressed scales or entire, minutely cartilaginous and \pm recurved, 1-1.5(-2) by 0.5-0.9 (rarely up to 1.5) cm (in sterile young shoots up to 4 by 2 cm), midrib slightly or not impressed, rather prominent beneath, nerves 2-3 spreading pairs, \pm obsolete; petiole 1-2 by 0.5-1 mm. *Umbels* (1-)2-3-flowered. Outer perulae ovate, subacuminate or obtuse, inner ones oblong, all manifestly sericeous and laxly lepidote dorsally at least in the upper half, and shortly fimbriate, often still persistent at flowering time, up to 8 by 4 mm. Bracteoles filiform, up to 7 mm. Pedicels slender, very densely set with \pm stellate and shortly stalked scales, and mostly with very short papillose hairs, 0.5-1.5 cm. *Calyx* shortly cup-shaped, oblique, the 5 lobes or teeth irregular (0.5 mm), c. 2.5 mm ϕ , densely lepidote externally. *Corolla* tubular, dilated upwards, glossy-red to deep crimson, thin suboblique, (2.2-)2.5-3 cm long in all, laxly to subdensely stellate-lepidote outside, glabrous inside, tube slightly curved, \pm 2 cm long, at base 4-5 mm ϕ , dilated to 8-10 mm at apex, lobes erecto-patent, suborbicular, c. 7 mm ϕ . *Stamens* 10, unequal, reaching \pm halfway the corolla lobes; filaments linear, glabrous; anthers broad-oblong-elliptic, 2 by 1 mm, the base of each theca subapiculate. *Disk* glabrous. *Ovary* subcylindric, densely lepidote, 4-5 by 1.5-2 mm, gradually tapering to the style, which is lepidote in its lower $\frac{1}{5}$ - $\frac{1}{3}$ and 1.7-2 cm long; stigma subclavate-capitate. Submature capsule narrow-fusiform, c. 3.5 cm by 3.5 mm.

Distr. *Malesia*: New Guinea (Oranje and Nassau Mts; Milne Bay Distr.: Mt Garatun).

Ecol. In mossy forest, occasionally (high) epiphyte, in shrubby opening, on sandy or peaty soil, 1370-2800 (-3250) m. *Fl.* Oct.-March.

2. *var. cyclopense* J. J. S. Nova Guinea 12 (1914) 130; SLEUM. Reinwardtia 5 (1960) 173; Blumea 12 (1963) 109.

Leaves (1.3-)2-3(-4) by 0.7-1.7 cm. Pedicels lepidote and rather densely short-pubescent. Perulae as in *var. wrightianum*.

Distr. *Malesia*: N. New Guinea (Mt Cycloop).

Ecol. Epiphytic or on moss-covered soil, in \pm open *Nothofagus-Rapanea* ridge forest, 1480-1800 m. *Fl.* June-Oct.

3. *var. insulare* SLEUM. Reinwardtia 5 (1960) 174.

Leaves 1-2 by 0.6-1.2(-1.5) cm. Perulae laxly lepidote dorsally, not hairy at all, up to 8 mm in

length. Pedicels lepidote, sometimes furthermore laxly and very shortly hairy.

Distr. *Malesia*: New Guinea (Milne Bay Distr.: Normanby and Goodenough Is.).

Ecol. Common high epiphyte in tall mossy forest, 820–1600 m. *Fl.* Jan., Oct.

194. *Rhododendron subcrenatum* SLEUM. Reinwardtia 5 (1960) 174.

Erect, terrestrial shrub, 0.3–0.5 m; branches terete, 4–5 mm ϕ ; bark blackish grey. Branchlets divaricate, c. 2 mm ϕ , densely set with substellate and distinctly stalked scales at the upper internodes, early glabrescent at the lower ones, early greyish corticate and minutely warty, a little rough to the touch; internodes 2.5–5 cm. *Leaves* in 3–5-merous pseudowhorls at the upper 3–5 nodes, \pm narrowly elliptic or more rarely subovate- or subobovate-elliptic, short-acuminate towards the apex, \pm blunt at the very apex by a thick gland, base broad-attenuate or subtruncate-obtuse, very coriaceous, subsdensely lepidote on both faces, early glabrescent above with age, \pm persistently lepidote beneath (scales rather small, marginal zone thin, variously dented or irregularly crenate, centre thickish and much impressed), edge narrowly cartilaginous and slightly or not revolute, subcrenulate or entire, 2–2.8(–3) by (0.8–)1–1.4 cm, midrib \pm distinctly and narrowly sunk above, thick and obtusely prominent in the lower part beneath, nerves inconspicuous; petiole densely lepidote, a little flattened, 2–3 by 1.5–2 mm. *Umbels* (1–)2–4-flowered. Outer perulae ovate, with a 4–5 mm long subulate acumen, more inner ones ovate-oblong (acumen c. 1 cm), innermost ones subspathulate, obtuse, 1–1.5 by 0.5–0.8 cm, lepidote dorsally in the upper part or quite glabrous (no sericeous pubescence), margin initially fimbriate by scales. Bracteoles linear, c. 1 cm. Pedicels very densely clad with rufous stellate scales (no hairs), 1.5–2 cm by c. 1 mm. *Calyx* subobliquely disk-shaped, shortly obtusely 5-lobed, very densely stellate-lepidote, 3–4 mm ϕ . *Corolla* tubular, suboblique, dark red, 2.5–3 cm long in all, subsdensely stellate-lepidote outside margin of the lobes excepted, glabrous inside, tube rather straight, 2–2.3 cm long, base but faintly saccate, c. 4 mm ϕ , dilated to 8–10 mm at apex, lobes erecto-patent, suborbicular, 5–7 mm. *Stamens* 10, unequal, the longest almost as long as the corolla; filaments linear, glabrous; anthers broad-oblong, 2.5 by 1 mm, blunt at the base. *Disk* glabrous, or short pubescent at the upper margin only. *Ovary* subcylindric, very densely stellate-lepidote, 6–7 by 2.5 mm, gradually attenuate to the style, which \pm equals the stamens and is lepidote in its lower $\frac{1}{5}$ – $\frac{1}{3}$, glabrous for the rest; stigma subcapitate; pedicel 3 cm.

Distr. *Malesia*: W. New Guinea (Lake Habbema), 3225–3345 m, common on edges of mossy forest, or in open mossy thickets, also in thin shrubberies on a dry ridge. *Fl.* Aug.

195. *Rhododendron rubrobracteatum* SLEUM. Reinwardtia 5 (1960) 175.

Small, epiphytic or terrestrial shrub, up to 60 cm. Branchlets 1.5–2 mm ϕ , laxly substellate-lepidote at the upper 1–2 internodes, glabrescent and smooth downwards; internodes 2–7 cm. *Leaves* in 3–5-merous pseudowhorls at the upper 2–3 nodes (with one or two leaves inserted lower than the rest), oblong to elliptic oblong, apex short-acuminate, subacute or blunt, not rarely apiculate by a gland, base broad-attenuate, more rarely truncate-subrotundate, coriaceous, minutely rugose above in old leaves, with scale remains or quite glabrous, rather laxly and more persistently lepidote beneath (scales irregularly substellate-dented at the thin marginal zone, centre slightly impressed), margin minutely cartilaginous and paler than the proper lamina, entire, wavy or subcrenulate, hardly revolute, (2–)2.3–3.8 (very rarely up to 5) by 1–1.6 cm, midrib \pm impressed above, obtusely prominent beneath, nerves subinconspicuous; petiole a little flattened, lepidote, 3–5(–7) by 1–1.5 mm. *Umbels* (2–)3(–5)-flowered. Perulae ovate-acuminate, attenuate or almost subulate into a short acumen, red, membranous, rather glossy, glabrous, initially with scales along the margin, (1–)1.2–2 by 0.4–0.9 cm. Bracteoles filiform, c. 6 mm. Pedicels rather slender, very densely rufous-stellate-lepidote, furthermore \pm densely papillose, 1.3–2 cm. *Calyx* obliquely disk-shaped, obscurely and bluntly 5-dented, lepidote dorsally, c. 3 mm ϕ . *Corolla* tubular, suboblique, red or of a delicate pale red, or pale orange-pink, thin, 2–2.6 cm long in all, laxly to subsdensely stellate-lepidote outside, glabrous inside, tube rather straight or somewhat curved, 1.6–2 cm long, base 5-pouched c. 5 mm ϕ , widened to 7–8 mm at apex, lobes erecto-patent, broadly obovate or suborbicular, slightly retuse, 5–6 mm ϕ . *Stamens* 10, unequal, the longest almost as long as or sometimes slightly longer than the corolla; filaments linear, glabrous; anthers broad-oblong, c. 2 mm, base obtuse. *Disk* glabrous. *Ovary* subcylindric, very densely stellate-lepidote, c. 4 by 1.5 mm, \pm gradually narrowed to the style, which is rather slender, glabrous and nearly equals the stamens; stigma subcapitate. Immature capsule fusiform, c. 2.2 by 0.35 cm.

Distr. *Malesia*: New Guinea (Lake Habbema and vicinity).

Ecol. In open thickets of higher ridges, also epiphytic on high trees in mossy forest, 2900–3345 m. *Fl.* Aug., Oct.

Note. A *Rhododendron* with similar leaves and larger corollas (3 cm) was found on Mt Hellwig, 1900 m.

196. *Rhododendron calosanthos* SLEUM. Blumea 11 (1961) 125.

Shrub, c. 40 cm. Branchlets slender, laxly substellate-lepidote at the youngest, glabrescent at the older parts, smooth, 1–2 mm ϕ ; internodes (1.5–)2–5 cm. *Leaves* 4–6 on each of the ultimate 2 or 3 nodes at short intervals, or partly (2 or 3) more close together or even in a pseudowhorl, narrowly oblong or oblong-elliptic, apex subacutely attenuate or subacuminate, base attenuate to sub-

cuneate, coriaceous, initially laxly lepidote on both faces, tardily glabrescent above, subpersistently lepidote beneath (scales of medium size, variously substellate-dented or -incised at the thin marginal zone, centre small, \pm impressed), narrowly marginate, margin subcrenulate by impressed scales or \pm entire, 2–2.5 by 0.5–0.9 cm, midrib hardly impressed above or even flat, thick and obtusely prominent beneath, nerves and veins inconspicuous; petiole 2–3 by 0.7–1 mm. *Flowers* solitary or mostly in twos, nodding. *Perulae* membranous, red, glabrous and shining dorsally, ovate-oblong, outer ones acuminate-apiculate, inner ones obtuse, up to 2 by 1 cm. *Pedicels* rather slender, densely stellate-lepidote, 1.5–2 cm. *Calyx* obliquely disk-shaped, often included by the basal saccate part of the corolla tube, hardly lobed, \pm 2.5 mm ϕ , lepidote dorsally. *Corolla* a little zygomorphous, red or fiery red, thin, laxly sub-

stellate-lepidote at the tube inside, otherwise quite glabrous, 3(–3.5) cm long in all, tube straight, 2(–2.5) cm long, at base 5–6 mm ϕ , dilated to 8–10 mm at apex, lobes erecto-patent, broadly obovate-oblong, c. 1 by (0.5–)0.6–0.8 cm. *Stamens* 10, very unequal, the longest hardly exerted from the corolla tube; filaments linear, glabrous; anthers obovate-oblong, base obtuse, 1.5–1.8 by 1 mm. *Disk* prominent, glabrous. *Ovary* subobliquely cylindrical, 4 by 1.5 mm, densely set with substellate, ferruginous scales (no hairs), tapering to the slender style, which bears some scales at the base and is glabrous for the rest; stigma turbinate, shortly 5-lobed.

Distr. Malesia: Central New Guinea (Mt Antares, Star Mts).

Ecol. Alpine or semi-alpine shrub vegetation, 3000–3200 m, rare. *Fl.* July.

7. Series Javanica

SLEUM. Reinwardtia 5 (1960) 176. — *Rhododendron sect. Schistanthe* SCHLTR., Bot. Jahrb. 55 (1917) 140, p.p. — *Rhododendron sect. Hapalanthe* SCHLTR., *ibid.* 55 (1918) 155. — *Rhododendron sect. Zygomorphanthe* SCHLTR. l.c. 145, p.p. — *Rhododendron subsect. Euvireya* COPEL. f. Philip. J. Sc. 40 (1929) 137, 159, s. str. — *Rhododendron subsect. Leiovireya* COPEL. f. l.c. 137, 167. — *Rhododendron subsect. Schizovireya* SLEUM. Bot. Jahrb. 74 (1949) 538. — **Fig. 38–45.**

Leaves rather large, all or at least for their greater number in the same specimen longer than 4 cm, mostly much longer, and of various shape.

Distr. S. Indochina, *Malesia*.

KEY TO THE SPECIES

1. Corolla outside rather laxly to densely (rarely very densely) short-hairy, otherwise whether or not lepidote.
 2. Leaves very shortly soft-hairy beneath at least when young **197. R. verticillatum f. velutinum**
 2. Leaves without hairs beneath.
 3. Style glabrous or with some spreading hairs at the base or up to the lower third, rather abruptly set off against the ovary.
 4. Leaves \pm bullate; scales stalked, *i.e.* subdendroid to dendroid **198. R. rugosum**
 4. Leaves not bullate (though the main nerves are markedly impressed above); scales not stalked, flat. **199. R. keditii**
 3. Style pubescent to almost the top, \pm gradually tapering from the ovary.
 5. Leaves cordate at the base, subsessile **200. R. christi**
 5. Leaves rounded to attenuate at the base, distinctly petiolate.
 6. Corolla 5–6.5 cm long in all. Leaves 10–13 by 5–7 cm. **201. R. curviflorum**
 6. Corolla up to 4.5 cm long in all. Leaves up to 8.5 by 4.5 cm.
 7. Corolla 3–4(–4.5) cm long in all **202. R. villosulum**
 7. Corolla c. 2.5 cm long in all **158. R. hatamense**
 1. Corolla outside not or practically not hairy (some hairs may be present at the base, *cf.* 197. *R. verticillatum*), otherwise whether or not lepidote.
 8. Ovary glabrous or lepidote, not hairy at all.
 9. Ovary very densely and persistently lepidote.
 10. Filaments quite glabrous.
 11. Anthers obovate or obcordate, *i.e.* much narrowed towards the base, each cell with a distinct basal apiculus.
 12. Leaves oblong, entire, apex shortly acuminate, subacute; petiole 0.8–1.2 cm. **203. R. glabriflorum**
 12. Leaves obovate, subserrulate-crenulate, apex obtuse to rounded, petiole 0.3–0.5 cm. **204. R. pachycarpon**
 11. Anthers broad-oblong, base obtuse. Leaves elliptic, entire, apex subacuminate to rounded; petiole 0.4–1(–1.2 cm) **205. R. celebicum**
 10. Filaments distinctly hairy at least in the lower part.
 13. Style with some sparse hairs at the very base, or not hairy at all, otherwise whether or not lepidote.
 14. Leaves manifestly reticulate (impressed or prominent) on both faces **206. R. sayeri**

14. Leaves faintly or not reticulate.
15. Corolla (7-)7.5-8 cm long in all. Anthers 8 mm 207. *R. pachystigma*
15. Corolla up to 6 cm long in all. Anthers up to 6.5 mm.
16. Leaves ovate-lanceolate. Corolla 5.5-6 cm. Anthers narrow-oblong, 5.5-6.5 mm.
208. *R. angulatum*
16. Leaves oblong-elliptic or more rarely elliptic. Corolla 2-3.5 cm.
17. Calyx shortly cup-shaped, distinctly irregularly dented. Anthers 1-1.5 mm.
209. *R. loerzingii*
17. Calyx disk-shaped, obliquely 5-angular. Anthers 3.5-4 mm.
18. Leaves in 4-5-merous pseudowhorls at the upper nodes, 6.2-8.3 by 2.4-3.2 cm.
210. *R. impressopunctatum*
18. Leaves scattered along the upper internodes, 9-12 by 3.5-5 cm . . . 211. *R. xanthopetalum*
13. Style rather densely set with short spreading hairs (and some scales) in its lower half.
212. *R. hirtolepidotum*
9. Ovary initially laxly to subdensely lepidote, \pm early glabrescent during the anthesis, or glabrous from the beginning.
19. Filaments quite glabrous.
20. Nerves (15-)17-20 pairs, from the midrib at an almost right angle, straight \pm towards the margin, curved before the edge. Style (4-)5-6 mm. Leaves spirally arranged.
213. *R. pseudomurundense*
20. Nerves (6-)8-13 pairs, from the midrib at a more acute angle, mostly ascending or curved. Style exceeding 6 mm.
21. Most or all leaves scattered along the internodes.
22. Corolla 5-lobed to c. $\frac{3}{5}$ of its length, orange, salmon, light or brilliant red. Pedicels (1.5-) 2-3 cm in anthesis, 3-4 cm in fruit 214. *R. seranicum*
22. Corolla lobed halfway, yellow. Pedicels 1-1.5 cm at anthesis, 1.5-2 cm in fruit.
215. *R. loboense*
21. Leaves in distinct pseudowhorls, though 1-2 leaves may be inserted up to 1 cm below the rest.
23. Corolla white 216. *R. williamsii*
23. Corolla yellow, salmon or red.
24. Leaves \pm coriaceous. Corolla 3-3.5 cm, yellow to salmon or orange, sometimes light red.
217. *R. robinsonii*
24. Leaves \pm thick-coriaceous. Corolla 2-2.5 cm, red to dark red or crimson, rarely orange red.
218. *R. rarilepidotum* var. *rarilepidotum*
19. Filaments \pm densely hairy at least in their lower part.
25. Style longer, often much longer than the ovary, at least 7 mm.
26. Corolla 1.5-2(-2.5) cm. Leaves \pm subcoriaceous, lanceolate or oblong-lanceolate, (3-)4-7 by (0.7-)1-1.5(-2, very rarely up to 2.5) cm. Capsule 1.8-2.2 by 0.5 cm . . . 219. *R. multicolor*
26. Corolla longer. Leaves \pm stiffly coriaceous and mostly also the capsules larger.
27. Corolla lobed to $\frac{2}{3}$, tube pubescent inside along 5 vertical stripes . . . 220. *R. brevittubum*
27. Corolla lobed about halfway, equally short-pubescent, or glabrous inside.
28. Leaves sessile or nearly so (the base \pm truncate-rounded).
29. Corolla (3-)3.5-4 cm. Capsule 2.5-3 by 0.6-0.7 cm 221. *R. sessilifolium*
29. Corolla (5-)5.5-6.5 cm. Capsule (4-)4.5-5.5(-6) by 0.6-0.7 cm 222. *R. beccarii*
28. Leaves distinctly petioled (the base cuneate to rounded).
30. Leaves narrow in relation to their length, lanceolate, apex subacutely acuminate, 14-18 (-23) by (2-)2.5-4(-4.5) cm 272. *R. retivenium*
30. Leaves wide in relation to their length, apex subacute to obtuse.
31. Corolla tube narrow, 3-4(-5) mm ϕ at base, elongate, equalling c. $\frac{3}{5}$ of the total length of the corolla, which is laxly lepidote outside. 223. *R. kemulense*
31. Corolla tube wider, 5-8 mm ϕ at base, shorter, equalling mostly c. $\frac{1}{2}$ (rarely up to $\frac{3}{5}$) of the total length of the corolla, which is glabrous outside.
32. Nerves (16-)18-20 pairs, close to each other, \pm straight and rectangular from the midrib.
224. *R. moultonii*
32. Nerves 7-10(-13) pairs, more distant from each other and \pm curved-ascending.
33. Corolla (3-)3.5-4 cm. Leaves shortly petioled. 221. *R. sessilifolium*
33. Corolla generally much longer. Leaves relatively long petioled 225. *R. javanicum*
25. Style short, \pm as long as the ovary.
34. Leaves ovate to oblong-ovate; petiole 4-6 by 3 mm 226. *R. perplexum*
34. Leaves elliptic to oblong; petiole 12-18 by 3-4 mm. 227. *R. crassifolium*
8. Ovary hairy to various degree, otherwise whether or not lepidote.
35. Style hairy (or hairy and lepidote) to at least half its length, often so to nearly the top.
36. Leaves velutinous all over the undersurface at least initially, glabrescent to various degrees in later stages. 197. *R. verticillatum* f. *velutinum*
36. Leaves without hairs underneath.

37. Leaves \pm long-attenuate and (sub)acutely (subcaudate-)acuminate at the apex.
 38. Corolla tubular, tube very slightly expanded upwards, 4–5 cm long 228. *R. rhodopus*
38. Corolla funnel-shaped, *i.e.* tube short (up to c. 1.5 cm), if longer, manifestly dilated upwards.
 39. Corolla 7.5–9(–10) cm.
 40. Pedicels 2.4–4 cm 229. *R. baenitzianum*
 40. Pedicels (6–)7–11 cm 230. *R. englerianum*
39. Corolla up to 6.5 cm.
 41. Corolla lobed to c. $\frac{2}{3}$, tube 1–2.1 cm.
 42. Leaves ovate to lanceolate-ovate; petiole rather slender, 1–1.5 mm across.
 231. *R. wentianum*
 42. Leaves lanceolate to subovate- or oblong-lanceolate; petiole stout, 2–3 mm across.
 232. *R. cuspidellum*
41. Corolla lobed up to halfway, tube 3–4 cm.
 43. Leaves acutely attenuate at the base 233. *R. commutatum*
 43. Leaves rounded or slightly cordate at the base. 234. *R. subcordatum*
37. Leaves shortly (acutely or mostly rather bluntly) acuminate or attenuate, or obtuse to rounded at the apex.
 44. Leaves lanceolate to (sub)oblong-lanceolate.
 45. Anthers (3–)4–5 mm.
 46. Pedicels hairy and lepidote. Petiole (0.4–)0.6–1 cm. Corolla (3.7–)4.5–5.5(–6) cm.
 235. *R. vanvuurenii*
 46. Pedicels lepidote, epilose. Petiole 1.5–2 cm. Corolla 6.5–7 cm 228. *R. rhodopus*
 45. Anthers 2 mm. Pedicels lepidote, epilose. 236. *R. leptobranchion*
44. Leaves oblong, elliptic or ovate, more rarely subobovate.
 47. Corolla at least 14 cm long in all.
 48. Leaves oblong-elliptic, apex \pm obtuse, 13–17 by 6–8 cm. Corolla 5-merous.
 237. *R. schlechteri*
 48. Leaves \pm oblong, apex \pm subacuminately attenuate, (18–)20–28 by 6–10.5 cm. Corolla 7-merous 238. *R. leucogigas*
47. Corolla up to 10 cm long in all.
 49. Corolla glabrous (elepidote) or practically so outside.
 50. Corolla c. 2.5 cm long 158. *R. hatamense*
 50. Corolla longer than 4 cm.
 51. Corolla tubular-funnel-shaped, 4–5 cm.
 52. Leaves 7–10.5 by 2.8–4.4 cm. Anthers exappendiculate 239. *R. lomphohense*
 52. Leaves (7–)12–16 by (4–)5–7.5 cm. Anthers glandular-appendiculate at base.
 240. *R. buruense*
51. Corolla tubular, (6.5–)7–7.5 cm. 241. *R. bloembergenii*
49. Corolla laxly to densely lepidote outside.
 53. Corolla lobed to $\frac{1}{2}$ – $\frac{2}{3}$ of its total length, tube up to 1 cm long 242. *R. macgregoriae*
 53. Corolla lobed to $\frac{1}{4}$ – $\frac{1}{2}$ of its total length, tube longer than 1.5 cm.
 54. Filaments glabrous, or practically so (very sparse hairs found at the base only).
 55. Leaves ovate to ovate-elliptic, base cordate 243. *R. rosendahlia*
 55. Leaves elliptic to obovate-oblong, rarely obovate, base broadly attenuate to the petiole.
 268. *R. culminicolum*
54. Filaments distinctly hairy at least in the lower third.
 56. Leaves (2.5–)4–8 (rarely in the same specimen in part up to 9) by (1.5–)2–4(–5) cm.
 57. Corolla white or pale pink.
 58. Leaves distinctly petioled.
 59. Inflorescences (8–)9–13-flowered. 244. *R. comparabile*
 59. Inflorescences (3–)4–5-flowered. 245. *R. luraluense*
 58. Leaves sessile. Inflorescences (4–)5–7(–9)-flowered 131. *R. orbiculatum*
 57. Corolla coloured otherwise.
 60. Corolla greenish, yellowish greenish, yellow or orange-yellow.
 61. Corolla greenish or yellowish greenish, 4–5 mm across the base 246. *R. flavoviride*
 61. Corolla yellow or orange-yellow, 7–8(–10) mm across the base.
 62. Corolla widely tubular-subcampanulate. Perulae up to 1.5 by 0.8 cm.
 247. *R. christiana*
 62. Corolla broadly funnel-shaped. Perulae 3.5(–5) by 1.5(–2) cm 248. *R. laetum*
60. Corolla pure red.
 63. Reticulation of the leaves dense, subimpressed above, distinctly raised beneath.
 249. *R. scabridibracteum*
 63. Reticulation of the leaves practically absent 250. *R. longiflorum*
56. Leaves (5–)7–15(–18) by (2.5–)3–8 cm.
 64. Pedicels exceeding 6 cm at anthesis at least in part in the same specimen.

65. Leaves shortly (rarely up to 1 cm) petioled. Corolla c. 8 cm . . . 230. *R. englerianum*
 65. Leaves petioled for 2–4 cm. Corolla c. 4 cm 251. *R. polyanthumum*
 64. Pedicels shorter than 6 cm at anthesis at least in the greater part of the same specimen.
 66. Outer and middle perulae up to 2.5 cm long, glabrous, lepidote or finely sericeous and lepidote dorsally.
 67. Corolla white or pale pink, tubular to almost salver-shaped.
 68. Leaves petioled for 1.5–2 cm. 252. *R. kochii*
 68. Leaves sessile 131. *R. orbiculatum*
 67. Corolla yellow, orange, pale to deep red, ± funnel-shaped.
 69. Leaves sessile or subsessile, petiole 1–2(–3) by 3–4 mm 253. *R. brevipes*
 69. Leaves ± manifestly petioled.
 70. Leaves thick-coriaceous, stiff, base ± rounded or often subcordate.
 197. *R. verticillatum f. verticillatum*
 70. Leaves subcoriaceous to coriaceous, base usually ± cuneate, sometimes rounded.
 71. Perulae ± densely lepidote in the upper part both in- and outside. Scales on the leaves of a scurfy, somewhat detersile type 254. *R. aurigeranum*
 71. Perulae lepidote and whether or not sericeous outside, mostly early glabrescent, glabrous inside. Scales on the leaves not scurfy, though (very) early caducous.
 250. *R. longiflorum*
 66. Outer and middle perulae distinctly larger, sometimes up to 5 cm long, all over densely covered with a rather scabrid, ± appressed tomentum of shorter or longer and ± stoutish hairs outside for a long time, glabrescent in later stages.
 72. Corolla ± tubular, densely lepidote outside. Leaves manifestly reticulate at least beneath 249. *R. scabridibracteum*
 72. Corolla ± funnel-shaped, ± laxly lepidote outside. Leaves faintly or not reticulate.
 73. Leaves ± coriaceous, broadly to subovate-elliptic, subsessile or shortly (rarely up to 7 mm) petioled. Corolla of a pure yellow initially, turning orange or reddish at the lobes in later stages; anthers 4–5 mm. 248. *R. laetum*
 73. Leaves thin-coriaceous, elliptic to oblong-elliptic, rarely subovate-elliptic or ovate-oblong, generally manifestly (5–15 mm) petioled. Corolla orange, or tube yellow and lobes orange-red from the beginning; anthers (5–)6–8 mm . . . 255. *R. zoelleri*
 35. Style hairy at the base, or rarely hairy up to the lower third, or glabrous.
 74. Leaves markedly bullate 256. *R. maxwellii*
 74. Leaves not bullate.
 75. Leaves narrow-lanceolate, (0.6–)1–2 cm wide.
 76. Leaves (2.7–)5–7.5 cm long, sessile or nearly so, reticulation distinctly finely prominent on both faces. Corolla red. 257. *R. nervulosum var. nervulosum*
 76. Leaves 10–15 cm long, petioled for (3–)4–6 mm, reticulation, if any, faintly visible on the upper surface only. Corolla yellow or orange. 258. *R. salicifolium*
 75. Leaves lanceolate or of other shape, at least in part in the same specimen wider than 2 cm.
 77. Leaves 4–8 (rarely in the same specimen partly up to 10) cm long.
 78. Style markedly abrupt with the short-conical or obovoid-cylindrical ovary, glabrous or with some scattered hairs at the very base.
 79. Leaves sessile or nearly so. 259. *R. lanceolatum*
 79. Leaves manifestly petioled.
 80. Corolla broadly funnel-shaped, lobed at least halfway.
 81. Leaves rounded-obtuse at apex. Perulae up to 8 by 5 mm, dorsally sericeous.
 260. *R. sumatranum*
 81. Leaves acuminate, the very apex only subobtuse. Perulae up to 2 by 1 cm, quite glabrous dorsally 218. *R. rarilepidotum var. ootrichum*
 80. Corolla tubular or funnel-shaped, lobed to c. 1/3.
 82. Corolla (2.5)–3–3.5 cm long, quite glabrous outside. Leaves in distinct pseudowhorls.
 261. *R. arfakianum*
 82. Corolla laxly lepidote outside.
 83. Leaves in distinct pseudowhorls. Corolla (4.5–)5–5.5(–6) cm . . . 262. *R. fuchsii*
 83. Leaves scattered along the branchlets. Corolla (3.5–)4–5 cm . . . 263. *R. impositum*
 78. Style continuous or subabrupt with the ovoid to cylindrical ovary, pubescent up to the lower third, or glabrous.
 84. Corolla lobed halfway or more.
 85. Corolla ± densely lepidote outside, lobes much often horizontally, spreading. Pedicel slender, generally longer than the corolla. 242. *R. macgregoriae*
 85. Corolla glabrous outside, lobes erecto-patent. Pedicel rather stout, much shorter than the corolla 264. *R. leyense*
 84. Corolla lobed less than halfway.
 86. Style reaching halfway the stamens. 265. *R. brachygynum*

86. Style nearly as long as or longer than the stamens.
87. Corolla white. Perulae up to 3.5 by 1.5 cm. 266. *R. mindanaense*
87. Corolla light to dark red, or orange. Perulae, as far as known, up to 2 by 1 cm.
88. Ovary predominantly hairy (tomentose), bearing a few, early caducous scales. Capsule hairy, not lepidote 267. *R. renschianum*
88. Ovary hairy (even tomentose) and distinctly lepidote (scales, often hidden by the hairs on the ovary, persistent and at least well visible on the capsule).
89. Corolla completely glabrous outside 261. *R. arfakianum*
89. Corolla laxly to subdensely lepidote outside 268. *R. culminicolum*
77. Leaves all or at least most of them in the same specimen longer than 8 cm.
90. Corolla laxly to subdensely lepidote outside.
91. Leaves \pm long and acutely (subcaudate-)acuminate.
92. Leaves lanceolate or oblong-lanceolate, 1.5–3 cm wide 269. *R. mollianum*
92. Leaves (2.5–)3.5–6.3 cm wide.
93. Leaves ovate to lanceolate-ovate; petiole slender, 1–1.5 mm ϕ . . . 231. *R. wentianum*
93. Leaves lanceolate, sometimes subovate- or oblong-lanceolate; petiole stout, 2–3 mm ϕ .
232. *R. cuspidellum*
91. Leaves shortly and acutely or mostly obtusely acuminate or attenuate, or obtuse at all at the apex.
94. Corolla 3.5–6 cm long in all, tube at least 1.6 cm long
95. Style at least thrice as long as the ovary.
96. Corolla funnel-shaped 270. *R. poremense*
96. Corolla obliquely tubular 268. *R. culminicolum*
95. Style \pm as long as the ovary 265. *R. brachygynum*
94. Corolla (1.8–)2–2.8 cm long in all, tube 0.5–1 cm.
97. Leaves sessile or nearly so 259. *R. lanceolatum*
97. Leaves distinctly petioled 242. *R. macgregoriae*
90. Corolla quite glabrous outside from the beginning.
98. Style \pm as long as the ovary.
99. Leaves subsessile. Corolla red 257. *R. nervulosum* var. *exuberans*
99. Leaves 1.5 cm petioled. Corolla yellow 265. *R. brachygynum*
98. Style much longer than the ovary.
100. Leaves manifestly cordate 271. *R. stresemanni*
100. Leaves rounded (rarely subcordate) or attenuate at the base.
101. Ovary sparsely and shortly hairy (lens!). Leaves lanceolate to lanceolate-oblong, finely and remarkably reticulate on both faces 272. *R. retivenium*
101. Ovary subdensely to densely and rather longish white-hairy.
102. Leaves large, (12–)14–23 by (5–)6–13 cm (leaf index 2–2.5), stiffly coriaceous; petiole stout and flattened, 3–10(–15) by 3–5(–6) mm.
103. Umbels (6–)7–12-flowered. Pedicels laxly lepidote, epilose. Anthers 5 mm. 273. *R. lowii*
103. Umbels 2-flowered. Pedicels densely short-hairy, lepidote. Anther c. 8 mm.
274. *R. intranervatum*
102. Leaves mostly smaller, only (2–)2.5–5 (partly in the same specimen occasionally up to 9) cm wide (leaf index 3–5, but only 1 if wider than 5 cm), less stiff; petiole mostly more slender.
104. Leaves oblong-ovate, nervation manifestly impressed above . . . 275. *R. toxopei*
104. Leaves lanceolate to oblong or elliptic-oblong, sometimes subovate or subobovate-oblong, nervation but faintly or not impressed above.
105. Leaves broadly oblong to subovate- or subelliptic-oblong. Corolla (3–)4–5(–5.5, rarely up to 6) cm 225. *R. javanicum*
105. Leaves oblong to lanceolate. Corolla mostly 6–7(–8) cm, rarely shorter.
276. *R. brookeanum*

197. *Rhododendron verticillatum* Low ex LINDL. J. Hort. Soc. Lond. 3 (1848) 86, c. icon. p. 89; PLANCH. Fl. Serres 5 (1849) 477–480, fig.; WALP. Ann. 5 (1858) 477, p. p.; MILLAIS, Rhodod. (1917) 258; MERR. En. Born. (1921) 463, p.p. SLEUM. Reinwardtia 5 (1960) 185; Blumea 11 (1961) 126, non Low ex HOOK. f. in Hook. Ic. Pl. (1852) t. 884.

f. verticillatum.

Generally epiphytic shrub; roots reported to be

long and fleshy. Branchlets downy and \pm laxly, early caducously lepidote at the upper internodes; internodes (2–)5–10(–15) cm by 3–4(–5) mm. Leaves in 4–6-merous pseudowhorls at the upper 2–4 nodes, variable in shape and size in the same specimen, oblong or elliptic-oblong to elliptic, not rarely subovate- or subcordate-elliptic or -oblong, apex subacutely to broadly subobtusely acuminate or obtusely attenuate, sometimes even rounded, base very broadly attenuate or mostly rounded to slightly cordate, thick-coriaceous, stiff, lepidote

initially on both faces, early glabrescent above midrib excepted, remaining laxly lepidote for a long time beneath (scales minute, dark, stellate-dentate at the marginal zone, centre very small, slightly impressed), finely \pm glabrescent on the intervenium, entire, slightly revolute at the margin in dry specimens, (5-)6-10(-11) by (2-)3-4 (sometimes up to 6) cm, midrib broadened above the base, narrowed and flat or a little sunk distally, as thick and rugose as the petiole, much prominent beneath in the lower part, nerves 7-9(-10) curved-ascending pairs, somewhat impressed above, rather indistinctly raised beneath, often \pm obsolete on both faces; petiole rugose, flattened and grooved above, lepidote for a long time, (1-)1.5-2(-2.5) cm by 2-3 mm. *Umbels* compact, (8-)10-15-flowered. Outer perulae ovate-subacuminate, inner ones oblong to spatulate, sericeous and minutely lepidote dorsally, lepidote at the \pm reflexed apex internally, up to 2 by 1.5 cm. Bracteoles filiform (0.5 mm) below, subspathulate (up to 7 mm) distally, laxly short-hairy, up to 2 cm. Pedicels densely to laxly clad with rather long and subpatent hairs, laxly clothed with small caducous scales, (3-)3.5-4.5 cm by 1-1.5 mm at anthesis. *Calyx* oblique, patellar, irregularly and shortly 5-dented (one tooth occasionally more acutely acuminate and up to 2 mm long), c. 4 mm σ , pubescent outside. *Corolla* funnel-shaped, reddish crimson, red-pink or salmon, rather densely to laxly lepidote and occasionally set with some scattered hairs at the very base outside, subsdensely hairy at the tube inside, (4-)5-5.5 cm long in all, tube c. 3 cm, base a little pouched, 5 mm σ , dilated in its upper third to c. 1 cm, lobes erecto-patent, broad-spathulate, 2-2.5 by 1.5-1.8(-2) cm. *Stamens* 10, subequal, attaining \pm half the corolla lobes, or finally slightly exserted; filaments filiform, rather laxly pubescent in the lower third, glabrous for the rest; anthers oblong, curved, 2.5-3.5 by 1 mm. *Disk* densely white-pilose at its upper margin, glabrous below. *Ovary* subcylindric-conical, rather abrupt with the style, densely clad with rufescent subpatent hairs, which cover very small scales, 4-5 by 2-2.5 mm; style equalling or slightly exceeding the stamens in full anthesis, slender, hairy and lepidote for the lower $\frac{3}{5}$ - $\frac{4}{5}$, glabrous above; stigma subcapitate. Immature *capsule* cylindrical, 2.4-2.7 by 0.5 cm, patent-hairy and lepidote.

Distr. *Malesia*: Borneo (Sarawak).

Ecol. Epiphytic in moss-forest, but also found in moss on ground, apparently rare. *Fl.* Jan., Feb.

f. velutinum (BECC.) SLEUM. *Reinwardtia* 5 (1960) 185. — *R. velutinum* BECC. *Malesia* 1 (1878) 204; MERR. *En. Born.* (1921) 463.

Leaves with short, soft hairs beneath. *Corolla* besides the scales with short hairs all over the tube outside, or at least so at the base.

Distr. *Malesia*: Borneo (Sarawak), in forest, 700-1430 m.

198. *Rhododendron rugosum* Low *ex* HOOK. *f.* in Hook. *Ic. Pl.* (1852) t. 885; WALP. *Ann.* 5 (1858)

446; STAPF, *Trans. Linn. Soc. II, Bot.* 4 (1894) 197; GIBBS, *J. Linn. Soc. Bot.* 42 (1914) 104; MILLAIS, *Rhodod.* (1917) 237; MERR. *En. Born.* (1921) 463; SLEUM. *Reinwardtia* 5 (1960) 185; *Blumea* 12 (1963) 109; *ibid.* 12 (1964) 340. — *R. kinabaluense* MERR. *J. Str. Br. R. As. Soc. n.* 76 (1917) 108; *En. Born.* (1921) 461.

var. rugosum.

Shrub or small tree, in general knotty and rather straggly, 2-5(-10) m, also epiphytic and pendent. Branches robust, divaricately branched. Branchlets terete, 2-3(-4) mm σ , upper internodes with some scarious bracts, densely clothed with rufous, furfuraceous, deeply stellate-incised and \pm stalked, early caducous scales, early glabrescent, remaining a little warty and rough to the touch, finally with greyish cork; internodes (1-)2-5(-8, very rarely up to 12) cm. *Leaves* in 3-5(-6)-merous pseudowhorls, mostly at the upper 1-2(-3) nodes, broadly ovate-elliptic or elliptic, more rarely oblong-elliptic, often variable in shape and size in the same pseudowhorl, rather coriaceous, apex shortly acuminate, subobtusate, base broadly attenuate into the petiole, rarely more obtuse, with a dense rufous, almost scurfy, lepidote tomentum on both faces initially, early glabrescent above, more persistently lepidote beneath (scales detersile, not rarely \pm dendroid, *i.e.* small centre deepened in middle and extended into a shorter or longer foot, which stands within a minute epidermal depression, marginal zone narrowly irregularly stellate-incised, often so to nearly the centre), finally glabrescent beneath too, the remaining pits manifest, margin entire or faintly crenulate, mostly somewhat revolute, (5-)6-10(-13) by (2.5)-3-6 cm, midrib rather narrow, the subtriangular base excepted, much impressed above, as thick as the petiole and very prominent in the lower part beneath, nerves (5-)6-8 pairs, spreading and \pm curved, anastomosing before the edge, \pm deeply impressed above, very prominent beneath, lamina thus bullate to various degree, veins subsdensely reticulate, slightly impressed above, \pm prominent, but often not much visible beneath; petiole subterete, a little flattened, grooved above, 0.7-1.5(-2, rarely up to 2.5) cm by 2-3(-4) mm, densely stellate-lepidote initially, rugulose in later stages. *Umbels* (8-)10-12(-18)-flowered, flowers nodding initially. Outer perulae ovate-acuminate, firm, apex short-apiculate or submucronate, laxly to subsdensely lepidote in the upper half dorsally, often pruinose (as are the branchlets), inner ones larger, ovate-oblong to obovate, apiculate, lepidote in the upper, finely pubescent in the lower part outside, margin with caducous scales, up to 1.5 by 0.8 cm. Bracteoles filiform, laxly pubescent and lepidote, up to 2 cm. Pedicels rather stoutish, densely pubescent and lepidote, (1-)1.3-2.5 cm in anthesis, up to 4.5 cm by 1 mm in fruit. *Calyx* thick, disk-shaped, margin wavy and obtusely shortly 5-lobed, pubescent and lepidote dorsally, c. 4 mm σ . *Corolla* sweet-scented, tubular below, expanded at the lobes, slightly oblique, (2-)2.5-3 (rarely up to 3.5) cm long in

all, densely short pubescent and less densely lepidote outside, pubescent at the lower half of the tube inside, waxy, pink to crimson or scarlet, even deep magenta, bright purple or blood-red, tube rather straight, (1.2-)1.5-2 cm long, the base a little 5-pouched, c. 5 mm ϕ , gradually dilated in the upper third to c. 1 cm at apex lobes, oblong-obovate to subspathulate, subretuse, (0.8-)1-1.5 by (0.6-)0.8-1.2 cm. *Stamens* 10, unequal, somewhat exerted from the corolla tube; filaments linear, with short spreading hairs in the lower third, glabrous upwards; anthers obovate-oblong, base of each cell protracted into a short apiculus, (2-)3 by 1 mm. *Disk* hairy at the upper margin, glabrous elsewhere. *Ovary* subcylindric, green-grey-velutinous, the hairs covering small scales, rather abrupt with the style, c. 4 by 2 mm; style stoutish, attaining half the corolla lobes, with some patent hairs at the base or more rarely up to the lower third, glabrous for the rest; stigma broad-capitate, distinctly lobed. *Capsule* subovoid-cylindrical, very shortly attenuate at the apex and base, deeply 5-furrowed, purplish, erect, subdensely short-pubescent, laxly lepidote, 1.3-1.5 by (0.4-)0.5-0.6 cm, the valves faintly or not twisted when open. *Seeds* 2-2.5 mm including the tails.

Distr. Malesia: North Borneo (Mts Kinabalu and Trus Madi).

Ecol. In low mossy forest and open exposed ridge, also on edge of landslides, in widely different habitats from dense shade to full sun, locally abundant, (1525-)2100-2900 (rarely up to c. 3300) m. *Fl. fr.* Jan.-Dec.

Note. GIBBS found the lovely heads of waxy pink to red flowers one of the most vivid impressions in her ascent of Mt Kinabalu.

var. coriifolium (SLEUM.) SLEUM. *Blumea* 12 (1964) 340. — *R. coriifolium* SLEUM. *Blumea* 12 (1963) 107.

Leaves thick-coriaceous, stiff, more distinctly crenulate than in *var. rugosum*, apex and base obtuse, (2-)2.5-4(-5.5) by 1.5-2(-2.6) cm; petiole 3-4(-5) by 2(-3) mm. *Umbels* (5-)7-12-flowered. *Corolla* of a deeper red colour than usually found in *var. rugosum*.

Distr. Malesia: North Borneo (East slope of Mt Kinabalu), in rather open low thickets along ridges, 3050-3200 m (and possibly still higher), rather local.

Note. Replacing *R. rugosum* at higher altitudes and apparently subject to introgression by *R. buxifolium var. robustum*.

199. *Rhododendron keditii* SLEUM. *Blumea* 11 (1961) 126; *ibid.* 12 (1963) 109.

Terrestrial shrub. Branchlets robust; internodes 1.5-3 by 0.3-0.5 cm, subglabrous. *Leaves* in 3-4-merous pseudowhorls at the upper nodes, oblong or oblong-elliptic, rarely subobovate-elliptic, apex shortly attenuate or subacuminate, \pm bluntish, base broadly attenuate or rounded, coriaceous, stiff, glabrous above at full age, subdensely lepidote beneath (scales minute, flat, variously dented in the thin early dissolute marginal zone, small

centre much impressed), slightly convex above when dry, 6.5-10.5 by 3-6 cm, midrib slightly prominent to the base and becoming \pm flattish distally above, thick-prominent in the lower part and gradually decreasing upwards beneath, nerves 6-8 irregular pairs, rather straight below, not rarely branched before the margin and anastomosing, distinctly immersed above in fully mature leaves, slightly prominent beneath, reticulation lax, faintly raised beneath only, or subobscure; petiole semiterete or flattened, rugulose, red, glabrous, (1-)1.2-1.6 cm long, (3-)4-5 mm wide, 2-3 mm thick. *Umbels* \pm 10-flowered. Flower buds ovoid-subglobular, 2(-2.5) by 1.5-2 cm; outer perulae chartaceous, ovate-subrotundate, distinctly apiculate, more inner ones larger and thinner, broad-elliptic, very shortly apiculate, innermost ones oblong-obovate, obtuse, glabrous, shining, not fimbriate, 1-2(-2.5) by 1-1.5 cm. Bracteoles linear below, elongate-subspathulate distally, glabrous, 1-1.5 cm by 1-3 mm. Pedicels rather slender, red, densely very shortly patent-hairy, laxly lepidote especially below the calyx, 1.6-2.2(-2.5) cm. *Calyx* patellar, \pm oblique, indistinctly 5-lobed, puberulous and very laxly lepidote dorsally, 2.5-3 mm ϕ . *Corolla* broadly funnel-shaped, deep pink, subdensely to more laxly short-hairy and laxly or not lepidote at the tube and the lower part of the lobes outside, hairy in the lower third of the tube inside, otherwise glabrous, 3-3.5 cm long in all, tube 4-5 mm ϕ at the slightly saccate base, dilated upwards to 1-1.3 (-1.5) cm at apex, limb c. 2.5 cm ϕ , lobes suberect or somewhat spreading, \pm obovate, 1-1.5 by 1-1.3 cm. *Stamens* 10, slightly exerted from the corolla tube; filaments linear and densely very shortly hairy below, narrower and glabrous to the upper $\frac{2}{3}$; anthers broadly obovate-oblong, 2.5-3 by 1 mm, cells slightly narrowed at the otherwise obtuse base. *Disk* prominent, markedly 10-lobed, glabrous. *Ovary* subconical-cylindric, densely short-hairy, not (or very early caducously) lepidote, 4-5 by 2-2.5 mm, rather abruptly narrowed to the style, the latter thickish, quite glabrous, 7-8 mm; stigma turbinate.

Distr. Malesia: North Borneo (Mt Kinabalu), and in Sarawak (Mt Mulu), twice found.

Ecol. In open sparse scrub on boulders or landslides, 1920-2010 m. *Fl.* Aug., *fr.* Dec.

200. *Rhododendron christi* FOERSTER in Fedde, Rep. 13 (1914) 222; SCHLTR, Bot. Jahrb. 55 (1918) 155, *incl. var. loniceroides* SCHLTR, l.c.; DIELS, *ibid.* 62 (1929) 487; SLEUM. Reinwardtia 5 (1960) 185; *Blumea* 11 (1961) 127; *ibid.* 12 (1963) 110. — *Rhododendron sp.*, allied to *R. wentianum*, STONOR, Rhodod. Yearbook 6 (1951) 50, f. 54.

Small, stiff, sparsely branched shrub, 0.3-1.2 m, terrestrial or epiphytic, with long virgate branches. Branchlets terete, 1.5-2 mm ϕ , upper internodes rather laxly lepidote, lower ones glabrescent, smooth, early covered with whitish cork; internodes 4-9(-11) cm. *Leaves* in 3-merous pseudowhorls at the upper 2 or 3 nodes, ovate, subsessile, apex shortly subabruptly acutely acuminate, base

cordate, (thin-)coriaceous, laxly lepidote initially, glabrescent above, laxly and \pm persistently lepidote beneath (scales flat, small, thin marginal zone rather large, irregularly and \pm deeply dented or incised, darker centre small, slightly impressed), somewhat recurved at the margin in dry specimens, (4-)5-9(-11) by 2.5-6.5 cm, midrib narrow and deeply grooved above, rather robust and prominent beneath, nerves 4-6 pairs, curved-ascending and joined, faintly or not impressed above, slightly prominent beneath, veins and veinlets rather densely reticulate, slightly raised on both faces; petiole flattened, 1-2(-3) by 1-2 mm, lepidote. *Umbels* (2-)3-4-flowered. Outer perulae ovate, apex abruptly subulate, small, glabrous dorsally, inner ones larger, ovate, apiculate or obtuse, sericeous in the upper part externally, margin minutely erose, up to 2 by 0.8 cm. Bracteoles linear below, subspathulate-dilated (3-5 mm) towards the apex, laxly pubescent, up to 2 cm. Pedicels rather stoutish, red, very densely patently short-hairy, with few or no scales, (1.5-)2-2.5 cm at anthesis. *Calyx* disk-shaped, hairy, 3-4 mm ϕ , with 5 short (1 mm) obtuse ciliate lobes (of which some or other occasionally extends to 5 by 1 mm). *Corolla* tubular below, expanded and oblique at the lobes, (3-)3.5-4(-4.5) cm long in all, at the basal part yellow or greenish yellow, otherwise red or orange-red, \pm densely clothed with rather longish hairs in- and outside which are whitish below, becoming reddish to purplish towards the lobes, no scales, tube slightly curved, 2-2.5 cm, base c. 6 mm ϕ , slightly dilated to 8-10 mm at apex, lobes obovate-spathulate or suborbicular, 1.3-1.8 by 1-1.5(-1.8) cm. *Stamens* 10, unequal, slightly exserted; filaments narrow-linear, subdensely patently hairy in the lower $\frac{1}{4}$ - $\frac{1}{3}$, glabrous for the rest; anthers obovate, apex truncate, 2-2.5 mm. *Disk* densely pubescent in its upper half. *Ovary* cylindrical, continuous with the style, short-tomentose, 5-7 by 2.5-3 mm; style stout, \pm densely hairy to nearly the top, \pm as long as the stamens; stigma oblique, subcapitate. *Capsule* subcylindrical, widest in the upper third, slightly curved, laxly pubescent, 3-3.5 by c. 0.5 cm, valves thin, \pm twisted.

Distr. *Malesia*: E. New Guinea (Mt Saruwaged and vicinity; Eastern, Western and Southern Highlands; Wharton Range).

Ecol. Epiphyte in mossy bush and on grassland treeferns, or terrestrial in light *Quercus-Engelhardia* forest, out of rock faces on cliffs at the moss forest level, or in scrubby summit growth, 1200-2800(-3000, perhaps still higher up) m. Fl. May-Oct.

Vern. *Kuswamp*, Mendi.

201. *Rhododendron curviflorum* J. J. S. Bull. Jard. Bot. Btzg II, 8 (1912) 50; Nova Guinea 12 (1914) 141, t. 36 B; SLEUM. Reinwardtia 5 (1960) 186.

Large terrestrial or epiphytic shrub, up to 2.5 m. Branchlets subterete, 2.5-4 mm ϕ , tips subdensely substellate-lepidote, older parts early glabrescent; internodes 4-17 cm. *Leaves* in 5-merous pseudowhirls at the upper 1-2 nodes, oblong- to ovate-

elliptic, apex short acuminate, subacute, base \pm rounded, stiff-coriaceous, at full age quite glabrous above, subdensely lepidote beneath (scales small, irregularly and \pm deeply stellate-incised at the pale marginal zone, centre dark, finally blackish, faintly impressed), edge not or but little revolute, 10-13 by (4.7-)5-7 cm, midrib narrowly impressed above, continuing the robust petiole beneath, nerves 5-8 pairs, spreading, straight below, curved upwards and anastomosing, slightly impressed above, prominent beneath, reticulation rather dense, faintly impressed or raised above, much more distinct and prominent beneath; petiole somewhat flattened, grooved above, glabrescent, reddish when dry, 0.7-1.7 cm by 2-3 mm. *Umbels* 5-9-flowered. Outer perulae small (\pm 1 cm), ovate, apiculate, inner ones gradually larger, oblong to spatulate, sericeous outside, glabrous inside, 2.5-4 by 1.5 cm. Bracteoles linear below (0.5 mm), spatulate distally (4 mm), 2.8-3.5 cm. Pedicels short-tomentose, elepidote, 2-3.3 cm by nearly 1 mm. *Calyx* disk-shaped, tomentose dorsally, 4-6 mm ϕ , lobes short-deltoid (1 mm), obtuse, \pm reflexed at full anthesis. *Corolla* tubular, \pm oblique, unequally 5-lobed, lilac (type) or yellow (BRASS 11536), (5-)5.5-6.5(-7) cm long in all, densely rather shortly pubescent outside margin of the lobes excepted, subdensely pubescent in the lower half of the tube inside, elepidote, tube curved, 3-4 cm, at the 5-pouched base 6-7 mm ϕ , widened to 1-1.2 cm at apex, lobes obovate-spathulate to suborbicular, 2-2.5(-3) by 1-1.5 (-1.8) cm. *Stamens* 10, unequal, the longest reaching halfway the corolla lobes; filaments linear, densely to sparsely pubescent below, more slender and glabrous towards the top; anthers broad-oblong to obovate-oblong, c. 4 by 1.8-2 mm, base obtuse. *Disk* prominent, densely pubescent above, less so below. *Ovary* elongate-conical, tomentose, 8-10 by c. 3 mm, continuous with the style, the latter \pm as long as the shortest stamens, densely pubescent to nearly the top; stigma thick, capitate, much lobed.

Distr. *Malesia*: W. New Guinea (Keyts Mts and Bele R.).

Ecol. Epiphytic or terrestrial in secondary forest or in low seral growths on landslip, 1900-2200 m. Fl. Nov.-Dec.

Note. The size of the corolla in SMITH's description of 1914 differs from that in t. 36 B; unfortunately, the type material, conserved in formaline at Bogor, is practically useless. I have drawn a new description of it based on good and apparently conspecific specimens (BRASS 11215 and 11536) from Bele R., which have yellow flowers instead of 'lilac' as said of the type material, which came from the Keyts Mts. Also the description of the perulae, not given in the original diagnosis, is made after the BRASS collections.

202. *Rhododendron villosulum* J. J. S. Med. Rijks-herb. n. 25 (1915) 5; Nova Guinea 12 (1917) 507; *ibid.* 12 (1918) t. 201; *ibid.* 18 (1936) 94; SLEUM. Reinwardtia 5 (1960) 186; Blumea 11 (1961) 127.

— *R. franssenianum* J. J. S. Med. Rijksherb. n. 25 (1915) 5; Nova Guinea 12 (1917) 508; *ibid.* 12 (1918) t. 202.

Shrub, c. 1 m, with apparently weak, sub-pendent long branches. Branchlets terete, 2.5–4 mm ϕ , upper internodes subdensely clothed with substellate brownish, rather early caducous scales, lower parts glabrescent and smooth; internodes (4–)8–18 cm. *Leaves* in 3(–5)-merous pseudowhorls at the upper 1–2 nodes, unequal in size, elliptic or ovate-elliptic, sometimes ovate-lanceolate, apex shortly to long (1–2 cm) acuminate, often a little curved, subacute to very acute, base broadly attenuate to rounded, coriaceous to subcoriaceous, completely glabrous above with age, \pm persistently and subdensely lepidote beneath (scales rather small, flat, marginal zone variously and irregularly substellate-dented or -lobed, dark centre slightly impressed), edge slightly or not recurved, (3–)3.5–8.5 by (2–)2.5–4.5 cm, midrib narrow and much impressed above, rather robust and prominent, nerves (4–)5–8(–9) pairs, irregular, spreading and anastomosing, faintly or not impressed above and raised beneath, reticulation rather dense and prominent on both faces; petiole a little flattened and grooved above, lepidote, (2–)3–5 by 1–1.5 mm. *Umbels* (2–)3–6-flowered. Flower buds ovoid, c. 2.5–3 by 1.5 cm; outer perulae broad-ovate, apex abruptly narrowed, apiculate, subglabrous, inner ones larger, ovate to obovate-spathulate, obtuse, \pm densely sericeous dorsally especially in the upper half, up to 2.5 by 1 cm. Bracteoles linear, pubescent, up to 2 cm by 1 mm. Pedicels very densely patent-pubescent, elepidote, (1.5–)2–3 cm by c. 1 mm at full anthesis. *Calyx* disk-shaped, obliquely 5-angular or shortly 5-dented, densely hairy or nearly villous, c. 4 mm ϕ . *Corolla* tubular below, expanded towards the limb, oblique, dark to light red, 3–4(–4.5) cm long in all, more laxly to densely hairy all over, outside margin of the lobes excepted, and at the lower half of the tube inside, elepidote, tube curved, 2–2.5 cm, at the 5-pouched base 4–6 mm ϕ , widened to 7–10 mm at apex, lobes broad-obovate to suborbicular, slightly retuse, 1.2–1.5(–1.8) by 0.8–1.2(–1.6) cm. *Stamens* 10, very unequal, the longest reaching nearly halfway the corolla lobes; filaments linear and pubescent in the lower, nearly filiform and glabrous in the upper half; anthers obovate, apex obliquely truncate, 2.5–3 by c. 1.5 mm. *Disk* densely pubescent at the upper margin only. *Ovary* subovoid-cylindric, continuous with the style, whitish tomentose, apparently elepidote, 6–7 by 2.5–3 mm; style \pm as long as the stamens, densely hairy below, less so towards the top; stigma broad-capitate, distinctly lobed.

Distr. *Malesia*: New Guinea (Wissel Lake region, Oranje and Nassau Mts, Eastern Highlands).

Ecol. Generally epiphytic in moss forest, (1755–)2400–3000 m.

Note. Certainly much related to *R. christi*, distinguished mainly by the non-cordate, more distinctly petioled leaves.

203. *Rhododendron glabriflorum* J. J. S. Med. Rijksherb. n. 25 (1915) 6; Nova Guinea 12 (1917) 509; *ibid.* 12 (1918) t. 200, b–f, t. 204 a; SLEUM. Reinwardtia 5 (1960) 186.

Shrub. Branchlets terete, c. 4 mm ϕ , upper 2 internodes subdensely lepidote, pruinose, minutely lenticellate or verruculose, older parts glabrescent; internodes 4–5 cm. *Leaves* in 6–7-merous lax pseudowhorls at the upper 2 nodes, oblong, apex short-acuminate, subacute, base broad-cuneate into the petiole, coriaceous, stiff, glabrous and finally rugulose above, rather laxly lepidote beneath (scales small, flat, thin marginal zone relatively large, irregularly angled or substellate-lobed or -dented, dark centre minute, hardly impressed), margin narrowly cartilaginous, faintly revolute, 6–9 by 2–4 cm, midrib narrow and rather deeply impressed above, robust and much prominent (being the continuation of the thick petiole) in the lower part beneath, gradually decreasing towards the apex, nerves 8–10 pairs, the lowest from the base of the blade, steeply ascending, anastomosing, slightly impressed above, raised beneath, reticulation rather dense, not or but faintly impressed above, distinct and prominent beneath; petiole a little flattened, grooved above, lepidote, 0.8–1.2 cm by 2–2.5 mm. *Umbels* \pm 9-flowered. Pedicels stoutish, very densely lepidote, epilose, 1.1–1.8 cm. *Calyx* disk-shaped, but slightly oblique, obscurely and very obtusely 5-lobed, lepidote dorsally, c. 3.5 mm ϕ . *Corolla* tubular-campanulate, rather fleshy, red, the tube orange towards the base, 4.5–5.2 cm long in all, glabrous in- and outside, tube straight, c. 3.5 cm, at base 6–7 mm ϕ , widened gradually to c. 1.5 cm at apex, lobes erect or somewhat spreading, suborbicular, 1.4–2 cm ϕ . *Stamens* 10, c. 3.5 cm; filaments linear, glabrous; anthers obovate-obcordate, much narrowed towards the base, each cell ending there in a narrow apiculus, 4–4.5 by 2–2.2 mm. *Disk* glabrous. *Ovary* subovoid-conical, 6–7 by c. 3 mm, densely lepidote, rather suddenly narrowed to the style, the latter stoutish, c. 2 cm, lepidote in its lower third; stigma capitate-truncate.

Distr. *Malesia*: W. New Guinea (Wichmann Mts), at 3100 m. Once found. *Fl.* Feb.

204. *Rhododendron pachycarpon* SLEUM. Reinwardtia 5 (1960) 186; Blumea 12 (1963) 110.

Shrub, 1.2–1.5 m. Branches greyish corticate, 5–6 mm ϕ . Branchlets terete, c. 4 mm ϕ , ends laxly lepidote in flowering, glabrous and pruinose at fruiting time; internodes 3–6 cm. *Leaves* either scattered or in 3-merous pseudowhorls at the upper nodes, obovate, apex obtuse or rounded, sometimes slightly emarginate, base cuneate, subdensely lepidote beneath (scales small, nearly round, rather large, marginal zone variously angular or lobed, centre minute and \pm distinctly impressed), margin narrowly cartilaginous and subserrulate-crenulate, flat, 5–6.5 by (2.5–)3–4.5 cm, midrib narrowly impressed above, thick, flattened and obtusely prominent beneath, nerves

6-8 pairs, lower 2 ones from near the base, the others at an angle of c. 45°, all high-ascending and curved-anastomosing before the edge, slightly impressed above and raised beneath, reticulation subinconspicuous, grooved above, lepidote, 3-5 by 2.5-3.5 mm. *Umbels* (3-)-4-8-flowered. Pedicels \pm densely lepidote, epilose, 1.5 cm by c. 1 mm. *Corolla* tubular below, funnel-shaped-expanded at the lobes, thin-fleshy, of a pure sulphur or lemon yellow, c. 5 cm long in all (6-7 cm when fresh), nodding, showy, quite glabrous in- and outside, tube c. 3 cm long, straight, base 5-7 mm ϕ , c. 1 cm at apex, lobes erecto-patent, obovate-suborbicular, c. 1.5 cm ϕ . *Stamens* 10, nearly equalling the corolla tube; filaments linear, glabrous; anthers obovate-obcordate, much narrowed towards the base, c. 3 by 1.5 mm, each cell protracted into a basal appendix. *Disk* prominent, glabrous. *Ovary* thick-obovoid-cylindric in later stages, very densely lepidote, 6-7 by c. 3.5 mm, abrupt with the style, the latter c. 3 cm, lepidote at the base, otherwise glabrous; stigma obliquely capitate, shortly lobed. *Capsule* obliquely obovoid-cylindric, short-attenuate at the base, rather abruptly so at the apex, lepidote, 2-2.5 by 0.8-0.9 cm, crowned by the rest of the style; pedicel 2-3 cm by 1.5 mm.

Distr. *Malesia*: E. New Guinea (Mt Saruwaged area: Mt Enggan; Rawlinson Range in Morobe Distr.).

Ecol. In open subalpine forest on limestone, 2135-3655 m. *Fl.* March-June.

205. *Rhododendron celebicum* (BL.) DC. *Prod.* 7 (1839) 725; *Miq. Fl. Ind. Bat.* 2 (1859) 1058; *Ann. Mus. Bot. Lugd.-Bat.* 1 (1863) 44, t. 2 B; *BL. Fl. Jav. Pl. inéd.* (1863-83) t. 6; SARASIN, *Reisen in Celebes* 1 (1905) 235; SLEUM. *Reinwardtia* 5 (1960) 187. — *Vireya celebica* BL. *Bijdr.* (1826) 855; G. DON, *Gen. Syst.* 3 (1834) 848. — *R. tubulosum* REINW. *Reis. I. A.* (1858) 576, *nom. nud.* — *R. javanicum* [non (BL.) BENN.] KOORD. *Minah.* (1898) 514; KOORD.-SCHUM. *Syst. Verz.* 3 (1914) 100. — *R. discolor* WARB. in Sarasin, *Reisen in Celebes* 1 (1905) 28, *in text, nom. subnud.*, non FRANCH. 1895.

Epiphytic shrub, 1-1.5 m; roots said to be swollen and tuber-like at the ends. Branchlets terete, 1.5-3 mm ϕ , upper internodes subdensely substellate-lepidote, older parts glabrous, smooth, often pruinose; internodes 1.5-6 (rarely up to 12) cm. *Leaves* opposite or in 3-merous pseudowhorls at the upper 1-3 nodes, elliptic to lanceolate elliptic, apex short-acuminate, subacute or blunt, base broadly attenuate to the petiole, coriaceous, glabrous and slightly rugose above at full age, subdensely lepidote beneath (scales small, flat, marginal zone thin, rather large, variously angled or substellate-lobed to -dented, centre small, not impressed), edge but slightly and narrowly revolute, (3-)-4-7.5 by (1.5-)-2-3(-3.5) cm, midrib rather narrow and slightly impressed above, robust and prominent beneath, nerves 5-7 pairs, subpatent, anastomosing, faintly sunk above, very slightly or not raised beneath, no proper reticulation visible; petiole \pm flattened, lepidote, 4-10(-12) by 1-1.5

mm. *Umbels* (2-)-3-5(-7)-flowered. Perulae ovate to obovate, glabrous dorsally, margin with \pm early caducous stellate scales, 0.5-1.2 by 0.4-0.7 cm. Bracteoles linear below, subspathulate-dilated and irregularly dented distally, glabrous, c. 1.5 cm by 1-2 mm. Pedicels slender, very densely stellate-lepidote and papillose, not properly hairy, 1.5-2 cm. *Calyx* disk-shaped, oblique, shortly obtusely 5-lobed, densely lepidote outside, 2.5-3 mm ϕ . *Corolla* tubular below, expanded at the lobes, thin, red to carmine, 3-3.5(-4) cm long in all, laxly to very laxly lepidote outside, glabrous inside, tube cylindric, straight, c. 2.5(-3) cm long, base angular by 5 pouches, 5-6 mm ϕ , widened to 8-10 mm at apex, lobes suborbicular, 6-10 by 6-8 mm. *Stamens* 10, unequal, the longest mostly reaching \pm halfway the corolla lobes, sometimes equalling the corolla; filaments linear, glabrous; anthers broad-oblong, 2-2.5 by 1 mm, base rounded. *Disk* prominent, glabrous. *Ovary* subcylindric, very densely stellate-lepidote, 5-6 by 2 mm, continuous with the style, the latter quite glabrous or lepidote at the base only, \pm as long as the corolla; stigma thick-capitate. Submature *capsule* narrow subobovoid-cylindric, 2.5-3.8 by 0.35 cm, lepidote, pedicel up to 3 cm.

Distr. *Malesia*: Celebes (Minahasa: Mt Klabat, Poso Lake area; Central part).

Ecol. Mossy forest, 1800-2600 m. *Fl.* Jan., June, Nov.

206. *Rhododendron sayeri* SLEUM. *Reinwardtia* 5 (1960) 188.

Shrub, c. 1.8 m. Branchlets divaricate, terete, 1.5-3 mm ϕ , upper internodes very densely rufous-stellate-lepidote, early glabrescent and smooth lower down; internodes 3-7 cm. *Leaves* in 3(-5)-merous pseudowhorls at the upper 1-3 nodes, broad-elliptic, sometimes obovate-elliptic, more rarely obovate, apex (very) broadly attenuate, obtuse or sometimes rounded, broadly attenuate or nearly rounded towards the base, coriaceous, mature ones quite glabrous above, subpersistently densely rufous-lepidote beneath (scales small, \pm deeply stellate-dented or -lacerate in the marginal zone, minute centre dark and very slightly impressed), margin a little revolute to base or quite flat, (3.5-)-4.5-6.5 by (2-)-2.5-4 cm, midrib slightly impressed above, markedly prominent especially in the lower part, nerves 6-8 pairs, irregular, spreading, anastomosing before the edge, somewhat impressed or raised as are the midrib and veins above, prominent beneath, veins forming a lax, well visible network on both faces, veinlets less conspicuous beneath; petiole flattened and grooved dorsally, lepidote, 4-7 by 1-1.5 mm. *Umbels* (1-2-)-3-4-flowered. Perulae ovate to obovate, obtuse, glabrous dorsally, very shortly subglandular-fimbriate, up to 1 by 0.8 cm. Bracteoles linear below, subspathulate-dilated distally, up to 1.2 cm by 0.5-1.5 mm. Pedicels very densely rufous-stellate-lepidote, 1.5-2.3 cm by c. 0.6 mm. *Calyx* obliquely disk-shaped, irregularly 5-dented, lepidote at the base dorsally, teeth deltoid, subacute, 0.5-2 (rarely up to 3) mm, \pm

spreading, subglabrous. *Corolla* tubular below, lobes expanded, suboblique, 4–4.5 cm long in all, \pm laxly stellate-lepidote outside, laxly and longish patent-hairy at the tube inside, tube \pm curved, c. 3 cm, the 5-saccate base 4–5 mm σ , amplate to 7–8 mm σ at apex, lobes suborbicular, 0.9–1.3 cm σ . *Stamens* 10, \pm as long as the corolla tube; filaments linear, laxly patently long-hairy in the lower $\frac{2}{3}$; anthers subobovate-oblong, 2.5 mm by c. 1.2 mm, base obtuse. *Disk* prominent, sparsely hairy in the upper margin. *Ovary* subcylindric, rather abruptly narrowed to the style, very densely stellate-lepidote, epilose, 5–6 by 2–2.5 mm; style \pm as long as the stamens, laxly stellate-lepidote in its lower third, glabrous for the rest; stigma thick-capitate.

Distr. Malesia: New Guinea (Central Distr.: Mt Obree), growing in profusion on brink of precipitous cliffs at Howers Lake, c. 2135 m. Once found. *Fl.* Aug.

207. *Rhododendron pachystigma* SLEUM. Blumea 12 (1963) 110.

Terrestrial shrub, 1.5 m. Branchlets subterete, tips densely lepidote, older parts striate and pruinose; internodes 4–10(–13) cm by 3–5 mm. *Leaves* at the apex of or at the upper 2 internodes or almost at the nodes, obovate or elliptic-obovate, apex rounded, sometimes slightly retuse, base \pm broadly cuneate to the petiole, when young densely lepidote on both faces, mature ones coriaceous, firm, rather early glabrescent (scales small, rufescent, sessile and flattish, detersile, marginal zone irregularly substellate-dented, centre minute, hardly or not impressed), entire, (5–) 6–8.5(–9) by (2.5–)3–4.5(–5) cm, subrevolute towards the base, midrib thick and grooved in the lower part above, as strong as the petiole at the base beneath, nerves 8–9 pairs, straight, at an angle of c. 45° and subparallel at the base, obtusely curved-anastomosing before the edge, faintly impressed above, a little raised beneath, no reticulation; petiole densely lepidote initially, 1–2(–2.5) cm by c. 2 mm. *Umbels* 2–3-flowered. Immature perulae laxly lepidote dorsally, no hairs. Bracteoles filiform, glabrous, seen up to 1.5 cm. Pedicels with dense, small rusty scales, furthermore with fine short hairs in the lower $\frac{3}{4}$, and upwards more densely with longer hairs, as on the calyx, (8–) 11–14 by 1.5–2 mm. *Calyx* obliquely patellar, 6–7 mm σ , lobes irregular, spreading, deltoid to elongate-deltoid, fimbriate and caducously lepidote along the margin, 2–3(–4) mm. *Corolla* funnel-shaped, deeply (6–)7-lobed, light orange at the tube outside, white at the lobes, fleshy, (7–)7.5–8 cm long in all, sparsely lepidote or glabrous outside, densely white-hairy in the lower part of the tube inside, tube straight, (2.5–)3 cm long, base 6–7-pouched, 8–9 mm σ , gradually widened to 2–2.5 cm, lobes obovate-spathulate, spreading, 4.5–5 by (2.5–)3–3.5 cm. *Stamens* 12–14, unequal, well exerted; filaments linear, 1 mm wide below, densely white-hairy in the basal part, filiform and glabrous in the upper part; anthers versatile, elongate-oblong, base obtuse, c. 8 by

1–1.2 mm. *Disk* prominent, densely white-hairy on the margin. *Ovary* thick-cylindric, 8–9 by c. 4 mm, red-brown stellate-scaly, no hairs, tapering to the style, the latter glabrous, c. 4 cm by 1–1.5 mm; stigma subpellate, 6–8(–9) mm σ , with 6–7 thick, subglobular lobes.

Distr. Malesia: W. New Guinea (Balim R. Valley near Wiligimaan), once collected.

Ecol. Young secondary forest, on stony clay, c. 1800 m. *Fl.* June.

Vern. Poroom, Dani.

208. *Rhododendron angulatum* J. J. S. Bull. Jard. Bot. Btzg II, 8 (1912) 50; Nova Guinea 12 (1914) 140, t. 36 A; SLEUM. Reinwardtia 5 (1960) 188.

Terrestrial shrub, c. 75 cm. Branchlets rather robust, terete, laxly lepidote. *Leaves* in \pm 5-merous pseudowhorls at the upper nodes, ovate-lanceolate, apex gradually long-acuminate, very acute, base obtuse-rounded or very slightly cordate, coriaceous, glabrous above with age, subdensely lepidote beneath (scales stellate-dented in the marginal zone, centre \pm impressed, leaving minute pits when the scale is gone), faintly or not recurved at margin, 11–18 by 3.5–5.8 cm, midrib narrowly grooved above, stout and much obtusely prominent beneath in the lower part, nerves 12–15 pairs, ascending, anastomosing, very slightly raised or impressed above, obscure beneath, no reticulation visible; petiole robust, compressed and grooved dorsally, transversely rugulose, minutely lepidote, 1–1.2 cm by 3 mm. *Umbels* \pm 6-flowered. Pedicels laxly minutely lepidote, more densely so below the calyx, epilose 4–5 cm by 2.5 mm. *Calyx* annular, oblique, obtusely and rather inconspicuously 5-angular, ciliolate, c. 4.5 mm σ . *Corolla* funnel-shaped, 5-lobed in the upper $\frac{2}{3}$, rose red and rather fleshy, 5.5–6 cm long in all, sparsely minutely lepidote outside, laxly pubescent at the tube inside, tube distinctly 5-angular or pouched at the base outside, deeply 5-grooved lengthwise in the lower part inside, the ribs extending upwards to the median of the corolla lobes, c. 2 cm long, c. 8 mm σ at base, hardly widened distally, lobes subovate-elliptic, obtuse, spreading, 3.5–4 by c. 2 cm. *Stamens* 10, nearly as long as the corolla; filaments linear and shortly patently pubescent below, narrower and glabrescent upwards; anthers linear-oblong, 5.5–6 by 1 mm, obtuse at the base. *Disk* much prominent, practically glabrous. *Ovary* conical-cylindric, densely clothed with thickish nearly roundish scales, no hairs, c. 10 by 3 mm, continuous with the style, the latter lepidote and sparsely minutely pubescent (or nearly papillose) at the base, glabrous for the rest, c. 4.8 cm; stigma thick-capitate.

Distr. Malesia: W. New Guinea (Oranje Mts: Mt Goliath), common in shadowy swampy humous places at 1500 m. Once collected. *Fl.* April.

209. *Rhododendron loerzingii* J. J. S. in K. & V. Bijdr. 13 (1914) 105, 107; AMSH. in Back. Bekn. Fl. Java (em. ed.) 7 (1948) fam. 162, p. 3; SLEUM.

Reinwardtia 5 (1960) 189; STEEN. Endeavour 21 (1962) 189, t. 4.

Erect, much-branched, terrestrial shrub, c. 2.5 m. Branchlets divaricate, terete, tips subdensely clothed with flat substellate scales, lower down glabrescent and smooth; internodes 2-8(-10) cm. *Leaves* very close together or in 3-5-merous pseudowhorls at the upper nodes, mostly oblong-elliptic, more rarely elliptic, apex short-acuminate, subacute, rarely obtuse, base broadly and \pm acutely attenuate to the petiole, coriaceous, initially lepidote on both faces, glabrescent above, more persistently lepidote beneath (scales dense though distant from each other, small, rufescent, the rather narrow marginal zone variously angled, lobed or substellate-dented, centre dark, distinctly impressed, pits blackish with age), edge narrow-cartilaginous and somewhat revolute, 6-8.5(-12) by 2.3-3.5(-4.4) cm, midrib narrow and slightly impressed above, rather stout and obtusely prominent beneath, nerves 8-10 pairs, spreading, anastomosing before the edge, mostly faintly impressed above, slightly raised beneath, veins subinconspicuous; petiole compressed and grooved dorsally, 4-8(-10) by 1.5-2 mm. *Umbels* (3-)-5-9-flowered. Flower buds ovoid, outer perulae ovate, inner ones obovate, obtuse or mostly apiculate, glabrous except some scales on the upper part of the dorsal mediane or the very tips, margin laxly set with caducous scales, 0.4-1.7 by 0.3-0.8(-1.1) cm. Bracteoles linear below, spatulate at the apex, glabrous, 0.7-1 cm by 0.5-1 mm. Pedicels rather slender, very densely stellate-lepidote, epilose, 2-2.5 cm. *Calyx* small, obliquely annular or nearly cup-shaped, lepidote dorsally, c. 3 mm σ , teeth deltoid, unequal, subpatent, acute, glabrous apically, 0.5-2 (occasionally up to 3) mm. *Corolla* tubular in outline, expanded at the lobes, scarlet, membranous, sparsely stellate-lepidote outside, pubescent in lower half of the tube inside, (2.2-)-2.5-3 cm long in all, tube straight, 1.5-2.2 cm long, at base 4-5 mm σ , widened to 7-8 mm at apex, lobes obovate, subequal, 0.9-1.3 by 0.6-1 cm. *Stamens* 10, \pm as long as the corolla tube; filaments linear, subdensely clad with longish patent hairs in the lowest 3-5 mm, glabrous for the rest; anthers obovate, apex truncate, base subacute, 1-1.5 mm. *Disk* prominent, glabrous. *Ovary* subcylindrical-conical, much abrupt with the style, densely stellate-lepidote, or with some very short hairs in especially the lower part between the scales, *i.e.* practically epilose, 5-7 by c. 3 mm; style rather thick, glabrous, nearly as long as the stamens; stigma capitate, with thick lobes. *Capsule* oblique cylindrical, 5-angular, densely lepidote, 2-2.3 by 0.5 cm. *Seeds* c. 6 mm including the tails; pedicel to 4.8 cm.

Distr. *Malesia*: Central Java (Kedu: Mts Tlerep and Sumbing).

Ecol. In scrub or grassland, on rather dry but fertile soil, very rich in humus, apparently rare, 1800-2000 m. *Fl.* March-Nov., *fr.* Aug.-Nov.

Vern. *Purwo geni*, J.

210. *Rhododendron impressopunctatum* J. J. S. in

Fedde, Rep. 30 (1932) 164; SLEUM. Reinwardtia 5 (1960) 189.

Terrestrial shrub, c. 1.2 m. Branchlets subterete, upper 1-2 internodes \pm densely clad with stellate scales, lower ones quite glabrous, striate, dark, later with thin grey cork; internodes 2-5(-10) cm. *Leaves* in 4-5-merous pseudowhorls at the upper 1-3 nodes, oblong-elliptic, apex short-acuminate, subacute or rarely bluntish, base broad-attenuate to nearly rounded, coriaceous, subdensely set with small, flat, non-impressed and early decoloured scales for a long time, especially on the midrib, finally glabrescent above, more densely and \pm persistently lepidote beneath (scales dense, but for their greater number distant from each other, rust-coloured, rather small, marginal zone \pm irregularly lobed or dented, dark centre distinctly impressed), margin slightly recurved, 6.2-8.3 by 2.4-3.2 cm, midrib grooved above, strongly and obtusely prominent beneath, nerves 8-10 pairs, spreading, but obscurely anastomosing, very slightly impressed above, not much raised beneath, reticulation inconspicuous; petiole very densely lepidote initially as is the lower part of the midrib beneath, *i.e.* the scales \pm touching each other there, semiterete, much grooved above, 8-10 by 1.5-2 mm. *Umbels* 5-7-flowered. Pedicels sparsely lepidote, 1-1.9 cm by 0.7 mm. *Calyx* obliquely disk-shaped, unequally 5-angular or very shortly dented, c. 4 mm σ . *Corolla* tubular-funnel-shaped, red, 3-3.5 cm long in all, quite glabrous in- and outside, tube straight, 2-2.3 cm, at the somewhat saccate base c. 5 mm σ , slightly dilated upwards, lobes expanded, obovate to suborbicular, 1-1.3 by (0.7-)-0.9-1.2 cm. *Stamens* 10, somewhat exerted from the corolla tube; filaments linear, densely patently hairy in the lowest 5-7 mm; anthers oblong, base obtuse, c. 3.5 by 1 mm. *Disk* prominent, glabrous. *Ovary* conical-subcylindric, very densely stellate-lepidote, epilose, 5-6 by 2-2.5 mm, rather abrupt with the style, the latter \pm as long as the stamens, glabrous; stigma capitate.

Distr. *Malesia*: Moluccas (Buru), once found in peatmoor at Kunturun, 1075 m. *Fl.* Feb.

Note. Size and colour of the scales suggest, that *R. impressopunctatum* is a hybrid of *R. malayanum* with another species of the *Javanicum* group, presumably *R. seranicum*; these three species grow together at Kunturun.

211. *Rhododendron xanthopetalum* MERR. Publ. Gov. Lab. Philip. n. 29 (1905) 41; Philip. J. Sc. 1 (1906) Suppl. 111; *ibid.* 3 (1908) Bot. 380; MILLAIS, Rhodod. (1917) 263; MERR. En. Philip. 3 (1923) 246; MILLAIS, Rhodod. ser. 2 (1924) 261; COPEL. f. Philip. J. Sc. 40 (1929) 169, t. 16, f. 1-2; SLEUM. Reinwardtia 5 (1960) 189.

Epiphytic shrub, 80 cm or less, with a stout simple or but slightly branched stem, 1 cm σ below, covered with light grey bark. Branchlets reddish brown, glabrous. *Leaves* scattered along the upper internodes, oblong-elliptic, apex slightly acuminate or merely acute, base acute, coriaceous, glabrous above, lepidote, margin revolute, 9-12 by 3.5-5 cm, midrib very stout and prominent; petiole very

robust, 1.5 cm. *Umbels* 3-4-flowered. Pedicels glabrous, 1.5 cm. *Calyx* reduced to an obscure disk. *Corolla* campanulate, yellow, 3-3.4 cm long in all and about as wide at the limb, tube 1.5 cm long, c. 5 mm σ at base, lobes rounded, 1.5 cm. *Stamens* 10; filaments pubescent below, 1.8 cm; anthers linear, without any basal appendix, 4 mm. *Disk* crowned with abundant hairs. *Ovary* lepidote, 8 mm; style glabrous, abrupt, 1.2 cm.

Distr. *Malesia*: Philippines (Luzon;? Mindoro).

Ecol. Epiphyte in moss forest, 1200 m, apparently rare.

Note. An imperfectly known species of which I have seen not more than a single leaf. After COPELAND *f.*, the occurrence in Mindoro remains uncertain.

212. *Rhododendron hirtolepidotum* J. J. S. Nova Guinea 12 (1914) 135, t. 32; KANEH. & HATUS. Bot. Mag. Tokyo 56 (1942) 479; SLEUM. Reinwardtia 5 (1960) 189; Blumea 12 (1963) 110.

Terrestrial or occasionally epiphytic shrub, (0.5-)1-2(-2.5) m, not much branched; bark brown. Branchlets terete, (2-)3-5 mm σ , upper internodes or very tips only subdensely clothed with early caducous, substellate, rufescent scales, lower parts glabrous and smooth, early covered with cork; internodes (2-)4-18 cm. *Leaves* in 4-6(-8)-merous pseudowhorls at the upper 1-2 (-3) nodes, oblong-elliptic, sometimes obovate-elliptic, apex broad-attenuate or shortly sub- acuminate, obtuse to nearly rounded, base broadly narrowed, subtruncate to rounded, rarely subcordate, coriaceous, glabrous above at full age, rather densely and less fugaciously lepidote beneath (scales small, variously substellate-lobed or -dented in the marginal zone, dark centre but slightly impressed), finally completely glabrescent, the remaining pits blackish and shallow, edge slightly revolute, (4-)5-7.5(-10.5) by (2-)2.5-4.2 cm, midrib slightly impressed above, stout and much prominent in the lower part beneath, nerves 6-8(-10) pairs, spreading, rather straight below, curved and \pm indistinctly anastomosing before the edge, slightly raised on both faces or a little impressed above, veins lax, somewhat prominent above, mostly subinconspicuous beneath, no proper reticulation; petiole semiterete, grooved above, lepidote and rugulose, (4-)6-12(-16) by 1.5-2(-2.5) mm. *Umbels* 5-9-flowered. Perulae ovate to obovate, obtuse, firm-membranous, with some sparse scales at the top dorsally or quite glabrous, up to 1.5 by 0.8 cm. Bracteoles linear below, subspathulate-dilated apically, glabrous, up to 2.2 cm by 1.5 mm. Pedicels sparsely stellate-lepidote below, more densely so distally, 3-4 cm by 0.6-0.8 mm. *Calyx* very oblique, disk-shaped, 5-angular, c. 4 mm σ , dorsally densely lepidote. *Corolla* tubular below, suboblique, rose-red to carmine, membranous, rather laxly to subdensely lepidote outside, short-hairy at the lower half of the tube inside, 4-4.5(-5) cm long in all, tube (2-)2.5-3 cm long, at base 5-saccate, 6-7 mm σ , slightly dilated to apex, lobes \pm obliquely obovate-spathulate, (0.9-)1.3-1.7 by 1-1.2 cm.

Stamens 10, slightly shorter than the corolla; filaments linear, densely pubescent below, less so upwards; anthers oblong, obtuse at the base, 3.5-4 by 1 mm. *Disk* short-pubescent at the upper margin, glabrous below. *Ovary* subcylindric, densely stellate-lepidote, with some spreading hairs on the very top between the scales, c. 8 by 2.5 mm, rather gradually tapering to the style, the latter stoutish, laxly lepidote and subdensely patent-pubescent in the lower 1-1.5 cm, glabrous for the rest, \pm as long as the corolla tube; stigma capitate, deeply 5-lobed. *Capsule* subcylindric, subdensely set with red-brown scales, 3.5-4 by 0.4-0.5 cm; pedicel to 6 cm by 1.3 mm.

Distr. *Malesia*: New Guinea (Vogelkop Peninsula: Arfak Mts, Netti Range, Mt Watjetoni).

Ecol. In light mossy forest in poor humous or sandy soil, or in swampy places with *Sphagnum* (1200-)1750-2000 m. *Fl.* April, Nov.-Dec.

Vern. *Krobua*, Kebar.

213. *Rhododendron pseudomurudense* SLEUM. Reinwardtia 5 (1960) 189. — *R. murudense* (non MERR.) J. J. S. Bull. Jard. Bot. Btzg III, 13 (1935) 449.

Epiphytic shrub. Branchlets very robust, upper internode obtusangular, c. 5 mm σ , rather densely clothed with flat, appressed, rufescent scales, lower ones terete, 6-8 mm σ , glabrescent and smooth; internodes 5-16 cm, occasionally longer. *Leaves* spirally arranged, all or most of them (3-5) in the upper half of the upper 1-2 internodes, oblong, sometimes subovate- or elliptic-oblong, apex very broadly attenuate, obtuse, base mostly obtuse to rounded, or sometimes cordulate, coriaceous, thick and stiff, glabrous above at full maturity, subdensely lepidote for a long time beneath (scales minute, variously and irregularly substellate-dented at the marginal zone, which disappears early, centre dark, faintly or not impressed, leaving dark points when the proper scales are gone), margin flat, 12-18 by 4-7(-8) cm, midrib as robust as the petiole, obtusely prominent on both faces in the lower part, nerves (15-)17-20 pairs, very distinct and subparallel from the midrib at c. 90°, \pm straight below, curved and anastomosing before the edge, prominent on both sides as is the rather dense reticulation; petiole red brown in dry specimens, subterete, not grooved above, glabrous, (1.3-)1.5-2.1 cm by 3-4(-5) mm. *Umbels* 12-25-flowered. Perulae ovate to ovate-oblong, glabrous (immature). Bracteoles linear or nearly filiform, glabrous, c. 2 cm by c. 1 mm. *Calyx* oblique, disk-shaped, obscurely lobed, glabrous, c. 4.5 mm σ . *Corolla* broad-funnel shaped, dark red to salmon, 2.5-3 cm long in all, glabrous in- and outside, tube cylindric below, widened upwards, 1.2-1.5 cm long, the 5-saccate base c. 4 mm σ , widened to c. 1 cm at apex, lobes oblong-obovate to subspathulate, 1.2-1.5 by 0.8-1 cm. *Stamens* 10, unequal, c. 2 cm long; filaments linear, quite glabrous; anthers obovate-elliptic, base obtuse, 3-3.5 by 1.5 mm. *Disk* thick-prominent, glabrous. *Ovary* cylindric, c. 4 by 2.5 mm, very abrupt with the

style, quite glabrous, somewhat rugulose, blackish when dry; style (4)–5–6 mm, glabrous; stigma capitate, distinctly lobulate, c. 2 mm ϕ . *Capsule* (immature) obliquely subcylindric, 1.5 by 0.5 cm; pedicel up to 5 cm.

Distr. *Malesia*: Central E. Borneo (Mt Kemul), 1600–1850 m (summit), common in primary forest. *Fl.* Oct.

214. *Rhododendron seranicum* J. J. S. in Fedde, Rep. 30 (1932) 165; Bot. Jahrb. 68 (1937) 202, in obs. ('*seranense*'); SLEUM. Reinwardtia 5 (1960) 189.

Shrub, up to 5 m. Branches 5–6 mm ϕ , with ashy cork. Branchlets 2.5–4 mm ϕ , terete, upper internode laxly lepidote, often pruinose, smooth; internodes 1.5–9(–11.5) cm. *Leaves* scattered along the upper 1–2 internodes, the upper 2–3 often close together near the node, elliptic, subovate- or oblong-elliptic, more rarely oblong, apex short-acuminate, subacute, base broadly attenuate to the petiole, or nearly rounded, coriaceous, quite glabrous above at maturity, rather laxly lepidote beneath for some time (scales small, flat, marginal zone irregularly lobed or dented, centre faintly or not impressed), finally \pm glabrescent beneath too, edge shortly and narrowly recurved, 5–8.5 by (2)–2.5–4 cm, midrib a continuation of the thick and somewhat flattened petiole, much and bluntly prominent in the lower part on both faces, nerves 8–10 pairs, \pm irregular, spreading below, curved-ascending and obscurely anastomosing towards the edge, slightly prominent on both faces, veins laxly reticulate, a little raised or often \pm inconspicuous; petiole 0.5–1 (rarely up to 1.5) cm by 2–3 mm. *Umbels* 7–11-flowered. Inner perulae oblong to narrow-oblong, obtuse, membranous, glabrous, 3–3.5 by 0.5–1 cm. Bracteoles linear, glabrous, c. 2.5 cm by 1 mm. Pedicels thickened at apex, sparsely lepidote or practically glabrous, (1.5)–2–3 cm by c. 1 mm. *Calyx* very oblique, shortly cup- or disk-shaped, thickened, obscurely or not lobed, laxly lepidote outside, c. 5 mm ϕ . *Corolla* broad-funnel-shaped, light violet, rose or brownish yellow (limb orange, salmon rose towards the border), or fiery red, glabrous in- and outside, (4)–4.5–5.5 cm long in all, tube 1.7–2.1 cm long, the saccate base 5–6 mm ϕ , widened to 1–1.5 cm at apex, lobes unequal, oblong-obovate, c. 3 by 2 cm. *Stamens* 10, unequal, 2.8–3.2 cm; filaments flat-linear, glabrous; anthers oblong, somewhat curved, base blunt or minutely apiculate, 3.5–4 by 1 mm. *Disk* prominent, glabrous. *Ovary* oblong-conical, glabrous from the beginning, minutely rugulose, blackish when dry, c. 6 by 3 mm, rather abrupt with the style, which is glabrous and 1.5–2 cm long; stigma thick-capitate, manifestly 5-lobed. *Capsule* oblique, thick-fusiform, 3.5–4 by 0.7–0.8 cm, glabrous; pedicel 3–4 cm by 1.5 mm.

Distr. *Malesia*: Moluccas (Ceram, Buru, and Ambon).

Ecol. Light thickets on open spots and in primary forest, 900–1700 m, on limestone, locally abundant. *Fl.* Aug.–Feb.

Note. A specimen slightly differing by salmon red, 3.5 cm long corollas and manifestly biapenniculate anthers has been found in Central Celebes (Palopo-Rantepao road), in dry rocky hillside at 900 m.

215. *Rhododendron loboense* COPEL. f. Philip. J. Sc. 40 (1929) 137, 172, t. 15, f. 3, t. 16, f. 5–6; SLEUM. Reinwardtia 5 (1960) 190.

Epiphytic shrublet, 30–40 cm. Branchlets terete, c. 5 mm ϕ , glabrous. *Leaves* scattered along the upper internode (lower internodes not known), elliptic to oblong-elliptic, apex shortly sub-acuminate, obtuse, base broadly subacutely attenuate, very coriaceous and stiff, glabrous above at maturity, rather laxly and \pm persistently lepidote beneath (scales relatively small, irregularly lobed or dented at the marginal zone, centre faintly or not impressed), finally glabrous on both faces, margin but slightly recurved, 10–12 by 4–6 cm, midrib robust, rather flattish in dry specimens, obtusely prominent on both sides, as broad as the petiole at the base, gradually narrowed upwards, nearly inconspicuous at the apex, nerves 12–15, rather dense pairs, at an acute angle, indistinctly anastomosing, \pm markedly prominent at both faces, veins laxly reticulate, mostly visible beneath only; petiole somewhat flattened, (1)–1.5–2 cm by 2.5–3 mm. *Umbels* \pm 5-flowered. Pedicels practically glabrous, 1–1.5 cm by c. 1.5 mm. *Calyx* disk-like, margin thickened, wavy and faintly lobed, glabrous. *Corolla* funnel-shaped, 3.5–4 cm long in all, yellow, glabrous on both sides, lobes unequal, oval, c. 2 cm. *Stamens* 10; filaments linear, glabrous, c. 2.5 cm; anthers oblong, base obtuse, 4 by 1 mm. *Disk* glabrous. *Ovary* subobovoid-cylindric, quite glabrous from the beginning, c. 7 by 2.5 mm; style abrupt with the ovary, glabrous, 1.3 cm; stigma capitate, c. 3 mm ϕ . *Capsule* subcylindric, 4 by c. 0.5 cm; pedicel 1.5–2 cm.

Distr. *Malesia*: Philippines (S. Luzon: Prov. Batangas, Lobo Mts). One collection. *Fl.* April. Vern. *Malagos*, Lobo.

216. *Rhododendron williamsii* MERR. ex COPEL. f. Philip. J. Sc. 40 (1929) 137, 163, t. 9, t. 11, f. 2; SLEUM. Reinwardtia 5 (1960) 190. — *R. schadenbergii* (non WARB.) MERR. Publ. Gov. Lab. Philip. n. 29 (1905) 40, p.p.; Philip. J. Sc. 3 (1908) Bot. 380, p.p.; En. Philip. 3 (1923) 245, p.p.

Small tree, 4–6 m; branches light grey or brownish, terete. Branchlets subterete, upper internodes laxly lepidote at the tips, or early glabrescent and not rarely quite glabrous and somewhat pruinose; internodes 3–10 cm. *Leaves* in 3(–4)-merous pseudowhorls at or close to the upper 1 or 2 nodes, oblong-ovate or oblong-elliptic, rather thinly coriaceous, apex shortly but sharply acuminate, \pm acute, base acutely attenuate into the petiole or bluntish, practically glabrous above with age, rather laxly lepidote beneath initially (scales small, flat, variously and irregularly lobed in the very thin, early dissolved marginal zone, centre slightly darker, but faintly impressed), finally

glabrescent beneath too, leaving shallow dark pits, little or not revolute, 8–11 by 3–5(–6) cm, midrib broad (1.5–2 mm) at the base, much narrowed upwards, impressed in the upper $\frac{2}{3}$ above, obtusely prominent below, nerves 6–10(–12) pairs, somewhat ascending, slightly impressed or raised above, more conspicuously prominent beneath, open or rather obscurely anastomosing before the edge, reticulation lax, slightly prominent on both sides, not rarely subinconspicuous; petiole 1–1.5 (–2) cm by 1.5–2.5(–3) mm, somewhat flattened. *Umbels* 5–8-flowered. Outer perulae broad-ovate, mucronulate, 1.5 by 1.2 cm, inner ones broad-oblong or elliptic, obtuse up to 2 by 1 cm with some dorsal scales or glabrous, margin very shallowly dented by early caducous scales. Bracteoles linear, glabrous, up to 2 cm by 0.5 mm. Pedicels \pm densely set with rufescent flattish scales, especially towards the apex, 2–2.5 cm by 1 mm. *Calyx* very oblique, disk-shaped, shortly irregularly 5-dented (up to 1 mm), 4–5 mm ϕ . *Corolla* funnel-shaped, white, (2.5–)3–4 cm long in all, sparsely lepidote or mostly glabrous outside, glabrous inside, tube 1.8–2.3 cm, base 5-pouched, *c.* 7 mm ϕ , widened to *c.* 1 cm at apex, lobes obovate-suborbicular, sub-expanded, 1–1.5 cm ϕ . *Stamens* 10, as long as or slightly exceeding the tube; filaments linear, glabrous; anthers oblong, *c.* 3 by 1 mm, each cell with a short basal apiculus. *Disk* glabrous, prominent. *Ovary* subovoid-cylindric, initially with rather dense, flat, rufescent, stellate scales, glabrescent, subabrupt with the style, (5–)6–8 by 2.5–3 mm; style *c.* 2 cm, with some scales at the base, otherwise glabrous; stigma thick-capitate, 3 mm ϕ . *Capsule* oblong-fusiform, 2.5–3 by 0.6–0.7 cm, bearing the long persistent style, which may attain 2.5 cm; pedicel to 4 cm by 1.5 mm. *Seeds* 5–6 by 0.2 mm including the tails.

Distr. *Malesia*: Philippines (Luzon: Mountain and Zambales Prov.).

Ecol. Along streams, in ravines, 1500–2200 m.

217. *Rhododendron robinsonii* RIDL. J. Fed. Mal. St. Mus. 4 (1909) 44; *ibid.* 5 (1914) 39; Fl. Mal. Pen. 2 (1923) 216; HENDERS. Mal. Nat. J. 6 (1950) 261; SLEUM. Reinwardtia 5 (1960) 190. — *R. javanicum* [non (BL.) BENN.] CLARKE in Hook. f. Fl. Br. Ind. 3 (1882) 463; RIDL. J. Str. Br. R. As. Soc. n. 23 (1891) 145; K. & G. J. As. Soc. Beng. 74, ii (1905) 74; RIDL. J. Fed. Mal. St. Mus. 5 (1914) 38; Fl. Mal. Pen. 2 (1923) 216; BURK. & HENDERS. Gard. Bull. S. S. 3 (1925) 390; HENDERS. Mal. Nat. J. 6 (1950) 262. — *R. teysmannii* (non MIQ.) HENDERS. J. Mal. Br. R. As. Soc. 5 (1927) 256.

Small, epiphytic or sometimes terrestrial shrub, 1–2.5 m. Branchlets subterete, very tips laxly lepidote, lower parts glabrous, upper 1–2 internodes dark, older ones with a thin, ashy cork; internodes 4–8(–10) cm. *Leaves* in 3–4 (rarely up to 8)-merous pseudowhorls at the upper 2–3 nodes, and often 1–2 additional ones below the nodes (several scars in the lower part of the internodes from early caducous, much reduced bract-like leaflets), elliptic or mostly elliptic-oblong, some-

times lanceolate, apex short-acuminate, mostly \pm acute, base acutely narrowed to the petiole, \pm coriaceous, glabrous and with numerous minute impressed darker points at maturity above, laxly lepidote beneath (scales variously irregularly lobed or dented in the marginal zone, dark centre but shallowly impressed), finally \pm completely glabrescent beneath too, margin very slightly or not revolute, (5–)6–12(–16, rarely up to 17) by (2–)2.5–4(–6) cm, midrib as stout as the petiole, obtusely prominent in its lower part at both faces, \pm impressed distally above, nerves 8–10 (–12) pairs, curved-spreading and obscurely inter-arching at some distance from the edge, slightly prominent on both sides, reticulation obscure, or faintly visible beneath only; petiole rugulose, somewhat flattened, (0.7–)1–1.5(–2) cm by 1.5–2(–3) mm. *Umbels* (4–)5–8(–12)-flowered. Flower buds ovoid, acuminate, 3–3.5 by 2 cm, outer perulae ovate-acuminate, subacute, initially laxly lepidote dorsally, but very early glabrescent, inner ones ovate-oblong, more obtuse, glabrous, up to 2.5 by 1.3 cm. Bracteoles linear below, subspathulate at the apex, glabrous, up to 2 cm by 0.5–2 mm. Pedicels laxly lepidote, early glabrescent, 2–3.5 (–4.5) cm by 0.5–1 mm at anthesis. *Calyx* oblique, disk-shaped or merely rim-like, obscurely lobed or wavy, glabrescent, 3–4 mm ϕ . *Corolla* funnel-shaped, golden to deep creamy yellow, flushed apricot-pink, sometimes yellowish salmon, bright red or diluted crimson, thin, 3–3.5 cm long and wide, glabrous in- and outside, tube *c.* 1.5 cm long, base distinctly 5-pouched, 5–6 mm ϕ , widened to 1–1.5 cm at apex, lobes \pm expanded, broad-oblong-obovate, 1.3–1.8 by 1–1.3(–1.5) cm. *Stamens* 10, unequal, 2–2.5 cm; filaments linear, quite glabrous; anthers oblong, a little curved, base obtuse, 3–3.5 by 1–1.3 mm. *Disk* prominent, glabrous. *Ovary* ovoid-conical, initially with some early caducous substellate scales, or mostly glabrous from the begin, often faintly verruculose, 5–6 by 2–2.5 mm, \pm abrupt with the style, the latter *c.* 1.5 cm, rather slender, glabrous; stigma large, capitate, thickly and markedly 5-lobed, 2–3 mm ϕ . *Capsule* thick-fusiform, somewhat oblique and curved, glabrous, *c.* 3 by 0.6 cm.

Distr. *Malesia*: Malay Peninsula (Main Range from Perak to Selangor, and in the Taiping Hills).

Ecol. Epiphytic on lofty trees, also terrestrial on rocks by stream, in wooded hillside or swamp, locally common, but rare in general, 1035–1830 m. *Fl. fr.* Jan.–Dec.

Vern. *Nubang bintang*, Selangor, *akar*, Pahang.

218. *Rhododendron rarilepidotum* J. J. S. in Merr. Contr. Arn. Arb. 8 (1934) 126; SLEUM. Reinwardtia 5 (1960) 191.

var. rarilepidotum.

Shrub, 1.5–4 m, said to be often much branched. Branchlets subterete, *c.* 3 mm ϕ , upper internodes laxly lepidote, lower ones glabrescent, not rarely pruinose, smooth; internodes 4–11 cm. *Leaves* 3–6 in a pseudowhorl at the upper 1–3 nodes, further sometimes 1–2 inserted 1–2 cm lower, elliptic or

oblong-elliptic, not rarely oblong-lanceolate, apex short-acuminate, subobtuse or pointed, base \pm broadly and subacutely attenuate to the petiole, \pm thick-coriaceous, stiff, \pm densely lepidote at both sides on young shoots, quite glabrous above at full age (often minutely blackish punctate there), laxly to subdensely lepidote for a long time beneath (scales small, irregularly substellate-dented or -lobed in the marginal zone which disappears with age, dark centre rather large, minutely but well visibly sunk), finally \pm glabrescent beneath too, edge but little revolute, (4.5-)5-8(-15) by 1.8-3.7 cm, midrib a continuation of the robust petiole, rather flat above, more pronounced and obtusely prominent beneath, nerves 6-10(-12) pairs, spreading, mostly faintly impressed or rather inconspicuous above, slightly raised beneath, reticulation lax, faintly prominent beneath only; petiole a little flattened, slightly grooved above, initially lepidote, 0.7-1.5 cm by 2-3 mm. *Umbels* (6-)8-12-flowered. Perulae membranous, quite glabrous from the beginning, outer ones ovate, subobtuse, inner ones ovate-oblong, slightly keeled, all early caducous, up to 2.5 by 1.2 cm. Bracteoles linear below, subspathulate-dilated apically, glabrous, c. 2 cm by 0.5-1.5 mm. Pedicels \pm laxly, rarely subdensely lepidote, 1.5-2 cm by 1 mm. *Calyx* very oblique, rim-like, wavy, c. 4 mm σ . *Corolla* broadly funnel-shaped, 2-2.5 cm long in all, c. 3.5 cm σ at the limb, (dark) red to crimson, rarely orange-red, laxly lepidote or mostly glabrous outside, glabrous inside, tube 1-1.3 cm, subcylindric in the lower half, obtuse base slightly 5-saccate, 5-6 mm σ , widened to 1-1.5 cm at apex, lobes obovate-suborbicular, spreading, 1-1.3 by c. 1 cm. *Stamens* 10, unequal, reaching \pm halfway the corolla lobes; filaments linear, glabrous; anthers subelliptic-oblong, 2.5-3.2 by 1.3 mm, obtuse at the base. *Disk* very prominent, glabrous. *Ovary* subcylindric-conical, mostly quite glabrous from the beginning, rarely \pm laxly lepidote at first, becoming glabrous during the anthesis, 4-6 by 2-2.5 mm, abrupt with the style, the latter rather slender, 1.2-1.8 cm; stigma subcapitate, large, 2-3 mm σ , lobes distinct. *Capsule* subcylindric, oblique, slightly curved, glabrous, 2.5-3 by 0.5-0.7 cm; pedicel up to 4 cm.

Distr. *Malesia*: N. Sumatra (Gajo Lands; East Coast).

Ecol. In subalpine scrub or bush, apparently always terrestrial, on slopes, (975-)1800-2500 m. Fl. Jan.-Dec.

Vern. *Balingan, pariama*, Karo.

Note. *R. rarilepidotum* is closely related to *R. robinsonii* from the Malay Peninsula and mainly differs by its smaller, generally red to dark red corollas.

var. *ootrichum* SLEUM. Reinwardtia 5 (1960) 191.

Differs by the white-tomentose *ovary*, broader and more shortly acuminate *leaves*, more densely lepidote pedicels and slightly smaller perulae. *Corolla* scarlet, very laxly hairy inside. *Capsule* 2-2.5 by c. 0.6 cm.

Distr. *Malesia*: Sumatra (East Coast: Mt

Sibayak and Mt Pinto), 1750-2100 m.

Note. Occurs together with *R. sumatranum* and is probably a local hybrid of that species with typical *R. rarilepidotum*.

219. *Rhododendron multicolor* MIQ. Fl. Ind. Bat. Suppl. 1 (1860) 251, 586; HOOK. f. Bot. Mag. (1884) t. 6769; HENSLOW, J. R. Hort. Soc. 13 (1891) 263, f. 42 (*fol.*), 43d (*fl.*), incl. var. *curtisii* HENSLOW, l.c.; RIDL. J. Fed. Mal. St. Mus. 8 (1917) 58; MILLAIS, Rhodod. (1917) 216; J. J. S. in Merr. Contr. Arn. Arb. 8 (1934) 124; SLEUM. Reinwardtia 5 (1960) 191. — *R. salicifolium* BL. Fl. Jav. Pl. inéd. (1863-83) t. 7 C, f. 2, cf. STEEN. Bull. Jard. Bot. Btzg III, 17 (1948) 388. — *R. curtisii* T. MOORE, Florist & Pomologist (1884) 113, t. 615; ANON. Garten-Zeitung Berlin 3 (1884) 469, fig.; ANON. Ill. Gartenzeitung Stuttgart 30 (1886) t. 10. — *Azalea multicolor* (MIQ.) O. KATZE, Rev. Gen. Pl. 2 (1891) 387. — *R. javanicum* [non (BL.) BENN.] STEEN. Arch. Hydrobiol. Suppl. 11 (1932) 318.

Shrub, epiphytic or mostly terrestrial, 1-1.5 m. Branches lax. Branchlets slender, terete, upper 1(-2) internodes reddish and c. 2 mm σ , laxly to subdensely set with flat, substellate scales, older parts glabrescent; internodes 1.5-4(-7) cm. *Leaves* in 3-5-merous pseudowhorls at the upper 1-2 nodes, lanceolate to oblong-lanceolate, apex \pm shortly acuminate, subacute, base \pm broad-attenuate to the petiole, sometimes \pm obtuse, \pm subcoriaceous, subdensely lepidote initially on both faces, glabrescent above, lepidote for a long time beneath (scales small, irregularly lobed or dented at the marginal zone, dark centre minute, but shallowly impressed), edge flat, (3-)4-7 by (0.7-)1-1.5(-2, very rarely up to 2.5) cm, midrib rather robust and prominent in the lower part on both sides, nerves 6-8 pairs, rather straight and ascending, indistinctly anastomosing before the edge, very slightly raised on both faces, often almost obsolete; petiole flattened dorsally, 2-6 by 1-2 mm. *Umbels* (3-)4-6-flowered. Perulae ovate-oblong to oblong, membranous, obtuse, glabrous and shining, up to 2.2 by 0.7(-0.9) cm. Bracteoles linear, glabrous, up to 1.5 cm by 1 mm. Pedicels stoutish, very sparsely lepidote or glabrous, 1.8-2.5(-3) cm. *Calyx* oblique, disk-shaped or rim-like, c. 4 mm σ , obtusely angled or very shortly lobed, sometimes acute and up to 1 mm. *Corolla* broad-funnel-shaped, 1.5-2(-2.5) cm long in all, sometimes sweet-scented, whitish cream to yellow, rose or fiery red, lobed \pm halfway, glabrous outside, short-pubescent at the tube inside, tube c. 5 mm σ at the 5-pouched obtuse base, c. 1 cm σ at apex, lobes somewhat expanded, broadly obovate-spathulate, 1-1.3 by 0.7-1 cm. *Stamens* 10, unequal, as long as or a little longer than the corolla tube; filaments linear, densely set with rather longish, spreading, white hairs in the lower $\frac{1}{4}$ - $\frac{1}{3}$, glabrous for the rest; anthers broad-oblong to obovate, 1.5-2 by 1 mm. *Disk* prominent, glabrous. *Ovary* obovoid-cylindric, glabrous, slightly rugose, c. 4 by 2 mm, abrupt with the style, the latter slender, glabrous, (7-)8-10 mm; stigma

obconical. *Capsule* subcylindric, 1.8–2.2 by 0.5 cm.
Distr. *Malesia*: Sumatra.

Ecol. Mostly terrestrial in open places, hillside or pastures, also near solfataras, sometimes epiphytic in mountain forest, at (900–)1000–1700 (–2100) m, locally common, both on fertile soil and stony ground, volcanic tuff, on rocks. *Fl.* Jan.-Dec.

Vern. *Sarodang*, Toba, *karamunting-rimbo-njang djanten*, Batangbaru, M.

220. *Rhododendron brevitubum* J. J. S. Ic. Bog. 4 (1914) 253, t. 381; MERR. En Born. (1921) 460; SLEUM. Reinwardtia 5 (1960) 192.

Epiphytic shrub. Branchlets terete, 3.5–6 mm ϕ , glabrous, upper 2 internodes red brown, 3–5 cm. *Leaves* mostly 2 subopposite at the upper 2(–3) nodes, and 1 or 2 scattered on the internodes, broad-elliptic or subovate-elliptic, apex broad-attenuate, obtuse, base rounded or \pm distinctly cordulate, \pm stiff-coriaceous, finally glabrous above, laxly to subdensely lepidote beneath for a long time (scales minute, irregularly dented or lobed in the marginal zone, which is early discarded, dark centre slightly impressed), finally glabrescent underneath too, edge somewhat recurved, (7–) 8–12 by 3.7–7.5 cm, midrib robust, much broadened, usually much prominent on both faces, nerves 10–12 pairs, at an angle of c. 70°, rather straight below, slightly curved distally and \pm anastomosing before the edge, all \pm parallel, little but conspicuously raised on both sides, veins and veinlets forming a rather dense network; petiole much flattened and a little convex above, 7–12 by 3–4 mm, sparsely lepidote or glabrous. *Umbels* 3–4-flowered. Perulae ovate, obtuse, glabrous, up to 1.7 by 1 cm in an immature flower bud. Pedicels glabrous, c. 1 cm by 1.5 mm. *Calyx* obliquely and very shortly cup-shaped, subentire, wavy, glabrous, c. 6 mm ϕ . *Corolla* broad-funnel-shaped, c. 5.5 cm long in all, c. 8 mm ϕ at the much expanded limb, rather fleshy, glabrous outside, densely pubescent at the tube inside along 5 vertical stripes, tube subcylindric, c. 1.5 cm long, c. 1.3 cm ϕ at the 5-saccate base, widened to c. 2 cm at apex, lobes broad-obovate-spathulate, 3.5–3.7 by 2.4–3.1 cm. *Stamens* 10, unequal, 2.2–3 cm; filaments filiform and glabrous in the upper, yellowish villous in the lower dilated half, 1.7–2.5 cm; anthers linear, curved, versatile, 0.6–0.8 by 1.3 mm. *Disk* puberulous on the upper margin, otherwise glabrous. *Ovary* cylindrical-conical, 5-ribbed, c. 9 by 4 mm, rather abrupt with the style, the latter thickish, glabrous, c. 1.5 cm; stigma capitate, distinctly lobed.

Distr. *Malesia*: Central Borneo (Liang Gagang and B. Mi'li). *Fl.* Nov.

221. *Rhododendron sessilifolium* J. J. S. in Merr. Contr. Arn. Arb. 8 (1934) 125; SLEUM. Reinwardtia 5 (1960) 192.

Terrestrial, or rarely epiphytic shrub, 1–3 m. Branchlets terete, brown when dry, 2–3 mm ϕ , upper 1–2 internodes sparsely to subdensely

covered with flat, rather early caducous scales, smooth; internodes 4–10 cm. *Leaves* in \pm 5-merous pseudowhorls at the upper 1–2 nodes, sessile or subsessile, lanceolate to oblong-lanceolate, sometimes subobovate-oblong, apex gradually or rarely abruptly acuminate, subacute or more bluntish, base broadly attenuate to rounded or subtruncate, occasionally slightly cordate, coriaceous, stiff, finally glabrous above, lepidote for a long time beneath (scales rather small, irregularly stellate-dented at the marginal zone, dark centre shallowly or not impressed), finally glabrescent beneath too, but remaining brownish punctulate, very edge somewhat revolute, (8–)10–17.5 by 2.4–4(–5) cm, midrib as thick as the petiole, obtuse or \pm flattened, c. 2 mm wide at the very base, nerves 10–13 spreading pairs, straight below, curved upwards, but indistinctly anastomosing, very slightly impressed above in old leaves, or mostly a little raised on both faces, not rarely obsolete, reticulation mostly obscure; petiole 0–4 (rarely up to 5) by 2–3(–4) mm. *Umbels* (4–) 6–8(–10)-flowered. Flower buds ovoid, 2–2.5 by c. 1.5 cm, outer perulae ovate, obtuse, inner ones ovate-oblong to oblong, obtuse, glabrous, up to 2.5 by 1.2 cm. Bracteoles subfiliform, glabrous, up to 1.5 cm. Pedicels laxly stellate-lepidote, epilose, 2.5–3 cm by 1–1.5 mm. *Calyx* oblique, rim-like, obscurely lobed, c. 4 mm ϕ . *Corolla* broad-funnel-shaped, (3–)3.5–4 cm long in all, a clear to light orange yellow (possibly occasionally also red?), glabrous outside, very laxly and shortly pubescent inside, tube 1.5–2 cm long, base 5-saccate, 5–6 mm ϕ , c. 1.5 cm ϕ at apex, lobes obovate, 1.4–1.8(–2) by 1–1.5(–1.7) cm. *Stamens* 10, subequal, attaining \pm halfway the corolla lobes; filaments linear and densely subpatent-hairy in the lower $\frac{1}{4}$, glabrous above; anthers broad-oblong, c. 4 by 1.3 mm. *Disk* prominent, much lobed, glabrous. *Ovary* thick-cylindric, a little narrowed towards the base, with some scales initially, early glabrescent, or glabrous from the beginning, 5–7 by 2.5–3 mm, rather abrupt with the style, the latter \pm excentric, glabrous, \pm equalling the stamens; stigma subcapitate. *Capsule* subcylindric, 2.5–3 by 0.6–0.7 cm.

Distr. *Malesia*: Sumatra (Tapanuli, East Coast, West Coast).

Ecol. In light jungle or open places, on rim of crater, hills, 1100–1980 m. *Fl.* Jan.-Dec.

222. *Rhododendron beccarii* SLEUM. Reinwardtia 5 (1960) 192.

Epiphytic, apparently rather small shrub. Branchlets terete, 4–8 mm ϕ , uppermost internodes with lax substellate, appressed scales, lower parts glabrous, smooth, not rarely pruinose; internodes (5–)7–17 cm. *Leaves* in 5–8-merous pseudowhorls at the upper 2–3 nodes, oblong or lanceolate-oblong, apex gradually long-acuminate (2–3 cm), acute or nearly so, \pm broadly attenuate towards the base, very base subtruncate, sessile or more rarely subsessile, coriaceous, stiff, quite glabrous with age, but remaining blackish punctulate above,

rather laxly subsersistently lepidote beneath (scales small, irregularly substellate-dented or -lobed in the marginal zone, centre minutely impressed), finally glabrescent and punctate beneath too, margin slightly revolute, 10–16 by 3–5(–6) cm, midrib thick, 2–3(–4) mm wide and obtusely prominent on both faces below, nerves 10–12 obliquely ascending pairs, faintly interarching before the edge, little raised on both sides, sometimes hardly visible, veins and veinlets subobscure; petiole compressed dorsally, 0–2 by 2–4 mm. *Umbels* 4–6-flowered. Flower buds ovoid-acuminate, 3–3.5 by 1–1.5 cm, outer perulae ovate, acuminate, inner ones oblong-ovate, all subacute, up to 2.5 (rarely up to 3) by c. 1 cm, glabrous dorsally, margin initially with caducous scales. Bracteoles filiform, glabrous, up to 2.5 cm by 0.5 mm. Pedicels laxly lepidote, 2–3 cm. *Calyx* much oblique, disk-shaped, obscurely lobed, subglabrous, c. 4 mm σ . *Corolla* funnel-shaped, red or orange, (5–)5.5–6.5 cm long in all, glabrous outside, \pm densely shortly white-hairy in the lower half of the tube inside, tube 3–3.5 cm long, base thickened, 5-saccate, 5–6 mm σ , subcylindric in the lower, gradually widening in the upper part to 1.5–2 cm, lobes obovate-spathulate, 2–3 by 1.5–2 cm. *Stamens* 10, unequal, the longest nearly as long as the corolla; filaments linear and very densely subpatently white-hairy below, filiform and glabrous distally; anthers oblong, base obtuse, c. 4 by 1 mm. *Disk* prominent, glabrous. *Ovary* subcylindric, glabrous or very laxly lepidote, tapering to the style, c. 10 by 2.5 mm; style nearly as long as the corolla tube, glabrous; stigma subcapitate. *Capsule* subfusiform, red, slightly curved, glabrous, (4–)4.5–5.5(–6) by 0.6–0.7 cm; pedicel 3–4 cm by 1–1.5 mm.

Distr. Malesia: Sumatra (West Coast: Mt Singgalang, Mt Sago).

Ecol. In mountain forest, mossy forest or thickets, 1400–2450 m. *Fl.* Jan.–Aug., *fr.* June–Aug.

223. *Rhododendron kemulense* J. J. S. Bull. Jard. Bot. Btzg III, 13 (1935) 448; SLEUM. Reinwardtia 5 (1960) 193.

Small, crumpled tree, trunk c. 35 cm σ . Branchlets terete, 3–4 mm σ , red brown, with lax, small, substellate, flat scales at the upper internodes or the very tips, early glabrescent below; internodes 2–8.5 cm. *Leaves* in 5–7-merous pseudowhorls at the upper 1–2 nodes, oblong- to lanceolate-elliptic, apex gradually attenuate or shortly acuminate, subacute or obtuse, base acutely narrowed to the petiole, coriaceous, densely minutely lepidote on both faces when very young, glabrous and \pm shining above at maturity, more persistently lepidote beneath (scales minute, marginal zone irregularly dented and early dissolved, dark centre shallowly impressed), finally \pm glabrescent beneath too, but remaining conspicuously punctulate there, margin faintly recurved, 7–12 by 2–4 (rarely up to 4.5) cm, midrib narrow and sunk above, as broad as the petiole and obtusely prominent in the lower part beneath, nerves 7–10 pairs, irregular, ascending, obscurely

anastomosing, very slightly impressed above, slightly prominent or subinconspicuous beneath, no reticulation; petiole subterete, rugose, grooved above, minutely lepidote or glabrescent, (4–) 8–15 by 2–2.5 mm. *Umbels* 7–12-flowered. Bracteoles linear, laxly pubescent, 2–3 cm by 0.5–1 mm. Pedicels laxly lepidote at both ends, otherwise very laxly short-pubescent, \pm glabrescent, 2–2.5 cm by nearly 1 mm. *Calyx* suboblique, disk-shaped, obscurely 5-angular, minutely lepidote, 4–5 mm σ . *Corolla* narrow-funnel-shaped, salmon coloured, sparsely minutely lepidote outside, short-pubescent at the lower half of the tube inside, 5–6(–7) cm long in all, limb 3–4 cm σ , tube rather straight, 3–4 cm long, base 3–4(–5) mm σ , c. 1 cm σ at apex, lobes broadly oblong-obovate, 2–2.5(–3) by 1.5–2 (–2.5) cm. *Stamens* 10, subequal, 4–5 cm long; filaments linear and densely patently short-hairy in the lower third, narrower to filiform and glabrous distally; anthers oblong, 3–4 by 1 mm, base obtuse. *Disk* puberulous at the upper margin, glabrous for the rest. *Ovary* subcylindric, lepidote especially at the base and apex, early glabrescent, c. 6 by 2.5 mm, continuous with the style, the latter nearly as long as the stamens, subdensely lepidote below, more laxly so up to the middle, otherwise glabrous; stigma capitate.

Distr. Malesia: Central Borneo (Mt Kemul), in primary forest, said to be common locally, 1800–1850 m. *Fl.* Oct.

224. *Rhododendron moultonii* RIDL. J. Str. Br. R. As. Soc. n. 63 (1912) 61; MERR. En Born. (1921) 462; SLEUM. Reinwardtia 5 (1960) 193.

Small, terrestrial shrub with grey bark, c. 3 m. Branchlets 4–7 mm σ , upper internode obtuse-angular and laxly to very laxly lepidote, lower ones terete and glabrous; internodes 10–20 cm. *Leaves* at the upper 1–2 internodes, 2(or 3) of them \pm opposite or in a pseudowhorl, 2 or 3 others scattered along the internode, elliptic to elliptic-oblong, apex shortly (1–2 cm) acuminate or obtusely attenuate, base broad-attenuate to subtruncate rounded, coriaceous, rigid, glabrous above at full age, laxly to rather subdensely lepidote beneath (scales small, irregularly substellate-lobed or -dented in the marginal zone, dark minute centre but shallowly impressed, leaving dark points on the undersurface, edge \pm flat, 13–20(–25) by (4–)5–8 cm, midrib a continuation of the very robust petiole in its lower $\frac{1}{2}$, c. 4 mm wide, rather flat above, much and obtusely raised beneath, nerves (16–)18–20 pairs, narrow and \pm parallel, spreading at a wide angle, anastomosing near the edge, prominent on both faces, reticulation rather dense and distinctly raised on both sides; petiole somewhat flattened, initially lepidote, (0.8–)1–1.4 cm by 3–4 mm. *Umbels* 7–9-flowered. Pedicels (very) laxly lepidote to glabrescent, 2–3 (rarely up to 4) cm by 1.5 mm. *Calyx* suboblique, thick, disk-shaped, c. 5 mm σ , lobes very short, rounded, often hardly distinguished. *Corolla* funnel-shaped, yellowish orange or yellow, flushed pink outside on the lobes, 4–4.5 cm long in all, 5-lobed to $\frac{2}{3}$ – $\frac{3}{8}$, glabrous outside, equally

laxly short-hairy at the lower part of the tube inside, tube 1.5–2.5 cm long, base 5-pouched, 5–6 mm ø, widened to c. 1.5 cm at apex, lobes obovate-spathulate, 1.5–2.5 by c. 1.5 cm. *Stamens* 10, c. 3 cm; filaments linear and shortly patent-pubescent below, filiform and glabrous towards the top; anthers oblong, slightly curved, 5–6 by 1.2 mm. *Disk* prominent, glabrous. *Ovary* subcylindrical-conical, suddenly narrowed to the style, glabrous, finely rugose, c. 6 by 2.5 mm; style glabrous, rather thick (c. 0.5 mm), c. 1.4 cm long; stigma capitate-obconical.

Distr. *Malesia*: Borneo (Sarawak).

Ecol. Growing on the ground in mossy forest, 1220–1525 m. *Fl.* May, Oct.

(1891) 262, 281, 282, f. 42 (*fol.*), 43 e (*fl.*); KOORD. *Teysmannia* 10 (1899) 450; Nat. Tijd. N.I. 60 (1901) 264; WIGMAN, *Teysmannia* 20 (1909) 112, t.; KOORD. *Jung.* Gedenkb. (1910) 184; *Exk. Fl. Java* 3 (1912) 3, f. 1; KOORD.-SCHUM. *Syst. Verz.* 1 (1912) fam. 233, p. 106; J. J. S. in K. & V. *Bijdr.* 13 (1914) 96; RIDL. *J. Fed. Mal. St. Mus.* 8 (1917) 57; MILLAIS, *Rhodod.* (1917) 196; KOORD. *Fl. Tjib.* 3 (1918) fam. 233, p. 2; SP. MOORE, *J. Bot.* 63 (1925) *Suppl.* 57; HOCHR. *Candollea* 2 (1925) 490, *incl. var. gymnocarpum* HOCHR. *l.c.*; STEEN. *Bull. Jard. Bot. Btzg III*, 12 (1932) 177; *ibid.* III, 13 (1933) 50; AMSH. in *Back. Bekn. Fl. Java* (em.ed.) 7 (1948) fam. 162, p. 2; SLEUM. *Reinwardtia* 5 (1960) 194; STEEN. *Endeavour* 21 (1962) 189, t. 1;



Fig. 38. *Rhododendron javanicum* (BL.) BENN. Mt Gedeh, W. Java (BRUGGEMAN).

225. *Rhododendron javanicum* [REINW. *Verh. Bat. Gen.* 9 (1823) 30, *nom. nud.*; in *Bl. Cat.* (1823) 72, *nom. nud.*] (BL.) BENN. in *Benn. & Br. Pl. Jav. Rar.* (1838) 85, *excl. t.* 19, which is *var. teysmannii*; DC. *Prod.* 7 (1839) 721; HASSK. *Cat. Hort. Bog.* (1844) 161, *incl. var. citrinum* HASSK. *l.c.*; MORITZI, *Syst. Verz.* (1846) 42; PAXTON, *Mag. Bot.* 15 (1849) n. 217; PLANCH. *Fl. Serres* 5 (1849) 477–480; HOUTTE, *ibid.* 6 (1850–51) 135, t. 576; ZOLL. *Syst. Verz.* 2 (1854) 137; MIQ. *Fl. Ind. Bat.* 2 (1859) 1057; *Suppl.* 1 (1860) 251, 585; *Ann. Mus. Bot. Lugd.-Bat.* 1 (1863) 42, t. 1 B; BL. *Fl. Jav. Pl. inéd.* (1863–83) t. 1; HENSLOW, *J. R. Hort. Soc.* 13

SLEUM. Blumea 12 (1963) 111. — *Vireya javanica* BL. *Bijdr.* (1826) 854, *incl. var. l.c.* 855; G. DON, *Gen. Syst.* 3 (1834) 848. — *Azalea javanica* (BL.) O. KTZE, *Rev. Gen. Pl.* 2 (1891) 386. — Fig. 38.

KEY TO THE VARIETIES

1. Ovary very sparsely lepidote and early glabrescent, or glabrous from the beginning.
2. Leaves predominantly in pseudowhorls at or in part inserted a little below the nodes, occasionally some additional scattered ones

in the upper third of the internodes, apex \pm acuminate. Anthers (2.5-)3-3.5 (rarely up to 4) mm 1. *var. javanicum*

2. Leaves exclusively scattered along the internodes, apex \pm obtuse. Anthers 5-6(-7) mm.

2. *var. schadenbergii*

1. Ovary \pm densely pubescent 3. *var. teysmannii*

1. *var. javanicum*.

Shrub, 1-2 m, or treelet, 2-3(-5) m, trunk up to 8 cm ϕ , erect or writhed, terrestrial or epiphytic, generally not much branched; bark ashy. Branchlets 3-5 mm ϕ , young shoots obtusangular and laxly substellate-lepidote, older parts terete, glabrescent, smooth; internodes 4-15 cm. Leaves in (4-)5-7(-8)-merous pseudowhorls at the upper 1-2(-3) nodes, occasionally not strictly so, broadly oblong- to subovate- or subelliptic-oblong (occasionally ovate- or obovate-elliptic), apex mostly acuminate, subacute, more rarely bluntish, base mostly \pm acutely and rather shortly attenuate, \pm coriaceous, initially \pm densely lepidote on both faces, early glabrescent above, laxly to subdensely lepidote beneath for a certain time (scales small, flat, variously lobed or dented at the marginal zone, dark centre but faintly impressed), brownish blackish punctulate beneath after the scales are gone, margin \pm flat, 4-15(-20) by (1.8-)2.5-6 (occasionally up to 8) cm, midrib \pm a continuation of the robust petiole, broad and obtusely prominent to various degree in the lower part on both faces, \pm narrowly impressed above, nerves 7-10 pairs, at an angle of c. 45°, slightly prominent on both sides, rather indistinctly anastomosing before the edge, veins and veinlets a lax network, faintly raised or often obsolete on both sides; petiole compressed dorsally, not or hardly grooved above, brownish reddish as is often the midrib, initially lepidote, early glabrescent, (0.4-)0.7-2(-2.3) cm by 2-3 mm. Umbels 4-7(-12)-flowered. Flower buds ovoid, subacuminate, c. 3-3.5 by 1.5-2 cm. Outer perulae broad-ovate, shortly subulate-mucronate, inner ones ovate-elliptic to oblong, obtuse, all membranous, glabrous, margin with minute early caducous scales, up to 3.5 by 2.2 cm. Bracteoles linear, glabrous, up to 3 cm by 0.5-1.5 mm. Pedicels laxly stellate-lepidote especially upwards, epilose, glabrescent, (1.5-)2-4 cm by c. 1 mm. Calyx oblique, disk-shaped, obtusely 5-angular, c. 4 mm ϕ , glabrous or very laxly lepidote. Corolla funnel-shaped, rather fleshy, occasionally yellow or red (even scarlet), mostly \pm orange, the tube often reddish or rose inside or with a ring of deep pink round the throat, scentless, (3-)4-5(-5.5, rarely up to 6) cm long and wide in all, \pm halfway 5-lobed, glabrous or nearly so outside, short-pubescent to various degree at the tube inside (occasionally glabrous there too), tube (1.7-)2-2.5 cm long, obtusely 5-angular, base 5-saccate, 5-6 mm ϕ , widened to 1-1.5 cm at apex, lobes slightly unequal, expanded, obovate to subspathulate, 2.5-3.5 by 1.7-2.5 (rarely up to 3) cm. Stamens 10, alternately slightly unequal, the longer ones reaching \pm half the corolla lobes;

filaments purplish, linear, \pm densely pubescent in the lower third, more filiform and glabrous towards the top; anthers oblong to broad-oblong, sometimes more obovate-oblong, (2.5-)3-3.5 (rarely up to 4) by c. 1.3 mm. Disk prominent, puberulous at the upper margin only. Ovary obliquely conical-cylindric, 5-angled, glabrous or very sparsely lepidote (and early glabrescent then), 7-9 by c. 3 mm, but little abrupt with the style, the latter glabrous, \pm as long as the shorter stamens; stigma capitate, c. 3 mm ϕ . Capsule elongate-cylindric, shortly attenuate at both ends, 5-angled, glabrous, (3-)3.5-4.5 (rarely up to 5) by 0.7-0.8 (rarely up to 0.9) cm; pedicel up to 5 cm by 1.5-2 mm. Seeds including tails 6-7 mm long.

Distr. *Malesia*: Sumatra, Natuna I., Lingga Arch., Java, Bali.

Ecol. Mostly epiphytic and in primary and secondary forest, also near craters, on narrow ridges, in rather dry ground, between rocks, on steep slopes, once found on stony mud-flow in S. Sumatra, (300-)800-2400(-2550) m, locally common. Fl. fr. Jan.-Dec., with preference for the dry season.

Vern. *Kémbang gēni*, *k. képiting*, *k. sademo*, *lumpēni*, *purwa gēni*, *soloko baros*, *soro sari*, *tjépoko gēni*, *J. areuj gandarusa*, *djudjukan*, *ki badak*, *loda dindēr*, *l. dēnēr*, *songgom tangkal*, *tjantigi bēsar*, *tjawardēnē sore*, *tjonkok*, *S. bunga sa rudang*, *b. tempa barēn*, *M.*

2. *var. schadenbergii* (WARB.) SLEUM. Reinwardtia 5 (1960) 195. — *R. schadenbergii* WARB. in Perk. Fragm. Fl. Philip. 3 (Feb. 1905) 172; MERR. Philip. J. Sc. 3 (1908) Bot. 380, *p.p.*; MILLAIS, Rhodod. (1917) 239; MERR. En. Philip. 3 (1923) 245, *p.p.*; COPEL. f. Philip. J. Sc. 40 (1929) 170, t. 15, f. 2, t. 16, f. 3-4. — *R. spectabile* MERR. Publ. Gov. Lab. Philip. n. 29 (Sept. 1905) 42; Philip. J. Sc. 3 (1908) Bot. 381; ELM. Leaflet. Philip. Bot. 3 (1911) 1106; MILLAIS, Rhodod. (1917) 246; MERR. En. Philip. 3 (1923) 245; MILLAIS, Rhodod. ser. 2 (1924) 241; COPEL. f. Philip. J. Sc. 40 (1929) 168, t. 13, f. 4-5, t. 14. — *R. sarasinorum* WARB. in Sarasin, Reisen in Celebes 2 (1905) 386 (*index*), *cf. ibid.* 1 (1905) 62 (*text*), *nom. nud.* — *R. clementis* MERR. Philip. J. Sc. 3 (1908) Bot. 160, 381; En. Philip. 3 (1923) 243; MILLAIS, Rhodod. ser. 2 (1924) 113; COPEL. f. Philip. J. Sc. 40 (1929) 167, t. 12, t. 13, f. 1-3.

Leaves exclusively scattered along the upper internodes, apex \pm obtuse. Corolla red, orange or salmon pink, very rarely yellow. Anthers 5-6 (-7) mm.

Distr. *Malesia*: NE. Celebes (Menado), Philippines (Luzon; Camiguin de Misamis; Jolo; Mindanao; Palawan).

Ecol. As in *var. javanicum*.

Vern. Philippines: *malagos*, Bag., *lasatan*, Bon., *luhung di kamaduyung*, If.

Uses. Flowers said to be edible.

3. *var. teysmannii* (Miq.) K. & G. J. As. Soc. Beng. 74, ii (1905) 75; J. J. S. in K. & V. Bijdr. 13 (1914)

99; STEEN. Bull. Jard. Bot. Btzg III, 13 (1933) 50; *ibid.* III, 17 (1948) 388; SLEUM. Reinwardtia 5 (1960) 195; Blumea 12 (1963) 111. — *R. javanicum* (BL.) BENN. in Benn. & Br. Pl. Jav. Rar. (1838) *pro* t. 19; HOOK. Ic. Pl. (1847) t. 4336; LEMAIRE, Fl. Serres 3 (1847) 293, *c. icon.*; BL. Fl. Jav. Pl. inéd. (1863–83) t. 2; HOCHR. Candollea 2 (1925) 490 (*var. typicum*). — *R. teysmannii* MIQ. Fl. Ind. Bat. Suppl. 1 (1860) 251, 585; Ann. Mus. Bot. Lugd.-Bat. 1 (1863) 42, t. 1 A; CLARKE in Hook. f. Fl. Br. Ind. 3 (1882) 463; HENSLOW, J. Hort. Soc. 13 (1891) 263, f. 42 (*fol.*), 43 f (*fl.*); RIDL. J. Str. Br. R. As. Soc. n. 23 (1891) 146; J. Fed. Mal. St. Mus. 4 (1909) 42; *ibid.* 7 (1916) 46; *ibid.* 8 (1917) 58; MILLAIS, Rhodod. (1917) 251; HENDERS. Mal. Nat. J. 6 (1950) 261. — *Azalea teysmannii* (MIQ.) O. KTZE, Rev. Gen. Pl. 2 (1891) 387. — *R. basirotundatum* J. J. S. in Merr. Contr. Arn. Arb. 8 (1934) 124, *p.p. typ.*

Differs from *var. javanicum* only by the \pm densely pubescent *ovary*. Pedicels nearly always pubescent.

Distr. *Malesia*: Sumatra, Malay Peninsula, Java, Bali.

Ecol. As in *var. javanicum*, apparently occurring rarely together with it on the same spot.

Vern. *Areng maréngang, kakuran, kembang tjulang, S.*

Note. Part of the specimens collected in North Sumatra bear capsules 5.8–8 cm long, thus distinctly longer than stated above for *R. javanicum sens. lat.*

In these long capsules they agree with *R. beccarii*, also from Sumatra (East Coast), which, however, has a practically glabrous (or certainly not hairy) *ovary*.

It is possible that these North Sumatran specimens correspond with *R. basirotundatum* described from Atjeh (Bur ni Telong) without fruits and might represent a fourth variety. Material at hand is not sufficient to decide this question.

R. teysmannii was figured by BLUME and MIQUEL as having yellow flowers. This, I presume, is an error by an omission of the draughtsman, similarly as was made for *R. album*; there is no difference in colour with *R. javanicum*. — ED.

226. *Rhododendron perplexum* SLEUM. Reinwardtia 5 (1960) 197.

Shrub, probably epiphytic. Branchlets terete, c. 4 mm ϕ , red-brown, glabrous; the one known (upper) internode 10 cm. *Leaves* in a \pm 4-merous pseudowhorl, ovate to oblong-ovate, gradually acuminate towards the subacute apex, base rounded to slightly cordate, or a little inequilateral, thick-coriaceous, glabrous, subdensely lepidote beneath (scales minute, irregularly substellate-lobed or -incised in the marginal zone, much darker centre slightly impressed), margin a little revolute, 8.5–13.5 by 4–5.5 cm, broadest slightly below the middle, midrib very stout, striate lengthwise, being a continuation of the thick petiole, obtusely and much prominent in the lower part above, broad and rather flat beneath, nerves 12–15 pairs, at an

angle of nearly 90°, \pm parallel, obscurely inarching before the edge, very slightly immersed above, not much raised beneath, reticulation lax, subtle on both faces; petiole slightly flattened and grooved dorsally, initially lepidote, 4–6 by c. 3 mm. *Umbels* \pm 9-flowered. Pedicels rather robust, laxly or very laxly lepidote, more densely so immediately below the calyx, not hairy, 2–2.7 cm. *Calyx* disk-shaped, obscurely lobed or crenate, thick, glabrous, 4–5 mm ϕ . *Corolla* funnel-shaped, 2.5–2.7 cm long in all, glabrous outside, densely shortly grey-pubescent at the lower $\frac{2}{3}$ of the tube inside, tube 1–1.3 cm long, at base c. 5 mm ϕ , widened to c. 1 cm at apex, lobes oblong-obovate, 1.3–1.5 by 1–1.3 cm. *Stamens* 10, subequal, nearly as long as the corolla; filaments linear and very densely subpatently white-hairy in the lower half, more filiform and glabrous upwards; anthers broad-oblong, 3.5 by 1.3 mm. *Disk* prominent, glabrous. *Ovary* subcylindric, glabrous, 5–6 by c. 2 mm, tapering to the style, the latter columnar, glabrous, c. 6 mm; stigma subcapitate.

Distr. *Malesia*: Sumatra (West Coast: Kerintji) at c. 1000 m. One collection.

227. *Rhododendron crassifolium* STAPP, Trans. Linn. Soc. II, Bot. 4 (1894) 195; GIBBS, J. Linn. Soc. Bot. 42 (1914) 102; MERR. En. Born. (1921) 460; SLEUM. Reinwardtia 5 (1960) 198; Blumea 11 (1961) 127; *ibid.* 12 (1963) 111; Jahrb. Deutsch. Rhodod. Ges. Bremen (1965) f. 19. — *R. crassinervium* RIDL. J. Str. Br. R. As. Soc. n. 63 (1912) 61; MERR. En. Born. (1921) 461. — *R. murudense* MERR. Sarawak Mus. J. 3 (1928) 542.

Mostly epiphytic, sometimes terrestrial shrub, (0.5–)1.2–3.5 m; bark fawn, smooth. Branchlets (3–)4–6 mm ϕ , upper 1–2 internodes dark red-brown, initially scantily lepidote, early glabrescent; internodes (1.5–)3–15 cm. *Leaves* opposite or mostly in 3(–4)-merous pseudowhorls at the upper 1–3 nodes, often not strictly so and internodes often with scars of scattered reduced and very early caducous leaves, elliptic, oblong-elliptic or oblong, occasionally obovate-elliptic, apex in general broadly attenuate and obtuse or rounded, sometimes shortly obtusely acuminate, base rounded or subtruncate, not rarely slightly subauriculate-cordate, very rarely cuneate, thick-coriaceous, stiff, initially lepidote on both faces, glabrous and blackish punctulate with age above, lepidote for a certain time beneath (scales rather lax, small, flat, irregularly dented or lobed in the marginal zone, centre minute, faintly or not sunk), glabrescent with age beneath too, the scales leaving dark points, flat, 8–14(–18) by 4–8(–9) cm, midrib continuing the petiole, mostly much and \pm bluntly prominent and hardly grooved above, more flattish and hardly raised, or even a little sunk towards the apex of the lamina beneath, c. 3 mm wide at the base, often a little rugose, nerves 8–12 pairs, subparallel at a wide to almost right angle, anastomosing before the edge, distinctly raised on both faces, reticulation rather dense, slightly prominent above, less or obscurely so beneath; petiole somewhat flattened, 1.2–1.8 cm

by 3-4 mm. *Umbels* compact, (8-)-10-14 (sometimes up to 20)-flowered. *Perulae* ovate-acuminate, glabrous, up to 2.5 by 1 cm. *Bracteoles* linear, glabrous, up to 2 cm. *Pedicels* \pm glabrous, 3-4.5 by 1(-1.5) mm. *Calyx* very oblique, patellar, obtusely and very shortly lobed or crenate, glabrous, 3-4 mm σ . *Corolla* funnellform-subcampanulate, rather fleshy, flame red or scarlet, orange or apricot, salmon or bright shell pink, margin and apex of the lobes not rarely deep rose, (2-)-2.5-3 cm long in all, glabrous outside, sparsely hairy inside the tube, tube 1.2-1.5 cm, at base distinctly 5-pouched, 3-4 mm σ , gradually widened to (1-)-1.2-1.5 cm at apex, lobes obovate-oblong, (1-)-1.2-1.5 by 0.8-1(-1.3) cm. *Stamens* 10, alternately a little unequal, (1.2-)-1.4-2 cm; filaments linear and densely subpatently hairy in the lowest $\frac{1}{4}$ - $\frac{1}{5}$, filiform and glabrous for the rest; anthers subelliptic, c. 2-2.5 (rarely up to 2.8) by 1.3 mm. *Disk* prominent, glabrous. *Ovary* subcylindrical-conical, glabrous or initially sparsely lepidote, 3-4 by 2 mm, rather abrupt with the style, the latter columnar, glabrous, as long as the ovary; stigma thick, dilated-capitate, 2 mm σ . *Capsule* thick-cylindric, 1.8-2.5 by c. 0.5 cm. *Seeds* very narrow, 4-5 mm including the tails.

Distr. *Malesia*: Borneo.

Ecol. In moss forest, also in more open sunny places (landslides), not rare locally, 1220-2135 (-2745) m. *Fl.* Jan.-Dec.

228. *Rhododendron rhodopus* SLEUM. Reinwardtia 5 (1960) 199.

Shrub, apparently terrestrial. Branchlets terete, 4-5 mm σ , laxly stellate-lepidote at the upper, glabrous and pruinose at the lower internodes (13-15 cm). *Leaves* in \pm 5-merous pseudowhorls, some additional reduced ones on the internode, lanceolate, subinequilateral, apex rather long-acuminate, acute, base broadly cuneate, coriaceous, glabrous above with age, laxly lepidote beneath (scales small, flat, variously, mostly shortly dented or lacerate at the marginal zone, minute centre hardly impressed), 9-13(-17) by 2-3.5(-5) cm, midrib above dilated and slightly raised at base, narrowed and impressed upwards, beneath thick and obtusely prominent below, nerves c. 8 pairs, at an acute angle, high-ascending, indistinctly anastomosing, slightly depressed above, not much raised beneath, veins subobscure; petiole olivaceous, laxly lepidote, subterete, 1.5-2 cm by 2(-3) mm. *Umbels* 8-9-flowered. Outer perulae broadly ovate-oblong, densely and very shortly substrigose-hirsutulous outside, glabrous inside, c. 4 by 2 cm. *Bracteoles* linear, laxly pubescent towards the apex, c. 2 cm by 1 mm. *Pedicels* laxly lepidote, not hairy, 1.5-2 cm by c. 1 mm at anthesis. *Calyx* disk-shaped, wavy, hardly lobed, lepidote dorsally, c. 4 mm σ . *Corolla* tubular, lobed in the upper third, white, scented, 6.5-7 cm long in all, glabrous outside or here and there with a solitary (caducous) scale, subdensely pubescent at the tube inside, tube straight, 4-5 cm, at base slightly 5-saccate, c. 5 mm σ , dilated to c. 8 mm

at apex, lobes spreading, suborbicular, 2-2.5 by 1.5-2 cm. *Stamens* 10, subequal, reaching halfway the corolla lobes; filaments linear and subvillous in the lower $\frac{2}{3}$, filiform and glabrous for the rest; anthers oblong, 4-5 by c. 1.3 mm. *Disk* glabrous. *Ovary* cylindrical, yellowish tomentose, minutely lepidote, c. 10 by 2.5 mm, gradually narrowed to the style, the latter nearly as long as the corolla tube, yellowish tomentose in the lower $\frac{3}{4}$, elpidote, glabrous below the capitate stigma. Submature *capsule* thick-cylindric, attenuate at the base, mostly curved, shortly yellowish villous and minutely lepidote, 5-7 cm by 7-8 mm, crowned by the villous style.

Distr. *Malesia*: Central Celebes (Latimodjong Range: Pokapindjang; Luwuk), in Latimodjong at 2800-3000 m. Twice found. *Fl.* June, fr. Sept.

229. *Rhododendron baenitzianum* LAUT. in K. Sch. & Laut. Nachtr. (1905) 337; SCHLTR, Bot. Jahrb. 55 (1918) 156; SLEUM. Reinwardtia 5 (1960) 200; Blumea 12 (1963) 112. — *R. maboroensis* SCHLTR, Bot. Jahrb. 55 (1918) 156.

Terrestrial shrub, 1.5-2 m. Branchlets brown, terete, 2-4 mm σ , tips densely red-brown substellately scaly, lower parts glabrescent; internode 3-10 cm. *Leaves* opposite or in 3-5-merous pseudowhorls at the upper 1-2 nodes, erectopatient, subsessile or shortly petioled, oblong to lanceolate or elliptic-lanceolate, sometimes in part ovate-lanceolate, apex long (3-4 cm) subcaudate-acuminate, acute, base broadly obtusely or subacutely attenuate, rarely rounded, \pm inequilateral, subcoriaceous, glabrous above at maturity, laxly lepidote beneath (scales small, flat, irregularly and not too deeply lobed or dented at the marginal zone, centre small, faintly or not impressed), glabrescent finally beneath too leaving minute, dark spots, edge \pm flat, 12-17 (-25) by (2.5-)-3.5-6.5(-8.5) cm, midrib narrow and impressed above, broader and bluntly prominent beneath, nerves 8-10(-12) pairs, ascending, curved-anastomosing before the edge, slightly impressed or raised above, distinctly prominent beneath, reticulation whether or not finely raised on both faces; petiole semiterete, grooved above, lepidote, (3-)-4-7 by 1.5-2 mm. *Umbels* (3-)-4-5(-7)-flowered. Outer perulae ovate to obovate, cuspidate or shortly acutely acuminate, laxly caducously lepidote externally and along the margin, moreover very shortly appressed-pubescent in the middle or towards the apex, inner ones subspathulate, acuminate, dorsally laxly lepidote, but not hairy, up to 2.5 by 1 cm. *Bracteoles* filiform to linear-subspathulate, subglabrous, up to 2 cm. *Pedicels* laxly lepidote especially at base and apex, \pm glabrescent, epilose, (2.5-)-3.5-4 cm by 1.5 mm. *Calyx* suboblique, rim-like, c. 4 mm σ . *Corolla* funnel-shaped, 7.5-9(-10) cm long in all, tube yellow, orange at lobes, laxly lepidote outside, papillose-pubescent at the tube inside, tube 4-6 cm, at base 5-pouched, 6-8 mm σ (pouches including or covering the calyx), c. 2 cm at apex, lobes spreading, broad-

obovate to suborbicular, 3(–4) by 2.5–3 cm. *Stamens* 10, subequal, reaching halfway the corolla lobes; filaments linear, short-patent-hairy in the lower half, glabrous above; anthers oblong, 4 by 1.2 mm. *Disk* pubescent at the upper margin, glabrous below. *Ovary* subcylindric, shortly and densely covered with subappressed forward-directed hairs and with scales, 10–12 by 2–2.5 mm, continuous with the style, the latter equalling the stamens at full anthesis, densely set with subpatent hairs and with scales to near the top; stigma thick-capitate, 5-lobed. *Capsule* elongate-fusiform, somewhat curved, laxly hairy and lepidote, 15–20 cm by 4–5 mm.

Distr. *Malesia*: E. New Guinea (Torricelli Mts; Maboro Range; Waria R. region).

Ecol. Along rivulets or in rocky places, 215–1200 m. *Fl.* April, June, Aug., *fr.* Aug.

Vern. *Tindili*, Orne: Wantipi.

230. *Rhododendron englerianum* KOORD. Nova Guinea 8 (1909) 186; *ibid.* 8 (1912) 877, t. 152; J.J.S. *ibid.* 12 (1914) 140, *nota sub R. angulatum*; KANEH. & HATUS. Bot. Mag. Tokyo 56 (1942) 478; SLEUM. Reinwardtia 5 (1960) 199. — *R. lowii* (non HOOK. f.) F.v.M. Trans. R. Soc. Vict. 1 (1889) 22. — *R. megalostigma* F.v.M. l.c., *nom. event.*

Shrub, 1–1.2 m. Branchlets terete, 5–7 mm \varnothing , lepidote at the very tips, early glabrescent; internodes 4–10 cm. *Leaves* in 3–4 merous pseudowhorls at the upper 2(–3) nodes, large, subsessile, oblong or subovate-oblong, apex shortly to rather long-acuminate, acute or subacute, broadly attenuate towards the base (very base truncate-rounded or a little cordate), coriaceous, practically glabrous above at full age, rather laxly lepidote beneath (scales relatively small, marginal zone irregularly and rather shallowly lobed or dented, centre but slightly impressed), edge short-revolute, 12–20(–25) by (4–)5–8.5(–9) cm, midrib a continuation of the petiole, narrow and markedly impressed above, much prominent on the underside below, nerves 8–10(–14) pairs, with additional shorter ones, irregular and ascending, inarching before the edge, slightly raised above, more distinctly so beneath, reticulation lax, but slightly raised on both sides; petiole grooved above, 4–7 (rarely up to 10) by 3–4 mm. *Umbels* (4–) 6–9-flowered. Outer perulae ovate-lanceolate, long-acute, inner ones broad-ovate-acuminate and subacute to oblong-spathulate, all sericeous and lepidote dorsally, glabrous internally, up to 5.5 by 1.5 cm. Bracteoles linear-filiform, lepidote and puberulous, up to 3 cm by c. 1 mm. Pedicels erect, laxly lepidote, not hairy at all, (6–)7–11 cm, c. 1.5 mm \varnothing . *Calyx* suboblique, patellar, very shortly obtusely 5-lobed, c. 5 mm \varnothing , lepidote dorsally. *Corolla* funnel-shaped, orange or reddish to cerise-pink, flushed yellow outside, c. 8 cm long in all, laxly stellate-lepidote outside, laxly hairy at the tube inside, tube 2.5–3 cm long, base markedly 5-pouched, 5–6(–8) mm \varnothing , gradually extended to 1.5–2 cm at apex, lobes obovate, much spreading, 5–6 by c. 3 cm. *Stamens* 10,

reaching halfway the corolla lobes; filaments linear and densely hairy in the lower, more filiform and glabrous in the upper half; anthers linear-oblong, slightly curved, 6–7 by 1 mm. *Disk* much prominent, velutinous in the upper half, glabrous below. *Ovary* subcylindric, greyish velutinous, with numerous minute rusty scales between the hairs, 9–10 by nearly 3 mm, passing gradually into the style which \pm equals the stamens and is covered in its lower $\frac{1}{2}$ – $\frac{2}{3}$ with short hairs and well visible scales; stigma thick-capitate, 5-lobed. *Capsule* elongate-cylindric, laxly hairy and lepidote, 6–10 cm by c. 5 mm; pedicel 2 mm \varnothing .

Distr. *Malesia*: New Guinea.

Ecol. Epiphytic in *Agathis* forest, or terrestrial in rain-forest, 400–600 m, also reported from rocks near river, 1220–2745 m. *Fl.* March, April, July.

Vern. *Tiriz*, Movoi: Ueli.

231. *Rhododendron wentianum* KOORD. Nova Guinea 8 (1909) 188; J.J.S. *ibid.* 12 (1917) 508; *ibid.* 12 (1918) t. 199, b-f, 203, a; SCHLTR. Bot. Jahrb. 55 (1917) 143; SLEUM. Reinwardtia 5 (1960) 200; Blumea 11 (1961) 127. — *R. callichilioides* WERNH. Trans. Linn. Soc. II, Bot. 9 (1916) 95, *incl. var. minor* WERNH. l.c. 96. — *R. wollastonii* WERNH. l.c. 99.

Epiphytic shrub, 0.5–1.5 m. Branchlets terete, 1.5–3(–4) mm \varnothing , upper internode laxly to densely covered with flat scales; internodes 2–10(–20) cm. *Leaves* mostly 3–4 in a pseudowhorl, occasionally 2 opposite, at the upper 1–2 nodes, ovate to lanceolate-ovate, subsessile, apex gradually and \pm elongately acuminate to subcaudate, acute or nearly so, base rounded to subcordate, rarely very broadly attenuate, subcoriaceous to coriaceous, glabrous above at full age, laxly lepidote beneath (scales small, thin, marginal zone irregularly dented or incised, centre slightly immersed), margin slightly or not revolute, (7–)8–13(–16) by (2.5–) 3.5–6.3 cm, midrib slightly impressed above, very prominent beneath, nerves (8–)9–11 pairs, upper ones spreading and \pm straight below, curved towards the edge and inarching, but little prominent on both faces, reticulation rather dense, faintly visible on both sides, or only above so; petiole densely lepidote initially, grooved above, 1.5–6 (rarely up to 10) by 1–1.5 mm. *Umbels* (3–)4–6-flowered. Perulae oblong-ovate, acutely acuminate, sericeous and laxly lepidote dorsally, up to 2.5 by c. 1 cm. Bracteoles subulate, up to 2 cm. Pedicels slender to rather stoutish, densely to laxly lepidote, not hairy, (2.5–)3–4.2 cm. *Calyx* irregularly 5-lobed or -dented, wavy, densely lepidote, c. 4 mm \varnothing . *Corolla* funnellform-campanulate in outline, tubular below, rose-red, tube suffused with light green or yellowish white, (3–)4–4.8 cm long in all, rather sparsely lepidote outside, laxly hairy to glabrous and not rarely yellowish inside, tube 1–1.5 cm, bluntly 5-angular, (3–)4–6 mm \varnothing , manifestly 5-saccate at the base, slightly dilated upwards, lobes \pm erecto-patent, somewhat recurved at the apex, broadly obovate,

(2-)3-3.4 by (1.3-)2.5-3.2 cm. *Stamens* 10, subequal, manifestly exerted from the throat; filaments linear, densely patent-pubescent in the lower half, glabrous distally; anthers oblong, 2.5-3 mm. *Disk* glabrous below, pubescent in the upper half. *Ovary* conical, obtusely 5-angular, densely lepidote and velutinous, 4-6 by 1.5-2 mm, gradually tapering to the style, the latter thick, pubescent and lepidote in about the lower half or third, glabrous for the rest; stigma thick-capitate, lobes manifest. *Capsule* slenderly fusiform, laxly lepidote and hairy, 6.5-9 by 0.4-0.5 cm, on slender pedicel 3-4 cm.

Distr. *Malesia*: New Guinea (Main Range, from Mt Carstenz to the Star Mts, and the Upper Sepik R. region).

Ecol. In forest, 600-1500 m, locally not rare. *Fl.* Jan.-Aug., *fr.* July.

232. *Rhododendron cuspidellum* SLEUM. Reinwardtia 5 (1960) 200.

Terrestrial shrub, c. 1.5 m. Branchlets rather robust, terete or sometimes obtusangular, laxly to subdensely substellate-lepidote at the upper internodes, glabrous lower down; internodes 8-17 cm. *Leaves* in 4.5(-7)-merous pseudowhorls at the upper 2 nodes, lanceolate to subovate- or oblong-lanceolate, apex rather long (subcaudate-) acuminate, the acute acumen not rarely somewhat curved, \pm broadly attenuate towards the base (very base subtruncate-rounded to subcordate), coriaceous, rather stiff, minutely rugose above and glabrous at full age, laxly lepidote beneath (scales small, irregularly substellate-lobed or -dented in the marginal zone, darker centre slightly impressed, flat, (9-)-10-15 by (2.5-)-3-5 cm, midrib dilated for the lowest 1-2 cm, becoming very narrow upwards, impressed above, as thick as the petiole, blunt and much prominent beneath, nerves 8-10 pairs, spreading, \pm straight below, rather indistinctly curved-anastomosing before the edge, faintly raised on both faces, or not rarely subinconspicuous especially beneath; petiole a little flattened, shallowly grooved above, lepidote, 5-10 by 2-3 mm. *Umbels* 9-12-flowered. Flower buds suborbicular-ovoid, 3.5 by 2.5 cm. Outer perulae ovate, apex very shortly subulate, the subsequent inner ones larger, ovate, nearly blunt, innermost ones spatulate, all laxly substellate-lepidote and very shortly pubescent dorsally and along the margin, up to 3.5 by 2.3 cm. Bracteoles linear to linear-spatulate, short-pubescent, up to 3 cm by 1-4 mm. Pedicels laxly lepidote, epilose, (2.5-)-3.5-6 cm by c. 1 mm. *Calyx* disk-like, wavy and obscurely lobed, densely lepidote dorsally, c. 3 mm ϕ . *Corolla* tubular below, much expanded at the limb, orange or orange-yellow, (3.5-)-4-4.5 cm long in all, subdensely or more laxly substellate-lepidote outside, sparsely or very sparsely pubescent in the lower part of the tube inside, tube 1.7-2.1 cm, straight, 5-angular, at base much 5-saccate, c. 5 mm ϕ , widened upwards to 1.2-1.5 cm at apex, lobes broadly obovate-spatulate or suborbicular, 2.3-2.7 by 1.5-2.2 cm. *Stamens* 10, subequal, slightly exerted

from the throat, c. 2.5 cm; filaments linear and densely patent hairy in the lower, more filiform and glabrous in the upper half; anthers oblong, c. 4 by 1 mm. *Disk* white-sericeous. *Ovary* subcylindric-conical, white-velutinous and lepidote, 5-6 by c. 2.5 mm, rather abrupt with the style, the latter robust, nearly equalling the stamens, hairy and manifestly lepidote in the lower $\frac{1}{3}$ - $\frac{2}{3}$; stigma capitate, deeply 5-lobed.

Distr. *Malesia*: New Guinea (Wissel Lakes region).

Ecol. Secondary forest, locally common, 1900 m. *Fl.* March.

Vern. *Warade*, Kapauku.

233. *Rhododendron commutatum* SLEUM. Reinwardtia 5 (1960) 201. — *R. gracile* (non Low ex LINDL.) BECC. *Malesia* 1 (1878) 203.

Epiphytic or terrestrial shrub growing with dense-packed, slender stems, not rarely subarborescent, 1.5-3 m. Branchlets terete, 2-4 mm ϕ , densely set with stellate rufous scales at the upper internodes, early glabrescent in the lower ones; internodes (3-)-6-12 cm. *Leaves* opposite or in 3(-5)-merous pseudowhorls at the upper 2-3 nodes, lanceolate or oblong-lanceolate, apex \pm elongate, sometimes rather abruptly acuminate, subacute, base broadly and acutely attenuate to the petiole (never rounded), subinequilateral, thin-coriaceous lepidote above for a rather long time, finally glabrescent, minutely rugose by inflated epidermis cells and \pm persistently laxly to subdensely lepidote beneath (scales minute, the marginal zone substellate-lobed or -incised, centres small and slightly impressed), edge flat, very slightly revolute, (8-)-10-15(-17) by (2-)-3-5(-5.5) cm, midrib very narrow and markedly depressed above, as thick as the petiole, blunt and much prominent beneath, often more densely lepidote than the intervenium, nerves 10-14 pairs, spreading at almost 90°, straight below, curved and obscurely anastomosing before the edge, with additional, less distinct nerves, \pm parallel, faintly sunk above, minutely raised or subinconspicuous beneath, reticulation rather dense, visible above only; petiole flattened and grooved dorsally, densely lepidote, 1-1.5 cm by 1.5-2 mm. *Umbels* (3-)-4-5-flowered. Outer perulae narrow-ovate-acuminate, extended at the apex into a fine sharp point, lepidote along the dorsal middle line and in the upper part, glabrous at the margin, inner ones much narrower, nearly linear, up to 2 by 0.7 cm. Bracteoles filiform, laxly lepidote, c. 1.5 cm. Pedicels laxly substellate-lepidote, not hairy, 1-1.5(-2) cm by c. 1 mm. *Calyx* subobliquely disk-shaped, very shortly and bluntly 5-lobed, densely lepidote dorsally, c. 4 mm ϕ . *Corolla* funnel-shaped, bright rose or red with magenta flushed throat, 5-6(-6.5) cm long in all, lobed to about the upper third, laxly minutely substellate-lepidote outside, laxly short-pubescent in the lower half of the tube inside, tube 3-4 cm, base 5-saccate, 4-5 mm ϕ , gradually dilated to c. 1.5 cm at apex, lobes erecto-patent, broadly obovate-spatulate or suborbicular, 2-2.5(-2.7) by (1.5-)-1.8-2.4 cm.

Stamens 10, unequal, the longest reaching halfway the corolla lobes; filaments linear, subdensely papillose-puberulous below, papillose in the middle, glabrous in the upper third; anthers oblong, 3–3.5 by 1 mm. *Disk* glabrous below, short-pubescent on the upper margin. *Ovary* subcylindric, greyish velutinous and densely lepidote (scales \pm covered by the forward directed hairs), rather abrupt with the style, 7–8 by c. 2 mm; style thickish, densely subpatent-hairy to nearly the top, less densely lepidote, nearly as long as the corolla; stigma thick-capitate. *Capsula* narrow-cylindric, curved, laxly hairy and densely lepidote, c. 8 cm by 4 mm.

Distr. *Malesia*: Borneo (Sarawak).

Ecol. In swampy jungle or white sand podsols at low elevations. *Fl.* Jan.–Dec.

Vern. *Jemalan*, Iban.

234. *Rhododendron subcordatum* BECC. *Malesia* 1 (1878) 203; MERR. *En. Born.* (1921) 463; SLEUM. *Reinwardtia* 5 (1960) 202.

Terrestrial shrub. Branchlets terete, 2–3 mm ϕ , the upper internodes laxly set with flattish scales, no hairs; internodes 3–7 cm. *Leaves* opposite or in 3(–4)-merous pseudowhorls at the upper 1–2 nodes, oblong- to lanceolate-ovate, apex mostly longish, rarely more shortly and rather abruptly acuminate, acute, base rounded to slightly cordate, coriaceous, glabrous above at full age, laxly and \pm persistently lepidote beneath (scales very small, narrow marginal zone irregularly substellate-lobed or -dented, early dissolute, dark centre minute, markedly impressed), edge very slightly or not revolute, 9–17 by (3.5)–4–6 cm, midrib broadened at the very base, otherwise narrowly impressed above, as stout as the petiole and obtusely prominent in the lower part, gradually narrowed towards the apex of the lamina beneath, nerves 8–10(–12) much spreading pairs, straight below, curved-in-arching before the edge, faintly sunk above, slightly prominent or sometimes subinconspicuous beneath, reticulation rather obscure on both sides; petiole subterete, not grooved above, rugose, lepidote initially, finally glabrous, 1.5–2.5 cm by 2(–3) mm. *Umbels* 4–6-flowered. Bracteoles subfiliform, laxly lepidote. Pedicels \pm densely very shortly pubescent and laxly lepidote, 2–2.8 cm by 0.7 mm. *Calyx* oblique, disk-shaped, very shortly lobed or wavy, c. 3 mm ϕ , lepidote outside. *Corolla* narrow-funnel-shaped, red, 5–5.5(–6) cm long in all, laxly lepidote outside, subdensely short-pubescent at the tube inside, tube 3–3.5 cm, base 5-saccate, 4–5 mm ϕ , gradually widened upwards to 1–1.5 cm at apex, lobes expanded, obovate-oblong, 2–2.5 by 1.2–1.5 cm. *Stamens* 10, subequal, attaining \pm halfway the corolla lobes; filaments linear and densely subpatent-hairy in the lower half, filiform and glabrous for the rest; anthers oblong, 3–4 by 1 mm, base blunt. *Disk* densely pubescent at the upper margin. *Ovary* subcylindric-conical, velutinous (the short hairs covering minute scales), continuous with the style, the latter nearly 4 cm long in full anthesis, densely covered with short hairs and scales to

nearly the top; stigma thick-capitate, 2.5 mm ϕ .

Distr. *Malesia*: Borneo (Sarawak: Prov. Batan Lupar, Mt Tian Laju), c. 1000 m. *Fl.* April, June.

235. *Rhododendron vanvuurenii* J.J.S. *Bull. Jard. Bot. Btzg III*, 1 (1920) 399, t. 48; H. J. LAM, *Blumea* 5 (1945) 577; SLEUM. *Reinwardtia* 5 (1960) 198. — *R. kjellbergii* J.J.S. in *Fedde, Rep.* 68 (1937) 202.

Shrub or treelet, terrestrial, often with rather long and flexile branches, 1.2–4 m. Branchlets reddish, terete, 2–4(–5) mm ϕ , covered with a dense, scurfy, detersile tomentum of deeply stellate and subdendroid, rufescent scales at the upper internodes, early glabrescent below; internodes (3–) 5–10(–15) cm. *Leaves* mostly somewhat spaced, 5–9 in the uppermost part of the upper 1–2(–3) internodes, rarely more approximate in a pseudowhorl at the nodes, oblong to lanceolate, rarely elliptic- or ovate-lanceolate, apex short-acuminate, subacute, base \pm broadly attenuate, subacute or mostly blunt, subinequilateral, thin-coriaceous, densely stellate-lepidote on both faces, glabrescent above with age, underneath the detersile, loose tomentum consisting of rufous longer persistent scales (these deeply and narrowly stellate-incised in the marginal zone, centre depressed and subdendroid-extended downwards, very slightly impressed), edge very slightly or not revolute, (5)–6.5–12(–14) by (1.5)–2.5–3.7 (rarely up to 5) cm, midrib narrowly impressed above, broader and very prominent beneath, nerves (6)–7–9 pairs, somewhat irregular, spreading, rather straight below, curved-anastomosing before the edge, mostly rather faintly raised, reticulation 0; petiole subterete, rather slender, \pm densely lepidote, (4)–6–10 by 1–1.5 mm. *Umbels* (4)–5–10-flowered. Outer perulae ovate, more inner ones ovate-elliptic to broad-oblong, innermost ones oblong-spathulate, all densely very shortly appressed-hairy and lepidote outside, laxly hairy inside, up to 3 by 1.6 cm. Bracteoles filiform to linear-spathulate, laxly hairy, up to 2.2 cm. Pedicels rather stoutish, mostly densely, rarely more laxly subpatent-pubescent and caducously lepidote (especially at both ends), occasionally only laxly to subdensely lepidote and epilose, (0.9)–1.3–2.5 cm. *Calyx* oblique, shortly obtusely 5-lobed or -dented, c. 5 mm ϕ , densely hairy and lepidote. *Corolla* funnel-shaped, (3.7)–4.5–5.5 (sometimes up to 6) cm long in all, orange to yellow, also occasionally white or pink, laxly minutely stellate-lepidote outside, pubescent at the tube inside, tube obtusely 5-angular, 2–3 cm, base manifestly 5-saccate, 5–6 mm ϕ , gradually dilated to 1–1.3 cm at apex, lobes broadly obovate, 1.5–2.5 (rarely up to 3) by 1–2 cm. *Stamens* 10, subequal, reaching \pm halfway the corolla lobes; filaments linear and hairy below, filiform and glabrous in the upper half; anthers oblong, (3)–4–5 mm, base obtuse. *Disk* densely pubescent at the upper margin only. *Ovary* subcylindric, tapering to the style, densely yellowish brownish velutinous and lepidote, (5)–7–9 by 2–2.5 mm; style slender, \pm equalling the stamens, densely pubescent and lepidote below,

less so upwards, glabrous for the rest; stigma thick-capitate. *Capsule* subfusiform-cylindric, subdensely hairy and lepidote, 5.5–7 by 0.6–0.7 cm.

Distr. *Malesia*: Central Celebes.

Ecol. In light dry forest, grass and fern scrub vegetation, on rocks or bare slopes, locally common and gregarious, (600–)800–1600 m. *Fl.* June, July.

Note. The showy flowers vary in colour and are used for decoration by the people.

236. *Rhododendron leptobranchion* SLEUM. *Reinwardtia* 5 (1960) 203.

Shrub or treelet, up to 3 m. Branchlets terete, 1.5–3 mm σ , very tips laxly lepidote, glabrous otherwise, pruinose in dry specimens; internodes (3.5–)6–12 cm. *Leaves* in \pm 5-merous pseudowhirls at the upper 1–2 nodes, 1(–2) additional on the internode, lanceolate or suboblong-lanceolate, apex shortly subabruptly acuminate, subacute, base acutely attenuate to the petiole, subcoriaceous, \pm densely lepidote at both faces when young, glabrescent and minutely blackish punctulate above with age, more persistently and laxly lepidote beneath (scales rather small, relatively wide marginal zone early dissolute, variously substellate-lobed or -dented, minute centre slightly impressed, blackish with age), margin faintly or not revolute, (5.5–)6.5–9 by 1.8–2.8 cm, midrib very narrow and impressed above, much and obtusely prominent beneath, pruinose, nerves 6–8(–10) pairs, irregular, spreading, obscurely inarching, with additional shorter intermediate veins, all minutely sunk or rather obscure above, raised beneath, reticulation rather dense, subinconspicuous above, more distinct beneath; petiole compressed and grooved dorsally, (1–)1.2–1.8(–2) cm by 1.5–1.8 mm. *Umbels* 4–6 (–10)-flowered. Pedicels slender, laxly lepidote, epilose, 0.8–1.4 cm. Outer perulae ovate to ovate-oblong, inner ones spatulate, very densely sericeous-hirsutulous outside, glabrous (the laxly pubescent base excepted) inside, up to 2 by 1 cm. Bracteoles linear, densely hirsutulous, 1.5–2 cm by 0.6 mm. *Calyx* obliquely disk-shaped, faintly 5-lobed, densely lepidote dorsally, 3–4 mm σ . *Corolla* tubular, scarlet to fiery red, 3–3.5(–4) cm long in all, laxly or very laxly lepidote especially towards the base outside, subdensely very shortly pubescent at the tube inside, tube subcylindric, straight, c. 2.5 cm, the base manifestly 5-saccate, c. 4 mm σ , dilated to 5–6 mm at apex, lobes broadly obovate or suborbicular, erecto-patent at anthesis, 1–1.3 by 0.7–0.9(–1) cm. *Stamens* 10, unequal, the longest reaching \pm halfway the corolla lobes; filaments linear, densely subpatently pubescent in the lower $\frac{2}{3}$, glabrous above; anthers obovate-oblong, 2 by 1 mm. *Disk* prominent, glabrous. *Ovary* subobovoid-cylindric, densely subpatently hairy and lepidote, 4–6 by 2–2.5 mm, tapering to the style, the latter rather slender, nearly as long as the stamens, subdensely to more laxly hairy in the lower half, sparsely or not lepidote; stigma capitate. *Capsule* obliquely subfusiform-cylindric, slightly curved, subdensely hairy and lepidote,

2.5–3 by 0.5–0.6 cm, on laxly lepidote pedicel 2.2–3 cm by 1 mm.

Distr. *Malesia*: Central Celebes.

Ecol. In mossy forest, 2000–2800(–3000) m, locally common. *Fl.* May–June.

237. *Rhododendron schlechteri* LAUT. in K. Sch. & Laut. Nachtr. (1905) 338; SCHLTR, Bot. Jahrb. 55 (1918) 158, f. 5; SLEUM. *Reinwardtia* 5 (1960) 120.

Epiphytic shrub, few-branched, 1–1.5 m. Branchlets terete, glabrous; internodes 6–8(–10) cm. *Leaves* spiral or subverticillate, crowded apically, \pm spreading, oblong-elliptic, apex broadly obtusely attenuate, base broadly attenuate to rounded, coriaceous, firm, glabrous above at maturity, rather densely lepidote beneath (scales small, irregularly stellate-dentate or -lacerate in the marginal zone, centre not or very slightly immersed, finally caducous, leaving blackish points beneath), flat, 13–17 by 6–8 cm, midrib nearly flat above, robust and strongly raised below, nerves 8–9 pairs, rather straight or slightly curved, obsolete anastomosing, slightly raised on both faces, reticulation obscure; petiole subterete, 1.5–2 cm by 2–3 mm. *Umbels* \pm 12-flowered. Pedicels densely covered with rusty scales, which are deeply incised to or nearly to the small centre, otherwise laxly hairy immediately below the calyx, 1.2–2 cm by 2.5–3 mm. *Calyx* patelliform, \pm oblique, shallowly 5-lobed and wavy, stellate-lepidote outside, glabrous inside, c. 6.5 mm σ . *Corolla* tubular below, funnelliform distally, snow white, very fragrant, (15–)16(–17) cm long in all, tube cylindric, 10–12 cm long, base manifestly 5-saccate, c. 1–1.2 cm σ , gradually dilated to c. 1.4 cm in the middle, to 2–2.5 cm at apex, glabrous outside, rather densely hairy and laxly lepidote inside, lobes 5, obliquely and broadly obovate, rounded at the apex, \pm spreading, margin wavy, c. 5–6(–7) by 3.5–4(–5) cm. *Stamens* 10, manifestly exserted; filaments linear, flat, c. 1.5 mm wide below, gradually attenuate and finally filiform distally, densely hairy (the hairs denser and \pm retrorse at the margin) glabrescent in the upper third, 11–13.5 cm; anthers elongate-oblong, dorsiflex, versatile, 1.6–1.8 cm by 1.8 mm, cells minutely apiculate at the base. *Disk* lobes set with tufts of short hairs. *Ovary* oblong-cylindric, very densely clad with yellowish, \pm spreading hairs mixed with stellate scales, and covering them \pm completely, c. 2.5 by 0.7–0.9 cm, gradually tapering to the very stout cylindrical style, (c. 12.5 cm by 3.5 mm), equally covered with yellowish or fulvous subpatent hairs and stellate scales for the lower c. 7 cm, becoming almost exclusively lepidote above, and entirely glabrous for 2 cm below the stigma, the latter broadly and shortly turbinate, coarsely 5-crenate.

Distr. *Malesia*: NE. New Guinea (Kani and Bismarck Mts).

Ecol. Rain-forest epiphyte on high trees, 1000–1700 m. *Fl.* Jan., June.

238. *Rhododendron leucogigas* SLEUM. *Blumea* 12 (1963) 102; *Jahrb. Rhodod. Ges. Bremen* (1963) 11, *in text*, f. 7-8; SCHNEIDER, *Jahrb. Deutsch. Rhodod. Ges. Bremen* (1965) f. 2-4.

Epiphytic lanky shrub, 1-2(-3) m, erect, few-branched. Branchlets densely stellate-lepidote at the new shoots, early glabrescent; upper internodes (3-)6-12(-20) by (0.5-)0.8-1.2 cm. *Leaves* in (3-)5-6(-7)-merous pseudowhorls at the upper 3-4 nodes, spreading, oblong or subelliptic- or subobovate-oblong, apex gradually attenuate to subacuminate, towards the base broadly attenuate to cuneate (base rounded-obtuse or often slightly cordate), coriaceous, young ones stellate-lepidote-tomentellous (scales of two different types, *i.e.* subdendroid much stellate-incised, rufous, early caducous ones, and flattish, minor and paler, less deeply dentate and more longer persistent ones, the impressions of the latter found on the mature leaves beneath), later \pm glabrescent, flat, (18-)20-28 (in cultivation -36) by 6-10.5 cm, midrib broadened below, gradually narrower and becoming a little impressed distally above, as thick as the petiole and much prominent at the base, nerves (9-)10-11(-12) pairs, curved-ascending, inarching before the edge, slightly raised (their middle-line often faintly impressed) as is the lax network of the veins and veinlets above, much less prominent beneath; petiole somewhat flattened, 7-18(-20) by (3-)4-5 mm. *Umbels* (5-)6-8-flowered. Flower bud ovoid, of a dull carmine; outer perulae ovate, apiculate, more inner ones obovate to spatulate, covered with a tomentum of short, a little scabrid appressed hairs and scales outside, and by a tomentum of softer and longer hairs inside, 6.5-8 by 2-4 cm. Bracteoles linear, dilutely carmine, glabrous, *c.* 6 cm by 2-3 mm. Pedicels densely lepidote, *c.* 1 by 0.4-0.5 cm. *Calyx* rim-like, sometimes with irregular linear lobes up to 8 by 2 mm. *Corolla* 7-merous, tubular-funnelform, white suffused with pale carmine at angles of lobes with tube, and partly on the tube itself, subdensely stellate-lepidote outside, densely hairy at the tube inside, *c.* 14 cm long in all, strongly carnation-scented, tube straight, slightly dilated distally, 8-9 by 1.5-2 cm, lobes \pm spreading, obovate, apex emarginate, edge crenulate, 5-5.5 by 3-4 cm. *Stamens* 14; filaments hairy, exerted for *c.* 1 cm; anthers linear, base obtuse, *c.* 12 by 1.5 mm. *Disk* densely hairy. *Ovary* thick-cylindrical, *c.* 1.5 by 1 cm, tomentose. Style thick, *c.* 7 cm by 2 mm, tomentose in the lower, hairy and lepidote in the upper half, with a short glabrous zone below the stigma. Submature *capsule* obfusiform, densely covered with hairs and scales, 14-16 cm by 1.4-1.8 cm, continuous with the style, the latter 10-11 cm by 2-3 mm, densely hairy and lepidote below, more laxly so upwards in the lower $\frac{3}{4}$, apparently exclusively lepidote for 5-6 mm, glabrous for the rest; stigma large, 7-lobed.

Distr. *Malesia*: W. New Guinea (Cyclopo Mts).

Ecol. On tree trunks in riverine forest or in submossy *Nothofagus* forest at 1200-1350 m,

not rare locally. *Fl.* apparently April-May, *fr.* June.

Note. This species has the largest leaves in New Guinea, and, to conclude from the size of the developed ovary *ca.* immature fruit, probably bears the largest flowers in the genus, nearest to *R. schlechteri* LAUT.

It is now in cultivation from cuttings and the description and size of the floral parts are taken from the living plant. The flowers of the latter may be smaller than those of the wild plant.

239. *Rhododendron lomphense* J.J.S. *Bull. Jard. Bot. Btzg III*, 1 (1920) 402, t. 50; SLEUM. *Reinwardtia* 5 (1960) 204.

Shrub. Branchlets terete, 2.5-4 mm ϕ , rather densely lepidote at the upper internode, elsewhere glabrous; internode 2.8-9 cm, with the scars of several rudimentary, very early caducous leaflets. *Leaves* in 4(-7)-merous pseudowhorls at the upper nodes, oblong-ovate, apex gradually acuminate, nearly acute, base \pm rounded, rather stiffly coriaceous, initially densely lepidote on both faces, at maturity glabrescent above, \pm persistently and subdensely lepidote beneath (scales flat, small, marginal zone irregularly incised, centre very slightly impressed), the margin faintly or not revolute, 7-10.5 by 2.8-4.4 cm (the upper leaves in the same whorl not rarely smaller), midrib broadened below, \pm flat above, strongly raised beneath, nerves (8-)10-12(-14) spreading pairs, straight at the base, curved upwards and inarching distally, a little raised above, more distinctly so beneath, reticulation indistinct above, dense and minutely prominent beneath; petiole 6-12 by 1.5-2 mm. *Umbels* \pm 6-flowered. Perulae orbicular to broadly ovate-acuminate, lepidote-fimbriate, lepidote and very shortly pubescent near the base outside, finally glabrescent, remaining faintly verruculose, up to 3 by 1.5 cm. Pedicels stoutish, subdensely lepidote, epilose, 1.2-1.6 cm. *Calyx* inconspicuous, disk-shaped, oblique, *c.* 3 mm ϕ . *Corolla* tubular below, more funnel-shaped upwards, white, glabrous outside, pubescent at the tube inside, tube subangular-cylindric, 2.6-3.1 cm, at base manifestly 5-gibbous, 4-5 mm ϕ , slightly dilated towards the apex, lobes obovate, erecto-patent, *c.* 1.5 by 1.2-1.3 cm. *Stamens* 10, somewhat exerted from the throat; filaments linear, rather densely hairy in the lower $\frac{2}{3}$, glabrous for the rest; anthers oblong, base obtuse, *c.* 3 by 1 mm. *Disk* glabrous below, set with short white hairs at the upper margin. *Ovary* cylindrical-conical, 5-angled, *c.* 9 by 2 mm, appressed-hairy (the hairs covering numerous scales), gradually developed into the style, the latter *c.* 2 cm long, densely hairy and laxly lepidote in the lower $\frac{2}{3}$, glabrous above; stigma large, capitate, 5-lobed.

Distr. *Malesia*: Central Celebes (Mt Lompoh), once found. *Fl.* Dec.

240. *Rhododendron buruense* J.J.S. in Fedde, *Rep.* 30 (1932) 168; SLEUM. *Reinwardtia* 5 (1960)

204. — *R. lomphohense* J.J.S. var. *grandifolium* J.J.S. in Fedde, Rep. 30 (1932) 169.

Terrestrial shrub, up to 3.5 m. Branchlets terete, 3–4 mm ϕ , laxly appressed-lepidote at the upper internode which is \pm distinctly pruinose; internodes (3–)7–16 cm. *Leaves* in 4–5(–6)-merous, lax pseudowhorls at the upper 1–2 nodes, 1–2 additional ones on the internode which has also scattered spaced scars of reduced, very early caducous leaflets, ovate-oblong to elliptic, apex short-acuminate, rather obtuse, base broadly attenuate, sometimes nearly rounded, coriaceous, glabrous above at full age, laxly \pm persistently lepidote beneath (scales small, the early disappearing marginal zone variously lobed or dented, leaving dark spots, centre small, shallowly impressed), edge very slightly or not revolute, (7–)12–16 by (4–)5–7.5 cm, midrib grooved above, obtusely prominent beneath, nerves 8–12 pairs, mostly straight below, curved-anastomosing before the edge, minutely impressed above, distinctly raised beneath, reticulation rather lax and but faintly prominent beneath; petiole subterete or slightly flattened, rugose, often pruinose, 1–2 cm by 1.5–2 mm. *Umbels* 7–10-flowered. Pedicels \pm laxly lepidote, laxly to very laxly pubescent, (2–)2.2–3.3 cm by c. 1 mm. *Calyx* obliquely disk-shaped, lepidote and with some short hairs dorsally, 4–5 mm ϕ . *Corolla* broad-funnel-shaped in outline, tubular below, white, 4–4.5(–5) cm long in all, with some very scattered scales, i.e. practically glabrous outside, short-pubescent at the tube inside, tube cylindrical, straight, 2–2.6 cm, at base manifestly 5-saccate, 5–6 mm ϕ , slightly widened towards apex, lobes \pm expanded, broad-ovate to suborbicular, (1.2–)1.5–2.3 by (1.2–)1.5–2 cm. *Stamens* 10, unequal, the longest reaching halfway the corolla lobes; filaments linear and subdensely patent-hairy in the lower $\frac{1}{3}$ to $\frac{1}{2}$, more filiform and glabrous above; anthers oblong, 3–4 by 1 mm, the very base slightly thickened, gland-like. *Disk* prominent, glabrous or short-hairy at the upper margin. *Ovary* subcylindrical, densely clothed with subpatent short hairs which cover small scales, 6–7 by 2.5–3 mm, rather abrupt with the style, the latter \pm densely hairy and laxly lepidote to the lower $\frac{2}{3}$, glabrous for the rest; stigma capitate.

Distr. *Malesia*: Moluccas (Buru).

Ecol. On loamy mouldered limestone, 1290–1900 m. *Fl.* Feb., April.

241. *Rhododendron bloembergenii* SLEUM. Reinwardtia 5 (1960) 204.

Treelet, c. 3 m. Branchlets subangular and very sparsely appressed-lepidote at the tips, otherwise terete, glabrous, not rarely pruinose, 4–9 mm ϕ ; internodes 5–20 cm. *Leaves* opposite or in 3-merous pseudowhorls at the upper 1–2(–3) nodes, with 1–2(–3) additional leaves (scattered on internode), broad-oblong, apex shortly and not rarely rather abruptly acuminate, subacute, base broadly attenuate, subinequilateral, firmly coriaceous, sparsely lepidote or entirely glabrescent above with age, subsersistently laxly to subdensely

lepidote beneath (scales minute, flat, the rather broad, early dissolved marginal zone irregularly substellate-lobed or -dented, centre very small, hardly impressed), edge very shortly revolute in dry state, (9–)11–19 by (3–)4–8 cm, midrib as wide as the petiole in the lower part, flat or shallowly impressed above, very thick and obtusely prominent beneath, nerves 9–12 pairs, high-ascending at a rather acute angle, curved and anastomosing before the edge, with several intermediate smaller nerves, all \pm parallel, faintly impressed or raised above, distinctly prominent beneath, reticulation slightly raised beneath only; petiole flattened, 1–1.5(–2) cm by c. 3 mm, lepidote, lengthwise striate as is the midrib. *Umbels* \pm 10-flowered. Outer perulae ovate, blunt, 1.5–2 by c. 1 cm, initially (especially at the base) sericeous dorsally, early glabrescent, manifestly rough to the touch, inner ones oblong to oblong-spathulate, very densely subsericeous-hirsutulous dorsally, up to 6 by 2.5 cm. Bracteoles linear-subspathulate, \pm densely hairy, c. 2 cm by 1–1.5 mm. Pedicels subdensely substellate-lepidote at anthesis, 1.2–1.7 cm by c. 1.5 mm. *Calyx* disk-like, very short, c. 3 mm ϕ . *Corolla* long-tubular below, expanded at the limb, white, fragrant, glabrous outside, densely shortly pubescent at the tube inside, (6.5–)7–7.5 cm long in all, tube 4.5–5 cm, cylindrical, straight, base \pm 5-saccate, 5–6 mm ϕ , hardly dilated to apex, lobes broadly obovate-spathulate or suborbicular, 2–2.5 by 1.5–2 cm. *Stamens* 10, reaching \pm halfway the corolla lobes; filaments linear and densely patent-hairy to the lower $\frac{2}{3}$, glabrous and filiform above; anthers oblong, 6–7 by c. 1.5 mm, each cell protracted in a short basal appendix. *Disk* rather prominent, glabrous, *Ovary* subcylindrical, yellowish tomentose (scales not visible), 9–10 by 3–4 mm, continuous with the style, the latter thick, slightly exceeding the stamens, densely hairy below, more subdensely or laxly so and minutely lepidote in the upper part, glabrous for the upper 6–8 mm; stigma thick-capitate, c. 3 mm ϕ . *Capsule* thick-subfusiform-cylindrical, laxly shortly hairy, somewhat rugose, slightly curved, 3.5–4 by 0.7–0.8 cm; pedicel 3–3.5 cm by 2 mm.

Distr. *Malesia*: W. and Central SW. Celebes (Mt Ngilalaki, E of Lake Lindu; Latimodjong Mts).

Ecol. Summit vegetation, 2200–2335 m. *Fl.* July, *fr.* Aug.

242. *Rhododendron macgregoriae* F. v. M. J. Bot. 29(1891) 177; J.J.S. Nova Guinea 18 (1936) 97; SLEUM. Reinwardtia 5 (1960) 205; Blumea 11 (1961) 127; *ibid.* 12 (1963) 112; Jahrb. Rhodod. Ges. Bremen (1963) f. 5, 20, 32.—*R. hansemanni* WARB. Bot. Jahrb. 16 (1892) 26; K. SCH. & LAUT. Fl. Schutzgeb. (1901) 487; SCHLTR. Bot. Jahrb. 55 (1917) 141, f. 1; LANE-POOLE, For. Res. Papua (1925) 130; WHITE & FRANCIS, Proc. R. Soc. Queensl. 39 (1928) 68; DIELS, Bot. Jahrb. 62 (1929) 486.—*R. vonroemerii* KOORD. Nova Guinea 8 (1912) 879, t. 155; J.J.S. *ibid.* 12 (1914) 143; GIBBS, Arfak (1917) 170.—*R. lauterbachianum*



Fig. 39. *Rhododendron macgregoriae* F. v. M. Mt Nettoti, 1750 m, NW. New Guinea (VAN ROYEN & SLEUMER 7415) (SLEUMER, 1961).

FOERSTER in Fedde, Rep. 13 (1914) 224; STONOR, Rhodod. Yearbook 6 (1951) 49, f. 49—*R. calceolarioides* WERNH. Trans. Linn. Soc. II, Bot. 9(1916) 95.—*R. gorumense* SCHLTR, Bot. Jahrb. 55 (1917) 142.—Fig. 39.

KEY TO THE VARIETIES

1. Corolla \pm densely hairy at the tube inside.
 1. var. macgregoriae
 1. Corolla glabrous inside.
 2. Filaments densely hairy below **2. var. mayrii**
 2. Filaments very sparsely hairy below, or quite glabrous **3. var. glabrifilum**

1. var. macgregoriae.

Shrub or treelet, 0.5–5 m, rarely tree up to 15 m, terrestrial, rarely epiphytic. Branchlets rather slender, terete, upper internodes sparsely lepidote, lower parts glabrous; internodes (2–)4–10 cm. *Leaves* mostly in 3–5(–7)-merous pseudowhorls, rarely subopposite at the upper 1–3 nodes, ovate-lanceolate to subovate- or sometimes elliptic-oblong, rarely ovate, apex \pm shortly acuminate, subacute or more bluntish, base broadly and \pm acutely attenuate to the petiole, rarely rounded (then petiole longer than 4 mm), subcoriaceous to rather coriaceous, glabrous above

at maturity, subdensely lepidote beneath (scales brownish, flat, thin, marginal zone irregularly dentate or incised, centre small, shallowly or hardly impressed), \pm flat, (4-)5-8 (rarely up to 15) by (1.7-)3.5(-6) cm, midrib a little impressed above, prominent beneath, nerves (6-)8-10 pairs, spreading, \pm straight and markedly inarched before the edge, slightly raised above to faintly impressed, somewhat prominent beneath, reticulation very slightly raised on both sides, rather dense and mostly well visible; petiole flattened, grooved above, lepidote, (3-)6-12 mm. Flower buds subglobose. *Umbels* (4-)8-15-flowered. Outer perulae ovate, inner ones obovate to spatulate, all dorsally laxly lepidote and minutely sericeous, ciliate, up to 2 by 1 cm. Bracteoles linear to filiform, subspathulate distally, very laxly hairy or glabrous, up to 1.5 cm. Pedicels slender to rather stoutish, sparsely lepidote, normally epilose, but sometimes laxly set with very fine, short hairs, (1-5.)2.5-3.5(-4.5, rarely up to 7) cm. *Calyx* oblique, patellar, sometimes rudimentary, lobes indistinct, margin \pm ciliate. *Corolla* tubular below, generally much (sub-horizontally) expanded at the lobes, light yellow to dark orange or yellow at the tube and/or centre, reddish orange at the lobes, variable in size, mostly scentless, (1-1.8-)2-2.8 cm long in all (in natural hybrids with other species of *ser.* *Javanica* tending towards *R. macgregoriae*, larger, up to 4 cm long with more erect corolla lobes), 5-lobed to $1/2-3/5$, laxly lepidote outside, \pm densely set with spreading hairs at the tube inside, tube straight, somewhat 5-angular, with 5 basal rounded-saccate pouches, *c.* 1 cm long, 3-5 mm ϕ at base, slightly or not dilated upwards, lobes broadly obovate-spatulate, laxly lepidote outside, glabrous inside, 1.2-1.8(-2) by 0.8-1.3(-1.6) cm. *Stamens* 10, unequal, almost as long as the corolla; filaments linear and densely clothed with spreading hairs or subvillous in the lower, glabrous and narrower in the upper half; anthers oblong, 2.5-3.2 by *c.* 1 mm. *Disk* with thick lobes, mostly glabrous, rarely shortly hairy in the upper half. *Ovary* elongate-conical, densely covered with subappressed hairs, which completely cover the scales, *c.* 4 by 1.8 mm, tapering to the style, the latter 1-1.5 cm, densely to laxly hairy and lepidote in its lower, glabrous in upper half; stigma thick-capitate, somewhat deepened in the middle, lobes distinct. *Capsule* cylindrical, slightly curved, manifestly 5-ribbed, attenuate at apex and base, hairy and lepidote, 3.5-4.5 by 0.3-0.4 cm, on slender fruit-pedicel 4-5 cm; valves twisting. *Seeds* *c.* 4 mm including the long tail at both ends.

Distr. *Malesia*: New Guinea.

Ecol. Distributed over the whole of New Guinea, fairly common, locally abundant to such degree, that it can be recognized from a far distance when in flower, both in primary mossy forest, secondary brushes and moderately dry sunny situations, among trees on mountain slopes, in thin canopy shade (*Quercus* forest), also along creeks, on precipitous banks of streams, scattered over open (*Imperata*-, maybe regrowth) grassland,

not rarely on landslides and formerly cultivated land, invading artificial clearings (air strips), on sandy or often on peaty soil, also stony clay and limestone ridge, at (120-)500-3000(-3350, perhaps even more) m. *Fl.* Jan.-Dec.

Vern. *Gupou*, Ueli: Movoi (Kunimaipa Valley), *nektamuk*, Dani, *waradé*, Kapauku, *gorogoro*, Guale: Movoi, *tiriz*, Ueli: Movoi (Upper Zevi Valley), *nekaloa*, Andjaj, *hongkempa*, Sosomepari, *hakessa*, Asaro: Kefamo, *kibimume*, Chimbu: Masul, *wumbamb*, Wahgi: Minj, *wambu*, Hagen: Togoba, *atikro*, Kebar: Karoon, *ron*, Enga, *xdépnään*, Hattam, *wamp*, Mendi, *favell*, Wapi.

Note. Reported to be poisonous to mules (Edie Creek). Natural hybrids, apparently in the first place with the equally common *R. zoelleri*, not rare locally. Such plants show the general habit and foliage of *R. macgregoriae*, but have larger flowers.

2. *var. mayrii* (J.J.S.) SLEUM. Reinwardtia 5 (1960) 206.—*R. mayrii* J.J.S. Nova Guinea 18 (1936) 97, t. 20, f. 2.

Corolla glabrous inside, light red, otherwise as in *var. macgregoriae*.

Distr. *Malesia*: W. New Guinea (Arfak Mts: Mt Ditschi), at 1100 m, once found.

Vern. *Sangsaia*.

3. *var. glabrifilum* (J.J.S.) SLEUM. Reinwardtia 5 (1960) 206; *Blumea* 11 (1961) 127; *ibid.* 12 (1963) 112.—*R. glabrifilum* J.J.S. Nova Guinea 12 (1914) 134, t. 31.—*R. torricellense* SCHLTR, Bot. Jahrb. 55 (1917) 142.

Filaments very sparsely hairy below or quite glabrous. *Corolla* glabrous inside (yellow or red), otherwise as in *var. macgregoriae*.

Distr. *Malesia*: New Guinea.

Ecol. Apparently with preference (or exclusively?) epiphytic, 200-1675 m.

Vern. *Munako*, Kamora.

243. *Rhododendron rosendahlia* SLEUM. Reinwardtia 5 (1960) 207.

Erect shrub, *c.* 1.5 m. Branchlets erect, laxly substellate-lepidote at the upper internodes (1.5-7 cm by 1.5-2 mm), glabrescent at the lower ones (3-10 cm by 2-3 mm). *Leaves* in 3-4(-5)-merous pseudowhorls at the upper 2-3 nodes, ovate to ovate-elliptic, apex longer or shorter and gradually acuminate or attenuate, \pm bluntish, more rarely subacute, sometimes almost rounded and minutely emarginate, at base slightly but distinctly cordate, coriaceous, laxly punctate by the remains of scales above, laxly to subdensely and subsersistently lepidote beneath (scales small, variously substellate-lobed or -dented at the early evanescent marginal zone, centre minute, much impressed), margin slightly revolute, (3-)4-6 (-7.5) by (2-)2.5-3.5 cm, midrib narrow and immersed above, a continuation of the thick petiole and obtusely prominent in the lower part beneath, nerves 6-8 pairs, spreading, curved-anastomosing before the edge, slightly impressed above, faintly so beneath or almost inconspicuous,

reticulation \pm obscure; petiole subterete, grooved above, 2-4(-5) by 1.5-2 mm. *Umbels* 3-5-flowered. Outer perulae subcoriaceous, ovate, short-acuminate, laxly lepidote and minutely sericeous in the middle line dorsally, 5-6 by c. 3 mm, inner ones much thinner, obtuse, oblong to obovate-spathulate, densely and very shortly sericeous, not lepidote, up to 2 by c. 0.7 cm. Bracteoles filiform below, subspathulate-dilated distally, pubescent, up to 1.5 cm by c. 1 mm. Pedicels densely subpatently pubescent and very laxly or not lepidote, (1.5-)-2-2.5(-3.5) cm by c. 0.6 mm. *Calyx* disk-shaped, very shortly obtusely 5-dented, shortly pubescent dorsally, c. 3 mm ϕ . *Corolla* tubular-funnel-shaped, slightly oblique, dark red, sparsely substellate-lepidote outside, glabrous inside, 3-3.5 cm long in all, tube (2-)-2.5 cm, at base manifestly 5-saccate, c. 4 mm ϕ , dilated to 6-8 mm at apex, lobes broadly spatulate or suborbicular, 1-1.2 by 0.8-1 cm. *Stamens* 10, unequal, the longest reaching \pm halfway the corolla lobes; filaments linear, glabrous. *Disk* tomentellous especially at the upper margin. *Ovary* subcylindric, continuous with the style, tomentose, the spreading hairs hiding minute scales, 6-7 by 2.5 mm; style thickish, tomentose in the lower, less densely hairy in the upper part, glabrous for the ultimate 2-3 mm; stigma thick-capitate.

Distr. *Malesia*: New Guinea (Wissel Lakes region).

Ecol. Terrestrial, in peaty swamp, 1380-1800 m. *Fl.* Sept., Jan.

Vern. *Wagadei*, Kapauku.

244. *Rhododendron comparabile* SLEUM. Reinwardtia 5 (1960) 208.

Erect shrub, up to 2 m. Branchlets (2-)-3-4 mm ϕ , subterete, laxly and caducously substellate-lepidote at the upper internodes, early glabrescent below, not rarely pruinose; internodes 2-8(-11) cm. *Leaves* in 4-5-merous pseudowhorls at the upper 2-3(-5) nodes, elliptic to subobovate-elliptic, apex very broadly attenuate or very shortly subabruptly acuminate, obtuse, sometimes rounded, base broadly attenuate to the petiole, coriaceous, glabrous above at full age, laxly and subpersistently lepidote beneath (scales minute, the marginal zone irregularly substellate-lobed or -dented, centre slightly impressed), edge slightly but distinctly revolute, (3.5-)-4.5-8(-9) by 2.5-4(-5) cm, midrib narrowly impressed above, thick and obtusely prominent beneath, nerves (5-)-6-9 pairs, spreading, sometimes irregular, or in part divided before the edge, mostly subparallel to each other and distinctly curved-anastomosing, slightly impressed above, somewhat raised beneath, reticulation faintly impressed above in old leaves, not rarely subinconspicuous; petiole subterete, grooved above, (8-)-10-18(-23) by 1-2 mm. *Umbels* (8-)-9-13-flowered. Outer perulae ovate, subacuminate, or orbicular, lepidote at the median or to the apex dorsally, inner ones obovate to spatulate, early glabrescent dorsally, or glabrous from the beginning, all with marginal scales, up to 2 by 1.5 cm. Bracteoles linear-spathulate, glabrous,

c. 1.5 cm by 0.5-1.5 mm. Pedicels rather densely substellate-lepidote, 2-2.5(-3) cm by c. 1 mm. *Calyx* obliquely disk-shaped, very shortly and bluntly 5-lobed, lepidote dorsally, c. 3 mm ϕ . *Corolla* funnel-shaped, white, fragrant, (4-)-4.5 (-4.8) cm long in all (5 cm ϕ at limb when fresh), laxly to subdensely set with minute substellate scales outside, short-pubescent at tube inside, tube straight, subcylindric, c. 2.5 cm, at base markedly 5-saccate, 5-6 mm ϕ , gradually dilated to 8-12 mm at apex, lobes broadly obovate or suborbicular, spreading, (1.5-)-2 cm ϕ . *Stamens* 10, subequal, exserted; filaments linear and laxly patently hairy in the lower $\frac{2}{3}$, more filiform and glabrous apically; anthers narrow-oblong, 3-3.5 by 0.8 mm. *Disk* hardly prominent, glabrous. *Ovary* subcylindric, densely clad with forward directed hairs which \pm cover the scales, 5-6 by c. 2 mm, rather continuous with the style, the latter slightly shorter than the stamens, densely hairy and lepidote to the lower $\frac{3}{4}$, lepidote at apex; stigma capitate, deeply 5-lobed. *Capsule* subcylindric, 3-3.5 by 0.5-0.6 cm, on fruit-pedicel 2.5-3 cm by 1.5 mm. *Seeds* very narrow, 4-5 mm including the long tails.

Distr. *Malesia*: E. New Guinea (Milne Bay Distr.: Sudest I., on Mt Riu), 600-800 m, scattered in stiff scrub on summit or on edge of a precipice. *Fl.* Aug.

Note. Much related to *R. lochae* F. v. M. from NE. Queensland (the only *Rhododendron* in Australia), which, however, has red corollas, laxly hairy ovary (the scales thus clearly visible) and 2-5 (rarely up to 7) flowers per umbel.

245. *Rhododendron luraluense* SLEUM. Notizbl. Berl.-Dahl. 12 (1935) 485; Reinwardtia 5 (1960) 209.

Small, epiphytic shrub or tree, up to 9 m. Branchlets subterete, 2-3(-4) mm ϕ , laxly lepidote at the upper internode, glabrous below; internodes 3.5-8 cm. *Leaves* in 4-7-merous pseudowhorls at the upper 2-3 nodes, obovate-elliptic to obovate-oblong, apex broadly attenuate, subapiculate or obtuse, rarely rounded, base broadly cuneate to the petiole, coriaceous to subcoriaceous, glabrous above at full age, laxly to very laxly and more persistently lepidote beneath (scales very small, the early dissolved marginal zone irregularly dented, centre dark, slightly impressed), edge somewhat recurved, (3.5-)-4-5.5(-6) by 2-2.8(-3.2) cm, midrib broad and impressed in the lower part above, broadly and obtusely prominent beneath, nerves 4-5(-6) irregular pairs, spreading, inconspicuously inarching before the edge, faintly impressed or hardly visible above, slightly prominent beneath, reticulation lax, a little raised beneath only; petiole flattened, grooved above, 3-4(-5) by 1-1.5 mm. *Umbels* (3-)-4-5-flowered. Outer perulae ovate-acuminate, inner ones obovate to spatulate, all glabrous or laxly lepidote apically outside, 0.5-1.2 by 0.3-0.6 cm. Bracteoles filiform, glabrous, c. 1 cm. Pedicels rather stoutish, laxly substellate-lepidote, more densely so at apex, c. 1.3 cm. *Calyx* oblique, disk-shaped, very shortly

5-lobulate, c. 3 mm ϕ . *Corolla* funnel-shaped, (3-)3.5-4(4.5) cm long in all (limb c. 5 cm ϕ when fresh), white, membranous, sparsely lepidote outside, very laxly and shortly pubescent at the tube inside, tube 1.5-2 cm, at base c. 4 mm ϕ , gradually widened to 7-9 mm at apex, lobes obovate-suborbicular, spreading, (1-)1.5 by 1-1.4 cm. *Stamens* 10, reaching \pm halfway the corolla lobes; filaments linear and densely hairy below, filiform and glabrous above; anthers oblong, c. 2.5 mm. *Disk* prominent, glabrous. *Ovary* subcylindric, densely white-hairy and lepidote (the hairs \pm covering the scales), c. 4 by 1.8 mm, rather abrupt with the style, the latter slender, not quite equalling the stamens, subdensely to laxly hairy and lepidote to about the lower $\frac{3}{4}$; stigma capitate.

Distr. Melanesia: Solomon Is. (Bougainville, Crown Prince Range), twice found.

Ecol. In rain-forest, or stunted vegetation, locally common, at 900-1500 m. *Fl.* Aug., Oct. Vern. *Kiribut*.

246. *Rhododendron flavoviride* J.J.S. Med. Rijksherb. n. 25 (1915) 4; Nova Guinea 12 (1917) 505; *ibid.* 12 (1918) t. 200 a, 204 b-e; SLEUM. Reinwardtia 5 (1960) 207.

Much-branched, terrestrial shrub, up to 4 m. Branchlets subterete, \pm densely lepidote at the upper internodes, glabrescent, 2-4 mm ϕ ; internodes (1.5-)2.5-5(-8) cm. *Leaves* in (4-)6-8-merous pseudowhorls at the upper 1-2 nodes, elliptic or ovate-elliptic, apex obtuse or rounded, base mostly rounded, more rarely broad-attenuate, coriaceous, \pm stiff, initially lepidote on both faces, glabrescent leaving dense minute blackish pits above, more persistently and subdensely lepidote beneath (scales rather large, flat, marginal zone wide, shortly substellate-lobed or -dented, minute centre very dark, somewhat impressed), edge much revolute, 2.5-4.5 by (1.5-)2-2.7 cm, midrib narrow and slightly sunk above, as robust as the petiole and much prominent beneath, nerves 6-8 pairs, spreading, rather irregular, anastomosing, slightly depressed above and raised beneath in old leaves, reticulation rather dense, slightly impressed above, faintly to markedly raised beneath; petiole lepidote, subterete, 3-5 by 1-1.5 mm. *Umbels* 3-5-flowered. Outer perulae suborbicular, lepidote dorsally, inner ones obovate to spatulate, glabrous, up to 1.6 by 0.8 cm. Bracteoles linear to linear-spatulate, glabrous or lepidote apically, up to 1.9 cm. Pedicels stoutish, densely substellate-lepidote, epilose, 1-1.7 cm. *Calyx* obliquely disk-shaped, very shortly and obtusely 5-lobed, 4-5 mm ϕ . *Corolla* tubular in outline, somewhat oblique and curved, yellow-green or pale green, fragrant, (3.5-)4-4.5 cm long in all, laxly substellate-lepidote outside, short-pubescent at the tube inside, tube subcylindric, 2.5-3 cm, at base 5-saccate, 4-5 mm ϕ , slightly dilated upwards, lobes suborbicular, suberect or somewhat spreading, 1(-1.2) cm ϕ . *Stamens* 10, \pm as long as the corolla; filaments linear below, more filiform distally, subdensely to laxly pubescent to nearly

the top; anthers oblong, c. 2.5 by 0.8 mm, base obtuse. *Disk* hardly prominent, glabrous. *Ovary* subcylindric-conical, base attenuate, apex somewhat constricted to the style, yellowish velutinous, the straight hairs covering small scales, c. 5 by 2 mm; style as long as the stamens, finally a little exerted, hairy and lepidote to the lower $\frac{1}{4}$ - $\frac{1}{3}$, lepidote and whether or not very laxly hairy up to the middle, glabrous above; stigma capitate.

Distr. Malesia: W. New Guinea (Oranje Mts: Kajan Mts and near Lake Habbema).

Ecol. In open, swampy localities, or edge of forest, c. 3200 m. *Fl.* Feb., Aug.

247. *Rhododendron christiana* SLEUM. Reinwardtia 5 (1960) 211; Blumea 11 (1961) 128; CRUTT-WELL, J. R. Hort. Soc. 87 (1962) 81, f. 21.

Rather compact terrestrial shrub, up to 3 m. Branches terete, 7-8 mm ϕ ; bark brownish greyish. Branchlets obtusangular and sparsely lepidote at the tips, subterete and glabrous at the older parts; internodes (2-)3.5-11(-13) cm. *Leaves* in 3(-5)-merous pseudowhorls at the upper 1-3(-4) nodes, \pm broadly elliptic or subobovate-elliptic, apex rather abruptly and very shortly or more gradually acuminate, blunt, sometimes rounded or slightly emarginate, terminal gland thick, not emerging, base broadly attenuate into the petiole or more rarely cuneate, coriaceous, juvenile ones laxly lepidote on both faces, mature ones quite glabrous above, laxly to very laxly lepidote for a long time beneath (scales small, marginal zone variously lobed or dented, centre slightly impressed), flat, 4-7.5 by 3-4.5 cm, midrib slightly or faintly sunk above, much and bluntly prominent in the lower part beneath, nerves 5-7 pairs, spreading, divided and curved-anastomosing before the edge, rather obscure above, a little raised beneath, reticulation inconspicuous; petiole subterete, grooved dorsally, somewhat rugose, glabrous, (5-)6-10 by 1-1.5 mm. *Umbels* (2-)3-4(-5)-flowered. Outer perulae ovate to obovate, innermost ones oblong-spathulate, hirsutulous on the dorsal middle line and at the apex, margin with early caducous scales, up to 1.5 by 0.8 cm. Bracteoles linear-subspatulate to filiform, laxly pubescent, c. 1.5 cm. Pedicels densely and shortly hairy, laxly lepidote at both ends, 1-1.8(-2.7) cm by c. 1 mm. *Calyx* oblique, disk-shaped, shortly obtusely 5-lobed, lepidote and pubescent dorsally, c. 4 mm ϕ . *Corolla* widely tubular-subcampanulate, normally deep yellow shading to glowing orange, or bright orange at the lobes, and yellow at the throat, sometimes salmon or paling almost to yellow and darkening to russet, occasionally red outside and greenish inside, sparsely lepidote outside, laxly hairy at the lower third of the tube inside, tube straight, (2.5-)3-3.5 cm, at base much 5-saccate, 7-8(-10) mm ϕ , gradually dilated to 1.5-2 cm at apex, lobes broadly obovate or suborbicular, (1.5-)2-2.5 by c. 2 cm. *Stamens* 10, very unequal, the longest reaching halfway the corolla lobes, the shortest hardly exerted; filaments linear, c. 1 mm wide at the base, densely and very shortly papillose-

pubescent in the lower third, glabrous at apex; anthers narrow-oblong, (3-)4-5 by 1 mm, base very shortly biappendiculate. *Disk* slightly prominent, white-velutinous at the upper margin. *Ovary* subcylindric, rather abrupt with the style, white-tomentose (and lepidote but scales hidden by the hairs), c. 6 by 2.5 mm; style 3-4 cm long, \pm as long as the corolla tube, densely or upwards more laxly hairy and lepidote to the lower $\frac{3}{4}$, glabrous for the 5-7 mm below the thick-capitate, manifestly 5-lobed stigma.

Distr. *Malesia*: SE. New Guinea (Milne Bay Distr.: Daga country).

Ecol. On precipitous rock face or cliff edges, overhanging deep gorge or gullies, in full sun. "Locally abundant from 600-1525 m. When in flower (properly about June), it is a mass of orange and a conspicuous sight for miles, even from an aeroplane" (N. E. G. CRUTWELL, in litt.). *Fl.* May-Oct.

248. *Rhododendron laetum* J.J.S. Nova Guinea 12 (1914) 139, t. 35; in Gibbs, Arfak (1917) 169; KANEH. & HATUS. Bot. Mag. Tokyo 56 (1942) 479; SLEUM. Reinwardtia 5 (1960) 212; Blumea 12 (1963) 112; Jahrb. Rhodod. Ges. Bremen (1963) f. 35.—*R. uliginosum* J.J.S. Nova Guinea 12 (1914) 136, t. 33; KANEH. & HATUS. Bot. Mag. Tokyo 56 (1942) 479.—Fig. 40.

Terrestrial shrub, 0.5-1.5(-3) m. Branchlets obtusangular and laxly lepidote at young shoots, 3-5(-6) mm ϕ , terete and practically glabrous later; internodes (2.5-)3-16 cm. *Leaves* in 4-5(-7)-merous pseudowhorls at the upper 1-2 nodes, broadly elliptic or subovate-elliptic, apex mostly very shortly acuminate or subcuspidate, more rarely broadly attenuate, subacute or bluntish, sometimes rounded, base mostly rounded, rarely very broadly attenuate or subcordate, coriaceous, dark green and glossy above, paler beneath, subsdensely lepidote on both faces initially, glabrous above at full age, \pm persistently and rather laxly lepidote beneath (scales small, marginal zone irregularly substellate-lobed or -dented, early dissolved, minute centre shallowly impressed), finally glabrescent, but remaining punctate beneath, margin \pm flat, (4-)5-9.5 by (2.5-)3-5.3 cm, midrib narrow and grooved above, as stout as the petiole and obtusely prominent at the base beneath, nerves 6-8 pairs, spreading, rather obscurely anastomosing before the edge, faintly impressed, or not rarely inconspicuous above, slightly to distinctly raised beneath, reticulation lax, a little prominent beneath, or often \pm obsolete; petiole depressed and grooved dorsally, 2-5(-7) by 2-3 mm. *Umbels* (5-)-6-8-flowered. Flower buds ovoid, c. 4.5 by 2.5 cm. Outer perulae rounded to ovate, apiculate or obtuse, initially dorsally with very short substrigose hairs, glabrescent and \pm smooth finally, inner ones ovate-oblong to subspathulate, glabrous or nearly so dorsally, to 3.5-5 by 1.5-2 cm. Bracteoles filiform, subspathulate at apex, very laxly hairy or glabrous, c. 4 cm by 0.5-1 mm. Pedicels subsdensely stellate-lepidote, moreover puberulous



Fig. 40 *Rhododendron laetum* J. J. S. Swamp near Iray, Anggi Gigi Lake, Arfak Mts, NW. New Guinea, 1900 m (SLEUMER, 1962).

to various degree, 2.5-5.5 by c. 1 mm. *Calyx* obliquely disk-shaped, very shortly obtusely 5-lobed, lepidote and puberulous dorsally, wavy, c. 4 mm ϕ . *Corolla* rather broadly funnel-shaped, fleshy and fragrant, of a deep pure yellow first, becoming suffused with red, orange or salmon in later stages, or sometimes dilutely rose-coloured then, laxly stellate-lepidote and may be with some hairs at the base outside, short-pubescent at the tube inside, 6.5-7 cm long and c. 5 cm ϕ at the

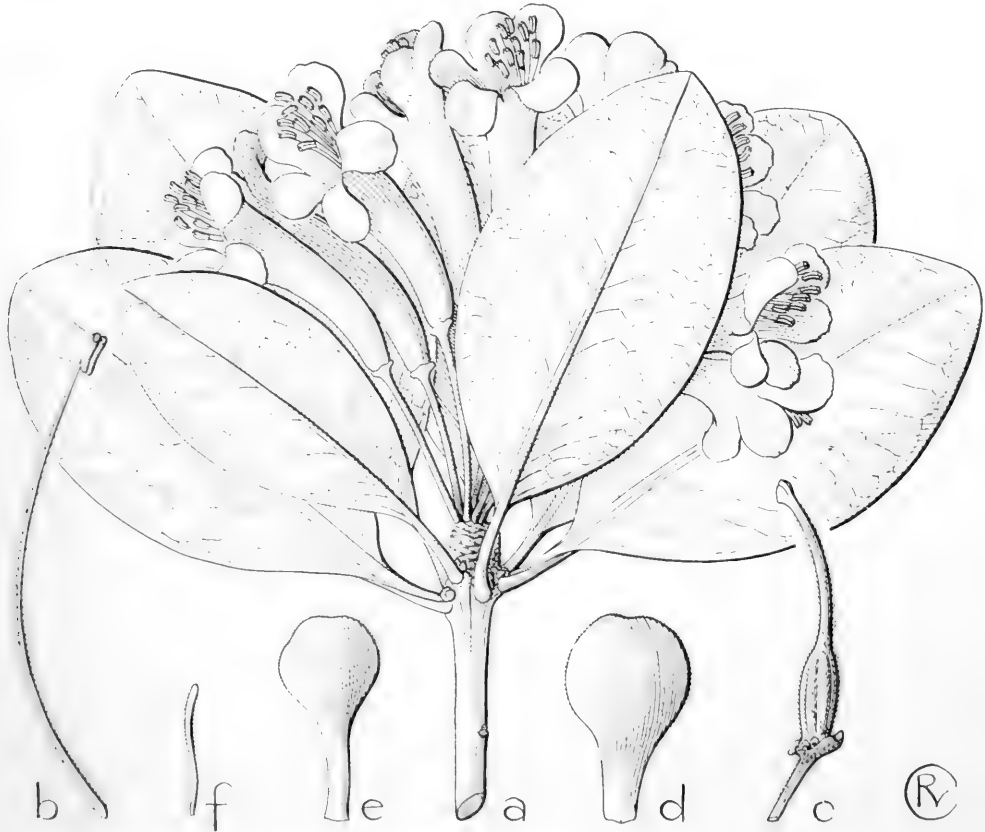


Fig. 41. *Rhododendron scabridibracteum* SLEUM. a. Flowering branchlet, $\times \frac{2}{3}$, b. stamen, $\times 1 \frac{1}{3}$, c. ovary and style, $\times 1 \frac{1}{3}$, d-e. two inner perulae from outside, $\times \frac{2}{3}$, f. bracteole, $\times \frac{2}{3}$ (a-f HOOGLAND & PULLEN 5840).

limb (when fresh), (4.5-)5-5.5(-6) cm long in all when dry, tube 3-3.5 cm, straight, very distinctly 5-angular, at base 5-saccate, 0.7-0.8 cm ϕ (1.2 cm when fresh), dilated to 1.2-2 cm at apex, lobes broadly obovate, 2-2.5(-3) by 1.5-2.2 cm. *Stamens* 10, subequal, slightly exserted; filaments linear and subdensely short-pubescent in the lower, narrower and quite glabrous in the upper half; anthers broad-oblong, base obtuse, 4-5 by 1.5 mm. *Disk* much prominent, glabrous in the lower, tomentose in the upper half. *Ovary* sub-cylindric, rather abrupt with the style, 6-8 by 2.5-3 mm, white-tomentose (the hairs covering minute scales); style stoutish, tomentose at the base, more laxly hairy above to the lower $\frac{1}{2}$ to $\frac{2}{3}$, mostly without trace of scales; stigma thick-capitate. *Capsule* subfusiform-cylindric, curved, densely hairy and lepidote, (3.5-)4-5(-5.5) by c. 0.8 cm, on fruit-pedicel 4-5.5 cm by 2 mm. *Seeds* 4-6 mm

Distr. Malesia: NW. New Guinea (Anggi Lakes area in Arfak Mts).

Ecol. On edge of primary and secondary forest, and in open marsh, often in swamps near lake shore, 1800-2300 m. *Fl.* Jan.-Dec.

Note. Much related to *R. zoelleri*.

249. *Rhododendron scabridibracteum* SLEUM. Reinwardtia 5 (1960) 215; Blumea 11 (1961) 128; *ibid.* 12 (1963) 112.—**Fig. 41.**

Terrestrial or epiphytic shrub or tree, (1-)3-5 (-12) m, sparsely branched. Branchlets (3-)4-6 mm ϕ , laxly substellate-lepidote at the upper internodes, early glabrescent; internodes (2-)4-18 cm. *Leaves* in 3-4(-6)-merous pseudowhorls at the upper 1-2 nodes, elliptic-oblong, apex broadly attenuate, obtuse, sometimes rounded or emarginate (apical gland not projecting), broadly attenuate towards the base (very base not rarely subtruncate or very shortly or occasionally broadly rounded), coriaceous, glabrous above at full age, laxly lepidote beneath (scales small, dark chestnut brown, marginal zone variously substellate-lobed or -incised, minute centre slightly impressed),

somewhat convex above, edge \pm flat, (6.5-) 8-13 by (3-)3.5-6(-7) cm, midrib narrowly impressed above, as thick as the petiole, blunt and much prominent in the lower part beneath, nerves 10-12 pairs, spreading, rather straight below, curved upwards and anastomosing before the edge, with some additional intermediate veins, faintly impressed above, prominent beneath, reticulation rather dense, hardly impressed above, raised beneath, veinlets less visible; petiole subterete, rugulose, grooved above, 10-15 by 2-3 mm. *Umbels* 6-12-flowered. Outer perulae ovate, inner ones obovate to subspathulate, obtusely apiculate, at both sides with a tomentum of scabrid, subappressed yellowish hairs inflated at base, up to 3 by 1.8 cm. Bracteoles almost filiform, densely hirsute, c. 2 cm by 0.5-1 mm. Pedicels with dense rufescent, substellate and somewhat scurfy scales, 2-3.2(-5) cm by c. 1 mm. *Calyx* disk-shaped, shortly (c. 1 mm) 5-dented or -lobed (one or the other tooth occasionally up to 4 mm), densely lepidote dorsally, 4-5 mm ϕ . *Corolla* tubular, pale to deep red or crimson, distinctly oblique, (5-)5.5-6 cm long in all, densely stellate-lepidote outside, hirsutulous by retrorse hairs at the tube inside, tube subcylindric, curved, 3-4.5 cm, at base c. 6 mm ϕ , slightly dilated to 1-1.5 cm at apex, lobes erecto-patent, obovate-spathulate, 1.5-2 by 1-1.2 cm. *Stamens* 10, as long as the tube or finally exerted; filaments linear and densely clad with stout, forward directed hairs below, more laxly to very laxly so and filiform upwards, glabrous for some mm at apex; anthers oblong, c. 5 by 1.3 mm, base \pm obtuse. *Disk* thick-prominent, glabrous below, tomentose above. *Ovary* subobconical-cylindric, rather abrupt with the style, yellowish hirsute and lepidote (scales completely hidden by the hairs), 8-10 by 3-4 mm; style thick, densely set with substrigose hairs and minute (here well visible) scales below, more laxly so above to nearly the top; stigma turbinate-capitate, oblique, very thick.

Distr. *Malesia*: New Guinea (Mt Antares and Western, Southern and Eastern Highlands).

Ecol. In lower montane rain-forest or in *Castanopsis*- or *Nothofagus*-forest, not rarely on tree trunks if epiphytic, at 1950-2400 m. *Fl.* April-Sept.

Vern. *Ome, wamp wamp*, Mendi.

250. *Rhododendron longiflorum* LINDL. J. Hort. Soc. Lond. 3 (1848) 88, fig. on p. 89; PLANCH. Fl. Serres 5 (1849) 477-480, fig.; BECC. *Malesia* 1 (1878) 205; HENSLOW, J. R. Hort. Soc. 13 (1891) 263, f. 42 (*fol.*), 43 b (*fl.*); K. & G. J. As. Soc. Beng. 74, ii (1905) 77; RIDL. J. Linn. Soc. Bot. 38 (1908) 314, *repr.* J. Fed. Mal. St. Mus. 2 (1908) 120; J. Fed. Mal. St. Mus. 4 (1909) 43; *ibid.* 6 (1915) 158; *ibid.* 7 (1916) 46; MILLAIS, Rhodod. (1917) 203; MERR. En. Born. (1921) 462; RIDL. J. Fed. Mal. St. Mus. 10 (1922) 250; Fl. Mal. Pen. 2 (1923) 219; BURK. & HENDERS. Gard. Bull. S.S. 3 (1928) 280; HOLTUM, M.A.H. A. Mag. 9 (1939) 34, *phot.*; HENDERS. Mal. Nat. J. 6 (1950) 262; SLEUM. Reinwardtia 5 (1960)

209; Blumea 11 (1961) 127; *ibid.* 12 (1963) 112.—*R. tubiflorum* LOW ex LINDL. J. Hort. Soc. Lond. 3 (1848) 88, *in obs.*—*R. lobbii* VEITCH, Cat. (1870) 22; ANON. Florist & Pomologist (1870) 233; ANON. Gard. Chron. (1871) 1323; HENSLOW, J. R. Hort. Soc. 13 (1891) 262, fig. on p. 281 (*fol.*), on p. 282 (*fl.*); MILLAIS, Rhodod. (1917) 203.—*R. javanicum* (BL.) BENN. *var. tubiflorum* HOOK. Bot. Mag. (1885) t. 6850; RIDL. J. Str. Br. R. As. Soc. n. 23 (1891) 144; *ibid.* n. 33 (1900) 103.—*R. orion* RIDL. *var. aurantiacum* RIDL. Fl. Mal. Pen. 2 (1923) 217; HENDERS. Gard. Bull. S.S. 4 (1928) 280.

var. longiflorum.

Large shrub, terrestrial or sometimes epiphytic, up to 3 m. Branchlets terete, initially laxly fuscous-lepidote at the upper internode, early glabrescent below; internodes 2-8(-12) cm. *Leaves* opposite or mostly in 4-5-merous pseudowhorls at the upper 1-3 nodes, narrow-obovate or obovate-elliptic, or \pm elliptic, rarely more oblong-elliptic, apex shortly and bluntly attenuate or subacuminate, base usually \pm cuneate, rarely broadly attenuate, \pm coriaceous, bright green, juvenile ones rather densely lepidote on both faces, mature ones glabrous above, rather laxly and subpersistently lepidote beneath (scales small, marginal zone irregularly incised or lacerate, centre deeply immersed), flat or slightly convex above, margin hardly or not revolute, (3.5-)4-9(-11.5) by (1.7-) 2.5-3.5(-4, rarely up to 6) cm, midrib slightly immersed above, prominent in its lower part beneath, nerves 5-6 pairs, faintly impressed above, even less so beneath, or hardly visible on both sides, reticulation 0; petiole somewhat flattened, grooved above, variable in length, 3-8(-12, rarely up to 15) by 1.5-2 mm. *Umbels* rather laxly 5-10-flowered. Outer perulae ovate to suborbicular, inner ones broadly spathulate, all laxly lepidote dorsally, sometimes also minutely sericeous there, \pm shining, ciliolate, up to 1.2 by 0.8 cm. Bracteoles filiform to linear-spathulate, up to 1.5 cm. Pedicels rather slender, mostly laxly, rarely densely hairy, (1-)1.2-1.8(-3) cm, laxly and \pm caducously lepidote. *Calyx* a thin, oblique, very short rim. *Corolla* tubular below, expanded to various degree at the limb, or nearly salver-shaped, mostly a little oblique, 4-5(-6) cm long in all, magenta or coral red to crimson, rarely very dainty orange-scarlet, salmon-pink or pink, very rarely pure white, laxly lepidote outside especially in the lower half, or glabrescent, pubescent in the lower part inside, tube cylindric, mostly markedly curved, (2.5-)3-4 cm, at the distinctly 5-pouched (sometimes yellowish) base 3-5 mm ϕ , widened to c. 7 mm at apex, lobes suberect or \pm spreading, obovate to suborbicular, 1.5-2(-2.5) by 1-1.5(-2) cm. *Stamens* 10, exerted for 1-1.5 cm, not rarely exceeding the corolla; filaments linear and subdensely to laxly hairy in the lower, glabrous and nearly filiform in the upper half; anthers oblong, 2.8-3 by 1 mm, base obtuse. *Disk* densely hairy in the upper half, glabrous below. *Ovary* elongate-conical, 5-6 by

2 mm, densely set with ascendent, subappressed hairs and with scales, the latter \pm covered by the hairs, rather abrupt with the slender style, which is 3.5–4.8 cm long and \pm exserted, densely hairy below, more laxly so upwards to c. $\frac{3}{4}$ or more of its length, glabrous for the last 5–10 mm below the shortly turbinate-capitate, obscurely 5-lobed stigma. *Capsule* elongate-obconical, base slightly attenuate, apex acuminate, laxly hairy and lepidote, 3–3.5(–4) by 0.4–0.5 cm, the 5 ribs conspicuous. *Seeds* very narrow, c. 4 mm including the long filiform tail on both ends.

Distr. *Malesia*: Sumatra (incl. Mentawai Is.), Malay Peninsula, Karimata Arch., Borneo.

Ecol. Epiphytic on lofty trees in primary or secondary forest, often along rivers or on mangrove, a woody scrambling terrestrial shrub on rocks, hard quartzite ridge, sandstone pavement or sandy clay, in extreme 'kerangas' heath forest, but also in poor forest in stagnant water, from sea-level up to c. 1500 m. *Fl.* Jan.–Dec.

var. bancanum SLEUM. *Reinwardtia* 5 (1960) 210. —*Rhododendron* sp. KURZ, *Nat. Tijds. N. I.* 27 (1864) 215.

Differs from *var. longiflorum* mainly by smaller flowers and longer petioles. *Leaves* elliptic or oblong-elliptic; petiole (9–) 12–20 by 1.5–2 mm. *Corolla* 2–2.5 cm long in all, tube \pm straight, base 5-gibbous, 2.5–3 mm ϕ , widened to 3.5–4.5 mm at apex, lobes obovate-spathulate, 1.5–1.6 by 0.8–1 cm. *Stamens* c. 3.5 cm; anthers 2.5 by 1 mm. *Ovary* c. 4 by 2 cm; style 2.3 cm. Perulae manifestly sericeous dorsally.

Distr. *Malesia*: Banka (top of Mts Maras and Menumbing, and Sg. Liat), 425–700 m.

251. *Rhododendron polyanthemum* SLEUM. *Blumea* 12 (1963) 111; *ibid.* 12 (1964) 341.

Tree or treelet, 6(–15) m, trunk stoutish or slender, or low epiphytic shrub. Branchlets at tips with a furry tomentum of rufous stellate scales, early glabrescent, subterete; internodes c. 11 cm by 5–8 mm. *Leaves* in 5–7-merous pseudowhorls at the upper 2 nodes, elliptic-oblong or elliptic, apex gradually broadly attenuate or sub-acuminate (tip bluntish) to base broadly attenuate-rounded (very base shortly cordate and complicate), young ones at both sides and on the petiole covered by a similar indumentum (scales subdendroid, narrowly stellate-divided up to the minute centre, fugacious, leaving no pits), mature ones early glabrescent except the midrib, finally quite glabrous, (7–)8–15 by (3–)4–8(–9) cm, midrib c. 2 mm wide at base, gradually narrower and slightly impressed upwards above, as thick beneath at base as the petiole, nerves 9–11 pairs, subregular, slightly curved, partly deeply forked, anastomosing before the edge, faintly though even distinctly impressed above, not much raised or inconspicuous beneath, no reticulation; petiole a little depressed, grooved above, 2–4 cm 4–5 mm. *Umbels* (18–)20–24-flowered. Inner perulae thin, \pm spatulate, glabrous, caducously lepidote-fimbriate, up to 2.5 by 1.2 cm. Bracteoles linear

to filiform, glabrous, c. 2 cm. Pedicels laxly stellate-lepidote, 6–8 cm by c. 1.5 mm. *Calyx* rather oblique, patellar or rim-like, obtusely shortly 5-lobed or merely wavy, 4–5 mm ϕ , densely lepidote dorsally. *Corolla* funnel-shaped, thin, bright scarlet, sweet-scented, subdensely lepidote at the tube, less so at the lobes outside, laxly hairy in the lower part of the tube inside, c. 4 cm long in all, limb c. 3.5 cm ϕ , tube straight, c. 2 cm long, at base 5–6 mm ϕ , 5-pouched, dilated to 1.5–2 cm at apex, lobes suberect-patent, broadly obovate-spathulate, c. 2 by 1.5–1.8 cm, slightly retuse. *Stamens* 10, unequal, reaching halfway the lobes; filaments linear and for their lower $\frac{1}{3}$ subdensely to laxly hairy, narrower and glabrous above; anthers elliptic, base obtuse, 2.7–3 by 1.2 mm. *Disk* thick, glabrous at the much prominent ribs, hairy between. *Ovary* subconical, 5-ribbed, densely clad with a tomentum of white, forward directed hairs which covers the scales, 5–6 by 3 mm, rather abrupt with the style, the latter thickish, 1.6–2 cm, densely to more laxly and rather patently hairy in the lower half, glabrous for the rest; stigma thick, depressed-capitate, bearing 5 short club-shaped lobes.

Distr. *Malesia*: North Borneo (summit area of Mt Trus Madi and Mt Kinabalu: Mesilau East R. Basin).

Ecol. In dense mossy or submossy forest on crest of ridge, 1720–2285 m. *Fl.* Jan.

252. *Rhododendron kochii* STEIN, *Gartenflora* 34 (1885) 193, t. 119; *Jahresber. Schles. Ges. Vaterl. Cult. f. d. Jahr* 1885 (1886) 413, 414; VIDAL, *Rev. Pl. Vasc. Filip.* (1886) 172; MERR. *Publ. Gov. Lab. Philip. n.* 29 (1905) 41; *Philip. J. Sc.* 3 (1908) Bot. 380; *ELM. Leaf. Philip. Bot.* 3 (1911) 1105; MILLAIS, *Rhodod.* (1917) 199; MERR. *En. Philip.* 3 (1923) 243; MILLAIS, *Rhodod. ser.* 2 (1924) 168; *COPEL. f. Philip. J. Sc.* 40 (1929) 160, t. 7, f. 6–7, t. 8, t. 11, f. 1; SLEUM. *Reinwardtia* 5 (1960) 212; *Blumea* 11 (1961) 128. —*Rhododendron* sp. (*aff. R. javanicum*) VIDAL, *Sinopsis Atl.* (1883) 30, t. 60, f. F. —*R. javanicum* [non (Bl.) BENN.] F.-VILL. *Nov. App.* (1883) 353; VIDAL, *Rev. Pl. Vasc. Filip.* (1886) 170. —*R. schadenbergii* (non WARB.) MERR. *Publ. Gov. Lab. Philip. n.* 29 (1905) 41, p. p.

Shrub, sometimes tree-like; stem 3–6(–10) m, 7–15 cm ϕ . Branchlets subterete, (2–)3–4 mm ϕ , fugaciously lepidote; internodes (2.5–)5–9 cm. *Leaves* in (3–)4–5-merous pseudowhorls at the upper 1–2 nodes (several other reduced and early caducous ones scattered along the internodes), oblong to ovate-oblong, or subovate-elliptic, apex rather shortly and \pm abruptly acuminate, acute, base mostly broadly attenuate to the petiole, rarely subrotundate, subinequilateral, coriaceous, densely lepidote on both sides initially, early glabrescent above, laxly subpersistently lepidote beneath (scales flat, rather small, relatively wide marginal zone variously substellate-lobed or -dented, minute centre shallowly impressed), finally glabrescent beneath too, entire or slightly wavy, very slightly or not revolute at the margin, 8–14

(-18) by (2.5-)3-5 cm, midrib dilated at the base, rather suddenly narrowed and a little impressed above, as thick as the petiole and obtusely prominent in the lower part beneath, nerves 8-10 pairs spreading and ascending, inarching near the edge, slightly impressed or raised above, distinctly prominent beneath, reticulation rather dense, raised to various degree on both faces, or at least underneath; petiole \pm flattened, reddish, 1.5-2 cm by c. 2 mm. *Umbels* 10-20-flowered. Outer perulae ovate, obtuse, inner ones obovate to spatulate, laxly lepidote apically or glabrous dorsally, often rugose by minute tubercules, margin set with caducous scales, up to 2 by 1.2 cm. Bracteoles filiform to linear-subspatulate, up to 2 cm. Pedicels \pm densely clothed with pale substellate scales, no hairs, 2-3(-3.5) cm by 1 mm. *Calyx* obliquely disk-shaped, shortly obtusely 5-lobed, 3-4 mm σ , densely lepidote dorsally. *Corolla* tubular, white, scentless, 3.5-4(-4.5) cm long in all, \pm laxly set with substellate scales outside, subdensely short-hairy at the tube inside, tube (2-)2.5(-3) cm, base much 5-saccate, 5-6 mm σ , slightly widened to apex, lobes subhorizontally expanded, obovate-suborbicular, 1.2-1.6 by 1-1.5 cm. *Stamens* 10, subequal, reaching about half the corolla lobes, filaments linear and subdensely patent-pubescent to the lower $\frac{1}{2}$ - $\frac{3}{4}$, glabrous and filiform for the rest; anthers obovate-oblong, base shortly though distinctly biappendiculate, (3-)3.5 by 1 mm. *Disk* glabrous. *Ovary* subcylindric, white-velutinous, the hairs covering the also present scales, gradually narrowed to the style, 5-6 by 2.5 mm; style nearly as long as the stamens, subdensely to laxly and exclusively hairy to the lower $\frac{1}{2}$ - $\frac{3}{4}$, glabrous below the capitate stigma. *Capsule* subcylindric, laxly lepidote, more densely hairy, (2.5-)3-3.5 by 0.5-0.6 cm, on fruit-pedicel up to 5 cm by 1 mm.

Distr. *Malesia*: Philippines (Luzon, Mindoro, Negros, Mindanao).

Ecol. On ridges in mossy forest, 1000-2300 m. Fl. Jan.-Dec.

Vern. *Malagos*, Bag., *hablang*, If.

253. *Rhododendron brevipes* SLEUM. Reinwardtia 5 (1960) 213.

Shrub, up to 3 m. Branchlets subterete or obtusangular and subdensely clothed with flat, substellate scales in the youngest parts (3-4 mm σ), terete and glabrous in the older ones (c. 7 mm σ); internodes 7-10 cm. *Leaves* in \pm 5-merous pseudowhorls at the upper 1-2 nodes, oblong to elliptic-oblong, apex shortly acuminate, subacute, broadly attenuate towards the base (very base subtruncate-obtuse), subsessile, coriaceous, upper surface glabrous but densely minutely pitted, undersurface subdensely lepidote (scales flat, thin, rufescent, variously lobed or dented at the marginal zone, rather small centre hardly sunk), flat, c. 15 by 5-7 cm, midrib as wide as the petiole at the base, much narrowed upwards and slightly impressed above, much prominent beneath, nerves 8-10 pairs, with additional, less distinct ones between them, all erecto-patent, \pm straight at

the base, more curved distally, indistinctly anastomosing along the edge, flat or faintly raised above, more distinct and raised beneath, reticulation visible above, nearly obscure beneath; petiole flattened, 1-2(-3) by 3-4 mm. *Umbels* 6-7-flowered. Outer perulae ovate-acuminate, with a distinct sharp point (3-4 mm), very laxly lepidote along the dorsal middle-line or glabrous outside, densely lepidote at the apex inside, up to 2 by 1 cm, inner ones oblong-subspatulate, glabrous, c. 2.5 by 0.6 cm, all caducously lepidote along the margin. Bracteoles filiform, subglabrous, c. 2 cm by 1 mm. Pedicels dilated at the very apex, laxly lepidote, not hairy, 4-5(-6) cm by c. 1.5 mm. *Calyx* oblique, rather obsolete, a wavy rim, hardly 3 mm σ . *Corolla* funnel-shaped, intensely orange at the limb, yellow at the tube, 7.5-8 cm long in all, laxly to very laxly substellate-lepidote outside, short-pubescent at the lower $\frac{3}{4}$ of the tube inside, tube straight, c. 4 cm, at base manifestly 5-saccate, 4-5 mm σ , widened to 1.5 cm at apex, lobes expanded, obovate, c. 4 by 2.5 cm. *Stamens* 10, unequal, the longest reaching halfway the corolla lobes; filaments linear and subdensely hairy in the lower, filiform and glabrous in the upper half; anthers oblong, base obtuse, c. 4 by 1.2 mm. *Disk* very prominent, whitish tomentellous at the upper margin, glabrous below. *Ovary* cylindric, continuous with the style, very densely lepidote, more laxly and shortly white-hairy, 10-12 by 2-2.5 mm; style c. 5.5 cm, \pm densely lepidote and short-pubescent in the lower $\frac{2}{3}$, more laxly lepidote and epilose to apex; stigma thick-capitate, with 5 distinct, almost club-shaped lobes. *Capsule* cylindric, lepidote and hairy, c. 8 cm by 3-4 mm; pedicel 7.5-8 cm by c. 2 mm.

Distr. *Malesia*: E. New Guinea (Western Highlands: Karap, Jimmy Valley), c. 1725 m. Once found. Fl. fr. June.

254. *Rhododendron aurigeranum* SLEUM. Reinwardtia 5 (1960) 214; Blumea 11 (1961) 128; *ibid.* 12 (1963) 112; Jahrb. Rhodod. Ges. Bremen (1963) f. 16.

Shrub or treelet, (0.5-)1-2.5(-4) m. Youngest internodes 2 mm σ , a little flattened and densely lepidote, the older ones 3-4(-5) mm σ , terete and early glabrescent; internodes 5-15 cm. *Leaves* in \pm 5-merous pseudowhorls at the upper 1-2 nodes, oblong, apex short-acuminate, subacute, base cuneately narrowed into the petiole, thin-coriaceous, glabrous above at full age (minutely pitted under the lens), densely lepidote beneath in young, less so in mature leaves (scales rather small, rufescent, scurfy, \pm detersile, sessile or very shortly stalked, marginal zone irregularly and \pm deeply stellate-incised, centre not rarely deepened and extended into a very short stipe or foot, not or hardly impressed, flat, (7-)8-10 (-13) by 3-4(-5) cm, midrib dilated at the base, narrowed and slightly impressed, thick and prominent beneath, nerves 6-8 pairs, rather straight below, curved and obsoletely anastomosing before the edge, nearly flat above, slightly raised beneath,

reticulation subinconspicuous on both faces; petiole compressed and grooved dorsally, lepidote, 6–8 by 1.5–2 (rarely up to 3) mm. *Umbels* 8–10 (–14)-flowered. Outer perulae ovate-acuminate, apex blunt or very shortly contracted into a sharp point, \pm densely lepidote on both sides at the apex, glabrous for the rest, inner ones obovate-oblong to subspathulate, glabrous dorsally, all with caducous scales along margin, 1.5–2 by 0.4–1 cm. Bracteoles linear-subspathulate, 1–1.5 cm by 1–2 mm. Pedicels stoutish, 2–4 (–5) cm by 1–1.5 mm, subdensely stellate-lepidote, very laxly though distinctly short-pubescent. *Calyx* disk-shaped, wavy, *c.* 3 mm σ . *Corolla* funnel-shaped, orange or orange-yellow initially, fading to yellow, 6–7 (–8) cm long in all, laxly stellate-lepidote outside, laxly pubescent at the lower half of the tube inside, tube straight, rather markedly 5-angular, (3–)3.5–4 cm, at base very distinctly 5-saccate, 4–5 mm σ , gradually widened to 1–1.5 cm at apex, lobes expanded, obovate, 2–3 by 1.8–2.5 cm. *Stamens* 10, subequal, reaching \pm halfway the corolla lobes; filaments linear, subdensely hairy in the lower third, glabrous above; anthers broad-oblong, 3.5–4 by *c.* 1.3 mm, base obtuse. *Disk* very prominent, white-tomentellous at the upper margin. *Ovary* subconical-cylindric, tapering to the style, densely and shortly hairy and lepidote, *c.* 10 by 2.5 mm; style robust, densely hairy and lepidote to the lower $\frac{3}{4}$, densely and exclusively lepidote for the subsequent *c.* 2 mm, glabrous for the upper *c.* 10 mm; stigma thick-capitate and deeply 5-lobed. *Capsule* elongate-subfusiform-cylindric, shortly attenuate at the base, longer so at the apex, hairy and lepidote, \pm curved, (6–)8–10 cm by 5 (–6) mm; valves much twisted. *Seeds* (7–)8–10 (–12) mm including the tails.

Distr. *Malesia*: New Guinea (Morobe Distr.: mainly the Bulolo-Wau area).

Ecol. Occasionally in floating immature peat in forest clearing, generally in rather dry grassy or shrubby hillside together with *Grevillea papuana* Diels or on schistes or steep rock, 915–1740 m, locally common. *Fl.* Feb.–Oct., *fr.* July–Sept.

Note. Worth to be cultivated for its showy flowers.

255. *Rhododendron zoelleri* WARB. Bot. Jahrb. 16 (1892) 15, 24; K. SCH. & LAUT. Fl. Schutzgeb. (1901) 488; SCHLTR, Bot. Jahrb. 55 (1918) 156; SLEUM. Reinwardtia 5 (1960) 216; Blumea 11 (1961) 128; CRUTTWELL, J. R. Hort. Soc. 87 (1962) 85, f. 22; SLEUM. Blumea 12 (1963) 113; Jahrb. Rhodod. Ges. Bremen (1963) f. 33; SCHNEIDER, Jahrb. Deutsch. Rhodod. Ges. Bremen (1965) f. 1.—*R. asparagoides* WERNH. Trans. Linn. Soc. II, Bot. 9 (1916) 94.—*R. moszkowskii* SCHLTR, Bot. Jahrb. 55 (1918) 161.—*R. oranum* J.J.S. in Fedde, Rep. 30 (1932) 167.—*R. doctersii* J.J.S. Nova Guinea 18 (1936) 98, t. 21, 1, cf. DOCTERS VAN LEEUWEN, Trop. Natuur 25 (1926) 182, f. 9.—*R. laetum* (non J.J.S. 1914) J.J.S. Nova Guinea 18 (1936) 98.—Fig. 42-43.

Weak epiphytic or stiffly erect, also sub-

scandent terrestrial shrub respectively treelet, up to 6 (–10) m, stem up to 15 cm σ ; bark light grey. Branchlets terete, 3–5 mm σ , laxly and \pm caducously lepidote at the upper internodes, glabrescent below; internodes (3–)5–10 (–14) cm. *Leaves* in 4–5 (–6)-merous pseudowhorls at the upper 1–2 nodes, (broadly) elliptic to oblong-elliptic, rarely subovate-elliptic or ovate-oblong, apex short-acuminate, subacute or blunt, base broadly attenuate, sometimes rounded or nearly so, often slightly inequilateral, \pm thin-coriaceous, glabrous above at full age, laxly lepidote for a rather long time beneath (scales small, marginal zone variously substellate-lobed or -dented, minute centre \pm shallowly impressed), finally glabrescent but remaining punctulate beneath, edge \pm flat, 7–14 (–17) by (3–)4–7 (–9, very rarely up to 10) cm, midrib narrowly grooved above, as stout as the petiole and obtusely prominent at the base beneath, nerves 10–12 (–14) pairs, oblique, irregular, often running a little down on the midrib, curved upwards and anastomosing before the edge, mostly but slightly raised (or in very old leaves even somewhat impressed) above, more distinctly prominent beneath, reticulation rather lax, mostly \pm distinct, but not much raised on both faces; petiole flattened and grooved dorsally, lepidote initially, (0.5–)1–1.5 cm by 1.5–2 mm. *Umbels* (4–)5–8-flowered. Floral buds oblong-ovoid, 3.5–5 by 2–2.5 cm; outer perulae suborbicular, more inner ones ovate to oblong-obovate or spatulate, all obtuse and covered for a long time by a tomentum of sericeous to substrigose, greyish yellowish rather long hairs, in which the sparse scales are well visible as dark points, \pm glabrescent but mostly remaining rough to the touch in later stages, margin with caducous scales, up to 5 by 2.5 cm. Bracteoles linear-subspathulate, short-hairy or hirsutulous, up to 3 cm. Pedicels laxly to subdensely stellate-lepidote, moreover mostly sparsely pubescent in the upper part, sometimes laxly pubescent and lepidote all along, (1.5–)2–2.5 (–4) cm by 1–1.5 mm. *Calyx* obliquely disk-shaped, laxly lepidote and hairy outside, obtusely 5-lobed, *c.* 5 mm σ . *Corolla* funnel-shaped, lobed almost halfway, yellow to orange or salmon, or salmon-reddish, or the tube yellow and the lobes suffused with red, very rarely white or greenish white (? hybrid with *R. phaeocephalum*, cf. there), often sweet-scented, (5–)6–7.5 (–8.5, occasionally up to 10) cm long in all, sometimes with some hairs at the base (within the pouches) and otherwise sparsely lepidote outside, laxly hairy at the lower half of the tube inside, tube straight or nearly so, 3–4 (–4.5) cm, base distinctly 5-saccate, 5–8 mm σ , gradually widened to 1.5–2 cm at apex, lobes expanded, obovate-spathulate, 2.5–3.5 (–4, rarely up to 4.5) by 2–2.5 (–3) cm (up to 7.5 cm σ when fresh). *Stamens* 10, subequal, reaching \pm halfway the corolla lobes; filaments linear and \pm densely to more laxly set with spreading hairs in the lower $\frac{1}{3}$ – $\frac{1}{2}$, glabrous and filiform for the rest; anthers oblong, somewhat curved, base obtuse or rarely obscurely biappendiculate, (4–)6–8 by 1.5 (–2) mm.



Fig. 42. *Rhododendron zoelleri* WARB. a. Habit, $\times \frac{2}{3}$, b. stamen, $\times 1$, c. ovary and style, $\times 1$, d. fruit $\times \frac{2}{3}$ (a-d BW 3058 VERSTEEGH).

Disk prominent, densely hairy to tomentose at least in the upper part. *Ovary* subcylindric, whitish tomentose by rather stiff hairs, which are directed forward and cover minute scales, subabrupt with the style, 9–10(–12) by c. 3 mm; style apparently first \pm equalling the corolla tube, finally \pm equalling the stamens, densely to laxly hairy in the lower $\frac{2}{3}$ – $\frac{3}{4}$, the scales there absent or present, in the latter case more obvious above the lower half of the style, where the hairs become more lax or even may disappear completely, glabrous for the rest; stigma turbinate-capitate. *Capsule* elongate-cylindric, attenuate at both ends, slightly curved, \pm densely hairy and lepidote, 5–7(–8) cm by (5–)6–7(–8) mm, rarely shorter; pedicel 3–4 cm by c. 2 mm. *Seeds* 8–10 mm including the long tail at both ends.

Distr. Malesia: Moluccas (W. Ceram: Ora Mts) and New Guinea.

Ecol. Epiphyte in high forest, terrestrial in lighter mountain forest of *Castanopsis*; also in secondary growths, in open spots (artificial

grassland), hanging over precipices and rivers, in hill scrubs, from sea-level to 1500, rarely up to 2000 m, not rarely gregarious, on poor sandy or clayey soil, but said to occur also on limestone. *Fl. fr.* Jan.–Dec.

Vern. *Krobua*, *mamba'uk*, Kebar, *atek*, Karoon, *waradê*, Kapauku, *mompera*, Samor, *powida*, Kutubu, *fabeh*, Wapi, *tindili*, Orne.

Note. A form different only by smaller anthers (3–4 mm) apparently limited to SE. New Guinea (Central and Milne Bay Distr.). For natural hybrids with *R. phaeocephalum* see there.

DOCTERS VAN LEEUWEN observed the flowers of *R. zoelleri* visited during daytime by butterflies as *Ornithoptera* and *Papilio* (Trop. Natuur 15, 1926, 182, 185).

256. *Rhododendron maxwellii* GIBBS, J. Linn. Soc. Bot. 42 (1914) 103; MERR. En. Born. (1921) 462; SLEUM. Reinwardtia 5 (1960) 217; Blumea 11 (1961) 128; *ibid.* 12 (1963) 113; Jahrb. Deutsch. Rhodod. Ges. Bremen (1965) f. 17.



Fig. 43. *Rhododendron zoelleri* WARB. Kebar valley, 700 m, with *Gleichenia*, NW. New Guinea (VAN ROYEN & SLEUMER 6850) (SLEUMER, 1961).

Shrub or treelet, occasionally epiphytic. Branchlets terete, 3-4(-5) mm ϕ , glabrous or practically so; internodes 2-9 cm. *Leaves* in 3-4(-5)-merous pseudowhorls at the upper 1-2(-3) nodes, elliptic to oblong-obovate, sometimes obovate, apex broad-attenuate and obtuse, not rarely rounded, base broadly attenuate to subrotundate, coriaceous, glabrous above at full age, laxly lepidote beneath (scales very small, marginal zone variously lobed or dented, \pm early dissolved, centre dark, persistent, \pm deeply impressed), margin \pm revolute, lamina \pm convex above in herb., (4-)5-9.5 by (2-)2.5-5 cm, midrib narrow and deeply impressed above, as thick as the petiole at the base beneath, obtusely prominent and longitudinally wrinkled, nerves 5-6 pairs, spreading and curved-anastomosing, \pm deeply impressed

above and rather sharply prominent beneath providing a markedly bullate aspect, reticulation lax and subimpressed above, or mostly rather inconspicuous; petiole flattened and grooved dorsally, lepidote initially, rugulose, 5-10 by 2-3(-4) mm. *Umbels* 5-13-flowered. Flower buds ovoid-ellipsoid, 2 by 1.5 cm in a not yet fully developed stage, outer perulae suborbicular, apiculate, inner ones obovate, obtuse, all dorsally laxly lepidote, margin with caducous scales. Pedicels subdensely rufous-stellate-lepidote, besides whether or not laxly puberulous, 2-3.5 cm by 0.8 mm. *Calyx* disk-shaped, obscurely lobed, lepidote dorsally, c. 4 mm ϕ . *Corolla* shortly funnel-shaped, i.e. tubular below, much expanded at the limb, lobed from halfway to nearly $\frac{2}{3}$, yellow, sometimes deep cream to pink or pale salmon,

with a strong delicate scent, c. 2.7 cm long in all, \pm densely set with substellate to subentire scales outside, laxly hairy in the lower part of the tube inside, tube straight, 1–1.2 cm, base 4–5 mm ϕ , widened to 6–8 mm at apex, lobes spreading, oblong-obovate, 1.3–1.8 by 0.9–1.2 cm. *Stamens* 10, subequal, somewhat exerted; filaments linear and with patent hairs in the lower third, more filiform and glabrous apically; anthers oblong, 2.5–3.3 by 0.8 mm. *Disk* hairy at the upper margin. *Ovary* subconical, densely clothed with subpatent, rufescent hairs covering the scales, \pm abrupt with the style, c. 4 by 2 mm; style slender, patent-hairy at and near the base only; stigma subcapitate. *Capsule* apparently c. 1.5 cm long.

Distr. *Malesia*: North Borneo (Mt Kinabalu).

Ecol. In high forest, mossy jungle or open exposed crest of spur among bracken, scrub and grasses, rather rare, 1830–3050 m. *Fl.* Feb.–Aug.

257. *Rhododendron nervulosum* SLEUM. Bot. Jahrb. 71 (1940) 146; Reinwardtia 5 (1960) 217; Blumea 11 (1961) 128; *ibid.* 12 (1963) 113; Jahrb. Deutsch. Rhodod. Ges. Bremen (1965) f. 20. — Fig. 44.

var. nervulosum.

Small, few-stemmed shrub, generally terrestrial, rarely epiphytic. Branchlets 1.5–2(–2.5) mm ϕ , glabrous; internodes 2–10 cm. *Leaves* in 3–5-merous pseudowhorls at the upper 2(–4) nodes (other much reduced fugacious ones scattered along the internodes), narrow-lanceolate, apex (sub)acutely acuminate, cuneate towards the base to a very short petiole, sessile or nearly so, coriaceous to subcoriaceous, finally glabrous above, laxly lepidote beneath (scales small, marginal zone irregularly, often but shallowly substellate-lobed, early dissolved and marked by a dark halo, centre minute, faintly or not impressed), edge \pm flat, (2.7)–5–7.5(–9) by (0.6)–1–1.4 (–1.6, very rarely up to 2) cm, midrib narrow and slightly impressed above, \pm broadened and obtusely prominent beneath, nerves c. 5 pairs, at a rather acute angle, steeply ascending, \pm straight, obsoletely or not anastomosing, forming a \pm dense and slightly prominent network with the veins and veinlets on both faces; petiole 1–2 by 1–2 mm. *Umbels* (1)–2–3-flowered. Perulae membranous, outer ones ovate, inner ones ovate-oblong, all \pm long-acuminate, the very apex tapering to a 2–3 mm long sharp point, glabrous dorsally, up to 2.8 by 1 cm. Bracteoles subulate, up to 1.5 cm. Pedicels laxly lepidote, 1–1.3 cm by 1(–1.5) mm. *Calyx* oblique, thick, disk-shaped or more rim-like, obsoletely 5-lobed, subglabrous, c. 5 mm ϕ . *Corolla* subcampanulate, lobed, to \pm half-way, rather fleshy, shining, bright scarlet, 3–3.5 cm long in all, glabrous in- and outside, tube 1.7–2.3 cm, straight, base 6–8 mm ϕ , gradually widened to c. 1.5 cm at apex, lobes suberect, obovate-subspathulate to suborbicular, c. 1.5 by 1 cm. *Stamens* 10, c. 2 cm; filaments linear, dilated and rather laxly hairy in the lower $\frac{1}{4}$, glabrous and narrower for the rest; anthers



Fig. 44. *Rhododendron nervulosum* SLEUM. *var. nervulosum*. On old log above Mesilau East R., 1950 m, Mt Kinabalu, N. Borneo (SLEUMER 4733) (SLEUMER, 1963).

elongate-oblong, (4.5)–5–6 by 1.5 mm, each cell shortly appendiculate at base. *Disk* prominent, glabrous. *Ovary* conical, tomentose, the hairs covering the scales, 5–6 by 2.5–3 mm, abrupt with the style, the latter slender, glabrous, 8–10 mm; stigma subcapitate. Immature *capsule* ovoid-cylindric, densely hairy and lepidote to judge from the developed ovary (1 by 0.6 cm); pedicel 2.8 cm.

Distr. *Malesia*: N. Borneo (top of Bt Raja (1900 m) and Mt Kinabalu).

Ecol. In mossy forest or more open mossy jungle, on open and sunny boulders or landslides with sparse scrub, not common, (1900)–2440–3050 m. *Fl.* March–Aug., Dec.

var. exuberans SLEUM. Blumea 12 (1963) 113.

Epiphyte. *Leaves* (7)–9–11 by (2)–2.5–3.7 cm. *Corolla* scarlet, c. 2.5 cm long in all.

Distr. *Malesia*: Borneo (Sarawak: Mt Mulu), mossy forest, 1430 m. Once found. *Fl.* June.

258. *Rhododendron salicifolium* BECC. *Malesia* 1 (1878) 202; For. Born. (1902) 147; MERR. En. Born. (1921) 463; SLEUM. Reinwardtia 5 (1960) 217, non BL. 1863–83.

Terrestrial shrub, c. 60 cm. Branchlets terete,

1.5-2(-3) mm ϕ , upper 1-3 internodes laxly lepidote; internodes 3-8 cm. *Leaves* in 4-5(-7)-merous pseudowhorls at the upper 2-4 nodes, narrow-lanceolate, apex acuminate and slightly curved, subacute or acute, base cuneate to the petiole, thin-coriaceous, glabrous above at full age, sparsely lepidote beneath (scales flat, small, marginal zone variously, often obtusely and shallowly substellate-lobed, centre minute, hardly or not impressed), edge \pm flat, 10-15 by (0.6-) 1-2 cm, midrib narrow and impressed above, prominent beneath, nerves c. 10 pairs, high-ascending and joined along the edge, slightly raised above, faintly so or not visible beneath, nerves and veins subdensely reticulate and very slightly raised above only; petiole grooved above, (3-)4-6 by 1-1.5 mm, passing imperceptibly into the lamina. *Umbels* (1-)2-3-flowered; flowers nodding. Bracteoles subulate, glabrous, up to 1 cm. Pedicels lepidote at base and apex, \pm glabrous between, 1.2-1.7 cm by 0.8 mm. *Calyx* disk-shaped, obtusely and very shortly 5-lobed, laxly lepidote dorsally, 3-4 mm ϕ , *Corolla* funnel-shaped, tubular below, 5-lobed from halfway to nearly $\frac{3}{5}$, yellow or buff orange, glabrous outside, laxly pubescent at the lower half of the tube inside, 2.8-3.2 cm long in all, tube straight, 1.2-1.5 cm, base 5-saccate, c. 4 mm ϕ , gradually widened to c. 1 cm at apex, lobes much spreading, obovate-spathulate, 1.4-1.7 by 1-1.2 cm. *Stamens* 10, unequal, c. 2 cm; filaments linear and densely pubescent in the lowest 3-4 mm, glabrous and more filiform for the rest; anthers obovate-oblong, c. 2.5 by 0.8 mm, base obtuse. *Disk* prominent, pubescent at the upper margin. *Ovary* \pm densely hairy and lepidote, c. 4 by 2 mm, subabrupt with the style, the latter equalling the stamens, pubescent at the base only; stigma capitate, becoming disk-shaped and deeply 5-lobed. *Capsule* subfusiform-cylindric, 2.5-3.5 by 0.4 cm.

Distr. *Malesia*: Borneo (Sarawak: on summit rocks of Mt Mattang). *Fl.* Jan.

259. *Rhododendron lanceolatum* RIDL. J. Str. Br. R. As Soc. n. 63 (1912) 60; MERR. En. Born. (1921) 462; SLEUM. Reinwardtia 5 (1960) 217. —*R. paritum* J.J.S. Bull. Jard. Bot. Btzig III, 13 (1935) 453.

Shrub; bark brown. Branchlets 2-3 mm ϕ , very densely clad with rufescent substellate scales at the upper internodes, glabrescent; internodes 3.5-8 cm. *Leaves* in 3-4-merous pseudowhorls at the upper 1-2 nodes, lanceolate or subovate- or oblong-lanceolate, rarely oblong-ovate, sessile or nearly so, the sometimes slightly curved apex acuminate, acute, base obtuse to rounded, very densely lepidote on both faces when juvenile, with sparse flat scales or finally quite glabrous but pitted above, subdensely lepidote beneath for a long time, especially at the base of the blade (scales rather small, thin and flattish, marginal zone irregularly substellate-lobed or -dented, minute centre shallowly impressed, leaving dark pits), flat, 6.5-11.5 by 2.8-4 cm, midrib stout and obtusely prominent in the lower half, similarly

dilated but flat or even slightly impressed beneath, nerves (8-)10-12 pairs, at a nearly right angle, curved and anastomosing before the edge, slightly raised above, obsolete beneath, reticulation, if any, subinconspicuous above only; petiole 0-2 by 2-3 mm. *Umbels* (3-)4-6-flowered. Outer perulae subulate to ovate-acuminate (these then often shortly subulate at the apex), inner ones oblong-obovate to -spathulate, apiculate, all subdensely \pm caducously lepidote outside, up to 2 by 1 cm. Bracteoles subsubulate-linear, lepidote, up to 1.5 cm. Pedicels densely lepidote and short-pubescent, 1.5-2.7 cm by 0.7 mm. *Calyx* very oblique, disk-shaped, with distinct, very short blunt lobes, lepidote and pubescent dorsally, c. 4 mm ϕ . *Corolla* subcampanulate, 5-lobed to $\pm \frac{2}{3}$, c. 2 cm long in all, orange-yellow, membranous, \pm densely lepidote at the tube and the lower part of the lobes outside, glabrous or slightly puberulous inside, tube up to 7 mm, base 4-5 mm ϕ , gradually widened to c. 1 cm at apex, lobes much expanded, oblong to subobovate, 1.2-1.7 by 0.8-1.2 cm. *Stamens* 10, unequal, 1.6-1.9 cm; filaments linear and woolly in the lower $\frac{2}{3}$, narrower and glabrous for the rest; anthers oblong, curved, 3.5-4 by 1 mm, base obtuse or very shortly bilobed. *Disk* thick-prominent, glabrous or somewhat hairy at the upper margin. *Ovary* conical, woolly, obtuse, *i.e.* very abrupt with the style, c. 4 by 3 mm; style slenderly columnar, thickened towards the subcapitate stigma, c. 7 mm, with some hairs at the base.

Distr. *Malesia*: Borneo (Sarawak: Mt Batu Lawi at Upper Limbang R., and Mt Batu Tiban), 1125-1700 m. *Fl.* Oct.-Dec.

260. *Rhododendron sumatranum* MERR. Pap. Mich. Ac. Sc. 19 (1933) 182; J.J.S. Bull. Jard. Bot. Btzig III, 13 (1935) 450; SLEUM. Reinwardtia 5 (1960) 217.

Much branched terrestrial shrub, 1.5-3 m. Branchlets terete, (1.5-)2-3 mm ϕ , subdensely set with flat, substellate scales at the upper internodes, glabrescent; internodes (2-)4-8.5 cm. *Leaves* in 5-7-merous pseudowhorls at the upper 1-2 nodes, unequal, obovate or obovate-elliptic, also oblong-obovate, apex obtuse or \pm rounded, not rarely somewhat notched, base cuneate and a little decurrent into petiole, coriaceous, glabrous above at maturity, laxly and \pm persistently lepidote beneath (scales small, marginal zone irregularly lobed or dented, dark centre impressed), margin \pm flat, (2.5-)3.5-7.5(-8.5) by (1.5-)2-3(-4) cm, midrib narrowly impressed above, nearly as robust as the petiole and obtusely prominent at the base beneath, nerves 4-6 pairs, spreading, \pm distinctly impressed above and raised beneath, not rarely subinconspicuous on both faces as is the reticulation; petiole somewhat flattened, grooved above, lepidote initially, 4-7(-10) by c. 1.5 mm. *Umbels* (1-)2-3(-5)-flowered. Flower buds ovoid; outer perulae suborbicular, inner ones ovate to oblong-obovate, obtuse, grey-sericeous or appressedly short-tomentose in the upper (free) part, ciliate, up to 0.8 by 0.5 cm. Pedicels rather

slender, densely substellate-lepidote, pilose, 1–1.8 cm. *Calyx* obliquely disk-shaped, very shortly obtusely lobed or dented, 4–5 mm \emptyset . *Corolla* broadly funnel-shaped, \pm tubular below, scarlet to purple or orange red, sometimes salmon, 2.3–3 cm long in all, laxly substellate-lepidote outside, glabrous inside, tube straight, 1–1.4 cm, base 3–5 mm \emptyset , gradually widened to c. 1 cm at apex, lobes spreading, obovate, (1.3–)1.6–1.8 by 1–1.3 cm. *Stamens* 10, subequal, 1.5–1.7 cm; filaments linear, dilated and patently pubescent for 2–4 mm at base, glabrous and filiform for the rest; anthers obovate-oblong, base subobtuse, 2–2.5 by 1 mm. *Disk* glabrous, not prominent. *Ovary* ovoid-conical, \pm patently villous, 4.5 by 3–3.5 mm; style very abrupt, terete, glabrous, 0.8–1 cm; stigma thick-obconical. *Capsule* subcylindric, shortly attenuate at both ends, subdensely set with minute scales and short, rather robust and subpatent hairs, c. 2 cm by 4–5 mm; pedicel up to 3 cm.

Distr. *Malesia*: N. Sumatra (Atjeh, Tapanuli, East Coast).

Ecol. Mostly terrestrial in light forests, summit vegetation, ericoid ridge scrub, alpine growth with ferns or grassland, occasionally epiphytic, rather common locally, 1800–2700 m. *Fl.* Jan.-Dec.

Vern. *Kaju hor hor dolok*, Asahan-Toba boundary.

261. *Rhododendron arfakianum* BECC. *Malesia* 1 (1878) 201; J.J.S. *Nova Guinea* 12 (1914) 134, in text ('arfakense'); SLEUM. *Reinwardtia* 5 (1960) 218; *Blumea* 12 (1963) 113.—*R. undulaticalyx* J.J.S. in Gibbs, Arfak (1917) 168.

Epiphytic, more rarely terrestrial shrub, (0.5–) 1–2(–2.5) m. Branchlets 2–3 mm \emptyset , sparsely lepidote and papillose-pubescent at the upper 1(–2) internodes, glabrescent; internodes 2–10 cm. *Leaves* in (3–)4–5-merous pseudowhorls at the upper 1–3 nodes, oblong-obovate to obovate-elliptic, apex obtusely attenuate or nearly rounded, base \pm cuneate to the petiole, coriaceous, glabrous above at full age, subpersistently and subdensely to rather laxly lepidote beneath (scales small, marginal zone irregularly dented, dark centre minute, slightly impressed, the scale surrounded by a dark halo), moreover very finely punctulate by minute emergences of the epidermis beneath, slightly revolute at the margin in herb., (4–)5–8 (–10) by (1.5–)2–3.5 cm, midrib and petiole slightly depressed and with minute, papillose, spreading hairs above, as robust and wrinkled as the petiole and obtusely prominent in the lower part beneath, nerves 6–8(–10) pairs, spreading, \pm obscurely inarched at margin, slightly prominent on both faces, reticulation inconspicuous; petiole 6–10(–12) by 1–1.5 mm. *Umbels* (4–)5–7 (–10)-flowered. Outer perulae ovate, obtuse, inner ones oblong-obovate, laxly lepidote and minutely papillose dorsally, finally practically glabrous, fimbriate, up to 1.5 by 0.8 cm. Bracteoles filiform below, spatulate-dilated distally, up to 2.3 cm by 0.5–4 mm, papillate. Pedicels slender, laxly to subdensely lepidote and finely patent-

puberulous, 0.8–1.2 cm. *Calyx* disk-shaped, membranous, subobtusely and very shortly unequally dented, wavy, spreading to reflexed, glabrous dorsally, manifestly ciliate, c. 3 mm \emptyset . *Corolla* tubular below, expanded towards the limb, oblique, (2.5–)3(–3.5) cm long in all, \pm deeply pink, glabrous outside, laxly pubescent at the tube inside, tube subcylindric, straight or slightly curved, 1.5–2 cm, base 3–4 mm \emptyset , widened to c. 5 mm at apex, lobes suberect, or somewhat spreading, obovate-spathulate, 0.7–1 by 0.5–0.8 cm. *Stamens* 10, unequal, longest \pm as long as corolla; filaments linear and laxly pubescent below, filiform and glabrous upwards; anthers obovate, 2 mm. *Disk* puberulous. *Ovary* subcylindric, densely short-pubescent and minutely lepidote (scales covered by the hairs), c. 4 by 2 mm, rather abrupt with the style, the latter slender, sometimes with some hairs at the very base, \pm equalling the stamens; stigma subclavate-obconical, oblique. Submature capsule fusiform, densely hairy, 2 by 0.4 cm, crowned by the glabrous 2 cm long style.

Distr. *Malesia*: NW. New Guinea (Arfak and Nettiti Mts).

Ecol. In edge of forest, 1200–2135 m, locally common, *Fl.* Jan.-Dec.

Vern. *Krobua*, Kebar.

262. *Rhododendron fuchsii* SLEUM. *Blumea* 12 (1964) 341.

Shrub or small tree, 2–4 m. Branchlets robust, reddish and shining when dry, laxly lepidote at apex; internodes 4–8 cm by 3–4 mm. *Leaves* in (5–)6–8-merous pseudowhorls at the 1–2 upper nodes, elliptic-oblong or more rarely oblong, apex shortly attenuate and subobtuse, base almost rounded to truncate, coriaceous, stiff, glabrous above at age, subdensely lepidote beneath (scales brownish, flattish, narrow marginal part variously angled or substellately dented, centre sunk, leaving dark pits), \pm flat, 5–8.5 by (2–)2.5–4(–4.5) cm, midrib as thick as the petiole below, narrowly impressed above, obtusely prominent beneath, nerves 6–8(–10) irregular pairs, rather straight in the lower, more curved in the upper part and but obscurely inarching, slightly though markedly impressed above, often rather indistinct on both sides, petiole thick, flattened, (2–)3–5 by 3–4 mm. *Umbels* (6–)8–10 (–11)-flowered. Outer perulae ovate, apiculate, c. 2 by 1.5 cm, inner ones spatulate and up to 3 by 1–1.5 cm, glabrous, rather shining dorsally. Bracteoles subspathulate-linear, glabrous, 3–3.5 cm. Pedicels stoutish, (2–)2.5–3.5 cm, laxly patently hairy and laxly lepidote, or more densely lepidote only. *Calyx* oblique, shortly 5-lobed and wavy, c. 4 mm \emptyset . *Corolla* funnel-shaped, salmon-pink in bud, pinkish-red at anthesis, throat yellowish, (very) laxly lepidote outside, hairy at the base only inside, (4.5–)5–5.5(–6) cm long in all, limb 4(–5) cm \emptyset , tube 2.5–3.5 cm, base 5-saccate and 5–6 mm \emptyset , widened to 1 cm at apex, lobes spatulate-obovate, slightly retuse, 2–2.5 by 1.5–2 cm. *Stamens* 10, \pm as long as the corolla

tube; filaments linear, hairy but for the lower $\frac{1}{4}$ or $\frac{1}{3}$; anthers oblong, 4 by 1 mm, each cell with a basal thickened apiculus. *Disk* thickly 10-lobed, glabrous. *Ovary* conical-cylindric, 5-angular or -ribbed, abrupt with the style, densely patently hairy and lepidote, 4-5 by 2.5-3 mm; style thickish, glabrous, c. 1.4 cm; stigma subcapitate. *Capsule* thick-cylindrical, 1.2 by 0.6 cm; pedicel thick, glabrous, up to 3.5 cm.

Distr. *Malesia*: Borneo (N. slope of Mt Kinabalu).

Ecol. Apparently rare, in sclerophyllous vegetation or forest border at c. 3350 m. *Fl. fr.* Aug.

263. *Rhododendron impositum* J.J.S. in Fedde, Rep. 68 (1937) 201; SLEUM. Reinwardtia 5 (1960) 218.

Shrub or treelet, 3-4 m. Branchlets subterete, (2-)3-4 mm ϕ , young parts laxly set with flattish scales, glabrescent. *Leaves* several (up to 12) scattered along the upper internodes (7-18 cm), elliptic or mostly obovate-elliptic to obovate, sometimes subovate-elliptic, apex generally shortly and rather abruptly acutely acuminate, rarely obtuse, base broad-cuneate to rounded, sometimes subcordate, coriaceous, initially very densely lepidote on both faces (scales touching each other), glabrous and remaining minutely pitted above, densely lepidote beneath (scales only partly or not touching each other, dilutely rufescent, small, marginal zone variously angled or dented, minute centre slightly impressed), edge finely crenulate by impressed scales (lens!), margin revolute to various degree, (3.7-)4-8(-10) by (1.8-)2.5-4(-5) cm, midrib nearly as stout as the petiole and much convex-prominent in its lower part, broadened and rather flat, if not impressed in its lower part beneath, nerves 6-9 pairs, at an angle of c. 45° and rather high-ascending, curved-anastomosing before the edge, slightly impressed above, a little raised beneath, reticulation mostly obsolete; petiole robust, rugulose, lepidote initially, compressed dorsally or distinctly flattened in the lower leaves, (4-)6-10 by (1.5-)2-4 mm. *Umbels* (6-)10-15-flowered. Bracteoles filiform to linear, almost hirsute, up to 2 cm by 0.5-1.5 mm. Pedicels densely (in part caducously) stellate-lepidote, 2-3.8 cm by c. 0.8 mm. *Calyx* obliquely disk-shaped, normally shortly (c. 1 mm) dented (or not rarely one to two teeth elongate up to 5 by 1 mm), teeth reflexed, lepidote dorsally, glabrous inside, margin with caducous scales, c. 4 mm ϕ . *Corolla* funnel-shaped, white, pink or red, 5-lobed \pm halfway, (3.5-)4-5 cm long in all, sparsely lepidote outside, puberulous in the lower part of the tube inside, tube straight, (1.5-)2 cm, base 4-5 mm ϕ , \pm pouched, gradually dilated to c. 1 cm at apex, lobes broadly obovate-spathulate, slightly retuse, 2-2.5(-3) by 1.5-2 cm. *Stamens* 10, a little exerted; filaments linear and laxly hairy below, narrower to filiform and glabrous upwards; anthers oblong, 3-3.5 by 1 mm, base obtuse or minutely apiculate. *Disk* glabrous, or pubescent at upper margin. *Ovary* ovoid-conical or somewhat

cylindric-obovoid, abrupt with the style, brownish tomentose (hairs covering the scales), 5-6(-7) by 2.5-3 mm; style rather slender, with some sparse hairs at the very base or glabrous, nearly equalling the stamens; stigma capitate, deeply lobed.

Distr. *Malesia*: SW. Central Celebes (Latimodjong Range).

Ecol. In low forest, 2400-3000 m. *Fl.* June.

264. *Rhododendron leyense* MERR. Philip. J. Sc. 10 (1915) Bot. 55; En. Philip. 3 (1923) 244; COPEL. f. Philip. J. Sc. 40 (1929) 165, t. 11, f. 7-9; SLEUM. Reinwardtia 5 (1960) 218.—*R. flaviflorum* ELM. ex MERR. En. Philip. 3 (1923) 244 in obs. pr. *R. leyense*.

var. leyense.

Epiphytic shrub. Branchlets terete, reddish brown or greyish, 2-3(-4) mm ϕ , laxly lepidote at the upper internodes, glabrescent lower; internodes 1.5-5 cm. *Leaves* in 3-5-merous pseudowhorls at the upper 1-3 nodes, oblong or elliptic-oblong, apex shortly and \pm bluntly acuminate, base attenuate to somewhat decurrent into petiole, thin coriaceous, laxly substellate-lepidote on both faces when young, finally glabrous above, laxly and subpersistently lepidote beneath (scales small, the marginal zone irregularly lobed or dented, centre shallowly impressed), finally \pm glabrescent beneath too, leaving dark points, flat, 4-7(-8) by (1.5-)2-2.7 cm, midrib slightly prominent in the lower, \pm impressed in the upper half above, broadened and obtusely prominent below, nerves c. 8 pairs, rather straight-ascending, subinconspicuous on both sides, reticulation 0; petiole 0.6-1.8 cm by 1.5 mm, flattened. *Umbels* 4-5-flowered. Perulae oblong, acuminate, glabrous, up to 2.5 by 1 cm. Bracteoles linear. Pedicels puberulous, practically elipidote, stoutish, c. 1 cm, twice as long in young fruit. *Calyx* obsolete, rim-like, c. 3 mm ϕ . *Corolla* broadly tubular-funnel-shaped or -subcampanulate, yellow, 3.7-4 cm long in all, 5-lobed about halfway, glabrous outside, very laxly hairy at the lower half of the tube inside, tube c. 2 cm, at base 5-6 mm ϕ , gradually widened to c. 1.5 cm at apex, lobes obovate, 1.5-1.8 by 1.2-1.4 cm. *Stamens* 10, unequal, 2.7-3 cm; filaments dilated and patently hairy in the lower third, more linear to filiform and glabrous above, anthers oblong, 2-2.5 mm, base minutely or not biapiculate. *Disk* pubescent at the upper margin. *Ovary* subcylindric, tapering to style, rather densely short-pubescent and with minute scales \pm hidden by the hairs, c. 7 by 2 mm; style hairy and lepidote in the lower $\frac{1}{4}$, glabrous for the rest; stigma obconical, deeply 5-lobed.

Distr. *Malesia*: Philippines (Luzon, Leyte).

Ecol. Mossy forest, probably above 1000 m. Vern. *Malágos*, Leyte.

var. loheri (COPEL. f.) SLEUM. Reinwardtia 5 (1960) 218.—*R. loheri* COPEL. f. Philip. J. Sc. 40 (1929) 166, t. 11, f. 10-12.

Differs from *var. leyense* by the *corolla* only c.

3 cm long in all and anthers biappendiculate at the base.

Distr. *Malesia*: Philippines (Luzon), once found. Vern. *Salangon*.

265. *Rhododendron brachygynum* COPEL. f. Philip. J. Sc. 40 (1929) 137, 165, t. 11, f. 4-6; SLEUM. Reinwardtia 5 (1960) 219.

"Shrub 1 m. Branchlets red brown. *Leaves* either in pseudowhorls at the end of the branchlets, or scattered and alternate, oval, apex short-acuminate, base obtuse, decurrent into the petiole, shining and minutely blackish punctulate above, sparsely set with pale scales beneath, *c.* 10 by 4.5 cm; petiole 1.5 cm. *Umbels* \pm 5-flowered. Pedicels robust, pubescent, *c.* 2 cm. *Corolla* narrowly obconical, yellow, 4 cm long in all, lobes rounded, *c.* 1.5 cm. *Stamens* 10; filaments minutely pubescent in the lower part, *c.* 3 cm; anthers oblong, base minutely biappendiculate, 3 mm. *Disk* hairy, in the upper margin. *Ovary* subcylindric, densely hairy, *c.* 8 by 3 mm; style subabrupt, glabrous, *c.* 9 mm; stigma subcapitate, 2 mm ϕ ."

Distr. *Malesia*: Philippines (Cebu), once found.

Vern. *Mogang-pudpud*.

Note. No material seen; description after COPELAND f.

266. *Rhododendron mindanaense* MERR. Publ. Gov. Lab. Philip. n. 29 (1905) 41; Philip. J. Sc. 3 (1908) Bot. 381; ELM. Leaf. Philip. Bot. 3 (1911) 1106; MILLAIS, Rhodod. (1917) 210; MERR. En. Philip. 3 (1923) 244; MILLAIS, Rhodod. ser. 2 (1924) 188; COPEL. f. Philip. J. Sc. 40 (1929) 164, t. 7, f. 10-11, t. 11, f. 3; SLEUM. Reinwardtia 5 (1960) 219.

Erect shrub, about 1 m; stems few to several, sparingly branched. Branchlets terete, reddish and sparingly lepidote at the upper internodes, glabrescent and often greyish or pruinose below, 4-5 mm ϕ ; internodes (2)-5-7 cm. *Leaves* in 5-7(-9)-merous pseudowhorls at the upper 1-2 nodes, oblong-obovate, apex obtuse or mostly rounded, not rarely slightly emarginate, narrowed to the cuneate base, coriaceous, \pm rigid, dark green above, paler beneath, glabrous above at full age, more persistently and laxly lepidote beneath (scales rather small, marginal zone irregularly lobed or dented, minute dark centre slightly impressed), finally glabrescent beneath with persistent dark points, margin \pm flat, 5-7(-8.5) by (2)-2.5-3.5(-4.5) cm, midrib broadened below, slightly grooved above at least in the upper $\frac{3}{4}$, rather flat and but obtusely raised beneath, nerves 8-10 pairs, at an acute angle, rather high-ascending, anastomosing before the edge, slightly but distinctly impressed above and raised beneath as is the \pm marked lax reticulation; petiole flattened, lepidote for a long time, 6-10 by 2-3 mm. *Umbels* (7)-9-12-flowered. Outer perulae ovate, inner ones ovate-oblong, obtuse, subchartaceous, glabrous and shining dorsally, up to 3.5 by 1.5 cm. Bracteoles linear below, subspatulate at the apex, glabrous, up to 4 cm by 1-3 mm. Pedicels laxly lepidote, 2-2.5 cm by 1 mm. *Calyx* obliquely

patellar, shortly obtusely 5-lobed, 3.5 mm ϕ . *Corolla* tubular below, funnelform-expanded above, pure white, very laxly lepidote outside, laxly pubescent in the lower $\frac{3}{4}$ of the tube inside, 4-4.5 cm long in all, tube cylindric, *c.* 2.5 cm, base pouched, *c.* 5 mm ϕ , somewhat expanded distally, lobes obovate, 2-2.2 by 1.5-1.8 cm. *Stamens* 10, subequal, 2.5-3 cm; filaments linear, laxly hairy in the lower third, glabrous above; anthers subobovate-oblong, 3.5-4 by 1 mm, base minutely biappendaged. *Disk* slightly prominent, hairy at the upper margin. *Ovary* subovoid-cylindric, densely yellowish-brown-pubescent, the hairs covering numerous, minute scales, 6-7 by 2.5 mm, tapering to the style, the latter sparsely hairy in its lower $\frac{1}{6}$ - $\frac{1}{3}$, \pm as long as the stamens; stigma subcapitate. *Capsule* fusiform, slightly curved, warty, subdensely hairy and lepidote, 3-3.5 by *c.* 0.7 cm, with 5 deep longitudinal grooves; pedicel 5 cm.

Distr. *Malesia*: Philippines (Mindanao: Mt Apo).

Ecol. Mossy forest near summit, 2700-2895 m. Fl. July, Aug.

267. *Rhododendron renschianum* SLEUM. Bot. Jahrb. 71 (1940) 146; Reinwardtia 5 (1960) 220. —*R. javanicum* [non (BL.) BENN.] MALM in Fedde, Rep. 34 (1934) 284.—Fig. 45.

Shrub, *c.* 0.5 m. Branchlets 1.5-2(-3) mm ϕ , tips caducously lepidote, older parts glabrous; internodes 3-4 cm. *Leaves* 4-6 spirally arranged in the upper third of the upper 2-4 internodes, 2 or 3 of these leaves more close together in a kind of pseudowhorl, elliptic or mostly elliptic-obovate-oblong, apex shortly acuminate, subacute or obtuse, sometimes rounded, base \pm cuneate to the petiole, coriaceous, very early glabrescent above, subpersistently and subdensely lepidote beneath (scales small, marginal zone irregularly lobed or dented, centre distinctly impressed, blackish with age), slightly revolute, (3.5)-4.2-5 by 1.5-2.3 cm, midrib impressed above, strongly raised beneath, nerves 4-5 pairs, spreading, obscurely anastomosing, slightly impressed above, mostly obsolete beneath, reticulation 0; petiole lepidote, semiterete, grooved above, 4-6 by 1-1.5 mm. *Umbels* (1-3) 5-8-flowered. Perulae membranous, outer ones ovate-apiculate or -acuminate, inner ones ovate-oblong or obovate and obtuse, glabrous dorsally, margin with caducous scales, up to 1 by 0.6 cm. Bracteoles linear, subspatulate apically, up to 1.2 cm. Pedicels rather slender, laxly to subdensely stellate-lepidote, *c.* 2 cm. *Calyx* obliquely disk-shaped, very shortly dented or lobed, lepidote dorsally, *c.* 3 mm ϕ . *Corolla* tubular-funnelform, 3-3.5 cm long in all, orange to red, laxly lepidote outside, glabrous or practically so inside, tube cylindric, straight, (1.7)-2(-2.5) cm, base somewhat 5-pouched, 4-5 mm ϕ , slightly dilated to 6-7 mm at apex, lobes \pm spreading, oblong-obovate to obovate, 1-1.5 by 0.8-1.3 cm. *Stamens* 10, \pm as long as the corolla tube; filaments linear, hairy for 2 or 3 mm above the base,



Fig. 45. *Rhododendron renschianum* SLEUM. Mt Geli Mutu, E. Flores, 1500–1700 m (RENSCH, 1927).

glabrous for the rest; anthers oblong, *c.* 2 mm. Disk prominent, glabrous. Ovary subcylindric, densely covered with very short, subpatent, greyish hairs and some (early caducous) scales, 5–7(–9) by *c.* 2 mm, subabrupt or more continuous with the style, the latter with some hairs at the base, \pm as long as the stamens; stigma subcapitate, manifestly dilated. Capsule oblong, (1.2–)1.5–2 cm by (4–)5–6 mm, subdensely short-pubescent, lepidote; pedicel glabrescent, 2–3.5 cm by 1 mm.

Distr. *Malesia*: Lesser Sunda Is. (Flores: Mts Geli Mutu and Mandaswai).

Ecol. In *Casuarina* forest or in summit vegetation, on slopes or edge of crater, on stony ground, 1500–2300 m. *Fl.* May–Nov.

268. *Rhododendron culminicolum* F. v. M. Trans. R. Soc. Vict. n.s. 1, 2 (1889) 23; SLEUM. Reinwardtia 5 (1960) 220; Blumea 11 (1961) 128; *ibid.* 12 (1963) 113.—*R. nodosum* C. H. WRIGHT, Kew Bull. (1899) 103.—*R. keysseri* FOERSTER in Fedde, Rep. 13 (1914) 223; SCHLTR. Bot. Jahrb. 55 (1918) 155; DIELS, *ibid.* 62 (1929) 487; SLEUM. Reinwardtia 5 (1960) 220.—*R. convexum* SLEUM. *l.c.* 220.—*R. regarium* SLEUM. *l.c.* 221.

KEY TO THE VARIETIES

1. Style hairy in the lower $\frac{1}{2}$ – $\frac{3}{4}$ part. Filaments laxly pubescent to practically glabrous.
2. *var. nubicola*

1. Style mostly with some sparse hairs at base, rarely so up to the lower third. Filaments laxly to subdensely hairy in about the lower half.

2. Corolla 2.5–3.5 cm. Fruit 4(–5) mm σ .

3. *var. angiense*

2. Corolla 3.5–4.5 (rarely –6) cm. Fruit (5–)6–8(–9) mm σ 1. *var. culminicolum*

1. *var. culminicolum*.

Shrub or small tree, up to 5 m. Branchlets 2–3 (rarely up to 6) mm σ , striate lengthwise, tips lepidote, below early glabrescent; internodes 2–5 (–8, rarely up to 14) cm. Leaves in 3–5 (rarely up to 7)-merous pseudowhorls at the upper 1–2(–3) nodes, elliptic or broadly oblong or obovate-oblong, more rarely ovate- or obovate-elliptic or obovate, apex shortly, sometimes rather abruptly subacuminate or attenuate, subacute or mostly obtuse, rarely almost rounded, base \pm broadly attenuate to the petiole, or rarely rounded or even subcordate, \pm coriaceous, when very young densely covered on both faces with flattish, pale scales, completely glabrescent above with age, still laxly lepidote for a while beneath (scales rather small, early whitish or dissolved marginal zone irregularly lobed or dented, dark centre \pm impressed), finally laxly brownish-blackish-punctate beneath, edge \pm revolute, (2.5–)3.5–6(–8, rarely up to 9) by (1–)2–3(–4.5, rarely up to 7) cm, midrib narrowly sunk above, broadened, wrinkled, and much prominent in the lower part, nerves (4–)6–8(–10) pairs, curved-spreading and rather indistinctly anastomosing before the edge, slightly impressed above, somewhat raised beneath at full age, reticulation subdense, \pm obscure above, slightly raised beneath; petiole flattened, grooved above, (2–)4–7(–9, rarely up to 16) by (1–)1.5–2(–3) mm. Umbels (1–)2–4–6 (rarely up to 9) -flowered. Outer perulae suborbiculate to ovate, sometimes with a short narrow acumen, inner ones ovate to obovate, laxly lepidote and sometimes subsericeous at the base outside, glabrous or mostly laxly to subdensely sericeous inside, up to 2 (rarely up to 2.5) by 1(–1.5) cm. Bracteoles filiform to linear, glabrous, up to 2 by 0.3 cm. Pedicels laxly to subdensely lepidote, moreover whether or (mostly) not hairy, (1–)1.5–2(–2.4) cm by *c.* 0.7 mm. Calyx obliquely disk-shaped, wavy, obtusely and shortly lobed, *c.* 4 mm σ , lepidote outside, generally not ciliate. Corolla \pm obliquely tubular, red to purple, sometimes reddish pink, 3.5–4.5 (rarely up to 6) cm long in all, laxly to subdensely lepidote outside, sparsely to subdensely hairy in the lower part of the tube inside, tube \pm curved, 2.5–3.5 (rarely up to 4.5) cm, base 4–5(–6) mm σ , gradually widened to 8–10(–15) mm at apex, lobes broadly obovate to suborbicular, suberect or \pm spreading, (0.8–)1.5(–1.8) by 0.8–1.3(–1.5) cm. Stamens 10, subequal, \pm equalling the corolla; filaments linear, laxly to subdensely hairy in about the lower half, glabrous above; anthers obovate to broad-oblong, base often minutely biappendiculate, (2–)2.5–3(–3.5) by 1–1.5 mm. Disk \pm prominent, short-pubescent

but at the upper margin. *Ovary* subcylindric, yellowish tomentose, and \pm densely lepidote (scales mostly covered by the hairs), subcontinuously with the style, 5–7 by 2–3 mm; style slender, finally exerted, mostly with some sparse hairs and scales at the base, rarely so up to the lower third; stigma subcapitate. *Capsule* subcylindric, attenuate at both ends, laxly to very laxly hairy, more densely lepidote (2.5–)3–4 by (0.5–)0.6–0.8 (–0.9) cm.

Distr. Malesia: New Guinea (Main Range, from Mt Carstensz to the Southern and Western Highlands and in the Owen Stanley Range, also in the Mt Saruwaged-Rawlinson Range area).

Ecol. Low mossy forest or subalpine forest-grassland edge with shrubberies, on more open slopes or summit vegetation, also found in alpine pasture, both in primary and secondary communities, not rarely as part of the forest undergrowth, locally plentiful, (2400–)2800–3600 (–4000) m. *Fl. Jan.-Dec.*

Vern. Kibimune, Chimbu: Masul, *kutengaigai*, Chimbu: Goromagua, *gagum*, *wumbemp*, Wahgi: Minj, *wambu*, Hagen: Togoba, *bit-bit*, Dani.

Note. *R. culminicolum* is conceived here in a broad sense comprising forms with coriaceous, though flexible, distinctly petioled leaves with \pm attenuate base, and corollas 3.5–4.5 cm, found in the upper montane forest from on c. 2400 m, and forms with smaller, stiff-coriaceous, short-petioled or sessile leaves with rounded or even subcordate bases, and corollas 4–6 cm, found in the uppermost patches of the mossy forest or forest fringe shrubberies or even in open alpine grassland between 3200 and 4000 m.

It belongs to the small number of rather variable species which are distributed all over the mountainous part of New Guinea, such as are *R. zoelleri*, *R. macgregoriae*, and *R. konori*.

2. var. *nubicola* (WERNH.) SLEUM. *Reinwardtia* 5 (1960) 221; *Blumea* 12 (1963) 113.—*R. coenenii* J.J.S. *Nova Guinea* 12 (1914) 132, t. 30 A; *ibid.* 12 (1917) 506; SLEUM. *Reinwardtia* 5 (1960) 153, *pro syn. sub R. hatamense*.—*R. nubicola* WERNH. *Trans. Linn. Soc. II, Bot.* 9 (1916) 98.—*R. acrocline* SLEUM. *Reinwardtia* 5 (1960) 158.—*R. hatamense* (non BECC.) SLEUM. *l.c.* 153, *p.p.*

Differs from *var. culminicolum* by the laxly pubescent to practically glabrous filaments and the style, which is hairy in its lower half to $\frac{3}{4}$ part. *Leaves* 2–3.5 (–4) by (1–)1.5–2 (–2.5) cm.

Distr. Malesia: New Guinea (Wissel Lakes, Mt Carstensz and Oranje Mts).

Ecol. Open places in the subalpine forest or in open alpine vegetation, (2500–)3200–3600 m.

3. var. *angiense* (J.J.S.) SLEUM. *Blumea* 12 (1963) 114.—*R. angiense* J.J.S. *Nova Guinea* 12 (1914) 133, t. 30 B; in Gibbs, Arfak (1917) 169; KANEH. & HATUS. *Bot. Mag. Tokyo* 56 (1942) 478; SLEUM. *Reinwardtia* 5 (1960) 220; *Blumea* 11 (1961) 128, *pro syn. sub R. culminicolum* F. v. M. *var. culminicolum*.—*R. gibbsiae* J.J.S. in Gibbs, Arfak (1917) 169; SLEUM. *Reinwardtia* 5 (1960)

153, *pro syn. sub R. hatamense*.

Differs from *var. culminicolum* by corollas 2.5–3.5 cm long in all and smaller fruits, 4 (–5) mm \varnothing .

Distr. Malesia: NW. Guinea (Vogelkop Peninsula: Arfak, Nettoti, and Tohkiri Mts).

Ecol. In devastated *Nothofagus* forest or forest border and more open summit areas, (900–)1200–2300 m, locally rather common, but often sterile, generally terrestrial. *Fl. fr. Jan.-Dec.*

269. *Rhododendron mollianum* KOORD. *Nova Guinea* 8 (1909) 187; SLEUM. *Reinwardtia* 5 (1960) 222.

Terrestrial shrub, 1 m. Branchlets terete, 2–4 (–5) mm \varnothing ; internodes laxly minutely lepidote, lower ones glabrescent and corticate, 6–9 (–15) cm. *Leaves* in 4–5-merous pseudowhorls at the upper nodes, lanceolate or oblong-lanceolate, apex acutely caudate-acuminate, base broadly acutely attenuate, coriaceous, completely glabrous above with age, rather laxly lepidote for some time beneath (scales minute, marginal zone irregularly substellate-lobed, early dissolute, centre shallowly impressed), finally \pm glabrescent beneath, margin strongly revolute, 11–15 by 1.5–3 cm, midrib narrow and impressed above the broadened base excepted, much and obtusely prominent beneath, nerves 10–12 (–14) pairs, irregular, spreading, obsoletely anastomosing near the edge, slightly impressed above and raised beneath, reticulation obscure above, rather dense and finely prominent beneath; petiole rugose, grooved above, 5–7 by 1–1.5 mm. *Umbels* \pm 3-flowered. Pedicels laxly lepidote, epilose, 2.5–3 cm by 0.7 mm. *Calyx* disk-shaped, obsoletely dented, oblique, c. 3 mm \varnothing . *Corolla* funnel-shaped, orange, suffused at the limb with red, 6.5–7 cm long in all, sparsely minutely lepidote outside, laxly hairy at the tube inside, tube c. 2.5 cm, base markedly pouched, c. 5 mm \varnothing , dilated to c. 1 cm at apex, lobes \pm spreading, obovate-oblong, 4–4.5 by c. 2 cm. *Stamens* 10, subequal, reaching halfway the corolla lobes; filaments linear and subdensely to laxly hairy in the lower third, becoming nearly filiform and glabrous above; anthers elongate-oblong, slightly curved, 5 by 1 mm. *Disk* prominent, shortly greyish pubescent. *Ovary* subcylindric, tapering to the style, densely minutely lepidote and short-pubescent (not tomentose), scales well visible between the hairs, c. 8 by 2 mm; style in the lower $\frac{1}{4}$ – $\frac{1}{3}$ short-pubescent and lepidote, or exclusively lepidote above, slender, \pm equalling the stamens; stigma dilated-capitate.

Distr. Malesia: New Guinea (Noord R.), once found. *Fl. June.*

270. *Rhododendron poremanense* J.J.S. *Bot. Jahrb.* 68 (1937) 203; SLEUM. *Reinwardtia* 5 (1960) 222.

Epiphytic shrub, c. 1 m. Branchlets 1.5–2.5 mm \varnothing , very laxly clothed with appressed scales, early glabrescent; internodes 4–9 cm. *Leaves* opposite or in 3 (–6)-merous pseudowhorls at the upper 1–2 nodes, obovate- to oblong-elliptic, apex very shortly acuminate or obtuse, base acutely attenu-

ate, coriaceous, glabrous, densely blackish punctulate above at full age, laxly appressedly lepidote beneath (scales minute, narrow marginal zone irregularly lobed or obtusely dented, centre hardly impressed), finally \pm glabrescent beneath, margin very narrowly revolute, (6.5–8–11 by 2.9–4.6 cm, midrib flattened and slightly or not raised above, obtuse and much prominent at least in the lower half beneath, nerves 7–9 pairs, rather narrow and subparallel, curved-ascending and obscurely anastomosing along the margin, slightly raised on both faces, reticulation \pm obsolete; petiole subterete, lepidote, grooved above, 7–9 by c. 2 mm. *Umbels* 5–6-flowered. Pedicels stoutish, rather densely substellate-lepidote, epilose, c. 1.5 cm. *Calyx* obliquely disk-shaped, crenulate or obtusely lobed, lepidote dorsally, c. 4 mm σ . *Corolla* funnel-shaped, carmine, c. 4 cm long in all, sparsely substellate-lepidote outside, finely hairy in the lower half of the tube inside, tube c. 2 cm, base 5-saccate, c. 4 mm σ , gradually dilated to 6–8 mm at apex, lobes obovate-spathulate, often retuse, \pm expanded, 1.8–2 by 1.4–1.6 cm. *Stamens* 10, somewhat exserted; filaments linear, rather laxly pubescent in the lower half, glabrous above; anthers oblong, base obtuse, c. 4 by 1 mm. *Disk* low, glabrous. *Ovary* subcylindric, attenuate towards the slender style, finely short-pubescent and subdensely set with minute, subentire scales, c. 5 by 2 mm; style glabrous, 1.7–2 cm; stigma thick-capitate.

Distr. *Malesia*: SE. Celebes (Mengkoka Mts: B. Porema), at 1400 m. Once found. *Fl.* Oct.

271. *Rhododendron stresemannii* J.J.S. in Fedde, Rep. 30 (1932) 166; SLEUM. *Reinwardtia* 5 (1960) 222.

Shrub. Branchlets subterete, 2–3 mm σ , brown, subdensely clad with appressed, small scales at upper internodes (c. 10 cm), laxly so in the lower ones. *Leaves* in 3–5-merous pseudowhorls, ovate- or oblong-cordate, apex rather shortly acutely acuminate, base cordate with rounded lobes, glabrescent above with age, but still rather densely set with minute blackish pits for some time, laxly to subdensely lepidote beneath (scales small, marginal zone substellate-lobed or -dented to various degree, centre impressed), finally \pm glabrescent beneath too, leaving darker \pm pitted spots, flat, 8.5–10 by 4.2–5.3 cm, midrib flattish, dilated at the very base, narrower and slightly impressed for the upper third above, as robust as the petiole in its lower part, obtusely prominent, nerves 7–8 pairs, spreading, inarching before the edge, slightly impressed above and raised beneath, reticulation subinconspicuous; petiole compressed dorsally, lepidote, 5–6 by 2 mm. *Umbels* \pm 7-flowered. Pedicels with lax substellate, flat scales and minute white hairs, 2.4–2.7 cm by 1 mm. *Calyx* oblique, disk-shaped, obscurely lobed, rather fleshy, dorsally with some scales and fine short hairs, c. 4 mm σ . *Corolla* tubular-funnel-shaped, slightly oblique, dark rose-red, 4–4.5 cm long in all, quite glabrous outside,

practically so inside, tube 2–2.3 cm, base dilated and 5-pouched, 5–6 mm σ , then \pm narrowed, but upwards again dilated to c. 12–15 mm at apex, lobes obovate-spathulate, 2–2.3 by 1.5–1.8 cm. *Stamens* 10, subequal, 2.4–2.8 cm; filaments linear, sparsely set with longish, \pm spreading hairs in the lower third, glabrous above; anthers oblong, c. 3 by 1 mm. *Disk* low, hairy except the very base. *Ovary* subovoid-cylindric, densely clothed with white, \pm forward directed hairs, which cover small scales, 6–7 by 3 mm, rather abrupt with the style, the latter stoutish, c. 2 cm, hairy at the base; stigma thick-capitate.

Distr. *Malesia*: Moluccas (W. Ceram).

Ecol. Steep limestone ridge of the Ora Mts, c. 1000 m, in *Rhododendron* copse with a few high *Casuarina*. Once found. *Fl.* May.

272. *Rhododendron retivenium* SLEUM. *Reinwardtia* 5 (1960) 222; *Blumea* 12 (1963) 114.—*R. brookeanum* (non LOW ex LINDL.) STAPP, Trans. Linn. Soc. II, Bot. 4 (1894) 196.

Straggling shrub or small tree, up to 6 m, terrestrial or epiphytic. Branchlets terete, (3–) 4–5 mm σ , rather laxly set with flat scales at the upper 1–2 internodes, the latter (2–)3–9(–13) cm. *Leaves* partly in 3–4-merous pseudowhorls at the upper 1–2 nodes, partly spiral and spaced in the upper half of the internode, lanceolate to lanceolate-oblong, apex shortly subacutely acuminate, base cuneate to the petiole, not rarely subtruncate at the very base, coriaceous, glabrous and indistinctly impressedly blackish punctulate above at full age, rather laxly and subpersistently lepidote beneath (scales minute, marginal zone lobed or dented, early dissolute, blackish centre faintly impressed), margin \pm flat, 14–18(–23) by (2–) 2.5–4(–4.5) cm, midrib dilated in the basal part, very narrow and deeply sunk in the upper part above, as thick as the petiole and obtusely prominent in the lower part beneath, nerves 12–18 pairs, spreading, anastomosing along the edge, not much raised on both faces, reticulation dense, fine, but remarkably prominent on both sides; petiole somewhat flattened, wrinkled lengthwise, lepidote, early glabrescent, (6–)8–20 by 2–3(–4) mm. *Umbels* 4–6(–8)-flowered. Outer perulae ovate, more inner ones broadly ovate-oblong, innermost ones spathulate, obtuse, membranous, all glabrous, up to 3 by 1.2 cm. Bracteoles linear, glabrous, c. 2 cm by 1 mm. Pedicels robust, laxly lepidote, more densely so at both ends, not hairy at all, 2–2.8 cm by 1–1.5 mm. *Calyx* obliquely disk-shaped, the margin wavy and indistinctly 5-lobulate, glabrous, 4–5 mm σ . *Corolla* funnel-shaped in outline, tubular below, expanded up to 7.5 cm σ at the limb, of a rich pure yellow or orange, sweet-scented, 6–7(–7.5) cm long in all, glabrous outside, laxly pubescent at the lower half of the tube inside, tube rather straight, (3–)3.5–4 cm, base much saccate or inflated and 6–7 mm σ at base (which includes the calyx), slightly dilated upwards, 1.5(–2) cm across the mouth, lobes broadly obovate to suborbicular, 2.5–3 cm σ . *Stamens* 10, unequal, slightly exserted from the

corolla tube; filaments linear (1 mm) and densely patently hairy in the lower third, more filiform and glabrous upwards; anthers oblong, curved, base minutely apiculate, (3.5-)4.5-5 by *c.* 1 mm. *Disk* very thick and prominent, glabrous, or occasionally puberulous at the upper margin. *Ovary* cylindrical, continuous with the style, seemingly glabrous, but laxly finely pubescent (lens!), otherwise set with some sparse scales, 8-10 by *c.* 2 mm; style rather slender, nearly as long as the stamens, glabrous; stigma capitate, manifestly 5-lobed. *Capsule* subfusiform, very shortly attenuate at the base, more longish so at the apex, sparsely lepidote, puberulous in the lower third, or quite glabrous all over, (4.5-)5-5.5 by *c.* 0.8 cm; pedicel 2.5-3 cm by 1.5 mm.

Distr. *Malesia*: Borneo (Mt Kinabalu).

Ecol. In jungle ridge or crest, or on wet rocks in light shade, near waterfall, 1220-2985 m. *Fl.* Jan.-Dec.

273. *Rhododendron lowii* HOOK. f. in Hook. Ic. Pl. (1852) t. 883 ('*lowei*'); WALP. Ann. 5 (1858) 447; STAPF, Trans. Linn. Soc. II, Bot. 4 (1894) 195; GIBBS, J. Linn. Soc. Bot. 42 (1914) 102; MILLAIS, Rhodod. (1917) 204; MERR. En. Born. (1921) 462; SLEUM. Reinwardtia 5 (1960) 223; Blumea 12 (1963) 114, *non* COURTOIS, Mag. d'Horticult. 1 (1833) 105, *n.* 402, *pro var.* *R. ponticum* L.; LOUDON, Gard. Mag. 11 (1835) 79, 190.

Spreading shrub or small tree, 3-7 (rarely up to 10) m, terrestrial or epiphytic. Branchlets (5-)6-10 mm \varnothing , terete, practically glabrous; upper internodes 4-10 cm (or longer?). *Leaves* 4-6 scattered along the upper 1-2 internodes, 2 or 3 in a \pm pronounced pseudowhorl, large, elliptic to subobovate- or oblong-elliptic, rarely obovate, apex broadly attenuate or subacuminate, obtuse, rarely really rounded, broadly attenuate towards the base (very base often \pm abruptly truncate), or even rounded or subcordate, stiffly coriaceous, initially very densely lepidote on both sides (the scales \pm touching), finally quite glabrous above, but still blackish-impressed-punctulate, subdensely lepidote for a while beneath (scales small, marginal zone variously lobed or shortly dented, minute centre shallowly impressed), gradually glabrescent beneath too, the scales leaving a pale halo in the epidermis, flat, (12-)14-23(-26) by (5-)6-13(-15) cm, midrib wrinkled lengthwise, as stout as the petiole in the basal part, much convex-prominent above, much less so to nearly flat beneath, nerves (10-)16-24 pairs, spreading below, often markedly subparallel, in part deeply forked, indistinctly anastomosing, \pm prominent on both faces, reticulation rather dense, mostly finely raised on both sides; petiole flattened, (3-)5-10 (rarely up to 15) by 3-5(-7) mm, rugose, inserted on a thick leaf-cushion. *Umbels* (6-)7-12-flowered. Outer perulae ovate, obtuse, inner ones ovate-oblong to oblong, short-acuminate, innermost ones obovate, obtuse, all stiff-membranous, glabrous and lustrous dorsally, up to 3.5 by 1 cm. Bracteoles linear below, sub-

spathulate-dilated distally, up to 3 cm by 2 mm. Pedicels laxly stellate-lepidote, epilose, 2-3 (rarely up to 5) cm by 1.5 mm. *Calyx* very oblique, rim-like or shortly disk-shaped, obscurely 5-lobed or -angled, fleshy, subglabrous dorsally, 5-6 mm \varnothing . *Corolla* funnel-shaped (wax-like when fresh), canary or golden yellow, orange, salmon red or flushed flame-pink, (5.5-)6-7 cm long in all, limb as wide as the length of the corolla, scentless, glabrous outside, short-pubescent at the tube inside, tube straight, \pm 3 cm, base markedly 5-saccate, 5-7 mm \varnothing , gradually widened to 1.5-2 cm at apex, lobes much expanded, broad-obovate to -spathulate, sometimes retuse, (2.5-)3-3.5(-4) by 2-3 cm. *Stamens* 10, unequal, the longest reaching halfway the corolla lobes; filaments linear (2 mm) and villous in the lower third, narrower to subfiliform and glabrous above; anthers obovate-oblong, curved, with minute basal appendages, *c.* 5 by 1.5 mm. *Disk* thick, very prominent, glabrous or puberulous in the upper margin. *Ovary* columnar, \pm abrupt with the style, greyish velutinous and \pm densely lepidote (most scales hidden by the rather short dense hairs), 7-10 by *c.* 4 mm; style stoutish, glabrous, or with some hairs at the base, (2-)3 cm by 1 mm; stigma large, capitate, *c.* 4 mm \varnothing , obtusely lobed. *Capsule* thick-fusiform, (2.5-)3.5-4(-4.5) by 0.8-1 cm, short-hairy, practically elepidote, finally \pm glabrescent, with scattered, minute, elliptic-oblong, lenticel-like warts, valves woody; pedicel 4-5(-7) by 2-2.5 mm. *Seeds* *c.* 6 mm, long-tailed on both ends, each tail *c.* 2.5 mm.

Distr. *Malesia*: Borneo (Mt Kinabalu and Mt Trus Madi).

Ecol. Undershrub in high, small tree in low mossy forest, on hillside or rocky ridge, (1980-)2440-3350 m. *Fl.* Jan.-Dec.

Note. This beautiful species is very conspicuous on Mt Kinabalu; the flower clusters are reported to measure up to 35 cm \varnothing when fresh.

274. *Rhododendron intranervatum* SLEUM. Blumea 11 (1961) 129; *ibid.* 12 (1963) 114.

Epiphytic shrub. Branchlets *c.* 4 mm \varnothing at the glabrous tips; internodes 1.5-3 cm. *Leaves* solitary and subopposite at the ultimate 1-2 nodes (leaving subreniform scars 5-6 by 7-9 mm), elliptic-obovate, apex rounded-obtuse, or sometimes very shortly apiculate, broadly subcuneate-rounded towards the base (very base subtruncate-obtuse), or faintly cordate, coriaceous, firm, \pm glabrous at full age above, subsersistently lepidote beneath (scales minute, flat, marginal zone variously stellate-dented, centre small, hardly immersed), edge a little revolute, 13-16 (-18) by 8-10 cm, midrib as wide as the petiole and slightly raised below on the upper surface, thick-prominent at the base beneath, nerves 12-14 (-16) pairs, \pm at right angles, rather straight and \pm parallel, with numerous similar less distinct nerves (or primary veins) between, all \pm manifestly prominent on both sides, anastomosing and united into an inner intramarginal nerve, which is connected by numerous transverse veinlets

with an outer, less distinct one, reticulation dense, slightly prominent on both faces, especially beneath; petiole compressed dorsally or subsemiterete, glabrous, c. 10 by 5–6 by c. 4 mm. *Flowers* in twos. Inner perulae oblong, glabrous, 4–5 by c. 1 cm. Bracteoles (or innermost perulae?) elongate-subspatulate, c. 4 by 0.5 cm. Pedicels very densely patently short-hairy, elepidote, c. 4 cm by 1.5 mm. *Calyx* disk-shaped, wavy, obtusely 5-lobed, c. 4 mm σ , glabrous lobes sometimes in form of 5 elongate obtuse laciniae, appressed to the corolla, 4–4.5 by 0.2–0.4 cm. *Corolla* funnel-shaped, light yellow, very shortly hairy for the lowest cm inside, quite glabrous otherwise, 5-lobed halfway, 5–6 cm long in all, base slightly 5-saccate, 0.6–0.8 cm σ , widened to 1.5–2.5 cm at apex, lobes obovate-spatulate, erecto-patent, 2.5–3 by 2–3 cm. *Stamens* 10, c. 3 cm; filaments linear and densely hairy or almost villous in the lower half, filiform and glabrous above; anthers narrow-oblong, slightly curved, 7–8 by 1.5 mm, each cell bearing a basal obtuse swelling or gland. *Disk* prominent, thickly 10-lobed, glabrous below, laxly hairy above. *Ovary* subcylindric, c. 6 by 2 mm, densely white-hairy or subvillous, apparently elepidote, tapering to the style, the latter rather slender, quite glabrous, 1–1.5 cm at anthesis; stigma thick-turbinate with 5 distinct lobes.

Distr. *Malesia*: Borneo (Mt Palimasan, near Tabang on Belajan R. in W. Kutei; Mt Penrissen and Mt Berumpit in Sarawak).

Ecol. In *Agathis* forest on waterlogged, white, acid sands or on granite rock faces, 600–1050 m.

275. *Rhododendron toxopei*. J.J.S. in Fedde, Rep. 30 (1932) 168; SLEUM. Reinwardtia 5 (1960) 224.

Shrub. Branchlets subterete, 2–3 mm σ , initially lepidote, early glabrescent; internodes 2–4 cm. *Leaves* in \pm 4-merous pseudowhorls, oblong-ovate, apex gradually and \pm shortly acuminate, subacute, base obliquely rounded, slightly inequilateral, coriaceous, glabrous above (scale vestiges remaining recognizable by numerous minute, blackish pits), laxly subpersistently lepidote beneath (scales small, marginal zone variously and shortly dented or lobed, but later roundish when marginal zone is partly dissolved, centre slightly impressed), edge very narrowly or not revolute, 6.2–10 by 2–4.6 cm, midrib broadened below, wrinkled lengthwise, rather flat or a little impressed above, \pm distinctly prominent beneath, nerves 10–12 pairs, curved-spreading, inarching near the edge, well visible impressed above, slightly raised beneath, reticulation dense, finely prominent beneath only; petiole rugose, flattened, 7–11 by 2–2.5 mm. *Umbels* \pm 8-flowered. Bracteoles said to be linear, glabrous. Pedicels sparsely lepidote at both ends, 1.7–2.1 cm by 1 mm. *Calyx* oblique, disk-shaped, obtusely angled or very shortly lobed, practically glabrous, 3–4 mm σ . *Corolla* tubular-funnel-shaped, pale rose, 4.5–5 cm long in all, glabrous outside, laxly pubescent in the lower $\frac{2}{3}$ of the tube inside, tube 2–2.4 cm, straight, base slightly dilated or

pouched, 5–6 mm σ , widened to c. 1 cm at apex, lobes oblong-spatulate, \pm spreading, 2.3–2.7 by 1–1.6 cm. *Stamens* 10, shortly exserted; filaments linear below (1 mm) and subdensely patent-hairy in the lower, narrower and glabrous in the upper half; anthers oblong, curved, base obtuse, c. 4 by 1 mm. *Disk* prominent, short-pubescent. *Ovary* subcylindric, densely pubescent or subvelutinous, with numerous minute scales well visible between the hairs, rather continuous with the style, 6–8 by 2.5 mm; style rather slender, pubescent in the lower $\frac{1}{4}$ – $\frac{1}{2}$, c. 2 cm; stigma capitate, c. 2.5 mm σ .

Distr. *Malesia*: Moluccas (Buru, near Kunturun), in peatmoor with *Sphagnum*, 1075 m. *Fl.* Feb.

276. *Rhododendron brookeanum* Low ex LINDL. J. Hort. Soc. Lond. 3 (1848) 82, c. icon p. 83; PLANCH. Fl. Serres 5 (1849) 477–480, c. icon. xyl.; ANON. Gard. Chron. (1855) 404, c. icon.; HOOK. Bot. Mag. (1856) t. 4935; HOUTTE, Fl. Serres II, 2 (1857) 111, t. 1238–39; MIQ. Fl. Ind. Bat. 2 (1859) 1057; BECC. Malesia 1 (1878) 207; STAFF, Trans. Linn. Soc. II, Bot. 4 (1894) 196; GIBBS, J. Linn. Soc. Bot. 42 (1914) 103; MILLAIS, Rhodod. (1917) 130; MERR. En. Born. (1921) 460; HOLTT. M.A.H.A. Mag. 9 (1939) 35; SLEUM. Reinwardtia 5 (1960) 224; Blumea 11 (1961) 130; *ibid.* 12 (1963) 114.—*Azalea brookeana* (Low ex LINDL.) O. KTZE, Rev. Gen. Pl. 2 (1891) 387.

KEY TO THE VARIETIES

1. Leaves oblong to lanceolate-oblong, \pm shortly acuminate, (3–)3.5–8(–9) cm wide.
2. Leaves without hairs . . . 1. *var. brookeanum*
2. Leaves densely short-hairy on both sides along the midrib; branchlets hairy.
 2. *var. cladotrichum*
1. Leaves lanceolate or oblong-lanceolate, longer and/or more acutish acuminate, mostly more slenderly, 6–15 by 1.5–2, rarely up to 3 mm petioled.
3. Leaves lanceolate. Corolla (5–6) cm.
 3. *var. gracile*
3. Leaves oblong-lanceolate. Corolla 4(–5) cm.
 4. *var. extraneum*
1. *var. brookeanum*.

Epiphytic or terrestrial shrub, up to 2(–4) m. Roots large and fleshy. Upper internodes obtusangular or subterete, laxly set with appressed substellate scales, 2–15 cm by 3–4(–6) mm, lower ones terete, glabrescent. *Leaves* more or less clearly in 3–4(–5)-merous pseudowhorls at the upper 1–2 nodes, oblong or lanceolate-oblong, often subsessile, but sometimes also manifestly petioled, apex gradually and mostly rather shortly acuminate, subacute, base cuneate or attenuate to the petiole, or sometimes subtruncate, or even rounded at the very base, \pm coriaceous, glabrous, the former scales leaving dense, minute, dark pits, laxly to very laxly lepidote for some time beneath (scales small, marginal zone variously substellate-lobed

or -dented, centre minute, shallowly impressed), finally \pm completely glabrescent beneath, margin \pm flat, 12–25(–28) by (3–)3.5–8(–9) cm, midrib a prolongation of the robust petiole below, nerves in 14–24 pairs, \pm spreading, inarching along the edge, slightly raised on both faces, reticulation rather coarse and not much conspicuous, sometimes dense and more visible raised especially beneath (possibly due to intercrossing with distinctly reticulate-leafed species as *R. retivenium?*). *Umbels* 5–14-flowered. *Perulae* thin, outer ones ovate-subacuminate, inner ones oblong to spatulate-oblong, glabrous, up to 4(–4.5) by 1.5(–2) cm. *Pedicels* sparsely lepidote or not, rarely almost glabrous, rarely pubescent, (2–)2.5–4(–5) cm by (1–)1.5–2 mm in anthesis. *Calyx* shortly disk-shaped or merely rim-like, obscurely angled or lobed, glabrous, 4–5 mm ϕ . *Corolla* funnel-shaped, beautiful orange pink with white or cream centre, or golden (pale) yellow, more rarely of a brick-red colour, throat then mostly yellow, said to become suffused with red or rosy orange outside with age, \pm fleshy, often with a delicate lemon-like fragrance, glabrous outside, \pm laxly pubescent in the lower part of the tube inside, 5–7.5(–8) cm long in all (length and width of corolla 9 cm when fresh), tube straight, 3–3.5 cm, markedly obtusangular, base 5-pouched, 6–8 mm ϕ , gradually dilated to 2–2.5 cm at apex, lobes much expanded, broadly obovate or suborbicular, slightly retuse or delicately crisped at the edge, (2.5–)3.5(–4.5) by 2.5–3(–3.5) cm. *Stamens* 10, subequal, reaching halfway the corolla lobes; filaments linear, densely subpatently hairy in the lower third, glabrous above; anthers oblong, curved, base obtuse, (4–)4.5–5(–6, rarely up to 7) by 1–1.3 mm. *Disk* prominent, puberulous at the upper margin. *Ovary* subcylindric, densely greyish hairy or velutinous and lepidote (scales often at least partly hidden by the hairs), \pm abrupt with the style, 8–10 by 2–3 mm; style first shorter than, finally \pm equalling the stamens, glabrous; stigma turbinate-dilated, deeply lobed. *Capsule* subfusiform-cylindric, lepidote and short-pubescent to various degree, with some elliptic minute warts, (3.5–)4–5 by 0.7–0.8(–1.2) cm; pedicel 3–6 cm by c. 2 mm. *Seeds* 7–9 mm including the tails.

Distr. *Malesia*: Borneo.

Ecol. Epiphytic on mangrove or rocks at sea-level, ascending to 1525 m in the mossy

forest, with preference for trees along rivers. *Fl.* Jan.–Dec.

Note. Introduced to the lowlands of the Malay Peninsula and flowering freely. Formerly used for crossings, practically out of cultivation by now. Very near to *R. triumphans* YERSIN & CHEV. from S. Annam, which is mainly distinguished by longer and more slender petioles; its fruit is still unknown.

2. *var. cladotrichum* SLEUM. *Reinwardtia* 5 (1960) 224.

Branchlets and midrib of the leaves \pm densely clad with fuscous short and \pm spreading hairs. *Pedicels* \pm glabrous, 6–10 by (1–)2(–3) mm.

Distr. *Malesia*: Central E. Borneo (W. Kutei: Long Suh), at 300 m. Once found.

3. *var. gracile* (LOW ex LINDL.) HENSLOW, J. R. Hort. Soc. 13 (1891) 261, f. 42 (*fol.*), 43 a (*fl.*); MILLAIS, *Rhodod.* (1917) 130; SLEUM. *Reinwardtia* 5 (1960) 224; *Blumea* 11 (1961) 130.—*R. gracile* LOW & ex LINDL. J. Hort. Soc. Lond. 3 (1848) 84, fig.; MILLAIS, *Rhodod.* (1917) 174; MERR. *En. Born.* (1921) 461, non BECC. *Malesia* 1 (1878) 203 (which is *R. commutatum* SLEUM.).—*R. obscurinervium* MERR. J. Str. Br. R. As. Soc. n. 76 (1917) 109; *En. Born.* (1921) 462.

Leaves lanceolate, \pm long-acuminate, rather slender petioled, (1–)2–3(–3.5) cm wide only; nerves generally more obscure than in *var. brookeanum*. *Corolla* 5(–6) cm long in all. Branchlets and pedicels besides the scales whether or not patent-puberulous.

Distr. *Malesia*: Borneo (Sarawak; W. and N. Borneo; Brunei).

Ecol. Mostly epiphytic in lowland forest, sometimes terrestrial on vertical rocks, up to 600 m.

Note. Apparently transient to *var. brookeanum*.

4. *var. extraneum* SLEUM. *Reinwardtia* 5 (1960) 225.

Branchlets laxly lepidote, epilose. *Leaves* oblong-lanceolate, 9–18 by (2–)2.5–5 cm; petiole 7–12 by 2–3 mm. *Pedicels* densely short-pubescent and laxly lepidote, c. 15 by 1 mm. *Corolla* funnel-shaped, pale orange, 4(–5) cm long in all; otherwise as in *var. brookeanum*.

Distr. *Malesia*: Sumatra (West Coast: Harau canyon near Pajakumbuh), on sandstone rocks, c. 500 m. *Fl.* Nov.–Dec.

2. Subgenus *Hymenanthes*

(BL.) K. KOCH, *Dendrol.* 2 (1872) 170 ('*Hymenanthus*'); SLEUM. *Blumea* Suppl. 4 (1958) 51; *Reinwardtia* 5 (1960) 225. — *Hymenanthes* BL. *Bijdr.* (1826) 862; G. DON, *Gen. Syst.* 3 (1834) 849; D. DIETR. *Synops.* 3 (1843) 2; COPEL. *f. Am. Midl. Nat.* 30 (1943) 614. — *Rhododendron* subg. *Eurhododendron* (ENDL. *pr. sect.*) KOEHNE, *Deutsch. Dendrol.* (1893) 449, *s. str.*; SLEUM. *Bot. Jahrb.* 74 (1949) 526, 542. — **Fig. 47–49.**

Plants entirely eplidote. *Leaves* evergreen. *Flowers* from terminal buds (several to many); leafy branchlets (new foliate shoots) from separate lateral buds, from the axils of the leaves of the past season.

Distr. Europe, Asia, in *Malesia*: N. Sumatra, Malay Peninsula.

1. Section *Hymenanthes*

(BL.) ENDL. Gen. (1839) 759; DC. Prod. 7 (1839) 721; SLEUM. Blumea Suppl. 4 (1958) 51; Reinwardtia 5 (1960) 225. — *Rhododendron sect. Eurhododendron* ENDL. Gen. (1839) 759, *p.p. et aut. plurim.*; DC. Prod. 7 (1839) 721, *p.p.* — Fig. 47–49.

Same as above.

1. Subsection *Irrorata*

SLEUM. Bot. Jahrb. 74 (1949) 548; Blumea Suppl. 4 (1958) 52; Reinwardtia 5 (1960) 225.

Leaves densely tomentose or villous by simple hairs initially (new shoots) or in young stages at least beneath, mostly glabrescent at maturity, margin \pm cartilaginous characteristically undulated when dry; nerves 12–20, \pm parallel.

Distr. SE. Asia, in *Malesia*: N. Sumatra, Malay Peninsula. Fig. 46.

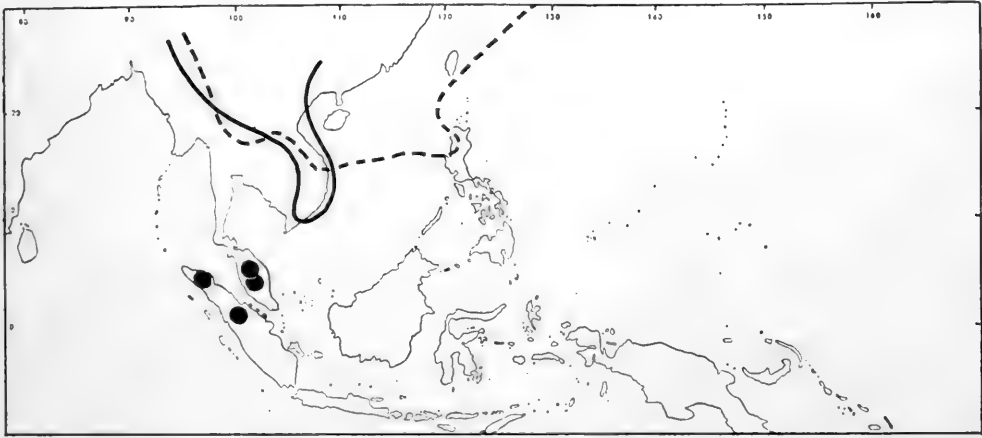


Fig. 46. Distribution of *Rhododendron subgenus Hymenanthes subsection Irrorata* (——— approximate southern limit of area on the Asiatic continent, ● localities in *Malesia*) and of *subgenus Tsutsutsi sect. Tsutsutsi* (----- approximate southern limit of area in SE. Asia and *Malesia*).

KEY TO THE SPECIES

1. Ovary densely set with stalked glands, or glandular and hairy (strigose). Leaves not wax-coated above, *i.e.* unaltered when heated.
2. Style densely or subdensely glandular to the top. Leaves glabrous at maturity, laxly set with red glandular points underneath 277. *E. atjehense*
2. Style glabrous or practically so. Leaves clad underneath with a thin, whitish or fawn indumentum of interlaced cobweb hairs for a long time 278. *R. wrayi*
1. Ovary not glandular at all, otherwise laxly to densely hairy. Leaves wax-coated above, *i.e.* becoming lustrous when heated 279. *R. korthalsii*

277. *Rhododendron atjehense* SLEUM. Blumea Suppl. 4 (1958) 53, *in clavi (angl.)*; Reinwardtia 5 (1960) 226.—Fig. 47-48.

Large shrub or tree, 5–7 m; trunk *c.* 8 cm ϕ . Branches and branchlets robust, the latter terete, upper internodes densely and \pm persistently set with stalked glands; internodes 1.6–7 cm. *Leaves* in 5–9-merous pseudowhorls at or near the upper 2 nodes, oblong-lanceolate, apex short-acuminate, subacute, base attenuate to the petiole, thin-coriaceous, though firm, brownish lanate when very young, finally quite glabrous, but with lax,

reddish glandular points beneath, edge slightly revolute, 7.5–10(–13.5) by (2–)2.5–3.5(–5) cm, midrib impressed above, very prominent beneath, nerves *c.* 15 pairs, curved, not anastomosing, faintly impressed in fully developed leaves above, prominent beneath, reticulation dense, not much raised; petiole glandular initially, glabrescent, grooved above, 1–1.5 cm by 1.5–2 mm. *Racemes* umbel-like, 6–10(–12)-flowered. Flower buds oblong-ovoid, somewhat glutinous, *c.* 3 by 1–1.5 cm. Outer perulae broadly ovate, apiculate, yellowish-or greyish-subsericeous, 0.5–1 by 0.6–



Fig. 47. *Rhododendron atjehense* SLEUM. Mt Goh Lembuh, 3000 m, N. Sumatra (VAN STEENIS 8991) (VAN STEENIS, 1937).

0.8 cm, inner (middle) ones \pm obovate, dorsally with stalked, \pm appressed glands and \pm tomentelous by rufous and yellowish hairs, 1–1.5 by c. 1 cm, innermost ones obovate-spathulate, yellowish-tomentose or lanate dorsally, hairy fimbriate, up to 2 by 0.8 cm. Bracteoles linear, hairy, up to 2 cm by c. 1 mm. Rachis 0.5–2.5 cm, rather abruptly decrescent in σ , laxly glandular, with a tuft of pale hairs immediately below the insertion of each pedicel, these densely clad with spreading stalked glands, furthermore with rufous fine hairs at the base and immediately below the calyx, rarely all over the whole pedicel, 1–1.5 cm by c. 1 mm. *Calyx* thick-membranous, wavy, deeply 5-lobed, lobes \pm spreading or erect, short-glandular dorsally, laxly to subdensely glandular-fimbriate and/or with longish substrigose hairs along the margin, 1.5–2.5 mm. *Corolla* funnellform-campanulate, the attenuate base with 5 pouches, thin, glabrous, rose-lilac, (3–)3.5(–4) cm long in all, limb 3–3.5 cm σ , with 5 purplish nectar markings

at base inside and darker spots at throat, lobes erecto-patent, broadly oblong to subobovate, slightly retuse, 1.5–2 by 1–1.5(–1.8) cm. *Stamens* 10, very unequal, reaching to $\frac{1}{3}$ – $\frac{1}{2}$ of the corolla; filaments linear and laxly hairy below, filiform and glabrous above; anthers obovate, truncate, 1.5–1.8 mm. *Disk* glabrous. *Ovary* conical, obtuse, all over densely clad with stalked reddish glands, furthermore laxly to subdensely clad with substrigose rufescent stiff hairs in the lower half, 4–5 by 2–3 mm; style abrupt with the ovary, subdensely or densely clothed with stalked glands to the top; stigma subcapitate. *Capsule* cylindrical, obtuse, nigrescent, glandular or strigose below, 1.5–1.8 by 0.6–0.7 cm, valves 5, woody, with persistent calyx; pedicel 1.5–2 cm by 1 mm.

Distr. Malesia: N. Sumatra (Gajolands: Mt Losir; Putjuk Angasan; Mt Kemiri; Mt Goh Lembuh).

Ecol. In mossy forest or subalpine brushwood, 1800–3000 m, locally common. *Fl.* Jan.–Feb.



Fig. 48. *Rhododendron atjehense* SLEUM., with white to light pink *Exobasidium* galls, on Mt Goh Lembuh, N. Sumatra (VAN STEENIS, 1937).

Note. Most related to *R. ningyuenense* HAND.-MAZZ. (*R. langbianense* CHEV. ex DOP) known from SW. China (SW. Szechuan-E. Yunnan) and Indochina (Annam), distinguished chiefly by much larger calyx lobes, a richer inflorescence, and \pm persistently glandular ultimate internodes. Not yet in cultivation, possibly one of the most hardy species of the genus in Malesia.

278. *Rhododendron wrayi* K. & G. J. As. Soc. Beng. 74, ii (1905) 75; RIDL. J. Linn. Soc. Bot. 38 (1908) 314, repr. J. Fed. Mal. St. Mus. 2 (1908) 120; J. Fed. Mal. St. Mus. 4 (1909) 42, incl. var. *elliptica* RIDL. l.c.; *ibid.* 6 (1915) 49, incl. var. *minor* RIDL. l.c. 157; Fl. Mal. Pen. 2 (1923) 217; BURK. & HOLTT. Gard. Bull. S.S. 3 (1923) 57; HENDERS. J. Mal. Br. R. As. Soc. 5 (1927) 256; SYMINGTON, *ibid.* 14 (1936) 355; HENDERS. Mal. Nat. J. 6 (1950) 261; SLEUM. Blumea Suppl. 4 (1958) 53, in clavi; Reinwardtia 5 (1960) 227.—*R. dubium* K. & G. J. As. Soc. Beng. 74, ii (1905) 78; RIDL. Fl. Mal. Pen. 2 (1923) 221.—*R. corruscum* RIDL. J. Fed. Mal. St. Mus. 5 (1914) 37; Fl. Mal. Pen. 2 (1923) 217.—Fig. 49.

Compact shrub or small, lanky tree, 3–6(–12) m. Branches and branchlets thick, terete, only tips pubescent; internodes 2–4(–8) cm. Leaves in 4–5-merous pseudowhorls at the end of the upper 1–2 internodes; besides, much reduced, mostly early caducous leaves scattered along these internodes; oblong to elliptic-oblong or elliptic, rarely somewhat obovate-elliptic, apex short-acuminate (very apex mostly subacute or rather obtuse), base broadly attenuate to rounded, very coriaceous, rusty-floccose-tomentose on both surfaces on young shoots, very early glabrous above, indumentum of undersurface persisting for a long time, thin, greyish, whitish or fawn at flowering time, \pm evanescent with age, leaving a very fine detersile greyish tomentum of cobweb hairs in the pits of the intervenium, finally not rarely quite glabrous, becoming silvery-greyish or rather glaucous underneath, edge recurved in dry specimens, (4.5–) 6–15(–18) by 2–5(–6) cm, midrib grooved above, bold beneath, nerves 10–14(–18) pairs, rather straight or slightly curved, at an angle of 70–90°, indistinctly anastomosing, \pm not impressed above, prominent beneath, reticulation dense, obsolete above, more raised beneath and very distinct with age; petiole glabrous, (1.5–)2–2.5 cm by 2–3 mm, somewhat flattened, grooved above. Umbel-like racemes (3–)8–12-flowered. Outer perulae broad-ovate, dorsally clothed with very short hairs and minute sessile glands, especially the lowest ones \pm glutinous, up to 1.2 by 0.9 cm, inner ones larger, \pm obovate-spathulate, \pm apiculate, silky-tomentose on both faces, up to 2.5 by 1.5 cm. Bracteoles linear-spathulate, \pm tomentose, up to 10 by 1–1.5 mm. Rachis 0.5–1 cm, laxly floccose and glandular. Pedicels rather slender, \pm densely rusty-floccose and with \pm numerous small substipitate glands, the floccae finally \pm evanescent, the glands becoming more visible, 1.5–2 cm. Calyx mostly very oblique, small, wavy, rusty-floccose-tomentose outside, lobes obtuse, c. 1 mm. Corolla rather wide-campanulate, (2.5–)3–3.5(–4.5) cm long in all, somewhat translucent, flushed pink in bud, white in full bloom, whether or not tinged with pale pink and red-spotted inside, glabrous, lobes broad oblong to obovate-oblong, \pm spreading, 1.2–1.7 by 0.7–1 cm. Stamens 10, \pm unequal, mostly a little shorter than the corolla; filaments linear and densely patent-hairy in the lower third, filiform and glabrous distally; anthers oblong, orange-red, 3–3.5 by 1 mm. Disk glabrous below, densely whitish ciliate at the upper margin. Ovary conical, 3–4 by c. 2.5 mm, dense rusty tomentulose, with some substipitate glands; style rather abrupt with the ovary, showing some stalked club-shaped glands on its very base, otherwise completely glabrous, rather slender, (1.5–)2–2.5 cm; stigma subcapitate. Capsule woody, cylindrical, obtuse, slightly ridged, initially rusty-tomentose, finally glabrous, blackish when dry, (1–)1.3–1.6 (–2) by 0.5–0.6 (rarely up to 0.8) cm, on stoutish \pm glabrous pedicel (1.5–)2–2.5(–3) cm; valves 5. Seeds angular, with very short irregular, often lacerate appendices, no tails, c. 2 mm.

Distr. Malesia: Malay Peninsula (Main Range



Fig. 49. *Rhododendron wrayi* K. & G. a. Branchlet with flowers, $\times \frac{2}{3}$, b. flower, $\times 1$, c. ovary and style, $\times 10/3$, d. stamen, $\times 10/3$, e-f. seed, $\times 10$ (a-d SEIMUND 515, e-f HOLTUM s.n.).

from Mt Kerbau on the Perak/Pahang/Selangor border to Mt Ulu Kali in Selangor; further on Mts Tahan and Tapis in Pahang).

Ecol. In mossy forest associated with *Dacrydium elatum*, also in dwarf mossy forest or summit vegetation, in *Leptospermum* forest, also in exposed situations on the actual summits, open ridges, quartzite cliffs, (855-)1200-2165 m, locally plentiful (so in the Cameron Highlands sometimes dominant just below the comb of the ridges). Fl. Jan.-Dec.

Note. *R. wrayi* is most related to *R. penninivium* BALF. f. & FORR. from Yunnan, with which it shares the glandular-tomentose ovary and the leaves clad underneath with a thin whitish or fawn indumentum of interlaced cobweb-like hairs, which persists for a long time. *R. penninivium* differs in the rose- to deep-crimson corolla and the leaves which are initially floccose and glandular.

279. *Rhododendron korthalsii* MIQ. Ann. Mus. Bot. Lugd.-Bat. 1 (1863) 43; MILLAIS, Rhodod.

(1917) 199; SLEUM. Blumea Suppl. 4 (1958) 54, *in clavi*; Reinwardtia 5 (1960) 228.

Shrub? Branchlets thick, terete, glabrous. Leaves both in 4-5-merous pseudowhorls at the nodes (c. 6 cm) and laxly scattered on the internodes, lanceolate, apex short-acuminate, subacute, with a small, not protruding terminal gland, base attenuate to the petiole, coriaceous, \pm dull on both faces, wax-coated above (becoming lustrous there when heated), glabrous, rather densely punctulate beneath, 8-10 by (1.5-)1.8-2.6 cm, midrib impressed above, prominent beneath, nerves 6-8 pairs, \pm straight below, curved and \pm irregular distally, faintly anastomosing, slightly impressed above, somewhat raised beneath, reticulation dense, regular, slightly but well visibly impressed above, rather faint beneath; petiole stoutish, grooved above, glabrous, 0.7-1.2 cm. Racemes sub-umbellate, \pm 6-flowered. Rachis elongate-conical, c. 2.5 cm, rather densely clad with short-stipitate, reddish glands especially in the upper part. Perulae oblong, glandular and hispid-hairy, c. 1 by 0.5 cm. Bracteoles linear-spathulate, hairy,

up to 1 cm. Pedicels stoutish, 1.5–2 cm, densely set with very shortly stalked glands, but no proper hairs. *Calyx* deeply 5-lobed, lobes ovate, rounded-obtuse, c. 2 (rarely up to 3) by c. 2 mm, membranous, veined, ciliate, short-glandular (glutinous) at the very base only, glabrous for the rest. *Corolla* wide-campanulate, (white?), c. 2.5 cm long in all, thin, glabrous except a pubescent spot at the base of the tube inside, lobes oblong-ovate, 1.5–1.8 by c. 1 cm. *Stamens* 10, unequal, 1.2–1.6 cm; filaments linear, glabrous at the very base (1 mm), then densely set with papillose (inflated) spreading whitish blunt hairs for 4–6 mm, glabrous in the upper half or to $\frac{2}{3}$; anthers broad-elliptic, \pm truncate, 1.5–2 by 1 mm. *Disk* glabrous below, densely whitish ciliate on the

upper margin. *Ovary* conical, c. 4 by 2 mm, all over with scattered red-brown substrigose hairs but apparently no proper glands; style abrupt with the obtuse ovary, glabrous, 1.5–1.8 cm; stigma short-capitellate.

Distr. *Malesia*: Central Sumatra (possibly Padang Highlands). One collection.

Note. *R. korthalsii* shares the wax-coated surface of the leaves with *R. leptopeplum* BALF. f. & FORR. (Yunnan) and *R. lukiangense* FRANCH. (SE. Tibet, SW. Szechuan, NW. Yunnan), but differs from them in many respects. The most related species are probably *R. ombrochares* BALF. f. & WARD (NE. Upper Burma), *R. cerochitum* BALF. f. & FORR. (W. Yunnan), and *R. araiophyllum* BALF. f. & W. W. SM. (W. Yunnan)

3. Subgenus *Pentanthera*

(G. DON, *pro sect.*) POJARKOVA, Flora U.R.S.S. 18 (1952) 57; SLEUM. *Blumea* 12 (1964) 345. — *Azalea* (*non L. sensu* SALISB.) DESV. J. Bot. Appl. 1 (1813) 35, *p.p.* — *Anthodendron* REICHB. in Moessl. Handb. ed. sec. I (1827) XL, 308. — *Azalea subg. Pentanthera* (G. DON) K. KOCH, Dendrol. 2 (1872) 186. — *Rhododendron subg. Anthodendron* (REICHB.) ENDL. *ex WILS. & REHD.* Monogr. Azaleas (1921) 115.

Plants entirely elepidote. *Leaves* deciduous. *Flowers* (several to many) from a strictly floral terminal bud; leafy shoots from lateral buds below, *i.e.* from the axils of the leaves of the past season.

Distr. N. America, Europe, Asia.

1. Section *Pentanthera*

G. DON, Gen. Syst. 3 (1834) 846; WILS. & REHD. Monogr. Azaleas (1921) 95, 124; SLEUM. *Blumea* 12 (1964) 346. — *Rhododendron sect. Anthodendron* (REICHB.) ENDL. Gen. (1839) 759. *Stamens* 5. *Corolla* funnel-shaped.

Distr. As above; in *Malesia* but one cultivated species.

280. *Rhododendron molle* (BL.) G. DON, Gen. Syst. 3 (1834) 846, *non* S. & Z. 1846; HASSK. Cat. Hort. Bog. (1844) 161; WILSON in Wils. & Rehd. Monogr. Azaleas (1921) 95; REHD. Spec. Rhodod. ed. 2 (1947) 64. — *Azalea mollis* BL. Cat. (1823) 44; Bijdr. (1826) 853; ZOLL. Syst. Verz. 2 (1854) 137. — *Azalea sinensis* LODD. Bot. Cab. 9 (1824) t. 885. — *R. sinense* (LODD.) SWEET, Br. Fl. Gard. I, 3 (1829) *sub t.* 290.

Sparingly branched shrub, 0.3–1.2 m, with rather stout erect branches, villous when young and often setose. *Leaves* deciduous, oblong to oblong-lanceolate, apex obtuse and mucronulate, base cuneate, ciliate and often revolute at margin, soft-pubescent above at least when young, beneath with a greyish white dense matted pubescence, which becomes glaucous or sometimes confined to the veins in later stages, 6–15 by 1.8–5.5 cm; petiole pubescent, 2–6 mm. Floral buds ovoid, with 9–12 broad-ovate mucronate or acuminate

perulae, densely grey-pubescent or velutinous, sometimes glabrescent. *Inflorescence* many-flowered, flowers expanding before the leaves. Pedicels puberulous, with only few or without bristles, 1.2–2.5 cm. *Calyx* lobes small, obtuse, pubescent, ciliate, with few bristles, 1–2 mm. *Corolla* wide-funnel-shaped, 4–5 cm long, 4.5–6 cm across, golden-yellow with a large blotch of greenish dots, tomentulose outside, lobes oval or ovate to broad-oblong, longer than the rather wide tube. *Stamens* 5, as long as the corolla; filaments hairy below the middle; anthers 2 mm. *Disk* hairy. *Ovary* densely white-hairy; style glabrous, exceeding the stamens. *Capsule* cylindrical-oblong, 1.8–2.5 cm, finely pubescent and sparingly setose.

Distr. Native in Eastern and Central China, cultivated occasionally in *Malesia* (Java, introduced before 1823).

Note. *Azalea mollis* BL. is based on a plant cultivated in Java.

4. Subgenus *Tsutsutsi*

(G. DON) POJARKOVA, Flora U.R.S.S. 18 (1952) 55; SLEUM. *Blumea* 12 (1964) 347. — *Azalea subg. Tsutsutsi* (G. DON, *pro sect.*) K. KOCH, Dendrol. 2 (1872) 171. — *Rhododendron subg.*

Anthodendron (non (REICHB.) ENDL. ex WILS. & REHD.) SLEUM. *Blumea* Suppl. 4 (1958) 49; Reinwardtia 5 (1960) 228. — Fig. 50—51.

Plants epiphytic. *Leaves* persistent or deciduous in the wild state in Asia, persistent in Malesia including the cultivated species introduced from Asia. *Flowers* (1–3, rarely more), from the terminal bud; leafy shoots from the axil of lower perulae of the same bud.

Distr. E. Asia, in *Malesia*: Philippines (Luzon). Fig. 46.

1. Section Tsutsutsi

SWEET, Br. Fl. Gard. I, 5 (1831) sub t. 117 ('*Tsutsusi*'); G. DON, Gen. Syst. 3 (1834) 845, p.p.; PLANCH. Fl. Serres 9 (1854) 76 ('*Tsutsia*'); MIQ. Fl. Ind. Bat. 2 (1859) 1059 ('*Tsutsugi*'); WILS. & REHD. Monogr. Azaleas (1921) 22; SLEUM. *Blumea* Suppl. 4 (1958) 49; *ibid.* 12 (1964) 347. — *Rhododendron* sect. *Anthodendron* SLEUM. Reinwardtia 5 (1960) 228. — Fig. 50—51.

Branchlets with appressed, flattened, mostly brown hairs, or with flattened and normal (not-flattened) hairs. *Leaves* ± scattered on the branchlets, ± strigose.

Distr. E. Asia, in *Malesia*: Philippines (Luzon, 1 sp.). Fig. 46.

KEY TO THE SPECIES

1. Perulae viscid, especially on the inner surface.
 2. Shoots clothed with appressed, flattened, grey-brown strigose hairs which gradually disappear with age. Stamens 10 281. *R. scabrum*
 2. Shoots densely clothed with spreading, grey to grey-brown soft (whether or not glandular) hairs, mixed with few to numerous, loosely appressed or spreading flattened bristle-like hairs.
 3. Stamens normally 10 (sometimes 8). Ovary densely setose, glandless 282. *R. mucronatum*
 3. Stamens normally 5 (6–10 in some garden forms). Ovary glandular-setose.
 283. *R. linearifolium* var. *macrosepalum*
1. Perulae not viscid.
 4. Stamens 5. Leaves crenulate-serrate 284. *R. indicum*
 4. Stamens (6–)8–10. Leaves entire or nearly so.
 5. Style hairy in its lower 1/4 to 1/3 285. *R. subsessile*
 5. Style entirely glabrous 286. *R. simsii*

281. *Rhododendron scabrum* G. DON, Gen. Syst. 3 (1834) 846; WILS. in Wils. & Rehd. Monogr. Azaleas (1921) 59; REHD. Spec. Rhodod. ed. 2 (1947) 102.

Loosely branched shrub, 1–2 m tall, with rather stout branches; shoots clothed in their first year with appressed flattened grey-brown strigose hairs, glabrescent. *Leaves* dimorphous, persistent, coriaceous; spring leaves elliptic-lanceolate to lanceolate, apex acute to obtuse and mucronate, base broad-cuneate, ciliate and subcrenulate at the ± revolute margin, 3–9.5 by 1.8–3.5 cm, at first with scattered, appressed, straight grey-brown hairs, at maturity glabrescent nerves excepted, nerves impressed above, raised beneath; summer leaves similar, but oblanceolate, smaller and more coriaceous; petiole stout, flattened, clothed with appressed grey-brown hairs, 4–8 mm. Floral winter buds ovoid, acute, outer perulae clothed with strigose rufous hairs, inner ones cinnamon-brown, ciliate, viscid especially on the inner surface, persisting at the base of the pedicels. *Inflorescence* 2–6-flowered. Pedicels densely fulvous-strigose, 8–12 mm. *Calyx* lobes ample, green, normally oval-rounded, c. 6 by 5 mm, occasionally all or some lanceolate up to 12 mm long and acuminate, always glandular, ciliate and covered with appressed straight grey hairs. *Corolla* broad-funnel-shaped, c. 6 cm across and as long, rose-

red to vivid scarlet or rich magenta, with dark dots on the upper 3 lobes, lobed to nearly the middle. *Stamens* 10, shorter than the corolla; filaments short-hairy below the middle. *Ovary* glandular and strigose; style glabrous, longer than the stamens. *Capsule* erect, ovoid, 1–1.2 cm long, sparsely hairy, subtended by the persistent calyx lobes.

Distr. Native in the Riu Kiu Is., in *Malesia* cultivated occasionally in Java.

282. *Rhododendron mucronatum* (BL.) G. DON, Gen. Syst. 3 (1834) 846; WILS. in Wils. & Rehd. Monogr. Azaleas (1921) 68; REHD. Spec. Rhodod. ed. 2 (1947) 92; SLEUM. *Blumea* Suppl. 4 (1958) 49.—*Azalea rosmarinifolia* BURM. f. Fl. Ind. (1768) 43, t. 3, f. 3; BL. Bijdr. (1826) 853, non *R. rosmarinifolia* VIDAL, 1886.—*Azalea mucronata* BL. Cat. (1823) 44; Bijdr. (1826) 853.—*Azalea ledifolia* HOOK. Bot. Mag. (1829) t. 2901.—*R. burmanni* G. DON, Gen. Syst. 3 (1834) 846; HASSK. Cat. Hort. Bog. (1844) 161; MORITZI, Syst. Verz. (1846) 42; ZOLL. Syst. Verz. 2 (1854) 137.—*R. ledifolium* (HOOK.) G. DON, Gen. Syst. 3 (1834) 846; HASSK. Cat. Hort. Bog. (1844) 162; MIQ. Ann. Mus. Bot. Lugd.-Bat. 1 (1863) 34; MERR. Philip. J. Sc. 19 (1921) 369; AMSH. in Back. Bekn. Fl. Java (em. ed.) 7 (1948) fam. 162, p. 2; STEEN. Fl. Sch. Indon. (1949) 309.

Much branched, wide-spreading shrub, 0.9–1.8 (–2.5–5) m; shoots in their first year, as well as petioles and pedicels densely clothed 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. *Leaves* partly persistent, dimorphous, spring leaves deciduous, membranous, lanceolate to ovate-lanceolate, apex acute or obtuse and mucronulate, base cuneate, on both surfaces with appressed straight and soft grey to rufous hairs, 3–4.5 by 1–2.5 cm; summer leaves persistent, chartaceous, oblong-lanceolate to oblong-oblanccolate, apex obtuse to rounded and mucronate, base cuneate, recurved at margin, pubescent like the spring leaves and often glandular, 1–3.5 by 0.6–1.2 cm; petiole 2–6 mm. Floral winter buds ovoid, outer perulae with strigose hairs along the middle line, inner ones viscid. *Inflorescence* 1–3-flowered. Pedicels 5–20 mm. *Calyx* lobes lanceolate, often slightly erose or serrate, glandular-pubescent, c. 12 mm. *Corolla* wide-funnel-shaped, 3.5–5 cm long and wide, fragrant, pure white or white with a yellowish blotch on the upper corolla lobes in the cultivated forms (red or rose coloured in the native form), occasionally a few flowers rose or striped with rose on an odd branch also in cultivated plants, with oval or narrow-oval lobes. *Stamens* 10 (sometimes 8), \pm as long as the corolla; filaments glabrous or subglabrous. *Ovary* densely setose, glandless; style glabrous, slightly exceeding the corolla. *Capsule* conic-ovoid, with appressed setose hairs, c. 1 cm long, shorter than the persistent calyx lobes.

Distr. A native of Japan (Shikoku) in its form with rose to purple flowers (*R. ripense* MAKINO), the white flowered form much cultivated in Japan and China, early introduced to Java and still cultivated there in various forms, up to 1400 m. *Fl.* Jan.–Dec.

283. *Rhododendron linearifolium* S. & Z. var. *macrosepalum* (MAXIM.) MAKINO, Bot. Mag. Tokyo 27 (1913) 108; WILS. in Wils. & Rehd. Monogr. Azaleas (1921) 74; REHD. Spec. Rhodod. ed. 2 (1947) 87.—*R. macrosepalum* MAXIM. Gartenflora 19 (1870) 258, t. 662; Mém Ac. Imp. Sc. St. Pétersb. VII, 16, n. 9 (1870) 31.

Loosely branched and usually low shrub, 0.3–1(–3) m; shoots and pedicels densely clothed with greyish, partly gland-tipped hairs, and a few spreading flattened caducous hairs. *Leaves* mostly deciduous, dimorphous, spring leaves membranous, partly scattered and partly clustered, ovate-elliptic or ovate to lanceolate, apex acute or short-acuminate, mucronate, base cuneate, sparingly glandular-hairy above, slightly rugulose and hispid, beneath with soft spreading grey to grey-brown glandular hairs, 2.5–6 by 0.6–2.5 cm; summer leaves oblanceolate to oblong-oblanccolate, obtuse and mucronulate, of firmer texture; petiole densely hairy, 2–6 mm. Floral winter buds ovoid; outer perulae c. 10, densely covered with strigose yellow-brown hairs, inner ones viscid. *Inflorescence* 2–10-flowered. Pedicels 1.2–3(–4)

cm. *Calyx* lobes lanceolate, 1.2–3 cm, sometimes longer than the corolla, glandular-pubescent, *Corolla* broad-funnel-shaped, 3.6–5 cm across and as long, rose-pink to red-purple, fragrant, with dark purple dots on the upper lobe, lobes oval to broad-oblong. *Stamens* normally 5 (6–10 in some garden forms), slightly shorter than the corolla; filaments pubescent below the middle. *Ovary* glandular-setose; style glabrous, longer or as long as the corolla. *Capsule* narrow-ovoid, 8–12 mm, glandular-pubescent, subtended by the persistent reflexed calyx lobes.

Distr. Native of Japan, occasionally cultivated in Java at c. 1000 m.

284. *Rhododendron indicum* (L.) SWEET, Br. Fl. Gard. II, 2 (1833) sub t. 128; HASSK. Cat. Hort. Bog. (1844) 162, incl. var. *A-E*, l.c.; ZOLL. Syst. Verz. 2 (1854) 137; MIQ. Fl. Ind. Bat. 2 (1859) 1059; WILS. in Wils. & Rehd. Monogr. Azaleas (1921) 22; KOORD. Exk. Fl. Java 3 (1923) 7; REHD. Spec. Rhodod. ed. 2 (1947) 84.—*Azalea indica* LINNÉ, Sp. Pl. (1753) 150; BL. Cat. (1823) 44; Bijdr. (1826) 852, incl. var. *spathulata* BL. l.c., var. *angustifolia* BL. l.c. 853 et var. *floribunda* BL. l.c. 853.—*R. breynii* PLANCH. Rev. Hort. sér. 4, 3 (1854) 46; Fl. Serres 9 (1854) 77 (based on a plant cultivated in Java).

Densely branched shrub, up to 2 m, usually low, sometimes prostrate. Branches slender, but rigid, with flattened, appressed, chestnut-brown hairs. *Leaves* crowded, persistent, narrow-lanceolate to oblanceolate, acute at the ends, with scattered, closely appressed red-brown hairs on both faces, usually remotely crenulate-serrulate and ciliate, 1.8–3.6 by 0.3–1 cm; petiole densely clothed with appressed chestnut-brown hairs, 1–4 mm. Floral winter buds ovoid, pointed, not viscid; outer perulae ciliate but otherwise glabrous or with a tuft of brown hairs at the apex. *Inflorescence* 1–2-flowered. Pedicels with strigose brown hairs, hidden by the perulae, 3–5 mm. *Calyx* lobes oval or suborbicular, obtuse, densely strigose and ciliate, 2–3 mm. *Corolla* broad-funnel-shaped, 5–6 cm long and wide, bright red to scarlet, sometimes rose-red or salmon, with oval rounded lobes. *Stamens* 5, \pm as long as the corolla; filaments glabrous. *Ovary* densely clothed with appressed shining brown hairs; style glabrous, exceeding the stamens. *Capsule* oblong-ovoid, c. 6 mm, densely strigose.

Distr. Native of S. Japan, cultivated occasionally in Java, mostly in hybrids. The *Azalea indica* of the trade is not this species, but *R. simsii* (and related forms).

Note. *R. indicum* (L.) SWEET f. *variegatum* (BL.) DC. Prod. 7 (1839) 726; WILS. in Wils. & Rehd. Monogr. Azaleas (1921) 26. —*Azalea indica* L. var. *variegata* BL. Bijdr. (1826) 852, is a form with white-and-red-striped and spotted flowers, cultivated in Java in BLUME's time.

285. *Rhododendron subsessile* RENDLE, J. Bot. 34 (1896) 357; MERR. Publ. Gov. Lab. Philip. n. 29 (1905) 40; Philip. J. Sc. 3 (1908) Bot. 379;

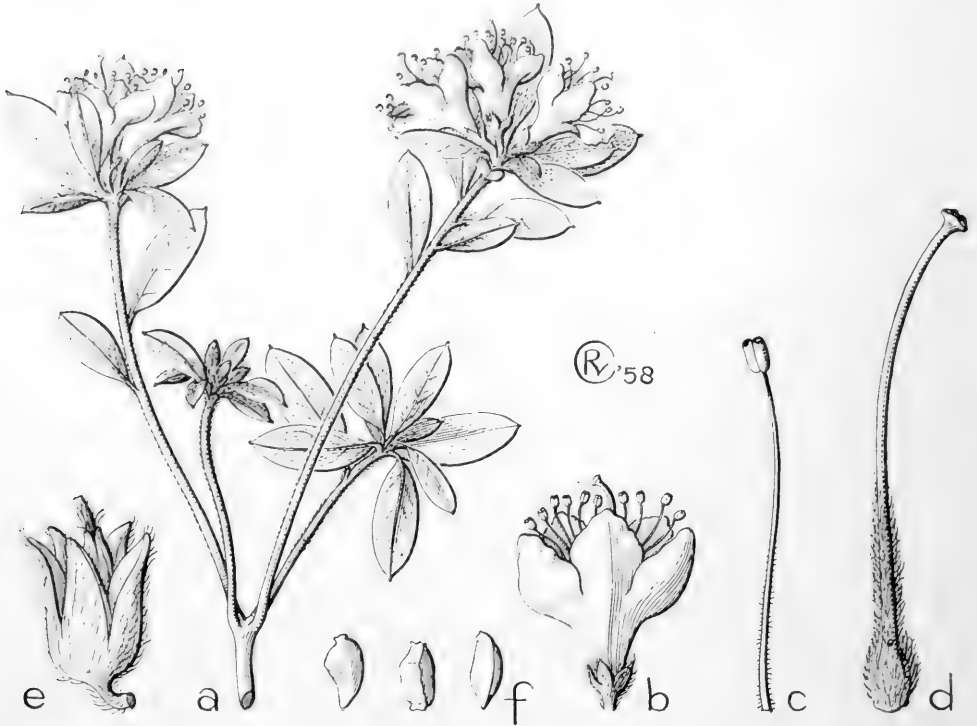


Fig. 50. *Rhododendron subsessile* RENDLE. a. Habit, $\times \frac{2}{3}$, b. flower, $\times 1$, c. stamen, $\times \frac{8}{3}$, d. ovary and style, $\times \frac{8}{3}$, e. fruit, $\times 2$, f. seed, $\times 10$ (a-d BARNES 922, e-f WILLIAMS 2001).

ibid. 5 (1910) Bot. 371; MILLAIS, *Rhodod.* (1917) 249; WILS. in Wils. & Rehd. *Monogr. Azaleas* (1921) 51; MERR. *En. Philip.* 3 (1923) 245; MILLAIS, *Rhodod. ser. 2* (1924) 244; COPEL. *f. Philip. J. Sc.* 40 (1929) 174, t. 16, f. 7-10, *incl. var. baucoense* COPEL. *f. l.c.* 175; REHD. *Spec. Rhodod. ed. 2* (1947) 106; SLEUM. *Reinwardtia* 5 (1960) 228; *Blumea* 12 (1963) 114; *Jahrb. Rhodod. Ges. Bremen* (1963) f. 2.—? *R. rubropilosum* HAYATA, *J. Coll. Sc. Imp. Un. Tokyo* 30, art. 1 (1911) 173; WILS. in Wils. & Rehd. *Monogr. Azaleas* (1921) 52; *J. Arn. Arb.* 6 (1925) 182; KANEH. *Formos. Trees* (1936) 547, f. 507; REHD. *Spec. Rhodod. ed. 2* (1947) 99.—? *R. caryophyllum* HAYATA, *l.c. Pl. Formos.* 3 (1913) 130, t. 23.—*Azalea subsessilis* (RENDLE) COPEL. *f. Am. Midl. Nat.* 30 (1943) 597, *in text.*—Fig. 50-51.

Much-branched shrub, 1-3(-6) m; shoots densely clothed with appressed, upwardly directed, flattened, bristle-like or strigose chestnut-brown hairs, which in the third season are wearing off. *Leaves* ascending, persistent, scattered along the upper shoots and \pm crowded towards their ends, elliptic to lanceolate, short-acuminate, acute and prominently mucronate, base \pm broad-attenuate, darker above, firmly chartaceous to subcoriaceous, at first hairy on both faces, at maturity laxly

covered with whitish hairs above, underneath densely clad with rufous, later greyish silky long bristle-like or strigose, appressed, \pm reddish hairs and thickened at the base, margin slightly to strongly recurved, (1-)2-4(-5) by (0.3-)0.5-1.2 (-1.4-1.8) cm, midrib impressed above, prominent beneath, nerves rather indistinct; petiole strigose-hairy, 3-6(-8) mm. Floral buds ovoid; perulæ broad-ovate, abruptly attenuate or mucronate at the apex, up to 9 by 6 mm, outer ones with appressed brown hairs along the midline, ciliate, otherwise glabrous, inner ones appressed strigose toward the apex, not viscid, long persistent. *Inflorescence* (1-)2-4(6-)-flowered. Pedicels stoutish, with appressed rusty hairs, 2-4 mm. *Calyx* lobes broadly oblong or ovate to suborbicular, obtuse, 2-3 mm, densely clad with upright flattened rufescent hairs outside, glabrous inside. *Corolla* mostly light red or lilac to purple-red (magenta), sometimes pink, rarely white, apparently never spotted in the Philippine specimens, campanulate-funnel-shaped, gradually dilated from the base, glabrous, 1.8-2.2 cm long, c. 2.5 mm \varnothing , tube 8-9 mm, lobes 1.2-1.4 by 8-9 mm, ovate-oblong, shortly spreading. *Stamens* (6-)8(-10), slightly longer than the corolla; filaments linear, \pm sparingly whitish papillose hairy towards the base.



Fig. 51. *Rhododendron subsessile* RENDLE. Mt Data, 2000 m, Luzon, Philippines (VAN ROYEN & SLEUMER 5613) (SLEUMER, 1961).

Ovary subovoid, c. 3 mm, densely covered with flattened rufous or rusty, shiny, upwards directed long hairs; style c. 2 cm, exerted, clad with the same hairs as occur on the ovary in its lower $\frac{1}{4}$ to $\frac{1}{3}$, glabrous otherwise; stigma small, capitate. Capsule conic-ovoid, densely clothed with appressed, rufous hairs, 6–8(–10) by 4–5 mm; pedicel to 9 mm. Seeds very shortly or not winged, 1 mm.

Distr. Formosa, in *Malesia*: Philippines (N. Luzon: Mountain and Abra Prov.).

Ecol. In Luzon rather common in the pine

region and the pine-oak association below the mossy forest, rare in the mossy forest (Mt Pulog), again on exposed grass-covered slopes above the moss forest, often in clumps or masses, 1300–2400 m (in Formosa only on open slopes, 2135–3300 m). Fl. fr. Jan.–Dec.

Vern. *Ausip*, *ayusip*, *buga-buga*, *bugo-gugua*, *salangon*, Ig.

Note. This is the most southern species of the '*Azalea*' group. Its var. *baucoense* COPEL. f. is a microform, connected by intergrades with the larger typical form. As to Formosan *R. rubropilosum* HAYATA see SLEUM. Reinwardtia 5 (1960) 229.

286. *Rhododendron simsii* PLANCH. Fl. Serres 9 (1854) 78; WILS. in Wils. & Rehd. Monogr. Azaleas (1921) 45; REHD. Spec. Rhodod. ed. 2 (1947) 105; SLEUM. Blumea Suppl. 4 (1958) 51.—*Azalea indica* (non L.) SIMS, Bot. Mag. (1812) t. 1480.

A much-branched shrub, usually up to 1.5 m, rarely attaining 2.5 m; shoots densely clothed with appressed, flattened, shining brown hairs. Leaves persistent or partly so, and dimorphous in the wild plant, always persistent in specimens cultivated in the tropics and less distinctly dimorphous there; spring-leaves (or early leaves) chartaceous, elliptic, sometimes ovate or oblong-elliptic, 1.8–5 by 0.8–1.8 cm, apex acute or somewhat obtuse, base \pm cuneate, sparingly strigose above, more densely so beneath at least on midrib and veins; summer-leaves (or later leaves) obovate to oblanceolate, 0.8–3.6 by 0.4–1.2 cm, more coriaceous; petiole densely strigose, 2–6 mm. Floral winter buds ovoid, not viscid, c. 4 cm long or less, with several perulae, these densely strigose along the median and ciliate. Inflorescences 2–6-flowered. Pedicels densely strigose, 5–10 mm. Calyx lobes ovate to lanceolate, strigose and ciliate, 2–6 mm persistent. Corolla broad-funnel-shaped, 3.5–5 cm long and wide, rose-red to bright or dark red, spotted, lobes broad-ovate. Stamens (8–9)–10, \pm as long as the corolla; filaments pubescent below the middle; anthers purple. Ovary strigose; style exceeding the corolla, glabrous. Capsule ovoid, c. 8 mm long, setose.

Distr. Native in the temperate parts of Thailand, Indochina, China, and S. Formosa, in *Malesia* occasionally cultivated under the commercial name '*Indian Azalea*'.

5. Subgenus *Azaleastrum*

PLANCH. Fl. Serres 9 (1854) 75 ('*sous-type*'); Rev. Hort. sér. 4, 3 (1854) 43 ('*sous-type*'); ex K. KOCH, Dendrol. 2 (1872) 159, *descr. subg.*; DRUDE in E. & P. Pfl. Fam. 4, 1 (1889) 37; SLEUM. Bot. Jahrb. 74 (1949) 528, 552; Blumea Suppl. 4 (1958) 56; Reinwardtia 5 (1960) 230.—*Azaleastrum* (PLANCH.) RYDB. Mem. N.Y. Bot. Gard. 1 (1900) 297.

Floral buds, respectively inflorescences, though seemingly terminal, in reality lateral, mostly several together, starting from the axil(s) of the uppermost leaf (or leaves).

Distr. N. America, E. Asia, *Malesia* (Malay Peninsula).

1. Section *Choniastrum*

FRANCH. Bull. Soc. Bot. Fr. 33 (1886) 229; SLEUM. Bot. Jahrb. 74 (1949) 528, 552; Blumea Suppl. 4 (1958) 56; Reinwardtia 5 (1960) 230.— Fig. 53.

Calyx small or obscure. *Stamens* 10. *Seeds* shortly and irregularly winged at both ends. Distr. E. Asia, *Malesia* (Malay Peninsula). Fig. 52.

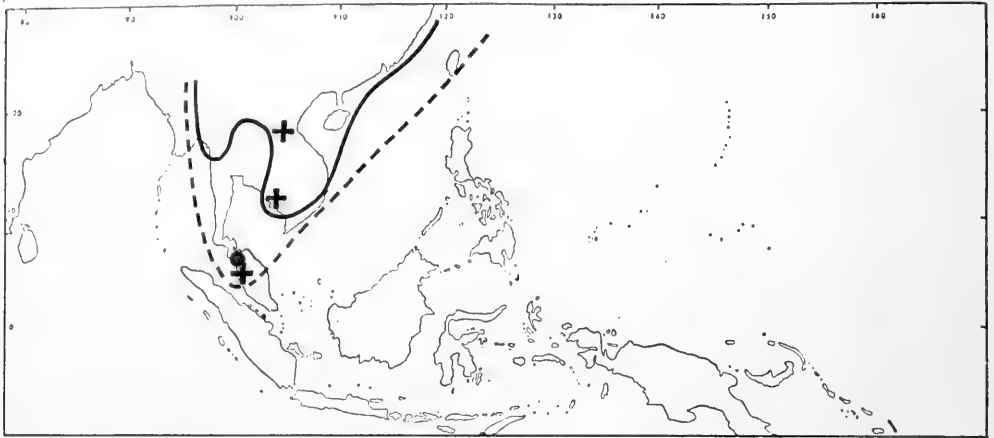


Fig. 52. Distribution of *Rhododendron* sect. *Choniastrum*: ---- southern limit of the section; — southern limit and ● localities of *Rhododendron moulmainense* HOOK. respectively; + localities of *Rhododendron klossii* RIDL.

KEU TO THE SPECIES

- 1. Ovary glabrous 287. *R. moulmainense*
- 1. Ovary laxly to subdensely hairy 288. *R. klossii*

287. *Rhododendron moulmainense* HOOK. Bot. Mag. (1856) t. 4904; KURZ, J. As. Soc. Beng. 46, ii (1877) 216; Fl. 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, Fl. I.-C. 3 (1930) 734; HUTCH. Spec. Rhodod. (1930) 620, *excl. syn. R. klossii*; in Craib, Fl. Siam. En. 2 (1938) 318; SLEUM. Blumea Suppl. 4 (1958) 58; Reinwardtia 5 (1960) 230.—*R. westlandii* HEMSL. J. Linn. Soc. Bot. 26 (1889) 31; MILLAIS, Rhodod. (1917) 261; HUTCH. Spec. Rhodod. (1930) 626.—*R. oxyphyllum* FRANCH. J. de Bot. 12 (1898) 264; MILLAIS, Rhodod. (1917) 222; HUTCH. Spec. Rhodod. (1930) 621.—*Azalea moulmainensis* (HOOK.) O. KTZE, Rev. Gen. Pl. 2 (1891) 387.—*R. siamense* DIELS in Fedde, Rep. 4 (1907) 289.—*R. leucobotrys* RIDL. J. Fed. Mal. St. Mus. 4 (1909) 43; *ibid.* 7 (1916) 46; Fl. Mal. Pen. 2 (1923) 218; HUTCH. Spec. Rhodod. (1930) 619.—*R. stenaulum* BALF. f. & FORR. Not. R. Bot. Gard. Edinb. 10 (1917) 157; HUTCH. Spec. Rhodod. (1930) 624, *excl. syn. R. mackenzianum* FORR.—Fig. 53.

Terrestrial shrub, 3–5 m, or small tree, with straight, erect branches. Branchlets glabrous, terete; internodes 2–8 cm. *Leaves* in ± terminal, 2–4-merous pseudowhorls, elliptic or mostly elliptic-lanceolate, rarely obovate-elliptic or oblong-oblancheolate, apex acute, base narrowed, ± coriaceous, glabrous, 6–12(–15) by (2.5–)3–5(–6)

cm, midrib impressed above, much raised beneath, nerves 9–12 pairs, straight, spreading and ± parallel, initially slightly prominent or somewhat impressed, more conspicuously inarched in mature leaves above, prominent beneath, veins slightly or not visible; petiole often red in fresh specimens, somewhat winged, (6–)8–12(–15) mm. *Inflorescences* 2–4, each in the axil of one of the upper leaves; inflorescences 2–4-flowered. Floral buds ovoid-oblong, subacute, c. 2.5 by 0.8 cm. Outer perulae small and ovate, obtuse, inner ones gradually larger and ovate to ovate-oblong or obovate-oblong, all glabrous or rather faintly sericeous outside especially towards the tip, densely white-ciliate. Bracteoles linear, glabrous, up to 2.5 by 0.1 cm. Pedicels rather slender, glabrous, (1–)1.5–2.5 cm. *Calyx* very small, margin undulately lobed, glabrous. *Corolla* funnel-shaped, deeply 5-lobed, 3.5–4 cm long in all, tube 1–1.5 cm, base 5-saccate, 3–4 mm ø, lobes oblong, subacute, ± spreading, 2–2.5 by 0.5–0.9 cm, glabrous, mostly white with a yellow spot inside on the upper lobe, also rose or of a clear orchid-purple with a ± orange spot, rarely reddish, fragrant. *Stamens* normally 10 (sometimes a few more), ± as long as the corolla; filaments linear, hairy except the very base and upper half, occasionally entirely glabrous; anthers short-oblong, 2.5 by 1 mm. *Disk* glabrous. *Ovary* glabrous, cylindric, slightly 5-ribbed, mostly continuous (rarely abrupt) with the glabrous



Fig. 53. *Rhododendron moulmainense* HOOK. a. Habit, $\times \frac{2}{3}$, b. ovary, $\times 2$, c. stamen, $\times 2$ (a-c POILANE 28769).

style, c. 3 cm long; stigma capitate. Capsule ovoid-fusiform, rather deeply 5-grooved, 2-2.5 by c. 0.6 cm, beaked by the persistent rest of the style even after the capsule is split into 5 rather thin, not twisted valves. Seeds flat, broad-oblong, very shortly and irregularly winged (not tailed) on both ends, c. 2 mm.

Distr. Burma, S. China, Indochina, Thailand, in *Malesia*: Malay Peninsula (Kedah Peak: Mt Jerai), 855-1220 m. Fl. May-Dec., fr. May.

288. *Rhododendron klossii* RIDL. J. Fed. Mal. St. Mus. 4 (1909) 43; Fl. Mal. Pen. 2 (1923) 218;

SLEUM. Blumea Suppl. 4 (1958) 59; Reinwardtia 5 (1960) 231.—*R. laoticum* DOP, Fl. I.-C. 3 (1930) 735.

Shrub or treelet, occasionally a tall tree up to 15 m high. Branchlets glabrous, terete; internodes 2.5-6 cm. Leaves mostly lanceolate to oblong-lanceolate, rarely lanceolate-elliptic, (6-)8-13 by (2-)2.5-6 cm, very similar to those of *R. moulmainense*. Inflorescences 3-6, seemingly terminal, each with 2 flowers, making an umbel of 6-12 flowers. Flower buds ovoid-oblong, subacute, 2-2.5 by c. 0.6 cm. Perulae and bracteoles as in *R. moulmainense*. Pedicels rather slender, glabrous

or initially very finely pubescent, c. 2.5 cm. *Calyx* small, obscurely 5-dentate, an occasional lobe accrescent to 3 mm. *Corolla* funnel-shaped, white, fragrant, c. 3.7 cm long in all, tube cylindrical, c. 1.2–1.5 cm by 3–4 mm, lobes oblong, obtuse, 2–2.5 by 0.5–0.8 cm. *Stamens* \pm as long as the corolla; filaments slender, pubescent in the middle, glabrous at the base and in the upper half; anthers oblong, 2.5 by 1 mm. *Disk* glabrous. *Ovary* cylindrical, 5-ribbed, laxly or mostly subdensely clothed with simple subappressed hairs; style continuous with the ovary, slender, glabrous,

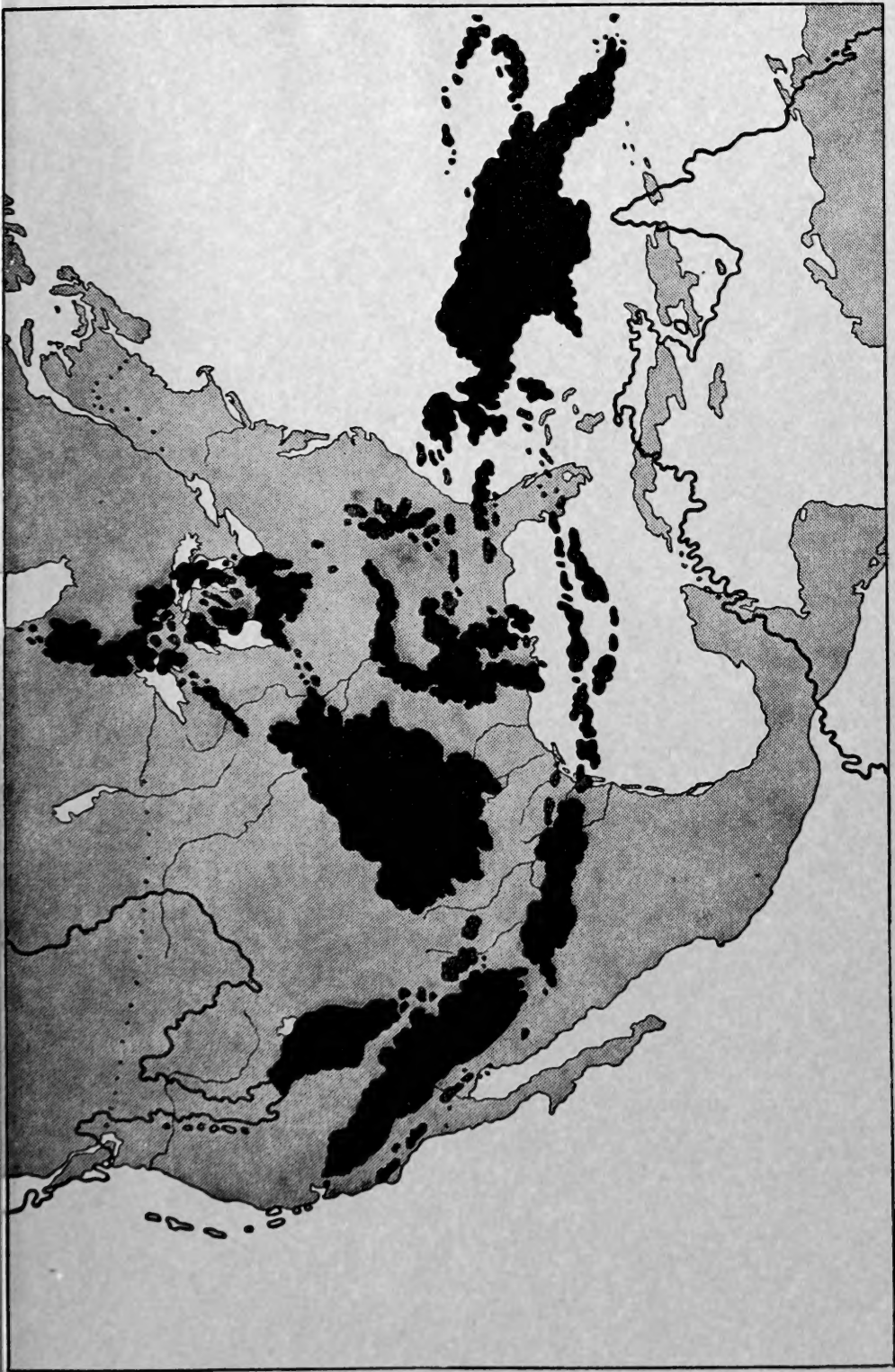
somewhat exserted. *Capsule* apparently similar to that of *R. moumainense*.

Distr. Indochina (Central Laos and SW. Cambodge), in *Malesia*: Malay Peninsula (Main Range on the Perak-Pahang border, from the Cameron Highlands to the Frazer Hill region and in SW. Pahang). Fig. 52.

Ecol. Rocky ridges, 1600–1800 m. *Fl.* April, June, Nov., *fr.* June.

Note. Very close to *R. moumainense*, different from it by the hairy ovary.

3 5185 00202 4964



FLORA MALESIANA

SCIENTIFIC COMMUNICATIONS

concerning Flora Malesiana should be addressed to the General Editor,
Dr C. G. G. J. VAN STEENIS, Rijksherbarium, Leyden, Holland

* *

SUBSCRIPTIONS

should exclusively be directed to N.V. DE ERVEN P. NOORDHOFF,
P.O. Box 39, Groningen, Holland

- Volume 1. *Cyclopaedia of collectors & collections*. 1950. pp. clii. + 639. Dfl. 55.50, £ 5.10.-, US\$ 14.65.
Volume 2. *Malaysian vegetation*. In preparation.
Volume 3. *Malaysian plant geography*. In preparation.
Volume 4. *General chapters and revisions*. 1948-1954. pp. ccix + 631. Dfl. 69.-, £6.16.-, US\$ 18.15.
Volume 5. *Bibliography, specific delimitation, & revisions*. 1955-1958. pp. ccclxii + 596. Dfl. 92.-,
£ 9.1.-, US\$ 24.20.

For sale only, Not for exchange

INDEX TO REVISED FAMILIES

Aceraceae	4: 3, 592	Droseraceae	4: 377	Pentaphragmataceae	5: 121
Actinidiaceae s.str.	4: 37	Elatinaceae	4: 203	Philydraceae	4: 5
Aizoaceae	4: 267	Epacridaceae	6: 422	Phytolaccaceae	4: 229
Alismataceae	5: 317	Ericaceae	6: 469	Pittosporaceae	5: 345
Amaranthaceae	4: 69, 593	Erythroxylaceae	5: 543	Plumbaginaceae	4: 107
Ancistrocladaceae	4: 8	Ficoideaceae	4: 267	Podostemaceae	4: 65
Aponogetonaceae	4: 11	Flacourtiaceae	5: 1	Polemoniaceae	4: 195
Basellaceae	5: 300	Flagellariaceae	4: 245	Pontederiaceae	4: 255
Batidaceae	5: 414	Geraniaceae	6: 445	Primulaceae	6: 173
Betulaceae	5: 207	Gnetaceae	4: 336	Proteaceae	5: 147
Bixaceae s.str.	4: 239	Gonystylaceae	4: 349	Punicaceae	4: 226
Burmanniaceae	4: 13, 592	Goodeniaceae	5: 335	Restionaceae	5: 416
Burseraceae	5: 209	Haemodoraceae	5: 111	Rhizophoraceae	5: 429
Butomaceae	5: 118	Hamamelidaceae	5: 363	Salicaceae	5: 107
Callitrichaceae	4: 251	Hippocrateaceae	6: 389	Salvadoraceae	4: 225
Campanulaceae	6: 107	Hydrocaryaceae	4: 43	Sarcospermaceae	4: 32
Cannabaceae	4: 223	Hydrocharitaceae	5: 381	Saururaceae	4: 47
Capparidaceae	6: 61	Hydrophyllaceae	4: 207	Scyphostegiaceae	5: 297
Caprifoliaceae	4: 175, 598	Juglandaceae	6: 143	Simaroubaceae	6: 193
Celastraceae	6: 227, 389	Juncaceae	4: 210	Sonneratiaceae	4: 280, 513
Centrolepidaceae	5: 421	Juncaginaceae	4: 57	Sparganiaceae	4: 233
Ceratophyllaceae	4: 41	Loganiaceae	6: 293	Sphenocleaceae	4: 27
Chenopodiaceae	4: 99, 594	Malpighiaceae	5: 125	Stackhousiaceae	4: 35
Cochlospermaceae	4: 61	Martyniaceae	4: 216	Staphyleaceae	6: 49
Combretaceae	4: 533	Molluginaceae	4: 267	Stylidiaceae	4: 529
Connaraceae	5: 495	Moringaceae	4: 45	Styracaceae	4: 49
Convolvulaceae	4: 388, 599	Myoporaceae	4: 265	Thymelaeaceae	4: 349, 6: 1
Corynocarpaceae	4: 262	Myricaceae	4: 277	Trigoniaceae	4: 59
Crassulaceae	4: 197	Najadaceae	6: 157	Turneraceae	4: 235
Datisaceae	4: 382	Nyctaginaceae	6: 450	Typhaceae	4: 243
Dichapetalaceae	5: 305	Nyssaceae	4: 29	Umbelliferae	4: 113, 595
Dilleniaceae	4: 141	Papaveraceae	5: 114	Valerianaceae	4: 253
Dioscoreaceae	4: 293	Pedaliaceae	4: 216	Xyridaceae	4: 366, 598
Dipsacaceae	4: 290	Pentaphragmataceae	4: 517	Zygophyllaceae	4: 64

PRINTED IN THE NETHERLANDS BY

N.V. DIJKSTRA'S DRUKKERIJ V/H BOEKDRUKKERIJ GEBR. HOITSEMA - GRONINGEN