

# REINWARDTIA

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## REINWARDTIA

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### FLORAE MALESIANAE PRAECURSORES XIV

#### A REVISION OF THE GENUS DIPLYCOSIA (ERICACEAE)

by

H. SLEUMER \*

#### SUMMARY

In this revision of the nearly exclusively Malaysian genus *Diplycosia* Bl. 84 species and 12 varieties are distinguished, of which 17 new Malaysian species resp. 8 varieties and 2 extramalaysian species are described; 4 species have been reduced to varietal rank, 1 new name has been proposed. An index to specimens has been added.

#### INTRODUCTION

With the gradual progress of exploration of Malaysia many new species have been described in the genus *Diplycosia* Bl., but no general treatment has ever been undertaken. It seemed therefore necessary to revise the genus to reach a satisfactory basis for 'Flora Malesiana'.

Previous authors considered the genus to extend through Malaysia as far as the Eastern Himalaya and Burma. In the present revision it appears to be limited nearly completely to the proper Malaysian flora, with only three species (one of them endemic) in S. Siam and one endemic species in S. Annam. The bulk of the species is found in Borneo (especially on Mt Kinabalu); Sumatra, Celebes, and New Guinea show a less rich development.

Many species are based on a single collection (20 spp.) or have a very restricted area (c. 47 spp.).

In the course of this revision it has become evident, that *Diplycosia* cannot be further divided into sections, although some minor, apparently natural groups of species have been noticed. The division by Bentham & Hooker f., who distinguished two subgenera *Eudiplycosia* and *Gaultheriopsis*, based on the habit of three of the four species known in their time, is no longer tenable.

The key to the species offered here is undoubtedly artificial in many respects. I have avoided — as far as possible — to use the finer differ-

\* Flora Malesiana Foundation, Leyden.

ences in the structure of the stamens which are difficult to handle in *Diplycosia* and have preferred to work mainly with the indument characters of the stems, leaves and flowers. The variation in the indument-types (well recognizable only by use of a lens), is rather large in the genus, but the indument types themselves are surprisingly constant in the species, a phenomenon similarly found in other genera of Ericaceae. Descriptions are given only of the new species and of those which fall outside the area covered by the 'Flora Malesiana'.

My study has been based on herbarium specimens borrowed from the following institutions:

Arnold Arboretum (A)	Lae (LAE)
Bogor (BO)	Melbourne (MEL)
Calcutta (CAL)	New York (NY)
Edinburgh (E)	Manila (PNH)
Florence (FI)	Stockholm (S)
Gray Herbarium (GH)	Kuching (SAR)
Kepong (KEP)	Singapore (SING)
Leiden (L)	Utrecht (U)

The material preserved in  
British Museum (BM)  
Kew (K)

Paris (P) has been studied during a stay at London and Paris.

#### DIPLYCOSIA BL.

*Diplycosia* Blume, Bijdr. 857. 1826; DC, Prodr. 7: 591. 1839; Meisn., Gen. 247 (154). 1839; Dietr., Syn. 2: 1370, 1389. 1840; Reichb., Nom. 127. 1841; Klotzsch in Linnaea 24: 18. 1851; Miq., Fl. Ind. Bat. 2: 1054. 1859; Benth. & Hook, f., Gen. Pl. 2: 583. 1876, incl. subgen. *Eudiplycosia* et *Gaultheriopsis*; Becc, Malesia 1: 210. 1878; Dru. de in E. & P. Nat. PflFam. IV 1: 46. 1891; K. & G. in J. As. Soc. Bengi 74, ii: 70. 1906; Koord., Exk. Fl. Java 3: 7. 1912; J. J. S. in Koord. & Val., Bijdtf. Booms. Java 13: 126. 1914; Schltr. in Bot. Jahrb. 55: 162. 1918; Ridl., Fl. Mai. Pen. 2: 213. 1923; Copel. f. in Philip. J. Sc. 47: 63. 1932; Sleum. in Bot. Jahrb. 72: 207. 1942; Amshoff in Backer, Bekn. Fl. Java (em. ed.) 7b fam. 162: 5. 1948, non Clarke in Hook, f., Fl. Br. Ind. 3: 495. 1882.—*Dypleeosia* G. Don, Gen. Syst. 3: 788. 1834.—*Diplecosia* G. Don l.e. 756.—*Diplicosa* Bndl., Gen. 756, in syn. 1839.—*Diplocosia* Spach, Veg. phan. 9: 443, in syn. 1840.—*Amphiealyx* BL, Fl. Jav. praef. VII, in syn. 1828; Endl. Gen., 756, pro sect. *Gaultheriae*, descr. 1839; ditto, Ench. 370. 1841; BL, Fl. Jav. Icon. ined. t. 9. 1863-1883.

LECTOTYPE SPECIES: *D. heterophylla* Bl.

As to the choice of the type-species, the following may be stated. Copeland f. *I.c.* 65 says, that "*D. pilosa* which Blume listed first, is to be

regarded as the type". From this arbitrary point of view he concludes that the classification by Bentham & Hooker f. into 2 subgenera "is to be rejected, because *D. pilosa*, the type, was included in subgen. *Gaultheriopsis* instead of in *Eudiplycosia*".

I cannot agree with Copeland f. in selecting *D. pilosa* Bl. as the type-species of *Diplycosia*, which for the reason he gives, was chosen by him in a purely mechanical way, not adopted in the rules. In contrary we have to follow Bentham & Hooker f., who anticipated what we call 'typification', when they divided the genus into one 'typical' part, i.e. subgen. *Eudiplycosia*, with *D. latifolia* Bl. and *D. heterophylla* Bl., and into one apparently 'non-typical', gaultheria-like part, i.e. subgen. *Gaultheriopsis*, with *D. pilosa* Bl. and "other not yet described species". Reasonably the type-species of *Diplycosia* has to be chosen from subgen. *Eudiplycosia*. I therefore consider *D. heterophylla* Bl. as the type-species; *D. latifolia* Bl. is regarded in my work as a variety of it.

#### KEY TO THE SPECIES

1. Branchlets (young shoots) laxly to very densely setose or setulose, otherwise whether or not patent-puberulous.
2. Branchlets (young shoots) setose or setulose only, no other fine patent pubescence present.
3. Calyx outside densely and longish setose or setulose.
4. Pedicels stoutish. Bristles on the calyx all or for their greater number  $\pm$  appressed or obliquely suberect, 2.5—5 mm.
5. Leaves underneath set with  $\pm$  coarse, patent-upright bristles.
6. Nerves in 1—3 pairs, only slightly distinct, or nerves  $\pm$  inconspicuous.
7. Corolla  $\pm$  shortly setulose-hairy in its upper part.
  8. Leaves subcaudate-acuminate (coriaceous, shining above, strongly revolute at the margin), (3—)3.5—5(—7) cm in length. Borneo . . . . . 1. *D. rufa*
  8. Leaves short-acuminate, 1—3 cm in length.
  9. Leaves coriaceous, slightly revolute at the margin, shining above, (1—) 1.5—2 (rarely up to 3) by 0.7—1(—1.2) cm. Ovary laxly, hairy. Borneo.
    2. *D. chrysothrix*
  9. Leaves subcoriaceous, quite flat, dull above, 2—3 by (1.2—)1.3—1.9 cm. Ovary glabrous. Borneo. . . . . 3. *D. carrii*
7. Corolla entirely glabrous. Borneo. . . . . 4. *D. barbiger*
6. Nerves in (5—)6—7 pairs,  $\pm$  distinctly impressed above, prominent beneath.
10. Pedicels (3—)4—5(—7) mm. Calyx lobes 1.5—2 mm. Borneo.
  5. *D. saurauoides*
  10. Pedicels (0.8—)1—1.3 cm. Calyx lobes  $\pm$  3.5 mm. Borneo. 6. *D. clementium*
  5. Leaves underneath set with fine and manifestly appressed bristles. Borneo.
    7. *D. aurea*
4. Pedicels slender. Bristles on the calyx spreading in all directions, (1—)1.5—2.5

11. Bristles manifestly gland-tipped. Pedicels setose only, 5—8 mm. Filaments 3.5 mm. New Guinea . . . . . 8. *D. lilianae*
11. Bristles glandular. Pedicels besides the bristles rather densely covered with fine whitish hairs, 10—25 mm. Filaments 1.5—2 mm. Luzon . . . . . 9. *D. loheri*
3. Calyx outside rather laxly and shortly (0.5—1 mm), generally crisped- or manifestly appressed-setulose, or puberulous, or glabrous.
12. Style ± densely shortly patent-pubescent. Celebes . . . . . 10. *D. aperta*
12. Style completely glabrous.
13. Corolla ± densely pubescent, at least in the upper half. (Ovary densely hairy).
14. Branchlets densely setose. Corolla longish crisped-hairy in the upper half. Sumatra . . . . . 11. *D. pubivertex*
14. Branchlets very laxly setulose (finally glabrous at all). Corolla nearly entirely covered with straight ± appressed hairs. Sumatra . . . . . 12. *D. atjehensis*
13. Corolla glabrous or practically so (some glandular hairs occasionally present in 24. *D. tetramera*). (Ovary pubescent or glabrous).
15. Flower 1 or 2 per axil (occasionally also 3 in other axils of the same specimen).
16. Leaves surpassing 11 cm in length. Pedicels (2—)2.5—3.5(—4) cm. Borneo. . . . . 13. *D. pendndiflora*
16. Leaves not exceeding 11 cm in length. Pedicels rarely up to 2 cm.
17. Leaves lanceolate, up to 7 mm wide.
18. Leaves, very dense, covering partly each other, on very densely setose branchlets. Ovary hirsute. Borneo. . . . . 14. *D. ciliolata*
18. Leaves subdensely to laxly arranged, not covering each other partly, on laxly to subdensely setose branchlets. Ovary glabrous.
19. Pedicels slender, laxly setulose at anthesis. Corolla red. Celebes. . . . . 15. *D. filipes*
19. Pedicels rather stoutish, subdensely setulose at anthesis. Corolla white, with flesh tinge. New Guinea. . . . . 34a. *D. morobeensis* var. *morobeensis*
17. Leaves, if lanceolate, wider than 7 mm, or leaves of other form.
20. Pedicels laxly or mostly rather densely longish (1.5—2 mm) and ± patently setulose, always surpassing 3 mm in length. (Ovary glabrous).
21. Calyx glabrous dorsally or practically so.
22. Leaves (ovate, subcaudate) 5—7 by 2.5—3.5 cm. Siam. 16. *D. epiphyticum*
22. Leaves smaller, up to 2 cm wide.
23. Corolla subglobose-urceolate, 5 mm. Leaves narrow-oblong-elliptic, (2—)2.5—4(—5) by (0.8—)1—1.7(—2) cm. New Guinea . . . . . 17. *D. rufesce-yis*
23. Corolla subcampanulate, 4 mm. Leaves elliptic to ovate, (0.9—)1.2—1.7(—1.9) by (0.5—)0.6—1 cm. Celebes. . . . . 18. *D. triangularthera*
21. Calyx dorsally ± laxly clad with ± appressed and ± crisped stoutish bristle-like hairs.
24. Leaves ovate or elliptic-oblong, ± abruptly acuminate at the apex, the terminal gland small.
25. Corolla 6.5 mm. Celebes. . . . . 19. *D. kjellbevgii*
25. Corolla 1—1.1 cm. Celebes. . . . . 20. *D. hirsuta*
24. Leaves elliptic, ± rounded at the apex, the terminal gland thick and protruding beyond the leaf margin.
26. Corolla 6 by 2.5 mm. Bracteoles glabrous dorsally. New Guinea. . . . . 21. *D. rosea*
26. Corolla 9 by 5 mm. Bracteoles densely short-setulose dorsally. New Guinea. . . . . 22. *D. setosa*
20. Pedicels laxly to subdensely short- and crisped-, or, if the bristles are longer, appressed-setulose, or muriculate, or pubescent, or nearly glabrous, or pedicels up to 3 mm in length. (Ovary pubescent or glabrous).
27. Ovary sparsely to densely pubescent.
28. Leaves up to 2.8 cm in length, but for the greater part shorter in the same specimen.
29. Leaves ovate, (persistently rufous-setulose underneath). Borneo. . . . . 23a. *D. pseudorufescens* var. *pseudorufescens*
29. Leaves (broadly) elliptic to elliptic-oblong.
30. Style 5—6 mm. (Stamens 8). Sumatra . . . . . 24. *D. tetramera*
30. Style 2—3 mm.
31. Bristles on the branchlets ± patent, very dense. Malay Peninsula, Borneo. . . . . 23b. *D. pseudorufescens* var. *elliptifolia*
31. Bristles on the branchlets ± appressed, subdense to lax.
32. Stamens 8. Philippines (Negros). . . . . 25. *D. parvifolia*
32. Stamens 10. New Guinea (also Morotai?). . . . . 26. *D. soror*
28. Leaves, at least in part in the same specimen, exceeding 2.8 cm in length.
33. Leaves ovate, rufous-setulose beneath for a long time. Sumatra. . . . . 27. *D. glauciflora*
33. Leaves (broadly) elliptic or elliptic-oblong, caducously setulose, resp. only punctate underneath or entirely glabrous in later stages.
34. Corolla ovoid. New Guinea . . . . . 28. *D. ledermannii*
34. Corolla campanulate.
35. Leaves (broadly) elliptic, rarely oblong-elliptic, (4.5—)5—7.5(—10) by (2.5—)3—6(—6.5) cm. Sumatra. . . . . 29a. *D. braehyantha* var. *brachyantha*
35. Leaves obovate, 2—3.5 by 1—2 cm. Sumatra. . . . . 29b. *D. brachyantha* var. *parvula*
27. Ovary entirely glabrous. . . . .
36. Lateral nerves impressed above up to the apex of the leaves in dry specimens.
37. Leaves triplinerved.
38. Pedicels 2—3 (rarely up to 5) cm. Corolla 4 mm. Philippines (Mindanao). . . . . 30. *D. apoensis*
38. Pedicels 1.5—2 cm long. Corolla 9 mm. New Guinea. . . . . 31. *D. schultzei*
37. Leaves 5—7-plinerved. Celebes. . . . . 32. *D. undata*
36. Lateral nerves not or only obscurely impressed above in dry specimens.
39. Leaves lanceolate to oblong-elliptic.
40. Flowers sessile or nearly so. Indochina (Annam). . . . . 33. *D. annamensis*
40. Pedicels 3—6(—10) mm.
41. Leaves, at least initially, with scattered bristles underneath. Stamens 10. New Guinea . . . . . 34a. *D. morobeensis* var. *morobeensis*
41. Leaves laxly punctate underneath. Stamens 8. Philippines (Negros). . . . . 25. *D. parvifolia*

39. Leaves ovate to elliptic-ovate.  
 42. Corolla 7—8 mm. New Guinea. . . . . 35. *D. rupicola*  
 42. Corolla c. 4 mm. New Guinea. . . . . *Sib. D. morobeensis* var. *ovatifolia*
15. Flowers 3—6 (rarely up to 9) in all or at least in the lower axils, the uppermost axils sometimes only with 2 flowers, or very rarely 1 flower in the same specimen.
43. Leaves narrow-lanceolate, 3—6 mm wide. Borneo. . . . . 36. *D. kalmifolia*  
 43. Leaves various in form, wider than 7 mm.  
 44. Corolla (9—) 10—11 mm. Leaves with ± persistent longish marginal bristles. Borneo. . . . . 37. *D. kinabaluensis*  
 44. Corolla up to 8 mm. Leaves with ± early caducous marginal bristles.  
 45. Calyx lobes c. 4 mm. Ovary laxly to densely pubescent.  
 46. Corolla campanulate.  
 47. Leaves (broadly) elliptic, rarely oblong-elliptic, (4.5)5—7.5(—10) by (2.5—)3—6(—6.5) cm. Sumatra. 29a. *D. braehyantha* var. *brachyantha*  
 47. Leaves obovate, 2—3.5 by 1—2 cm. Sumatra. 29b. *D. braehyantha* var. *parvula*  
 46. Corolla urceolate-cylindric. Sumatra. . . . . 38. *D. sumatrensis*  
 45. Calyx lobes 1.5—2 (rarely up to 3) mm. Ovary completely glabrous.  
 48. Bracts at the base of the inflorescence very numerous, ovate-acuminate to lanceolate, 2—4 mm. Bracteoles (2—)2.5—3 mm.  
 49. Pedicels densely crisped-ferruginous-pubescent. Sumatra. 39. *D. crassiramea*  
 49. Pedicels densely patent-glandular-setulose. Borneo. 70b. *D. pittosporifolia* var. *punctiloba*  
 48. Bracts at the base of the inflorescence mostly few, ± ovate, obtuse, up to 1.5 mm. Bracteoles 1—1.5 mm.  
 50. Leaves 3—5-plinerved from and from above the base (lower half of the lamina), the higher lateral nerves, if any, much less distinct.  
 51. Anthers linear as or nearly as long as the anther-cells. Corolla short-cylindric to subcampanulate.  
 52. Branchlets densely patent-setose. Philippines (Mindanao). 40a. *D. trinervia* var. *trinervia*  
 52. Branchlets very laxly appressed-setose. Philippines (Mindanao). 40b. *D. trinervia* var. *urdanetensis*  
 51. Anthers oblong to ovate-oblong, the tubules much shorter than the anther-cells.  
 53. Leaves rigidly coriaceous, ± concave when dry. New Guinea. 41. *D. lamii*  
 53. Leaves subcoriaceous to coriaceous, ± flat when dry.  
 54. Leaves (10—)12—17 by 3.5—5.5 cm. Borneo. . . . . 42. *D. orophila*  
 54. Leaves smaller, (2—)3—6 (rarely in part up to 10) cm in length.  
 55. Shoots ± densely setose initially (but glabrescent with age). Pedicels at the anthesis rather densely appressed-setulose and finely short-pubescent, the bristles ± caducous under the fruit. Leaves setose on both faces initially.  
 56. Calyx glabrous. Philippines. . . . . 43a. *D. luzonica* var. *luzonica*

56. Calyx manifestly greyish-puberulous. Philippines (Luzon). 43b. *D. luzonica* var. *pubens*  
 55. Shoots (very) laxly setulose initially (early entirely glabrescent). Pedicels not or very laxly setulose, ± densely short-pubescent, finally glabrescent. Leaves glandular-punctate beneath when very young.  
 57. Leaves elliptic, broadly acuminate, at the apex. Philippines. 43c. *D. luzonica* var. *calalayensis*  
 57. Leaves elliptic-lanceolate, ± long-acuminate. Philippines. 43d. *D. luzonica* var. *merrittii*
50. Leaves penninerved, i.e. the basal and higher nerves equally distinct, the latter also from the upper half of the lamina.  
 58. Calyx markedly funnellform-attenuate, nearly stipitate in later stages (Pedicels laxly subpatently hairy. Bristles, if any, glandular at the tips of the branchlets).  
 59. Leaves 4.5—7 by 2.5—3.6 cm; petiole 2.5—5 mm. Celebes. *hh-a. D. caryophylloides* var. *caryophylloides*  
 59. Leaves 3—5 by (1.5—)1.7—2.5 cm; petiole 4—7 mm. Celebes. 44b. *D. caryophylloides* var. *longipes*  
 58. Calyx gradually attenuate at the base.  
 60. Pedicels ± densely ferruginous-setulose and furfureaceous as are the tips of the branchlets. Bristles not glandular. Borneo. 45. *D. scabrada*  
 60. Pedicels densely rusty-tomentose. Tips of the branchlets very laxly setose (finally glabrous). Celebes. . . . . 46. *D. capitata*
2. Branchlets (young shoots) both very laxly to densely setose or setulose and patent-puberulous, or patent-puberulous only.  
 61. Stipules ± persistent, well recognizable at least at the uppermost leaves, subulate, as long as or slightly longer than the petioles. (Anthers sagittate).  
 62. Margin of the calyx lobes set with longish (c. 1.5 mm), coarse, not glandular bristles. Celebes. . . . . 47. *D. sagittanthera*  
 62. Margin of the calyx-lobes ciliolate, or very shortly glandular-muriculate or fimbriate.  
 63. Leaves (ovate) subcaudate-acuminate, the apex ± acutish. Borneo  
 63. Leaves (ovate to elliptic or subrotundate) short-attenuate, the apex obtuse to rounded.  
 64. Corolla flesh-coloured, 6—6.5 mm long, mouth c. 4 mm diam. Leaves ovate to subrotundate, all manifestly cordate at the base. Borneo. . . . . 49. *D. crenidata*  
 64. Corolla pale yellow to greenish-white, 4—5 mm, mouth 2.5—3 mm diam. Leaves ovate to elliptic, broadly cuneate to rounded (rarely also in part subcordate) at the base. Siam, Malay Peninsula, Sumatra, Borneo. 50. *D. elliptica*  
 61. Stipules absent (or not recognizable, being too small or very early caducous).  
 65. Anthers manifestly sagittate.  
 66. Ovary glabrous. Leaves elliptic. Borneo. . . . . 51. *D. microphylla*  
 66. Ovary subdensely pilose. Leaves ovate-elliptic. Borneo. . . . . 52. *D. consobrina*  
 65. Anthers not sagittate.

67. Margin of the calyx lobes set with longish (c. 1.5 mm) coarse not glandular bristles. Sumatra . . . . . 53. *D. einnabarina*
67. Margin of the calyx lobes short-ciliate or -fimbriate.
68. Leaves linear, i.e. equally wide (up to 2.5 mm) their entire length.
69. Leaves (1—)1.5—2 cm by 0.5—0.8 mm. Ovary glabrous. Borneo . . . . . 54. *D. piceifolia*
69. Leaves (3—)4.5—5.5(—6) cm by 1.5—2(—2.5) mm. Ovary pubescent. Borneo. . . . . 55. *D. pinifolia*
68. Leaves not linear and wider than 3 mm.
70. Leaves narrow-lanceolate<sup>1</sup>, 4—6 mm wide.
71. Leaves (2—)2.3—3.5 cm long. Celebes. . . . . 56. *D. stenophylla*
71. Leaves (1—)1.2—1.4(—1.6) cm long. Borneo. . . . . 57. *D. myrtilus*
70. Leaves various in form, wider than 7 mm.
72. Branchlets besides the patent puberulence manifestly setose. Leaves ± persistently setose beneath, at least in the lower half and/or along the midrib.
73. Bristles on the branchlets short, subdense and ± appressed. Leaf base ± cuneate.
74. Pedicels glabrous. Corolla red. Sumatra . . . . . 58. *D. rubella*
74. Pedicels glandular-setulose. Corolla greenish.
75. Calyx rather densely and shortly red-pilose. Malay Peninsula.
75. Calyx completely glabrous. Malay Peninsula. 59a. *D. lancifolia* var. *land folia*
- 59b. *D. la/neifoMa* var. *calvescens*
73. Bristles on the branchlets longish, very dense and ± patent. Leaf base rounded or mostly so. (Pedicels ± densely crisped-setulose. Corolla light yellow or greenish). Java . . . . . 60. *D. pilosa*
72. Branchlets besides the patent puberulence very laxly or mostly not setose or setulose. Leaves early glabrescent, whether or not punctate beneath.
76. Leaves ± abruptly caudate- or subcaudate-acuminate at the apex.
77. Leaves lanceolate-ovate, up to 2.1 cm wide. Flowers generally solitary. Pedicels c. 2 mm. Borneo. . . . . 61. *D. caudatifolia*
77. Leaves ovate-elliptic, all or at least partly 2.5—4 cm wide in the same specimen. Flowers generally 3—5 per fascicle. Pedicels (3—)4—6 mm. Borneo. . . . . 62. *D. memecyloides*
76. Leaves gradually and ± broadly attenuate-acuminate or obtuse to rounded at the apex.
78. Corolla c. 1 cm, campanulate, Pedicels very slender, 1.2—2.6 cm. Celebes. . . . . 63. *D. gradlipes*
78. Corolla up to 7 mm, urceolate or subcampanulate.
79. Corolla 6.5—7 mm. (Ovary glabrous).
80. Pedicels 1.5—3 mm, rather stoutish. Corolla white. Celebes.
80. Pedicels 6—8(—10) mm, slender. Corolla blood-red. Celebes. 64. *D. celebensis*
65. *D. haemantha*
79. Corolla 3—3.5 mm.
81. Ovary hairy. Leaves finely crenulate, subdensely punctate beneath, the apical gland conspicuous. Celebes. . . . . 66. *D. minutiflora*

81. Ovary glabrous. Leaves entire, not or very laxly punctate, the apical gland obscure. Borneo. . . . . 67. *D. kemulensis*
1. Branchlets (young shoots) completely glabrous i.e. without hairs or bristles, otherwise whether or not (glandular-) punctate.
82. Leaves (mostly obtuse at the apex) markedly apiculate by a thick gland, which protrudes beyond the leaf margin.
83. Leaves linear, i.e. equally wide their entire length, (3—)5—7.5 cm by (1.5—)1.8—3 mm. Borneo. . . . . 68. *D. rosmarinifolia*
83. Leaves not linear, all or at least most of them wider than 4 mm in the same specimen.
84. Flowers 4-merous. Borneo. . . . . 67. *D. kemulensis*
84. Flowers 5-merous.
85. Corolla ± densely appressed-hairy outside. Sumatra. . . . . 19. *D. atjehensis*
85. Corolla glabrous outside or practically so.
86. Ovary laxly to densely pilose.
87. Corolla (± tubular) (9—)10—11 by 5 mm. Sumatra. . . . . 69. *D. apioulifera*
87. Corolla up to 7 mm in length.
88. Corolla (widely) campanulate. Calyx lobes 4 mm.
89. Corolla green, 6—7 by 5—6 mm. Leaves (4.5—)5—7.5 (—10) by (2.5—)3—6(—6.5) cm. Sumatra. . . . . 29a. *D. brachyantha* var. *brachyantha*.
89. Corolla white, 5—6 by c. 3 mm. Leaves 2—3.5 by 1—2 cm. Sumatra. . . . . 29b. *D. brachyantha* var. *parvula*
88. Corolla ovoid, 7 mm. Calyx lobes c. 2 mm. New Guinea. 88. *D. ledermannii*
86. Ovary entirely glabrous.
90. Pedicels laxly to subdensely longish (1—)1.3 mm) and ± patently glandular-setulose. Borneo. . . . . 70a. *D. pittosporifolia* var. *pittospori folia*
90. Pedicels very shortly (whether or not glandular-) subsetulose or muriculate and/or short-pubescent, or glabrous.
91. Flowers generally solitary or in pairs, rarely also 3 in one or the other axil of the same specimen.
92. Pedicels 2—3 mm at the anthesis (in fruit up to 4 mm only). New Guinea. . . . . 71. *D. lysolepis*
92. Pedicels (5—)6—15 mm at the anthesis.
93. Corolla 10 mm. Celebes. . . . . 72. *D. retusa*
93. Corolla c. 7 mm. New Guinea . . . . . 73. *D. edulis*
91. Flowers generally 3—6 per fascicle, sometimes also solitary or in pairs in one or the other axil of the same specimen.
94. Corolla exceeding 9 mm in length.
95. Corolla (9—)10—11 mm. Pedicels glabrous. Borneo. 36. *D. kinabaluensis*
95. Corolla 13—15 mm. Pedicels densely hirtellous. Borneo. . . . . 74. *D. sanguinolenta*
94. Corolla up to 8 mm in length.
96. Leaves elongate-spathulate, (the apex rounded-obtuse and ± retuse). Borneo. . . . . 75. *D. sphenophylla*
96. Leaves of other shape.
97. Corolla ventricose or subglobose-urceolate.

98. Leaves stiff-coriaceous. Petiole 1—1.3 by 0.2—0.3 cm. Pedicels stoutish, densely clad with patent rufescent short hairs. Borneo.

76. *D. urceolata*

98. Leaves subcoriaceous to coriaceous. Petiole 2—8 by 1—1.5 mm. Pedicels slender, initially with a few bristle-like crisped hairs and: a fine pubescence, g-labrescent.

99. Pedicels 2—3 mm at the anthesis, up to 4 mm in fruit. (Leaves oblong or subovate-oblong, mostly obtuse-rounded to slightly emarginate at the apex, rarely broad-attenuate. Style 2 mm). Borneo.

99. Pedicels 4—8 mm at the anthesis, up to 15 mm in fruit. 77. *D. commntata*

100. Leaves elliptic to ovate-elliptic, rarely narrow-elliptic, or elliptic-obovate, mostly short-acuminate, rarely obtuse. Style 2—3 mm. Philippines. . . . . 43c. *D. luzonica* var. *calelanensis*

100. Leaves broadly obovate, obtuse. Style c. 5 mm. New Guinea.

97. Corolla ± campanulate, or short-tubular. 78. *D. lorentzii*

101. Pedicels densely ferruginous-hirtellous at the anthesis, glandular hairs not present.

102. Bracteoles c. 1.5 mm. Corolla red, 7—8 mm. Celebes.

102. Bracteoles (2—)2.5—3 mm. Corolla green, ± 6 mm. 79. *D. rubidiflora* Sumatra.

89. *D. crassiramea*

101. Pedicels laxly hirtellous and ± laxly set with short rather thickish glandular hairs at the anthesis. (Corolla greenish, sometimes partly suffused with red, ± 4 mm. Bracteoles c. 1.5 mm). Siam, Malay Peninsula, Sumatra, Java, Borneo, Philippines (Mindanao).

84b. *D. heterophylla* var. *latifolia*

82. Leaves (mostly acuminate or acute at the apex) not or not manifestly apiculate, the apical gland small and within the margin of the lamina, or, if more conspicuous, inserted on the (obtuse) apex underneath.

103. Pedicels very slender, (2—)2.5—3.5 cm. Borneo. . . . . 13. *D. penduliflora*

103. Pedicels rather slender or mostly ± stoutish, rarely up to 2 cm in length.

104. Leaves narrow-lanceolate, (6—)8—10 times as long as wide. Borneo.

80. *D. ensifolia*

104. Leaves various, not ensiform, 1—4 (rarely up to 5) times as long as wide.

105. Leaves manifestly penninerved, nerves 8—10 strongly inarching, the lowest pair short and straight to the margin. Borneo. . . . . 81. *D. punctulata*

105. Leaves pli- resp. pli- and penninerved, the lowest pair of nerves always curved and high-ascending, the upper nerves not manifestly inarching.

106. Leaves ovate, the apex ± caudate-acuminate, the base rounded to subcordate.

107. Calyx rather densely shortly rufous-hirsutulous. Borneo. 42. *D. orophila*

107. Calyx glabrous or very laxly muriculate. Borneo. 82. *D. cinnamomifolia*

106. Leaves not strictly ovate, the base mostly (broadly) cuneate, rarely subrotundate.

108. Leaves lanceolate to subovate-oblong-lanceolate, (very coriaceous), strictly triplinerved from the very base.

109. Flowers several per fascicle. Corolla 6—7 mm. Style 5 mm. Borneo.

83a. *D. viridiflora* var. *viridiflora*

109. Flower solitary. Corolla 11mm. Style 10 mm. Borneo.

83b. *D. viridiflora* var. *megalantha*

108. Leaves subovate-oblong, or oblong, or elliptic, 5-pl:nerved from and from above the base, moreover ± penninerved.

110. Pedicels and bracteoles (dorsally) ferruginous-tomentose. Celebes.

46. *D. capitata*

110. Pedicels ± laxly hirtellous, moreover whether or not laxly set with short thickish glandular hairs. Bracteoles ± glabrous dorsally.

111. Leaves relatively small, variable in shape and size, 3—7(—10) by (1—)1.B—3.5 cm, ± olivaceous (often pallid) when dry, subcoriaceous to coriaceous. Sumatra, Java, Bali, Lombok; Borneo?

84. *D. heterophylla* var. *heterophylla*

111. Leaves relatively large, mostly oblong-elliptic, 8—14(—16) by (3—)3.5—8(—10) cm, ± brown (often rather dark) when dry, coriaceous. Siam, Malay Peninsula, Sumatra, Bangka, Java, Borneo, Philippines (Mindanao). . . . . 84b. *D. heterophylla* var. *latifolia*

## 1. DIPLYCOSIA RUFA Stapf

*Diplycosia rufa* Stapf in Trans. Linn. Soc. ser. 2, Bot. 4: 191, t. 14 f. D 8-9. 1894; Merr., En. Born. 465 p.pr. 1921.

BR. N. BORNEO. Mt Kinabalu, 2130t—3050 m, *Haviland 1137, 1181* (BO; K, lectotype), *Haslam s.n.*; *Clemens 10694, 28922 p.p., 30377, 33125A, 35019; Carr SF 27475, Sow KEP 71644; Nat. coll. 94.*

## 2. DIPLYCOSIA CHRYSOTHRIX Stapf

*Diplyeosia chrysothrix* Stapf in Trans. Linn. Soc. ser. 2, Bot. 4: 191, t. 14 f. E 10—14. 1894; Merr., En. Born. 463. 1921.

BR. N. BORNEO. Mt Kinabalu, 1525—3100 m, *Haviland 1182* (K, type; SAR); *Haslam s.n.*; *Clemens 27832, 29956, 32280, 32718, 33813 ('33183'), 35076; Holttum s.n.*

Similar, but with smaller leaves, sterile, and possibly a new species:

BR. N. BORNEO. Mt Kinabalu, 2895 m, *Clemens 33843.*

Similar, with broader leaves, approaching *D. rufa* in habit but apparently distinct, sterile:

C. BORNEO. B. Batu Lesong, *Amdjah 453* (BO, L).

## 3. *Diplycosia carrii* Sleum., nov. spec.

Frutex epiphyticus, gracilis. Ramuli novelli gracillimi subteretes c. 1 mm diam., densissime patenter setosi (pilis setiformibus gracilibus rufo-brunneis 3—4 mm longis, pilis aliis haud obviis), sat dense foliati. Folia ovata, apice breviter acuminata, subobtusa, glandula terminali parva

parum prorumpente instructa, basi  $\pm$  rotundata, subcoriacea, in sicco castanea utrinque opaca, supra costa basique infima laminae diutius setulosa excepta cito glabrata, subtus et secus marginem dense setuloso-pilosa (pilis vel, si mavis, setulis erecto-patentibus rufis 2—3 mm longis, lit videtur diu persistentibus), integra, haud revoluta, 2—3 cm longa, (1,2—) 1,3—1,9 cm lata, costa supra leviter immersa, subtus prominente, nervis lateralibus utroque latere 2—3 inter sese valde distantibus curvato-ascendentibus, supra minutissime impressis, haud raro omnino evanescentibus, subtus parum elevatis vel obscuris; petiolus supra sulcatus sat gracilis c. 2—3 mm longus, dense setulosus. Flores axillares solitarii. Pedicelli sat graciles sub anthesi 4—5 mm longi, postea usque ad 7 mm accrescentes, dense patenter rufo-setulosi, bractea basali minutissima, bracteolis ovatis dorso setulosis 1 mm longis. Calyx 3 mm longus, dense patentissime rufo-setulosus (c. 4 mm), lobis ovatis subacutis c. 2 mm longis. Corolla albida, breviter late subcylindrico-campanulata, 5 mm longa, c. 4 mm diam., extus basi subglabra, in superiore 2/3 parte sat dense pilis appressis rufis setulosis apice crispulis induta, intus glabra, lobis 5 deltoideis obtusis erectis c. 1,5 mm longis. Stamina 10, c. 4 mm longa; filamenta linearia, supra basin paullo dilatata, apicem versus filiformia, glabra, c. 2 mm longa; antherae ovato-oblongae, cum tubulis 2 mm longae, minute echinulatae, tubulis ipsis 0,7 mm longis sat angustis. Ovarium glabrum; stylus 3 mm longus, glaber. Fructus ignotus.

BR. N. BOENEO. Mt Kinabalu, path to Ranau, c. 1465 m, fl. 11-4-1933, *Ca/rr SF 26965* (SING, type).

#### 4. DIPLYCOSIA BABBIGERA Sleum.

*Diplycosia barbiger*a Sleumer in Bot. Jahrb. 71: 149. 1940.

BORNEO. Sarawak. Mt Dulit, c. 1300 m, *Richards 1715, 1,9.91* (K, type).

#### 5. DIPLYCOSIA SAURAUOIDES J. J. S.

*Diplycosia saurauioides* J. J. Smith in Bull. Jard. Bot. Btzg III, 13: 456. 1935.

C. BORNEO. W. Kutei, Mt Kemul, 1850 m, *Endert 4385* (A; BO, type; L).

Similar in habit, but less setose, apparently a not yet described species (corolla and stamens unknown):

C. BORNEO. Amai Ambit, *Hallier* (BO, L). Liang-gagang, *Hallier 2691* (BO).

#### 6. DIPLYCOSIA CLEMENTIUM Sleum.

*Diplycosia clementium* Sleumer in Bot. Jahrb. 71: 151. 1940.

BR. N. BORNEO. Mt Kinabalu, 1370—3650 m, *Clemens 28768, 28922* p.p., 29258 (A; BM, type; BO, E, K, NY), 29401, 29565, 31751, 31912, 33132, 33804, 35077, 50849; *Carr SF 27692*,

#### 7. DIPLYCOSIA AUREA Sleum.

*Diplycosia aurea* Sleumer in Bot. Jahrb. 71: 147. 1940.—*D. rufa* (non Stapf) fMerr., En. Born. 465 p.p. 1921.

BR. N. BORNEO. Mt Kinabalu, 1220—1525 m, *Clemens 10929, 30942, 30960, 32400* (A; BM, type; BO, E, K, L, NY), 32693, 35075, 40682.

#### 8. DIPLYCOSIA LILIANAE J. J. S.

*Diplycosia lilianae* J. J. Smith in Gibbs, Arfak 170. 1917; Sleum in Bot. Jahrb. 42: 211. 1942.

NEW GUINEA. Western part: Arfak Mts, 2285—2440 m, *Gibbs 5518* (BO, lectotype; K), 5680.

#### 9. DIPLYCOSIA LOHERI Merr.

*Diplycosia loheri* Merrill in Philip. J. Sc. 27: 44, 1925; En. Philip. 4: 253. 1925; Copel. f. in Philip. J. Sc. 47: 67. pi. 1 f. 6, 7. 1932.

PHILIPPINES. Luzon: Nueva Vizcaya, Caraballo Mts, *Loher 13693* (E, fragm.  $\phi$  f type; PNH, type f; US, not seen).

#### 10. DIPLYCOSIA APERTA J. J. S.

*Diplycosia aperta* J. J. Smith in Bot. Jahrb. 68: 208. 1937.—*D. pokapindjangensis*, J. J. S. Ie. 204.—*D. undata* (non J. J. S.) Lam in Blumea 5: 574. 1945.

0. CELEBES. Enrekang, B. Poka Pindjang, 2800 m, *Kjellberg 3923* (S, type of *D. pokapindjangensis*); *ibid.*, 2500 m, *Kjellberg 11,54* (BO; S, type of *D. aperta*); Pokapindjang-Tinabang, 2800—3000 m, *Eyma 640*; Pintealon, outlet of Pokapindjang, 2400—2600 m, *Eyma 521, 529*; Mamasa, Mt Mambuliling, 2700 m, *Monod de Froideville 121, 124 CD. undata'*).

#### 11. *Diplycosia pubivertex* Sleum., *nov. spec.*

Frutex. Rami teretes, stricti, c. 3 mm diam., dense rufo-strigosi. Ramuli densissime subadpresso rufo-setosi (2—3 mm), sat dense foliati. Folia oblongo-elliptica rarius obovato-elliptica, apice breviter, interdum subabrupte acuminata, subacuta vel obtusiuscula, glandula crassa protracta terminata, basi in petiolum attenuata, coriacea, firma, in sicco supra saturate, subtus dilutius brunnea, supra nitidula, subtus opaca, juniora utrinque adpresse rufo-setosa, matura supra  $\pm$  glabra, subtus per totam faciem et marginem sat dense rufo-subsetoso-pilosa, ad costam et basin versus longius setulosa, obscure crenulata fere integra, in sicco paullo concava, margine leviter revoluta, (2—)2,2—3(—3,5) cm longa, 0,9—1,5 cm lata, costa supra impressa, subtus prominente, nervis lateralibus utroque latere 2, e basi resp. altius a costa curvato-abeuntibus alteque ascendentibus, supra levissime immersis, subtus parum visibiliter elevatis vel omnino evanidis; petiolus crassiusculus, setulosus, 3—4 mm longus, 1 mm crassus. Flores axillares singuli. Pedicelli crassi (1 mm diam.), basi minute pluribracteati, 4—5 mm longi, dense pilis crispulis rufescentibus hie inde



minute glanduliferis obsiti. Bracteolae ovato-acuminatae, subacutae, dorso subglabrae, margine brevissime muriculato-fimbriatae, 2 mm longae. Calyx 8—9 mm longus, campanulatus, dorso imprimis ad lobos subdense pilis crispulis fere setulosis rufescentibus instructus, lobis anguste triangularibus subacutis 5—6 mm longis, erectis. Corolla subcylindrica, 8—9 mm longa, c. 2,5 mm diam., breviter 5-loba, extus infra medium glabra, superne dense pilis longis rufescentibus apice crispulis induta, intus glabra. Stamina 10; filamenta linearia, basin versus paullo dilatata, glabra, c. 4,5 mm longa; antherae subovato-oblongae, cum tubulis 3 mm longae, tubulis ipsis 1 mm longis. Ovarium dense flavido-pubescentis. Stylus glaber c. 7 mm longus. Fructus ignotus.

SUMATRA. Atjeh: Gajo & Alas Lands, Mt Losir, central and eastern top, 2950—3500 m, fl. 5/6-2-1937, *van Steenis* 8650, 8677 (BO; L, type).

## 12. *Diplycosia atjehensis* Sleum., *nov. spec.*

Frutex ramulis obtusangulis cortice cinerascenti obtectis, apice brunnescentibus, glabris vel laxissime breviter setosis, resp. setis basi excepta caducis punctatis. Folia elliptica usque obovata, interdum oblonga vel late elliptica usque subrotundata, apice late attenuata, obtusa usque rotundata, interdum emarginata, glaridula crassa nigrescente protrusa apiculata, basi late in petiolum cuneata rarius subrotundata, rigide coriacea, in sicco supra saturate olivaceo-brunnea usque nigrescentia, lucidula et glabra, subtus pallidiora, opaca et lax-e nigrescenti-punctata, margine revoluta et crenaturis minutissime impressis obsita, (2,5—) 4—6 cm longa, 1,5—2,5(—3) cm lata, costa supra impressa, subtus valida et prominente, nervis lateralibus utroque latere 2—3 utrinque subinconspicuis; petiolus crassus, rugulosus, glaber vel interdum setis nonnullis brevibus ad folia summa indutus, 4—6 mm longus, 1,5—2 mm diam. Flores axillares 1—2, raro 3. Pedicelli subdense rufescenti-hirsutuli, pilis glandulosis brevibus crassis nonnullis intermixis, 4—6 mm longi, c. 1 mm crassi, demum glabrescentes, bracteis basalibus paucis ovato-acutis. Bracteolae ovatae, apiculatae, dorso hirsutulatae, ciliatae, c. 1,5 mm longae. Calyx 5 mm longus, basi ipsa contractus fere usque ad basin 5-lobus, lobis anguste ovato-acuminatis acutis dorso, imprimis apicem versus laxe adpresse pilosulis, margine ciliatis et muriculatis, c. 4 mm longis. Corolla urceolata, ± 6 mm longa, extus basi infima glabra, ceterum dense adpresse flavido-pilosa, lobis c. 1 mm longis. Stamina 10; filamenta linearia, basin versus dilatata, superne undata, papillosa, 2,8 mm longa, antheris echinulatis ovato-oblongis, cum tubulis sat brevibus 2,5 mm longis. Ovarium sat dense flavescens-hirsutum, stylo corollam aequante. Fructus subglobosus, basi turbinato-attenuatus, nigrescens, c. 5 mm diam., lobis calycinis superne paullo patentibus, capsula in vertice hirsutula.

SUMATRA. Atjeh: Gajo lands, G. Losir, biv. 6 to 8, Central peak, Eastern peak and ridge, 2950—3500 m, fl. 5/6-2-1937, *van Steenis* 8651, 8678 (BO; L, type); *ibid.*, biv. 5 to 6, 3300 m, fl. 1-2-1937, *van Steenis* 8554; *ibid.*, biv. 4 to 5, 2700—2800 m, 31-1-1937, *van Steenis* 8511; Putjuk Angasan, biv. 1 to 2, 2500 m, 28-1-1937, *van Steenis* 8415.

## 13. *DIPLYCOSIA PENDULIFLOEA* Stapf

*Diplycosia penduliflora* Stapf in Trans. Linn. Soc. ser. 2, Bot. 4: 193, t. 14 f. C 7. [1894; Merr., En. Born. 465. 1921.

BR. N. BORNEO. Mt Kinabalu, 1070—1525 m, *Haviland* 1269 (K, type; SAR); *iClemens* 80734, 32264', 34734.

## 14. *DIPLYCOSIA CILIOLOATA* Hook. f.

*Diplycosia ciliolata* Hooker f., Ic. Pl. t. 894. 1852; Walp., Ann. 5: 443. 1858; Stapf in Trans. Linn. Soc. ser. 2, Bot. 4: 192. 1894; Gibbs in J. Linn. Soc. Bot. 42: 101. 1914; Merr., En. Born. 463. 1921.—*Gaultheria ciliolata* (Hook. f.) F. v. M. in Trans. R. Soc. Viet. n.s. 1 (2): 21. 1889, in texto.

BR. N. BORNEO. Mt Kinabalu, 1830—3500 m, *Low* (BM; K, type); *Haviland* 1135; *Gibbs* 4171, 4249; *Clemens* 27810t, 29092, 3008k, 32334, 32376, 50963; *Carr SF* 27487; *Sow KEP* 71642; *Wyatt-Smith KEP* 80360.

## 15. *Diplycosia filipes* Sleum., *nov. spec.*

Fruticulus epiphyticus, ramulis subteretibus gracilibus cito griseo-corticeatis, in partibus recentissimis sat dense longe (1,5—2 mm) subadpresse rufescenti-setosis ceterum haud pubescentibus. Folia lanceolata vel oblongo-lanceolata, apice sensim breviter acuminata, subacuta, glandula terminali minuta paullo prorumpente instructa, basi in petiolum attenuata, acuta, subcoriacea, in sicco adulta supra pallide griseo-olivacea, subtus nigrescenti-brunnescentia, novella utrinque nigrescentia, utrinque opaca, supra glabra, subtus disperse nigro-punctulata, regulariter minute crenulato-denticulata, denticulis glandulosis in foliis junioribus in pilum setulosum longum mox caducum excurrentibus, 12—20 mm longa, 4—6 mm lata, medio latissima, costa supra impressiuscula, subtus parum prominente, nervis venisque obscuris; petiolus setulosus c. 1,5 mm longus. Flores axillares solitarii. Pedicelli graciles, initio laxe subadpresse breviter setulosi demum ± glabrati, (5—) 6—7 mm longi, basi bracteis minutis, apice bracteolis minutis ovatis obtusis glabris instructi. Calyx 2,5—3 mm longus, glaber, ad medium 5-lobatus, lobis ovatis acutiusculis margine glandulis stipitatis brevius vel longius fimbriatis. Corolla glabra, rubra, plane matura haud visa, prob. urceolata c. 4 mm longa. Stamina nondum bene evoluta. Ovarium glabrum, stylo 3,5 mm longo. Fructus immaturus c. 3 mm diam., basi in pedem brevem contractus.

C. CELEBES. Masamba, between Kambuno and Tomadu, near rockery in rather light forest, 27-7-1937, 2800—2550 m, *Eyma* 1409 (L, type).

## 16. *DIPLYCOSIA EPIPHYTICA* Fletcher

*Diplycosia epiphytica* Fletcher in Kew Bull. 40. 1936; Fl. Siam. En. 2: 315. 1938.

Epiphytic shrub, branches glabrous, subterete, greyish-corticate, branchlets brownish, slender, obtusely angular, densely patent-setose

(bristles brown to rufous, caducously glandular in part, 3—4 mm), no other pubescence present, laxly foliate. Leaves ovate, slightly inequilateral, gradually rather shortly subcaudate-acuminate, the apex somewhat falcate, acute, the apical gland minute, base broadly attenuate to rounded, the very base  $\pm$  protracted into the petiole, dilutely greyish-brown when dry, subcoriaceous, somewhat glossy above, dull beneath, glabrous above some bristles on the base resp. the midrib excepted, initially covered with pallid longish fine setular appressed hairs (1—2 mm) beneath, soon glabrescent, rather laxly set with red-brown glandular points (the bristle's bases) then, margin short-revolute, finely crenulate or subserrulate, the long bristles on top of the crenations mostly soon gone, 4—6.5 by (2—) 2.5—3.5 cm, 3—5-nerved from the base, midrib deeply impressed above, very prominent beneath, lateral nerves curved-ascending to the top of the lamina and anastomosing there, the inner pair manifestly impressed above, resp. prominent beneath, the outer pair only slightly so and sometimes barely visible, other 3—4 short lateral nerves patent from the midrib rather inconspicuous in general; petiole semiterete, grooved above, patent-setose initially, glabrescent, 3—6(—7) by 1 mm. Flowers mostly 3 per axil, rarely also solitary and in pairs in other axils of the same specimen. Pedicels nodding, stoutish, densely patent-subglandular-setulose (c. 2 mm), 5—7 mm, the basal bracts ovate-acute, c. 1.5 mm, the bracteoles ovate, subacute, dorsally glabrous or short-setulose at the base only, laxly shortly glandular-fimbriate and ciliate, c. 1.8 mm. Calyx 3 mm, glabrous, 5-lobed to 2/3 of its length, lobes ovate-acuminate, acute, their margins longish-glandular-subsetulose in the lower part, shorter so towards the apex. Corolla broad-urceolate, pinkish, glabrous, c. 6 mm, lobes obtuse c. 2 mm. Stamens 10; filaments linear, dilated towards the base, 2 mm; anthers ovate-oblong, 2.5 mm incl. tubules, abruptly attenuate into the tubules (1 mm). Ovary very laxly hairy on top; style glabrous, 4 mm; fruit unknown.

SIAM. Surat: Kao Nawng, 1100—1200m, *Kerr 13272* (BM; K, type).

#### 17. DIPLYCOSIA RUFESCENS Schltr.

*Diplycosia rufescens* Schlechter in Bot. Jahrb. 55: 163. / 7 A-G. 1918; Sleum. I.e. 72: 211. 1942.

NEW GUINEA. North New Guinea: Sepik region, 'Etappenberg', 850 m, *Ledermann 8873* (B, f, lectotype; K, SING); 'Felsspitze', 1400—1500m, *Ledermann 12438* (B, f), *1H95* (B, j), *12508* (B, f); 'Kamelrücken', c. 1150 m, *Ledermann 8850* (B, f; E, K, SING), *8856* (B, f); 'Lordberg', 1000 m, *Ledermann 9992a* (K, L).

#### 18. DIPLYCOSIA TRIANGULANTHERA J. J. S.

*Diplycosia triangulathera* J. J. Smith in Bot. Jahrb. 68: 207. 1937.

C. CELEBES. Poso, biv. Puna, c. 1800 m, *Steup 23*. Palopo, Tadjambu, 1000 m, *Kjellberg 1811* (BO; S, type).

#### 20. DIPLYCOSIA HIRSUTA Sleum.

*Diplycosia hirsuta* Sleumer in Bot. Jahrb. 74: 154. 1940.

C. CELEBES. 'Berg Pona', 1500—1700 m, *Sarasin It. Cel. IIS. 2110* (B, f, type; L, fragm.). Poso, Kambuno massif, Boro, 1700m, *Eyma 1645* (SO).

#### 21. *Diplycosia rosea* Sleum., nov. spec.

Frutex usque ad 50 cm altus, ramulis elongatis teretibus, in partibus vetustioribus sat dense  $\pm$  patenter cinerascens-setosis, ad innovationes densissime pilis rufis arete patentibus setulosis indutis. Folia elliptica, apice subrotundata vel rotundata, glandula terminali crassa bene prominente, basi rotundata vel latissime attenuata, rarius cuneata, matura coriacea, rigida, in sicco paulo convexa, supra dilute olivacea, subtus brunnescentia, novella utrinque passim pilis setosis adpressis (1,5—2 mm) induta, matura supra glabrescentia laxaque nigro-punctulata, subtus diu et  $\pm$  patenter rufo-setulosa, minute crenulata vel subdenticulata pilisque setosis ciliata, 2—3 cm longa, 1,2—1,6(—1,8) cm lata, costa supra impressa, subtus indistincta, nervis lateralibus utroque latere 1—2 e basi vel paulo supra basin laminae enascentibus atque ad laminae apicem curvato-ascendentibus supra levissime immersis, aliis pinnatis minus distinctis utroque latere 2—3 a costa abeuntibus supra haud raro vix visibilibus; petiolus crassus (1 mm), setosus, (2—) 3—4 mm longus. Flores axillares solitarii. Pedicelli subgraciles nutantes  $\pm$  dense pilis setosis subpatentibus  $\pm$  crispulis minuteque glanduliferis instructi, 6—10(—12) mm longi. Bracteolae ovato-acuminatae, dorso glabrae, margine glanduloso-muriculatae et ciliolatae, 1 mm longae. Calyx 3 mm longus, in toto dorso imprimis infra medium pilis crispulis sat brevibus  $\pm$  dense instructus, superne ad lobos  $\pm$  glabrescens, lobis ovatis obtusis 2 mm longis ciliolatis et glanduloso-muriculatis. Corolla urceolato-cylindrica, rosea, ad lobos albescens, carnosula, glabra, 6 mm longa, 2,5 mm diam. Stamina 4 mm longa; antherae oblongae, cum tubulis satis brevibus et latis 2 mm longae. Ovarium glabrum; stylus glaber, 3 mm longus. Fructus deest.

NEW GUINEA. Western part: Vogelkop, Nettoti top, 1980 m, fl. 28-10-1954, *van Roy en 3859* (L, type).

#### 22. DIPLYCOSIA SETOSA J. J. S.

*Diplycosia setosa* J. J. Smith in Bull. Jard. Bot. Btzg II, 8: 51. 1912; Nova Guinea 12: 145, t. 37 B. 1914; I.e. 18: 99. 1936; Sleum. in Bot. Jahrb. 72: 211. 1942.

NEW GUINEA. Northern part: Mt Cyclops, 1800—2160 m, *Gjellerup 540* (BO, type; K, L); *Mayr 645*.

#### 23. DIPLYCOSIA PSEUDORUFESCENS Sleum.

23a. var. PSEUDORUFESCENS.

*Diplycosia pseudorufescens* Sleumer in Bot. Jahrb. 71: 157. 1940.

BR. N. BORNEO. Mt Kinabalu, above Penataran River basin, 2895 m, *Clemens 33650* (A; BM, type; BO, E, K, L, NY).

23b. var. *elliptifolia* Sleum., *nov. var.*

*Diplycosia consobrina* (non Becc.) Ridl. in Str. Br. R. As. Soc. 39: 15. 1903 — *D. microphylla* (non Becc.) Henders. in J. Fed. Mai. St. Mus. 13: 5. 1927.

Foliis ± ellipticis pedicellisque ± patenter subdense crispulo-subsetulosis a typo diversa. An species propria?

MALAY PENINSULA. Perak: G. Bal (G. Kerbau), 1370 m, fl. 5-1909, *Haniff* 3983 (SING). Pahang: Kluang Terbang (G. Benom), 1525 m, *Barnes s.n.*, anno 1900 (SING), '*D. consobrina*'.

BR. N. BORNEO. Mt Kinabalu, 2745—3050 m, *Clemens* 28929 (A, BO, E, K; L, type; NY), 29282.

24. *Diplycosia tetramera* Sleum., *nov. spec.*

Frutex parvus, ramis erectis, teretibus, cortice striato et longitudinaliter fissis, ramulis dense adpresse vel subpatenter rufo-setosis (1,5—3 mm), pubescentia altera haud obvia. Folia ± late elliptica usque oblongo-elliptica, interdum angustiora et oblonga, conferta, apice breviter acuminate, subacuta vel obtusiuscula, plerumque glandula parva paullo prorpente apiculata, coriacea, rigidula, in sicco ± concava margineque revoluta, supra olivaceo-brunnea, nitidula, subtus brunnescentia, opaca, recentissima utrinque ± laxe rufo-setulosa, matura supra glabra, subtus patenter setulosa, demum setulis caducis nigropunctulata, sat regulariter minute crenulata, dentibus in foliis juvenilibus in setam (± 1,5 mm) abeuntibus, (0,7—)1—1,6(—2) cm longa, (0,5—)0,7—1,2(—1,4) cm lata, costa supra ± distincte impressa, subtus parum vel haud elevata, nervis obscuris; petiolus crassiusculus, ± setulosus, 2(—3) mm longus, c. 1 mm diam. Flores singuli axillares. Pedicelli crassiusculi, setulis vel pilis scabridis brevibus crispulis sat dense instructi, sub anthesi 3—4(—6,5) mm longi, post anthesin paullo elongati. Bracteolae ovato-acuminatae, dorso glabrae, margine breviter (0,3—0,5 mm) glanduloso-fimbriatae, apice ciliolatae, 1,5 mm. Calyx 4—5 mm longus, glaber vel ad lobos pilis crassis crispulis paucis ornatus, lobis ovatis subacutis 2—3 mm longis sub anthesi ± patentibus laxe longeque ± decidue glanduloso-fimbriatis, apice pilosiusculis. Corolla cylindrico-urceolata, 6—7 mm longa, 2 mm diam., basi et sub ore contracta, glabra vel initio in superiore parte pilis appressis glandulosis sparsis obsita, albida, lobis 4(vel 5) c. 1,5 mm longis. Stamina 8; filamenta linearia, basin versus paullo dilatata glabra fere 4 mm longa; antherae oblongo-ovatae valde granulatae, cum tubulis c. 2,5 mm longae, tubulis 1,2 mm longis. Ovarium glabrum vel in vertice parcissime pilosulum; stylus glaber 5—6 mm longus. Fructus c. 5 mm diam., purpurascens vel nigrescens.

SUMATRA. A t j e h: Gajo Lands, G. Lembuh, 2800 m, fl. 19-2-1937, *van Steenis* 8978 (BO; L, type); *ibid.*, top G. Lembuh to biv. 'Halfweg', 1850—3000 m, *van Steenis* 9180; G. Losir, 2700—2800 m, *van Steenis* 8510, 8519; Putjuk Angasan, 2500—2500 m, *van Steenis* 8356, 8383; G. Kemiri, Eastern slope, 3000 m, *van Steenis* 9590; *ibid.*, top plateau, 3150—3314 m, *van Steenis* 9667.

## 25. DIPLYCOSIA PARVIFOLIA Merr.

*Diplycosia parvifolia* Merrill in Philip. J. Sc. 5: Bot. 211. 1910; En. Philip. 3: 247. 1923; Copel. f. in Philip. J. Sc. 47: 81. 1932.

PHILIPPINES. Negros: Canlaon Volcano, c. 1500 m, *Merrill* 6995 (K; PNH, type, t).

## 26. DIPLYCOSIA SOROR Becc.

*Diplycosia soror* Beccari, Malesia 1: 210. 1878; Sleum. in Bot. Jahrb. 72: 211. 1942.

NEW GUINEA. Western part: Mt Arfak, Hatam, c. 2000m, *Beccari* (*Herb. Beccari* 5764., Fl, type).

Similar, but with shorter (c. 1,5 mm) bristles, leaves somewhat smaller, possibly a distinct, not yet described species:

MOLUCCAS. Morotai, G. Para-para, 1000 m, *Kostermans* 1186 (BO, L), no corollas and stamens available.

27. *Diplycosia glauciflora* Sleum., *nov. spec.*

Frutex 1,5—3 m, ramis teretibus setosis, ramulis dense pilis setosis patentibus saturate ruf o-nigrescentibus (1,5—2 mm) vestiti, ceterum pubescentia carentibus. Folia ad apicem ramulorum ovata vel elliptico-ovata, inferne elliptica, summa apice plerumque sensim subcaudato-acuminata, inferiora breviter acuminata, semper acuta vel acutiuscula, glandula parum incrassata terminata, basi rotundata rarius late cuneata, subcoriacea, ut videtur in vivo (imprimis inferiora) haud raro rubescentia, in sicco supra (saturate) olivacea, subtus brunnea, novella utrinque dense setulosa, matura supra glabra et nitentia, subtus diutius per totam faciem sat dense et patenter rufo-setoso-pilosa (0,7—1,5 mm), tarde glabrescentia, nigro-punctulata, margine parum revoluta minutissime crenulata, denticulis caduce ciliato-setulosis, 2,5—4(—5,5) cm longa, (1,2—)1,4—2(—2,5) cm lata, costa sutira valde impressa, subtus elevata, nervis lateralibus basalibus utroque latere unicus secus marginem usque ad apicem excurrentibus, supra aut leviter impressis aut subobscuris, subtus parum visibilibus, nervis alteris a costa pinnatim abeuntibus subinconspicuis; petiolus dense patenter rufo-setosus, 2,5—4 mm longus, 1—1,5 mm diam. Flores axillares singuli rarius bini. Pedicelli sat graciles, sat dense crispulo-rufo-pilosi, sub anthesi 2—3 mm longi, demum usque ad 5 mm elongati. Bracteolae ovato-acuminatae, dorso glabrae, 1,2 mm. Calyx campanulatus, glaber vel pilis solitariis crassis adpersus, c. 3 mm longus, fere usque ad basin 5-lobus, lobis ovatis acutis sicut bracteolae breviter glanduloso-fimbriatis. Corolla subcylindrico-campanulata, dilute viridis, glaucescens, glabra, in sicco nigrescens, c. 4 mm longa, breviter 5-loba, Stamina 10; filamenta sigmoideo-curvata, linearia, glabra, c. 2 mm longa; antherae ovato-oblongae, granulatae, cum tubulis tenuibus brevibus 2 mm longae. Ovarium in summo apice pilis pluribus flavescens instructum; stylus glaber 3—3,5

mm. Fructus (etiam in capsulae vertice) glaber, caerulescens, denique nigricans, c. 4 mm diam.

SUMATRA. Atjeh: Gajo Lands, from summit G. Lembuh to biv. 'Halfweg', 1850—3000 m, fl. 23-2-1937, *van Steenis 9153* (A, BO, K; L, type), *915U*; *ibid.*, c. 2500 m, *van Steenis 899 A*; top G. Lembuh, c. 3000 m, *van Steenis 9078*; biv. 9 at the River Lau Alas via Agusan ridge to Blang Kedjeren, 2000 m, *van Steenis 8750*. East coast: Sibolangit, G. Pinto, 2050—2200 m, *Lörzing 821,2*.

## 28. DIPLYCOSIA LEDERMANNII Schltr.

*Diplycosia ledermannii* Schlechter in Bot. Jahrb. 55: 165. 1918; Sleum. *l.e.* 72: 211. 1942.

NEW GUINEA. Sepik Region: Hunstein Mts, c. 1050 m, *Ledermann 81,08* (B, f), *81,5b* (BM), *81,76* (B, type, f; K, SING); *ibid.*, 1300—1400 m, *Ledermann 11090* (B, f), *11116* (B, f), *11335* (B, f), *1U37a* (B, f).

## 29. Diplycosia brachyantha Sleum., *nov. spec.*

29a. var. BRACHYANTHA.

Frutex, ramulis obtusangulis, crassis (4—7 mm diam.), griseo-brunnescentibus, apice valde sparse setosis vel glabris. Folia elliptica vel late elliptica, rarius oblongo-elliptica, apice breviter attenuata, obtusa usque rotundata, glandula crassa prorumpente apiculata, basi in petiolum cuneata vel fere rotundata, crasse coriacea, in sicco supra olivaceo-brunnea, glabra et nitidula, subtus brunnea, opaca et laxae aequaliter nigro-punctulata, integra, margine in sicco bene revoluta, (4,5—)5—7,5 (raro usque ad 10) cm longa, (2,5—)3—6(—6,5) cm lata, costa supra leviter impressa, subtus crasse prominente, nervis lateralibus utroque latere 1—2 manifestioribus e basi vel supra basin enascentibus alteque curvato-ascendentibus, supra leviter vel levissime insculptis, subtus ± manifesto prominentibus, in superiore laminae tertio minus distinctis, nervis lateralibus aliis multo brevioribus ± strictis 2—5 parum conspicuis; petiolus crassus, rugosus, glaber, 6—9 mm longus, 1,5—3 mm diam., in superiore tertio haud raro lamina decurrende parum alatus. Flores in sicco nigrescentes, ad fasciculos axillares 3—5-floros digesti, rarius in eodem ramulo etiam bini vel rarissime solitarii. Pedicelli crassi (fere 1 mm diam.) ± dense breviter subadpresso brunnescenti-hirsutuli et glanduloso-muriculati, vel -verruculosi, post anthesin ± glabrescentes, sub anthesi 5—7 mm longi, bracteis basilibus paucis oyato-acuminatis hirsutulis 1—2 mm longis. Bracteolae late ovate, apiculatae, dorso hirsutulae, intus glabrae, ciliatae, c. 2 mm longae. Calyx 6 mm longus, fere usque ad basin 5-lobus, lobis ovatis acuminatis subacutis dorso imprimis superne laxae adpresse pilosis vel glabris, ciliatis, 4 mm longis, basi c. 3 mm latis, post anthesin patentibus. Corolla campanulata, valde aperta, viridis, c. 6—7 mm longa, 5—6 mm lata, extus glabra vel hie inde pilo solitario instructa, lobis erectis fere 3 mm longis. Stamina 10; filamenta linearia, supra basin paullo dilatata, superne undata, papillosa, 3,5 mm longa; antherae echinulatae, ovate-oblongae, cum tubulis

angustis (c. 1,2 mm longis) 3,5 mm longae. Ovarium dense flavido-brunnescenti-hirsutum; stylus glaber 3—4 mm longus; fructus subglobosus, nigrescens, c. 1,3 cm diam., pedicello fructifero 10—11 mm longo.

SUMATRA. Atjeh: Gajo Lands, between biv. 'Halfweg' and summit G. Lembuh, 1850—3000 m, 2-1937, *van Steenis 9017, 9021, 9151* (BO; L, type); Putjuk Angasan 1800—2500 m, *van Steenis 8323, 8U01-*

## 29b. var. parvula Sleum., *nov. var.*

A typo foliis minoribus obovatis 2,2—3,5 cm longis, 1—2 cm. latis, floribusque albidis paulloque minoribus (corolla 5—6 mm longa, c. 3 mm diam.) diversa.

SUMATRA. Atjeh: Gajo Lands, top G. Lembuh to biv. 'Halfweg', 1850—3000 m, *van Steenis 9152* (BO; L, type).

## 30. DIPLYCOSIA APOENSIS Elm.

*Diplycosia apoensis* Elmer, Leaflet. Philip. Bot. 3: 1101. 1911 (*apoense*); Merr., En. Philip. 3: 246. 1923; Copel. f. in Philip. J. Sc. 47: 79, pi. 4 f. 2. 1932.

PHILIPPINES. Mindanao: Davao, Mt Calelan, *Elmer 11676b* (BO, E, FI, K, L; PNH, type, f). Bukidnon, Mt Lipa, *B. Sci. 38545 Ramos & Edano*, cit. Copeland, not seen.

## 31. DIPLYCOSIA SCHULTZEI Schltr.

*Diplycosia schultzei* Schlechter in Bot. Jahrb. 55: 163. 1918; Sleum., *l.e.* 72: 211. 1942.

NEW GUINEA. Northeastern part: biv. 'Hochmoos', c. 65 km S. of mouth of Tani River (c. 141°E—3°S), c. 1600 m, *Schultze Jena 33—1* (B, lectotype, f), *33—2* (B, syntype, t) •

## 32. DIPLYCOSIA UNDATA J. J. S.

*Diplycosia undata* J. J. S. Smith in Fedde Rep. 30: 171. 1932.

S. W. CELEBES. G. Bantaeng (Bonhain), 2700—2890m, *Biennemeijer 12175, 12222* (BO; L, type), *1221,8*.

## 33. Diplycosia annamensis Sleum., *nom. nov.*

*Vaccinium pilosum* Chev. in Rev. Bot. Appl. 9: 254. 1929, in obs., *nomen*; Chev. ex Dop, Fl. gen. I.-C. 3: 705. 1930, descr.; Sleum. in Bot. Jahrb. 71: 438. 1941, nec *D. pilosa* Bl. (1826).

Epiphytic shrub, branchlets slender, patently longish (2—3 mm) setose, otherwise not pubescent. Leaves rather dense, nearly distichous, oblong-elliptic or oblong, apex shortly acuminate, subobtusate, but apiculate by a minute gland, base broad-attenuate, subcoriaceous, rather dark castaneous and shining above when dry, more dilutely and dull beneath, initially

laxly setulose above, finally glabrous, laxly to rather densely persistently patent-setulose (1—1,5 mm) over the whole face beneath, margin somewhat revolute and minutely crenulate or entire, setulose-ciliate, 1,5—2 by (0,6—)0,8—1cm, broadest in the middle, midrib impressed above, prominent and densely setulose beneath, one lateral nerve on each side from nearly the base of the lamina, high-ascendent, slightly impressed above, nearly obscure beneath; petiole thickish, setulose, 1,5—2mm. Flowers axillary, solitary. Pedicels stoutish, setulose, at the anthesis c. 1—1,5 mm, up to 2,5 mm in fruit. Bracteoles broad-ovate, obtuse, glabrous dorsally, margin glandular-muriculate or -fimbriate, 1 mm. Calyx 3 mm, glabrous outside, lobes ovate, acute, margin glandular-fimbriate, c. 2 mm. Corolla urceolate-cylindric, greenish-white, glabrous, c. 4,5 mm, shortly 5-lobed. Stamens 10; filaments linear, glabrous, 2,5 mm; anthers incl. the short tubules 1,2 mm. Ovary glabrous; style 4 mm. Fruit blackish, 4—5 mm diam.

INDOCHINA. South Annam: Nhatrang, massif de Hon-ba, 1500 m, fl. 2-9-1918, *Chevalier* 38695 (P, type); Haut-Donai, massif du Bi Doup, 2000 m, fr. 11-10-1940-, *Poilane* 30729.

#### 34. DIPLYCOSIA MOROBEENSIS Sleum.

34a. var. MOROBEENSIS.

*Diplycosia morobeensis* Sleumer in Bot. Jahrb. 72: 210. 1942.

NEW GUINEA. Northeastern part: Morobe Distr., Sambanga, 1850—2000m, *Clemens* 6858 (A), 6978 (A), 7172 (B, type, f), 7222 (A), 7783 A (B, f), 7U5h (B, f); Samanzing, 2300—2600 m, *Clemens* 93?4 (A, neotype); Mt Saruwaged, 'marsh meadow camp', 2600 m, *Clemens* 9507 (A); Matap, 1525—1830 m, *Clemens* 40974 (A); A-mieng, on Yaneng River (trib. of Buso River), 1525—1830m, *Clemens* 12305 (A).

34b. var. ovatifolia Sleum., nov. var.

A typo foliis ovatis vel elliptico-ovatis pedicellisue brevioribus, sub anthesi 2—3 mm tantum longis diversa. An species propria?

NEW GUINEA. Southeastern part: Centr. Distr., Owen Stanley Range, Mt Victoria, 'The Gap', c. 2135 m, fl. white 13-1-36, *Carr* 15064 (A; BM, type; K, L, SING); Mt Yule, *Belford* (MEL). Eastern Highl., above Goroka, 2540 m, *N.G.F.* 6121 *Womersley* & *Floyd*.

#### 35. *Diplycosia rupicola* Sleum., nov. spec.

Frutex parvus, ramulis fuscis sat dense longe (2—3 mm) ± patenter rufo-setosis ceterum epilosis, subangulatis. Folia sat conferta, ovata usque ovato-elliptica, apice breviter acuminata, obtusiuscula, glandula subcrassa apiculata, basi rotundata rarius late attenuata, coriacea, rigida, concava, in sicco supra pallide cinereo-virescentia, subtus dilute brunnea, utrinque opaca, supra glabra, subtus laxe caduce setulosa resp. punctulata, margine parum revoluto regulariter minute crenulata, denticulis initio ciliatis (c.

1,5 mm), 0,8—1,1cm longa, (0,4—)0,5—0,7 cm lata, costa supra leviter impressa, subtus evanescente, nervis obscuris; petiolus crassiusculus 1—1,5 mm longus. Flores axillares solitarii. Pedicelli crassiusculi sparse glanduloso-punctati, nutantes, sub anthesi (1—)2—3 mm longi, sub fructu usque ad 4 mm elongati. Bracteolae late ovatae, obtusae, dorso glabrae, ciliolatae et glanduloso-muriculatae, 1,5 mm. Calyx 3 mm longus, glaber vel laxissime muriculatus, lobis ovatis obtusis ciliatis et glanduloso-muriculatis vel-fimbriatis, post anthesin reflexis, c. 1,8 mm longis. Corolla urceolato-cylindrica, glabra, rubra, (7—)8—10 mm longa, 3—4 mm diam., lobis 5 albescentibus c. 1,5 mm longis. Stamina 10; filamenta linearia, basin versus vix dilatata, glabra, 4—5 mm longa; antherae oblongae, c. tubulis 2,5 mm longae, echinulatae, tubulis latiusculis vix 1 mm longis. Ovarium glabrum; stylus glaber, 5—6 mm longus, Fructus c. 3 mm diam., basi breviter abrupte attenuatus quasi stipitatus, calyce parum carnosus et aucto, verticem capsulae haud includente.

CENTRAL NEW GUINEA. Western Highlands: Wahgi Divide area, *N.G.F.* 5188 *Womersley* (A; K, type; LAE, L); Hagen Range, c. 3650 m, *Stonor* 5 (E).

#### 36. DIPLYCOSIA KALMIIPOLIA Sleum.

*Diplycosia kalmiifolia* Sleumer in Bot. Jahrb. 71: 154. 1940.

BR. N. BORNEO. Mt Dulit (Ulu Koyan), near Long Kapa, c. 1000 m, *Richards* 2485 (K, type).

#### 37. DIPLYCOSIA KINABALUENSIS Stapf

*Diplycosia kinabaluensis* Stapf in Trans. Linn. Soc. ser. 2, Bot. 4: 193, t. 14 f. B 4—6. 1894; Gibbs in J. Linn. Soc. Bot. 42: 102. 1914; Merr., En. Born. 464. 1921.—*D. memecyloides* (non Stapf) Merr. *Le.*, p.p.

BR. N. BORNEO. Mt Kinabalu, (1860—) 2440—3960 m, *Haviland* 1086 (CAL; K, type; SAR, SING); Gibbs 4182 (cit. '4112'), 4311; *Clemens* 106U ('memecyloides'), 29085, 29087 p.p., 33115, 33785, 35079, 50925, 513.13, 5H15; *Carr* SF 27612; *Holtum* s.n.

#### 38. DIPLYCOSIA SUMATRENSIS Merr.

*Diplycosia sumatrensis* Merrill in Pap. Mich. Ac. Sc. 19: 181. March 1934.—*D. patenticalyx* J. J. S. in Fedde Rep. 35: 295. July 1934.

SUMATRA. Tapanuli: Luburadja, 1700—1900 m, *Junghuhn*. West coast: G. Singgalang, 2250—2870 m, *Yates* U52 (BO, K; MICH, type of *D. sumatrensis*, not seen; SING); *Doeters van Leeuwen* 398f (BO, type of *D. patenticalyx*; L); *Beccari* 328; *Biinnemeijer* 2841; *W. Meijer* 3835, 3839, 3866, 3869, 3870, 3887, 3895; G. Malintang, 2260 m, *Biinnemeijer* 4067, )205.

#### 39. *Diplycosia crassiramea* Sleum., nov. spec.

Frutex. Ramuli floriferi valde crassi (6—8 mm diam.), in partibus vetustioribus teretes, stigmatibus foliorum delapsorum rotundis valde

incrassatis ornati, in partibus terminalibus (3—5 mm diam.) angulati, griseo-corticati, lenticellis elongato-ellipticis nigrescentibus laxè praediti, ad innovationes in sicco rubescentes sparse setis solitariis longis (2—3 mm) adpersi ceterum omnino glabri. Folia pulvinulo crasso corticato insidentia atque cum eo bene visibiliter articulata, oblonga usque obovata, interdum obovato-elliptica, apice breviter acuminata usque late attenuata vel rotundata, glandula crassa et prorumpente apiculata, basi in petiolum cuneata, valde crassa et rigida, in sicco supra olivacea et nitidula, subtus brunnea et opaca, margine ± revoluta, minutissime crenulata vei integra, supra glabra, subtus per totam faciem subdense nigropunctata (setis vel setulis etiam in foliis recentioribus haud visis), (7—)8—13 cm longa, (3,5—)4—7,5 cm lata, costa supra leviter impressa, subtus valde crassa et prominente, nervis lateralibus pinnatis (nervo infimo tantum supra-basali) 3—4 curvato-ascendentibus interque sese praeter marginem conjunctis supra leviter impressis, subtus parum prominentibus, alteris summis brevioribus sicut venae minus distinctis vel obscuris; petiolus valde crassus, supra sulcatus, in parte summo lamina decurrente subalatus, c. 1 cm longus, 2,5—3 mm diam. Flores ad nodos defoliate et axillas foliatis fasciculati, (3—)4—8 pro fasciculo, basi bracteis ovatis usque lanceolatis acutis numerosis 2—4 mm longis f. ferrugineo-pubescentibus instructi. Pedicelli crassi, dense ferrugineo-crispulo-pubescentes haud setosi, 7—10 (—12) mm longi. Bracteolae ovatae, subacutae, ciliolatae atque brevissime glanduloso-fimbriatae, dorso f. ferrugineo-pubescentes, (2—)2,5—3 mm longae. Calyx basi contractus, 4—4,5 mm longus, dorso glaber vel ad lobos extus brevissime rufo-pilosus, lobis deltoideis subacutis sub anthesi reflexis breviter glanduloso-fimbriatis 2 mm longis. Corolla, sub plena anthesi campanulata, sed ore basique paullo constricta, c. 6 mm longa, 4—5 mm diam., glabra, viridis, lobis erectis fere 2 mm longis. Stamina 10, dilute brunnea; filamenta linearia supra basin paullo dilatata, papillosa, 3—3,5 mm longa; antherae ovato-oblongae, basi incurvatae, echinulatae, cum tubulis sat angustis 8 mm longae, tubulis ipsis 1,3 mm longis. Ovarium glabrum; stylus glaber, 5 mm longus. Fructus deest.

CENTRAL CELEBES. Enrekang, Tinabang, W. side of Rante Mario, 3000 m, fl. 18-6-1937, *Eyma* 736 (BO; L, type); *ibid.*, 2950 m, *Eyma* 788; Pokapindjang-Tinabang, 2800—3000 m, *Eyma* 622; near Pintealdn, spur of Pokapindjang, 2400—2600 m, *Eyma* 522.

#### 40. DIPLYCOSIA TRINERVIA Elm.

40a. var. TRINERVIA.

*Diplycosia trinervia* Elmer, Leaf. Philip. Bot. 3: 1102. 1911; Merr., En. Philip. 3: 247. 1923; Copel. f. in Philip. J. Sc. 47: 68. 1932.—*D. luzonica* (non (Gray) Merr.) Elm., Leaf. Philip. Bot. 3: 1105. 1911.

PHILIPPINES. Mindanao: Davao, Mt Calelan, *Elmer* 11676, 11676a, (E, K, L, PNH; US, type, not seen).

40b. var. *urdanstensis* (Elm.) Sleum., *comb. nov.*

*Diplycosia urdanetensis* Elmer, Leaf. Philip. Bot. 7: 2628. 1915; Merr., En. Philip. 3: 247. 1923.

PHILIPPINES. Mindanao: Agusan, Mt Urdaneta, *Elmer* 13800 (A, BO, CAL, E, GH, K, L; PNH, type, *j*; U, UC, US, not seen).

#### 41. DIPLYCOSIA LAMII J. J. S.

*Diplycosia lamii* J. J. Smith in Nova Guinea 18: 99, t. 21, 2. 1936; Sleum. in Bot. Jahrb. 72: 211. 1942.

NEW GUINEA. Northern part: Doormantop, 3200—3280m, *Lam* 1605 (BO; L, lectotype), 1791, 1808.

#### 42. DIPLYCOSIA OROPHILA Sleum.

*Diplycosia orophila* Sleumer in Bot. Jahrb. 71: 155. 1940.

BORNEO. Sarawak. Mt Dulit, 1230—1300 m, *Richards* 1895, 1988 (K, type).

#### 43. DIPLYCOSIA LUZONICA (A. Gray) Merr.

43a. var. LUZONICA.

*Diplycosia luzonica* (A. Gray) Merrill in Philip. J. Sc. 2: Bot. 293. 1907; *I.e.* 3: Bot. 378, 1908; *I.e.* 5: Bot. 371, 1910; En. Philip. 3: 247. 1923; Copel. f. in Philip. J. Sc. 47: 71, pi. 2 f. 3—6, pi. 3, pi. 4 f. 1. 1932.—*Gaultheria luzonica* A. Gray, in Proc. Am. Ac. Arts Sc. 5: 3z4. 1861.—*Diplycosia scandens* Merr. in Philip. J. Sc. 1: Suppl. 219. 1906; En. Philip. 3: 247. 1923.—*D. fascieuliflora* Merr. in Philip. J. Sc. 10: Bot. 52. 1915; En. Philip. 3: 246. 1923.

PHILIPPINES. Luzon: Laguna, Mt Banahao, *U.S. S. Pacif. Expl. Exp.* (GH, type of *G. luzonica*; US, cit. Copel. f., not seen); *Loher* 6208; *F.B.* 7884- *Curran & Merritt* (not seen); *F.B.* 7892 *Curran & Merritt* (not seen); *B. Sci.* 6851 *Robinson*; *B. Sci.* 19585 *Ramos* (not seen); *Foxworthy* (not seen); *Quisumbing* 1U0, 1366 (not seen); *F.B.* 30076 *Sulit*. Mountain, Benguet, *Clemens* 17217; Mt Simacoco, *B. Sci.* iO327 *Ramos & Edano*; Mt Pulog, *F.B.* 180U8 *Curran, Merritt & Zschokke*; Mt Pulog-*loco, Loher* 3771; Mt Baudan, *B. Sci.* U0S07 *Ramos & Edano*. Lepanto, Mt Data, *Merrill* U597 (cit. %579') (BO, K, L; PNH, type of *D. scandens*, f; US, not seen); *Loher* 3770; *Clemens* 16391 (cit. '13691'), 17822, 18779. Balbalasan, *F.B.* 5693 *Kleinme. Abra, F.B.* H61S *Darling* (not seen). Bontoc, Mt Pukis, *B. Sci.* 37811 *Ramos & Edano*. Ifugao, Mt Polis, *B. Sci.* 19758 *McGregor* (PNH, type of *D. fascieuliflora*, f)-Negros: Cuernos Mts, *Elmer* 10184-. Canlaon Volcano, *Merrill* 236; *ibid.*, along lake, 1860m PNH 21932 *Edano*. Mindanao: Misamis, Mt Malindang, *F.B.* 4779 (cit. '4776') *Mearns & Hutcheson*. Biliran Isi.: Mt Suiro, 1350 m, PNH 21697. Catanduanes: Mt Mariguion, *B. Sci.* 30381 (cit. '30318') *Ramos*.

43b. var. *pubens* Sleum., *nov. var.*

Bracteolis calycibusque dense griseo-puberulis a typo differt.

PHILIPPINES. Luzon: Benguet, Mt Pulog-*loco, B. Sci.* *Ramos & Edano* 40397 (A, BO, K; L, type; SING). Mt Pulog, *B. Sci.* 44884 *Ramos & Edano*.

43c. var. **calelanensis** (Elm.) Sleum., *comb. nov.*

*Diplycosia calelanensis* Elmer, Leaflet. Philip. Bot. 3: 1103. 1911 (*calelanense*); Merr., En. Philip. 3: 246. 1923; Copel. f. in Philip. J. Sc. 47: 74, pi. 5 f. 1. 1932.—*D. glabra* Merr. in Philip. J. Sc. 14: 442. 1919; En. Philip. 3: 246. 1923.—*D. opaca* C. B. Robins, in Philip. J. Sc. 6: Bot. 355. 1911; Merr. En. Philip. 3: 247. 1923; Copel. f. *l.e.* 47: 77, pi. 5 f. 2. 1932.

PHILIPPINES. Mindanao: Davao, Mt Calelan, *Elmer 11681* (A, BO, CAL, E, FI, K, L, NY; US, type, not seen). Mt Matutum, *Copeland*, (not seen). Luzon: Sorsogon, *Copeland* (not seen). Rizal, Montalban, *Loher 12382, 12383* (not seen); Pinatulan, *Loher 124.25*. Mountain Prov., Benguet, Mt Santo Tomas, 2285 m, *Santos 5805; Elmer 5932; Williams 1341; B. Sci. 5166 Ramos; Baguio, Elmer 14-262; Mt Ugo, B. Sci. 5726 Ramos; Mt Pauai, F.B. 14434 Darling; B. Sci. 8509 McGregor; B. Sci. 31784 Santos* (A, BO, CAL, K, L; PNH, type of *D. glabra*, f); *PNH 82412 Quisumbing & Sulit*. Tayabas, Mt Binuang-, 900 m, *B. Sci. 9385 Robinson* (PNH, type of *D. opaca*, t; US, not seen). Palawan: Mt Mantalinahan, Brooke's Point, *PNH 136 Edano*.

43d. var. **merrittii** (Merr.) Sleum., *comb. nov.*

*Diplycosia merrittii* Merr. in Philip. J. Sc. 2: Bot. 293. 1907; *l.e.* 3: Bot. 378. 1908; En. Philip. 3: 247. 1923.

PHILIPPINES. Mindoro: Mt Halcon, *F.B. 4413 Merritt; F.B. 4415 Merritt; F.B. 4437 Merritt* (not seen); *Merrill 5670* (K; PNH, type, f; US, not seen). Mindanao: Bukidnon, Mt Lipa, *B. Sci. 38540 Ramos & Edano*. Palawan: Mt Victoria *B. Sci. 666 Foxworthy* (US, cit. *Copeland*. f. not seen).

## 44. DIPLYCOSIA CARYOPHYLLOIDES J. J. S.

## 44a. var. CARYOPHYLLOIDES.

*Diplycosia caryophylloides* 3. 3. Smith in Bot. Jahrb. 68: 209, 214. 1937.

SOUTHEAST CELEBES. Mengkoka Mts. B. Porema, 1400—1500 m, *Kjellberg 2660, 3914* (S, type); B. Watuwila, 1500m, *Kjellberg 1095* (BO, S).

44b. var. **longipes** Sleum., *var. nov.*

A typo foliis minoribus 3—5 cm longis et (1,5—)1,7—2,5 cm latis (ceterum iis f ormae typicae simillimis) longiusque petiolatis (4—7 mm) tantum diversa.

SE. CELEBES. Kolonedale, between saddle and E. slope of Tomongkobae-group (i.e. in the mountains N of Kendari), *Eyma 3960* (BO: L, type).

## 45. DIPLYCOSIA SCABRIDA Becc.

*Diplycosia scabrida* Beccari, Malesia 1: 211. 1878; Merr., En. Born. 465. 1921.

BORNEO. Sarawak. Mt Mattan, *Beccari P.B. 2494, 2957*. Mt Poi, *Beccari P.B. 2418* (FI, lectotype; K). C. Borneo: G. Kenepai, *Hallier 1692*. Penunduk, B. Mili, *Amdjah 80*. Semedum, *Hallier 689*. SE. Borneo: Mentawir region, N. of Balikpapan, 20 m, *Kostermans 4520*; Peak of Balikpapan (G. Beratus), 1000 m, *Kostermans 7338; W. Meijer 866*.

## 46. DIPLYCOSIA CAPITATA Sleum.

*Diplycosia capitata* Sleumer in Bot. Jahrb. 71: 149. 1940.

C. CELEBES 'Ponaa-Rücken', i.e. on the waterdivide N of Paloppo (120°22'E.—2°15'S), 1620 m, *Sarasin, It. Cel. II-S 2081* (B, type f; fragm. L).

## 47. DIPLYCOSIA SAGITTANTHERA J. J. S.

*Diplycosia sagittanthera* 3. 3. Smith in Bot. Jahrb. 68: 205. 1937.

C. CELEBES. Nuha, B. Wawu Meusa (N of Lake Matana), 800 m, *Kjellberg 2316* (BO; S, type).

## 48. DIPLYCOSIA ACUMINATA Becc.

*Diplycosia acuminata* Beccari, Malesia 1: 212. 1878; Merr. En. Born. 463. 1921.

BORNEO. Sarawak: Batang Lupar, Mt Linga, 700m, *Beccari P.B. 3941* (FI, type). C. Borneo: Amal ambit, *Hallier 3440*. G. Kenepai, *Hallier 1875*. E. Borneo: Peak of Balikpapan (G. Beratus), 900—1000 m, *Kostermans 7352, 7601, 7608; W. Meijer 856*.

## 49. DIPLYCOSIA CRENULATA Sleum.

*Diplycosia crenulata* Sleumer in Bot. Jahrb. 71: 153. 1940.

BR. N. BORNEO. Mt Kinabalu, 1220—1680 m, *Clemens 30632, 35018* (A; BM, type; BO, E, L, NY), *40573*.

## 50. DIPLYCOSIA ELLIPTICA Ridl.

*Diplycosia elliptica* Ridley in 3. Fed. Mai. St. Mus. 10: 145. 1920; FI. Mai. Pen. 2: 213. 1923.—*D. cordifolia* Ridl. in 3. Fed. Mai. St. Mus. 10: 145. 1920; FI. Mai. Pen. 2: 214. 1923.—*D. microphylla* (non Becc.) Clarke in Hook, f., FI. Br. Ind. 3: 453. 1882; Ridl. in 3. Str. Br. R. As. Soc. 23: 146. 1891; in 3. Fed. Mai. St. Mus. 10: 145. 1920; FI. Mai. Pen. 2: 213. 1923; Burk. & Benders, in Gard. Bull. S.S. 3: 390. 1925; Fletcher in Craib, PI. Siam. En. 2: 315. 1938; Hemders. in Mai. Natur. J. 6: 264. 1950.—*Vaccinium microphyllum* (non Bl.) K. & G. in 3. As. Soc. Beng. 74, ii: 62. 1906; Burk. & Holtt. in Gard. Bull. S.S. 3: 57. 1923.—*Diplycosia kingii* Merr. in Pap. Mich. Ac. Sc. 19: 182. 1933; in Contr. Am. Arb. 8: 128. 1934; in Not. Nat. Ac. Nat. Sc. Philad. 47: 2. 1940.

SIAM. Surat: Kao Nawng, c. 800 m, *Kerr 13249*. Pattani, Yala, Betong, G. Ina, c. 1200 m, *Kerr 7585*.

MALAY PENINSULA. Kedah: Kedah Peak (G. Jerai), 915—1210 m, *Low s.n.; Lobb s.n.; Ridley 5528, 5529, Flippance s.n.* Perak: G. Batu Putih, 1035 m, *Wray 470* (K, lectotype of *D. elliptica*; SING); Larut Hills, 915—1220 m, *Kunstler s.n.* (BM. BO; K, syntype of *D. elliptica*); G. Hijau, 1525—1825 m. *Curtis s.n.; Murton 41*; G. Raya, *F. Dep. F.M.S. 47201 Sow*; G. Kerbau, above 1675 m, *F. Dep. F.M.S. 31468, 32127 Symington*; Tea Gardens, *Ridley s.n.*; locality not given: *Scortechini s.n., Scortechini 1171* (cit. by K. & G., not seen); *Wray 1105* (not seen); *Kunstler 3660* (not seen). Pahang: G. Tahan, 915—1005 m, *Ridley 16238* (K, type of *D. cordifolia*); *Holttum SF*

20708; Cameron Highl., c. 1370 m, *Hancock s.n.*; *ibid.*, Telom, Bt. Stempat, *Ridley s.n.*; *ibid.*, G. Batu Laengan, *F. Dep. F.M.S. 25950 Ja dm-at*; *ibid.*, G. Irau, summit, *F. Dep. F.M.S. 36553 Symington* (differs by dense rufous bristles on young shoots and setose pedicels, perhaps a variety); G. Benom, 1525 m, *F.M. Stat. Mus. Coll.*; Prazer Hill, 1220—1320 m, *Nur SF 11285, Burkill & Holtum SF 7895, 8942*; *ibid.*, Pine tree Hill., *F. Dep. F.M.S. 29499 Symington*; *Corner s.n. Selangor*: B. Etam, *Kelsall s.n. Johore*: Mt Ophir, top, c. 1270 m, *Griffith K.D. 3484*; *Lobb s.n.*; *Maingay 700*; *Hullett Slfl.*

SUMATRA, Atjeh: Gajolands, G. Lembuh, 1000—2500 m, *van Steenis 9029, 9193, 9231*. Eastcoast: Medan-Berastagi road, 1280 m, *Banff ham 976*; N of Berastagi, Karo Plateau, *Bartlett 6597*; new road Peso-Peso, 1250—1370m, *Bang ham 1079*.

BORNEO. W. Borneo: Mt Peneyn, *Teijsmann 7967*; Mt Singkadjang, *Teijsmann 7965*. Without locality; *de Vriese & Teijsmann s.n.*

### 51. DIPLYCOSIA MICROPHYLLA Becc.

*Diplycosia microphylla* Beccari, Malesia 1: 212. 1878; Merr., En. Born. 464. 1921.

BORNEO. Sarawak: Mt Mattang, top, *Beccari P.B. 2931* (cit. '2031', FI, type; K); *ibid.*, 915—1220 m, *Haviland s.n.*; *Clemens 20820bis*; *Ridley s.n.*; Mt Poi, 1370 m, *Clemens 20230*. Locality not given, *Lobb s.n.*, anno 1853.

The type specimen comprises 2 forms, one form with elliptic to ovate-elliptic leaves, 7—12 by 4—6 mm, the other form with elliptic-oblong leaves, 15—18 by 6—8 mm.

### 52. DIPLYCOSIA CONSOBRINA Becc.

*Diplycosia consobrina* Beccari, Malesia 1: 211. 1878; Merr., En. Born. 464. 1921.

BORNEO. Sarawak: Mt Mattang, c. 500 m, *Beccari P.B. 1747* (FI, leetotype), 2048.

### 53. *Diplycosia cinnabarina* Sleum., *nov. spec.*

Frutex repens et epiphyticus, ramulis radicanibus in partibus vetustioribus rubro-brunneo-corticatis et setosis, in partibus novellis sat dense subpatenter setulosis (1,5—2 mm) et subdense, rarius laxe pilis brevissimis patentibus fusciculis puberulis. Folia elliptica, rarius subovato-elliptica vel oblongo-elliptica, exstipulata, apice basique late obtusato-attenuata, apice ipso glandula parva manifesta instructa ibique una cum dentibus lateralibus brevissime tridentulata, rigida, coriacea, in sicco supra olivacea, rugosula et nitidula, subtus brunnescentia usque saturate rubescentia, opaca, supra glabra, subtus passim breviter nigro-setuloso-pilosa vel plerumque nigro-punctulata, manifeste crenata, dentibus obtusis in setulam diu persistentem 1 mm longam abeuntibus, 0,7—1,4 cm longa, (0,4—) 0,5—0,7 cm lata, costa supra bene immersa, subtus paullo elevata vel immersa, nervis lateralibus utroque latere unicus supra basin laminae ortis et praeter marginem curvato-ascendentibus, supra impressis, subtus plerumque obscuris, interdum levissime insculptis; petiolus setulosus 1,5—

2 mm longus. Flores singuli axillares. Pedicelli graciles, glabri, (6—)7—10 mm longi. Bracteolae ovatae, subacutae, ± reflexae, margine sat longe (c. 0,6 mm) setulosae. Calyx 2,5 mm longus, dorso glaber, lobis reflexis ovato-deltoidis 1,5 mm longis margine longe (0,6—0,8 mm) setulosis seu fimbriatis. Corolla urceolata, 8,5—9,5 mm longa, c. 3,5 mm diam., glabra, laete rubra, lobis obtusis 1,5 mm longis. Stamina 10; filamenta filiformia supra basin paulo dilatata, glabra, sigmoideo-undata, 4,5 mm longa; antherae oblongae, basi apiculato-recurvatae, valde granulatae, cum tubulis latiusculis 3,5 mm longae. Ovarium glabrum; stylus gracilis glaber 7 mm longus. Fructus haud visus.

SUMATRA. Atjeh: Gajo Lands, Mt Losir, upper course of the Lau Alas River, 2100—2250 m, *van Steenis 8428* (BO; L, type); G. Lembuh, 2500 m, *van Steenis 9055*.

### 54. *Diplycosia piceifolia* Sleum., *nov. spec.*

Frutex epiphyticus, c. 10—20 cm altus, ramis teretibus c. 3—5 mm diam., apicibus tantum iterum et iterum ramosis, ramulis brevibus congestis quasi pulviniformi-aggregatis, in partibus novellis verruculosis et brevissime patentibus brunneo-pubescentibus haud setosis. Folia densissima, acicularia, apice subacuta, basi breviter angustata, subcoriacea, in sicco supra griseo-olivacea, subtus brunnescentia, glabra, (1—)1,5—2 cm longa, 0,5—0,8 mm lata, costa supra impressa, ceterum evenia; petiolus 0,5—1 mm longus. Flores axillares solitarii, minuti. Pedicelli subglabri, graciles, 1,5—2,5 mm longi. Bracteolae ciliolatae, minutae. Calyx 1,3 mm longus, glaber, lobis ovatis obtusis ciliolatis. Corolla late cylindrica, c. 2,5 mm longa, fere usque ad medium 5-loba. Stamina 10 inclusa; filamenta sublinearia, curvata, glabra, 1 mm longa; antherae valde granulatae, thecis oblongis basi inflexis 0,8 mm longis, tubulis angustis 1,2 mm longis. Ovarium glabrum; stylus glaber, 1,5 mm. Fructus c. 1,5 mm diam.

C. BORNEO. M filler Mts, Amai Ambit, *Hallier 3345* (BO; L, type; NY), fl. fr. 29-4-1894.

### 55. DIPLYCOSIA PINIFOLIA Stapf

*Diplycosia pinifolia* Stapf in Trans. Linn. Soc. ser. 2, Bot. 4: 192. t. 14 f. A 1—3. 1894; Merr., En. Born. 465. 1921.

BR. N. BORNEO. Mt Kinabalu, 1065—2285 m, *Haviland 1297* (BO, CAL; K, type; SING); *Haslam s.n.*; *Clemens 28379, 29070., 29784, 32305, 32488, 33034, 33044, 33670, 34352, 34464*; *Carr SF 27538, 27682*.

### 56. *Diplycosia stenophylla* Sleum., *nov. spec.*

Frutex erectus, c. 30 cm altus, ramis teretibus in sicco nigrescentibus striatis, ramulis puberulis ceterum hinc inde seta subadpressa adspersis. Folia anguste lanceolata, apice breviter acuminata, glandula nigrescente minuta prorumpente terminata, basi in petiolum attenuata, subcoriacea, glabra, sed subtus ± laxe nigro-punctulata, supra nitidula, subtus opaca,



in sicco saturate usque nigrescenti-brunnea, integra vel remote ciliato-denticulata, denticulis minutissimis in setulam vix 1 mm longam gracillimam demum ± caducam excurrentibus 2—3 mm distantibus, (2—)2,3—3,5 cm longa, 0,4—0,6 cm lata, medio latissima, costa supra per totam longitudinem impressa, subtus parce prominente, nervis lateralibus utrinque obscuris; petiolus crassiusculus 1—2 mm longus, pulvinulo crasso insidens. Flores axillares solitarii rarius bini, plerumque 4-meri, interdum in eodem specimine 5-meri. Pedicelli pilosuli, c. 1,5 mm longi, basi minute 2—3-bracteati. Bracteolae late ovatae, minutae, glabrae, ciliatae. Calyx 2 mm longus, basi quasi in pedem contractus, glaber, lobis ovatis obtusis fimbriato-ciliolatis 1 mm. Corolla cylindrico-urceolata, rubra, 2,5—3 mm longa, c. 1,5 mm diam., glabra, brevissime 4(vel 5)-loba. Stamina 8 (vel rarius 10); filamenta linearia, glabra, inflexa, c. 1,5 mm longa; antherae ovatae basi saccatae, cum tubulis brevibus c. 1,5 mm longae. Ovarium glabrum; stylus filiformis 2,5 mm longus. Fructus haud visus.

C. CELEBES. Poso, Boro-Ptuna, 1700—1800 m, fl. 10-8-1937, *Eyma 1603* (BO; L, type); Lake Poso, c. 2000 m, *Steup 10*.

#### 57. DIPLYCOSIA MYRTILLUS Stapf

*Diplyeosia myrtillus* Stapf in Trans. Linn. Soc. ser. 2, Bot. 4: 192. 1894; Merr., En. Born. 464. 1921.

BR. N. BORNEO. Mt Kinabalu, 1525—2650 m, *Haviland 1136* (K, type; SAR); *Clemens 29861*.

#### 58. Diplyeosia rubella Sleum., nov. spec.

Frutex. Ramuli graciles, teretes, griseo-brunnescenti-corticati, laxe setulosi, in partibus recentissimis tenues, subangulati, densius subadpresse rufo-setulosi, setulis tenuibus 1—1,5 mm longis initio minute glanduliferis, ultro pilis brevissimis patentibus sat dense induti. Folia ovato-lanceolata, apicem versus longe subfalcato-caudato-acuminata, apice ipso acuta, glandula terminali parva haud prorumpente, basi late in petiolum cuneata, firmule subcoriacea, in sicco dilute brunnea, supra matura glabra et lucidula, subtus opaca et in facie laxa vel laxissime, secus costam densius breviter subadpresse setosa, margine in sicco r-evoluta, subintegra, loco denticulorum setis diu persistentibus instructa, 4—6 cm longa, 1—1,6 cm lata, costa supra bene impressa, subtus prominente, nervis lateralibus utroque singulis e basi laminae orientibus praeter marginem usque ad apicem excurrentibus supra levissime impresses, subtus obscuris, nervis ceteris venisque obscuris; petiolus supra sulcatus, breviter setosus, 2—3 mm longus. Flores axillares solitarii vel bini. Pedicelli basi minute bracteati, rigidiusculi, post anthesin tantum visi, glabri, (9—)10—12 mm longi. Bracteolae ovato-acuminatae, subacutae, apice puberulae ceterum glabrae, brevissime glanduloso-ciliolatae, 1,5 mm. Calyx, corolla (ex coll. rubra), stamina et ovarium desiderantur.

SUMATRA. Westcoast: N.W. slope" G. Talamau (Mt Ophir), 1950 m, 23-5-1927, *Bunnemeijer 781* (BO, type).

#### 59. DIPLYCOSIA LANCIFOLIA Ridl.

*Diplycosia lancifolia* Ridley in J. R. Str. Br. As. Soc. 39: 15. 1903; FL Mai. Pen. 2: 214. 1923.

59a. var. LANCIFOLIA.

MALAY PENINSULA. Pahang: G. Benom (Kluang Terbang), *Barnes (Herb. Ridley 10891)*, SING, type).

59b. var. calvescens Sleum., nov. var.:

Typo habitu valde similis, sed foliis magis ovato-lanceolatis, (3,5—)4,5—6,5 cm longis et (0,9—)1,1—1,7 cm latis et calyce dorso laxa murisculato ceterum glabro differt.

MALAY PENINSULA. Pahang: G. Tahan, W. of Teku Valley 1370m, *Holt-Sum SF 20746* (BO; SING, type).

#### 60. DIPLYCOSIA PILOSA Bl.

*Diplycosia pilosa* Blume, Bijdr. 858. 1826; DC, Prodr. 7: 591. 1839; Miq., Fl. Ind. Bat. 2: 1055. 1859; Koord.-Schum., Syst. Verz. fam. 233, p. 107. 1912; Koord., Exk. Fl. Java 3: 8. 1912; Back, in Bull. Jard. Bot. Btzg II, 12: 15. 1913; J. J. S. in K. & V., Bijdr. Booms. 13: 127. 1914; Amshoff in Back., Bekn. Fl. Java (em. ed.) 7b fam. 162: p. 6. 1948.—*Gaultheria pilosa* (Bl.) Endl. ex Hassk., Cat. Hort. Btzg 160. 1844; Zoll. in Nat. Geneesk. Arch. N.I. 2: 9. 1845; Endl. ex Moritz, Syst. Verz. Zoll. 42. 1846; Zoll., Syst. Verz. 2: 138. 1854; Miq., Ann. Mus. Bot. Lugd.-Bat. 1: 40. 1863.—*Amphicalyx pilosa* BL, Fl. Jav. Icon. Ined. t. 9. 1863—83.

W. JAVA. G. Salak, *Reinwardt s.n.* (*Herb. Blume*, L, type); *ibid.*, 1500—2200 m; *Zollinger 1686*; *Koorders 36686*; *Doct. van Leeuwen 14095*; *Backer 9253*; *Bakhuizen v.d. Br. 580, 4031, 4118*; *van Steenis 3033, 5067, 8265, 12397*; *Gedeh-Tjibodas, 2100 m, van Steenis 5026*; *Tjibodas, 1800 m, Sapei 2277*; *van Steenis 22329*; *G. Gegerbintang, 1500—2000m, van Steenis 4654, 11686*; above *Tjibeureum, 2000m, van Steenis 17597*. Bantam: *Nirmala, 1200—1500m, Backer 10672, 10809*; *G. Halimun, W. of Nirmala, 1500—1800 m, van Steenis 12425*. Locality not given: *Lobb s.n.*

#### 61. DIPLYCOSIA CAUDATIFOLIA Sleum.

*Diplycosia caudatifolia* Sleumer in Bot. Jahrb. 71: 150. 1940.—*D. heterophylla* (non Bl.) Stapf in Trans. Linn. Soc. ser. 2, Bot. 4: 192. 1894; Merr., En. Born. 464. 1921.

BR. N. BORNEO. Mt Kinabalu, 2100—3050 in, *Haviland 1146* (K, 'D. heterophylla'); *Clemens 27808, 28928, 29215, 29962, 31971, 32336, 32862, 32911, 33185, 33658, 33801, 51647* (A; BM, type; E, K, L); *Carr SF 27472*.

#### 62. DIPLYCOSIA MEMECYLOIDES Stapf

*Diplycosia memecyloides* Stapf in Trans. Linn. Soc. ser. 2, Bot. 4: 194. 1894; Merr., En. Born. 464, p.p. 1921; Heine in Fedde Rep. 54: 245. 1951.

BR. N. BORNEO. Mt Kinabalu, 915—2900 m, *Haviland 1208* (CAL; K, type; SAR); *Clemens 28885, 28917, 29283, 29729, 32048, 32541, 32918, 32974, 33066, 33150, 35078; Carr SF 28038.*

63. DIPLYCOSIA GRACILIPES J. J. S.

*Diphyeosia gracilipes* J. J. Smith in Bull. Jard. Bot. Btzg III, 1: 407, t. Si. 1920.

C. CELEBES. G. Sinadji (N of Makale and Rantepao) *Rachmat 886* (BO, type; L), 904 (= Ie. t.54), 905.

64. DIPLYCOSIA CELEBENSIS J. J. S.

*Diphyeosia celebensis* J. J. Smith in Bull. Jard. Bot. Btzg III, 1: 406, t. 53, 1920; in Bot. Jahrb. 68: 205. 1937.

C. CELEBES. G. Sinadji (N of Makale and Rantepao) *Rachmat 884*, (BO, type; L); G. Batuding, *Rachmat 914*; near Pintealon, spur of Pokapindjang, 2400—2600 m, *Eyma 530*; Pokapindjang, 2700 m, *Kjellberg 3921*; Pokapindjang-Tinabang, 2600—3000 m, *Eyma 578*.

65. *Diphyeosia haemantha* Sleum., *nov. spec.*

Frutex parvus, interdum epiphyticus, ramis cinereo-corticatis, ramulis novellis gracilibus rubro-brunneis, laxe ± appresse setulosis et patenter papilloso-puberulis. Folia elliptica vel obovato-elliptica, interdum obovata vel oblongo-elliptica, apice late acuminata usque rotundata, glandula sat crassa bene prorumpente apiculata, basi in petiolum cuneata, subcoriacea usque coriacea, firma, in sicco supra cinereo-olivacea, subtus sordide brunnescentia, utrinque opaca, margine dilutiore cartilagineo superne manifestius crenulata (initio denticulato-ciliata) vel haud raro subintegra vel integra, supra glabra, subtus basibus setularum caducarum relictis laxe nigro-punctulata, 1,4—2,5 (raro partim usque ad 3,5) cm longa, (0,8—) 1—1,5 cm lata, costa supra impressa, subtus fere plana, nervis obscuris; petiolus crassiusculus, rugulosus, laxe setulosus, 2(—3) mm longus. Flores singuli rarius bini (rarissime in axilla una alterave trini). Pedicelli graciles, nutantes, subglabri, 6—8(—10) mm longi. Bracteolae ovatae, obtusae, ± connatae, ciliolatae, 1 mm. Calyx glaber, c. 3 mm longus, lobis ovatis obtusis c. 2 mm longis margine brevissime glanduloso-muriculatis vel -fimbriatis. Corolla urceolata, 6,5 mm longa, glabra, sanguinea, breviter 5-loba. Stamina 10; filamenta linearia, glabra, 4 mm longa; antherae ovato-oblongae, echinulatae, cum tubulis brevibus et latiusculis c. 1,8 mm longae. Ovarium glabrum; stylus 3 mm longus. Fructus nigrescens, c. 4 mm diam.

CELEBES. Eastern Central Celebes: N spur of G. Lumut, between biv. II and III, 3-9-1938, *Eyma 3577* (BO; L, type), 35776. Southeast Celebes: B. Watuwila, 1500 m, *Kjellberg 1090*.

66. *Diphyeosia minutiflora* Sleum., *nov. spec.*

Frutex 2 m altus, ramis subangulatis, apice valde ramosis, ramulis erectis, angulatis, rigidulis, griseo-corticatis, innovationibus rubescenti-brunneis dense papilloso-puberulis, setulis nullis. Folia obovato-elliptica vel obovata, apice brevissime late attenuata usque rotundata, glandula crassa prorumpente apiculata, basi late in petiolum cuneata, subcoriacea, in sicco supra saturate griseo-olivacea, subtus rubescenti-brunnea, supra glabra et nitida, subtus opaca atque sat dense minutissime nigro-punctata, margine leviter revoluta et minutissime glanduloso-impresso-crenulata (primo visu integra), 1,5—3 cm longa, 0,9—1,7 cm lata, costa supra leviter immersa, subtus in inferiore dimidio tantum prominente, nervis laterilibus inter sese subparallelis utroque latere 2—3, nervo suprabasali altius curvato-ascendente, nervis superioribus 1—2 a costa abeuntibus brevioribus minus curvatis, omnibus supra levissime impressis, subtus ± obscuris; petiolus crassiusculus, in sicco nigrescens, 2—3 mm longus. Fasciculi 3—6-flori. Pedicelli sat graciles, ± dense breviter crispule flavescenti-pilosuli, 3—5 mm longi. Bracteolae ovatae, subacutae, in medio dorso pilosulae, c. 0,8 mm tantum longae, ciliolatae. Calyx basi contractus, glaber, 2 mm, lobis ovatis, subacutis glanduloso-fimbriatis, 1 mm longis. Corolla tubulosa, alba, glabra, 3,5 mm longa, c. 1,8 mm diam., lobis 0,6 mm longis, erectis. Stamina 10; filamenta linearia, glabra, 1,5 mm longa; antherae oblongae, echinulatae, sensim in tubulos sat angustos thecas subaequantibus abientes, cum tubulis fere 2 mm longae. Ovarium sat dense flavido-pilosulum; stylus glaber 2—2,5 mm longus. Fructus ex coll. ruber vel rubescens, haud visus.

N. C. CELEBES. Biv. Puna (near Poso), 1800 m, fl. 24-6-1931, *Steup 21* (BO, type).

67. DIPLYCOSIA KEMULENSIS J. J. S.

*Diphyeosia kemulensis* J. J. Smith in Bull. Jard. Bot. Btzg III, 13: 459. 1935.

C. E. BORNEO. W. Kutei, G. Kemul, summit, 1850 m, *Endert 4396* (BO, type; L).

68. DIPLYCOSIA ROSMARINIPOLIA Sleum.

*Diphyeosia rosmarinifolia* Sleumer in Bot. Jahrb. 71: 156. 1940.

BR. N. BORNEO. Mt Kinabalu, c. 1980 m, *Clemens 34205* (A; BM, type; BO, K, L, NY).

69. DIPLYCOSIA APICULIFERA J. J. S.

*Diphyeosia apieulifera* J. J. Smith in Fedde Rep. 35: 296. 1934.

SUMATRA. Westcoast: G. Singgalang, 2800 m, *Beccari (Herb. Beccari 5774, I'1)*. G. Talakmau (Mt Ophir), 2000 m, *Binnemeijer 799*; G. Kerintji, 2100—2500 m, *Binnemeijer 9413, 9961* (BO, type; L), 10269, 10U52.

## 70. DIPLYCOSIA PITTOSPORIFOLIA J. J. S.

*Diplycosia pittosporifolia* J. J. Smith in Bull. Jard. Bot. Btzg III, 13: 460. 1935.

70a. var. PITTOSPORIFOLIA.

C. E. BORNEO. W. Kutei, Mt Kemul, 1800 m, *Endert 4460* (BO, type; L).

70b. var. punctiloba Sleum., *nov. var.*

Ramulis dense setosis nervisque lateralibus supra leviter impressis, pedicellis 1,2—1,5 cm longis densius patenter glanduloso-setulosis a typo diversa.

BR. N. BORNEO. Mt Kinabalu, Kamburanga, 2440—2745 m, 23-3-1932, *Clemens 28900* (BM, BO, E, K; L, type; NY); *ibid.*, 2195m, *Carr SF 27480*.

## 71. DIPLYCOSIA LYSOLEPIS Sleum.

*Diplycosia lysolepis* Sleumer in Bot. Jahrb. 72: 209. 1942.

NEW GUINEA. Northeastern part: Morobe, Boana, 1150—1500 m, *Clemens 8161* (B, type, f); Yunzaing, Mt Alok, c. 1500 m, *Clemens 2376* (B, j); Sambanga, 1700—2000 m, *Clemens s.n.* (B, f). Southeastern part: Centr. Distr., Alola, 1980 m, *Carr 13736* (A; K, neotype; L).

## 72. DIPLYCOSIA RETUSA Sleum.

*Diplycosia retusa* Sleumer in Bot. Jahrb. 71: 156. 1940.

CENTRAL CELEBES. Topapu Mts (120° 15' E., 2° 0' S.), 1300—1700 m, *Sarasin It. Cel. II-n. S 2097* (B, type, f; L, fragm.).

## 73. DIPLYCOSIA EDULIS Schltr.

*Diplycosia edulis* Schlechter in Bot. Jahrb. 55: 163, f. 7, *H-M.* 1918; Sleum. *I.e.* 72: 209. 1942.

NEW GUINEA. Central part: Oranje Mts, Mt Wilhelmina, 9 km N. E. of Lake Habbema, 3000 m, *Brass 10673*; Lake Habbema, 3225 m camp, *Brass 90>67*. Northeastern part: Bismarck Mts, c. 2300 m, *Schlechter 18727* (B, type, 11 K).

## 74. DIPLYCOSIA SANGUIOLENTA Sleum.

*Diplycosia sanguinolenta* Sleumer in Bot. Jahrb. 71: 157. 1940.

BR. N. BORNEO. Mt Kinabalu, 1525—1830m, *Clemens 32465* (A; BM, type; BO, K, L, NY), 32474, 32722 ('32772'), 32982, 32986, 33052; *Carr SF 26922*.

## 75. DIPLYCOSIA SPHENOPHYLLA Sleum.

*Diplycosia sphenophylla* Sleumer in Bot. Jahrb. 71: 158. 1940.

BR. N. BORNEO. Mt Kinabalu, 1220—1525 m, *Clemens 32356*, 32546, 35074, 40007 (A; BM, type; BO, E, K, L, NY).

## 76. DIPLYCOSIA URCEOLATA Stapf

*Diplycosia urceolata* Stapf in Trans. Linn. Soc. ser. 2, Bot. 4: 194. 1894; Merr., *En. Born.* 465. 1921.—*D. coriifolia* Sleum. in Bot. Jahrb. 71: 152. 1940.

BR. N. BORNEO. Mt Kinabalu, 2135—3350 m, *Haviland 1150* (K, type; SAR, SING); *Clemens 27846*, 29087 p.p., 31864, 32909, 33042, 33189, 33624, 33815 (A; BM, type; E, L, NY); *Carr SF 27482*.

77. *Diplycosia conimutata* Sleum., *nov. spec.*

*Diplycosia urceolata* (non Stapf) Sleumer in Bot. Jahrb. 71: 153. 1940, in *texto*.

Frutex terrestris vel epiphyticus, rarius arbuscula, ramulis subteretibus, apice in sicco rubro-brunneis omnino glabris, in partibus inferioribus cito griseo-corticatis. Folia oblonga usque obovato-oblonga, apice obtusa rarius breviter late attenuata vel leviter emarginata, glandula crassa prorumpente apiculata, basi sat breviter in petiolum cuneata, tenuiter coriacea, rigidula, supra in sicco dilute brunnea, glabra et nitidula, subtus saepius saturate rubro-brunnea, opaca et laxe nigro-punctulata, integra, sed in margine subcartilagineo lamina pallidiore indistincte impresso-crenulata (loco crenularum in foliis juvenilibus setula mox caduca instructa), haud vel parce revoluta, (3,5—)4—6(—7) cm longa, (0,8—)1—1,8 (2, rarius partim usque ad 2,5) cm lata, supra basin 3—5-plinervia, costa supra manifeste impressa, subtus bene prominente, nervis lateralibus infimis paullo suprabasalibus alte curvato-ascendentibus, ± apicem laminae attingentibus, supra leviter impressis, superioribus altius a costa abeuntibus similiter curvatis haud raro minus distincte impressis vel omnino obscuris, nervis subtus haud visibilibus; petiulus crassiusculus glaber 2—4 mm longus, 0,6—1 mm diam. Flores in axillis superioribus singuli vel bini, in axillis inferioribus 3(—4), fasciculati. Pedicelli pilis vel setulis brevibus glanduliferis laxè induti, ceterum brevissime pilosi, vel subglabri, sub anthesi 2—3 mm longi, postea paullo elongati, bracteis basalibus paucis, minutis. Bracteolae ovatae, obtusae, glabrae, subglanduloso-ciliatae, 1 mm longae. Calyx 2 mm longus, prof unde 5-lobus, lobis ovatis obtusis breviter subglanduloso-fimbriatis. Corolla subgloboso-urceolata, basi attenuata, medio ventricosa, apice contracta, carnosula, cum lobis brevissimis (0,5 mm) c. 4,5 mm longa, c. 2,5 mm diam., albida (vel ante plenam anthesin rosacea). Stamina 10; filamenta linearia, glabra, leviter incurvata, fere 3 mm longa; antherae oblongae, parum granulatae, tubulis inclusis c. 1,8 mm longae, tubulis c. 0,5 mm longis. Ovarium glabrum; stylus 2,5 mm glaber. Fructus subglobosus, purpureus, fere maturus c 3 mm diam.

BR. N. BORNEO. Mt Kinabalu, Tenompok, c. 1525 m, *Carr SF 26860*; *Clemens 26811*, 27533, 28805 (A; BM, type; BO, L, NY), 29793, 29852; Gurulau spur, 1525m, *Clemens 50585*; Dahobang River, *Clemens 30706*.

## 78. DIPLYCOSIA LORENTZII Koord.

*Diplycosia lorentzii* Koorders in Nova Guinea 8: 881, t. 154 (3, a-e). 1912; J. J. S. *I.e.* 12: 514. 1917; Sleum. in Bot. Jahrb. 72: 209. 1942.

S, NEW GUINEA. Hellwig Mts, c. 1350 m, *von Römer 1014* (BO, type; fragm. L); Ericatop, c. 1460 m, *von Römer 104.2, 10US*; *ibid.*, 1520 m, *Pulle 8C3*.

79. DIPLYCOSIA RUBIDIFLORA J. J. S.

*Diplycosia rubidiflora* J. J. Smith in Fedde Rep. 30: 172. 1932.

S. CELEBES. G. Bantaeng (Bonthain), 1900—2600 m. *Bunnemeijer 12153* (BO, lectotype; L), *12316, 12392*; *ibid.*, Malino, 2500 m, *van der Fiji 759*; *ibid.*, Lanjienga, *Teijsmann 13675, 14208*.

80. DIPLYCOSIA ENSIFOLIA Merr.

*Diplycosia ensifolia* Merrill in J. Str. Br. R. As. Soc. 76: 107. 1917; En. Born. 464. 1921.

BR. N. BORNEO. Mt Kinabalu, 1370—2440 m, *Clemens 11027* (A, type; BO, K), *32024, 32239, 32405, 32478*.

81. DIPLYCOSIA PUNCTULATA Stapf

*Diplycosia punctulata* Stapf in Trans. Linn. Soc. ser. 2, Bot. 4: 193, 1894; Merr., En. Born. 465. 1921.

BR. N. BORNEO. Mt Kinabalu, 1680—2750 m, *Haviland 1202* (K, type; SAR); *Clemens 28934, 29961, 32497, 32509, 32692, 32788, 33624 A, 40971*; *Carr SF 28035, 28036*.

82. DIPLYCOSIA CINNAMOMIFOLIA Stapf

*Diplycosia cinnamomifolia* Stapf in Trans. Linn. Soc. ser. 2, Bot. 4: 195. 1894; Gibbs in J. Linn. Soc. Bot. 42: 102. 1914; Merr., En. Born. 464. 1921.

BR. N. BORNEO. Mt Kinabalu, 2440—3440 m, *Haviland 1138* (K, type; SAR); *Gibbs 3122* (cit. '3125', K); *Clemens 10567, 10696, 28914b, 29112, 29259, 29959, 33131, 33131a, 50804, 50960*; *Wood & Wyatt-Smith SAN A 4478*; *Nat. Coll. 74*; *Hoshim s.n.*; *Carr SF 27611*.

Similar in habit, not sure if conspecific, more densely muriculate on pedicels, bracteoles and calyx (buds only);

C. E. BORNEO. Mt Kemul, 1600—1800 m, *Endevt 4360* (BO), *4441* (BO, L).

83. DIPLYCOSIA VIRIDIFLORA Sleum.

*Diplycosia viridiflora* Sleumer in Bot. Jahrb. 71: 159. 1940.

83a. var. VIRIDIFLORA.

BR. N. BORNEO. Mt Kinabalu, 1220—1675 m, *Clemens 32668*, (cit. '32648') *12720* (A; BM, type; BO, E, K, L, NY), *32833, 40706*; *Darnton 589*.

83b. var. **megalantha** Sleum., *nov. var.*

A typo floribus solitariis, calyce 7—8 mm longo, corolla 11 mm longa, stylo 10 mm longo pedicellisue 1,5—2 cm longis differt. Foliis indumento omnino cum typo convenit.

BR. N. BORNEO. Mt Kinabalu, Colombon basin, head of Numeruk creek, 18—8—33, *Clemens 34499* (BO, type; E, sterile; L, type-fragm.; NY).

84. DIPLYCOSIA HETEROPHYLLA Bl.

*Diplycosia heterophylla* Blume, Bijdr. 858. 1826 *incl. var.*; DC, Prodr. 7: 591. 1839; Miq., Fl. Ind. Bat. 2: 1055. 1859; Koord. in Nat. Tijd. N.I. 62: 255. 1902; Exk. Fl. Java 3: 8. 1912; Hallier f. in Med. Rijksherb. 12: 28. 1912; Koord.-Schum., Syst. Verz. fam. 233, p. 107. 1912; J. J. S. in K. & V., Bijdr. Booms. 13: 131. 1914, *incl. var. obovata* J. J. S., *I.e.* 135; Hochr. in Candollea 2: 494. 1925; Sp. Moore in J. Bot. 63: Suppl. 57. 1925; Koord., Fl. Tjib. 4. 1918; Malme in Fedde Rep. 34: 284. 1934; Amshoff. in Back., Bekn. Fl. Java em. ed.) 7b fam. 162: 6. 1948, *excl. syn. D. latifolia* Bl.—*Gaultheria heterophylla* (Bl.) Endl. ex Hassk., Cat. Hort. Btzg 160. 1844; ZöL & Mor. in Nat. Geneesk. Arch. N.I. 2: 9. 1845; ZöL, Syst. Verz. 2: 138. 1854; Miq., Ann. Mus. Bot. Lugd.-Bat. 1: 40. 1863.—*Amphicalyx heterophyllus* (Bl.) Hassk., Cat. Hort. Btzg 160. 1844, *in. syn.*; Bl. ex Hassk., PL Jav. Rar. 470. 1848.—*Gaultheria latifolia* Endl. ex ZöL, Syst. Verz. 2: 138. 1854.—*Diplycosia latifolia* (*non* Bl.) Hallier f. in Med. Rijksherb. 12: 28. 1912.—*D. bartlettii* Merr. in Pap. Mich. Ac. Sc. 19: 182. 1933.

84a. var. HETEROPHYLLA.

SUMATRA. A t j e h: Laut Pupandji, 1900 m, *van Steenis 6546*. Eastcoast: G. Pinto (Sibolangit), 2200 m, *Loring 8280*. Westcoast: G. Singgalang, 2200 m, *Beccari P.S. 243, 346*; *Bunnemeijer 2604*; G. Talamau, N.W. slope, 1870—1900 m, *Bunnemeijer 783, 823*. T a p a n u l i: upper slopes and summit of Dolok Surungan, Habinsaran, *Bartlett 7991, 8019* (L, fragm.; MICH, type of *D. bartlettii*, not seen). P a l e m b a n g: G. Dempo, 2050—3000m, *Forbes 2370, 2398a, 2403a, 2559a*; *Bally 8*; G. Pesagi, E.S.E. Lake Ranau, 2200 m, *van Steenis 3749*. Benkulen: Mt Daun, 2400 m, *de Voogd 1392*. Locality not given: *Korthals s.n.*

JAVA. B a n t a m: Kosala, Pasir Orai, 855 m, *Forbes 273, 342*; Nirmala, 1200 m, *Backer 10763*; *van Steenis 5221*; *ibid.*, G. Botol, 1700 m, *Backer 10726*; *ibid.*, G. Halim, 1700 m, *van Steenis 12402*. D j a k a r t a / P r e a n g e r: G. Salak, 1600—2200 m, *Lobb s.n.*; *Backer 9262*; *Koorders 26047, 31630, 31974, 36670*; *van Steenis 3044, 12393*; *hochreutiner 2007*; G. Karang, 1000 m, *Horsfield s.n.*; *Bakhuizen v.d. Br. 836, 1565, 3746*; *Tjibodas, 1400—1500 m, Kuntze s.n.*; *Massart 376*; *Hallier 669*; *Scheffer s.n.*; *Beccari s.n.*; *Valeton s.n.*; *Boerlage s.n.*; *Danser 6110*; *ibid.*, 2000—2400 m, *Koorders 31601, 42106*; *Tjibeureum, 1600 m, Rant & Smith 567*; G. Gede, 1600—2700 m, *Scheffer s.n.*; *Backer 3362, 14711, 15026, 31379*; *Bakhuizen v.d. Br. 2799*; *Pulle 4131*; *van Steenis 10612*; G. Papandajan, 2000—2600 m, *Docters van Leeuwen 13324*; *van Steenis 4132, 4335*; *Kjellberg s.n.*; Kawah Manuk, *Holstvoogd 497*; *Scheffer B 39*; G. Megamendung, *de Voogd s.n.*; G. Perbakki, 1700 m, *Bakhuizen v.d. Br. 1698*; G. Pangrango, 2165 m, *Kurz s.n.*; *ibid.*, N. slope, 2300—2600 m, *van Steenis 5221*; Kertamanah, 1550—1600 m, *Rant & Smith 512, 561* (BO, lectotype var. *obovata*; L); G.

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BALI. Batukau, 1200 m, *de Voogd 1974*.

LOMBOK. Rindjani, SW. slope, 1750—2050 m, *Elbert (Gründler) 2268*.

Similar in habit, sterile, determination not certain:

C. E. BORNEO. Mt Kemul, 1500 m, *Endert 4178*.

84b. var. *latifolia* (Bl.) Sleum., *stat. nov.*

*D. latifolia* Blume, *Bijdr.* 858. 1826; DC., *Prodr.* 7: 591. 1839; Miq., *Fl. Ind. Bat.* 2: 1055. 1859; Boerl., *Handl.* 2, 1: 270. 1891; Koord. in *Nat. Tijds. N.L.* 62: 255. 1902; K. & G. in *J. As. Soc. Beng.* 74, ii: 71. 1906; J. J. S. in K. & V., *Bijdr. Booms.* 13: 130. 1914; Ridl. in *J. Fed. Mal. St. Mus.* 8, 4: 57. 1917; Merr., *En. Born.* 464. 1921; Ridl., *Fl. Mal. Pen.* 2: 214. 1923; Burk. & Holtt. in *Gard. Bull. S.S.* 3: 57. 1923; Henders. in *J. Mal. Br. R. As. Soc.* 5: 256. 1927; Fletcher, *Fl. Siam. En* 2: 315. 1928; Henders. in *Mal. Natur. J.* 6 (1): 264, f. 237, 1950—*Gaultheria latifolia* (Bl.) Endl. ex Hassk., *Cat. Hort. Btzg* 160. 1844; Zoll. & Mor. in *Nat. Geneesk. Arch. N.L.* 2: 9. 1845; Miq., *Ann. Mus. Bot. Lugd.-Bat.* 1: 41. 1863.—*Amphicalyx latifolius* Bl. ex Hassk., *Pl. Jav. Rar.* 469. 1848.—*D. macrophylla* Becc., *Malesia* 1: 212. 1878; Merr., *En. Born.* 464. 1921.—*D. urecolata* (non Stapf) Ridl. var. in *J. Str. Br. R. As. Soc.* 39: 15. 1903.—*D. heterophylla* (non Bl. s. str.) K. & G. in *J. As. Soc. Beng.* 74, ii: 71. 1906; Ridl., *Fl. Mal. Pen.* 2: 214. 1923.—*D. baclayensis* Elm., *Leaf. Philip. Bot.* 3: 1100. 1911; Merr., *En. Philip.* 3: 246. 1923; Copel. f. in *Philip. J. Sc.* 47: 78. 1932.—*D. enderti* J. J. S. in *Bull. Jard. Bot. Btzg III*, 13: 458. 1935.—*D. kerintjensis* J. J. S. *Lc.* 456, *incl. var. elliptica* J. J. S. *Lc.* 457.

SIAM. Pattani: Yala, Betong, G. Ina, c. 1200 m, *Kerr 7590*.

MALAY PENINSULA. Perak: Larut, 90—150 m, *Kunstler 6797*; G. Batu Putih, 2040 m, *Wray 364, 909*; *ibid.*, 915—1220 m, *Kunstler 8023*; G. Kerbau, 1675 m, *F. Dep. F.M.S. 31488* *Symington*; Kelau Tujur, *Wray 2204*; locality not given, *Scortechini 339*. Negri Sembilan: G. Angsi, 700 m, *Nur SF 11764*, Pahang: Cameron Highl. *F. Dep. F.M.S. 27037* *Yeoh*; *ibid.*, below Fosters Hill, 1465 m, *Henders SF 17840*; *ibid.*, Taman Sedia, 1430 m, *Holttum SF 24988*; *F. Dep. F.M.S. 36008* *Symington*; *F. Dep. F.M.S. 27668* *Ja'amat*; Sg. Chan, *F. Dep. F.M.S. 27037* *Ja'amat*; G. Benom (Kluang Terbang), *Barnes (Herb. Ridley 10915, 'D. urecolata* var.); Frazer Hill, 1220 m, *Nur SF 11290*; *ibid.*, Pine tree Hill, 1465 m, *Addison SF*

37380; *Burkill & Holttum SF 8552*; *Melville & Landon 4834*; G. Tahan, *Ridley 16655*. Selangor: Bt. Kutu, *Ridley 7556a*; Bt. Hitam, *Ridley 7556*; Kanching, *F. Dep. F.M.S. 29836* *Symington*. Johore: G. Behemat, 1005 m, *Holttum SF 10826*.

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JAVA. Bantam: between Langkop and Tjitorek, 700—800 m, *Backer 1780*. Preanger: G. Pangrango, 1830—2135 m, *Kurz HK 2348* (CAL); G. Patuha, *Korthals s.n.*; Telagabodas, *Korthals s.n.*; Tjampakka, *Hasskarl s.n.* Semarang: G. Unggaran, *Medini, Jungkuhn 82*. Locality not given: *Herb. Blume* (L, type of *D. latifolia*).

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PHILIPPINES. Mindanao: Davao, Mt Apo, c. 1960 m, *Elmer 11595* (E, K, L; PNH, type of *D. baclayensis*, †).

Similar in habit, sterile, perhaps conspecific:

BORNEO. Sarawak: Mt Poi, 1370—1830 m, *Clemens 20372* (NY). C. Borneo: G. Damus, *Hallier 503* (BO, K, L).

#### IMPERFECTLY KNOWN SPECIES.

*D. amboinensis* Becc., *Malesia* 1: 210. 1878.

AMBON. G. Salbutu, c. 1000 m, *Beccari (Herb. Beccari 5766, FI, type)*.

#### SPECIES EXCLUDED FROM THE GENUS.

*D. adenothrix* (Miq.) Nakai in *Bot. Mag. Tokyo* 35: 135. 1921 = *Gaultheria adenothrix* (Miq.) Maxim.

*D. alboglauca* Merr. in *Brittonia* 4: 153. 1941 = *Gaultheria denticola* W. W. Sm., cf. *Airy-Shaw* in *Kew Bull.* 109. 1948.

*D. breviflora* Ridl. in *J. Fed. Mal. St. Mus.* 6: 158. 1915 = *Pernettyopsis breviflora* (Ridl.) Ridl.

*D. discolor* (Nutt.) Clarke in *Hook. f., Fl. Br. Ind.* 3: 459. 1882 = *Gaultheria discolor* Nutt.

*D. erythrina* (Hook.) K. & G. in *J. As. Soc. Beng.* 74, ii: 72. 1906 = *Vaccinium varingiaefolium* (Bl.) Miq., cf. *J. J. S. in K. V., Bijdr. Booms.* 13: 126. 1914.

*D. lucida* Merr. in Phil. J. Sci. 11: Bot. 28. 1916 = *Costera lucida* (Merr.) Airy-Shaw & J. J. S.

*D. mundula* (F. v. M.) Schltr. in Bot. Jahrb. 55: 162. 1918; White & Francis, in Proc. R. Soc. Queensl. 39: 68. 1928 = *Gaultheria mundula* F. v. M.

*D. pauciseta* Merr. in Brittonia 4: 153. 1941 = *Gaultheria dumicola* W. W. Sm. var. *aspera* Airy-Shaw, cf. Airy-Shaw in Kew Bull. 110. 1948.

*D. ? semi-infera* Clarke in Hook. f., Fl. Br. Ind. 3: 459. 1882 = *Gaultheria semi-infera* (Clarke) Airy-Shaw.

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