

PRELIMINARY REVISIONS OF SOME GENERA OF MALAYSIAN
MILTONIACEAE V — A CENSUS OF THE GENUS DESMODIUM*

by

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SUMMARY

The generic circumscription accepted is in a rather wide sense, including the synonyms *Phyllodium*, *Dicerma*, *Aphyllodium*, *Meibomia*, *Monarthrocarpus*, *Pteroloma*, *Codariocalyx*, etc.

The generic delimitation against *Alysicarpus* seems doubtful; see the discussion under 2. *Desmodium alysicarpoides*.

In all 39 species have been recognized among which none is newly recorded for the Malaysian area. Another, 40. *D. bolsteri* Merr., of which no material was available, could not be clarified. Of 41. *D. uncinatum* (Jacq.) DC., an American introduction, I had no material either.

A number of specific names have been reduced: *D. muelleri* Bth. and *D. neurocarpum* Bth. to *D. filiforme* Zoll., which is not endemic in Malaysia and appears to be a species which finds its widest distribution in North Australia and Queensland; *D. archboldianum* Baker f. from New Guinea is reduced to *D. nemorosum* F. v. M.; *D. cumingianum* (Bth.) Bth. from the Philippines is merged with *D. umbellatum* (L.) DC.; *D. podocarpum* DC. and *D. fallax* Schindl. cannot be separated from *D. racemosum* (Thunb.) DC.; *D. capitatum* (Burm. f.) DC. is reduced to *D. styracifolium* (Osbeck) Merr.; *D. longibracteatum* Schindl., *D. rufihirsutum* Craib, and *D. virgatum* Zoll. are both merged with *D. velutinum* (Willd.) DC.; *Dicerma novoguineense* Schindl. and *Dicerma hispidum* Schindl. have both been reduced to *D. biarticulatum* (L.) F. v. M. Besides, two varieties in *D. nemorosum* and *D. adscendens* cannot be upheld.

Two new names are proposed, viz *D. alysicarpoides* for *D. parviflorum* (Dalz.) Baker 1876, non Mart. Galeotti, 1843, and *D. blandum* for *D. elegans* (Lour.) Bth. 1861, non DC. 1825 nec Schlecht. 1838.

Two new varietal combinations are *D. biarticulatum* var. *australiense* (Schindl.) van Meeuwen and *D. velutinum* var. *longibracteatum* (Schindl.) van Meeuwen.

A key to and synonymy and distribution of the species has been given. Indexes to collections and to names are provided at the end.

*) The first instalment of this series was published in Reinwardtia 5: 419—456. 1961; the second in vol. 6: 85—108. 1961; the third in vol. 6: 195—223. 1962; the fourth in vol. 6: 225—238. 1962.

**) Foundation Flora Malesiana, Leyden.

DESMODIUM Desv.

Desmodium Desv. in J. Bot. 1: 122, t. 5. 1813, *nom. gen. cons.* — *Meibomia* Heist. ex Adans., Fam. 2: 509. 1763. — *Phyllodium* Desv. in J. Bot. 1: 123, t. 5. 1813. — *Nicolsonia* DC., Mém. Lég. 311, t. 51. 1825; Prod. 2: 325. 1825. — *Dicerma* DC., Mém. Lég. 326. 1825; Prod. 2: 339. 1825; — *Pteroloma* DC., Prod. 2: 326. 1825, in *textu*; Bth. in Miq., Pl. Jungh. 219. 1852. — *Codariocalyx* Hassk. in Flora 25, Beihl. 2: 48. 1848. — *Dendrolobium* Bth. in Miq., Pl. Jungh. 215. 1852. — *Catenaria* Bth. in Miq. l.c. 220. — *Monarthrocarpus* Merr. in Philip. J. Sc. 5: Bot. 89. 1910; Kosterm. in Reinwardtia 1: 456. 1952. — *Aphyllodium* Gagnep., Not. Syst. 3: 251. 1916. — *Hanslia* Schindl. in Fedde, Rep. 20: 276. 1924. — *Hegnara* Schindl., l.c. 284. — *Desmofischera* Holth. in Blumea 5: 188. 1942.

KEY TO THE SPECIES

1. Flowers subtended and enclosed by a persistent leaf consisting of one pair of appressed orbicular-ovate, emarginate leaflets 1—3 cm through, obliquely rounded at the base.
 2. Floral leaflets appressed-hairy inside, more densely so on the nerves. Stipules 4—6 mm. Pod mostly (1—)2(—3)-jointed, appressed-hairy, reticulate-veined. Leaves 3-foliolate; terminal leaflet ovate—broad-elliptic—obovate, acute, obtuse or emarginate, slightly undulate along the margin, 2½—17 by 1½—7 cm, appressed-hairy beneath. 23. *D. pulchellum*
 2. Floral leaflets almost uniformly hairy inside. Stipules 2—3 mm. Pod (1—)2—3-jointed, densely appressed-hairy, not reticulate-veined. Leaves 3-foliolate; terminal leaflet ovate, oblong-ovate or obovate, emarginate, slightly undulate along the margin, 3½—8½ by 3—7 cm, appressed-hairy beneath. 5. *D. blandum*
1. Flowers never subtended by such leaves but by sessile, simple, not leaf-like bracts usually caducous long before fruit is set.
3. Flowers in dense-flowered umbels. Stalk of the umbel 3—10 mm. Stamens monadelphous. Pod corky when mature.
4. Keel shorter than the wings.
 5. Standard up to 10 mm. Bracteoles narrow-lanceolate to linear. Pod with appressed, white hairs, sometimes glabrescent when mature. Leaflets between the side-nerves cancellate-veined, mostly densely appressed-hairy on the nerves beneath, between them thinly pubescent. Terminal leaflet oblong-broad-elliptic, acuminate or narrowed acute, 7—11 by 3½—6 cm. 33. *D. triangulare*
 5. Standard (11—)12—14 mm. Bracteoles triangular. Pod with appressed, yellow hairs. Leaflets between side-nerves not cancellate-veined, appressed-hairy beneath. Terminal leaflet broad-elliptic or obovate, acuminate or acute, obtuse or emarginate, 2½—7½ by 1—3½ cm. 24. *D. quinquepetalum*
4. Keel longer than the wings. Standard up to 10 mm. Bracteoles triangular. Leaflets between side-nerves not cancellate-veined, appressed-hairy beneath. Pod with appressed, yellow, rarely white hairs, glabrescent. Terminal leaflet 1—1½ by ½—8½ cm. Leaflets variable in shape. 37. *D. umbellatum*
3. Flowers in terminal or axillary racemes or panicles, solitary or in 2- or more-flowered fascicles along the rachis. Pod never corky.
6. Ovary with 1 or 2 ovules, hence pod joints at most 2.

7. Stipules 3-fid at apex. Leaves 3-foliolate, seemingly digitate. Pod biarticulate, joints \pm orbicular, $3\frac{1}{2}$ —4 by 3— $3\frac{1}{2}$ mm, densely appressed-hairy. Leaflets appressed-hairy on both surfaces or glabrous above.
8. Stipules 6—8 mm. Bracts 3—8 mm. Petioles 4—5 mm. Leaflets obovate-lanceolate, acute, 6—30 by 3—8 mm. 4a. *D. biarticulatum* var. *biarticulatum*
8. Stipules 15—33 mm. Bracts 10—18 mm. Petioles 12—20 mm. Leaflets ovate, obovate-lanceolate, or linear, acute, 30—60 by 5—15 mm.
4b. *D. biarticulatum* var. *australiense*
7. Stipules entire, triangular. Leaves 1—3-foliolate; laxly, spreading pubescent beneath. Terminal leaflet ovate, long-acute or acuminate, with a broad-cuneate base, 7—20 by $2\frac{1}{2}$ —10 cm. Pod semilunar, lengthwise striate, 6—20 by $2\frac{1}{2}$ —9 mm, with hooked hairs. Pedicels short, \pm 2— $2\frac{1}{2}$ mm. 29. *D. securiforme*
6. Ovary usually with many ovules, pod joints mostly more than 2 (see under 18!).
9. Stipules asymmetrical, the base auriculate on the side opposite the petiole, from a very broad base acuminate; sometimes (partly) reflexed; persistent.
10. Pod joints more than twice as long as broad, 4—6 by 1— $2\frac{1}{2}$ mm. Pedicels 3—7 mm, with hooked hairs sometimes intermixed with straight hairs. Leaves 3-foliolate. Terminal leaflet ovate—broad-elliptic—obovate, obtuse or emarginate, appressed-hairy on both surfaces, somewhat denser along the margin, 1—4 by $\frac{1}{2}$ — $2\frac{1}{2}$ cm. 28. *D. scorpiurus*
10. Pod joints less than twice as long as broad, moniliform.
11. Plant often assuming a bluish-black tinge when dry. Pedicels 1—2 mm, recurved, with short, hooked hairs. Leaves 1—3-foliolate. Leaflets very variable in shape. Terminal leaflet 2—7 by 2—5 cm.
6. *D. brachypodium*
11. Plant never assuming a bluish-black tinge. Pedicels usually longer than 2 mm, never recurved. Leaves 3-foliolate.
12. Pedicels 10—15 mm, with many long, bulbous-based hairs. Pod joints $3\frac{1}{2}$ —5 by 3— $3\frac{1}{2}$ mm. Bracts caducous. Terminal leaflet ovate or ovate-oblong, obtuse or emarginate, rather laxly hairy on both sides, more densely along the margin, $2\frac{1}{2}$ —13 by $1\frac{1}{2}$ —7 cm. 32. *D. tortuosum*
12. Pedicels 2—5 mm, puberulous or with hooked hairs. Pod joints \pm $2\frac{1}{2}$ by $2\frac{1}{2}$ —3 mm. Bracts long-persistent even in fruit. Terminal leaflet ovate, broad-elliptic or obovate, obtuse or emarginate, appressed-hairy on both surfaces, more densely beneath, with a few hooked hairs above, $1\frac{1}{2}$ —6 by $\frac{3}{4}$ — $4\frac{1}{2}$ cm 8. *D. dichotomum*
9. Stipules largely symmetrical, sometimes caducous.
13. Terminal (or single) leaflet broader than long.
14. Leaves 3-foliolate, terminal leaflet papilionate or obdeltoid, $\frac{1}{2}$ —4 by $1\frac{1}{2}$ —9 cm. Lateral leaflets obdeltoid or obovate, $\frac{1}{2}$ — $1\frac{1}{2}$ by $\frac{1}{2}$ — $2\frac{1}{2}$ cm. Leaflets on both surfaces laxly pubescent with, often, rather long, straight and hooked hairs. Pod joints approximately U-shaped, with the ends somewhat recurved, often overlapping, the margin patently ciliate, with glandular and hooked hairs on the flat sides, besides puberulous throughout, 8—10 mm. diam. Erect herb, covered with hooked and glandular hairs all over. 20. *D. obcordatum*
14. Leaves 1-foliolate, leaflet reniform or obovate, $\frac{3}{4}$ — $2\frac{1}{2}$ by $1\frac{1}{2}$ — $3\frac{1}{2}$ cm, on the lower surface with a few white hairs, for the rest glabrous. Pod only

- along the lower margin slightly incised, joints ± 5 by $2-2\frac{1}{2}$ mm, thinly pubescent. Prostrate herb, thinly pubescent to glabrous. 26. *D. renifolium*
13. Terminal (or single) leaflet longer than broad or narrower than $1\frac{1}{2}$ cm.
15. Pod distinctly stalked in the calyx. Pod joints connected by a narrow isthmus.
16. Leaves 1-foliolate, glabrous on both sides. Pod joints gradually tapering to both ends. Calyx incised to halfway or little less. Pedicels $2-4$ mm in flower, in fruit $4-7$ mm. Bracts minute. Stipules very narrow-acuminate-triangular from a wide base, caducous. Leaflet ovate, acuminate, $8-10$ by $3\frac{1}{2}-8$ cm. 21. *D. ormocarpoides*
16. Leaves 3-foliolate, densely to sparsely hairy. Pod joints abruptly narrowed at least at one of the ends.
17. Pedicels $15-40$ mm. Calyx incised to halfway. Bracts $8-15$ by $3-4$ mm, caducous. Stipules linear, acute, brown, $10-20$ by $2-3$ mm, caducous. Terminal leaflet rhombic to obovate, the margin often slightly undulate, $3\frac{1}{2}-10$ by $2-7$ cm. 27. *D. repandens*
17. Pedicels $1-12$ mm. Calyx incised for c. $\frac{1}{4}$. Bracts $1\frac{1}{2}-6(-11)$ by $\frac{1}{2}-1$ mm. Stipules $3\frac{1}{2}-10(-20)$ by $\frac{1}{2}-2\frac{3}{4}$ mm, narrow-lanceolate to triangular acuminate.
18. Flowers ± 5 mm. Pod 1-3-jointed, joints $6-13\frac{1}{2}$ by $3\frac{1}{2}-6$ mm. 15. *D. lazarus*
18. Flowers ± 3 mm. Pod 1-2-jointed, joints $4-7$ by $2\frac{1}{2}-4\frac{1}{2}$ mm. 25. *D. racemosa*
15. Pod subsessile in the calyx.
19. Calyx less than halfway incised. Lateral leaflets markedly reduced or wanting. Pod opening along the lower suture, the joints not falling apart. Rachis densely hairy.
20. Lateral leaflets, if present, $0.6-1\frac{1}{2}$ by $0.1-0.6$ cm. Pod short-hooked hairy, $1\frac{1}{2}-5$ by $3-5$ mm. Rachis with hooked hairs. Terminal leaflet linear-lanceolate to broad-elliptic-ovate, acute, appressed-hairy below, largely patently short-hairy above, $4\frac{1}{2}-11\frac{1}{2}$ by $\frac{1}{2}-2\frac{1}{2}$ cm, with a broad glaucous median band, anyway when fresh. 18. *D. motorium*
20. Lateral leaflets, if present, $1-3$ by $\frac{1}{2}-1\frac{1}{2}$ cm. Pod densely set with rather long, yellow, hooked and straight hairs, $2\frac{1}{2}-5$ by $4-6$ mm. Rachis with appressed or patent, straight hairs. Terminal leaflet broad-elliptic-obovate, obtuse or acute, $3\frac{1}{2}-7\frac{1}{2}$ by $1\frac{3}{4}-5$ cm, appressed-hairy beneath and more thinly above. 11. *D. gyroideum*
19. Calyx incised halfway or deeper.
21. The middle joints of the pod either at least twice as long as broad, or, if shorter (at least $1\frac{1}{2}$ times as long as broad), the lower margin incised for more than halfway and the upper margin entire and the joints $5-4$ by $2\frac{1}{2}-4$ mm. Pods hooked-hairy.
22. Pedicels $1-2$ mm, curved in fruit. Stipules long-triangular, acuminate, appressed-pubescent, $3-7$ mm long, persistent. Pod joints $5-6$ by $2\frac{1}{2}-3\frac{1}{2}$ mm. Rachis with hooked hairs. Terminal leaflet ovate, obtuse or acute, $2-8$ by $1-3\frac{1}{2}$ cm, appressed-hairy beneath. 19. *D. nemorosum*
22. Pedicels at least 4 mm, never curved in fruit. Rachis usually with hooked and straight hairs.

23. Leaves 1-foliolate. Stipules rather wide triangular, 4—11 mm long, straw-coloured, lengthwise prominently veined, surfaces largely glabrous, persistent. Rachis with hooked hairs, very often intermingled with straight hairs. Leaflet ovate or ovate-oblong, acuminate, on the lower surface pale-green, with distinct appressed white hairs, 3—18 by 1½—9 cm. 39. *D. zonatum*
23. Leaves 3-foliolate.
24. Bracteoles present, 1—3 mm long, mostly along the pedicel, or sometimes at the top. Stipules subulate, with a broad base. Pod joints 10—18 by 3½—5 mm. Leaf rachis often slightly winged below the lateral leaflets. Terminal leaflet ovate-oblong-lanceolate, acute or acuminate, short-pubescent on both surfaces or glabrous above, glossy on the upper surface, 3½—14 by 1½—4½ cm. 7. *D. caudatum*
24. Bracteoles none.
25. Terminal leaflet obovate, with rounded top, 1¾—3½ by 1½—2½ cm, laxly pubescent beneath. Stipules c. 1¼—1½ mm wide, with a long, narrowed top. Pedicels 7—12 mm, in fruit 10—15 mm. Pod joints 5—6 by 2½—4 mm. 1. *D. ascendens*
25. Terminal leaflet ovate, top acutish to acuminate, (3½—)8—17 by (1.9—)4—9 cm, appressed pubescent beneath. Stipules c. 2—3 mm wide, long-triangular, pubescent, glabrescent, caducous. Pod joints 4—5½ by 1—2 mm. Rachis with both straight and hooked hairs, the latter sometimes scarce. 14. *D. laxiflorum*
21. The middle pod joints less than twice as long as broad.
26. Petiole winged. Pod joints much broader than long. Leaves 1-foliolate.
27. Pod hairy all over, joints 5—6 by 2½—3½ mm.
36a. *D. triquetrum* ssp. *triquetrum*
27. Pod glabrous all over when mature, thinly membranous, rather broad, joints 7—9 by 4—6 mm. 36b. *D. triquetrum* ssp. *alatum*
27. Pod glabrous but appressed-hairy along the sutures, thin, joints 4—6 by 2—2½ mm. 36c. *D. triquetrum* ssp. *pseudotriquetrum*
26. Petiole not winged. Pod joints not or little broader than long.
28. Pedicels patent or reflexed when in fruit, the pods appressed to each other.
29. Bracts subulate, at most 1 mm broad, caducous, hence the young inflorescence spike-like. Inflorescence 10 cm or longer, often paniculate.
30. Pod laxly hooked-hairy; lower margin incised for more than halfway. Stipules narrow-lanceolate. Pedicels 3—4 mm, in fruit 4—6 mm. Stems angular towards the top, with appressed gray hairs. 10. *D. gangeticum*
30. Pod densely clothed with brown hooked hairs; lower margin incised for ¼—⅓. Stipules with a broad base, acuminate. Pedicels 1—2½ mm. Stems densely brown-hairy towards the top.
31. Bracts 1½—3 mm long. 38a. *D. velutinum* var. *velutinum*
31. Bracts 5—10 mm long. 38b. *D. velutinum* var. *longibracteatum*
29. Bracts triangular, concave, 2 mm wide, caducous, hence the young inflorescence suggestive of a coniferous strobilus. Inflorescence ± 5 cm or shorter. Pod at the lower margin incised for ⅓.

32. Pod reflexed when mature. Leaflets obovate with a cuneate (if 3) or a cordate (if 1) base, densely, mostly silvery hairy beneath; terminal leaflet $1\frac{1}{2}$ —4 by 1 — $3\frac{1}{2}$ cm. Rachis with straight, spreading hairs and sessile glands. 31. *D. styracifolium*
32. Pod erecto-patent. Leaflets broad-elliptic-obovate with a round base, appressed-hairy beneath; terminal leaflet $1\frac{1}{2}$ —9 by $\frac{3}{4}$ —4 cm.
33. Rachis with hooked, spreading hairs.
12a. *D. heterocarpon* var. *heterocarpon*
33. Rachis with straight appressed hairs.
12b. *D. heterocarpon* var. *strigosum*
28. Pedicels divaricate when in fruit, or inflorescences lax, hence the pods not appressed to each other, although sometimes adhering to each other by their hooked hairs.
34. Calyx incised more than halfway. Leaflets on the lower surface laxly hairy.
35. Calyx (and often also the stems, petioles, etc.) with long patent yellowish hairs. Calyx lobes longer than $2\frac{1}{2}$ mm.
36. Pod on the flat sides with a line of long appressed hairs; the margin patently ciliate; joints $2\frac{1}{2}$ by $2\frac{1}{2}$ —3 mm. Inflorescences 4—7-flowered; pedicels with hooked hairs, 6—12 mm. Rachis, stems etc. also laxly short-hairy. Leaves 3-foliolate. Terminal leaflet obovate, obtuse or emarginate, 9—15 by 4—10 mm. . . 3. *D. auricomum*
36. Pod glabrous or almost so; joints $1\frac{1}{4}$ — $1\frac{1}{2}$ by $1\frac{1}{4}$ — $1\frac{1}{2}$ mm, slightly swollen. Inflorescences more than 20-flowered; rachis and pedicels with both short and rather long hooked hairs, pedicels 8—20 mm. Leaves 1(—3)-foliolate. Terminal leaflet ovate—broad-elliptic—obovate, acute or obtuse, $1\frac{1}{2}$ —4 by 1 — $2\frac{1}{2}$ cm. . . 2. *D. alysicarpoides*
35. Calyx with no such hairs; lobes mostly shorter than $2\frac{1}{2}$ mm. Leaves 3-foliolate.
37. Leaflets above with many minute yellow dots; obovate to obdeltoid, $2\frac{1}{2}$ —13 by 2—9 mm. Inflorescences long, few-flowered. Pod glabrescent, the upper margin entire, the lower margin slightly incised; joints 2 by 2 mm. 34. *D. trichostachyum*
37. Leaflets without yellow dots.
38. Pod incised along both the lower and upper margin; joints 3—4 by $2\frac{1}{2}$ —3 mm. Leaflets broad-elliptic or obovate, 3—17 by $1\frac{1}{2}$ —1 mm, often with a mucronate top. Slender habit. 17. *D. microphyllum*
38. Upper margin of the pod straight, lower margin incised.
39. Flowers inserted on a long, slender, few-flowered terminal or axillary rachis. Leaflets $2\frac{1}{2}$ — $3\frac{1}{2}$ times as long as broad, oblong, obtuse or emarginate, 0.3—4 by 0.3—1.2 cm. Pod joints 3—4 by $2\frac{1}{2}$ —3 mm. 9. *D. filiforme*
39. Flowers leaf-opposed or along a short leaf-opposed rachis.
40. Pedicels glabrous or with a few hooked hairs towards the top, 10—25 mm. Pod joints $3\frac{1}{2}$ —4 by 3— $3\frac{1}{2}$ mm, with both hooked hairs and a few scattered straight hairs. Terminal leaflet broad-elliptic-obovate, obtuse or emarginate, 5—35 by 3—20 mm. 13. *D. heterophyllum*

40. Pedicels all over or towards the top with only straight hairs, 3—8 mm, in fruit c. 13 mm. Pod joints 2—2½ by 2—3 mm, with only hooked hairs. Terminal leaflet obdeltoïd or obovate, obtuse or emarginate. Terminal leaflet 2½—10 by 2—9 mm.
34. Calyx incised halfway.
41. Pod along both margin deeply incised, hence joints connected by a narrow isthmus; the margin of the joints folded in such a way that the joints seem to be rhomboid. Leaves 3-foliolate, thinly herbaceous. Terminal leaflet approximately triangular with a rounded base, 2½—4 by ½—2½ cm. Stipules subulate. Inflorescence paniculate, lax.
41. Pod along both margins somewhat incised, hence joints connected by a broad isthmus. Leaves herbaceous, terminal leaflet more than 2 cm broad.
42. Pod 3¼—3½ mm broad, joints c. 4 mm long, densely covered with brown, hooked hairs. Stipules c. 1 mm wide, spatulate, caducous. Leaflets approximately rhombic, the margins more or less undulate or coarsely crenate to sublobate; terminal leaflet 3½—8 by 2—5 cm.
42. Pod 5—7 mm broad, joints 6—7 mm long with hooked hairs, sometimes mixed with some straight hairs, glabrescent at maturity. Stipules 3—4 mm wide, broad-triangular, caducous. Terminal leaflet 9—18 by 6—9½ cm, entire to shallowly crenate.
35. *D. triflorum*
22. *D. procumbens*
30. *D. sequax*
16. *D. megaphyllum*

1. DESMODIUM ADSCENDENS (Sw.) DC.

Desmodium adscendens (Sw.) DC., Prod. 2: 332. 1825; Baker in Oliv., Fl. Trop. Afr. 2: 162. 1817; Schindl. in Fedde, Rep. 21: 8. 1925, incl. var. *trifoliastrum* (Miq.) Schindl.; Dänik. in Mitt. Bot. Mus. Univ. Zürich 142: 184. 1932; Back., Bekn. Fl. Java (em. ed.) 5: fam. 120, p. 86. 1941; Guillaum. in Ann. Mus. Col. Mars. 56: 25. 1948; Fl. Nouv. Caléd. 154. 1948; Léon., Fl. Congo Belge 5: 189. 1954. — *Hedysarum adscendens* Sw., Prod. 1: 106. 1788. — *Hedysarum caespitosum* Poir. in Lamk, Enc. Méth. Bot. 6: 421. 1804. — *D. caespitosum* (Poir.) DC., Prod. 2: 333. 1825. — *D. trichosulon* (non DC.) Mor., Syst. Verz. Zoll. 5. 1846, nomen. — *D. trifoliastrum* Miq., Fl. Ind. Bat. 1, 1: 248. 1855; Back. in Bull. Jard. Bot. Btzg II, 12: 14. 1913; Ridl., Fl. Mal. Pen 1: 606. 1922; Merr., En. Philip. 2: 290. 1923; Craib, Fl. Siam. En. 1: 420. 1928. — *D. oxalidifolium* Bl. ex Miq., Fl. Ind. Bat. 1, 1: 249. 1855, nom. in synonym., sine stat. — *D. strangulatum* (non W. & A.) Thw., En. Pl. Zeyl. 87. 1859, incl. var. minor Thw. — *D. thwaitesii* Baker in Hook. f., Fl. Br. Ind. 2: 169. 1876.

DISTRIBUTION.—Africa, America, Asia: India, Ceylon, Siam, throughout Malaysia, Melanesia (New Hebrides, New Caledonia, Loyalty Is.).

NOTE.—No differences can be found between the African and American specimens and the Asiatic material, hence the variety *trifoliastrum* Schindl. cannot be retained.

2. *Desmodium alysicarpoides* van Meeuwen, *nom. nov.*

Alysicarpus parviflorus Dalz. in Hook., Lond. J. Bot. 3: 211. 1851. — *D. parviflorum* (Dalz.) Baker in Hook. f., Fl. Br. Ind. 2: 172. 1876, non Mart. & Galeotti, 1843, quae est *D. scorpiurus* Desv.; Back., Bekn. Fl. Java (em. ed.) 5: fam. 120, p. 88. 1941.

DISTRIBUTION.—Asia: India, in Malaysia: East Java (Mt Idjen; Pudjon).

ECOLOGY.—Sandy fields, 1200—1400 m.

NOTE.—This species has been referred to *Alysicarpus* by Dalzell, because the pod joints are slightly swollen. In this respect it tends to represent more or less a transition to the genus *Alysicarpus*. As a matter of fact the genera *Desmodium* and *Alysicarpus* are separated only by flat or almost terete pods respectively and might well be combined into one genus. A closer study of this question would require a monographic examination of both genera which falls outside the scope of the present study.

3. *Desmodium auricomum* Grah. ex Bth.

Desmodium auricomum Grah. ex Bth. in Miq., Pl. Jungh. 223. 1852; Baker in Hook. f., Fl. Br. Ind. 2: 172. 1876; Gagnep., Fl. Gén. I.-C. 2: 596. 1920; Craib, Fl. Siam. En. 1: 403. 1928; Back., Bekn. Fl. Java (em. ed.) 5: fam. 120, p. 85. 1941.

DISTRIBUTION.—Burma (plains of Martaban and Tenasserim), Cochinchina, Cambodia, Annam, and Tonkin, in W. Malaysia: Java (Indramaju), and Madura I.

ECOLOGY.—Grassfields, savannahs, and other open lowland country, below 300 m, subject to a distinctly dry season.

4. *Desmodium biarticulatum* (L.) F. v. M.

Desmodium biarticulatum (L.) F. v. M., Fragm. Phyt. Austr. 2: 121. 1861, *sensu lato*; Bth., Fl. Austr. 2: 231. 1864; F. v. M., Descr. Not. Pap. Pl. 7: 28. 1886. — *Hedysarum biarticulatum* L., Sp. Pl. 1054. 1753.

NOTE.—Judging from the description, *D. novae-hollandiae* Domin, Bibl. Bot., is in my opinion not specifically distinct from *D. biarticulatum*.

4a. var. *BIARTICULATUM*

Hedysarum biarticulatum L., Sp. Pl. 1054. 1753. — *Dicerma biarticulatum* (L.) DC., Mém. Lég. 7: 328. 1825; Prod. 2: 339. 1825; Miq., Fl. Ind. Bat. 1, 1: 259. 1855; Schindl. in Fedde, Rep. 20: 269. 1924. — *D. biarticulatum* (L.) F. v. M., Fragm. Phyt. Austr. 2: 121. 1861, *sensu stricto*; Kurz in J. As. Soc. Beng. 45, ii: 232. 1877; Baker in Hook. f., Fl. Br. Ind. 2: 163. 1876; Craib, Fl. Siam. En. 1: 403. 1928. — *Aphyllodium biarticulatum* Gagnep., Not. Syst. 3: 251—255. 1916; Fl. Gén. I.-C. 2: 609. 1920. — *Dicerma hispidum* Schindl. in Fedde, Rep. 20: 269. 1924.

DISTRIBUTION.—Asia: Ceylon, India, Burma, Siam, Cambodia, Cochinchina, Tonkin; in Malaysia: NE. Sumatra (Padang Lawas), SW. Celebes; N. Australia.

ECOLOGY.—Lowland grassy countries subject to seasonal drought.

NOTE.—In the Rijksherbarium, Leyden, there is one sheet in the old Reinwardt Herbarium labelled "Java" but this is in all probability erroneously localized.

4b. var. *australiense* (Schindl.) van Meeuwen, *comb. nov.*

Dicerma biarticulatum (L.) DC. var. *australiense* Schindl. in Fedde, Rep. 20: 267. 1924. — *Dicerma novaguineense* Schindl., l.c. 268.

DISTRIBUTION.—Australia: Queensland and Northern Territory; in Malaysia: SE. New Guinea.

ECOLOGY.—Lowland grassy countries subject to seasonal drought.

5. *Desmodium blandum* van Meeuwen, *nom. nov.*

Hedysarum elegans Lour., Fl. Coch. 1: 450. 1790. — *Phyllodium elegans* Desv. in Mém. Soc. Linn. Paris 4: 324. 1825; Schindl. in Fedde, Rep. 20: 270. 1924, *incl. var. javanicum et var. typicum.* — *Dicerma elegans* DC., Prod. 2: 339. 1825. — *Phyllodium vestitum* (non Bth.) Miq., Fl. Ind. Bat. 1, 1: 261. 1855, *pro specim.* — *D. elegans* (Lour.) Bth., Fl. Hongk. 83. 1861, *non* DC. 1825, *nec* Schlecht. 1838; Back., Schoolfl. 339. 1911; Gagnep., Fl. Gén. I.-C. 2: 569. 1920; Craib, Fl. Siam. En. 1: 406. 1928; Back., Onkruidfl. Suiker. 329. 1930; Bkn. Fl. Java (em. ed.) 5: fam. 120, p. 76. 1941.

DISTRIBUTION.—Asia: China, Tonkin, Annam, Laos, Cochinchina, Cambodia; in Malaysia: North coast of Java (Djakarta, Semarang), Madura I.

ECOLOGY.—Open lowland subject to a very dry season.

NOTE.—Miquel, Fl. Ind. Bat. l.c., recorded *Phyllodium elegans* from Sumatra, Borneo, and the Moluccas. These specimens, at hand in the Rijksherbarium, are however *D. pulchellum*. Besides, he recorded *D. vestitum* from Java, but these are *D. blandum*. *D. vestitum* is absent from Malaysia.

The specimens from continental Asia are yellow-pubescent, which Schindler refers to as var. *typicum*; the Malaysian specimens are gray-pubescent (var. *javanicum* Schindl.). They are geographically separated by a large gap.

ECOLOGY.—Grassy lowland plains subject to seasonal drought.

6. *DESMODIUM BRACHYPODUM* A. Gray

Desmodium brachypodum A. Gray in Bot. Wilkes U.S. Expl. Exped. 434. 1854; Bth., Fl. Austr. 2: 232. 1864; Schindl. in Fedde, Rep. Beih. 49: 280. 1928. — *D. indigotinum* Harms & K. Sch. in K. Sch. & Laut., Nachtr. Fl. Deut. Schutzgeb. Südsee 276. 1905.

DISTRIBUTION.—Australia (Queensland and New South Wales) and East New Guinea (twice found).

NOTES.—The type specimen of *D. indigotinum*, so called after the remarkable colour this species has in the dried state, was described with

5-foliolate leaves. The specimen I had to my disposition had 3-foliolate leaves, with one leaf with 5 leaflets; according to Bailey the Australian specimens have 3 leaflets. This character seems therefore to vary. According to Taubert very few *Desmodiums* have 5-foliolate leaves.

7. DESMODIUM CAUDATUM (Thunb.) DC.

Desmodium caudatum (Thunb.) DC., Prod. 2: 337. 1825; Gagnep., Fl. Gén. l.c. 2: 591. 1920; Merr. in Contr. Arn. Arb. 8: 76. 1934; Back., Bekn. Fl. Java (em. ed.) 5: fam. 120, p. 81. 1941. — *Hedysarum caudatum* Thunb., Fl. Jap. 286. 1784. — *Hedysarum laburnifolium* Poir. in Lamk., Enc. Méth. Bot 6: 422. 1804. — *D. laburnifolium* (Poir.) DC., Prod. 2: 337. 1825; Baker in Hook. f., Fl. Br. Ind. 2: 163. 1876; Prain in J. As. Soc. Beng. 66, ii: 389. 1897; Ridl., Fl. Mal. Pen. 1: 608. 1922. — *D. podocarpus* (non DC.) Hassk. in Flora 25, Beibl. 2: 49. 1842. — *Catenaria laburnifolia* Bth. in Miq., Pl. Jungh. 220. 1852; Miq., Fl. Ind. Bat. 1, 1: 257. 1855. — *Catenaria caudata* (Bth.) Schindl. in Fedde, Rep. 20: 275. 1924.

DISTRIBUTION.—Ceylon, India (Himalaya, Kumaon, Assam, Mishmi Hills), China, Japan, Tonkin, Burma; in Malaysia: N. Sumatra, Malay Peninsula, W. Java.

ECOLOGY.—In contrast with many other *Desmodiums* this is a forest dweller and occurs in the submontane rain-forest between 700 and 1500 m.

8. DESMODIUM DICHOTOMUM (Willd.) DC.

Desmodium dichotomum (Willd.) DC., Prod. 2: 336. 1825; Back., Bekn. Fl. Java (em.ed.) 5: fam. 120, p. 79. 1941. — *Hedysarum dichotomum* Willd., Sp. Pl. 3, 2: 1180. 1803. — *Hedysarum diffusum* Willd., l.c. — *D. diffusum* (Willd.) DC., Prod. 2: 336. 1825, nom. illeg., non 335 quae est *D. laxiflorum* DC.; W. & A., Prod. 226. 1834; Zoll. & Mor. in Nat. & Geneesk. Arch. Neêrl. Ind. 3: 58. 1846; Bth. in Miq., Pl. Jungh. 225. 1852; Miq., Fl. Ind. Bat. 1, 1: 252. 1855; Baker in Hook. f., Fl. Br. Ind. 2: 163. 1876; Back., Onkruidfl. Suiker. 333. 1930. — *Hedysarum quinquangulatum et auriculatum* Roxb., Fl. Ind. ed. Carey 3: 355. 1832. — *Hedysarum auriculatum* Roxb., Hort. Beng. nomen. — *D. willdenowii* G. Don, Gen. Syst. 2: 296. 1832. — *D. quinquangulatum* Wight, Ic. 1: 1588. 1839. — *D. amplexicaule* Zoll. & Mor. in Nat. & Geneesk. Arch. Neêrl. Ind. 3: 58 & 77. 1846. — *D. spirale* (non DC.) Back. in Bull. Jard. Bot. Bat. II, 13: 14. 1913.

DISTRIBUTION.—India to China (Yunnan); in Malaysia: NE. Java and SW. Celebes.

ECOLOGY.—Heavy clay soils in open lowland which is subject to a strong dry season.

NOTES.—In 1803, Willdenow published two species which have appeared to be conspecific, viz *Hedysarum dichotomum* Willd. and *H. diffusum* Willd. De Candolle in his Prodrômus (Oct. 1825) transferred both to *Desmodium* and *D. diffusum* (Willd.) DC., published on page 336. He had, however, already published in Ann. Sc. Nat. 4: 100 (Jan. 1825) another species under

the name *Desmodium diffusum* (derived from a *nomen nudum* of Roxburgh) which he quoted in his *Prodromus* on page 335. Although Wight & Arnott later (*Prod.* 226. 1834) combined the two Willdenow species under *D. diffusum* (Willd.) DC. it is impossible to use this epithet because it is an illegitimate later homonym.

Schindler (*in Fedde, Rep. Beih.* 49: 26. 1928) referred *Hedysarum diffusum* Roxb. to *D. diffusum* (Willd.) DC., but this is obviously an error.

9. DESMODIUM FILIFORME Zoll. & Mor.

Desmodium filiforme Zoll. & Mor. *in Nat. & Geneesk. Arch. Neêrl. Ind.* 3: 77. 184; Val., *Fl. Pap.* 16. 1907; Back., *Schoolfl. Java* 340. 1911 (corr. sheet); Sloot. *in Kon. Gruppe Nied.-Ind. Neu. Helv. Ges.* 8, 2: 16—17, fig. 1929; Back., *Bekn. Fl. Java* (em. ed.) 5: fam. 120, p. 86. 1941. — *D. neurocarpum* Bth., *Fl. Austr.* 2: 234. 184 (excl. var. *gracile?*). — *D. muelleri* Bth., *l.c.* 235.

DISTRIBUTION.—Northern Territory and Queensland; in Malaysia: SE. Java (Puger), Lesser Sunda Islands (Lombok, Alor), South New Guinea (Merauke).

ECOLOGY.—Dry places, dunes, roadsides, under strong seasonal conditions.

NOTES.—*D. filiforme* Zoll. & Mor., a species requiring a strong dry season (*in Reinwardtia* 5: 425 & 428, map 5. 1961) was only recorded from Java, the Lesser Sunda Islands, and New Guinea. It seemed highly improbable that in Malaysia an endemic species with such ecological claims occurred, because of the possibilities of migration along the drought corridor through Malaysia in the past, as discussed *l.c.* 419—429. I found that the Australian species *D. neurocarpum* Bth. and *D. muelleri* Bth. are conspecific with *D. filiforme*, which name, being the eldest, has to be retained.

The indument of the rachis is variable; in Java always with straight, appressed hairs, in the Lesser Sunda Islands and New Guinea with both hooked and straight hairs, in New Guinea one specimen with patent straight hairs, and the Australian specimens of *D. neurocarpum* with appressed straight hairs again. I think this not of any value as the hairiness of the rachis is rather variable in various species.

Specimens of the Australian species *D. brownii* Schindl. *in Not. Bot. Gard. Edinb.* 72: 131. 1926, syn. *D. neurocarpum* var. *gracile*, I have not seen and from the description of Schindler I cannot conclude whether this is conspecific with *D. filiforme*.

10. DESMODIUM GANGETICUM (L.) DC.

Desmodium gangeticum (L.) DC., *Prod.* 2: 327. 1825, incl. var. *neaei* DC.; W. & A. *Prod.* 225. 1834; Wight, *l.c.* t. 271. 1839; Miq., *Fl. Ind. Bat.* 1, 1: 247. 1855, incl.

var. *parvula* et var. *acuminata* Miq., l.c.; Baker in Oliv., Fl. Trop. Afr. 2: 161. 1871; in Hook. f., Fl. Br. Ind. 2: 168. 1876, incl. var. *maculatum* Baker, l.c.; King in J. As. Soc. Beng. 66, ii: 142. 1897; Back., Schooffl. Java 338. 1911; Gagnep., Fl. Gén. I.-C. 2: 601. 1920; Ridl., Fl. Mal. Pen. 1: 610. 1922; Merr., En. Philip. 2: 285. 1923; Craib, Fl. Siam En. 1: 407. 1928; Back., Onkruidfl. Suiker. 331. 1930; Bekn. Fl. Java (em. ed.) 5: fam. 120. p. 84. 1941; Henders., Mal. Wild Fl. 1: 80, t. 76. 1949; Léon., Fl. Congr. Belge 5: 196. 1954. — *Hedysarum gangeticum* L., Sp. Pl. 746. 1753. — *Hedysarum maculatum* L., l.c. — *Aeschynomene maculata* Lamk., Enc. Méth. Bot. 4: 452. 1797. — *D. maculatum* (L.) DC., Prod. 2: 327. 1825. — *Hedysarum collinum* Roxb., Fl. Ind. ed. Carey 3: 439. 1832. — *Hedysarum pseudogangeticum* Zipp. ex Miq., Fl. Ind. Bat. 1, 1: 247. 1855, nom. in syn., sine stat.

DISTRIBUTION.—Tropical Africa; India to Siam and Indo-China; throughout Malaysia to the Northern Territory, Queensland, and the Solomon Is., introduced in the West Indies.

ECOLOGY.—Widely distributed, one of the most common weeds, largely found in anthropogenous lowland, both under everwet and seasonal conditions.

NOTE.—The epithets *maculatum* and *gangeticum* are equally old; Wight & Arnott (Prod. 223—224. 1834) have first combined these two species under the name *D. gangeticum*, after having examined the Linnean types.

11. DESMODIUM GYROIDES DC.

Desmodium gyroides DC., Mém. Lég. 7: 322. 1825; Prod. 2: 326. 1825; Miq., Fl. Ind. Bat. 1, 1: 243. 1855, incl. var. *lilacina* et var. *violacea* Miq.; Baker in Hook. f., Fl. Br. Ind. 2: 175. 1876; King in J. As. Soc. Beng. 66, ii: 145. 1897; Back., Schooffl. Java 341. 1911; Gagnep., Fl. Gén. I.-C. 2: 583. 1920; Ridl., Fl. Mal. Pen. 1: 611. 1922; Merr., En. Philip. 2: 285. 1923; Back. & Sloot., Handb. Jav. Theonkr. 140, t. 140. 1924; Craib, Fl. Siam. En. 1: 408. 1928; Merr. in Contr. Arn. Arb. 8: 76. 1934; Back., Bekn. Fl. Java (em. ed.) 5: fam. 120, p. 80. 1941. — *Codariocalyx conicus* Hassk. in Flora 25, Beibl. 2: 48. 1842. — *Codariocalyx gyroides* Hassk., l.c. 49; Schindl. in Fedde, Rep. 20: 281. 1924. — *Pseudarthria polycarpa* Hassk., Cat. Hort. Bog. 282. 1844; Pl. Jav. Rar. 393, 1848, excl. syn.; Zoll. & Mor. in Nat. & Geneesk. Arch. Néerl. Ind. 3: 63. 1846. — *Pseudarthria gyroides* Zoll. & Mor. in Nat. & Geneesk. Arch. Néerl. Ind. 3: 63. 1846, pro comb., excl. specim. — *D. pseudogyroides* Miq., Fl. Ind. Bat. 1, 1: 244. 1855. — *D. papuanum* White in Proc. R. Soc. Queensl. 34: 34. 1922.

DISTRIBUTION.—India, Indo-China, Siam to Formosa; in Malaysia: Sumatra, Malay Peninsula, Borneo (once), Java, Celebes, Philippines, New Guinea.

ECOLOGY.—Indifferent to the distribution of rainfall, with a slight preference for everwet conditions.

NOTE.—Van Steenis erroneously reduced *Pseudarthria polycarpa* Hassk. to *D. polycarpum*, cf. Reinwardtia 6: 105. 1961; all Hasskarl's sheets at Leyden belong to *D. gyroides*.

12. DESMODIUM HETEROCARPON (L.) DC.

Desmodium heterocarpon (L.) DC., Prod. 2: 337. 1825, *sensu lato*; Merr., En. Philip. 2: 285. 1823; Back. & Sloot., Handb. Jav. Theeonkr. 141, t. 141. 1924; Back., Onkruidfl. Suiker. 335. 1930; Bkn. Fl. Java (em. ed.) 5: fam. 120, p. 85. 1941; Henders., Mal. Wild Fl. 1: 80, t. 75. 1949; van Meeuwen in Reinwardtia 6: 95. 1961. — *Hedysarum heterocarpon* L., Sp. Pl. 747. 1753. — *D. polycarpum* (Poir.) DC., Prod. 2: 334. 1825, *sensu lato*; W. & A., Prod. 227. 1834, *excl. syn. D. capitatum*; Miq., Fl. Ind. Bat. 1: 242. 1855; Bth., Fl. Austr. 2: 235. 1864; Baker in Oliv., Fl. Trop. Afr. 2: 165. 1911; in Hook. f., Fl. Br. Ind. 2: 171. 1876; Back., Schoolfl. Java 343. 1911, *excl. syn.*

12a. var. HETEROCARPON

Hedysarum heterocarpon L., Sp. Pl. 747. 1753. — *D. heterocarpon* DC., Prod. 2: 335. 1825, *sensu str.*; Gagnep., Fl. Gén. I.-C. 2: 588. 1920; Schindl. in Fedde, Rep. Beih. 49: 278. 1928; Craib, Fl. Siam. En. 1: 408. 1928; Hosokawa in J. Soc. Trop. Agric. 4, 2: 201. 1932, as var. *buergeri* (Miq.) Hosokawa; Guillaum., Fl. Nouv. Caléd. 34. 1948; Juncker in Bern. P. Bish. Mus. Bull. 220: 140. 1959. — *D. trichocaulon* DC., Prod. 2: 335. 1825. — *D. ovalifolium* Wall., Cat. 5730, *nomen*; Gagnep., Fl. Gén. I.-C. 2: 587. 1920; Merr., En. Philip. 2: 287. 1923; Schindl. in Fedde, Rep. Beih. 49: 27. 1928; Craib, Fl. Siam. En. 1: 414. 1928; Henders., Mal. Wild Fl. 1: 76, t. 70. 1949. — *D. buergeri* Miq. in Ann. Mus. Bot. Lugd. Bat. 3: 45. 1867; Merr. in Philip. J. Sc. 5: 85. 1910; En. Philip. 2: 284. 1923. — *D. polycarpum* var. *trichocaulon* (DC.) Baker in Hook. f., Fl. Br. Ind. 2: 172. 1876, *excl. Wall.*, Cat. 5729 B, D, F. — *D. polycarpum* var. *ovalifolium* King in J. As. Soc. Beng. 66, ii: 141. 1897.

DISTRIBUTION.—E. Asia (Japan, China, Formosa), SE. Asia (India to Indo-China), and throughout Malaysia; Melanesia: New Caledonia; Polynesia: Tonga, and possibly other islands.

12b. var. STRIGOSUM van Meeuwen

var. *strigosum* van Meeuwen in Reinwardtia 6: 95. 1961. — *Hedysarum siliquosum* Burm. f., Fl. Ind. 169, t. 55, f. 2. 1768. — *Hedysarum polycarpum* Poir. in Lamk., Enc. Méth. Bot. 6: 413. 1804. — *D. polycarpum* DC., Prod. 2: 335. 1825, *pro sp. et partim*; Gagnep., Fl. Gén. I.-C. 2: 586. 1920; Guillaum., Fl. Nouv. Caléd. 154. 1948; Yunker in Bern. P. Bish. Mus. Bull. 220: 140. 1959. — *D. siliquosum* DC., Prod. 2: 336. 1825; Schindl. in Fedde, Rep. Beih. 49: 298. 1928; Craib, Fl. Siam. En. 1: 408. 1928.

DISTRIBUTION.—SE. Asia and throughout Malaysia, New Caledonia, and possibly other Pacific islands.

13. DESMODIUM HETEROPHYLLUM (Willd.) DC.

Desmodium heterophyllum (Willd.) DC., Prod. 2: 334. 1825; Miq., Fl. Ind. Bat. 1: 238. 1855; Baker in Hook. f., Fl. Br. Ind. 2: 173. 1876, *excl. syn. cit. D. caespitosum* DC.; King in J. As. Soc. Beng. 66, ii: 135. 1897, *excl. syn. cit. D. caespitosum* DC.; Prain, Lc. 401; Ridl., Fl. Mal. Pen. 1: 605. 1922; Merr., En. Philip. 2: 286. 1923; Back. & Sloot., Handb. Jav. Theeonkr. 142, t. 142. 1924; Craib, Fl. Siam. En. 1: 408. 1928; Back., Onkruidfl. Suiker. 338. 1930; Kaneh., En. Micron. Pl. 4, 6: 332. 1935;

Back., Bekn. Fl. Java (em. ed.) 5: fam. 120, p. 86. 1941; Guillaum., Fl. Nouv. Calé. 154. 1948; Henders., Mal. Wild Fl. 1: 75, t. 68. 1949. — *Hedysarum triflorum* var. β et γ Linné, Sp. Pl. 749. 1753. — *Hedysarum heterophyllum* Willd., Sp. Pl. 3, 2: 120. 1803. — *Hedysarum triflorum* var. *oblongifolium* Desv. in Mém. Soc. Linn. Paris 320. 1825. — *D. triflorum* var. *majus* W. & A., Prod. 229. 1834; Wight, Ic. t. 291. 1839; Hochreut. in Candollea 2, 2: 396. 1926. — *D. stipulaceum* (non DC., nec Hassk.) Zoll. in Nat. & Geneesk. Arch Neêrl. Ind. 3: 58. 1846, *nomen*.

DISTRIBUTION.—Asia: India, Ceylon, Burma, China, Indo-China, Siam, throughout Malaysia, Queensland; Melanesia: New Caledonia; Micronesia: West Carolines (Yap); Mascarene Is.

NOTE.—Following Wight & Arnott, Hochreutiner recently proposed (in Candollea, *l.c.* 1926) that *D. heterophyllum* and *D. triflorum* represent only a large (var. *majus*) and a small (var. *minus*) form of one species respectively. He stated that the characters mentioned by various authors are not entirely restricted to one of the two. These characters seem to be, as I conclude from his note, the shape of the leaflets and the indument. The latter are variable indeed, but there are various other differences (see my key) and in my opinion they are perfectly good species.

14. DESMODIUM LAXIFLORUM DC.

Desmodium laxiflorum DC. in Ann. Sc. Nat. Paris 4: 100. Jan. 1825; Prod. 2: 335. Oct. 1825; Bth. in Miq., Pl. Jungh. 228. 1852; Miq., Fl. Ind. Bat. 1, 1: 250. 1855; Baker in Hook. f., Fl. Br. Ind. 2: 164. 1876; King in J. As. Soc. Beng. 66, ii: 141. 1897; Back., Schoolfl. Java 345. 1911; Gagnep., Fl. Gén. I.-C. 2: 591. 1920; Merr., Ex. Philip. 2: 286. 1923; Craib, Fl. Siam. En. 1: 412. 1928; Back., Bekn. Fl. Java (em. ed.) 5: fam. 120, p. 81. 1941. — *D. diffusum* DC. in Ann. Sc. Nat. Paris 4: 100. Jan. 1825; Prod. 2: 335. Oct. 1825, *non* 336 *auct.* (Willd.) DC. *quae est D. dichotomum*. — *D. macrophyllum* Dsv. [J. de Bot. 122. 1813, *nomen*] in Mém. Soc. Linn. Paris 4: 304. 1825. — *Hedysarum rottleri* Spreng., Syst. 3: 320. 1826. — *Hedysarum roxburghii* Spreng., Syst. App. 292. 1827. — *Hedysarum recurvatum* Roxb., Fl. Ind. ed. Carey 3: 358. 1832. — *D. rottleri* G. Don, Gen. Syst. 2: 297. 1832. — *D. recurvatum* Grah. [in Wall., Cat. 5717] *ex* W. & A., Prod. 226. 1834; Wight, Ic. t. 374. 1838; Bth. in Miq., Pl. Jungh. 228. 1852; Miq., Fl. Ind. Bat. 1, 1: 250. 1855, *excl. syn. cit. Bl. et Hassk.* — *D. scabrellum* Zipp. *ex* Miq., Fl. Ind. Bat. 1, 1: 250. 1855, *nom. in syn., sine stat.* — *D. incanum* (non DC.) Harms & K. Sch. in K. Sch. & Laut., Fl. Deut. Schutzgeb. Siam 355. 1901.

DISTRIBUTION.—India to Formosa, in Malaysia: Sumatra, Malay Peninsula, Java, Celebes, Philippines, Moluccas, Lesser Sunda Is. (Bali, Sumba), and New Guinea.

ECOLOGY.—Indifferent to distribution of rainfall, occurs under both everwet and seasonal conditions.

NOTE.—Bentham (1852) was, as far as I could find, the first who combined the two oldest names under *D. laxiflorum*. Though I have not

found *D. macrophyllum* reduced before, I assume the publication in the Mem. Soc. Linn. Paris appeared later than Jan. 1825; anyhow I combine them here.

15. DESMODIUM LAXUM DC.

Desmodium laxum DC. in Ann. Sc. Nat. Paris 4: 102. Jan. 1825; Prod. 2: 336. Oct. 1825; King in J. As. Soc. Beng. 66, ii: 138. 1897, excl. syn. *D. gardneri* Bth.; Prain, in 192; Gagnep., Fl. Gén. I.-C. 2: 582. 1920; Ridl., Fl. Mal. Pen. 1: 608. 1922; Merr., in Philip. 2: 287. 1923; Craib, Fl. Siam. En. 1: 412. 1928; Back., Bekn. Fl. Java (ed. 5): fam. 120, p. 78. 1941; Henders., Mal. Wild Fl. 1: 79, t. 73. 1949. — *D. longatum* Zoll. & Mor. in Nat. & Geneesk. Arch. Neêrl. Ind. 3: 58. 1846. — *D. leptopus* A. Gray, Bot. Wilkes U.S. Explor. Exped. 436. 1854; Miq., Fl. Ind. Bat. 1, 1: 255. 1855. — *D. bambusetorum* Miq., Fl. Ind. Bat. 1, 1: 256. 1855; Back., Schoolfl. Java 1911. — *D. japonicum* Miq. in Ann. Mus. Bot. Lugd. Bat. 3: 46. 1867, pro parte. — *D. podocarpum* var. *laxum* Baker in Hook. f., Fl. Br. Ind. 2: 165. 1876.

DISTRIBUTION.—Japan, Formosa, Tonkin, Siam, India, China, Malaysia (Sumatra, Malay Peninsula, Java, Philippines, Moluccas; Lesser Sunda Is.: Bali; New Guinea).

NOTE ON THE SECTION PODOCARPUM.—In this section four species are distinguished: 25. *D. racemosum* (Thunb.) DC., 15. *D. laxum* DC., *D. podocarpum* DC., and *D. fallax* Schindl. A fifth species, *D. japonicum* Miq., appeared to be a mixture of these four taxa and can be left out of consideration.

Of these 4 species, *D. laxum* DC. can easily be recognised by its flowers which are 5 mm long, whereas they measure only 3 mm in the other three species.

D. fallax differs only from *D. racemosum* in the length of the stalk of the pod, c. 8 mm against 2—3 mm. However, only few sheets of *D. fallax* were available and I have probably not obtained a good insight in the variability of the length of this stalk which, in the closely allied *D. laxum* of which I had more material, varies from 8—15 mm. Therefore I cannot ascribe great value to this supposed difference between *D. fallax* and *D. racemosum*, and I have reduced *D. fallax* to *D. racemosum*.

D. podocarpum is indistinguishable from *D. racemosum* but for its rhombic or broad-elliptic leaves. This does not appear a sound character and I have also reduced *D. podocarpum* to *D. racemosum*.

Consequently I accept in this section only two species, the differences between which have been given in the key.

16. DESMODIUM MEGAPHYLLUM Zoll.

Desmodium megaphyllum Zoll. in Nat. & Geneesk. Arch. Neêrl. Ind. 3: 58 & 77. 1846; Miq., Fl. Ind. Bat. 1, 1: 245. 1855; King in J. As. Soc. Beng. 66, ii: 139. 1897;

Prain, *l.c.* 399; Gagnep., *Fl. Gén. I.-C.* 2: 592. 1920; Schindl. *in Fedde*, *Rep.* 21: 2. 1925; Back., *Bekn. Fl. Java (em. ed.)* 5: fam. 120, p. 82. 1941; van Meeuwen *in Reinwardt* 6, pt 1: 100. 1961. — *D. karenium* Kurz *in J. As. Soc. Beng.* 45, ii: 228. 1877; Prain *ibid.* 66, ii: 397. 1897. — *D. prainii* Schindl. *in Fedde*, *Rep.* 21: 2. 1925.

DISTRIBUTION.—S. China (Yunnan: *Henry 11685 B*, in K), Burma (Prain, *l.c.*), Malaya (Perak, once), Central Sumatra (once), and Java.

ECOLOGY.—An undergrowth species of the montane forest, rather indifferent to distribution of rainfall but with a preference for an evergreen climate.

17. DESMODIUM MICROPHYLLUM (Thunb.) DC.

Desmodium microphyllum (Thunb.) DC., *Prod.* 2: 337. 1825; Miq., *Fl. Ind. Bat.* 1, 1: 239. 1855; Merr., *En. Philip.* 2: 287. 1923; Craib, *Fl. Siam. En.* 1: 408. 1928; Back., *Bekn. Fl. Java (em. ed.)* 5: fam. 120, p. 87. 1941. — *Hedysarum microphyllum* Thunb., *Fl. Jap.* 284. 1784; Poir. *in Lamk., Enc. Méth. Bot.* 6: 417. 1804. — *Hedysarum tenellum* Ham. *ex D. Don*, *Prod. Fl. Nep.* 243. 1825. — *D. parvifolium* DC. *in Ann. Sc. Nat. Paris* 4: 100. Jan. 1825; *Prod.* 2: 234. Oct. 1825; Bth., *Fl. Austr.* 2: 2. 1864; Baker *in Hook. f.*, *Fl. Br. Ind.* 2: 174. 1876; Back., *Schoolfl. Java* 341. 1911; 'parviflorum'; Ewart, *Fl. North. Territ.* 149. 1917.

DISTRIBUTION.—From India to Japan, in Siam and Indo-China, throughout Malaysia, and in Australia (Arnhem Land and Queensland).

ECOLOGY.—Indifferent to distribution of rainfall; a very common weed of lowland and hills.

18. DESMODIUM MOTORIUM (Houtt.) Merr.

Desmodium motorium (Houtt.) Merr. *in J. Arn. Arb.* 19: 345. 1938; Back., *Bekn. Fl. Java (em. ed.)* 5: fam. 120, p. 80. 1941. — *Hedysarum motorium* Houtt., *Nederl. Hist.* 2, 10: 246. 1779. — *Hedysarum gyrans* L. f., *Suppl.* 332. 1781. — *D. gyrans* (L.) DC., *Prod.* 2: 326. 1825; Miq., *Fl. Ind. Bat.* 1, 1: 243. 1855; Baker *in Hook. f.*, *Fl. Br. Ind.* 2: 174. 1876; Back., *Schoolfl. Java* 342. 1911; Gagnep., *Fl. Gén. I.-C.* 2: 584. 1920; Merr., *En. Philip.* 2: 285. 1923; Craib, *Fl. Siam. En.* 1: 407. 1928. — *Codariocarpum gyrans* Hassk. *in Flora* 25, Beibl. 2: 49. 1842; Schindl. *in Fedde*, *Rep.* 20: 280. 1925. — *Pseudarthria gyrans* Hassk. *in Cat. Hort. Bog.* 281. 1844; *in Tijds. Nat. Gesch. Nederl. Phys.* 11: 104. 1844; *Pl. Jav. Rar.* 391. 1848.

DISTRIBUTION.—India, Ceylon, Indo-China, Siam to Formosa, Malaysia, Sumatra, Celebes, Philippines, eastern half of Java, Lesser Sunda Is. (Sumatra, Timor, Wetar), according to Merrill also in Australia, not yet recorded from New Guinea. Introduced in America.

ECOLOGY.—A lowland weed which shows a distinct preference for areas subject to a moderate to strong dry season.

19. DESMODIUM NEMOROSUM F. v. M. *ex* Bth.

Desmodium nemorosum F. v. M. *ex* Bth. *Fl. Austr.* 2: 234. 1864; *incl. var. simplicifolium* Schindl. *in Fedde*, *Rep.* 21: 10. 1925; Merr. & Perry *in J. Arn. Arb.* 23: 401. 1938; *incl. var. novoguineense* Kan. & Hat. *in Tokyo Bot. Mag.* 56: 366. 1942. — *D. archboldianum* Bak. f. *in Brittonia* 2: 318. 1937.

DISTRIBUTION.—Australia (Queensland), in Malaysia: New Guinea, Philippines(?).

NOTES.—Schindler made a variety of the one-foliolate form in New Guinea, but as this is the only difference, and as this character often varies within species of this genus (viz in *D. heterocarpon*, *D. styracifolium*, *D. physiocarpoides*, etc.) I think it is insufficient for taxonomical distinction.

Furthermore he described (*l.c.*) a subvar. *whitfordii* from the Philippines with a larger pod (joints 8—10 mm); I have not seen any of his specimens; he mentions the following ones: *Whitford 227*; *R. Meyer 3115*; *Merrill 7611* from Luzon: Bataän, Lamao River, Mt Mariveles.

20. DESMODIUM OBCORDATUM (Miq.) Kurz

Desmodium obcordatum (Miq.) Kurz in J. As. Soc. Beng. 42, ii: 229. 1874; Baker in Hook. f., Fl. Br. Ind. 2: 166. 1876; Gagnep., Fl. Gén. I.-C. 2: 594. 1920; Craib, Fl. Siam. En. 1: 413. 1928; Back., Bekn. Fl. Java (em. ed.) 5: fam. 120, p. 77. 1941. — *Uraria obcordata* Miq., Fl. Ind. Bat. Suppl. 1: 114 & 305. 1860. — *Hegera obcordata* (Miq.) Schindl. in Fedde, Rep. 20: 284. 1924.

DISTRIBUTION.—Asia: Burma (Martaban, Moulmein, Tenasserim), Siam, Indo-China (Laos, Cambodia, Tonkin, Cochinchina), in Malaysia: S. Sumatra (Muara Dua), Java (recently only recorded from Madura I.).

ECOLOGY.—In Malaysia obviously a drought plant.

21. DESMODIUM ORMOCARPOIDES DC.

Desmodium ormocarpoides DC., Prod. 2: 327. 1825; Gagnep., Not. Syst. 3: 256. 1916; Merr., En. Philip. 2: 287. 1923; van Meeuwen in Reinwardtia 6: 98. 1961. — *Hedysarum adhaerens* Poir. in Lamk, Enc. Méth. Bot. Suppl. 5: 15. 1817, non Vahl, 1791. — *D. dependens* Bl. ex Miq., Fl. Ind. Bat. 1, 1: 248. 1855. — ?*D. pendulum* Teysm. ex F. v. M. in Campbell, A Year in the New Hebrides 9. 1873, *pro parte*; cf. F. v. M., Descr. Not. Pap. Pl. 1: 7. 1875. — *Hanslia adhaerens* Schindl. in Fedde, Rep. 20: 276. 1924; Guillaum. in J. Arn. Arb. 12: 244. 1931; in Ann. Mus. Col. Mars. 56: 25. 1948.

DISTRIBUTION.—Malaysia: Lesser Sunda Is. (Timor), Celebes, Moluccas (Buru, Ambon, Ceram, Ternate, Halmahera, Batjan, Banda, Key, Tenimber Is.), and New Guinea; according to Guillaumin also in the Bismarcks, Solomons, and New Hebrides; reported from New Caledonia and Australia, but possibly erroneously so.

22. DESMODIUM PROCUMBENS (Mill.) Hitchc.

Desmodium procumbens (Mill.) Hitchc. in Rep. Mo. Bot. Gard. 4: 76. 1893; Merr., En. Philip. 2: 288. 1923; Junker in Bern. P. Bish. Mus. Bull. 220: 141. 1959. — *Hedysarum procumbens* Mill., Gard. Dict. ed. 8: 10. 1768. — *Hedysarum spirale* Sw., Prod. 107. 1788. — *D. spirale* DC., Prod. 2: 332. 1825; Baker in Oliv., Fl. Trop. Afr. 2:

160. 1871; Robins., Fl. Galapagos Is. in Proc. Am. Ac. Arts. Sc. 151. 1902. — *Hippocrepis rhomboidea* Blanco, Fl. Filip. 585. 1837. — *Meibomia procumbens* (Mill.) Schindl. in Fedde, Rep. 20. 151. 1924.

DISTRIBUTION.—Tropical America and Africa; Malaysia: Philippines (according to Merrill introduced from America), Moluccas (Ambon, once, sheet *sine coll. et numero*); Polynesia: Tonga, Galapagos.

23. DESMODIUM PULCHELLUM (L.) Bth.

Desmodium pulchellum (L.) Bth., Fl. Hongk. 83. 1861; Fl. Austr. 2: 231. 1864; Baker in Hook. f., Fl. Br. Ind. 2: 162. 1876; King in J. As. Soc. Beng. 66, ii: 136. 1879; F. v. M., Descr. Not. Pap. Pl. 6: 7. 1885; K. Sch. & Laut., Fl. Deut. Schutzgeb. Südsee 357. 1901; Val., Fl. Pap. 18. 1907; Back., Schoolfl. Java 339. 1911; Gagnep., Fl. Gén. I.-C. 2: 568. 1920; Ridl., Fl. Mal. Pen. 1: 607. 1922; Merr., En. Philip. 2: 288. 1923; Craib, Fl. Siam. En. 1: 414. 1928; Back., Onkruidfl. Suiker. 328. 1930; Bekn. Fl. Java (em. ed.) 5: fam. 120, p. 75. 1941; Henders., Mal. Wild Fl. 1: 77, t. 71. 1949. — *Hesperisium pulchellum* Linné, Sp. Pl. 747. 1753. — *Dicerma pulchellum* DC. in Ann. Sc. Nat. Paris 4: 236. Jan. 1825; Prod. 2: 339. Oct. 1825; Wight, Ic. t. 418. 1839. — *Phyllodium pulchellum* Desv. in Mém. Soc. Linn. Paris 4: 324. 1826; Bth. in Miq., Pl. Jungh. 217. 1852; Miq., Fl. Ind. Bat. 1, 1: 260. 1855; Schindl. in Fedde, Rep. Beih. 49: 360. 1928. — *Phyllodium elegans* (non Desv.) Bth. in Miq., Pl. Jungh. 217 & 218. 1852; Miq., Fl. Ind. Bat. 1, 1: 260. 1855. — *Phyllodium blumei* Zipp. ex Miq., Fl. Ind. Bat. 1, 1: 160. 1855, *nomen in syn. sine stat.* erroneously referred to *Phyllodium elegans* which is *D. blandum*.

DISTRIBUTION.—Asia: India through tropical Asia to S. China (Formosa, Hongkong), in Malaysia: Sumatra, Malay Peninsula, Borneo (once, in L), Java, Lesser Sunda Is. (Bali, Timor, Sumba, Lombok), Moluccas (once, in L), Philippines, New Guinea; N. Australia.

24. DESMODIUM QUINQUEPETALUM (Blanco) Merr.

Desmodium quinquepetalum (Blanco) Merr. in Bur. Govt. Lab. Manila Publ. 35. 20. 1905; En. Philip. 2: 288. 1923. — *Cytisus quinquepetalus* Blanco, Fl. Filip. 598. 1837. — *Glycine cajanoioides* Walp. in Nov. Act. Ac. Nat. Cur. 19, Suppl. 1: 324. 1843. — *D. cephalotes* (non W. & A.) Nav. in Blanco, Fl. Filip. ed. 3, 4 Nov. App.: 61. 1880.

DISTRIBUTION.—Malaysia: Philippines, New Guinea; Australia: Queensland.

NOTE ON THE SPECIES OF SECTION DENDROLOBIUM IN MALAYSIA.—*D. quinquepetalum* (Blanco) Merr., *D. triangulare* (Retz.) Merr., and *D. umbellatum* (L.) DC. are difficult to distinguish. Backer, Bekn. Fl. Java (em. ed.) 5: fam. 120, p. 76 & 77. 1941, separated *D. triangulare* from *D. umbellatum* amongst others by an auriculate keel and a toothless upper lip of the calyx of the former, and a non-auriculate keel and a toothed upper lip of the latter. I have seen a lot of material, and this character appears not to hold good. The stems seem to be 3 or 4—5-angular, but this is difficult to distinguish.

in herbarium material. The pod is mostly equally thick-corky. The remaining differences I have mentioned in the key.

Merrill recorded two endemic species from the Philippines. The pod of *D. cumingianum* (Bth.) Bth. is unknown. The only difference with *D. umbellatum* is a smaller leaflet, but this is perhaps due to the fact that it does not grow on the seashore. A specimen from New Caledonia (McKee 3160) growing on the foot and slopes of Ouen Toro, has also small leaflets (1½—5 cm long, true *D. umbellatum* 5½—16½ cm).

The other Philippine species, *D. quinquepetalum*, is amongst others to distinguish from *D. umbellatum* by its keel, which is shorter than the wings. Four specimens, much alike *D. umbellatum*, with which name they had been labelled in the herbarium, three from New Guinea (Carr 11845, N.G.F. 4228, Brass 8789) and one from Queensland (Hubbard & Winders 6794) proved to have a shorter keel too. They differ also from *D. umbellatum* by their leaflets, which are smaller, averaging 2½—7½ cm long. The difference between these four plants and *D. quinquepetalum* is the acuminate leaflets of the latter. These specimens have acute, round or emarginate apices on their leaflets. It seems necessary to investigate the *Dendrolobium* section in the Australian region more carefully, but for the present I place these specimens under *D. quinquepetalum*.

25. DESMODIUM RACEMOSUM (Thunb.) DC.

Desmodium racemosum (Thunb.) DC., Prod. 2: 337. 1825; Gagnep., Fl. Gén. I.-C. 2: 581. 1920. — *Hedysarum racemosum* Thunb., Fl. Jap. 285. 1784. — *D. podocarpum* DC. in Ann. Sc. Nat. Paris 4: 102. Jan. 1825; Prod. 2: 336. Oct. 1825; Miq., in Ann. Mus. Bot. Lugd. Bat. 3: 46. 1867; Baker in Hook. f., Fl. Br. Ind. 2: 165. 1876; Prain in J. As. Soc. Beng. 66, ii: 391. 1897; Merr. in Philip. J. Sc. 5: Bot. 83. 1910; En. Philip. 2: 287. 1923. — *D. gardneri* Bth. in Miq., Pl. Jungh. 226. 1852; Baker in Hook. f., Fl. Br. Ind. 165. 1876. — *D. japonicum* Miq. in Ann. Mus. Bot. Lugd. Bat. 3: 64. 1867, pro parte — *D. fallax* Schindl. in Bot. Jahrb. 54: 55. 1916.

DISTRIBUTION.—Asia: Japan, China, Tonkin, India, Ceylon; in Malaysia: Philippines.

NOTE.—See discussion of the synonymy under 15. *D. laxum* DC.

26. *Desmodium renifolium* (L.) Schindl.

Desmodium renifolium (L.) Schindl. in Fedde, Rep. 22: 262. 1926; Craib, Fl. Siam. En. 1: 415. 1928. — *Hedysarum renifolium* L., Syst. ed. 10, 2: 1169. 1759. — *Hedysarum reniforme* L., Sp. Pl. 2: 1051. 1763. — *D. reniforme* (L.) DC., Prod. 2: 327. 1825; Miq., Fl. Ind. Bat. 1, 1: 249. 1855; Baker in Hook. f., Fl. Br. Ind. 2: 173. 1876; Prain in J. As. Soc. Beng. 66, ii: 401. 1897; Back., Schoolfl. Java 336. 1911; Ewart, Fl. North. Territ. 150. 1917; Gagnep., Fl. Gén. I.-C. 2: 604. 1920; Back., Bekn. Fl. Java (em. ed.) 5: fam. 120, p. 86. 1941. — *D. oblatum* Baker ex Kurz in J. As. Soc. Beng. 42, ii: 230. 1874; Baker in Hook. f., Fl. Br. Ind. 2: 166. 1876.

DISTRIBUTION.—Asia: India, Burma, Siam, Indo-China, up to S. China (Yunnan); in Malaysia: W. Java; North Australia.

NOTE.—*D. oblatum* Baker would differ from *D. renifolium* by its longer pedicels and more deeply indented pod. Prain, *l.c.* 394, pointed out “that *D. oblatum* does not always have longer pedicels than *D. renifolium* and some Maymyo specimens have the slightly indented pods and the deeply indented ones of *D. renifolium* and *D. oblatum* respectively on the same branch, so it appears that they do not even differ as varieties”.

27. *Desmodium repandum* (Vahl) DC.

Desmodium repandum (Vahl) DC., *Prod.* 2: 334. 1825; Schindl. *in Fedde, Rep. Beih.* 49: 295. 1928; Léon., *Fl. Congo Belge* 5: 193. 1954. — *Hedysarum repandum* Vahl, *Symb.* 2: 82. 1791; Poir. *in Lamk, Dict.* 6: 408. 1806. — *D. scalpe* DC., *Prod.* 2: 334. 1825; Baker *in Oliv., Fl. Trop. Afr.* 2: 164. 1871; *in Hook. f., Fl. Br. Ind.* 2: 165. 1876; Gagnep., *Fl. Gén. I.-C.* 2: 580. 1920; Ridl., *Fl. Mal. Pen.* 1: 608. 1922; Merr., *En. Philip.* 2: 289. 1923; Back. & Sloot., *Handb. Jav. Theeonkr.* 145, t. 145. 1924; Craib, *Fl. Siam. En.* 1: 417. 1928; Merr. *in Contr. Arn. Arb.* 8: 77. 1934; Back., *Bekn. Fl. Java (em. ed.)* 5: fam. 120, p. 78. 1941; Henders., *Mal. Wild Fl.* 1: 73, t. 74. 1949. — *D. strangulatum* W. & A., *Prod.* 228. 1834; Miq., *Fl. Ind. Bat.* 1, 1: 254. 1855. — *D. cafferum* Eckl. & Zeyh., *En. Pl. Afr. Austr.* 251. 1835. — *D. schimperii* Hochst. *ex A. Rich., Fl. Abyss.* 1: 205. 1847. — *D. trichocaulon* (*non* DC.) Hassk., *Pl. Jav. Rar.* 367. 1848. — *Hedysarum ignescens* Zipp. *ex Miq., Fl. Ind. Bat.* 1, 1: 254. 1855, *nomen in syn.*

DISTRIBUTION.—Africa, Asia: India, Siam, Laos, Tonkin, Yunnan; in Malaysia: Sumatra, Borneo, Celebes, Philippines, Moluccas (Ceram), Java, Lesser Sunda Islands, and New Guinea; Australia(?).

ECOLOGY.—Light forests and thickets in the hills and mountains, almost always under everwet climatic conditions, 700—2000 m.

28. *Desmodium scorpiurus* (Sw.) Desv.

Desmodium scorpiurus (Sw.) Desv. *in J. Bot.* 1: 122. 1813; Merr., *En. Philip.* 2: 289. 1923; van Meeuwen *in Reinwardtia* 6: 101. 1961. — *Hedysarum scorpiurus* Sw., *Prod. Veg. Ind. Occ.* 107. 1788. — *D. parviflorum* Mart. & Galeotti *in Bull. Ac. Brux.* 10, 2: 185. 1843.

DISTRIBUTION.—According to Merrill introduced from tropical America, and now even in Formosa, Australia, and Polynesia. In Malaysia: Philippines, Lesser Sunda Is. (Lombok), and New Guinea (on airstrip!); also in North Queensland.

29. *Desmodium securiforme* Bth.

Desmodium securiforme Bth. *in Miq., Pl. Jungh.* 226. 1852; Miq., *Fl. Ind. Bat.* 1, 1: 255. 1855; F.-Vill., *Nov. App.* 62. 1880; Vidal, *Phan. Cum. Philip.* 108. 1885; Rev.

Desmodium securiforme (Bth.) Merr. in Philip. J. Sc. 5: Bot. 89. 1910; En. Philip. 2: 291. — Kosterm. in Reinwardtia 1: 457. 1952. — *Desmofischera monosperma* Holth. in Boma 5: 188. 1942.

DISTRIBUTION.—Malaysia: Philippines (Luzon, Panay, Polillo, Basilan), Moluccas (Morotai, Talaud, Buru, Misool), and NW. New Guinea (Arfak Peninsula).

NOTE.—*D. securiforme* Bth. deviates in the genus *Desmodium* by its unovuled ovary, but agrees fully with *Desmodium* in all other characters: erect herb, flowers with a non-auriculate vexillum, upper calyx lips partly united, leaves 1—3-pinnate. The pod is of course not articulated. *D. biarticulatum* is very often 1-seeded, and is then not articulated either. *D. zonatum* has the same lengthwise-striate pod. The semilunar shape reminds of the pod joints of *D. ormocarpoides*.

30. DESMODIUM SEQUAX Wall.

Desmodium sequax Wall., Pl. As. Rar. 2: 46, t. 157. 1831; Baker in Hook. f., Fl. Br. Ind. 2: 170. 1876; Kurz in J. As. Soc. Beng. 45, ii: 227 & 232. 1877; Prain, Bot. Beechey 66, ii: 400. 1897; Gagnep., Fl. Gén. I.-C. 2: 594. 1920; Schindl. in Fedde, Rep. Bot. 49: 272. 1928; Merr. in Contr. Arn. Arb. 8: 76. 1928; Hosokawa in J. Soc. Trop. Agric. 4: 313. 1932, incl. var. *sinuatum* (Bl.) Hosokawa; van Meeuwen in Reinwardtia 4: 100. 1961. — *D. strangulatum* W. & A. var. *sinuatum* Miq., Fl. Ind. Bat. 1, 1: 255. 1855. — *D. dasylobum* Miq., *ibid.* Suppl. 305. 1861; Merr. En. Philip. 2: 284. 1923; Back., Bokn. Fl. Java (em. ed.) 5: fam. 120, p. 83. 1941. — *D. sinuatum* Bl. ex Hook., Fl. Br. Ind. 2: 166. 1876; Prain in J. As. Soc. Beng. 66, ii: 394. 1897; K. Sch. & Laut., Nachtr. Fl. Deut. Schutzgeb. Südsee 276. 1905. — *D. ancistotrichum* Laut. & K. Sch., Fl. Deut. Schutzgeb. Südsee 358. 1901.

DISTRIBUTION.—India (Assam, Khasya, Upper Burma), Tonkin, S. China (Szechuan), Formosa; in Malaysia: Sumatra, Philippines (Luzon, Mindanao), Celebes and New Guinea. In Java it occurs introduced in the mountain garden of Tjibodas.

ECOLOGY.—A characteristic species confined to the montane zone, mostly in open places, 500—1500(—1800) m altitude, not in drought regions. Between the Asiatic and Malaysian ranges there seems to be a rather large gap difficult to explain as there seems no ecological factor responsible for it.

31. DESMODIUM STYRACIFOLIUM (Osb.) Merr.

Desmodium styracifolium (Osb.) Merr. in Am. J. Bot. 3: 580. 1916; En. Philip. 2: 291. 1923; Schindl. in Fedde, Rep. 21: 5. 1925. — *Hedysarum styracifolium* Osb., Bengkok Ostind. Resa 247. 1757; Linné, Syst. Nat. ed. 10, 2: 1169. 1759. — *Hedysarum nitroflexum* Linné, Mant. 1: 103. 1767. — *Hedysarum capitatum* Burm. f., Fl. Ind.

167. 1768. — *D. retroflexum* (L.) DC., *Prod.* 2: 336. 1825; Miq., *Fl. Ind. Bat.* 1, 1: 240. 1855; Baker in Hook. f., *Fl. Br. Ind.* 2: 170. 1876; Gagnep., *Fl. Gén. I.-C.* 2: 606. 1920; Craib, *Fl. Siam. En.* 1: 416. 1928. — *D. capitatum* (Burm. f.) DC., *Prod.* 2: 336. 1825; Miq., *Fl. Ind. Bat.* 1, 1: 241. 1855; Baker in Hook. f., *Fl. Br. Ind.* 2: 170. 1876; King in J. As. Soc. Beng. 66, ii: 139. 1897; Ridl., *Fl. Mal. Pen.* 1: 609. 1922; Merr., *En. Philip.* 2: 284. 1923; Craib, *Fl. Siam. En.* 1: 404. 1928; Back., *Onkruidfl. Suiker.* 334. 1930; Kaneh., *En. Micron. Pl.* 4, 6: 382. 1935; Back., *Bekn. Fl. Java* (em. ed.) 5: fam. 120, p. 82. 1941. Henders., *Mal. Wild. Fl.* 1: 75, t. 69. 1949. — *Nicolaiella styracifolia* Desv. in *Ann. Sc. Nat. Paris* 1, ser. 9: 418. 1826. — *D. rotundifolium* Wall., *Cat. n.* 5696. 1832, non DC., *nomen*; Schindl. in *Fedde, Rep. Beih.* 49: 296. 1928, *nomen*. — *Pseudarthria capitata* Hassk., *Cat. Hort. Bog.* 281. 1844; *Pl. Jav. Rar.* 390. 1848. — *Uraria retroflexa* Drake in *Morot, J. Bot.* 5: 192. 1891.

DISTRIBUTION.—Asia: India, Ceylon, Burma, Indo-China, S. China; in Malaysia: Sumatra, Malay Peninsula, Borneo, Celebes, Philippines, Moluccas, Java, Lesser Sunda Is.; Micronesia: W. Carolines (Yap).

NOTES.—In the past a 1-foliolate form with broad-elliptic leaves and a 3-foliolate form with obovate leaves have been kept as separate species under the names *D. styracifolium* (or *D. retroflexum*) and *D. capitatum*. No other differences are correlated with this character. Among the material at hand some specimens have both leaf forms. It is a curious fact that the leaflets of 3-foliolate leaflets are always obovate and that the leaflet of the unifoliolate leaves is always broad-elliptic to orbicular. This holds also if in a single specimen these leaves are found associated. The broad shape of the unifoliolate leaflets makes the impression that the mesophyll of the lateral leaflets is 'taken up' in that of the single leaflet, as shown by its width. A similar phenomenon can be observed in *D. heterocarpon* var. *heterocarpon* and other species with both 1 and 3 leaflets.

32. DESMODIUM TORTUOSUM (Sw.) DC.

Desmodium tortuosum (Sw.) DC., *Prod.* 2: 332. 1825; Back., *Bekn. Fl. Java* (em. ed.) 5: fam. 120, p. 79. 1941; Merr. & Perry in *J. Arn. Arb.* 29: 156. 1948. — *Hedysarum purpureum* Mill., *Gard. Dict.* ed. 8: n. 6. 1768. — *Hedysarum tortuosum* Sw., *Prod.* 107. 1788; Vahl, *Symb. Bot.* 2: 82. 1791. — *D. stipulaceum* DC., *Prod.* 2: 330. 1825; Bth. in *Miq., Pl. Jungh.* 229. 1851; Miq., *Fl. Ind. Bat.* 1, 1: 252. 1855, incl. var. *aparine* Miq.; Back., *Schoolfl. Java* 344. 1911. — *D. aparines* (non DC.) Hassk. in *Flora* 25: 65. 1842; *Cat. Hort. Bog.* 274. 1844; *Pl. Jav. Rar.* 366. 1858. — *D. sub-stipulaceum* Bl. ex Miq., *Fl. Ind. Bat.* 1, 1: 252. 1855, *nomen in syn.*, non Kurz 1877. — *Meibomia tortuosa* (Sw.) O.K., *Rev. Gen. Pl.* 1: 198. 1891. — *Meibomia purpurea* (Mill.) Vail in *Small. Fl. Southeast. U.S.* 639. 1903; Schindl. in *Fedde, Rep. Beih.* 49: 352. 1928. — *D. purpureum* (Mill.) Fawc. & Rendle, *Fl. Jam.* 4: 36. 1920; Back. & Sloot., *Handb. Jav. Theonkr.* 144, t. 144. 1924; non Hook. & Arn., *Bot. Beech. Voy.* 62. 1832.

DISTRIBUTION.—Southern United States (Florida, Mexico to Columbia), West Indies, South America; early introduced in Malaysia, seen from Java (Blume, Waitz, Zollinger) and S. and E. New Guinea.

NOTE.—The oldest epithet *purpureum* of Miller is blocked under *Desmodium*.

33. DESMODIUM TRIANGULARE (Retz.) Merr.

Desmodium triangulare (Retz.) Merr. in J. Arn. Arb. 23: 170. 1942. — *Hedysarum triangulare* Retz., Observ. Bot. 3: 40. 1783. — *Hedysarum cephalotes* Roxb., Fl. Ind. ed. Carey 3: 360. 1832. — *Hedysarum umbellatum* (non L.) Roxb., l.c. — *H. cephalotes* (Roxb.) W. & A., Prod. 224. 1834; Wall. ex Steud., Nomenclator 2: 44. 1840; Baker in Hook. f., Fl. Br. Ind. 2: 161. 1876; Prain in J. As. Soc. Beng. 66, ii: 389. 1897, incl. var. *congestum* (W. & A.) Prain; Gagnep., Fl. Gén. I.—C. 2: 173. 1920; Craib, Fl. Siam. En. 1: 404. 1928; Back., Bekn. Fl. Java (em. ed.) 5: fam. 120, p. 77. 1941. — *D. congestum* W. & A., Prod. 224. 1834. — *D. lineatum* Spanoghe in Linnaea 15: 193. 1841. — *D. umbellatum* (non DC.) Mor., Syst. Verz. Zoll. 5. 1846. — *Dendrolobium cephalotes* (Roxb.) Bth. in Miq., Pl. Jungh. 216 & 218. 1852; Miq., Fl. Ind. Bat. 1, 1: 263. 1855. — *D. recurvatum* (non Grah.) Bth. in Miq., Pl. Jungh. 228. 1852. — *Dendrolobium triangulare* (Retz.) Schindl. in Fedde, Rep. 20: 779. 1924.

DISTRIBUTION.—Africa, Asia: Ceylon, India, Burma, Siam, Indo-China, S. China; in Malaysia: Borneo (once), Celebes, Java, Lesser Sunda Is. (Timor, Sumba).

NOTE.—See the discussion under 24. *D. quinquepetalum*.

34. DESMODIUM TRICHOSTACHYUM Bth.

Desmodium trichostachyum Bth., Fl. Austr. 2: 234. 1864; Merr. & Perry in J. Arn. Arb. 23: 401. 1942.

DISTRIBUTION.—Australia (Northern Territory, Queensland), and South New Guinea (Merauke, Kumbé R., Lake Daviumbu).

ECOLOGY.—A characteristic species adapted to savannahs under seasonal conditions.

35. DESMODIUM TRIFLORUM (L.) DC.

Desmodium triflorum (L.) DC., Prod. 2: 334. 1825, excl. syn. cit. *D. biflorum*; W. & A., Prod. 229. 1834, incl. var. *minus*; Wight, Ic. t. 292. 1839, incl. var. *minus*; Miq., Fl. Ind. Bat. 1, 1: 238. 1855; Baker in Oliv., Fl. Trop. Afr. 2: 165. 1871; in Hook. f., Fl. Br. Ind. 2: 173. 1876; King in J. As. Soc. Beng. 66, ii: 135. 1897; Ridl., Fl. Mal. Pen. 1: 606. 1922; Merr., En. Philip. 2: 286. 1923; Hochreut. in Candollea 2, 2: 396. 1926, incl. var. *minus*; Craib, Fl. Siam. En. 1: 419. 1928; Back., Onkruidfl. Suiker. 336. 1930; Kaneh., En. Micron. Pl. 4, 6: 332. 1935; Christophersen in Bern. P. Bish. Mus. Bull. 128: 101. 1935; Back., Bekn. Fl. Java (em. ed.) 5: fam. 120, p. 86. 1941; Henders., Mal. Wild Fl. 1: 74, t. 67. 1949; Juncker in Bern. P.

Bish. Mus. Bull. 220: 141. 1959. — *Hedysarum triflorum* Linné, Sp. Pl. 749. 1753, excl. var. β et γ . — *Hedysarum stipulaceum* Burm. f., Fl. Ind. t. 54, f. 2. 1768. — *Nicolsonia oxalidifolia* Spanoghe in Hook., Comp. Bot. Mag. 1: 346. 1835, nomen. — *D. stipulaceum* (Burm. f.) Hassk., Cat. Bog. Alt. 274. 1844, nom. illegit., non DC. 1825. — *D. parvifolium* Blanco (non DC.) Fl. Filip. ed. 2: 408. 1845.

DISTRIBUTION.—Pantropic, Asia: India, Siam, Indo-China, China; Malaysia: Sumatra, Borneo, Celebes, Philippines, Java, Lesser Sunda Is., Moluccas, New Guinea; Australia; Queensland; Pacific: W. & E. Carolines, Samoa, Tonga.

36. DESMODIUM TRIQUETRUM (L.) DC.

Desmodium triquetrum (L.) DC., Prod. 2: 326. 1825, *sensu lato*; W. & A., Prod. 224. 1834; Baker in Hook. f., Fl. Br. Ind. 2: 163. 1876; Back., Schooffl. Java 336. 1911; Gagnep., Fl. Gén. I.—C. 2: 607. 1920; Ridl., Fl. Mal. Pen. 1: 611. 1922; Craib, Fl. Siam. En. 1: 420. 1928; Back., Bekn. Fl. Java (em. ed.) 5: fam. 120, p. 79. 1941. — *Hedysarum triquetrum* Linné, Sp. Pl. 746. 1753. — *Pteroloma triquetrum* (L.) Bth. in Miq., Pl. Jungh. 217. 1852, *sensu lato*; Miq., Fl. Ind. Bat. 1, 1: 258. 1855.

NOTES.—The examination of specimens yielded as a result that, as first pointed out by Prain (*in* J. As. Soc. Beng. 66, ii: 390. 1897), four subspecies can be distinguished. It appeared that most authors have excepted *D. triquetrum* in the wide sense, incorporating in it what has been distinguished by De Candolle (Prod. 2: 326. 1825) under the names *D. triquetrum* (L.) DC., *D. pseudotriquetrum* DC., *D. auriculatum* DC., and *D. alatum* DC. Schindler (1924) kept these four taxa apart under the generic name *Pteroloma*.

Ssp. auriculatum (DC.) Prain was originally described from "Timor", on a sheet in the Paris Herbarium, but as this subspecies does not occur in Malaysia, it is clear that the Timor record rests on erroneous localization. Nevertheless I want to make a remark about its pod, which is corky around the seeds in the same way as in the pods of *D. umbellatum*, *D. triangulare* and *D. quinquepetalum*. According to Prain *ssp. auriculatum*, distributed in Tenasserim, the Andamans, and the Mascarene Islands, is almost purely a seashore species. *D. umbellatum* is also characteristic of the sandy beach. Before we leap to the conclusion that the corkiness of the pods must be an "adaptation" to dispersal by means of sea water, we must take in mind that the pods of *D. quinquepetalum* and *D. triangulare*, which are *not* coastal plants, are just as corky.

36a. *ssp. TRIQUETRUM*

Desmodium triquetrum (L.) DC. *ssp. genuinum* Prain *in* J. As. Soc. Beng. 66, ii: 390. 1897. — *D. triquetrum* (L.) DC. *sensu stricto*: King *in* J. As. Soc. Beng. 66, ii: 143. 1897; Merr., En. Philip. 2: 290. 1923; Back. & Sloot., Handb. Jav. Theconkr.

186, t. 146. 1924; Guillaum., Fl. Nouv. Caléd. 154. 1948; Henders., Mal. Wild. Fl. 1: 81, t. 77. 1949. — *Pteroloma triquetrum* (L.) Bth. *sensu stricto*: Schindl. in Fedde, Rep. 20: 271. 1924. — *Hedysarum alatum* Roxb., Fl. Ind. ed. Carey 3: 348. 1832.

DISTRIBUTION.—Ceylon, India, Burma, Indo-China, S. China, Hongkong, Formosa, throughout Malaysia to N. Australia, New Caledonia, and Polynesia.

NOTE.—From New Guinea there is one sheet with woolly-hairy pod (*Anta exp. Wentholt 56*).

35d. ssp. ALATUM Prain

ssp. *alatum* Prain in J. As. Soc. Beng. 66, ii: 390. 1897. — *D. alatum* DC., Mém. Ag. 7: 321. 1825; Prod. 2: 326. 1825. — *Pteroloma triquetrum* (L.) Bth. var. *elongata* Walp., Fl. Ind. Bat. 1, 1: 258. 1855. — *Pteroloma alatum* Schindl. in Fedde, Rep. 20: 272. 1924.

DISTRIBUTION.—According to Prain in North India, early in the 19th century also found in Java, but these specimens may have been derived from cultivated ones in Hortus Bogoriensis.

36c. ssp. PSEUDOTRIQUETRUM Prain

ssp. *pseudotriquetrum* Prain in J. As. Soc. Beng. 66, ii: 390. 1897. — *D. pseudotriquetrum* DC. in Ann. Sc. Nat. Paris 4: 100. Jan. 1825; Prod. 2: 326. Oct. 1825; Merr., En. Philip. 2: 288. 1923. — *Pteroloma pseudotriquetrum* Schindl. in Fedde, Rep. 20: 272. 1924.

DISTRIBUTION.—According to Prain in North India, according to Merrill in the Philippines.

EXCLUDED VARIETY.—36d. ssp. *auriculatum* Prain in J. As. Soc. Beng. 66, ii: 390. 1897, said to come from Timor; see above.

37. DESMODIUM UMBELLATUM (L.) DC.

Desmodium umbellatum (L.) DC., Prod. 2: 325. 1825, *incl. var. hirsutum* DC.; W. & A., Prod. 224. 1834; Bth., Fl. Austr. 2: 230. 1864; Baker in Oliv., Fl. Trop. Afr. 2: 160. 1871; in Hook. f., Fl. Br. Ind. 2: 161. 1876; King in J. As. Soc. Beng. 66, ii: 137. 1897; Prain, l.c. 388; Gagnep., Fl. Gén. I.—C. 2: 577. 1920; Merr., En. Philip. 2: 230. 1923; Craib, Fl. Siam. En. 1: 420. 1928; Back., Bekn. Fl. Java (em. ed.) 5: Ann. 120, p. 76. 1941; Henders., Mal. Wild. Fl. 1: 78, t. 72. 1949. — *Hedysarum umbellatum* Linné, Sp. Pl. 747. 1753; Willd., Sp. Pl. 3, 2: 1182. 1803; *non sensu* Roxb., Fl. Ind. ed. Carey 3: 360. 1832, *quae est D. triangulare*. — *Hedysarum australe* Willd. Sp. Pl. 3, 2: 1183. 1803. — *D. australe* (Willd.) DC., Prod. 2: 326. 1825. — *D. grandifolium* DC., l.c. 338. — *Hedysarum arboreum* Roxb., Fl. Ind. ed. Carey 3: 360. 1832. — *Aeschynomene arborea* Blco, Fl. Filip. 581. 1837. — *Dendrolobium umbellatum* (L.) Bth. in Miq., Pl. Jungh. 216 & 218. 1852; Miq., Fl. Ind. Bat. 1, 1: 262. 1855, *incl. var. majus* Miq. et *var. obtusissimum* Bl. ex Miq.; Schindl. in Fedde Rep. Beih. 0: 262. 1928. — *Dendrolobium australe* (Willd.) Bth. in Miq., Pl. Jungh. 216. 1852;

Miq., Fl. Ind. Bat. 1, 1: 263. 1855. — *Dendrolobium cumingianum* Bth. in Miq., Fl. Jungh. 216. 1852; Miq., Fl. Ind. Bat. 1, 1: 263. 1855; Schindl. in Fedde, Rep. Beih. 49: 262. 1928. — *Hedysarum ellipticum* Zipp. ex Miq., Fl. Ind. Bat. 1, 1: 262. 1855. — *D. cumingianum* (Bth.) Bth. in Bth. & Hook. f., Gen. 1, 2: 519. 1865; Merr., En. Philip. 2: 284. 1923.

DISTRIBUTION.—Africa, Mascarenes; Asia: Ceylon, India, Siam, Cochinchina, Burma, throughout Malaysia to Australia and the Pacific.

NOTE.—See the discussion under 24. *D. quinquepetalum*.

38. DESMODIUM VELUTINUM (Willd.) DC.

Desmodium velutinum (Willd.) DC., Prod. 2: 228. 1825; Schindl. in Fedde, Rep. 21: 6. 1925, incl. var. *roxburghii* (W. & A.) Schindl. et var. *plukenetii* (W. & A.) Schindl.; Craib, Fl. Siam. En. 1: 421 & 422. 1928; Merr. & Perry in J. Arn. Arb. 29: 156. 1948; Léon., Fl. Congo Belge 5: 194. 1954. — *Hedysarum velutinum* Willd., Sp. Pl. 3, 2: 117. 1803. — *Hedysarum lasiocarpum* Beauv., Fl. d'Oware et de Benin 1: 32. 1804. — *Hedysarum latifolium* Roxb., Hort. Beng. 57. 1814, nom. nud. — *D. lasiocarpum* (Beauv.) DC., Prod. 2: 328. 1825; Baker in Oliv., Fl. Trop. Afr. 2: 162. 1871; Merr. in Philip. J. Sc. 14: 243. 1919; En. Philip. 2: 286. 1923; Back., Bekn. Fl. Java (em. ed.) 5: fam. 120, p. 84. 1941. — *D. latifolium* DC., Prod. 2: 328. 1825; W. & A., Prod. 225. 1834, incl. var. *roxburghii* W. & A., var. *telfairii* W. & A. et var. *plukenetii* W. & A.; Miq., Fl. Ind. Bat. 1, 1: 246. 1855, incl. var. *virgatum* Miq., l.c. 247; Baker in Hook. f., Fl. Br. Ind. 2: 168. 1876; Gagnep., Fl. Gén. I.—C. 2: 600. 1920; Back., Onkruidfl. Suiker. 332. 1930. — *D. virgatum* [Zoll. in Nat. & Geneesk. Arch. Néerl. Ind. 3: 58 & 76. 1846, nomen] King in J. As. Soc. Beng. 66, ii: 143. 1897; Prain, l.c. 399; Merr. in Philip. J. Sc. 14: 243. 1919; Ridl., Fl. Mal. Pen. 1: 611. 1922; Merr., En. Philip. 2: 290. 1923; Back., Bekn. Fl. Java (em. ed.) 5: fam. 120, p. 84. 1941. — *D. plukenetii* (W. & A.) Merr. in Sunyatsenia 5: 78. 1940.

DISTRIBUTION.—Africa, S.E. Asia: Ceylon, India, Burma, Siam, Indo-China (Laos, Cambodia, Tonkin), throughout Malaysia: Sumatra, Malay Peninsula, Java, Lesser Sunda Is., Celebes, Philippines, and New Guinea.

NOTES.—The reason for drawing this note is that I found that many authors have at variance distinguished one or two species: *D. velutinum* (Willd.) DC. and *D. virgatum* Zoll., both occurring in tropical Asia, Africa, and America (introduced). Merrill in Philip. J. Sc. 5: Bot. 87. 1905 stated that *D. virgatum* is a good species; Craib, Fl. Siam. En. 1: 422. 1928, treated *D. virgatum* as a variety, var. *plukenetii* (W. & A.) Schindl.; Backer, Bekn. Fl. Java (em. ed.) 5: fam. 120, p. 84. 1941, mentioned it with some doubt as a distinct species.

No other differences are to be found than in the indument of the leaflets and their shape. *D. velutinum* should have ovate to obovate leaflets, obtuse, densely tomentose and thick, while *D. virgatum* should be less densely hairy, and have thin, herbaceous leaves, ovate to long-triangular, acute, with an undulate margin, on the lower surface appressed-pubescent.

At first glance this seems to represent differences of varietal rank but as I have found a lot of intermediate forms, of which I shall mention some below, it seems correct to reduce *D. virgatum* to *D. velutinum*.

Philippines. *Phil. Nat. Herb.* 17026. Leaflets thin, herbaceous, on the lower surface appressed-hairy, ovate, obtuse, with an entire margin.

Sumatra. Specimen from *Benjamin Heyne*. Leaflets ovate, obtuse, thinly membranous, with an entire margin.

Lesser Sunda Islands. Sumbawa. *Elbert* 3535. Leaflets thick, densely tomentose on the lower surface, ovate, acute. Wetar. *Bloembergen* 3744. Leaflet ovate, obtuse, thinly herbaceous. Both with an entire margin.

New Guinea. *Floyd NGF* 6495. Leaflets ovate, obtuse, thinly herbaceous.

Africa. Congo Belge. Station Domest. *Eléphants* 809. Tomentose, long-triangular, clearly undulated along the margin. Togo. *Warnecke* 209. Leaflets ovate, clearly undulated along the margin, appressed-pubescent.

38a. var. *longibracteatum* (Schindl.) van Meeuwen, *comb. nov.*

Desmodium rufihirsutum Craib in *Kew Bull.* 171. 1922; *Fl. Siam. En.* 1: 417.

1928. — *D. longibracteatum* Schindl. in *Fedde, Rep.* 21: 7. 1925.

DISTRIBUTION.—Assam (Manipur), Burma, Yunnan; in Malaysia: West Java (Tjiburial), twice collected.

NOTE.—A conspicuous variety characterized by the long bracts furnishing the raceme with a spike-like appearance.

39. DESMODIUM ZONATUM Miq.

Desmodium zonatum Miq., *Fl. Ind. Bat.* 1, 1: 250. 1855; *Pulle in Nova Guinea* 4: 651. 1912; *Gagnep., Not. Syst.* 3: 257. 1916; *Fl. Gén. I.—C.* 2: 602. 1920; *Merr., En. Philip.* 2: 290. 1923; *Craib, Fl. Siam. En.* 1: 423. 1928; *Back., Bekn. Fl. Java (em. ed.)* 5: fam. 120, p. 81. 1941; van Meeuwen in *Reinwardtia* 6: 97. 1961. — *D. ormoarpoïdes* (non DC.) *auct. plur.*: *Zoll. in Nat. & Geneesk. Arch. Neêrl. Ind.* 3: 57. 1846; *Baker in Hook. f., Fl. Br. Ind.* 2: 164. 1876; *Prairie in J. As. Soc. Beng.* 66, ii: 142 & 391. 1897, *incl. var. velutina*; *Ridl., Fl. Mal. Pen.* 1: 610. 1922.

DISTRIBUTION.—Ceylon, India, Burma, Siam, Indo-China, and Malaysia: Sumatra (also Mentawai, Enggano Is.), Malay Peninsula (Selangor), SE. Borneo (once), Java, Lesser Sunda Is. (Lombok), Central Celebes, Philippines (Luzon, Sorsogon, Mindoro, Camarines, Leyte, Negros, Mindanao), Moluccas (Kai Is.), New Guinea, and Solomons (Florida I.).

ECOLOGY.—Both under everwet and seasonal climatic conditions.

INSUFFICIENTLY KNOWN SPECIES

40. DESMODIUM BOLSTERI Merr. & Rolfe

Desmodium bolsteri Merr. & Rolfe in *Philip. J. Sc.* 3: Bot. 102. 1908; *Merr., Phil.* 5: Bot. 84. 1910; *En. Philip.* 2: 284. 1923.

NOTE.—This species I only know from the description of Merrill which runs as follows:

Leaves 3-foliolate, leaflets oblong-ovate, terminal leaflet 4 cm or less, 12 mm broad, on the lower surface thinly appressed-hairy, with an acute base, and rounded apex, lateral leaflets the same, somewhat smaller. Petioles 1 mm, of terminal leaflet 5 mm. Racemes terminal, lax, 3—4 cm; pedicels patent in fruit, 7—8 mm. Pod 4-jointed, 2½ cm by 5 mm, thin slightly pubescent. Stipules ± 8 mm, appressed.—Luzon, *Bolster 181, Adduru 209, Warburg 12447, Alvarez FB 22127.*

41. DESMODIUM UNCINATUM (Jacq.) DC.

Desmodium uncinatum (Jacq.) DC., Prod. 2: 331. 1825; Back., Bekn. Fl. Java (em. ed.) 5: fam. 120, p. 83. 1941. — ? *Hedysarum intortum* Mill., Gard. Dict. ed. 8: n. 11. 1768. — *Hedysarum uncinatum* Jacq., Hort. Schoenbr. 3: 27, t. 298. 1798. — ? *D. intortum* Urban, Symb. Ant. 8: 292. Febr. 1920; Fawc. & Rendle, Fl. Jam. 2: 34. 1920; Back. & Sloot., Handb. Jav. Theeonkr. 143, t. 143. 1924.

NOTE.—I have seen no material from Java of this American plant recorded by Backer as introduced in Java. Urban and Fawcett & Rendle reduced *D. uncinatum* to *D. intortum*, which doubtless would be the proper specific name having by far the oldest basionym, if their identity were beyond question. Schindler, however, keeps the two species apart. The specimens which are present in the Rijksherbarium under the name of *D. intortum* (Mill.) Urb. are distinctly different from the description of the Javanese plant given by Backer, *l.c.* This description runs as follows:

Leaves 3-foliolate, leaflets broad-elliptic-oblong, terminal leaflet 20—45 by 12—25 mm, on the lower surface thinly appressed-hairy. Stipules subulate with a broad base, caducous, with a rounded base and acute or obtuse apex. Racemes terminal. Pedicels 3—5 mm, patent in fruit. Pod 3—10-jointed, 15—45 by 3—3½ mm, short hooked-hairy.

42. DESMODIUM VIRIDIFLORUM Beck

Desmodium viridiflorum Beck, Bot. U.S. 84. 1833, *nom. illeg., homonym., non* DC. 1825; Back. in Bull. Jard. Bot. Btzg II, n. 13: 15. 1913.

NOTE.—This name of a North American species was casually mentioned in a provisional list of new Javanese records by Backer and recorded to be naturalized in the tea estate of Waspada in West Java. I have not seen the material on which this record is based.

DOUBTFUL SPECIES

43. *Desmodium frutescens* (Jacq.) Schindl. in Fedde, Rep. 21: 9. 1925; *ibid.* Beih. 49: 284. 1928. — *Hedysarum frutescens* Jacq., Hort. Vindob. 3:

47, t. 89. 1776. *Hedysarum malacophyllum* Link, En. Hort. Berol. 2: 247. 1822. — *D. malacophyllum* DC., Prod. 2: 338. 1825; Merr. in Philip. J. Sc. 5: Bot. 84. 1910; En. Philip. 2: 287. 1923.

D. malacophyllum was based on a specimen collected by Von Chamisso said to hail from the Philippines (Luzon, Cavite). It has never been collected again. It could be an early Spanish imported alien which has since disappeared, but Merrill's contention was that it has been a mislocalized specimen collected in tropical America.

UNIDENTIFIED SPECIES

44. *Desmodium* sp.

Erect herb. Stem shortly, patently hooked-hairy, with a few straight hairs. Leaf-rachis and petioles with hooked and straight hairs. Leaflets 3, (ob)ovate to broad-elliptic, rather variable in shape, nearly glabrous above, patently hairy beneath; lateral nerves prominent beneath. Stipules long-acuminate, dorsally with a few hairs. Stipels subulate. Inflorescence terminal, lax. Rachis and pedicels shortly hooked-hairy. Pedicels 6—10 mm. Calyx c. 2½ mm long, cleft halfway, with straight hairs. Corolla exceeding the calyx. Immature pod with 6—7 seeds, distinctly articulated, upper suture nearly straight, lower one more than halfway incised; joints c. 4—4½ by 2 mm.

DISTRIBUTION.—West New Guinea, near Hollandia, B.O. van Zanten H 75 (L), anno 1959.

NOTE.—I have been unable to identify this specimen with any species described from Indo-Malaysia, but it seems premature to describe it as a new species, as it is hardly likely that an endemic species would occur near Hollandia.

INDEX TO COLLECTORS' NUMBERS

The first number of each pair is the collector's number, the second refers to the number of the species in the text.

Of five series the collections have been cited as much as possible under the series numbers, viz of Boschbouwproefstation, Bogor = *bb* series, Bureau of Science, Manila = *BS* series, Forestry Bureau, Manila = *FB* series, New Guinea Forests = *NGF* series, and Philippine National Herbarium, Manila = *PNH* series. Also extra-Malaysian collections of Malaysian species examined have been cited.

<i>Achmad</i> 397: 13; 518: 14; 860: 1; 961:	— <i>Anta</i> 49: 36; 56: 36; 57: 23; 196:
37 — <i>Aet</i> 187: 37; 315: 21 — <i>Aet &</i>	23 — <i>Arañez</i> 4: 31; 13: 14 — <i>Asdat</i>
<i>Idjan</i> 57: 12b; 93: 35; 582: 12b; 722:	140: 12b — <i>Atasrip</i> 639: 12b.
37; 854: 12b; 964: 14 — <i>Altmann</i> 410:	<i>Backer</i> 1055: 11; 1805: 1; 2331: 38;
9 — <i>Amdjah</i> 6: 37; 22: 37 — <i>Anang</i>	2263: 7; 3558: 27; 4662: 38; 6049: 1;
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