

THE
GARDENS' BULLETIN
STRAITS SETTLEMENTS

Vol. VII.

10th May, 1933

Part 2.

ADDITIONS TO THE FLORA OF THE MALAY
PENINSULA.

By M. R. Henderson, F.L.S.

In the following paper forty-five species of flowering plants are recorded as additions to the flora of the Malay Peninsula, and a few nomenclatorial changes are made. Of these forty-five species, twenty-nine are described as new to science.

The recent more intensive exploration of the limestone areas of the Peninsula has yielded a number of interesting plants, sixteen additions being recorded from these areas, including four genera hitherto unknown in the Peninsula. Cameron's Highlands, an extremely interesting area from a botanical point of view, has also added three genera to the flora, as well as six new species. In all, no fewer than nine genera are here recorded which are additions to the flora. They are *Acanthopanax* (Araliaceae), *Ainsliaea* (Compositae), *Cipadessa* (Meliaceae), *Keenania* (Rubiaceae), *Myriophyllum* (Halorrhagaceae), *Pistacia* (Anacardiaceae), *Richeriella* (Euphorbiaceae), *Sumbaviopsis* (Euphorbiaceae), *Sycopsis* (Hamamelidaceae). It is interesting to note that of these the following are unknown from the Malay Islands, but that each has a representative in Luzon in the Philippines:—*Acanthopanax*, *Pistacia* and *Sycopsis*. The genus *Richeriella* has hitherto been known only from one species in the Philippines.

I am indebted to the Director of the Royal Botanic Gardens, Kew, and the staff of the Herbarium; to Mr. H. N. Ridley and Dr. E. D. Merrill for much kindly help; and to the Royal Botanic Gardens, Calcutta, the Botanic Gardens, Buitenzorg and the Bureau of Science, Manila for the loan of valuable material for comparison.

The drawings in this paper have all been made from herbarium specimens.

ANONACEÆ.

Goniothalamus tortilipetalum, sp. nov. (Plate XV).

A *G. giganteo*, Hook. fil. et Thoms. cui probabiliter affinis, foliis glabris latoribus, floribus minoribus, caulifloribus, viridis differt.

A slender stemmed tree c. 6 metres tall. *Branchlets* glabrous, bark pale grey to black, finely longitudinally wrinkled. *Leaves* up to 27 cm. long and 9.5 cm. broad, oblong to oblong ovate, sometimes slightly oblong obovate, pale brown olivaceous shining above when dry, dull pale brown below, glabrous, but both surfaces with minute pale brown or black glandular dots, base cuneate, apex with a short abrupt blunt acumen; *main nerves* up to about 20 pairs, interarching at about 6 mm. from the margin, with a series of subsidiary loops nearer the margin, tertiary nerves distinct, at least above, reticulations wide and distinct, those and the nerves raised and distinct on the upper surface, much less distinct below; midrib channelled above, strongly raised below. *Petioles* 1-1.3 cm. long, stout, black, finely wrinkled, deeply channelled above. *Flowers* 9 cm. long, entirely green, rising from small irregular woody tubercles on the main stem only, usually solitary but sometimes in pairs. *Pedicel* 3 cm. long, glabrous, brown when dry and finely wrinkled longitudinally, tapering from the apex downwards. *Sepals* 3 cm. long, 2.8 cm. broad, broadly triangular ovate, coriaceous-membranous, slightly cohering at base, base broad, apex with short blunt point, nerves and reticulations strongly marked, glabrous, shining on outer surface, dull on inner surface, the apex and margins near the apex minutely rufous glandular hairy, the rest of the inner surface except the basal portion with minute glandular dots. *Outer petals* 8.8 cm. long, 3.1 cm. broad, twisted, leathery, lanceolate, tapering to a narrowed blunt point, sometimes cohering at base to inner petals, both surfaces with scattered, very minute glandular hairs, nerves on outer surface raised and conspicuous when dry, on inner surface sunk and much less distinct. *Inner petals* 2 cm. long, oblong lanceolate, thick, fleshy, strongly cohering by the margins in their upper 2/3, the upper 1/3 coherent into a fleshy mass. *Stamens* numerous, incurved, 4 mm. long, longer than the ovaries, but exceeded by the styles, glabrous, the connective produced into a fleshy subulate point 0.6-0.7 mm. long. *Ovaries* linear oblong, flattened, 2-2.2 mm. long, tapering slightly to apex, adpressed silky golden hairy. *Styles* 4.5-5 mm. long, linear, flattened, tapering to a fine subulate point,

exuding a mucilaginous gum which in the dried flower causes them to adhere in a sticky mass. *Ovules* 1 or 2. *Fruit* unknown.

PAHANG: Tembeling, in lowland forest west of railway station, on calcareous soil, *Henderson 24543* (type); fr. May. Malay name: *kenerak*.

Xylopia tembelingensis, sp. nov. (Plate XVI).

X. Curtisii, King affinis, sed foliis minoribus subtus tomentosis, sepalis acuminatis, petalis longioribus differt.

A tree c. 25 metres tall. *Branchlets* whitish grey to black, longitudinally finely wrinkled with scattered lenticels, the young twigs with a sparse stiff black pubescence, the youngest parts with a dense reddish yellow mealy tomentum. *Leaves* very coriaceous, up to 24.5 cm. long and 7.8 cm. broad, oblong lanceolate acute, margin somewhat undulate when dry, base narrowed, upper surface pale shining grey, glabrous, lower surface pale with a fine whitish close tomentum; *main nerves* 18 or 19 pairs, raised and bold below, connected by regular and almost straight cross veins; on upper surface nerves and reticulations distinct but very fine. *Petiole* up to 1.5 cm. long, stout, black, flattened or shallowly channelled above, sparsely pubescent or eventually nearly glabrous. *Flowers* yellow green, several together on stout, woody, tuberculate, sometimes branched extra-axillary peduncles c. 1 cm. long. *Pedicels* stout, 5-6 mm. long, reddish tomentose, bracteole broadly ovate to suborbicular, shortly acute, c. 7 mm. long and broad, reddish tomentose on both surfaces. *Sepals* spreading, 1 cm. long, fleshy, basal part broadly triangular ovate, 5-6 mm. wide just above base, rather abruptly narrowed into a triangular reflexed point, both surfaces tomentose except for the inner basal concave part. *Petals* subequal, somewhat fleshy, linear oblong or lorate with a tendency to be falcate, up to 6 cm. long but varying in length and width, the width varying from c. 2 mm. to 5 mm. or even more, narrowed usually to an obtuse point or sometimes almost truncate and mucronate, narrowed above the broadly ovate claw, and faintly keeled; the claw vaulted, glabrous within, tomentose without like both surfaces of the limb, and with a conspicuous keel. *Stamens* numerous, c. 65, 1.6-1.7 mm. long, filaments flattened below, connective obliquely truncate and depressed above, concealing the linear anthers. *Ovary* solitary, glabrous, cylindric, fluted, with very thick fleshy walls, together with stigma c. 3.2 mm. long, 1.2 mm. broad, multiovulate. *Stigma* pileate, fleshy, wrinkled. *Ripe carpels* oblong globose, up to 6.5 cm. long and 6 cm. broad, hard and woody, pale grey with numerous lenticels. *Seeds* c. 15-16, compressed, up to about 3 cm. long and 2 cm. broad.

PAHANG: Tembeling, in lowland forest to west of railway station, on calcareous soil, *Henderson 24533* (type); fr. and fruit May.

This species is evidently closely allied to *X. Curtisii*, King, having in common with it the stiff strongly nerved leaves, a similar flower with the pileate style, and hard globose woody carpels, but it differs in the tomentose lower surface of the smaller leaves, the differently shaped sepals and the much longer petals.

MELIACEÆ.

Dysoxylum undulatum, sp. nov. (Fig. 1).

D. ruguloso, King affinis, foliis magis numerosis, floribus maioribus, fructu multo maiore differt.

A tree c. 12 metres tall. *Branchlets* stout, terete, longitudinally ridged, with prominent leaf scars, glabrous except for the youngest parts. *Leaves* up to c. 31 cm. long, equally pinnate, the petioles stout, minutely puberulous, swollen at base, flattened above; rachis angled, with fine raised lines running between the insertion of the petiolules. *Leaflets* usually 4 pairs, sometimes 5, subopposite or alternate, stiffly chartaceous or somewhat coriaceous when dry, lanceolate, ovate lanceolate or oblong lanceolate, acute, base cuneate, oblique or not, glabrous, up to 13 cm. long and 5 cm. broad; both surfaces minutely rugulose when dry and minutely black gland dotted; margins recurved and undulate; *main nerves* up to 9 pairs, raised and interrupted below, impressed and rather indistinct above; tertiary nerves and reticulations not visible except very faintly on very thin young leaves; *petiolules* stout, channelled above, 5 mm.—1 cm. long. *Racemes* spike like, stout, axillary or slightly supra-axillary, minutely pubescent, up to c. 8 cm. long. *Flowers* usually 3 or 4 together on very short stout bracteate peduncles, pedicels short, stout, jointed at the middle, densely minutely pubescent. *Calyx* shallowly and widely cupular, densely minutely pubescent, shortly 4-toothed, c. 1.8-2 mm. long and 5 mm. wide. *Petals* pale yellow green, oblong, apex triangular blunt, 8 mm. long, 3.2 mm. broad, reflexed in anthesis, tawny puberulous outside, much less densely so inside, apex and margins thickened. *Staminal tube* oblong, 4-angled, 7 mm. long and c. 3.2 mm. broad, constricted just below apex, margin slightly inflexed, rather irregularly 8-toothed, tawny puberulous on the angles, otherwise glabrescent outside and glabrous within. *Anthers* 8, very slightly exsert, narrowly oblong, c.

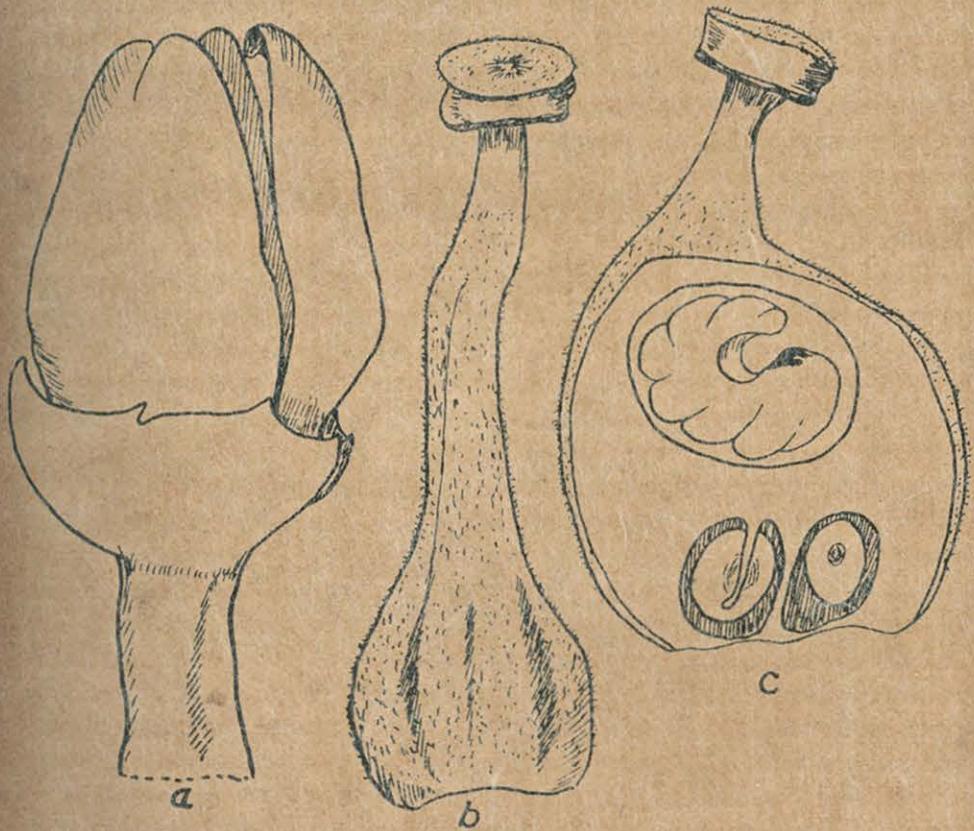


Fig. 1. *Dysoxylum undulatum*.

a. Bud, x c. 7.

b. Normal ovary and style, x c. 11.

c. Abnormal ovary and style, x c. 15.

1.1-1.2 mm. long. *Disc* shortly cylindrical, slightly exceeding the ovary, c. 2 mm. long and broad, glabrous, fleshy, margin shortly erose-dentate. *Ovary* 3-celled, ovoid or ovoid conic, vertically ridged, tawny pubescent, narrowed into the 4.5 mm. long style. Lower part of style 4-angled, pubescent, narrowing upwards, the upper 0.5 mm. glabrous. *Stigma* discoid with a basal annulus, top shallowly depressed or convex, pubescent. *Fruit* globose, ovoid, or depressed globular, very shortly apiculate, up to c. 5 cm. long and broad, narrowed at base into a short pseudostalk; pericarp woody, 5-6 mm. thick, glabrous, dark reddish brown when dry, yellow in life, finely rugulose, vertically ribbed. Fruiting peduncles stout, woody.

PAHANG: Cameron's Highlands, alt. c. 4600 ft., *Henderson 23484* (type of flower); *23624* (type of fruit); fr. and fruit April.

A specimen collected here in Nov. 1925 without flowers or fruit (*Henderson and Whitty 18007*) is almost undoubtedly this species although the leaflets are larger (up to 15 cm. long and 6.5 cm. broad). The Sakai name is given as *Sirai* (*Siral*), and the field note reads:—Inner bark saffron yellow, outer bark dark, apparently with large lenticels, 1/2-6/10 inch thick, sapwood distinct, yellow, 2-3 inches thick, heartwood reddish orange. Not common.

In a few flowers an abnormal ovary was observed which was ovoid conical or subglobose, much larger than the normal ovary and exceeding the disc, c. 2.8-2.9 mm. long and broad, narrowed abruptly into a style much shorter than that in normal flowers; loculi at base apparently with well developed ovules. These ovaries were found only in opened flowers, of which only a few were available for dissection. Many buds were dissected, but in all cases the ovary appeared normal. A vertical section of one abnormal ovary showed the presence of an insect larva in the upper half, as in fig. 1, c, so that it is possible that such abnormal ovaries are caused by insect attack.

Dysoxylum *Corneri*, sp. nov.

A speciebus aliis e peninsula malayana nervis magis numerosis, inflorescentia longissima spicatum recedit.

A tree 30-40 metres tall. *Branchlets* very stout, bark pale reddish brown and ribbed when dry, finely and closely yellow tomentose on youngest parts, otherwise glabrous. *Leaves* alternate, up to c. 75 cm. long, petiole stout, roughly triangular in section, rachis angled, the whole yellowish pubescent; *leaflets* 14-20, alternate or subopposite, chartaceous-coriaceous and brittle when dry, up to 19 cm. long and

6 cm. broad, oblong or occasionally lanceolate, caudate acuminate, base rounded or occasionally shortly cuneate, unequal; upper surface dull olivaceous brown or plumbeous, reddish brown in younger leaves, glabrous except for the yellowish pubescent midrib, minutely rugulose papillose with many minute black glandular dots; lower surface usually paler, glabrous except for the nerves and gland dotted like the upper surface; margins strongly recurved, almost revolute; midrib depressed above but with a raised central wing, very prominent below and more or less pubescent; *main nerves* up to about 25 pairs, slender and usually sunk above, elevate beneath, yellow pubescent or almost glabrous and then reddish, almost straight and parallel, curving rather abruptly up to the margin but not meeting; tertiary nerves short, usually almost invisible above and faint or invisible below; reticulations faint or invisible. *Petiolules* stout, channelled above, pubescent, c. 1 cm. long. *Inflorescence* an axillary apparently solitary spike exceeding 30 cm. in length, rachis stout, angled and striate when dry, closely and finely yellow tomentose, flowers in rather distant almost sessile cymules of 3 or 4. *Pedicel* very short and stout. *Calyx* shortly and widely campanulate or cup-shaped, c. 4.5 mm. long and 7 mm. wide, densely roughly pubescent, deeply wrinkled, margin obscurely 4-lobed and often incurved. *Corolla* in bud oblong, c. 9 mm. long. *Petals* 4 slightly imbricate in bud, at length reflexed, oblong blunt, densely reddish or yellowish tomentose outside, finely tomentose inside, somewhat fleshy, especially towards the apex, up to 10-12 mm. long and 3.5 mm. broad. *Staminal tube* c. 7 mm. long, 4-angled, cylindric oblong, somewhat constricted near the base, minutely pubescent outside especially on the angles, glabrous within; teeth 8, shortly and broadly triangular, blunt; *anthers* 8, included, oblong blunt, c. 1.2 mm. long. *Disc* cylindric annular, fleshy, c. 1.3 mm. tall, almost glabrous outside, densely pilose within with long shining pale yellow hairs, margin erosulate dentate. *Ovary* included within the disc, pyramidal, c. 1.2 mm. long and 1.5 mm. broad at base, densely pilose with long ascending shiny pale yellow hairs. *Style* 4-angled, hairy at the base like the ovary, glabrous above, 5 mm. long. *Stigma* cylindric capitate, with an annulus at the base, apex somewhat depressed and puberulous. *Fruits* 1-4 on stout peduncles up to 10 cm. long, pseudo-stalk very stout, 1-1.5 cm. long; depressed globose, 5-8 cm. long and 7-11 cm. broad, pumpkin-shaped, when dry deeply wrinkled and finely brownish mealy pubescent, in life bright gamboge yellow, probably turning orange or red when fully mature, loculi 4, marked

on outside over the septa by 4 deeply impressed lines radiating cruciately from the apex, 1-seeded, seeds 1-4 in each fruit, arillate.

SELANGOR: Weld Hill Forest Reserve, Kuala Lumpur, *Forest Dept.* 2833 (type of flower), from tree No. 346, fr. March; same locality, *Forest Dept. sine num.*, from tree No. 345, fr. Feb.; same locality, *Forest Dept.* 2433, from tree No. 402, fruit July.

KEMAMAN: Bukit Kajang, Sungai Nipah, on hillside in forest, *Corner* 25918 (type of fruit); fruit June.

The Malay names for this species vary considerably. The Weld Hill specimens are called respectively *Chengkuang*, *Gapis* and *Bekak*. *Corner* 25918 is called *Keriah*.

The dimensions of the Weld Hill specimens are given as 70 feet high, girth 4 ft. 6 ins. The Kemaman specimen is much bigger, being 120 ft. tall, 60 ft. to the first branch, and 20 ins. in diameter 6ft. above the ground. The description of the fruit has been taken largely from Mr. Corner's copious field notes, further extracts from which are given below.

"Buttresses fairly prominent, 1 ft. wide, rising on an average to 5 ft. above the ground; bark light pinkish brown rather rough and flaky, fairly thick; sapwood white, heart wood dark reddish brown, trunk hollow in centre. Wood hard but easily split and rather brittle. Flesh of fruit very thick, pale yellow, with a watery sticky latex, the septa seen in transverse section as pale orange lines; seeds large with thick green cotyledons and fairly thick aril."

Cipadessa baccifera, Miq., *Ann. Mus. Bot. Lugd. Bat.* iv (1868-69) 6; Craib, *Flor. Siam. Enum.* i, 2(1926) 251.

KEDAH: Gunong Baling, *Best* 20212.

Aglaia tembelingensis, sp. nov. (Plate XVII).

Arbor parva. *Folia* ad 60 cm. longa. *Foliola* 11, imparipinnata, subopposita vel alterna, oblonga, ovato-oblonga vel obcuneata, ad 21 cm. longa et 8 cm. lata, supra glabra, subtus minute lepidota, nervis c. 18-jugis, supra impressis indistinctis, subtus elevatis stellato-tomentosis; *petioluli* ad 2 cm. longi. *Paniculae* ad 35 cm. longae, extra-axillares. *Calyx* 5-lobus, lobis inaequalibus, rufo-pubescentibus, ad 1.4 mm. longis et 1.2 mm. latis. *Petala* 5, 1.8-1.9 mm. longa et 1.1-1.2 mm. lata, ovato-oblonga vel obovata, glabra. *Tubus stamineus* breviter cylindricus, c. 0.6-0.7 mm. longus, glaber, antheris 5, margini adnatis, inclusis. *Ovarium* 2-loculare dense rufo-hirtum.

A small tree. *Branchlets* terete, densely covered with a minute brown scurf-like pubescence, with numerous paler

lenticels. *Leaves* up to c. 60 cm. long, unequally pinnate, petioles, rachis and petiolules scurfy pubescent. *Leaflets* usually 11, up to 21 cm. long and 8 cm. broad, the lower pairs alternate or occasionally subopposite, the upper pair opposite; lower leaflets oblong, oblong ovate or slightly obovate, apices abruptly acute, bases unequal, one side rounded, the other shorter and more or less cuneate; upper leaflets progressively more narrowed from about or above the middle, the terminal one obtuse and much narrowed to the equal base; *petiolules* 1-2 cm. long; upper surface of leaflets dull grey or brown when dry, glabrous, lower surface dull reddish brown, very minutely scaly, the midrib and nerves with a shining brown red stellate pubescence; young leaves with a dense but quickly deciduous red stellate tomentum; *main nerves* about 18 pairs, prominent below, curving up into marginal loops, connected by fine but distinct, almost straight cross nerves; tertiary nerves very short; midrib and main nerves channelled on upper surface, rather faint, reticulations impressed, obscure. *Panicles* up to 35 cm. long, supra-axillary, usually rather lax, but occasionally strict, densely flowered, stellate red pubescent. *Pedicels* up to c. 2.5 mm. long, red pubescent, with a lanceolate acute bract c. 1.2 mm. long and 2 or 3 bracteoles. *Flower buds* ovoid, c. 2.2 mm. long and 2 mm. broad. *Calyx* 5-lobed, lobes unequal, somewhat concave, the largest broadly ovate, blunt, 1.4 mm. long and 1.2 mm. broad, externally densely red pubescent, internally glabrous, the smallest lobes of about the same length, but narrower and subacute. *Petals* 5, unequal, broadly ovate oblong or obovate, apex rounded, rather fleshy with thin margins, somewhat concave, glabrous, the largest c. 1.8-1.9 mm. long and 1.1-1.2 mm. broad. *Staminal tube* shortly cylindrical, c. 0.6-0.7 mm. long, glabrous, rather fleshy, the mouth wavy. *Anthers* triangular, blunt, c. 0.3 mm. long, sessile on the margin of the staminal tube but inflexed so as to be included, at least in bud, into excavations on the inner face of the tube. *Ovary* 2-celled, broadly conical, depressed, not exceeding the staminal tube, densely red pubescent. *Stigma* glabrous, very short and broad, divided into 2 rounded lobes by a shallow depression. *Young fruit* broadly obpyriform or depressed globose, c. 2.5 mm. long and 3 mm. broad, densely shortly red pubescent, shallowly 4-lobed.

PAHANG: Tembeling, in lowland forest to west of railway station, on calcareous soil, *Henderson 24805* (type); fr. May.

This species does not seem to be closely allied to any of the Peninsular ones so far described, and would appear to approximate to *A. pauciflora*, Merr., a Philippine species.

SABIACEÆ.

Meliosma rufo-pilosa, sp. nov. (Plate XVIII).

Arbor c. 20 m., ramulis crassis. *Folia* imparipinnata, ad 55 cm. longa, foliolis 15 vel 17, lanceolatis, oblongo-lanceolatis vel ovatis, acuminatis, basi latis, plus minusve obliquis, ad 12 cm. longis et 4 cm. latis, nervis utrinque 8-13, subtus prominentibus, margine plerumque integro, plus minusve undulato, petiolis et petiolulis rufo-pilosis. *Paniculae* ad 55 cm. longae, multiflorae, inferne adpresse rufo-pilosae, ramulis et pedicellis ad 1.5 mm. longis fulvo-pubescentibus. *Sepala* 4, ovata vel ovato-lanceolata, inter se inaequalia, ad 2 mm. longa et 1-1.2 mm. lata, ciliolata. *Petala* exteriora glabra, late obovato-orbicularia ad 1.5-1.7 mm. longa et 2-2.8 mm. lata, interiora integra, oblongo-obovata c. 1 mm. longa, margine ciliolata. *Ovarium* glabrum.

A tree c. 20 metres tall. *Branchlets* very stout, terete, glabrous, pale brown to blackish brown, with numerous large conspicuous dark leaf scars. *Leaves* imparipinnate, crowded at branchlet ends, densely red pilose at insertion of petioles, up to c. 55 cm. long; *petiole* stout, expanded at base and flattened and slightly channelled above, black and finely longitudinally striate when dry under dense adpressed red hairs; *rachis* stout below, slender above, somewhat angled, grooved above, adpressed red hairy; *leaflets* 15-17, opposite or the lower ones alternate, 3.5-4.5 cm. apart, oblong, oblong-lanceolate to ovate, the lowermost pairs broader than the others, base broad and more or less oblique, the lower leaflets more oblique than the others, the upper ones often with cuneate and not oblique bases, lowermost leaflets c. 8.5 cm. long and 4 cm. broad, the upper ones from 6.5 cm. long and 2 cm. broad to 12 cm. long and 4 cm. broad, terminal leaflet lanceolate to oblong elliptic acuminate, base narrowed, equal, c. 7-8 cm. long and 3-3.5 cm. broad; upper surface when dry dull dark reddish brown glabrous except for a minute coarse pubescence on midrib and basal part of main nerves; lower surface reddish brown with long adpressed reddish brown deciduous hairs on midrib and main nerves; midrib sunk above, prominent below; *main nerves* c. 8-13 pairs, raised and fine above as are the reticulations, prominent below, almost straight or curving gently upwards and interlooping 3-5 mm. from the margin, with fainter subsidiary loops nearer the margin; cross nervules and reticulations raised and distinct; margin more or less undulate when dry, occasionally very obscurely toothed; *petiolules* 2-5 mm. long, adpressed red pilose below, channelled above and bordered by the decurrent margins of the blade. *Panicles* spreading, about as long as the leaves.

rachis stout, angled, adpressed red pilose towards base, red pubescent above, branches spreading, the lower primary ones up to c. 30 cm. long, the lower secondary ones of each branch up to 9-10 cm. long, bracts linear, densely red pilose, up to c. 3 mm. long. *Flowers* rather densely disposed on the densely fulvous pubescent ultimate branchlets, c. 2.5-3 mm. in diameter. *Pedicels* up to c. 1.5 mm. long, fulvous pubescent like the branchlets, bracteoles linear c. 0.3-0.5 mm. long, red pilose. *Calyx* lobes 4, ovate to ovate lanceolate, blunt or subacute, the largest c. 2 mm. long and 1-1.2 mm. broad, concave, the smallest c. 1.2-1.3 mm. long and 0.4-0.5 mm. broad, bases rather fleshy, margins thin and ciliate, glabrous within, the outer ones rufous pubescent at base without. *Petals* 5, the 3 outer broadly obovate orbicular, glabrous, one usually larger and much broader in proportion to length than the other two, c. 1.5 mm. long and 2.5-2.8 mm. broad, the other two c. 1.6-1.7 mm. long and 2 mm. broad; inner petals entire, attached to base of fertile stamens, oblong obovate blunt, c. 1 mm. long, margin at apex ciliate. *Fertile stamens* 2, c. 1.3-1.4 mm. long, filaments rather broad, flattened, apex expanded into a rather shallow bilobed cup; infertile stamens adnate to base of outer petals. *Disc* annular with 3 bifid processes with narrow blunt arms reaching about $\frac{2}{3}$ up the ovary. *Ovary* glabrous, oblong or ovate oblong, apparently somewhat compressed, c. 0.6-0.7 mm. long, abruptly narrowed into a tapering glabrous style c. 0.7-0.8 mm. long. *Fruit* unknown.

PAHANG: Cameron's Highlands, c. 4600 ft., *Henderson* 23657 (type); fr. pale green, in April.

Not closely related to any of the other Malay Peninsular species with pinnate leaves, and at once distinguished from them by the crowding of the leaves and panicles at the ends of the very stout branchlets in a manner that recalls some species of *Parishia* (Anacardiaceae).

ANACARDIACEÆ.

Pistacia malayana, sp. nov. (Plate XIX).

Arbor parva, ramulis glabris. *Folia* paripinnata vel imparipinnata, ad 11 cm. longa, rhachide anguste alata; foliola 7-8-juga, sessilia, alterna, subopposita vel opposita, glaberrima, oblongo-ovata vel oblongo-lanceolata, apice alte et late retusa, ad 3.5 cm. longa et 1.5 cm. lata, *nervis lateralibus* utrinque 7-9 supra prominentibus, subtus indistinctis, petiolo et rhachi sparse albo-pubescente vel fere glabro. *Paniculae* ♀ ad 7 cm. longae, sparse albo-pubescentes; pedicelli c. 0.5-0.7 mm. longi; *sepala* 4, c. 1 mm. longa et 0.5 mm.

lata, oblongo-ovata obtusa vel triangulari-ovata sub-acuta, ciliata; *ovarium* ovato-globosum, compressum, c. 0.6 mm. longum et latum; stylus brevis; stigmata 3, recurvata, dense et crasse pilosa. *Fructus* ovato-globosus, compressus, c. 4.5 mm. longus et 4.5 mm. latus.

A small much branched white barked tree. *Branchlets* stout, terete, glabrous, brownish or greyish brown, with raised lenticels. *Leaves* crowded towards branchlet ends, 9-11 cm. long, pinnate, usually without a terminal leaflet; petiole 1-2 cm. long, white pubescent, somewhat flattened above and very narrowly winged, slightly expanded at base; rachis sparsely white pubescent or nearly glabrous, narrowly winged, the wing broadest at the apex and there c. 0.5 mm. broad, narrowing downwards to the petiole; *leaflets* glabrous, 7-8 pairs, opposite, subopposite or alternate, sessile, or the lowermost one or two pairs very shortly petiolulate, up to c. 3.5 cm. long and 1.5 cm. wide, oblong lanceolate to oblong ovate, narrowed from about or a little below the middle to the base, apex rather deeply and widely retuse, almost emarginate, with a minute mucro at the base of the notch; texture thin in young leaflets, subcoriaceous in adult ones; upper surface reddish brown to black, shining when dry, lower dull and usually paler; margin recurved and somewhat undulate when dry; midrib raised and distinct on both surfaces; *main nerves* 7-9 pairs, spreading, fine but raised and distinct above, much less distinct below, reticulations practically invisible except by transmitted light. ♂ inflorescence unknown. ♀ *panicles* up to c. 7 cm. long from upper axils, sparsely white pubescent; flowers distant, subtended by persistent triangular ovate, concave blunt bracts coarsely ciliate on margin, c. 1-1.1 mm. long and 0.8-0.9 mm. broad; *pedicel* stout, c. 0.5-0.7 mm. long, with 2 bracteoles at apex oblong ovate concave, fleshy with thin coarsely ciliate margins, c. 0.7-0.8 mm. long; *perianth* lobes 4, c. 1 mm. long and 0.5 mm. broad, oblong ovate blunt or triangular ovate subacute, margins at apex with coarse reddish ciliate hairs, outer surfaces very minutely reddish scaly on median line; *ovary* ovoid globose, glabrous, strongly compressed laterally, oblique, pale coloured, c. 0.6 mm. long and broad; *style* short and stout, 3-partite almost to base, stigmas 3, large, recurved, almost revolute, flattened vertically, coarsely and densely reddish hairy on outer face, one much larger than the other two. *Fruit* ovoid globose, laterally compressed, somewhat oblique, c. 4 mm. long and 4.5 mm. broad, when dry pale brown and reticulate, when boiled finely longitudinally ridged, stigmas more or less persistent.

UPPER PERAK: Gunong Runto, Lenggong, c. 500 ft., on a dry rocky limestone ridge top, *Henderson 23831* (type); fr. and fruit June.

This species is closely allied to *P. weinmanniaefolia*, Pois. in Bull. Soc. Bot. France xxxiii (1886) 467, but is sufficiently distinct from it in the larger thinner leaflets more deeply and widely emarginate at the apex, in the pedicellate flowers and 4-not 5-lobed calyx.

The genus *Pistacia* has a distribution from the Canary Islands, the Mediterranean region, Abyssinia, Persia, Afghanistan, the Himalayas, Burma, Yunnan, North Central China and South China to Formosa and Luzon, with 2 species in Mexico and Texas. This is the first record of the genus from the Malaysian region.

CONNARACEÆ.

Connarus euphlebius, Merr. in Journ. Str. Br. Roy. As. Soc. 85 (1922) 200.

PAHANG: Pulau Tioman, *Henderson 21724*.
Described from British North Borneo.

LEGUMINOSÆ.

Abrus mollis, Hance in Journ. Bot. ix (1871) 130; Craib, Flor. Siam. Enum. i, 3 (1928) 434.

PERLIS: Gua Nangka, *Henderson 23072*.

Desmodium lasiocarpum, DC., Prodr. ii, 328.

PERLIS: Gua Nangka, *Henderson 23075*.

Spatholobus compar, Craib in Kew Bulletin 1927, 62; Flor. Siam. Enum. i, 3 (1928) 446.

PERLIS: Mata Ayer, near Kangar, *Henderson 23060*.

Vigna malayana, nom. nov. *Vigna parviflora*, Ridl. in Journ. Roy. As. Soc. Str. Br. 82 (1920), 181; Flor. Mal. Pen. i, 569, non Welw. ex Baker in Oliver Flor. Trop. Africa, ii (1871) 201.

Bauhinia decumbens, sp. nov.

Frutex scandens, cirrhosus. *Ramuli* juventute dense adpresse rufo-pubescentes, sulcati, demum glabri. *Folia* ad 6.5 cm. longa et lata, subrotunda, basi cordata, apice ad 1/3 bilobata, sinu triangulari, lobis acutis, supra matura glabra,

reticulatis tenuibus sed distinctis, subtus dense adpresse rubro-pubescentia, 11-nervia, nervis supra impressis, subtus prominentibus, petiolo ad 3.5 cm. longo. *Racemi* terminales vel axillares ad 9 cm. longi, adpresse rufo-pubescentes, pedunculo sulcato. *Bracteae* minutae, persistentiae. *Pedicelli* ad 2.5 cm. longi. *Calyx* in segmenta 2 vel 3 fissus, demum reflexa, extus rufo-pubescent, inter glaber. *Petalum posticum* subrotundum vel obovatum, stipite 1.5 mm. longo incluso 7-8 mm. longum, 6 mm. latum, extus rufo-pilosum, intus basi pilosum. *Petala lateralia* et antica subaequilonga ad 1.3 cm. longa et lata, stipitis rufo-pilosis ad 4 mm. longis, extus adpresse rufo-pilosa, intus glabra. *Stamina* fertilia 2 vel 3, filamentis c. 5.5 mm. longis, rufo-pilosis, ad apicem glabris, antheris glabris 2 mm. longis et latis. *Pistillum* dense rufo-pilosum c. 9 mm. longum, stipite c. 2 mm. longo, *stylo* c. 5 mm. longo, ovulis 4 vel 2.

A low scrambling shrub with tendrils. Young shoots, stems and tendrils densely adpressed red pubescent, young stems grooved when dry; older parts of stem and tendrils brownish black when dry, with a sparse pale pubescence, eventually becoming glabrous and lenticellate. *Leaves* subrotund, 6.5 cm. long and broad, deeply and narrowly cordate at base, apex deeply bilobed, the sinus rather wide, triangular, the lobes triangular acute up to about 2.5 cm. long; texture coriaceous, upper surface with a fine but distinct raised reticulation, glabrous except for a fine brown pubescence on the main nerves in the younger leaves, the lower surface densely covered with adpressed, shining, deep coppery-red hairs, persistent but becoming paler in older leaves, edge of leaf somewhat thickened and white hairy. *Stipules* deciduous. Insertion of petiole glandular, emitting 11 nerves sunk above, prominent below and covered with the same pubescence as the under surface of the leaf; transverse nerves inconspicuous above, not prominent below except in older leaves. *Petiole* up to about 3.5 cm. long, clothed with the same pubescence as the young stems. *Racemes* terminal or axillary, c. 9 cm. long, all parts adpressed red pubescent, peduncle sharply 4-angled and grooved. *Bracts* very small, persistent. *Pedicels* up to 2.5 cm. long. Buds globose with a very short point. *Calyx tube* 1.3 cm. long, ribbed, narrowed into but distinct from pedicel, which has 2 minute bracteoles, one 2 mm. below the other, the uppermost 4 mm. below the apex of pedicel. *Calyx* splitting into 2 or 3, usually 2 oblong ovate blunt lobes c. 5 mm. long, adpressed red pubescent outside, glabrous within, reflexed after expansion of flower. *Upper petal* subrotund or broadly ovate, lamina 6 mm. long and broad, outer surface with long adpressed coppery-red shining hairs, the

inner glabrous except on the nerves, narrowed into a red-pilose claw c. 1.5 mm. long. *Lateral and lower petals* subequal, much larger than upper petal, lamina rotund, up to c. 1.3 cm. long and broad, the tip sometimes retuse, outer surface adpressed pilose as in upper petal, inner surface glabrous, bullate, the sunk veins conspicuous in life, less so in dried specimens, claw red pilose c. 4 mm. long. *Stamens* 3, subequal, one sometimes reduced, filaments broad at base, densely red pilose, tapering at apex and there glabrous, c. 5.5 mm. long, anthers glabrous, 2 mm. long and broad. *Pistil* 9 mm. long, stalk c. 2 mm. long, densely covered with shining red hairs, *style* c. 5 mm. long; *ovules* 2 or 4. *Fruit* unknown.

PAHANG: Gunong Senyum, on open top of limestone hill, scrambling over rocks, *Henderson* 22268 (type); fr. July.

Evidently allied to *B. euprea*, Ridl., to which it was at first referred, but distinct from that species in its smaller, stiffer, more deeply cordate leaves with more nerves, and in the more rounded flower buds and the smaller, more hairy flowers.

The shining deep coppery-red indumentum on the backs of the leaves and petals is very striking.

ROSACEÆ.

Pygeum odoratum, sp. nov. (Plate XX).

Affinis *P. Scortechinii*, King, sed foliis glandulosis, pro rata latioribus, subtus minus rugulosis, nervulis magis prominentibus, racemis longioribus, staminibus magis numerosis differt.

A rather stout bushy tree c. 12-14 metres tall. *Branchlets* terete, black, striate, lenticellate, obscurely adpressed reddish yellow pubescent, at length glabrous. *Leaves* thinly coriaceous, up to 8 cm. long and 4.25 cm. broad, elliptic lanceolate to elliptic ovate, apex acute or shortly obtusely acuminate, base cuneate with 2 glands usually between the first and second pair of nerves; upper surface glabrous, more or less shining dark reddish brown, lower surface slightly rugulose, dull brown, glabrous except for a few minute and very obscure adpressed bristles on the recurved margins, youngest leaves adpressed bristly hairy below and on the midrib above; midrib channelled above, prominent below; *main nerves* 7-9 pairs, impressed and rather indistinct above, slender but distinct and raised below, curving up to and along the margin and anastomosing;

cross nervules and reticulations almost invisible above, lax below, raised and rather faint. *Petiole* up to 1 cm. long, channelled above, sparsely pubescent especially near the base, or almost glabrous. *Racemes* solitary axillary, 4-5 cm. long, covered with coarse adpressed reddish yellow bristly hairs, as are the pedicels and calyces. *Pedicels* 3-4 mm. long. *Calyx tube* narrowly campanulate or somewhat obconic, c. 2 mm. long, lobes 6, linear oblong, c. 1.8 mm. long, very hairy. *Petals* 6, similar to calyx lobes but smaller and caducous. *Stamens* about 24-26, in 2 series, filaments glabrous, exerted, up to 4 mm. long. *Ovary* ovoid, c. 1 mm. long, sparsely hairy with long shining pale yellow hairs, *style* c. 4.2 mm. long, glabrous or with a few shining yellow hairs. *Stigma* capitate. *Fruit* unknown.

PAHANG: Cameron's Highlands, alt. c. 4800 ft., *Henderson 23278* (type); flr. April. A very floriferous tree, the flowers white with a pink tinted calyx, strongly rose scented.

Parinarium latifolium, sp. nov.

Ab speciebus aliis e peninsula malayana foliis latioribus, inflorescentiis brevioribus, floribus maioribus recedit; affinis *P. glaberrimo*, Hassk., sed ramulis folisque haud glabris, foliis latioribus differt.

A small tree c. 5 metres tall. *Branchlets* terete, covered with a long woolly yellowish tomentum. *Leaves* thinly coriaceous, 18-21 cm. long, 10-11.5 cm. broad, broadly elliptic, apex shortly and abruptly caudate acuminate, base shortly rounded, upper surface glabrous, lower surface sparsely strigose on midrib, main nerves and reticulations; midrib raised above, prominent below, main nerves and reticulations impressed and distinct above; *main nerves* c. 14 pairs, strongly raised below, curving up to the margin and anastomosing, tertiary nerves and cross nervules very distinct, reticulations fine but distinct. *Petioles* stout, 5-7 mm. long, yellow woolly. *Inflorescence* spike like, up to 5 cm. long but possibly elongating further, densely tawny silky, bracts numerous, oblong ovate to ovate lanceolate, acute, adpressed tawny hairy outside, adpressed yellowish pubescent inside, up to 1.5 cm. long. *Calyx tube* narrow oblong cylindrical, 7-8 mm. long, adpressed pubescent, lobes broadly lanceolate or oblong ovate, acute, 10 mm. long, outside densely adpressed long hairy, inside densely shortly pubescent. *Petals* thin, glabrous, obovate, narrowed to rounded base, 10-11 mm. long, 7-8 mm. broad. *Stamens*

c. 20, united below into a ring c. 2 mm. tall and red pubescent within, filaments slender, tapering upwards, 10-12 mm. long. Ovary densely red pilose, style slender, as long as the stamens. Fruit unknown.

KEDAH-PERAK boundary: Bukit Kuala Ketang, nr. Gunong Bintang, Haniff 21119 (type).

HAMAMELIDACEÆ.

Sycopsis sp.

PAHANG: Cameron's Highlands, alt. c. 4600 ft., Henderson 23567, 23316. A slender tree c. 50 ft. tall. Unfortunately only fruiting specimens have been collected, and the generic status of the plant is therefore doubtful. It somewhat resembles *Sycopsis tutcheri*, Hemsl. from China, but is distinct from that and other described species.

What appears to be another species of the same genus was collected, also in fruit, in the same locality under the Sakai name of *Senglong* (Henderson and Whitty 18084).

So far the genus *Sycopsis* has been recorded only from the Himalayas, China and the Philippines.

HALORRHAGACEÆ.

Myriophyllum sp.

JOHORE: Bukit Tiga, Sungai Sedili, Corner *sine num.* "Common by edge of river from Kuala Bohol to a short way below Bukit Tiga. Does not grow in the salt water of the mangrove reaches." Malay name: *Rumput Ekor Kuching*.

Unfortunately only the submersed stems and leaves, without flowers or fruit have so far been found, so that it is impossible to say to what species it may belong.

This is the first definite record of the family from the Malay Peninsula.

MELASTOMACEÆ.

Medinilla crassiramea, sp. nov. (Plate XXI).

As *M. perakense*, King ramulis multo crassioribus, magis tuberculatis, nervis subtus pubescentibus, inflorescentiis maioribus, pubescentibus, differt.

A large *epiphytic shrub*. *Branchlets* very stout and woody, 1-1.5 cm. in diameter, bark rough and longitudinally cracked, pale under a dense rufous furfuraceous tomentum and with numerous large rounded tubercles. Nodes thickened, 5-6 cm. apart, bearing whorls of 5 leaves. *Leaves* stiffly coriaceous when dry, up to 15 cm. long and 9 cm. broad, ovate, oblong ovate or elliptic rotund, apex blunt, rounded or minutely retuse, base cordate, pale when dry, glabrous above, below with very sparse minute reddish hairs, midrib very prominent below; *main nerves* 3 pairs, 2 pairs basal the third from higher up the midrib, the lower most pair of the basal nerves very faint, running parallel to and close to the margin, the second pair much more prominent, also running parallel to the margin, but becoming faint near the apex, the third pair bold, curving inwards at apex to meet the midrib; midrib and main nerves densely adpressed red hairy below, glabrous and much less distinct above, the straight cross nervules just visible on both surfaces as faint impressed lines. *Petioles* stout, up to 5 cm. long, red adpressed hairy when young, glabrescent when older and longitudinally striate. *Cymes* umbelliform, from axils of lower or fallen leaves, up to 7 cm. long and wide, the common peduncle 4-5 cm. long, bearing at its apex about 10 branches c. 2 cm. long which are usually again umbellately branched, each branchlet with a few flowers, the whole inflorescence rusty furfuraceous. *Pedicel* short. *Calyx* obconic, somewhat angled, 3-4 mm. long, 3.5 mm. wide, sparsely red hairy, teeth 5, minute, subulate, acute. *Petals* 5, white, up to 5.5 mm. long and 5 mm. wide, oblong ovate, obovate or obovate rotund, 2 usually larger and broader than the other 3, apex rounded, truncate or minutely apiculate. *Stamens* 10, equal, filaments 3 mm. long, anthers inflexed in bud, 2-2.5 mm. long, with 2 very small blunt tubercles at the base in front and a very short blunt spur behind. *Style* 4.5 mm. long. *Fruit* (? unripe) more or less globular, sparsely rusty pubescent, crowned by calyx, c. 5.5 mm. in diameter.

PAHANG: Gunong Batu Brinchang, Cameron's Highlands, alt. c. 6600 ft., epiphytic on ridge-top trees, *Henderson 23588* (type); fl. and fruit April.

Remarkable on account of the very thick and rough branches.

Marumia dimorpha, Craib in Kew Bull. 1930, 320; Enum. Siam. Pl. i, 4, 696.

PAHANG: Tasek Bera, *Henderson 24057*.

Described from Lower Siam.

Sonerila Whittyi, Hend. in Journ. Mal. Br. Roy. As. Soc. v, 2 (1927) 249. Further collections of this plant

from the type locality show it to be synonymous with *Sonerila capitata*, Stapf & King, Mat. Flor. Mal. Pen. No. 11 (1906) 35; Ridl., Flor. Mal. Pen. i, 787.

ARALIACEÆ.

Schefflera musangensis, sp. nov. (Plate XXII).

S. venulosa, Harms. affinis, sed foliolis latioribus, nervis lateralibus haud obliquis, nervis nervulisque supra minus, subtus magis conspicuis, floribus maioribus differt.

An epiphytic climbing shrub. Leaves digitate, leaflets coriaceous, 3-6, 7-20 cm. long, 3-9 cm. wide, variable in shape from elliptic lanceolate to ovate or obovate, base rounded or abruptly shortly cuneate, often oblique, apex acute, margin usually somewhat thickened with distant shallow crenatures or almost entire, glabrous, upper surface shining pale yellowish or greenish brown when dry, lower surface dull pale brown; main nerves up to about 13 pairs, spreading, (the basal pair oblique) prominent and somewhat irregular below, some leaves having only half the normal number, curving up at the margin and anastomosing, reticulations lax and conspicuous; nerves and reticulations usually indistinct above; petiole up to 26 cm. long, stout, glabrous, finely longitudinally ridged when dry, petiolules 1-6 cm. long, glabrous and ridged like the petioles. Panicles terminal, up to 12 cm. long and about 18 cm. across, with up to about 8 glabrous, flattened and finely longitudinally ridged branches, peduncles spreading, c. 2 cm. long, bearing dense umbels of 15-20 flowers. Pedicels c. 3 mm. long. Calyx obconic, c. 1.5 mm. long, and 3 mm. wide across the mouth, margin minutely toothed. Petals 5 or 6, triangular ovate acute, 3.2 mm. long, 2 mm. broad, apex thickened, reflexed in anthesis. Disc short fleshy, wrinkled. Stamens as many as petals, filaments slender, 4.5 mm. long, somewhat dilate at base. Anthers deltoid, blunt, dorsifixed, cells finely reticulate and free from one another for a short distance at apex and base. Fruit oblong, broadly oblong, or elliptic, sharply 6 or 7 ridged, c. 6-7 mm. long.

KELANTAN: Sungai Galas at Gua Musang, climbing on riverside trees of *Dipterocarpus oblongifolius*, Bl., Henderson 22599 (type); fl. and fruit Aug.

Acanthopanax malayana, sp. nov. (Plate XXIII).

Arbor glaber (ad c. 16 m.), rami glabri, sulcati, inermes. Petioli ad 12.5 cm. longi. Foliola 3-5 digitatim, lanceolata, ad 16 cm. longa et 5.5 cm. lata, glabra, margine

spinulosa. *Pedunculi* ad 9.5 cm. longi, glabri, sulcati. *Pedicelli* ad 2 cm. longi, graciles, glabri. *Calycis* tubus campanulatus, breviter 4-dentatus. *Petala* 4, ovato-oblonga, mucronata, reflexa, 2.5 mm. longa et 1.5 mm. lata. *Stamina* 4, filamentis c. 2.7 mm. longis. *Styli* 2 in unum concreti vel ad medium bifidi. *Fructus* ignotus.

A slender unarmed tree up to about 16 metres tall, bark rather smooth and papery, wood soft and white. *Branchlets* pale, glabrous, longitudinally ridged when dry. *Leaves* digitate, clustered at branch ends, 3-5 foliolate, glabrous; *leaflets* lanceolate acute, narrowed to base, up to 16 cm. long and 5.5 cm. broad, margin with rather long spinulose teeth; *main nerves* up to 10 pairs, prominent below and interarching, less prominent above; both surfaces with a close raised reticulation, more prominent above than below. *Petioles* up to 12.5 cm. long, glabrous, longitudinally ridged when dry. *Petiolules* 1 cm. long or shorter. *Flowers* umbelled, peduncles up to 9.5 cm. long, glabrous and ridged like the petioles; about 40 to 50 flowers to an umbel, pedicels slender, glabrous, up to 2 cm. long. *Calyx* campanulate, c. 1.2-1.4 mm. long, teeth 4, small, broadly triangular ovate acute. *Petals* 4, ovate oblong mucronate, green tinged red, reflexed, somewhat leathery in texture, slightly glandular pubescent at apex, 2.5 mm. long and 1.5 mm. broad, distinctly keeled within. *Stamens* 4, filaments linear flattened, tapering upwards, c. 2.7 mm. long; *anther cells* dorsifixed, sub-reniform, introrsé, c. 1.5 mm. long. *Styles* 2, connate at first for their whole length, but becoming free to about half way in older flowers. *Disc* conspicuous in life, yellow green. *Fruit* unknown.

PAHANG: Cameron's Highlands, beyond Tanah Rata, alt. c. 4600 ft., *Henderson 23476* (type); fr. April; near Brinchang camp, on ridge-tops, alt. c. 5200 ft., *Henderson and Whitty 18016, 18042* (sterile specimens). Sakai name: *Berlaki*.

This tree was not uncommon near the path between Tanah Rata and Brinchang camp, occurring in groups of a few individuals, and conspicuous when flowering by reason of its rather delicate feathery foliage which was pale green with a reddish tinge, the petioles and inflorescence also being reddish tinged.

This is the first record of the genus *Acanthopanax* from the Malay Peninsula. It extends from India to China and Japan, and one species has been recorded from the northern part of Siam and from the Philippines. It does not appear to be recorded from Sumatra, Java or Borneo, and this would seem to be its furthest known extension southwards.

CORNACEÆ.

Alangium Kurzii, Craib in Kew Bulletin 1911, 60; Flor. Siam. Enum. i, 4(1931) 806.

PAHANG: Pulau Tioman, *Henderson 21750*.

RUBIACEÆ.

Keenania modesta, Hook. fil., F.B.I. iii, 101.

PAHANG: Sungai Tahan, *Ridley*; Sungai Tekai, in flood damaged jungle on riverbank, *Henderson 24846*.

NEGRI SEMBILAN: Gunong Tampin, *Burkill 3169*.

These specimens agree well with the original collection from India. I have not seen *Keenania capitata*, Craib, Enum. Siam. Pl. ii, 82 (*Myrioneuron capitatum*, Ridl.), but this apparently differs from our plant in the longer peduncle. *Keenania modesta* has hitherto been known only from the type collection from Cachar.

Lasianthus scalariformis, King and Gamble, Mat. Flor. Mal. Pen. No. 15, 131. (Plate XXIV).

This species was described from scanty material collected on Gunong Batu Puteh, Perak at an altitude of 6700 ft., *Wray 332*; and in Perak without locality or number by *Scortechini*. It was collected again in Pahang, on Gunong Tahan, alt. c. 6000 ft., *Holttum 20722*; and on Gunong Batu Brinchang, Cameron's Highlands, alt. c. 6500 ft., *Henderson 23593*.

The following is a description of the inflorescence:—
Peduncles solitary, ebracteate, stout, up to c. 1 cm. long, glabrous or stiffly sparsely black hairy, finely longitudinally striate when dry, with 2 branches 2-4 mm. long subtended by very small narrow acute bracts and each bearing usually 3 flowers. *Flowers* sessile, c. 6 mm. long. *Calyx* tube obconic or campanulate, c. 2 mm. long and 1.5 mm. broad at apex, lobes 5, c. 4 mm. long and 1.5 mm. broad, oblong ovate or oblong lanceolate ovate, acute or somewhat rounded at tip, base broad, rather fleshy, margin sparsely adpressed setose pilose, outer surface glabrous, inner sparsely adpressed pilose near base or nearly glabrous, when dry strongly keeled on the median line within and deeply channelled without. *Corolla* pale lilac, early deciduous, cylindrical oblong, c. 5 mm. long and 2 mm. broad, sparsely puberulous without; lobes 5, reflexed, triangular or narrowly triangular ovate acute, glabrous within except at apex, puberulous without, c. 2-2.5 mm. long, apex thickened; throat of corolla

densely pilose with long pale hairs. *Anthers* narrow oblong, c. 1.2 mm. long, filaments very short. *Style* c. 5.5 mm. long, slender, glabrous, tapering upwards, stigma of 2 broadly obtriangular retuse lobes. *Disc* annular, c. 0.5 mm. tall and 1.2 mm. across, with 5 very thick and fleshy blunt rounded lobes. *Fruit* globose, narrowed to base, c. 4 mm. long and 3.5 mm. broad, crowned by the persistent calyx lobes, when dry with 5 conspicuous broad flattened ridges.

Wendlandia ternifolia, Cowan in Notes Roy. Bot. Gard. Edinb., Vol. XVI, No. lxxx (1932) 279.

JOHORE: Pulau Pelandok at sealevel, *Holtum* 24960; fr. July.

Described from Indo-China.

Attention may be called here to Dr. J. M. Cowan's recent monograph on the genus *Wendlandia* in the publication cited above. He erects two new species, *W. arborescens* and *W. Burkillii*, for the Malay Peninsular plants which up to the present have been considered to belong to *W. paniculata*, DC.

COMPOSITÆ.

Ainsliæa reflexa, Merr. in Philipp. Journ. Sci., i (1906) Suppl. 242; Enum. Philipp. Pl. iii, 620.

PAHANG: Cameron's Highlands, c. 5000 ft., *Holtum* 24991.

This is the first record of the genus from the Malay Peninsula. *A. reflexa* is known from the Philippines and Formosa, and the rest of the genus is mostly Chinese and Japanese, with species in the Himalayas and Burma and one in Sumatra.

LOBELIACEÆ.

Pratia montana, Hassk., Cat. Hort. Bog. Alt. 106.

PAHANG: Cameron's Highlands, c. 4800 ft., *Henderson* 23296; fr. April.

Distrib: Sumatra and Java.

APOCYNACEÆ.

Urceola montana, sp. nov. (Plate XXV).

A *U. torulosa*, Hook. fil. inflorescentia multo maiore et laxiore, sepalis minoribus, acutis, lobis corollæ intus pilosis, folliculis multo brevioribus, vix torulosis recedit.

A *liane* climbing on tall trees. *Branchlets* black when dry, finely striate and with numerous pale lenticels, youngest

twigs brown. *Leaves* opposite, up to 12 cm. long and 5 cm. broad, much smaller on branchlet ends, glabrous, thinly coriaceous, lanceolate, oblong lanceolate to elliptic, apex shortly and obtusely caudate acuminate, base narrowed, upper surface shining reddish brown when dry, lower dull and paler; midrib impressed above, elevated below; *main nerves* up to about 8 pairs, rather faint and usually impressed above, conspicuous and raised below, curving along and anastomosing indistinctly close to the recurved margin, transverse nervules and reticulations not conspicuous except in young leaves. *Petiole* glabrous, c. 1.5 cm. long, channelled. *Inflorescence* axillary and terminal of trichotomous panicles of cymes, up to 10 cm. long and broad, minutely sparsely pubescent, primary peduncles up to about 4.5 cm. long, secondary 1-1.3 cm. long, tertiary 7-8 mm. long, bracts linear lanceolate c. 3 mm. long; cymules lax, of about 4 flowers, pedicels c. 4 mm. long, bracteoles very small. *Calyx* lobes 5, somewhat spreading, broadly triangular ovate acute, edges minutely pubescent, c. 0.6-1 mm. long, 0.5-0.8 mm. broad. *Corolla* 5-lobed, urceolate or subglobose, c. 2 mm. long. *Petals* easily separable from one another, up to about 2.2 mm. long and 1 mm. broad, ovate lanceolate, blunt or subacute, fleshy, glabrous outside except for a minute pubescence at the apex, within with long shining adpressed white hairs and a glandular thickening on the margins just above the tips of the stamens. *Stamens* sagittate, 1.3 mm. long, filaments short, broad, flattened, c. 0.5 mm. long; anthers c. 1 mm. long, apex thin, rounded; spurs straight. *Disc* conspicuous, fleshy, cylindric annular, c. 0.4 mm. tall, edge wavy. *Ovary* of 2 carpels not exceeding the disc, but surrounded by a dense ring of long hairs protruding beyond the disc. *Style* and stigma c. 1 mm. long, style short, broad, obconic. *Stigma* narrowly conic acute, ridged. *Follicles* up to 9 cm. long and about 1-1.5 cm. thick, diverging only slightly, tapered to apex and base, with a few broad, shallow constrictions, scarcely torulose. *Seeds* unknown.

PAHANG: Cameron's Highlands, 4600-4800 ft., *Henderson* 23601 (type), 23472, 23486; flr. and fruit April. Flowers white or greenish white, fragrant. Follicles brown.

Apparently intermediate between those species with terete or dagger shaped follicles and those with definitely torulose and very much elongated follicles.

ASCLEPIADACEÆ.

Toxicarpus glabrescens, sp. nov. (Plate XXVI).

T. Curtisii, King et Gamble affinis, foliis pro rata angustioribus, glabris, vix obovatis, inflorescentiis et sepalis fere glabris differt.

Vol. VII. (1933).

A slender climbing shrub. *Branchlets* glabrous, pale brown, angled and ridged, youngest parts sparsely red hairy. Leaves elliptic lanceolate, elliptic, or slightly elliptic obovate, up to 9.5 cm. long and 4.5 cm. wide, glabrous, coriaceous, apex cuspidate acuminate, base cuneate, upper surface when dry shining reddish or olivaceous brown, lower paler and duller; midrib impressed above, bold below with sparse adpressed red hairs; *main nerves* 5-6 pairs, distant, faint above, distinct below, starting at an angle of about 70° to the midrib, at first straight then curving up to form somewhat indistinct loops a little distance from the recurved margin; reticulations rather indistinct. *Petioles* up to 1 cm. long, adpressed red hairy when young, becoming glabrous when older. *Cymes* 3-4 cm. long, sparsely red hairy or almost glabrous, sessile or shortly pedunculate, branches 2-4, divaricate, flowers racemosely clustered on the branchlets; bracts small, ovate blunt, edge and back rufous hairy; *pedicel* less than 1 mm. long, bracteoles similar to bracts but smaller. *Calyx* tube short, lobes 1.8-2 mm. long, 1.2-1.4 mm. broad, ovate blunt, slightly concave, thickened in centre, edges thin, a few red hairs on the outside and on the margin at the apex. *Corolla* c. 6 mm. long in bud, tube 2-2.5 mm. long, inflated at base, lobes c. 4 mm. long, linear oblong, blunt, twisted, somewhat thicker in texture than the tube. *Corona* processes adherent to anthers and much longer than them, the bases broad and horizontally 2-toothed, the tips produced into long points at first bent inwards at right angles towards the style apex, then again at right angles vertically; connective with a minute broad appendage bent inwards. *Style* apex annular and lobed at base with a subulate process 3.5-4 mm. long which is flattened and flexuous and sometimes twisted in the upper one-third. *Fruit* unknown.

JOHORE: Tanah Abang, Endau river, alt. c. 700 ft., *Holtum* 24937 (type); fr. July. "Climber on hilltop. Flower buds purple, petals yellow suffused purple towards edges."

***Toxocarpus pauciflorus*, sp. nov. (Plate XXVII).**

Inter species peninsulae malayanae foliis minoribus, inflorescentiis laxioribus, floribus paucioribus distincta.

A slender climbing shrub. *Branchlets* brown when dry, ridged, glabrous or sparsely reddish hairy. *Leaves* chartaceo-coriaceous, up to 5.5 cm. long and 3.5 cm. broad, elliptic lanceolate, elliptic or ovate, apex shortly and broadly caudate acuminate, base narrowed and rounded, rarely cuneate, upper surface glabrous, reddish or greenish brown, lower surface pale, with very sparse reddish hairs; midrib impressed above, raised below; *main nerves* 3 or 4 pairs,

distant, impressed and rather faint above, raised below, leaving the midrib at an angle of about 50° and curving up to form loops some distance from the margin; tertiary nerves and reticulations lax, impressed and indistinct above, raised and more or less distinct below. *Petioles* 5-8 mm. long, sparsely red pubescent or nearly glabrous. *Cymes* up to 2.5 cm. long, lax, sessile, usually with two divaricating slender branches, very sparsely red hairy or almost glabrous, cymules of 2 or 3 flowers. *Pedicel* slender 5-6 mm. long. *Calyx* tube very short, scales very minute, alternate with the lobes, lobes ovate lanceolate blunt, c. 2 mm. long and 1 mm. broad, margin towards apex shortly ciliate, outside with a few long adpressed red hairs or nearly glabrous. *Corolla* tube urceolate or subglobose c. 2 mm. long, glabrous without, pubescent within, lobes linear oblong acute, twisted, c. 6.5 mm. long, glabrous except at base within. *Coronal* processes laterally flattened, back expanded, with 2 horizontal blunt lobes at base, apex 2-toothed, the outer tooth narrow triangular acute, slightly incurved, the inner subulate, slightly longer and incurved to the style apex; connective very broad, very shortly and minutely appendaged. *Style* 0.5-0.6 mm. long, apex annular with a columnar process 1.5 mm. long bifid at apex. *Fruit* unknown.

PAHANG: Bukit Chintamani, between Bentong and Karak, on the edge of a clearing at base of limestone cliff, *Henderson 25034* (type); fr. dull pink, in October.

***Tylophora Ridleyi*, nom. nov.**

Gymnema flava, Ridl. in Journ. Str. Br. Roy. As. Soc. lvii (1911) 68; Flor. Mal. Pen. ii, 385.

The presence of coronal scales attached to the staminal column and the included style apex would place this plant in *Tylophora* rather than *Gymnema*.

***Tylophora calcicola*, sp. nov. (Fig. 2).**

T. Ridleyi Hend. affinis, sed foliis multo maioribus, semper cordatis, petiolis longioribus, pedicellis longioribus, floribus albis haud flavis differt.

A slender *twiner*, older stems glabrous, angled and ridged, younger parts terete, sparsely pubescent. *Leaves* membranous when dry, somewhat coriaceous when old, up to 8.5 cm. long and 5 cm. broad, ovate or oblong ovate acuminate, base cordate, margin minutely ciliate pubescent, otherwise glabrous; midrib slender, raised on both surfaces, minutely and sparsely puberulous above; *main nerves* 4-6 pairs, slender, raised on both surfaces, the lowest three pairs from the base, the others distant, all curving up towards the margin and interlooping; cross nervules lax, indistinct, reticulations fine, obscure. *Petioles* slender, 1.5-3



Fig. 2. *Tylophora calcicola*.
 a. Expanded flower, x c. 10.
 b. Flower bud, x c. 10.
 c. Flower with petals removed and calyx flattened, showing staminal column, x c. 40.

cm. long, glabrous or sparsely pubescent. *Cymes* axillary, up to 3 cm. long, main peduncles slender, pubescent, up to 2.5 cm. long, usually with one or two short pubescent branches bearing rather dense umbellate clusters of up to about 10 flowers. *Pedicels* slender, pubescent, up to 6 mm. long. *Calyx* pubescent outside, lobes ovate lanceolate to ovate, subacute or blunt, up to 1 mm. long and 0.7 mm. broad, edges ciliate, glands minute. *Corolla* tube more or less oblong or obconic, c. 1 mm. long; buds oblong truncate with the upper parts of the lobes inflexed and bent downwards; in the opened flower the lobes 2.5-3 mm. long, rather fleshy, the basal part oblong, then suddenly contracted into a narrow oblong thickened tail caused by the margins becoming strongly recurved, the lower margins also becoming recurved in the older flowers, puberulous within. *Corona* processes shorter than staminal column, ovate globose, fleshy, somewhat concave and closely adpressed to the backs of the anthers; *anthers* broad with a short broad rounded appendage slightly exceeding the style apex; pollinia very small, narrowly ellipsoid, pale shining yellow, attached near the base by very short caudicles to the shining red brown pollen carrier. *Style-apex* pentagonal, top flattened, depressed. Ripe fruit unknown.

PAHANG: Bukit Cheras, about 15 miles W.N.W. of Kuantan, at base of limestone cliff, *Henderson 25204* (type); frs. white, in October.

KELANTAN: Gua Ninik, near the railway line close to the Pahang boundary, on limestone, *Henderson 19583*; frs. white, in October.

LOGANIACEÆ.

Fagraea calcarea, sp. nov. (Plate XXVIII B).

F. Curtisii, King et Gamble similis, sed foliis pro rata latioribus et tenuioribus, calyce bracteolisque maioribus, floribus plerumque solitariis raro ternatis differt.

A climbing shrub. *Branchlets* stout, pale, with prominent leaf scars, striate when dry. *Leaves* thinly coriaceous, up to 17.5 cm. long and 9 cm. broad, elliptic to broadly ovate or somewhat obovate, base rather long narrowed, apex rounded with a very short abrupt triangular point; both surfaces glabrous, greenish or greenish grey when dry, minutely rugulose; midrib distinct above, prominently raised below; *main nerves* up to about 8 pairs, very faint on both surfaces when dry but visible by transmitted light, curving up to form a loop c. 1 cm. from the margin, with a fainter loop nearer the margin, tertiary

nerves and a fine close reticulation also visible by transmitted light. *Petioles* up to 1.5 cm. long, sheathing at base. *Flowers* terminal, usually solitary but sometimes in threes. *Pedicels* stout, up to 1 cm. long but usually less than half this length. *Bracteoles* 2 pairs, the outer ovate or ovate lanceolate acute up to 3 cm. long, the inner ovate rotund, 2 cm. long. *Calyx* 3.5-4 cm. long, ovate, the tube very fleshy c. 1.5 cm. long, lobes 5 unequal, ovate rotund, very fleshy, up to 2.5 cm. long and 2.2 cm. broad, the inner lobes narrowed and auricled at base. *Corolla* coriaceous, 9-10 cm. long, funnel shaped, the tube narrow at base, much widened above, c. 5 cm. long; limb 9-10 cm. across, lobes 5, broadly ovate or elliptic, apex rounded, c. 5 cm. long and 3.5 cm. broad. *Stamen* filaments slender, attached to corolla tube 2.5 cm. from its base, free portion c. 4 cm. long, anthers oblong, blunt, c. 1 cm. long. *Ovary* narrowly cylindrical clavate, glabrous, longitudinally fluted, narrowed into the style, which is slightly shorter than the stamens. *Stigma* broadly funnel shaped. *Fruit* unknown.

PAHANG: Bukit Chintamani, between Bentong and Karak, climbing on a limestone rock face. *Henderson 25036* (type); fr. white, in October.

Evidently allied to *F. Curtisi*, King and Gamble, but differs in the thinner, wider and more rounded leaves, in the flowers being usually solitary or sometimes in threes and somewhat larger, and in the much larger and more deeply cut calyx.

Fagraea Sparei, sp. nov. (Plate XXVIII A).

F. lanceolata, King et Gamble, Mat. Fl. Mal. Pen. iv, 607, non Blume; Ridley, Flor. Mal. Pen. ii, 420.

Frutex scandens. *Folia* ad 12-13 cm. longa, ad 5.5 cm. lata, coriacea, oblanceolata, basi cuneata, apice obtusa vel breviter obtuse acuminata, sicco brunneo-nigra; costa subtus prominente, nervis lateralibus obscuris, petiolo ad 1.5-2 cm. longo. *Calyx* oblongus, c. 2.3 cm. longus; lobi 1.3-1.4 cm. longi, oblongo-ovati rotundati. *Corolla* carnosa, ad 5.5 cm. longa et 4-5 cm. lata; tubus anguste infundibuliformis, 3.5 cm. longus; lobi ovato-rotundati, 2 cm. longi, 1.7 cm. lati. *Filamenta* c. 3 cm. longa, antheris oblongis, breviter acutis, 4-5 mm. longis. *Ovarium* anguste cylindricum, cum stylo 4.5 cm. longum. *Fructus* ovoideus vel oblongo-ovoideus.

A climbing shrub, ? epiphytic. *Branchlets* ashy brown when dry, bark smooth. *Leaves* up to 12-13 cm. long, 5.5 cm. broad, coriaceous, oblanceolate, the base narrowed, the apex blunt or with an abrupt blunt point; both surfaces blackish brown when dry, minutely rugulose, midrib faint

above, prominent below, *main nerves* very faint or invisible. *Petiole* stout, 1.5-2 cm. long, sheathing at base. *Flowers* apparently solitary, pedicel c. 1.5 cm. long, compressed, with a pair of lanceolate or ovate bracteoles c. 0.7-1 cm. long at apex. *Calyx* oblong, c. 2.3 cm. long, fleshy, lobes apparently not spreading, 1.3-1.4 cm. long, oblong-ovate, rounded. *Corolla* fleshy, about 5.5 cm. long and 4.5 cm. wide across the limb, tube 3.5 cm. long, c. 5 mm. wide at base, narrowly funnel shaped, lobes ovate rotund, 2 cm. long and 1.7 cm. broad. *Stamen* filaments inserted 1.6-1.7 cm. above base of corolla tube, free portion c. 3 cm. long, basal part thickened for about 7 mm., gradually tapering into the slender upper part; anthers 4-5 mm. long, oblong, shortly acute. *Ovary* and style 4.5 cm. long, the ovary narrowly cylindrical, tapering into the rather stout style. *Fruit* ovoid or oblong ovoid, c. 1.5 inches in diameter (ex Ridley), crowned by the rather long fragment of style.

JOHORE: Sungai Tukong Estate, *Gordon Spare F 952* (type); flr. Sept. Kluang State land, *Forest Dept. 5849* (a fragmentary specimen, but probably this species).

PERAK: Maxwell's Hill, *Wray 3202*; Larut, *Kunstler 6848*.

This species is quite distinct from *F. lanceolata* Bl., as Ridley remarks in *Flor. Mal. Pen.* ii, 420. It does not appear to be at all common and only rather poor material of it has been collected.

GESNERACEÆ.

Paraboea Bakeri, sp. nov.

P. ferruginea, Ridl. affinis, sed indumento haud ferrugineo, brevior, nervis et reticulationibus subtus multo magis prominentibus, inflorescentiis brevioribus, laxioribus, sepalis quam corollam brevioribus differt.

A stemless herb, rhizome stout with copious slender roots. *Leaves* up to 7.5 cm. long and 5 cm. broad, ovate or orbicular ovate, blunt, usually abruptly narrowed to the minutely cordate or auricled base or the base rounded and sometimes unequal; margin crenate; texture thick; upper surface bullate in life, smooth when dry in the older leaves and minutely and densely white pubescent, lower surface closely glandular papillose between the reticulations; midrib and c. 7 pairs of *main nerves* impressed and somewhat faint above, very prominent below and thick, as are the reticulations, all covered with a dense pale brown or yellowish brown matted tomentum. *Petioles* up to 4.5 cm. long, stout, densely pale brown hairy. *Inflorescences* up

to 8 or 9 cm. long, peduncles, pedicels and sepals densely hirsute with long pale brown matted hairs, in fruit glabrescent; cymes lax, fewflowered, subumbellate. *Calyx* tube very short, sepals narrow triangular lanceolate acute, 3 mm. long. *Corolla* c. 7 mm. long and 6 mm. wide across the expanded lobes, tube 3.5-4 mm. long, narrowly campanulate, puberulous, 2-lipped, lobes orbicular, the largest 2.5 mm. long and broad. *Stamen* filaments inserted near the base of the corolla tube, minutely pubescent, curved, c. 2.3 mm. long. *Anthers* orbicular oblong, c. 1.9 mm. long and 1.2 mm. broad, very lightly coherent by their apices. *Ovary* oblong, 1.2 mm. long, shortly and densely pubescent, abruptly narrowed into the rather stout style which is 3 mm. long and stiffly white pubescent in its lower two-thirds. *Stigma* small, rounded. *Capsule* oblong or oblong conic acute, puberulous, c. 5 mm. long.

PAHANG: Bukit Sagu, about 18 miles N.W. of Kuantan, alt. c. 1000 ft., on bare dry limestone, *Henderson 25094* (type); flowers white with a faint pink tinge, in October.

Named after Mr. V. B. C. Baker, Sungai Lembing, Pahang.

Paraboea Bettiana, sp. nov.

P. laxa, Ridl. probabiliter affinis, sed caule longiore, foliis petiolatis cordatis, inflorescentiis brevioribus haud laxis, sepalis pubescentibus haud glabris differt.

Stem woody, up to 45 cm. tall, densely softly white hairy. *Leaves* membranous, more or less crowded towards the top of the stem, up to 12 cm. long and 7 cm. broad, ovate lanceolate to ovate, apex acute, base broad, shallowly cordate or rounded and often unequal, margin deeply and coarsely serrate and softly white hairy; upper surface sparsely softly long white hairy, lower surface more sparsely so; *main nerves* 6-7 pairs, faint above, slender but raised and distinct below with long spreading white hairs. *Petioles* slender, reaching 13-14 cm., softly white hairy. *Inflorescences* numerous, up to 18 or 20 cm. long, peduncles slender, up to c. 12 cm. long, strawcoloured, softly white hairy, becoming glabrous, dichotomously branched, usually twice, the branches rather strict. *Pedicels* slender, pubescent, up to 4.5 mm. long, bracts linear caducous, 1-1.6 mm. long. *Calyx* tube short, sepals linear oblong acute, pubescent, 2 mm. long. *Corolla* 4-6 mm. long, 4.5-6 mm. across expanded lobes, 2-lipped, the upper lip of 2 ovate blunt lobes 2.5 mm. long and 2 mm. wide, lower lip of 3 similar but smaller lobes granular-glandular within, tube 2-2.5 mm. long, obconic-campanulate. *Stamen* filaments inserted c. 1 mm. from base of corolla tube and decurrent on it to the

base, free portions curved, c. 1.5 mm. long. *Anthers* quadrate, about 1 mm. across, the pair filling the mouth of the corolla tube. *Staminodes* 2, slender, clavate, c. 1 mm. long. *Ovary* conic oblong, pubescent, about 1.1 mm. long, narrowed into the style. *Style* 1.3 mm. long, pubescent, not exceeding the stamens, stigma small capitate. *Capsule* 9-10 mm. long, pubescent, narrowly cylindrical oblong, style persistent.

PAHANG: Bukit Cheras, about 15 miles W.N.W. of Kuantan, alt. c. 500 ft., at mouth of limestone cave in soil kept damp by drip, *Henderson* 25250 (type); flowers lilac-mauve, in October; same locality, on wet limestone rock, *Henderson* 25216.

Apparently aberrant in *Paraboea* in the presence of staminodes, but the flowers are otherwise those of this genus.

This plant bears a striking superficial resemblance to *Boea minutiflora*, Ridl., also from limestone, but it can be distinguished easily by the cordate or rounded, not attenuate leaf bases, and the straight, not twisted capsules.

Named after Mr. D. Bett, Sungai Lembing, Pahang.

Paraboea floribunda, sp. nov.

Caulis erectus, ad 10 cm. longus. *Folia* opposita, 15 cm. longa et 6 cm. lata, elliptico-lanceolata, ovata vel obovata, apice acuta, basi minute cordata; supra glabra, subtus ad costam nervosque sparse pilosa, nervis lateralibus utrinque 13-14, pagina superiore impressis, inferiore prominentibus, margine crenata, petiolo ad 1 cm. longo, dense hirsuto. *Pedunculoli* communi ad 9 cm. longi, sparse hirsuti. *Pedicelli* c. 6-10 mm. longi. *Sepala* c. 4 mm. longa, linearia, sparse pilosa. *Corolla* c. 1.5 cm. lata, late campanulata, lobis rotundatis. *Stamina* 2, filamentis 1.5 mm. longis, antheris late triangularis, c. 1-1.2 mm. longis. *Ovarium* cylindrico-conicum, tomentosum, c. 2.5 mm. longum. *Stylus* 3-4 mm. longus, curvatus, stigmatibus obscure bilobato. *Capsula* 1.5 cm. longa, anguste cylindrico-oblonga, angulosa, minute puberula.

Stem woody, tomentose, c. 10 cm. tall. *Leaves* more or less tufted at the top of the stem, opposite, 15 cm. long and 6 cm. broad, elliptic lanceolate, ovate or obovate, apex acute, narrowed to the minutely cordate or almost auricled, sometimes unequal base; margin crenate; upper surface glabrous, pale green but darker along the veins, minutely impressed dotted; lower surface pale with long sparse reddish hairs on midrib and main nerves; *main nerves* 13-14 pairs, impressed above, prominent below, cross nervules and reticulations distinct. *Petiolo* up to about 1 cm. long, reddish pink, densely hairy. *Inflorescences*

numerous, peduncles up to 9 cm. long, reddish pink with rather sparse stiff whitish hairs, in the perfect inflorescence with 2 terminal flowers, of which the uppermost opens first, and 2 branches c. 1.5 cm. long, each again with 2 terminal flowers and 2 branches c. 0.6-0.8 cm. long which bear 1 terminal and 2 lateral flowers; inflorescences often reduced by suppression of one of the terminal flowers on the secondary branches or by partial or complete suppression of the tertiary branches; bracts narrow lanceolate c. 8 mm. long. *Pedicels* variable in length, up to 1 cm. long, sparsely white hairy like the bracts. *Sepals* linear, sparsely white hairy, c. 4 mm. long. *Corolla* c. 1.5 cm. across, broadly campanulate, distinctly 2-lipped, the broad rounded lobes nearly all of the same size, but the lower lip longer than the upper one, lobes lilac, tube slightly paler, sometimes with a number of darker lines in the throat. *Stamens* inserted near the base of the corolla on slight swellings, filaments stout, 1.5 mm. long, anthers broadly triangular, coherent at apices, c. 1-1.2 mm. long, connective broad and ridged. *Disc* a very short fleshy ring round base of ovary adherent to the sepals. *Ovary* green, white tomentose, cylindric conic, c. 2.5 mm. long, tapering into the rather stout curved 3-4 mm. long style. *Stigma* green, obscurely bilobed. *Capsule* narrowly cylindric oblong, angled, 1.5 cm. long, sparsely and minutely puberulous.

Described from living plants in cultivation.

KEMAMAN: Bukit Kajang, Sungai Nipah, Corner 26022 (type).

Probably related to *P. Curtisi*, Ridl., and *P. obovata*, Ridl., but not similar to any other described species from the Malay Peninsula.

This is a most attractive and very floriferous plant not difficult to cultivate. One specimen grown in the Botanic Gardens, Singapore, had no fewer than 29 erect umbellately arranged inflorescences each bearing on an average about 10 faintly scented flowers. A fully developed inflorescence will bear 18 flowers, but usually a number of flowers are suppressed.

VERBENACEÆ.

Clerodendron hispidum, sp. nov. (Plate XXIX).

C. langkawiense, K. & G. probabiliter affinis sed ramis pubescentibus pilis longis, foliis multo latioribus, hispidis, petiolis longioribus, calyce maiore, tubo corollae multo brevior differt.

A shrub c. 1-1.5 metres tall. *Branchlets* terete, densely yellow hispid when dry, finely longitudinally ridged. *Leaves* chartaceo-membranous, up to 24 cm. long and 10 cm. broad, elliptic or oblong ovate, the broadest part occasionally above the middle, apex long acuminate, base rounded or very shallowly cordate or sometimes attenuate; margins rather irregularly sinuate dentate or almost entire, hispid; upper surface drying brown or blackish brown, lower usually paler, both hispid with rather sparse pale hairs which are dense on the midrib and main nerves; midrib distinct but not prominent above, bold below; *main nerves* 7-8 pairs, rather indistinct above, raised and distinct below, the basal pair usually at a more acute angle to the midrib than the others, the next 3 or 4 pairs usually almost straight than gently curving along the margin, the uppermost pairs emerging from the midrib more obtusely, often almost at right angles, then curving abruptly upwards; the looped intramarginal nerve usually indistinct; transverse nervules distinct below, distant, more or less horizontal, reticulations lax, rather faint. *Petioles* 3-8 cm. long, stout, densely hispid, often longitudinally ridged when dry. *Panicles* terminal, thrysoid, pyramidal, up to 25 cm. long, densely yellow hispid, bracts leaflike, progressively smaller from below upwards, branches 1.5-2.5 cm. apart, c. 1.25-2 cm. long, bearing rather densely flowered trichotomous cymes, the peduncles and pedicels with dense multicellular hairs, bracts and bracteoles long linear subulate. *Pedicels* c. 0.5-1.2 cm. long, occasionally shorter, thickened at apex. *Calyx* 10-11 mm. long, campanulate, lobes ovate lanceolate acute, 8-9 mm. long, outside with very long stiff multicellular hairs especially on the mid-rib, nerves and margin, glabrous within, 5-nerved. *Corolla* tube cylindric, slightly expanded at base, c. 13 mm. long, c. 2.7 mm. in diameter at base and c. 1.6 mm. near apex, scabrid puberulous outside except at base, shortly and sparsely glandular hairy within, lobes oblong ovate or somewhat obovate, rounded, subequal, c. 4.5 mm. long and 3 mm. broad, the midlobe of lower lip somewhat narrower than the others and subacute, glabrous within, densely hispid pubescent without. *Filaments* exsert, slender, glabrous, c. 13 mm. long, anthers ovate blunt c. 1.6 mm. long and 0.6-0.7 mm. broad. *Style* slender, glabrous, c. 20 mm. long, stigmatic lobes slender, subulate, tapering, c. 1 mm. long. *Ovary* rounded, glabrous, shallowly lobed. *Fruit* unknown.

PAHANG: in lowland forest near the limestone hill Bukit Sagu, Kuantan district, *Henderson 25085* (type); flr. October, corolla yellow, calyx red hairy.

MYRISTICACEÆ.

Horsfieldia bracteosa, sp. nov. (Plate XXX).

H. sucosa, Warb. affinis, sed foliis maioribus, panicula rufo-pubescentia, bracteis conspicuis, subpersistentibus, antheris paucioribus differt.

A tree c. 12-3 metres tall. *Branchlets* stout, glabrous, pale grey brown, with raised longitudinal ridges. *Leaves* up to c. 28 cm. long and 8.5 cm. broad, lanceolate, ovate lanceolate or slightly oblanceolate, apex acute, base narrowed; both surfaces glabrous; when dry the upper usually blackish or greenish brown, the lower dull red brown or pale brown; margins revolute; midrib prominent below; *main nerves* up to 14 pairs, usually inconspicuous on the upper surface, distinct below, at first straight, then curving up to and along the margin, sometimes forming loops, transverse nervules few and very inconspicuous. *Petiole* stout, black, rugulose, bordered by the decurrent margins of the leaf blade. *♂ flowers* numerous in branched panicles from axils of fallen leaves, up to 13 cm. long, the rachis black, flattened and finely longitudinally ridged when dry, minutely rufous pubescent, sparsely so on the older parts, densely on the ultimate branchlets; branchlets terminating in umbellate cymes of 3 flowers, each cyme subtended by a conspicuous subpersistent bract; bracts variable in shape, ovate blunt or lanceolate subacute, up to 3.2 mm. long and 1.8 mm. broad, rufous hairy on edges and black dotted. *Perianth* depressed globose, glabrous, c. 1-1.3 mm. long and 1.2-1.7 mm. broad, segments 3, glabrous within. *Pedicel* 1.1-1.2 mm. long, glabrous. *Androecium* shortly stipitate, broad depressed globose, anthers 7, connate for their whole length, their apices inflexed. *♀ flower* and fruit unknown.

PAHANG: Tembeling, in lowland forest to west of railway station, on calcareous soil, *Henderson 24521* (type); fr. May.

Easily distinguished from other Malay Peninsular species of similar habit by its large conspicuous bracts.

LAURACEÆ.

Endiandra Holttumii, sp. nov. (Plate XXXI).

A *E. Kingiana*, Gamble foliis pro rata angustioribus, tenuioribus, glabris, paniculis longioribus, floribus maioribus distinguenda.

A tree c. 16-17 metres tall. *Branchlets* terete, glabrous, pale whitish grey or brown, longitudinally striate, youngest branchlets angled. *Leaves* chartaceo-coriaceous, up to 19

cm. long and 8 cm. broad, oblong lanceolate to elliptic, apex shortly acute, base cuneate; both surfaces glabrous, the upper shining brown when dry, the lower dull, paler; midrib somewhat impressed or flattened above, raised below; *main nerves* up to 12 pairs, distinct on both surfaces, raised below, almost straight at first then gently curving up to and along the margin, tertiary nerves irregular, the cross nervules distinguishable from but not more prominent than the fine areolate reticulations which are raised on both surfaces; *petiole* stout, black, rugose, up to 1.8 cm. long. *Panicles* dense, axillary or terminal, up to 7-8 cm. long, rachis golden pubescent; *pedicels* rather stout, red pubescent, c. 2 mm. long; bracts caducous; buds ovoid, bluntly pointed, rufous pubescent, 3.5 mm. long, 2.5 mm. wide. *Perianth* tube densely red pubescent, c. 1 mm. long, lobes fleshy, cream coloured in life, the 3 outer larger than the 3 inner, one outer lobe usually larger than the other two, 4 mm. long, 2.5 mm. broad, ovate oblong or ovate, blunt or subacute, margin thin, red pubescent, glabrous within except for a rufous granular glandular patch at base and a few rufous glandular hairs near apex and on midrib; inner lobes oblong lanceolate, more or less acute, 4 mm. long, 1.5 mm. broad, glabrous except at base or densely rufous granular glandular within; lobes reflexed in anthesis. *Stamens* 3, 2-2.2 mm. long, rufous glandular pubescent, thick, triangular conoidal, narrowing to just above anthers then widening to a broad triangular blunt point, connivent and enclosing ovary; *anther-cells* c. 1 mm. long, narrow, distant, immersed in the connective, lids curling upwards and outwards. *Ovary* pyramidal, 3-angled, c. 1.2 mm. long, glabrous; *style* very short, stigma blunt, rounded. *Fruit* unknown.

PAHANG: Sungai Tekal, between railway line and the Pahang river, on stream bank, *Holtum* 24679 (type); flr. April.

A specimen in rather young bud collected at Rompin, Pahang by the *Forest Dept.* (No. 17114) is most probably referable to this species.

EUPHORBIACEÆ.

Sauropus calcareus, sp. nov.

Frutex parvus, glaber, multi-ramosus. *Folia* glabra, orbiculata, late oblongo-ovata vel ovata, apice rotundata vel minute emarginata, basi rotundata vel minute cordata, ad 3 cm. longa et 2.5 cm. lata, nervis lateralibus c. 6-jugis,

indistinctis, reticulationibus conspicuis, petiolo ad 1-1.5 mm. longo. *Stipulae* acutae, persistentes, ad 1 mm. longae. *Flores* ♂: pedicelli capillacei, ad 8 mm. longi, apice incrassati; calyx ad 2 mm. latus, breviter 6-lobus; columna staminalis brevissima. *Flores* ♀: pedicelli ad 2-3 mm. longi; calyx campanulatus, fere ad basin 6-lobus, lobis late obovatis, brevissime apiculatis. *Ovarium* subglobosum, trigonum, c. 1 mm. longum. *Capsula* depresso-globosa, c. 4.5 mm. diametricus.

A low much branched bush. *Branchlets* glabrous, bark black and winged, the youngest twigs brown and striate. *Leaves* thin, glabrous, alternate, orbicular, broadly oblong ovate or ovate, apex rounded or sometimes very slightly emarginate, base round or minutely and shallowly cordate, up to 3 cm. long and 2.5 cm. wide, upper surface pale greenish when dry, the lower more or less glaucous; *main nerves* about 6 pairs, faint on both surfaces, almost at right-angles to the midrib, straight, and interlooping at two-thirds of the distance to the margin, reticulations raised on both surfaces, thicker and much more prominent than the main nerves, especially towards the margin. *Stipules* very small, acute, persistent, up to 1 mm. long. *Petiolo* short, 1-1.5 mm. long. ♂ *flowers* on very short densely bracteate axillary tubercles, bracts broadly triangular ovate acute, dentate, c. 1 mm. long, the inner ones narrower. *Pedicels* capillary, up to c. 8 mm. long, apex thickened. *Calyx* shallowly saucer shaped, c. 2 mm. in diameter, black when dry, scarlet in life, margin 6-lobed, the lobes broad and shallow and somewhat irregular, disc lobes 6, acute, prominent in the young flower and enclosing the staminal column. *Staminal* column very short and broad. ♀ *flower*: pedicel 2-3 mm. long, stouter than in the ♂; calyx campanulate or probably eventually saucer shaped, c. 1.9 mm. long and 1.5 mm. broad, when spread out c. 3.5 mm. across, 6-lobed nearly to base, lobes subequal, broadly obovate, shortly apiculate. *Ovary* sessile, subglobose, trigonous, c. 1 mm. long, styles 3, adnate to top of ovary for almost all their length, only the bifid recurved tips free. *Capsule* somewhat depressed globose, c. 4.5 mm. in diameter, black when dry, seeds straw coloured.

PAHANG: Gunong Senyum, on limestone, alt. low, Henderson 22316 (type); fr. and fruit July.

Very distinct in its pale round leaves with their conspicuous reticulation.

***Richeriella malayana*, sp. nov. (Plate XXXII).**

Ab *R. gracili*, Pax & K. Hoffm. foliis maioribus, pro rata angustioribus, inflorescentiis ♂ multo longioribus,

multiramis, floribus pedicellatis, staminibus leviter longioribus, antheris brevioribus; inflorescentiis ♀ longioribus, ramosis, differt.

A bush or small tree c. 3-4 to c. 13 metres tall, glabrous. Branchlets terete, pale when dry, finely longitudinally striate and densely lenticellate. Leaves 15-28 cm. long, 4-10.5 cm. broad, lanceolate, oblong lanceolate, elliptic oblong or somewhat obovate, apex acuminate, base narrowed or rounded, margin recurved and somewhat wavy; midrib distinct above, prominent below; main nerves 11-13 pairs, fine but distinct and slightly raised above, raised and conspicuous below, curving up and interarching c. 0.5 cm. from the margin, with 2 further series of subsidiary loops nearer the margin; secondary nerves and cross nervules raised and distinct on both surfaces, reticulations fine but distinct. Stipules ovate lanceolate acute, c. 2.5-3 mm. long, peltately attached, early caducous and leaving rather conspicuous circular scars. Petioles stout, c. 5 mm. long. Staminate inflorescences up to 18 cm. long, usually from lower leaf axils but occasionally from upper ones, much branched, the secondary branches reaching 10 cm. in length, the tertiary ones up to 6 cm., all slender, flattened and striate when dry; flowers in dense glomerules from 4-10 mm. apart, up to about 8 flowers in each glomerule; bracts broadly triangular ovate acute, c. 0.7 mm. long and 0.5 mm. broad, strongly keeled on back; young buds sessile, mature flowers with a stout ridged pedicel c. 1 mm. long; sepals broadly ovate blunt to orbicular, concave, c. 1-1.2 mm. long, c. 1 mm. broad, margin at apex minutely irregularly dentate, aestivation quincuncial; stamen filaments slender, c. 2.2-2.5 mm. long, broadened at base; anthers broadly oblong ovate, c. 0.4-0.5 mm. long and 0.3-0.4 mm. broad; disc glands fleshy, broadly obconic truncate, c. 0.2 mm. long; rudimentary ovary oblong, c. 1 mm. long, cleft to below middle into 2 subulate recurved arms. ♀ flowers unknown. Pistillate inflorescences in fruit reaching c. 6 cm., often branched but not so much as the staminate inflorescences, fruiting pedicels slender, up to 2.5 cm. long; calyx persistent, of 5 triangular ovate acute reflexed lobes c. 0.8-1 mm. long and 0.6-0.7 mm. broad. Capsule c. 5 mm. long and 1 cm. broad, much flattened vertically, black when dry and reticulate, trilobed, dehiscent into bivalved cocci, leaving a persistent axis, seeds 2 in each coccus.

PERAK: Gunong Pondok, at base of limestone cliff, Henderson 23790 (♂ type); ♂ frs. June; Tambun limestone cliffs, near Ipoh, Burkill 6281, ♂ fr. Sept.; Padang Rengas, Burkill 13561, ♂ fr. June.

PENANG: Road to Balik Pulau, Curtis 2463, ♂ fr. July; Balik Pulau, Ridley 9396 (type of fruit), fruit July.

PAHANG: Sungai Tawar, Pulau Tioman, *Burkill* 1029, ♂ fr. June; Pulau Tioman, *Kloss sine num.*, ♂ fr. June.

?MALACCA: *Cantley's collector* 2247; fruit Sept.

Cantley's collector gives the Malay name *Pokok Surangkeng*, and notes that it is used for rafters and firewood. The plant is usually a bush or a small bushy tree, but may reach 40 feet (fide Curtis). The male flowers are usually green, but Curtis notes them as white.

The genus *Richeriella* was erected by Pax and K. Hoffmann in Engler, *Pflanzenreich* 81 (1922) 30 for a plant described by Merrill under the name *Baccaurea gracilis* from Palawan, Philippine Islands, and hitherto has been known only from this locality.

The specimens quoted above were found to have been distributed doubtfully between the following genera in the herbaria at Kew and Singapore:—*Antidesma*, *Actephila* and *Kunstlerodendron* (Euphorbiaceae) and *Maesa* (Myrsinaceae).

Aporosa microstachya, Muell. Arg. in DC. *Prodr.* xv, 2 (1866) 474; Pax & K. Hoffm. in Engl. *Pflanzenreich* Euphorb.-Phyllanthoid.-Phyllanth. (1922) 102.

NEGRI SEMBILAN: Gunong Tampin, *Goodenough* 1895, *Burkill* 3159. Distrib: Burma, Mergui, Tongkah.

Aporosa selangorica, Pax & K. Hoffm. in Engl. *Pflanzenreich* Euphorb.-Phyllanthoid.-Phyllanth. (1922) 105.

PERAK: sine loc., *Scortechini sine num.*

SELANGOR: Ulu Gombak, *Burn-Murdoch* 119, *Symington C. F.* 20501, *Sanger-Davies C. F.* 2279, *Jaamat C. F.* 11192; Bukit Enggang, Kajang, *Symington C. F.* 24137; Dusun Tua, *Ridley sine num.*; Klang Gates, *Ridley* 13385 (type).

PAHANG: Pulau Chengei, Pahang river, *Ridley* 2288; Tembeling, *Henderson* 21773; Jerantut, *Holtum* 24748; Gunong Senyum, *Henderson* 22307.

These two species are not included in Ridley's *Flora of the Malay Peninsula*.

Blumeodendron Tokbrai, J. J. S. in *Mededeel. Dept. Landbouw*, x (1910) 12, 460.

PERAK: Waterfall, Larut, alt. 300 ft., *Wray* 3279; fruit October.

PAHANG: Tembeling, *Henderson sine num.*; fruit May.

JOHORE: S. Sedili, *Corner sine num.* "Tree c. 60 ft. high in swamp jungle."

SINGAPORE: Reservoir jungle, *Corner sine num.*; fruit March.

A note by Sir George King on *Wray 3279* reads: "Sir Joseph Hooker doubts this being the true *Mallotus Tokbrai* of Blume."

Although the specimens quoted are in fruit only, there can be little doubt that they are correctly placed in *B. Tokbrai*. Wray's specimens were not taken up in the Flora of British India, and as they were preserved in the Wray Herbarium in Taiping they were presumably not seen by Ridley and not mentioned by him in his Flora of the Malay Peninsula.

Sumbaviopsis albicans, J. J. S. in Mededeel. Dept. Landbouw, x (1910) 12, 357.

PAHANG: Tembeling, in lowland forest to west of railway station, on calcareous soil, *Henderson 24526*; fruit May.

This plant has not hitherto been recorded from the Malay Peninsula. It is known from Sumatra, Java, Borneo and the Philippines.

Excoecaria oppositifolia, Griff. in Calcutta Journ. Nat. Hist., iv, 386; Hook. fil., F.B.I. v, 474.

PERAK: Gunong Pondok, alt. c. 200 ft., *Henderson 23794*; fruit June. Also collected by Scortechini, without locality, number or date, probably in Perak; this specimen was found in the Indian covers at Kew, which accounts for the fact that the species has not hitherto been recorded from the Peninsula. Distrib: India and Burma.

ZINGIBERACEÆ.

Alpinia Burkillii, Hend., in Gard. Bull. S.S., iv (1927) 55. This must be regarded as synonymous with *Alpinia pahangensis*, Ridl., Flor. Mal. Pen. iv (1924) 282, although the published descriptions would indicate some differences in the flower structure. The correct name for this plant is now *Languas pahangensis* (Ridl.) Hend.

LOWIACEÆ.

Orchidantha calcarea, sp. nov.

O. longiflorae, Ridl. habitu affinis, sed foliis pro rata angustioribus, floribus minoribus, staminibus quam petalis brevioribus, stigmatis irregulariter breviter dentatis differt.

A tufted plant with thick fleshy roots. *Leaves* lanceolate acute, margin wavy, up to 73 cm. long including petiole,

and up to 7 cm. wide, petiole c. 24 cm. long, channelled above and bordered by the decurrent margins of the blade, sheathing; midrib depressed above, prominent below, nerves and reticulations indistinct. *Flowers* in pairs, axillary. *Bract* c. 4.5 cm. long, sheathing, apiculate, greenish purple. *Calyx* tube c. 8 cm. long, white, faintly tinged pink, lobes c. 6 cm. long and 1.5 cm. wide, linear oblong apiculate, blackish purple, yellowish green at base, spreading, margins more or less revolute. *Petals* 2.8 cm. long, linear, long acuminate, white with a few reddish purple lines near the margin; lip c. 5.5 cm. long and 2.5 cm. wide, the claw dark purple, edges overlapping and enclosing the petals and stamens, when spread out c. 2 cm. wide; the limb obovate, creamy white, strongly rugose with raised rugulose veins running from the claw and becoming thicker and branched in the limb, the tip with a triangular sinus 1.4 cm. deep into which the very broad, raised and rugulose papillose midrib projects as a tapering smooth subulate point somewhat exceeding the lobes. *Stamens* c. 1.3 cm. long, pale cream colour, base of filament slightly dilate and purple, apex rounded blunt, anthers linear c. 7-8 mm. long; pollen grains oblong, rounded at both ends, sometimes somewhat reniform, smooth, white, semitransparent, 150-200 μ long and 75 μ wide. *Style* slender, white, c. 1.1 cm. long. *Stigma* fleshy, vulviform, with three obtriangular arms, the centre one 6 mm. long, the side ones 4 mm. long, margins involute, truncate and shortly and irregularly dentate at apex, purple on outer face, white with a purple rim within.

Described from living plants in cultivation.

UPPER PERAK: Lenggong, near the limestone hill Gunong Runto, abundant at one point, *Henderson 26023* (type). Plants were brought back alive to Singapore (Accession No. 72/30) in June 1930, but it was not until October 1932 that they flowered.

Although the flowers are striking by reason of the contrast between the deep purplish black of the sepals and the creamy white of the lip, they are not conspicuous, being borne at ground level and hidden by the leaves. They have rather an unpleasant odour.

This species can be distinguished at a glance from both the other Peninsular species—*O. longiflora*, Ridl. and *O. maxillarioides*, Ridl.—by its relatively narrower leaves, long narrowed and decurrent on the petiole and by the distinctly wavy margin of the blade.

INDEX.

Names of new species in Clarendon, of synonyms in italics. An asterisk denotes an illustration. PAGE.

Abrus mollis, Hance.....	99
Acanthopanax malayana, Hend.*.....	105
Aglaiia tembelingensis, Hend.*.....	94
Ainsliaea reflexa, Merr.....	108
Alangium Kurzii, Craib.....	107
Alpinia Burkillii, Hend.....	125
" pahangensis, Ridl.....	125
Aporosa microstachya, Muell. Arg.....	124
" selangorica, Pax & K. Hoffm.....	124
Bauhinia decumbens, Hend.....	99
Blumeodendron Tokbrai, J. J. S.....	124
Cipadessa baccifera, Bl.....	94
Clerodendron hispidum, Hend.*.....	118
Connarus euphlebius, Merr.....	99
Desmodium lasiocarpum, DC.....	99
Dysoxylum Corneri, Hend.....	92
" undulatum, Hend.*.....	90
Endiandra Holttumii, Hend.*.....	120
Excoecaria oppositifolia, Griff.....	125
Fagraea calcarea, Hend.*.....	113
" lanceolata, King & Gamble.....	114
" Sparei, Hend.*.....	114
Goniothalamus tortilipetalum, Hend.*.....	88
Gymnema flava, Ridl.....	111
Horsfieldia bracteosa, Hend.*.....	120
Keenania modesta, Hook. fil.....	107
Languas pahangensis (Ridl.) Hend.....	125
Lasianthus scalariformis, King & Gamble*.....	107
Medinilla crassiramea, Hend.*.....	103
Meliosma rufo-pilosa, Hend.*.....	96
Marumia dimorpha, Craib.....	104
Myriophyllum sp.....	103
Orchidantha calcarea, Hend.....	125
Paraboea Bakeri, Hend.....	115
" Bettiana, Hend.....	116
" floribunda, Hend.....	117
Parinarium latifolium, Hend.....	102
Pistacia malayana, Hend.*.....	97
Pratia montana, Hassk.....	108
Pygeum odoratum, Hend.*.....	101
Richeriella malayana, Hend.*.....	122
Sauropus calcareus, Hend.....	121
Schefflera musangensis, Hend.*.....	105
Sonerila capitata, Stapf & King.....	105
" Whittyi, Hend.....	104
Spatholobus compar, Craib.....	99
Sumbaviopsis albicans, J. J. S.....	125
Sycopsis sp.....	103
Toxocarpus glabrescens, Hend.*.....	109
" pauciflorus, Hend.*.....	110
Tylophora calcicola, Hend.*.....	111
" Ridleyi, Hend.....	111
Urceola montana, Hend.*.....	108
Vigna malayana, Hend.....	99
" parviflora, Ridl.....	99
Wendlandia ternifolia, Cowan.....	108
Xylopia tembelingensis, Hend.*.....	89

EXPLANATION OF PLATES.

(Except where otherwise stated, the figures of flowering or fruiting branches are a little less than half natural size.)

- PLATE XV. *Goniothalamus tortilipetalum*, Hend.
- PLATE XVI. *Xylopia tembelingensis*, Hend. 1, flowering and fruiting branch. 2, bracteole and pedicel x c.7. 3, flower with petals removed x c.7. 4, longitudinal section of fruit.
- PLATE XVII. *Aglaia tembelingensis*, Hend. 1, flowering branch. 2, flower buds x c.4.5. 3, part of staminal tube with 2 inflexed anthers x c.20.
- PLATE XVIII. *Meliosma rufo-pilosa*, Hend. 1, leaf and inflorescence. 2, tip of branchlet. 3, flower x c.10. 4, outer petals x c.10. 5, fertile stamen and inner petal x c.20. 6, ovary, style and disc x c.20.
- PLATE XIX. *Pistacia malayana*, Hend. 1, leaf, and ♀ inflorescence c. nat. size. 2, ♀ flower x c.25.
- PLATE XX. *Pygeum odoratum*, Hend.
- PLATE XXI. *Medinilla crassiramea*, Hend. 1, branch and inflorescence. 2, flower bud x c.5. 3, stamen x c.10.
- PLATE XXII. *Schefflera musangensis*, Hend. 1, fruiting branch. 2, flower x c.4. 3, fruit x c.2.5.
- PLATE XXIII. *Acanthopanax malayana*, Hend. Flowering branch. Flower x c.10.
- PLATE XXIV. *Lasianthus scalariformis*, King & Gamble. 1, flowering and fruiting branch x c.½. 2, flower x c.6. 3, corolla opened out x c.6.
- PLATE XXV. *Urceola montana*, Hend. 1, flowering and fruiting branch. 2, flower bud x c.10. 3, flower x c.10. 4, stamen from inside x c.23. 5, stamen from outside x c.20.
- PLATE XXVI. *Toxocarpus glabrescens*, Hend. 1, flowering branch. 2, bud and expanded flower x c.3. 3, staminal column and style apex x c.15.
- PLATE XXVII. *Toxocarpus pauciflorus*, Hend. 1, flowering branch c. nat. size. 2, flower x c.5. 3, staminal column and style apex x c.20.
- PLATE XXVIII. A. *Fagraea Sparei*, Hend. 1, flower bud; 2, opened corolla; 3, pistil; all x c.5/6.
- B. *Fagraea calcarea*, Hend.
- PLATE XXIX. *Clerodendron hispidum*, Hend. 1, calyx x c.4. 2, corolla x c.4.
- PLATE XXX. *Horsfieldia bracteosa*, Hend. 1, flowering branch. 2, flower buds x c.10. 3, androecium x c.20.
- PLATE XXXI. *Endiandra Holttumii*, Hend. 1, flowering branch. 2, part of lower surface of leaf showing reticulation. 3, expanded flower x c.5. 4, ovary and 2 stamens x c.10. 5, stamen x c.10.
- PLATE XXXII. *Richeriella malayana*, Hend. 1, branch with ♂ inflorescence. 2, ♂ flower x c.10.



Plate 16.





13/29

Plate 18.



Plate 19





13/92



13/93



13/94



13/18

Plate 24.



1896

Plate 25.



Gard. Bull. S.S. Vol. VII.

13/27





12/19

Plate 28.



A



B



13/120





Plate 31.



13/103

