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Materials for a Flora of the Malayan Peninsula.—By SIR GEORGE KING, K.C.I.E., LL.D., F.R.S., F.L.S., late Superintendent of the Royal Botanic Garden, Calcutta, and J. SYKES GAMBLE, Esq., C.I.E., M.A., F.R.S., F.L.S., late of the Indian Forest Department.

No. 17.

This contribution embraces the Natural Orders *Myrsinaceæ*, *Sapotaceæ*, *Ebenaceæ*, *Styraaceæ*, *Oleaceæ*, which are given under the joint names of the authors, the actual descriptions having been prepared by Sir George King for the *Ebenaceæ* and by Mr. J. S. Gamble for the rest.

The 5 Natural Orders comprise 24 genera and 221 species. There are no new genera, but the number of new species reaches 103.

Order LXX. MYRSINACEÆ.

Trees, shrubs (erect or climbing), or undershrubs, generally evergreen. *Leaves* usually alternate, sometimes opposite, entire dentate or crenate, often dotted with pellucid round or linear resinous glands. *Stipules* none. *Flowers* regular, usually small, white or reddish; hermaphrodite or occasionally polygamo-diœcious; generally in panicles, racemes or umbels. *Calyx* inferior (in *Mæsa* adnate to the ovary), 4-6-lobed, the lobes valvate or imbricate, sometimes enlarged in fruit, persistent, often marked with glandular dots or lines. *Corolla* 4-5-lobed; the tube usually very short, sometimes wanting; lobes twisted to the left in the bud, usually overlapping to the right, rarely

valvate, often gland-dotted or -striate. *Stamens* opposite to the corolla-lobes and equal to them in number, free or adnate to the lobes or in an inner ring, generally erect; filaments long or short; anthers opening by slits, usually introrsely, sometimes septate as in *Ægiceras* and *Ardisia littoralis*, sometimes with terminal openings as well, free or adherent by their edges; the connective often thickened and produced, sometimes glandular; staminodes sometimes present, though not in Malay species. *Ovary* globose, ovoid or oblong, free (in *Mæsa* adherent to the calyx-tube), 1-celled, narrowed into or surmounted by the style; style filiform or columnar, stigma usually simple; ovules few or many, inserted on or immersed in a free usually globose central placenta. *Fruit* usually small, globose (in *Ægiceras* linear, curved, acuminate); epicarp fleshy, mesocarp crustaceous, endocarp membranous, separable; usually one- rarely several-seeded (as in *Mæsa*), indehiscent. *Seeds* usually globose, hollowed at the base: in *Mæsa* many and angled; albumen pitted or ruminant; embryo transverse, cylindric; radicle usually elongate.—**DISTRIB.** Tropical or sub-tropical regions of both hemispheres, chiefly in Asia and South America; genera 32, species upwards of 900 (according to Mez Monog. *Myrsinæ*).

Calyx-tube adnate to the ovary; fruit many-seeded (Tribe I. *MÆSEÆ*):—

Trees or shrubs; calyx 2-bracteolate; flowers in simple or compound racemes 1. *MÆSA*.

Calyx-tube free from the ovary; fruit one-seeded (Tribe II. *EUMYRSINÆ*):—

Fruit round; anther-cells usually opening by slits, rarely septate:—

Corolla-lobes imbricate in bud:—

Flowers in axillary or lateral fascicles; trees or shrubs .. 2. *MYRSINÆ*.

Flowers in racemes or panicles; climbing plants, rarely shrubs 3. *EMBELIA*.

Corolla-lobes valvate in bud; flowers in paniculate spike-like racemes; small shrubs with parallel-veined leaves .. 4. *LABISIA*.

Corolla-lobes contorted in bud:—

Anthers sagittate, rarely septate; corolla-lobes overlapping to the right 5. *ARDISIA*.

Anthers sagittate-lanceolate, the connective produced in a membranous wing; corolla-lobes overlapping to the left .. 6. *ANTISTROPHE*.

Fruit elongate, cylindric, long-pointed; anthers markedly septate 7. *ÆGICERAS*.

1. *MÆSA*, Forsk.

Trees or shrubs, erect or straggling. *Leaves* entire, dentate or serrate, usually pellucid-punctate, sometimes with resinous lines. *Flowers* hermaphrodite or unisexual, in terminal or axillary racemes, the pedicels bracteate. *Calyx* bibracteolate, 4–5-lobed; lobes persistent,

imbricate; the tube adnate to the ovary, sometimes with resinous lines. *Corolla* shortly campanulate, 4-5-lobed; the lobes usually as long as the tube or rather shorter, rounded with inflexed tips, sometimes resinous-lineate. *Stamens* 4 or 5, inserted on the corolla-tube; filaments short; anthers introrse, oblong-cordate. *Ovary* adnate to the calyx-tube; style short; stigma small, entire or shortly 3-5-lobed; ovules numerous, placenta globose. *Fruit* small, dry or fleshy, ovoid or subturbinate, crowned with the persistent style, many-seeded. *Seeds* numerous, angular, immersed in hollows of the placenta, and arranged around it with hexagonal surfaces, embryo small, oblique or transverse, cotyledons narrowly ovate.—**DISTRIB.** Species over 100 (according to Mez), chiefly in the tropical regions of the Old World, a few in Australia and the Pacific Islands; all the Malayan species belonging to sub-genus *Eumæsa*, Mez.

Leaves entire :—

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| Flowers in large terminal leafy panicles; branches of the inflorescence pubescent | 1. <i>M. macrothyrsa</i> . |
| Flowers in large axillary or pseudo-terminal panicles of racemes; branches of inflorescence glabrous | 2. <i>M. ramentacea</i> . |

Leaves faintly lobed :—

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| Leaves very slightly dentate, almost coriaceous, under 3·5 in. long, midrib and main-nerves very prominent; inflorescence as long as or only a little shorter than leaves | 3. <i>M. impressinervis</i> . |
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Leaves membranous, over 4 in. long :—

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|---|---------------------------|
| Leaves pale when dry, under 3 in. broad, distantly dentate, inflorescence longer than the petiole | 4. <i>M. striata</i> . |
| Leaves dull green when dry, over 4 in. broad, inflorescence scarcely longer than the petiole | 5. <i>M. pahangiana</i> . |

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| Leaves prominently dentate | 6. <i>M. indica</i> . |
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1. *MÆSA MACROTHYRSA*, Miq. Fl. Ind. Bat. Suppl. 573 (1862). A slender climbing shrub reaching 30 to 50 feet in length; branches brown, somewhat angled and flexuose, striate. *Leaves* entire, chartaceous; elliptic, shortly bluntly acuminate at apex, rounded at base; smooth and dull on both surfaces; 3 to 4 in. long, 1·5 to 2 in. broad; midrib prominent, impressed above; main-nerves 5 to 7 pairs, distant, starting from the midrib at about 60° and curving upwards; secondary nerves and reticulations indistinct; petiole ·5 to ·7 in. long, channelled above by the decurrent margins of the blade. *Inflorescence* a large leafy terminal many-flowered tripinnate panicle, the branches rusty pubescent; pedicels about ·025 in. long, supported by a slightly shorter ovate-acute bract, and bearing 2 similar bracteoles below the flowers. *Calyx* superior, cupular; lobes 4, occasionally 5, rounded, denticulate, ·04 in. long, gland-dotted; tube very short. *Corolla* dull white or pink, longer than calyx; tube as long as lobes; lobes 4 or 5, rounded, often with

small lobules between, denticulate, with about 3 to 4 glandular lineoles. *Stamens* inserted near the base of the corolla-tube; anthers globose; filaments about twice as long as anthers. *Ovary* rounded, depressed, crowned with a short cylindrical style and obtusely 3-4-lobed stigma. *Fruit* very small, .05 in. in diam., globose, glabrous, faintly striate, crowned about one-third of the way down with the persistent calyx-teeth. *Seeds* very minute, angled. Scheff. Myrs. 29; Mez Monog. Myrs. 49. *M. floribunda*, Scheff. Myrs. 18. *M. Korthalsiana*, Scheff. Myrs. 18 (?)

PERAK: Wray 2684; Seortechini 122, 1655; King's Collector 725, 2722, 3777, 4968, 5326.—DISTRIB. Sumatra, Korthals, Beccari 887; Borneo, de Vriese, Teysmann.

We have always found the flowers tetramerous, as described by Miquel and Scheffer. Mez describes them as either 4- or 5-merous. This is a well-marked species on account of its large terminal inflorescence, whose pubescent branches easily distinguish it from those occasional forms of *M. ramentacea* which have part of the inflorescence pseudo-terminal.

2. *MÆSA RAMENTACEA*, Wall. in Roxb. Fl. Ind. ed. Carey & Wall. II. 231 (1824). A large shrub or small tree, usually branched from the base and sending out many straggling or climbing branches often 30 to 40 feet long or more; branchlets smooth, somewhat striate when dry. *Leaves* entire, chartaceous; ovate-lanceolate or elliptic, acuminate at apex, rounded or cordate at base; 3 to 8 in. long, 1.5 to 4 in. broad; smooth on both surfaces and generally shining above; midrib prominent, often impressed above; main-nerves slender, distant, 5 to 10 pairs, starting at 45° with the midrib and curved upwards; secondary nerves and reticulations not apparent: petiole .3 to .5 in. long, slightly winged by the decurrent margins of the blade, which are often connivent above. *Inflorescence* axillary or sometimes pseudo-terminal, glabrous, many-flowered, consisting of more or less closely packed racemes arranged in bipinnate panicles, shorter or longer than the leaves; pedicels .1 to .15 in. long, slender, supported by a minute lanceolate bract and with 2 very minute ovate-lanceolate bracteoles below the flower; buds minute, globose, depressed at top. *Calyx* superior, cupular; tube very short, about .025 in. long; lobes 5, ovate, faintly ciliate, as long as the tube. *Corolla* .075 in. long; lobes half the length, ovate or ovate-reniform, edges undulate, with a few brown glandular lineoles. *Stamens* short, longer in ♀ flowers, inserted a little below the top of the tube; anthers rounded, filaments as long as the anthers, dorsifixed. *Ovary* in ♀ flowers adnate to the base of the calyx-tube, style short, stigma minutely 4-lobed, ovules many. *Fruit* globose, .1 to .15 in. long, crowned with the persistent teeth of the calyx; seeds minute, angled,

albuminous, embryo small, transverse. A. DC. in Trans. Linn. Soc. XVII. 133, Prod. VIII. 77; Scheff. Myrs. 15; Miq. Fl. Ind. Bat. II. 1006; Kurz in Journ. As. Soc. Beng. XLVI. ii. 220; For. Fl. II. 99; Clarke in Hook. f. Fl. Br. Ind. III. 508; Koord. & Val. Bijdr. V. 218; Mez Monog. Myrs. 27; Prain Beng. Pl. 642. *M. ovata*, A. DC. l.c. 133, t. 4, Prod. l.c. 77; Scheff. Myrs. 14. *M. lanecolata*, Don Prod. 148. *M. acuminata*, *missionis*, and *glabra*, DC. Prod. l.c. 77, 78, 82. *M. sumatrana*, Scheff. Myrs. 15. *Baobotrys ramentacea*, Roxb. Hort. Beng. 16, Fl. Ind. I. 558; Wall. Cat. 2322. *B. ovata*, Wall. Cat. 2324. *B. glabra*, Roxb. Fl. Ind. I. 560. *B. fragrans*, Wall. Cat. 2323. *B. (?) missionis*, Wall. Cat. 6523.

KEDAH: Langkawi, *Curtis* 2554, 3409. PENANG: *Wallieh* 2324; *Maingay* (K.D.) 1001; *J. Scott*; *G. King*; *Phillips*; *Deschamps*. PERAK: *Seortechini* 382A, 606B, 628; *Wray* 1286, 1291, 1912, 2363, 2787; *King's Collector* 171, 1222, 1909, 2788, 3883, 4144, 4281, 4497, 4915, 5088, 5113; *Curtis*. PAHANG: *Ridley* 2175. SELANGOR: *Ridley*; *Goodenough* 10554. NEGRI SEMBILAN: *Ridley* 10067. MALACCA: *Griffith* (K.D.) 3552; *Cuming* 2286; *Miller* 9; *Hervey*; *Goodenough* 1036, 1742; *Derry* 37, 1063; *Ridley* 10099. JOHORE: *Lake & Kelsall* 4035; *G. King*. SINGAPORE: *Schomburgk* 91; *Lobb* 324; *T. Anderson* 126; *Ridley* 2064, 2805; *Goodenough* 1644; *Hullett* 38, 56, 885, 887.—
DISTRIB. Eastern Bengal and Burma, Audaman and Nicobar Islands, Sumatra, Java, Borneo.

We follow Mez in not keeping up the var. *ovata*. The large mass of material available shows clearly that in shape of leaf and in inflorescence the variation is regular, and that the form with cordate long-acuminate leaves passes gradually into that with ovate broad short-acuminate leaves, and that similarly the inflorescence changes. A monstrous form with moss-like inflorescence similar to those often seen in India on *M. Chisia* and other species, is not uncommon.

3. *MÆSA IMPRESSINERVIS*, King & Gamble, n. sp. A bush or small tree; branches half as thick as a goosequill, glabrous, pale brown, and prominently longitudinally wrinkled when dry. *Leaves* thinly coriaceous; elliptic, shortly acuminate at apex, cuneate at base; entire or very faintly dentate only near the apex, margins recurved when dry, reticulate and shining above, dull and paler beneath; 3 to 3.5 in. long, 1.25 to 1.75 in. broad; midrib prominent, impressed above; main-nerves 7 or 8 pairs, also prominently impressed above and prominently raised on the lower surface, arching upwards to meet near the margin; secondary nerves few, inconspicuous as are the reticulations; petiole .2 to .25 in. long, bordered by the decurrent edges of the blade, which are almost connivent above. *Inflorescence* an axillary raceme, simple or with one short branch near the base, 1.5 to 2.5 in. long, and so shorter

than the leaves; pedicels slender, .1 in. long, with a .06 in. long subulate bract at the base and 2 similar bracteoles beneath the flower; buds nearly globose. *Calyx* superior, .05 in. in depth, cupular, with 5 imbricate broad incurved concave glabrous lobes. *Corolla* rotate with 5 imbricate rounded broad lobes, .1 in. deep; tube rather longer than lobes. *Stamens* 5, inserted on the base of the corolla; anthers globular; filaments flattened, longer than the anthers. *Ovary* inferior, depressed, surmounted by a flattened lobed stigma, 1-celled; ovules many, cuneate, on a central basal placenta. *Fruit* unknown.

PERAK: Gunong Bubu, at 5,000 feet elevation; *Wray* 3850, 3886.

4. *MESA STRIATA*, Mez Monog. Myrs. 42 (1901). A shrub or small tree; branches smooth, reddish, with scattered lenticels. *Leaves* membranous; rather variable, elliptic or elliptic-oblong, rounded or acuminate at apex, bluntly acute and sometimes unequal at base; entire or undulate or broadly dentate, especially on the upper half, pale green when dry, glabrous except for a few occasional stiff hairs on the midrib beneath, striate with many faint very slender lineoles; 4 to 7 in. long, 2.5 to 3 in. broad; midrib angular, prominent beneath, main-nerves 7 to 8 pairs, slender; secondary nerves and reticulations faint and irregular; petiole slender, .4 to 1 in. long, channelled above. *Inflorescence* of axillary racemes, simple or joined in a sub-sessile panicle, rarely over 2 in. long; pedicels very slender, .05 to .1 in. long, with a subulate bract at base, half their length, and 2 acute bracteoles under the flower. *Calyx* superior, about .1 in. deep; lobes 5, imbricate, ovate, rounded, about 4-striate, edges hyaline; tube as long as lobes. *Corolla* as long as calyx, rotate, .1 in. in depth; lobes 5, imbricate, rounded, crenate, glabrous. *Stamens* 5, inserted near the base of the corolla; anthers ovate, slightly divaricate; filaments 2 to 3 times as long as anthers. *Ovary* inferior, depressed, rounded; style short cylindrical, stigma 4-lobed; ovules many, cuneate, on a central basal placenta. *Fruit* round, .1 to .15 in. in diam., smooth, faintly ribbed, crowned by the persistent calyx-lobes and style.

PENANG: at Paya Trobong, *Curtis* 2857. PERAK: *King's Collector* 2287.—DISTRIB. Sumatra, *Forbes* 1260, 1287, 1315, 1376.

5. *MESA PAHANGIANA*, King & Gamble, n. sp. Apparently a shrub; branches round, smooth, dark brown when dry. *Leaves* membranous; rhomboid-obovate, acuminate at the apex, rounded cuneate at base; faintly crenate especially in the upper half; glabrous on both dull surfaces; 7 to 8 in. long, 4 to 4.5 in. broad; midrib slender, prominent beneath; main-nerves distant, 8 to 9 pairs, at about half a right angle with the midrib, sometimes branched; secondary nerves few and like the reticulations indistinct; petiole slender, .8 to 1 in. long. *Inflores-*

cenee a simple axillary raceme, as long as or slightly longer than the petiole; pedicels slender, about .1 in. long, supported by a minute subulate bract below and with two similar bracteoles below the flower. *Calyx* superior, cupular, with a very short tube and 5 triangular imbricate teeth .6 in. long, glabrous, hyaline at the edges and very faintly brown-glandular. *Corolla* as long as calyx; lobes 5 imbricate, glabrous, rounded, somewhat crenate, with 2 to 3 prominent brown glandular lineoles; tube half the length. *Stamens* nearly as long as corolla, inserted near its base; filaments about twice as long as the anthers; anthers emarginate, cells somewhat divaricate. *Fruit* globose with a conical tip surrounded by the remains of the corolla and the persistent calyx, and surmounted by the short persistent style, ribbed, .125 in. in diam., glabrous.

PAHANG: at Tanjong Antan, *Ridley* 2175A.

Only one specimen is unfortunately available, and that in fruit, with only remains of flowers.

6. *MÆSA INDICA*, Wall. in Roxb. Fl. Ind. ed. Carey & Wall. II. 230 (1824). A shrub reaching 4 to 6 feet in height; branchlets brown, smooth, lenticellate. *Leaves* chartaceous; elliptic or elliptic-oblong, acuminate, rounded or acute at the base; repand-dentate, about 3 teeth to each main-nerve; 3 to 7 in. long, 2 to 3 in. broad; midrib very prominent, often broad; main-nerves 8 to 12 pairs, others closely reticulate; glandular striæ long, prominent; petiole .5 to 1 in. long, channelled above by the decurrent bases of the blade. *Inflorescence* of simple or compound axillary racemes, much shorter than the leaves, usually 1 to 3 in. long; pedicels slender, .05 to 1 in. long, longer in fruit; bracts subulate, in flower as long as pedicels; bracteoles 2, minute. *Calyx* superior, with 5 imbricate lobes, which are ovate, ciliate, striate, about .04 in. long, almost acute or rounded at apex. *Corolla* as long as calyx; lobes denticulate, glandular-striate; tube as long as lobes. *Stamens* inserted at base of corolla-tube; anthers ovate, cells divaricate; filaments dorsifixed, rather longer than anthers. *Ovary* rounded; style short cylindric, stigma obtuse; ovules many. *Fruit* round, smooth, striate, .15 in. long, crowned at the summit by the persistent calyx-lobes and the remains of the stigma. *Seeds* angular. A. DC. in Trans. Linn. Soc. XVII. 134, Prod. VIII. 80 (*in part*); Wall. Cat. 2318 E.; Clarke in Hook. f. Fl. Br. Ind. III. 509 (*in part*); Koord. & Val. Bijl. V. 222; Mez Monog. Myrs. 29. *Bæobotrys indica*, Roxb. Hort. Beng. 16, Fl. Ind. I. 557.

PERAK: *Wray* 3314, 3349; *Seortechini* 16, 733; *Ridley* 3007, 9741; *King's Collector* 7712.—DISTRIB. Burma, Java.

2. MYRSINE, Linn.

Trees or shrubs. *Leaves* entire or serrate, often thick, usually pellucid-punctate. *Flowers* polygamous or dicæious, fascicled, axillary or on very short branches, pedicels short with many imbricate bracts. *Calyx* small, lobes 4 to 5 persistent. *Corolla* 4-5-lobed, the lobes imbricate in bud, recurved in flower. *Stamens* 4 to 5; filaments short, inserted at the base of the corolla-lobes; anthers short, ovate; staminodes none. *Ovary* free, globose or ovoid; style usually short, cylindric or angular; stigma capitate or 2-5-lobed; ovules few or many, immersed in the placenta. *Fruit* a small, dry or somewhat fleshy, berry, 1-seeded. *Seed* solitary, globose, sessile, hollowed at the base; albumen pitted; embryo elongate, cylindric or curved, horizontal.—**DISTRIB.** Species about 80, chiefly tropical, a few in Japan, extra-tropical Africa, Australia and New Zealand. All our species belong to Mez' genus *Rapanea*.

Arrested branches bearing the umbels very short, .1 in. long or under :—

Leaf-nerves and reticulations obscure, leaves small, under 2.5 in. 1. *M. avenis*.

Leaf-nerves and reticulations visible, leaves usually over 2.5 in. :—

Leaves under 4 in. long, chartaceous, blackish when dry; pedicels short, .1 in. long 2. *M. Porteriana*.

Leaves over 4 in. long, coriaceous, reddish when dry; pedicels over .15 in. long 3. *M. perakensis*.

Arrested branches bearing the umbels .3 in. long or more :—

Leaves rounded at apex; berry .2 in. in diam. 4. *M. Wrayi*.

Leaves emarginate at apex; berry .3 in. in diam. 5. *M. umbellulata*.

1. **MYRSINE AVENIS**, A. DC. in Trans. Linn. Soc. XVII. 107 (1834). A small tree; branches pale, rounded; branchlets wrinkled when dry, faintly ferruginous-tomentose, leaf-buds long acuminate. *Leaves* entire, chartaceous; oblong-lanceolate, bluntly acute at apex, acutely narrowed at base, glabrous, marked with resinous often very conspicuous lineoles and dots along the margin especially near the apex, margins usually recurved; 1 to 2.5 in. long, .5 to .75 in. broad; mid-rib prominent, impressed above; main-nerves very obscure as are the reticulations; petiole .2 in. long, slender, edged with the ciliate margins of the decurrent blade. *Flowers* in compact sessile 2-5-flowered umbels on very short thick arrested branches; bracts oblong acute; pedicels about .1 in. long, angular; flower-buds ovate, flowers 5-merous. *Calyx-lobes* triangular, acute, ciliate, with few round glandular dots; tube as long as lobes. *Corolla-lobes* imbricate, elliptic, pubescent on the margins, sparsely round-gland-dotted, connate for about one-third of their length. *Stamens* as long as corolla-lobes; anthers

ovate, apiculate, pubescent at tip; filaments and lower part of anthers attached about half-way up the corolla-lobes. *Ovary* rounded, conical; style short in ♂, oblique and with long channelled stigma in ♀. *Berry* globose, .1 in. in diam., glandular, smooth, tipped with the persistent style. DC. Prod. VIII. 96; Miq. Pl. Jungh. 189, and Fl. Ind. Bat. II. 1015; Scheff. Myrs. 47; Koord. & Val. Bijdr. V. 234. *Myrsine capitellata*, Wall. var. *avenis* Clarke in Hook. f. Fl. Br. Ind. III. 512 (*in part*); Stapf in Trans. Linn. Soc. Ser. 2, IV. 199. *Ardisia avenis*, Blume Bijdr. 691. *Rapanea avenis*, Mez Monog. Myrs. 357.

SINGAPORE: Ridley 253.—DISTRIB. Java, Celebes, Borneo.

2. MYRSINE PORTERIANA, Wall. Cat. 6525 (1829). A shrub or small tree; branches grey, rough; branchlets slender, angled when dry, leaf-buds lanceolate. *Leaves* chartaceous, entire; oblong-lanceolate, bluntly acute and slightly emarginate at apex, cuneately narrowed at base, glabrous, glandular dotted, especially along the margin, and often glandular-lineolate, black or greyish when dry; 1.5 to 3.5 in. long, .75 to 1.25 in. broad; midrib prominent beneath, impressed above; main-nerves 8 to 12 pairs, the lowest pair running parallel to the midrib and there joined by the rest, not always easily seen; secondary nerves few, slender, reticulations minute; petiole slender, .2 to .4 in. long, channelled above by the decurrent and almost connivent, slightly fimbriate, edges of the blade. *Flowers* in compact sessile umbels on the summit of a short thick cone-like bracteate arrested branch about .1 to .3 in. long; bracts ovate, bracteoles oblong, blunt, ciliate; pedicels angled .1 in. long; flower-buds ovate, flowers greenish-white, usually diœcious, 5-merous. *Calyx-lobes* ovate acute, .05 in. long, ciliate, marked with prominent dark round or lineolate glands; tube as long as lobes. *Corolla-lobes* oblong obtuse, .1 to .15 in. long, minutely pubescent on the margins, marked by prominent dark rounded and lineolate glands, connate to one-fourth of their length, revolute in flower. *Stamens* inserted on the corolla, the filaments and lower half of the anthers adnate with it, those of ♂ flowers ovate apiculate, those of ♀ flowers sagittate; in open flowers exsert, longer than the revolute lobes. *Ovary* ovoid, glabrous, ♂ flowers with a short straight style, ♀ flowers with an oblique style and oblique folded stigma. *Berry* globose, glabrous, .1 in. in diam., dark blue when fresh, pale when dry, striate from the elongated vertical glands. A. DC. in Trans. Linn. Soc. XVII. 106, Prod. VIII. 95. *M. capitellata* var. *avenis*, Clarke in Hook. f. Fl. Br. Ind. III. 512 (*in part*). *Rapanea Porteriana*, Mez Monog. Myrs. 358.

PENANG: Porter in Wallich 6525; Maingay (K.D.) 1005; Curtis 1013, 3728, on Government Hill, road to Crag. PERAK: Ridley 2992; Wray 678, 1537; King's Collector 5001, usually at 5,000 feet eleva-

tion. PAHANG: *Ridley* 1669A. SELANGOR: *Ridley* 8208. MALACCA: *Griffith* (K.D.) 3543; *Ridley* 10076, on Mount Ophir.

3. *MYRSINE PERAKENSIS*, King & Gamble, n. sp. A tree; branchlets thick, smooth, wrinkled when dry, terminal leaf-buds lanceolate. *Leaves* entire, coriaceous; oblong, bluntly acute at apex, narrowed at the base, glabrous, shining above, margins recurved, glandular dots many, inconspicuous; 4 to 5 in. long, 1.5 to 2 in. broad; midrib thick, very prominent; main-nerves 20 to 26 pairs, prominent above, at about two-thirds of a right angle with the midrib, parallel at first, arching afterwards to meet near the margin; secondary nerves similar but more slender, reticulations prominent; petiole .3 in. long, very thick, winged by the decurrent margins of the blade. *Flowers* in compact sessile umbels on the summit of a thick, cone-like, bracteate, arrested branch about .1 in. long, in the axils of the leaves or below them on the current year's wood, so forming a thick cluster below the terminal leaves: umbels 5-8-flowered, pedicels .15 to .2 in. long, thick and angular when dry; bracts ovate, scaly, sometimes ciliate. *Calyx-lobes* ovate acute, glandular-ciliate, about .05 in. long, ciliæ jointed. *Corolla* and *Stamens* unknown. *Berry* globose, sometimes conical at top, .1 to .15 in. in diam., pericarp pale brown when dry, striate with obscure oblong glands.

PERAK: *Wray* 3856; *Scortechini*, 766, at 5,000 feet elevation.

4. *MYRSINE WRAYI*, King & Gamble, n. sp. A tree; branchlets stout, striate when dry. *Leaves* entire, coriaceous; elliptic-oblong, rounded at the apex, narrowly cuneate at base; 3 to 5 in. long, 1 to 1.75 in. broad, glabrous; midrib slender; main-nerves very obscure, about 12 pairs, meeting in an intramarginal nerve near the edge, reticulations many, somewhat raised beneath when dry; petiole .5 to .7 in. long, bordered above by the decurrent margins of the blade, wrinkled at the base. *Flowers* in peduncled axillary few-rayed umbels; bracteoles minute, triangular; peduncles .3 to .5 in. long; rays of umbel 3 to 4, pedicels about .35 in. long, clavately thickened above. *Calyx-lobes* triangular-ovate, glandular-ciliate, acute, .05 in. long. *Corolla* and *Stamens* unknown. *Fruit* round, .2 in. in diam., crowned by the persistent base of the style; pericarp rugosely striate.

PERAK: *Wray* 232, at 4,500 feet.

5. *MYRSINE UMBELLULATA*, A. DC. in Trans. Linn. Soc. XVII. 135 (1834). A small tree; branchlets thick, glabrous, reddish-brown. *Leaves* entire, coriaceous; elliptic-obovate, obtuse and emarginate at apex, acute at the base; glabrous above, rusty beneath, black glandular dots frequent, margins often recurved; 2 to 3.5 in. long, .75 to 1.25 in. broad; midrib prominent, slender; main-nerves inconspicuous, slender, raised on upper surface, depressed on lower, reticulations obscure;

petiole .3 to .5 in. long, rugose, bordered above by the decurrent margins of the blade. *Flowers* in axillary scattered umbels on thick cone-like bracteate, arrested branches, about .15 in. long; pedicels very slender, .3 to .4 in. long, glabrous. *Calyx-lobes* ovate, acute, very shortly ciliate, minute, recurved in fruit. *Corolla* and *Stamens* unknown. *Berry* globose, .3 in. in diam., smooth, pale when dry, crowned with the persistent style. A. DC. Prod. VIII. 95; Miq. Fl. Ind. Bat. II. 1014. *M. capitellata*, var. *avenis*, Clarke in Hook. f. Fl. Br. Ind. III. 512 (in part). *Embelia umbellulata*, Wall. Cat. 2312. *Rapanea umbellulata*, Mez Monog. Myrs. 362.

SINGAPORE: *Wallich* 2312.—DISTRIB. Sumatra, Borneo.

3. EMBELIA, Burm.

Small trees or shrubs, usually climbing, often extensively. *Leaves* alternate, entire, dentate or serrulate, usually glandular, petiole often margined. *Flowers* in axillary or terminal racemes, simple or paniculate, white or pink, hermaphrodite or polygamo-dioecious. *Calyx* free, 4-5-lobed, persistent, the lobes rounded or ovate. *Corolla* 4-5-lobed, the lobes imbricate or contorted, tube none or short. *Stamens* 4 to 5; filaments short or elongate, inserted on the corolla; anthers ovate-oblong, obtuse or acute; staminodes none. *Ovary* ovoid, globose or conical; style short; stigma capitate; ovules few, inserted on a sub-globose placenta. *Fruit* a small drupe, globose, 1-seeded, crowned by the persistent style. *Seed* ovoid, hollowed at the base, albumen pitted, embryo transverse, curved.—DISTRIB. About 60 species, in the tropical regions of the Old World.

Inflorescence terminal or terminal and axillary, paniculate:—

Petals free (Sect. I. EUEMBELIA):—

Leaves membranous or chartaceous:—

Main-nerves of leaves slender, not prominent:—

Petals sparingly villous, anthers with a cluster of black warts behind 1. *E. Ribes*.

Petals densely villous, anthers with only small glandular warts behind:—

Leaves elliptic, 1.5 to 2 in. broad, shortly acuminate.. 2. *E. canescens*.

Leaves oblong, .75 in. broad, long but obtusely acuminate 3. *E. dasythyrsa*.

Main-nerves of leaves prominent:—

Branches slender, leaves lanceolate acuminate, flowers densely villous 4. *E. Scortechinii*.

Branches stout, leaves suddenly acuminate, flowers glabrous or slightly pubescent only 5. *E. penangiana*.

Leaves coriaceous:—

Panicles long, leaves moderately thick:—

Leaves acute or cuneate at base, main-nerves conspicuous, bracteoles as long as the pedicels 6. *E. pergamacea*.

Leaves rounded or cordate at base, main-nerves very prominent, bracteoles shorter than the pedicels	7. <i>E. coriacea</i> .
Panicles short, stout, leaves very thick	8. <i>E. angulosa</i> .
Petals joined at the base into a tube (Sect. II. GRENACHERIA):—	
Leaves rusty-villous beneath, bracts of the inflorescence short, inconspicuous	9. <i>E. Lampani</i> .
Leaves pubescent or nearly glabrous beneath, bracts of the inflorescence long, often leafy, conspicuous	10. <i>E. amentacea</i> .
Inflorescence axillary:—	
Inflorescence paniculate, axillary, 1 to 2 in. long (Sect. III. PATTARA)	11. <i>E. Ridleyi</i> .
Inflorescence much shorter than the leaves, on very short racemose branchlets with many bracts (Sect. IV. MICREMBELIA):—	
Flowers tetramerous, leaves coriaceous	12. <i>E. Myrtillos</i> .
Flowers pentamerous, leaves chartaceous	13. <i>E. parviflora</i> .
SPECIES IMPERFECTLY KNOWN: 14. <i>E. lucida</i> . 15. <i>E. macrocarpa</i> .	

1. *EMBELIA RIBES*, Burm. Fl. Ind. 62. t. 23 (1768). An evergreen climbing shrub; branches pale brown, with thick bark studded with conical protuberances; branchlets pale brown, smooth, lenticellate. *Leaves* entire, chartaceous; elliptic or elliptic-lanceolate, obtusely acuminate at apex, cuneate at base; glabrous above, glabrous or minutely pubescent beneath, glandular dots scattered, sometimes obscure; margin generally recurved; 2 to 3 in. long, 1 to 1.5 in. broad; midrib slender, prominent below, generally impressed above; main-nerves obscure, irregular, slender, 12 to 14 pairs, parallel at first then curved upwards to join near the margin; secondary nerves many faint, reticulations very obscure; petiole .3 to .5 in. long, bordered by the crisped edges of the decurrent blade. *Inflorescence* a large terminal leafy 3-pinnate grey- or rusty-pubescent panicle of racemes, the branches at first turning upwards, afterwards nearly at right angles with the rachis; bracts leafy, smaller by degrees upwards; bracteoles subulate, shorter than the slender pedicels, .05 in. long; buds small, globose; flowers white. *Calyx-lobes* very minute, about .025 in. long, triangular-acute, ciliate, with few glandular dots; tube as long as lobes. *Corolla-lobes* free, elliptic, rounded at top in ♀, more acute in ♂, .05 in. long, ciliate, sparingly villous-pubescent, apex incurved, with few prominent glandular dots. *Stamens* inserted on the corolla-lobes, about half-way up in ♂, lower down in ♀, shorter than the lobes; anthers short, ♂ with parallel, ♀ with divaricate, cells, both with a long black mass of glandular warts behind at the insertion of the dorsifixed filaments. *Ovary* ovoid, glabrous; style short, stigma capitate in ♂, peltate and larger in ♀. *Berry* globose or sometimes pyriform, red or black, glabrous, succulent, wrinkled when dry, aromatic, .1 to .15 in. in diam., crowned with the persistent style and

stigma. Retz. Obs. iv. 24; Lamk. Ill. t. 133; Roxb. Fl. Ind. i. 586; Wall. Cat. 2304; A. DC. in Trans. Linn. Soc. XVII. 129, Prod. VIII. 85 (*part*); Scheff. Myrs. 38; Miq. Fl. Ind. Bat. II. 1011; Dalz. & Gibs. Bomb. Fl. 137; Brandis For. Fl. 284; Kurz For. Fl. II. 101; Clarke in Hook. f. Fl. Br. Ind. II. 513; Trimen Fl. Ceyl. III. 69; Cooke Bomb. Fl. II. 84; Mez Monog. Myrs. 303; Prain Beng. Pl. 643. *E. Burmannii*, Retz Obs. IV. 23. *E. garciniaefolia*, Wall. Cat. 2304c and e; Miq. l.c. 1011; Scheff. Myrs. 40. *E. sumatrana*, Miq. l.c. 1012. *E. glandulifera*, Wight Ic. 1207; Dalz. & Gibs. Bomb. Fl. 137. *Samara Ribes*, Kurz in Journ. As. Soc. Beng. XLVI. 222. *Ardisia tenuiflora*, Bl. Bijdr. 687.

PENANG: *Dcschamps, Curtis*. PERAK: *Wray* 420; *Seortcchini*; *King's Collector* 928, 1150, 6999 (abnormal state, most of the flowers converted into leafy bracts). MALACCA: *Griffith* (K.D.) 3550; MAINGAY (K.D.) 1002; *Cuming* 2320. JOHORE: *Native Collector* 3749. SINGAPORE: *Ridley* 10643, 2803 (fruits converted into insect galls); *Kurz* 2965.—DISTRIB. India, Burma and Ceylon; Malay Islands and eastwards to South China.

VAR. *rugosa*, King & Gamble. Branchlets dark brown, much wrinkled and with oblong lenticels. *Leaves* 4 to 5 in. long, 1.5 to 2 in. broad, usually thicker than the type. *Racemes* less pubescent than in type, the flowers often collected near the ends of the ultimate branches of the inflorescence. *Stamens* of ♂ flowers exsert. *Stigma* of ♀ much larger than that of ♂ flowers, peltate. *Berry* rugose, conically tipped; pericarp thick, fleshy, with cavities.

PERAK: *Wray* 2278, 2576, 3069; *King's Collector* 2512, 3001, 4040. SINGAPORE: *Ridley* 10384.

We find no Malay specimens with the large glandular pits so well marked in South Indian specimens (*Embelia glandulifera*, Wight Ic. 1207). Wight's figure is not well drawn in several respects, and especially as to the nervation of the leaves, so it is not very easy to make sure about it, but there seems no reason to separate *E. glandulifera* from *E. Ribes* unless perhaps as a variety. It has usually a much shorter and fewer-flowered inflorescence.

2. *EMBELIA CANESCENS*, Jack; Wall. in Roxb. Fl. Ind. ed. Carey & Wall. II. 292 (1824). A climbing shrub with slender, villous, subflexuose branches. *Leaves* entire, chartaceo-membranous; elliptic, shortly acuminate at apex, rounded or sub-cordate at base, glabrous or slightly pubescent and shining above, canescent beneath; glandular dots many, not prominent, in the areoles of the reticulations; 2 to 3.5 in. long, 1.5 to 2 in. broad; midrib prominent, impressed above, villous beneath; main-nerves about 10 pairs, irregular, curving upwards to join at some distance from the margin; secondary nerves many, slender,

reticulations irregular; petiole .3 to .4 in. long, bordered above by the prominently crispate edges of the decurrent blade, rugose beneath. *Inflorescence* a slender terminal 3-pinnate leafy panicle of distant comparatively few-flowered racemes, 4 to 8 in. long; rachis and its bracteoles densely rusty-villous; bracts leafy below, spatulate above, bracteoles subulate, deciduous, about half as long as the .05 to .1 in. long pedicels which are longer in fruit; buds very minute, globose. *Calyx-lobes* very small, triangular, pubescent; tube as long as lobes. *Corolla-lobes* oblong, free, blunt, .06 in. long, densely villous without, papillose within and glandular-dotted. *Stamens* shorter than the corolla-lobes, inserted near their base; anthers rounded, warted with inconspicuous glands behind at the insertion of the dorsifixed filaments. *Ovary* in ♂ flower rudimentary. *Berry* globose, somewhat conical above, rugose when dry, crowned with the remains of the persistent style, .2 in. in diam. Wall. Cat. 2311; A. DC. Prod. VIII. 85; Scheff. Myrs. 42; Miq. Fl. Ind. Bat. II. 1012; Clarke in Hook. f. Fl. Br. Ind. III. 514; Mez Monog. Myrs. 305.

PENANG: *Jack*; *Porter*. PERAK: *Ridley* 7172 (*part*). MALACCA: *Maingay* (K.D.) 1004. SINGAPORE: *Goodenough* 2804; *Hullett* 115.

3. *EMBELIA DASYTHYRSA*, Miq. Fl. Ind. Bat. Suppl. 573 (1862). A slender climbing shrub; branches minutely pubescent, striate, with prominent raised lenticels; branchlets dark, slender, rusty-villous. *Leaves* entire, chartaceous; oblong or elliptic-oblong, bluntly acuminate at apex, rounded at base; glabrous above, glabrous except on the midrib beneath, glandular dots scattered, obscure; 1.5 to 2 in. long, about .75 in. broad; midrib prominent beneath, villous, impressed above, main-nerves 10 to 12 pairs, irregular, arching upwards to meet near the margin; secondary nerves few, slender, reticulations obscure; petiole .1 to .2 in. long, channelled above. *Inflorescence* a long, 3-pinnate, leafy panicle of long slender many-flowered racemes, rachises minutely pubescent; bracts leafy, bracteoles subulate, minute, much shorter than the .1 in. long very slender pedicels; buds globose shaggy, flowers grey. *Calyx-lobes* minute, about .03 in. long, triangular, ciliate; tube shorter than lobes. *Corolla-lobes* free, ovate-spatulate, about .06 in. long, black-gland-dotted, densely covered with short moniliform hairs. *Stamens* less than half the length of the corolla-lobes, inserted at the base; anthers reniform, with inconspicuous glandular warts on the back at the insertion of the dorsifixed filaments, which are almost shorter than the anthers. *Ovary* ovoid, style very short, stigma in ♂ small capitate, in ♀ peltate, large. *Berry* red or black, .15 in. in diam., globose or slightly pyriform, wrinkled when dry, tipped by the persistent style and stigma. Scheff. Myrs. 42; Mez Monog. Myrs. 305.

PERAK: *Wray* 1924; *Scortechini* 498; *King's Collector* 776, 4103, 4375, 5102, 5762, 6640, 8583, 10024, 10701, clinging to trees in dense jungle at low levels. SELANGOR: *Ridley* 7572. SINGAPORE: *Hullett* 118.—DISTRIB. *Bangka*, *Teysmann* Hort. Bogor. No. 3189, at Djeboes.

Only one very poor specimen of the type (*Teysmann's*) is available, but from an examination of it and from *Miquel's* description it seems to be right to refer the Peninsular plant, which we had considered new, to this species.

4. *EMBELIA SCORTECHINII*, King & Gamble, n. sp. A climbing shrub (?); branches slender; ultimate branchlets reddish, rusty-villous. *Leaves* entire, chartaceous; elliptic-lanceolate, long acuminate at apex, narrowed at base; glabrous above, grey-pubescent on the nerves beneath and with minute white scales, glandular dots obscure; 4 to 5 in. long, 1.5 to 2 in. broad; midrib very prominent, impressed above; main-nerves about 8 pairs, prominent, slender, curving upwards to and along the margin; reticulations many, prominent on the upper surface; petiole .2 in. long, pubescent. *Inflorescence* of slender rusty-villous panicles of long racemes, the panicles 7 to 10 in. long, racemes 3 to 6 in.; rachis hirsute, somewhat angular; bracts deciduous, bracteoles very minute, subulate; buds very small, globose. *Calyx-lobes* ovate, rounded, very minute, the edges ciliate with long moniliform hairs, tube very short. *Corolla-lobes* oblong, acute, .05 in. long, shaggy with long moniliform hairs. *Stamens* shorter than the corolla-lobes; anthers ovate, cordate, with two prominent papillose warts behind at the insertion of the dorsifixed very short filaments. *Ovary* ovoid, style conical. *Berry* not known.

PERAK: *Scortechini*.

This interesting species is characterised by the abundant moniliform hairs on the flowers, longer and more conspicuous than in other species.

5. *EMBELIA PENANGIANA*, Mez Monog. Myrs. 311 (1901). A climbing shrub, stem reaching about 1 in. in diam.; branches stout; ultimate branchlets red, striate, lenticellate. *Leaves* entire, chartaceous; elliptic, shortly acuminate at apex, narrowly cuneate at base; glabrous, not gland-dotted; 3.5 to 4.5 in. long, 1.5 to 2 in. broad; midrib prominent, impressed above; main-nerves 10 to 12 pairs, irregular, slender, at about two-thirds of a right angle with the midrib at first then arching upwards to join near the margin; secondary nerves similar but less prominent, reticulations many; petiole .5 in. long, slender, edged by the crispate decurrent margins of the blade which are often connivent above. *Inflorescence* a terminal 3-pinnate leafy panicle, 6 to 9 in. long, of slender racemes; rachis slightly pubescent, main branches at about half a right angle with rachis; peduncles about 1 in. long, upper branches and branchlets usually at right angles; bracts lanceolate spatulate, leafy, deciduous;

bracteoles subulate, as long as or rather longer than the very short, under $\cdot 05$ in. long pedicels; buds very small, globose, flowers red. *Calyx-lobes* orbicular, glandular-ciliate, $\cdot 05$ in. long, connate to the middle, not gland-dotted. *Corolla-lobes* 5, free, ovate, rounded at apex, $\cdot 075$ to $\cdot 1$ in. long, slightly pubescent without, papillose within, not gland-dotted. *Stamens* of ♂ flowers equal to or longer than the corolla-lobes, of ♀ flowers shorter than them, inserted near the base of the lobes; anthers oblong, emarginate, with minute black warts behind at the insertion of the dorsifixed filaments. *Ovary* ovoid, glabrous, style very short, stigma peltate. *Berry* globose, red, tuberculate and corrugate, $\cdot 1$ in. in diam., fruiting pedicels as long as berry. *Embelia Ribes* var. *penangiana*, Oliv. in Hook. Ic. Pl. t. 1597.

PENANG: *Curtis* 306. PERAK: *Wray* 1375, 1409; *Seorteehini*; *King's Collector* 3637, 10739.

A well-marked species, distinguished by the fairly prominent nerves of the leaves, the very short pedicels, and the absence of glandular dots.

6. *EMBELIA PERGAMACEA*, A. DC. Prod. VIII. 85 (1844). A slender climbing shrub; branches rather thick, branchlets wrinkled and angular when dry. *Leaves* entire, coriaceous; oblong-lanceolate, acuminate at apex, cuneate or acute at base; glabrous, shining above, pale beneath, margins recurved, glandular dots many, hardly prominent; 3 to 5 in. long, 1.5 to 2 in. broad, midrib thick, impressed above; main-nerves slender 12 to 14 pairs, parallel but irregular, raised and conspicuous on the upper surface, leaving the midrib at about two-thirds of a right angle and joining near the edge in an intramarginal nerve; secondary nerves many, parallel to the main-nerves, reticulations obscure; petiole $\cdot 3$ in. long, angular, channelled above when dry by the crispate edges of the decurrent blade. *Inflorescence* a large terminal, pyramidal, 4-pinnate, nearly glabrous, leafy panicle with racemose branchlets and very numerous flowers; main rachis thick, flattened above, branches nearly at right angles to rachis as again are the branchlets, all angular; bracts ovate spatulate, leafy, bracteoles subulate acuminate as long as the pedicels; pedicels $\cdot 05$ in. long, somewhat longer in fruit; buds very small, globose, flowers light red. *Calyx-lobes* minute, about $\cdot 04$ in. long, broadly triangular, acute, glandular-ciliate, papillose on both sides, dotted with few large and small brown and black glands, tube as long as lobes. *Corolla-lobes* free, ovate-oblong, glandular-ciliate, glabrous without, papillose within, dotted in upper part only, $\cdot 07$ in. long. *Stamens* as long as or shorter than corolla-lobes, inserted half-way up; anthers ovate cordate, emarginate, black-warted behind at the insertion of the dorsifixed filaments. *Ovary* glabrous, ovoid; style thick very

short; stigma capitate. *Berry* globose, blue when ripe, wrinkled when dry, .06 in. in diam., crowned with the persistent style, gland-dotted. Miq. Fl. Ind. Bat. II. 1012; Scheff. Myrs. 34; Mez Monog. Myrs. 310. *Ardisia pergamacca*, Bl. *fidc* A. DC.

PERAK: Curtis 2029; Wray 2001; King's Collector 3658, 4678, 6412.—DISTRIB. Java; Borneo.

This species closely resembles *E. coriacea*, but differs in the acuminate leaves, very shining above and prominently nerved; in the papillose calyx-lobes, petals dotted only in the upper part and bracteoles as long as the pedicels.

7. *EMBELIA CORIACEA*, Wall. Cat. 2314 (1829). A climbing shrub; branches reaching 1.5 in. in diam.; branchlets reddish, twisted, somewhat angular, roughly lenticellate. *Leaves* entire, coriaceous; oblong or oblong-lanceolate, obtusely acute at apex, rounded or almost cordate or auricled at base; glabrous, more or less shining above, brownish beneath, glandular dots scattered, not prominent, margin sometimes incurved; 3 to 10 in. long, 1.5 to 4 in. broad; midrib thick, impressed above; main-nerves many, slender, not prominent, irregularly parallel, at about two-thirds of a right angle with the midrib, joining in an intramarginal faint nerve; secondary nerves many, slender, reticulations faint; petiole thick, .3 to .7 in. long, channelled when dry by the crispate edges of the decurrent blade. *Inflorescence* a large terminal 4-pinnate spreading leafy rusty-pubescent panicle with racemose branchlets and very numerous flowers; main rachis thick, somewhat flattened, branches nearly at right angles to rachis as again are the branchlets; bracts leafy, decreasing upwards; bracteoles minute, subulate, about half the length of the pedicels; pedicels .05 in. long; buds very small, globose, flowers grey. *Calyx-lobes* 5, minute, triangular, glabrous, dotted with very few (3 to 5 per lobe) brown or black glands; tube as long as lobes. *Corolla-lobes* free, 4-5, ovate, blunt, recurved, glabrous without, slightly papillose within, gland-dotted all over. *Stamens* shorter than the corolla-lobes, inserted on them about half-way up; anther-cells oblong, somewhat divaricate, with about 4 black warts behind at the insertion of the short filaments. *Ovary* ovoid, style very short, stigma capitate. *Berry* globose, smooth, .075 to .1 in. in diam., pale, prominently gland-dotted, wrinkled when dry, crowned with the persistent base of the style. A. DC. in Trans. Linn. Soc. XVII. 135, Prod. VIII. 87; Clarke in Hook. f. Fl. Br. Ind. III. 513; Mez Monog. Myrs. 313. *E. oblongata*, Miq. Fl. Ind. Bat. Suppl. 573; Scheff. Myrs. 34. *E. macrophylla*, Bl.; Scheff. Myrs. 36.

PENANG: Wallich 2314; Curtis 1047. PERAK: Curtis 1307; Derry 11712; Wray 2001, 2579, 3238; Seortchhini 117, 255; King's Collec-

tor 2278, 3481, 4976, 5056, 5254, 5323, 6231, 6766, 7857, 10015, 10543. PAHANG: *Ridley* 5828. SELANGOR: *Ridley* 7562. MALACCA: *Maingay* (K.D.) 1018; *Ridley* 11135. SINGAPORE: *Ridley* 2812.—DISTRIB. Sumatra; Java; Borneo, *Beccari* 767, 878, 1189, 2561, 3922; *Haviland & Hose* 3469.

8. *EMBELIA ANGULOSA*, King & Gamble, n. sp. A climbing shrub; branches thick, branchlets wrinkled when dry, lenticels few. *Leaves* entire, coriaceous; ovate, obtuse, emarginate, glabrous, shining above, dull beneath, glandular dots pitted on both surfaces; 2 to 3·5 in. long, 1 to 2 in. broad; midrib very thick and prominent, impressed above; main-nerves 14 to 16 pairs, slender, irregular, leaving the midrib at nearly a right angle, then curved and joining near the margin, raised on upper surface; secondary nerves many, slender, reticulations obscure; petiole 2 in. long, channelled above and bordered by the crispate edges of the decurrent blade. *Inflorescence* a dense terminal glabrous stiff panicle about 4 in. long and broad, of racemes, the rachises sharply angled; bracts leaf-like, spatulate, bracteoles very small, subulate; pedicels 0·5 in. long, thick, angular, glabrous or minutely pubescent, equal to or shorter than the bracteoles; buds globose. *Calyx-lobes* ovate, ciliate, minute, 0·3 in. long, not gland-dotted. *Corolla-lobes* free, ovate, acute, 0·75 in. long, nearly glabrous outside, papillose within. *Stamens* shorter than corolla-lobes, inserted one-third up, reniform, with inconspicuous black dots at the insertion of the short dorsifixed filaments. *Ovary* ovoid glabrous; style very short; stigma peltate. *Berry* red, ovoid, somewhat pyriform, ribbed and gland-dotted, glabrous, crowned with the remains of a cylindric style and capitate stigma. *E. coriacea*, Stapf in Trans. Linn. Soc. Ser. ii. IV. 200 (not of A. DC.)

PERAK: *Wray* 1524—on Ulu Batang Padang at nearly 5,000 ft.—DISTRIB. Borneo, *Haviland* No. 1152, on Mt. Kinabalu at 7,600 to 8,800 feet.

The description of the flowers is taken from *Haviland's* Borneo specimen, the rest from *Wray's*.

9. *EMBELIA LAMPANI*, Scheff. Myrs. 37 (1867). A slender climbing shrub, clinging to trees; branches reddish-brown, rough with strigose hairs, lenticellate; branchlets rusty-villous-hairy. *Leaves* chartaceous; oblong, obtuse or emarginate at apex, rounded or cordate at base; margins recurved, upper surface glabrous except on the midrib, lower surface rusty-villous, glandular dots many, scattered; 1·5 to 3·5 in. long, 1 to 1·5 in. broad; midrib impressed above, prominent below, villous on both sides; main-nerves many (up to 24 pairs), irregular, at about two-thirds of a right angle with the midrib, straight at first then curving

upwards to meet in a nerve more or less parallel to the margin; secondary nerves similar, reticulations many; petiole $\cdot 1$ to $\cdot 2$ in long, rusty-villous. *Inflorescence* of terminal panicles of pedunculate racemes 6 to 12 in. long, the branches often leafy, rachis and peduncles all rusty-villous; peduncles $\cdot 5$ to $\cdot 7$ in. long, pedicels slender, about $\cdot 05$ in. long; bracts few, leaf-like; bracteoles rather longer than the pedicels, lanceolate to spatulate; flowers small, buds globose, petals white, striate, tube red. *Calyx-lobes* 5-6, ovate, acute, ciliate on the edges, villous, dotted with few glands; tube as long as lobes, both together $\cdot 05$ in. long, longer in fruit. *Corolla* gamopetalous from one-third to one-half of its length; lobes oblong, obtuse, recurved, $\cdot 1$ in. long, sparsely gland-dotted. *Stamens* as long as or a little shorter than the corolla-lobes, inserted about half-way up, anthers oblong, dehiscing longitudinally, the back with black conspicuous glandular warts; filaments adnate to the corolla below point of insertion, slender, dorsifixed. *Ovary* rounded, glabrous, style cylindric, stigma peltate in ♀, slightly lobed in ♂. *Berry* globose, $\cdot 1$ to $\cdot 15$ in. in diam., black when dry, crowned with the persistent style, rugosely glandular. Clarke in Hook. f. Fl. Br. Ind. III. 514. *E. villosa*, Wall. Cat. 2313 (*in part*). *Grenacheria Wallichiana*, Mez Monog. Myrs. 293, fig. 49. *G. Lampani*, Mez l.c. 294.

PENANG: *Curtis* 305; *G. King*. PERAK: *Wray* 95, 2784; *Scortechini* 231; *King's Collector* 2483, 4210, 6849, 8134. SELANGOR: *Ridley* 10224. MALACCA: *Maingay* (K.D.) 1003. SINGAPORE: *Ridley* 10417.—DISTRIB. Sumatra, *Korthals*; Borneo, *Haviland & Hose*.

Haviland and Hose's Borneo specimens have rather larger flowers than, and pedicels about twice as long as, those from the Peninsula (No. 2280).

10. *EMBELIA AMENTACEA*, Clarke in Hook. f. Fl. Br. Ind. III. 514 (1882). A slender climbing shrub; branches pale brown, velvety; branchlets cinnamomeous or rusty-villous. *Leaves* chartaceous; oblong or obovate-oblong, obtuse and sometimes emarginate at apex, rounded at base; upper surface sparsely pilose, under surface pubescent, pale bluish-green, glandular dots many prominent; 2 to 3 in. long, $\cdot 75$ to $\cdot 1$ in. broad; midrib impressed above, prominent below, villous on both sides; main-nerves few, 6 to 10 pairs, irregular, at about two-thirds of a right angle with the midrib, arching upwards, branching and joining in a nerve near the margin; secondary nerves similar but more slender, reticulations not prominent; petiole $\cdot 15$ in. long, villous, winged by the decurrent base of the blade. *Inflorescence* of terminal panicles of pedunculate racemes, the branches leafy, the leaves passing gradually into oblong or spatulate conspicuous bracts; peduncles 1 to 1.5 in. long, enlarged at base; pedicels $\cdot 1$ in. long, supported by linear subulate bracteoles twice their

length, so that when in bud the racemes have the appearance of catkins; flowers very small, buds globose. *Calyx-lobes* 5, acute, ciliate on the edges, gland-dotted, tube as long as lobes, both together .05 in. long. *Corolla* very shortly gamopetalous; lobes 5, ovate, obtuse, glabrous within, .05 in. long. *Stamens* very short, shorter than corolla-lobes, inserted about half-way up; anthers oblong, rounded, with black papillose warts on the back; filaments as long as anthers, dorsifixed. *Ovary* rounded, glabrous, conical above, style slender, stigma peltate. *Berry* globose, wrinkled when dry, .1 to .125 in. in diam., crowned with the persistent style and stigma, black when dry. *Grenacheria amentacea*, Mez Monog. Myrs. 294.

PERAK: *Seortechini* 802; *Ridley* 7172 (part); *King's Collector* 5055, 6280, 6817, 8692—in open ground and in bamboo forests. SELANGOR: *Ridley* 7561, *Native Collector* 2802A, *Goodenough* 10555. MALACCA: *Griffith* (K.D.) 3548.

Mez suggests that this may be a young state of *Grenacheria Wallichiana*. He apparently saw only Griffith's specimen. The abundant material now available clearly shows that Clarke correctly considered it as separate. The curious catkin-like young inflorescence and the more sparse leaf-venation distinguish it.

11. EMBELIA RIDLEYI, King & Gamble, n. sp. A climbing (?) shrub; branchlets light brown, wrinkled. *Leaves* chartaceous; oblong, acute at apex, rounded at base; glabrous, glandular dots scattered obscure, margin somewhat recurved; 4 to 7 in. long, 1.5 to 3 in. broad; midrib thick, prominent below; main-nerves prominent below, about 12 pairs, curving upwards and meeting in a looped intramarginal nerve; secondary nerves and reticulations faint; petiole .5 in. long, thick. *Inflorescence* an axillary panicle of racemes, the branches curved, distant; rachis .5 to 1 in. long, that of racemes shorter, bracteoles minute, triangular; racemes about .5 in. long. *Calyx-lobes* 4 or 5, ovate, gland-dotted, very small. *Corolla* and rest not seen.

SINGAPORE: *Ridley* 6324. It seems to come near to *E. floribunda*, Wall.

E. Tsjeriam-Cottan, A. DC. is quoted by Mez as extending from India southwards to Singapore, but we have seen no specimens from our region.

12. EMBELIA MYRTILLUS, Kurz in Journ. As. Soc. Beng. XL. ii. 67 (1871), and For. Fl. II. 104. A small climbing shrub (Wray); branches rough, somewhat corky, with large lenticels; ultimate branchlets densely rusty-villous. *Leaves* coriaceous; bifarious, broadly elliptic to almost orbicular, acute at apex with usually 3 terminal teeth, narrowed truncate or cordate at base; glabrous above, slightly villous on nerves beneath; glandular dots black, numerous, small, fewer large, scattered, especially

near the apex and along the margin, which is often recurved; .4 to .7 in. long, .3 to .6 in. broad; midrib prominent; main-nerves 6 pairs, arched upwards and joining in an intramarginal nerve; secondary nerves similar, reticulations prominent; petiole .1 in. long, villous. *Flowers* tetramerous, very small, in umbels or very short racemes on short axillary arrested branches, .1 to .15 in. long, shorter than the leaves; bracts minute, subulate. *Calyx-lobes* ovate, glandular ciliate, densely papillose within, .05 in. long, tube very short. *Corolla-lobes* free, oblong, rounded at apex, .1 in. long, glandular-ciliate on the edges, conspicuously marked with black, oblong or linear glands. *Stamens* longer than the corolla-lobes in ♂ flowers, shorter in ♀; anthers oblong, often cordate, with conspicuous warts at the insertion of the dorsifixed filaments which spring from the base of the petals. *Ovary* ovoid; style slender; stigma capitate, 4-cleft. *Berry* globose, red or black, .15 to .2 in. in diam., prominently gland-dotted, tipped with the persistent style and stigma. Clarke in Hook. f. Fl. Br. Ind. III. 516; Mez Monog. Myrs. 322. *Myrsine Myrtillus*, Hook. Ic. Pl. t. 825. *Samara Myrtillus*, Kurz in Journ. As. Soc. Beng. XLVI. ii. 223.

PERAK: *Seorteehini* 762; *Wray* 1565, 3818, on Gunong Bubu and Gunong Brumber, at 5,000 to 7,000 feet. MALACCA: summit of Mount Ophir, *Griffith* (K.D.) 3542; *Lobb*; *Ridley*.—DISTRIB. Burma, *Griffith*.

13. *EMBELIA PARVIFLORA*, Wall. Cat. 2307 (1829). A slender climbing shrub reaching 60 feet in length; branches and branchlets densely rusty-villous, slender. *Leaves* chartaceous; distichous, ovate, obtusely acute at the apex, truncate at base; glabrous except on the midrib beneath; margin slightly recurved; glandular dots many, prominent, scattered, more numerous towards the apex; .7 to 1.5 in. long, .5 to .75 in. broad; midrib prominent beneath, impressed above; main-nerves 8 to 10 pairs, slender, curving upwards towards the margin; secondary nerves slender, many, reticulations prominent; petiole scarcely .05 in. long, rusty-villous, channelled above. *Inflorescence* of very short axillary few-flowered subumbellate racemes, ♂ 4–6-flowered with .15 in. long slender pedicels, ♀ 1–3-flowered with .05 in. slender pedicels; bracts in both minute subulate; flowers pentamerous; buds globose. *Calyx-lobes* oblong, fimbriate-ciliate, .05 in. long, with few (about 6) large brown glands, glandular-villous without, tube very short, ciliæ moniliform. *Corolla-lobes* ovate, rounded, ciliate, .075 in. long, .05 in. broad, with few unequal-sized prominent brown glands. *Stamens* in ♂ flowers longer than corolla-lobes, in ♀ much shorter; anthers reniform, in ♂ apiculate and warted at back at the insertion of the dorsifixed, rather long filaments which spring from near the base of the corolla-lobes. *Ovary*

rounded, glabrous; style slender, curved, stigma peltate, at any rate in ♀. *Berry* globose, red, black when dry, smooth, .15 to .2 in. in diam., surmounted by the remains of the style and stigma. A. DC. in Trans. Linn. Soc. XVII. 130 (excl. var. β), Prod. VIII. 86; Scheff. Myrs. 44; Kurz For. Fl. II. 104; Clarke in Hook. f. Fl. Br. Ind. III. 515; Mez Monog. Myrs. 324. *Samara parviflora*, Kurz in Journ. As. Soc. Beng. XLVI. ii. 223. *Celastrinca*, Griff. Itin. Notes 85, n. 1226.

PERAK: *Scortechini*; *Wray* 4194—at Maxwell's Hill, Larút, 3,500 feet; *Curtis* 2059—on Hijan Range; *King's Collector* 2342, 6992—from dense forests on high hills at 3,000 to 5,000 feet.—DISTRIBUTION. Khasia and Naga Hills; Upper Burma, *Griffith* (K.D.) 3545, &c.; Sumatra.

IMPERFECTLY KNOWN SPECIES.

14. *EMBELIA LUCIDA*, Wall. Cat. 2315. *Leaves* 3 in. long, 1.25 in. broad, broadly oblong, suddenly narrowed at both ends, entire, glabrous, coriaceous. *Racemes* 1 in. long, axillary, simple, solitary or paired, rusty-villous. A. DC. Trans. Linn. Soc. XVII. 134, Prod. VIII. 87; Clarke in Hook. f. Fl. Br. Ind. III. 517; Mez Monog. Myrs. 396.

SINGAPORE: *Wallich* 2315.

15. *EMBELIA MACROCARPA*, King & Gamble, n. sp. A strong climber, branchlets thick, nearly black, rough. *Leaves* coriaceous; elliptic, obtuse or shortly acuminate at apex, almost rounded at base, glabrous, margin reflexed; 6 in. long, 3 to 4 in. broad; midrib rather slender; main-nerves irregular, distant, not prominent, about 8 pairs; secondary nerves slender, obscure as are the reticulations; petiole .7 to 1 in. long, thick, bordered above by the decurrent margins of the leaves. *Flowers* apparently on rather short, thick racemes from the branches. *Calyx-lobes* 4, triangular, acute, gland-dotted, under .1 in. long. *Berry* large, .5 to .7 in. in diam., smooth, wrinkled when dry, globose, crowned with the short remains of the persistent style. *Seed* with many conspicuous pits. Rest not seen.

PENANG: at Marriot's Road, 1,500 feet, *Curtis* 1229.

The following Burmese species is here inserted, as it is found in Tenasserim and may occur further south in the Malay Peninsula.

EMBELIA GALLATLYI, King & Gamble, n. sp. Apparently a shrub; branchlets rounded, dark brown, lenticellate. *Leaves* ovate, acuminate at apex, truncate at base; prominently crenate dentate with blunt teeth and glands in the crenatures; glabrous on both surfaces, glandular dots few, chiefly near the margin; 1 to 1.4 in. long, .5 to .7 in. broad; midrib slender, impressed above; main-nerves 10 to 12 pairs; arching upwards to the crenatures; secondary nerves many, slender, reticulations prominent; petiole .1 to .2 in. long, channelled above, crispately edged. *Inflorescence* of axillary corymbose racemes, 10-12-flowered, rachis about 2 in. long, bracts minute subulate,

the whole minutely rusty-pubescent, pedicels slender. *Calyx-lobes* triangular acute .03 to .05 in. long, ciliate; tube as long as lobes or somewhat shorter. *Corolla-lobes* oblong-spathulate, .1 in. long, ciliate, minutely pubescent, sparsely gland-dotted. *Stamens* longer than corolla-lobes, .15 in., anthers oblong, cells parallel, not warded behind at the insertion of the long exsert filaments which spring from close to the base of the corolla-lobes. *Ovary* ovoid-conical, style short curved, stigma minute. *Berry* unknown.

TENASSERIM: at Moolyot, 5,000 feet, *G. Gallatly* No. 407. *Gamble* No. 7906 from Mianimukh, Chittagong Hill Tracts, without flowers or fruit, is probably this species.

4. LABISIA, Lindl.

Small shrubs, with a creeping rhizome and erect stem, resembling *Pothos* in appearance. *Leaves* few, coriaceous, entire or denticulate, sessile or petiolate, the petiole often dilated, main leaf-nerves very many, at right angles to the midrib. *Flowers* hermaphrodite, minute, pink, in axillary spike-like panicles, bracts very small. *Calyx* minute, 5-lobed. *Corolla* 5-lobed, lobes ovate, induplicato-valvate in bud; tube very short. *Stamens* 5, wrapped in the corolla-lobes; filaments very short; anthers ovoid, introrsely dehiscent, no staminodes. *Ovary* globose, attenuated into a short style; stigma small; ovules few, immersed in a globose central placenta. *Fruit* small, globose, red, 1-seeded. *Seed* globose, hollowed at the base; albumen smooth; embryo cylindric transverse. —DISTRIB. About 4 species, all of the Malay Peninsula and Archipelago.

Leaves petiolate without decurrent wings:—

- | | |
|--|--|
| Leaf-blades elliptic-lanceolate, much longer than broad | 1. <i>L. pumila</i> var. <i>lanceolata</i> . |
| Leaf-blades ovate or ovate-orbicular, nearly as broad as long.. .. . | 2. <i>L. paucifolia</i> . |

Leaves with winged petioles or sessile:—

- | | |
|---|-----------------------|
| Wings very narrow, blade of leaf acuminate at both ends | 1. <i>L. pumila</i> . |
|---|-----------------------|

Wings broad:—

- | | |
|--|---|
| Leaves crenate, thin, main-nerves rather distant .. | 1. <i>L. pumila</i> , var. <i>alata</i> . |
| Leaves entire, coriaceous, main-nerves very close and regular | 3 <i>L. longistyla</i> . |

1. LABISIA PUMILA, Benth. & Hook. f. Gen. Pl. II. 645 (1876). A semi-herbaceous undershrub, with rooting stems and leaves not jointed at their insertion but decurrent into them. *Leaves* bluish-green, elliptic-lanceolate, acuminate, narrowed at the base, and more or less decurrent on the petiole; crenately toothed, or sometimes nearly entire; blade 5 to 8 in. long by 1 to 2.5 in. broad; midrib thick, often rusty-pubescent; main-nerves extremely numerous, nearly at right angles to the midrib, parallel, slender, anastomosing towards the margin, and

then producing an elegant network; under-surface with brown glandular scales; petiole 1 to 3 in., enlarged at the base, often minutely rusty-pubescent. *Flowers* pink, in a spike-like, long-stalked, ferruginous-tomentose panicle of small corymbose bracteate clusters; peduncles of corymbs 1 in. long or shorter, sometimes none; bract linear-subulate, .05 to 1 in. long.; pedicels .05 to 1 in., slender, with minute bracteoles. *Calyx-lobes* triangular, acute, .025 in. long, densely glandular. *Corolla-lobes* ovate, with linear glands, glabrous. *Stamens* infolded in the corolla; filaments very short; anthers oblong-linear, apiculate, with several hard round or linear black warts on the back. *Ovary* rounded, pubescent, ending in a subulate angular style with minute notched stigma. *Fruit* a globose red berry, about .15 in. in diam., ribbed and with prominent elongate glands, surmounted by the persistent style. Mez Monog. Myrs. 171 (var. *genuina*). *L. pothoina*, Lindl. in Bot. Reg. 31. t. 48; Clarke in Hook. f. Fl. Br. Ind. III. 518; Stapf in Trans. Linn. Soc. Ser. 2, IV. 200; *Ardisia pumila*, Blume Bijdr. 688; A. DC. Prod. VIII. 137; Miq. Pl. Jungh. 199 and Fl. Ind. Bat. II. 1028; Scheff. Myrs. 92. *A* ? *spicata*, Wall. Cat. 2273; A. DC. in Trans. Linn. Soc. XVII. 135.

SINGAPORE or PENANG: *Walker*, 165. PENANG: *Curtis* 1192; *Kunstler* 1159. PERAK: *Seorteehini*; *Wray* 753A. MALACCA: *Maingay* 1013 (K.D.); *Stoliezka*. SINGAPORE: *Ridley* 1804.—DISTRIB. JAVA: *Forbes* 238, 474. In dense moist forests on the lower slopes of hills.

VAR. *lanceolata*, Scheff. l.c. 93. *Leaves* elliptic-lanceolate, acuminate, somewhat rounded at base; not, or very slightly, decurrent; blade 5 to 8 in. long, by 1.5 to 3.5 in. broad; petiole 2 to 5 in. long not winged. *Inflorescence* more slender, bracts often longer than the peduncle of the corymb. Clarke in Hook. f. Fl. Br. Ind. III. 518; Mez Monog. Myrs. 172. *L. pothoina*, N. E. Brown (*non* Lindl.) in Ill. Hort. XXXII. 95 tab. 561.

PENANG: *Hullett* 201. PAHANG: *Goodenough* 2799. SINGAPORE: *Lobb* 61; *Kurz*; *T. Anderson* 196.—DISTRIB. Sumatra, *Korthals*; Borneo, *Motley* 1250, *Haviland*.

VAR. *alata*, Scheff. l.c. 93. *Leaves* thin ashy-green above, dark green below, elliptic oblong, rounded at top or obtusely acuminate; gradually or suddenly narrowed into a broad wing decurrent on the petiole; crenate glands and scales few or none; 6 to 16 in. long, 2 to 4 in. broad. *Inflorescence* with the corymbs usually more closely congested and on a shorter peduncle; flowers somewhat smaller, bracts usually longer than the corymb peduncle, flowers white or pink. Mez Monog. Myrs. 172. *L. alata*, N. E. Brown in Ill. Hort. XXXIII. 123, t. 605.

PERAK: *Wray* 753B, 824, 2482, 2737; *Seorteehini*; *King's Collector*

980, 2815, 2882, 2891, 2942, 2974, 2999, 3376, 8325, 10949. SINGAPORE : Lobb 313.—DISTRIB. Sumatra, *Korthals* ; Borneo.

2. *LABISIA PAUCIFOLIA*, King & Gamble, n. sp. A small semi-herbaceous undershrub, 10 to 15 in. high; the stems striate, round, minutely purplish-brown-pubescent, bearing rarely more than 3 to 4 leaves. *Leaves* long-petioled, the blade ovate or orbicular-ovate, rounded at top into a bluntly acute point, rounded at base and then very shortly decurrent; entire or very minutely crenate; 2·5 to 4 in. long, 1·5 to 3 in. broad; main-nerves slender, numerous, more or less parallel, joining near the edge; petiole 1 to 2 in. long, thickened at the base and decurrent into the stem. *Inflorescence* 1·5 to 2·5 in. long, consisting of axillary, short-peduncled, rusty-pubescent racemes, the flowers reflexed, single or in few-flowered sessile clusters; pedicels ·05 to ·1 in. long, with short subulate bracts of equal length. *Calyx-lobes* ovate-acuminate, covered without with numerous glands, ·075 in. long; tube short, about half the length of lobes. *Corolla-lobes* oblong-acuminate, ·125 in. long, glabrous. *Stamens* closely enfolded; filaments very short; anthers hastate, long apiculate, glandular warted behind, ·1 in. long. *Ovary* rounded, pubescent; style about ·04 in. long, angular, oblique; stigma minute, notched. *Fruit* a dark red berry, ·1 in. in diam., striate and with oblong glands.

PERAK: *Scortechini*; *Wray* 4102; *King's Collector* 8078. In open forest at 3,000 to 5,000 feet.

Besides the characteristic leaves, the acuminate petals and hastate long apiculate anthers make this species recognisable, though the leaf-venation resembles that of *L. pumila*.

3. *LABISIA LONGISTYLA*, King & Gamble, n. sp. An undershrub about 2 feet high; stem thick, rusty-brown, minutely pubescent. *Leaves* sessile, oblong, entire, rounded at apex and very slightly emarginate, decurrent below in a broad wing for about $\frac{1}{3}$ of their length; prominently glandular-pitted above and with rusty glandular scales below; 7 to 12 in. long, 3 to 4 in. broad; midrib very thick, prominent, glandular scaly; main-nerves at right angles to midrib, extremely numerous, straight, parallel, anastomosing towards the edge which is slightly recurved. *Inflorescence* a raceme-like rusty-pubescent panicle of single flowers or shortly peduncled few-flowered secund corymbs, 8 to 9 in. long, the main peduncle about 4 in.; corymb-peduncles curved, angled, ·3 to ·4 in. long; bracts very short, subulate; pedicels striate, about ·15 in. long; bracteoles minute. *Calyx-lobes* ovate, acute, glandular without, tube rather shorter than lobes, together ·06 in. long. *Corolla* and *stamens* unknown. *Ovary* rounded, pubescent, crowned by a

filiform .2 in. long style. *Fruit* a globose berry, with a conical top and the remains of the style, glabrous, striate with linear-oblong prominent glands.

PERAK: *Wray* 1590. SELANGOR: *Curtis* 3750, at 3,000 to 4,000 feet.

5. ARDISIA, Swartz.

Small trees, shrubs or semi-herbaceous undershrubs, evergreen, generally all parts with pellucid glands which often dry black. *Leaves* sessile or petiolate, membranous to coriaceous, entire crenate or serrate. *Flowers* regular, pedicellate, hermaphrodite; inflorescence various. *Calyx* inferior, 4-6-lobed, the lobes free or overlapping to the right; tube very open, as long as or shorter than the lobes. *Corolla* red white or spotted, often waxy in appearance, 4-6-lobed, the tube often very short; the lobes overlapping to the right, often twisted. *Stamens* equal in number to, and opposite to, the corolla-lobes, sometimes long and narrow, usually sagittate-lanceolate and apiculate, sometimes very small, fixed to the corolla-tube by filaments usually short and broad; generally opening by slits, occasionally by terminal pores, in *A. littoralis* septate; dehiscence always introrse. *Ovary* globose, sometimes narrowed into the style, more often almost depressed; style usually filiform, rather long; stigma punctiform; ovules few or many, immersed in a globose placenta. *Fruit* a globose, rarely obovoid, berry, usually surmounted by the remains of the style, fleshy, red or purple or black, often spotted; endocarp crustaceous; 1-seeded. *Seed* solitary, large, globose, hollowed at the base; albumen pitted or ruminant; embryo cylindrical horizontal.—DISTRIB. 200 to 250 species, all of tropical or sub-tropical regions in both worlds, scarce in Africa.

Leaves entire or crenate, never serrate:—

Leaves entire, or if crenate without glands in the crenatures:—

Calyx-lobes not, or only slightly, overlapping to the right, usually small:—

Inflorescence lateral:—

Inflorescence short-peduncled, shorter than the leaves (I. PIMELANDRA):—

Leaves entire; inflorescence on wood of current and past years:—

Leaves over 6 in. long; nerves conspicuous:—

- | | |
|-----------------------------------|--------------------------------|
| Leaves nearly glabrous beneath; | |
| main-nerves less than 20 | .. 1. <i>A. pachysandra</i> . |
| Leaves densely tomentose beneath; | |
| main-nerves more than 20 | .. 2. <i>A. Teysmanniana</i> . |

Leaves under 6 in. long:—

Leaves shining, nerves obscure;
flower-buds very short, rounded .. 3. *A. chrysophyllifolia*.

Leaves not shining, nerves con-
spicuous; flower-buds long, acuminate 4. *A. solanoides*.

Leaves crenate; inflorescence on wood of
current year 5. *A. fulva*.

Inflorescence long-peduncled (II. AKOSMOS):—

Peduncles slender, under 1 in. long, pu-
bescent; leaves membranous .. 6. *A. ferruginca*.

Peduncles thick, 3 to 3.5 in. long, glabrous;
leaves coriaceous 7. *A. lankawiensis*.

Inflorescence terminal:—

Style exsert in the bud (III. STYLARDISIA):—

Leaves membranous; inflorescence short,
few-flowered 8. *A. andamanica*.

Leaves chartaceous or coriaceous, inflor-
escence elongate, many-flowered:—

Leaves without a conspicuous intra-
marginal nerve:—

Calyx-lobes .05 in. long or under,
usually glabrous:—

Leaves coriaceous:—

Leaves not thickly scaly beneath:—

Nerves of leaves obscure, leaves
dark when dry 9. *A. tuberculata*.

Nerves of leaves prominent,
leaves pale when dry 10. *A. ophirensis*.

Leaves thickly scaly beneath:—

Leaves broad; main-nerves very
many, prominent, over 24 pairs 11. *A. labisiæfolia*.

Leaves narrow; main-nerves
fewer, obscure, 20 pairs .. 12. *A. montana*.

Leaves chartaceous:—

Panicles slender, elongate; leaves
usually small, main-nerves at
about 60° to midrib .. 13. *A. sinuata*.

Panicles rather thick, compact;
leaves generally large, main-
nerves at about 75° to midrib .. 14. *A. colorata*.

Calyx-lobes .2 in. long, ferruginous
pubescent 15. *A. crassa*.

Leaves with a conspicuous intramarginal
nerve 16. *A. platyclada*.

Style not exsert in the bud (IV. ACRA-
DISIA):—

Branches of the inflorescence racemose;
buds long, slender 17. *A. porosa*.

Branches of the inflorescence umbellate;
buds short, conical 18. *A. divergens*.

Calyx-lobes clearly overlapping to the right,
usually large and broad:—

Inflorescence terminal (V. TINORSIS):—

- Leaves under 6 in. long; panicle compact, pedicels slender, flowers rather small; berry globose, .2 in. in diam. 19. *A. sumatrana*.
- Leaves usually over 6 in. long; panicle spreading, pedicels stout, flowers large; berry depressed, over .25 in. in diam. 20. *A. lanceolata*.
- Inflorescence lateral (VI. TRINUS):—
- Anthers septate; leaves coriaceous, obovate, inflorescence short 21. *A. littoralis*.
- Anthers not septate:—
- Leaves usually over 6 in. long:—
- Leaves 8 to 15 in. long, elliptic, buds .25 in. long 22. *A. Kunstleri*.
- Leaves 5 to 10 in. long:—
- Main-nerves at about an angle of 60° with midrib:—
- Buds .4 in. long or more; leaves coriaceous:—
- Buds conical; calyx-lobes rounded; raceme glabrous 23. *A. solanacea*.
- Buds rounded; calyx-lobes emarginate, raceme rusty-pubescent 24. *A. lurida*.
- Buds .3 in. long only, rounded; leaves chartaceous 25. *A. oxyphylla*.
- Main-nerves at only about 30° with the midrib; calyx-lobes emarginate 26. *A. Scortechinii*.
- Leaves usually under 6 or even 5 in. long:—
- Leaves few-nerved; inflorescence long, racemose 27. *A. pendula*.
- Leaves many-nerved; inflorescence short, 1-5-flowered 28. *A. Hullettii*.
- Anthers not known; leaves 7 to 10 in. long, under 2.5 in. broad; main-nerves at an angle of 80° with midrib in an elegant network with secondary nerves and reticulations 29. *A. oblongifolia*.
- Anthers not known; leaves elliptic or elliptic-ovate, acuminate, 4.5 to 6.5 in. long; calyx-lobes 4; inflorescence apparently terminal 30. *A. tetrasepala*.
- Anthers not known; leaves 3 to 5 in. long, under 1.5 in. broad, acuminate, flowers 2 31. *A. biflora*.
- Anthers not known; leaves 4 to 6 in. long, .7 to .9 in. broad, linear-lanceolate; flowers in peduncled axillary umbellate racemes, about 5 to 8 32. *A. tahananica*.
- Leaves crenate, with glands in the crenatures (VII. CRISPARDISIA):—
- Calyx-lobes more or less gland-dotted:—
- Calyx-lobes oblong, obtuse or obtusely acute:—
- Calyx-lobes lingulate, over .25 in. long, sparsely dotted; inflorescence short; leaves lanceolate, more or less villous 33. *A. villosa*.
- Calyx-lobes under .1 in. long, prominently

dotted; inflorescence long; leaves oblong,
glabrous, pale 34. *A. virens*.

Calyx-lobes ovate, more or less acute:—

Inflorescence axillary, racemose or umbel-
late:—

Racemes or umbels in the axils of upper
leaves only:—

Leaves over 5 in. long, crenatures broad,
very shallow, rounded:—

Leaves membranous, pedicels slender 35. *A. Wrayi*.

Leaves coriaceous, pedicels thick .. 36. *A. minor*.

Leaves under 4 in. long, crenatures
narrow, almost dentate 37. *A. perakensis*.

Racemes in the axils of all or nearly all
the leaves, crenatures narrow .. 38. *A. Meziana*.

Inflorescence terminal or pseudo-terminal:—

Inflorescence of a single sessile, umbellate
raceme; leaves 4 to 8 in. long .. 39. *A. Ridleyi*.

Inflorescence usually of paniced racemes;
leaves 2 to 4 in. long 40. *A. crenata*.

Calyx-lobes not gland-dotted; inflorescence ter-
minal or pseudo-terminal:—

Branches of inflorescence short, not more than
1 in. long; leaves 2 to 4 in. long .. 41. *A. rosea*.

Branches of inflorescence 2 to 3 in. long;
leaves 4 to 6 in. long 42. *A. longepedunculata*.

Leaves acutely and prominently serrate occasionally
abortive (VIII. BLADHIA):—

Inflorescence long, reaching 6 to 8 in.; leaves
large, nearly or quite sessile 43. *A. Maingayi*.

Inflorescence short, under 2.5 in.; leaves
petioled:—

Inflorescence 1.5 to 2.5 in. long; anthers
mucronate; leaves under 3 in. long .. 44. *A. theaefolia*.

Inflorescence under 1.5 in. long; anthers
emarginate; leaves over 4 in. long:—

Leaves and branchlets fulvous-villous;
flowers pink; ovary and base of style
pubescent 45. *A. odontophylla* var. *Lobbii*.

Leaves and branchlets glabrous; flowers
white; ovary and base of style glabrous .. 46. *A. bambusetorum*.

1. *ARDISIA PACHYSANDRA*, Mez Monog. Myrs. 97 fig. 14 A–E (1901).
A large shrub or small tree reaching to 40 to 50 feet high, and 6
to 10 in. diam.; branches with pale brown bark, marked with
decurent lines below the leaves or leaf-scars; branchlets thickly rusty-
villous at the ends. *Leaves* membranous; oblong or slightly obovate,
acute at apex, cuneate at base; glabrous above, except on the midrib
which is sometimes minutely pubescent, glabrous or slightly pubescent
beneath; entire, glands numerous near the margins; 6 to 10 in. long,
1.5 to 3 in. broad; midrib thick, slightly impressed above; main-nerves

14 to 20 pairs, irregular, .4 to .5 in. apart, starting at an angle of about 60°, then slightly arching to and along the margin; petiole .4 to .6 in. long, pubescent, wrinkled, slightly channelled above. *Inflorescence* of small, axillary, sessile or shortly peduncled, umbels or corymbs; peduncles .1 in. long, flowers 6 to 8; pedicels slender, pubescent, striate, .4 in. long; bracts minute, subulate, densely pubescent, deciduous. *Calyx-lobes* ovate, rounded, pubescent, .2 in. long, slightly overlapping to the right, ciliate, gland-dotted especially near the tip. *Corolla-lobes* boat-shaped, broadly ovate, shortly acuminate, .3 in. long, glabrous, white, faintly nerved, dots very few, revolute in flower; tube short. *Stamens* a little shorter than corolla-lobes; anthers ovate, cuspidate-acuminate, much gland-dotted and warted at the back on the connective; filaments thick. *Ovary* rounded, glabrous, style subulate, as long as the anthers. *Berry* .2 to .4 in. in diam., globose, glabrous, pale. *Myrsine paehysandra*, Wall. in Roxb. Fl. Ind. ed. Carey & Wall. II. 297; Wall. Cat. 2284; A. DC. in Trans. Linn. Soc. XVII. 111. *Pimelandra Walliehi*, A. DC. in Ann. Sc. Nat. 2. XVI. 88; Prod. VIII. 106; Deless. Ic. Sel. V. 14. t. 31; Scheff. Myrs. 94; Miq. Fl. Ind. Bat. II. 1029; Clarke in Hook. f. Fl. Br. Ind. III. 531.

PENANG: *Walliech* 2284; *Porter*; *Curtis* 1156, 3164, 3181, 3737. MALACCA: *Griffith* (K.D.) 3597; *Maingay* (K.D.) 1006. PERAK: *Wray* 1358; *King's Collector* 5995, 7194.—DISTRIB. Borneo (?).

2. *ARDISIA TEYSMANNIANA*, Scheff. in Tijdschr. Ned. Ind. XXXI. 368 and in Flora 253 (1870). A large shrub or small tree; branchlets brown, with wavy longitudinal lines passing downwards from the sides of the bases of the petioles, lenticels numerous, innovations densely ferruginous-pubescent. *Leaves* entire, chartaceous; oblong or slightly obovate-oblong or oblong-lanceolate, acuminate at the apex, alternate and sometimes abruptly rounded at base; glabrous above, densely ferruginous-tomentose beneath; glands very numerous, small, evenly distributed over the whole under surface; 6 to 11 in. long, 1.5 to 3 in. broad; midrib thick, prominent beneath; main-nerves 25 to 30 pairs, .3 to .4 in. apart, starting at an angle of 60°, at first straight, then curving to meet in the margin in a looped nerve, raised beneath as are the few secondary nerves and the many oblique reticulations; petiole very thick, .5 to .6 in. long, usually bordered by the decurrent margins of the blade which are again revolute. *Inflorescence* of axillary pedunculate umbels or corymbs; peduncles in flower .1 to .2 in. long, in fruit sometimes up to .5 in., 4-5-flowered; pedicels slender, .4 in. long, densely rusty-pubescent, striate; bracteoles linear-subulate, deciduous. *Calyx-lobes* ovate, rounded, pubescent, .1 in. long, ciliate. *Corolla-lobes* ovate-acuminate, .2 in. long, softly

pubescent, glands inconspicuous, tube very short. *Stamens* nearly as long as corolla-lobes; anthers ovate, cuspidate-acuminate, concave and warted on the connective at the back, .175 in. long; filaments slender, .05 in. long, glabrous. *Ovary* rounded, glabrous; style slender, subulate, as long as stamens. *Berry* globose, slightly depressed, .3 in. in diam., black-gland-dotted, faintly ribbed. Mez in Monog. Myrs. 97. *Pimelandra Teysmanniana*, Hook. f. in Benth. & Hook. f. Gen. Pl. II. 64. *Pimelandra Wallichii* var. *Teysmanniana*, Clarke in Hook. f. Fl. Br. Ind. III. 531.

MALACCA: *Maingay* (K.D.) 1007. SINGAPORE: *Cantley*; *Ridley* 2800, 5573, 6788.—DISTRIB. Bangka.

This species is easily distinguished from the former by having many more and much closer nerves to the leaves, and by the dense rusty tomentum.

3. *ARDISIA CHRYSOPHYLLIFOLIA*, King & Gamble, n. sp. A tree, branchlets reddish-brown, innovations densely ferruginous-pubescent. *Leaves* entire, coriaceous; oblong-lanceolate, obtusely acute at apex, narrowed at base; glabrous on both surfaces; glands scattered, visible on the under surface; 4 to 6 in. long, .75 to 1.25 in. broad; midrib thick, prominent; main-nerves many, more or less parallel, inconspicuous, meeting, with the secondary nerves, in a wavy intramarginal nerve, reticulations fine; petiole .4 to .5 in. long, glabrous, channelled above and edged by the decurrent margin of the blade. *Inflorescence* of small, axillary, sessile or shortly peduncled, umbels of up to about 12 flowers; pedicels slender, .2 in. long, ferruginous-pubescent; bracts minute, triangular; buds very short, rounded. *Calyx-lobes* 5, ovate, minutely ciliate, pubescent and scaly outside, dotted with many conspicuous golden glands, .05 in. long, tube a little shorter. *Corolla-lobes* ovate, concave, sparsely glandular, glabrous, .08 in. long; tube none or very short. *Stamens* a little shorter than the corolla-lobes; anthers ovate acuminate, black-gland-dotted behind; filaments short. *Ovary* rounded, glabrous; style subulate, .05 in. long. *Berry* globose, somewhat depressed, covered with round and elongate glands, .15 in. in diam.

PERAK: at Lower Camp, Gunong Pateh, 3,400 feet, *Wray* 483, 1118, 1182.

4. *ARDISIA SOLANOIDES*, King & Gamble, n. sp. A small shrub, 3 to 4 feet high; branches slender, smooth, dark brown; branchlets glandular-hirsute, marked by obscure raised lines from the sides of the bases of the petioles. *Leaves* entire, membranous; elliptic, bluntly long caudate-acuminate at apex, attenuate at base; glabrous above, more or less glandular-hirsute beneath; glandular dots many, scattered, prominent; 2.5 to 3.5 in. long, .75 to 1.25 in. broad; midrib slender,

raised beneath; main-nerves 8 to 9 pairs, raised, at an angle of 60° with the midrib, the lowest pair more oblique, nearly straight, meeting at about two-thirds of the way to the margin in a looped intramarginal raised nerve, reticulations obscure; petiole .15 in. long, bordered by the decurrent margins of the blade. *Inflorescence* of sessile, axillary, umbellate, nearly glabrous racemes of about 4 to 6 flowers, racemes hardly .1 in. long; bracteoles oblong-lanceolate, gland-dotted, .1 in. long; pedicels slender, .3 to .4 in. long, slightly clavate; buds conical, acuminate, .3 in. long; flowers white with a blueish tinge. *Calyx-lobes* 4 to 5, very short, rounded, scarious and ciliate on the margins, gland-dotted. *Corolla-lobes* ovate below, caudate-acuminate above, twisted and reflexed in flower, .3 in. long, sparsely pale-glandular-punctate. *Stamens* nearly as long as corolla-lobes, lanceolate, membranous at tip, with two lines of glandular dots on the back of the connective. *Ovary* rounded; style very slender, as long as stamens. *Berry* bright red, glossy, .25 in. in diam. when dry.

PERAK: in dense jungle on rich soil, at 500 to 800 feet, King's Collector 4254.

This species very closely resembles *Antistrophe caudata*, but is at once distinguished by the fact of the corolla-lobes overlapping to the right instead of to the left. The flowers somewhat resemble those of *Ardisia porosa*.

5. *ARDISIA FULVA*, King & Gamble, n. sp. Apparently a shrub; branchlets rather thick, usually marked by raised lines descending from the bases of the leaves; innovations densely tawny-villous; leaf-buds lanceolate, densely pubescent. *Leaves* coriaceous; elliptic-oblong or elliptic-lanceolate, shortly acuminate at apex, somewhat rounded at base; glabrous or slightly scaly above, thickly tawny-villous beneath; glandular dots few, scattered, obscure, in the areoles of the minor nerves; crenate, especially in the upper two-thirds; 4 to 7 in. long, 1 to 2 in. broad; midrib slender; main-nerves 20 to 24 pairs, irregular, arching upwards and joining in an intramarginal nerve; secondary nerves slender, faint, reticulations curved; petiole .4 to .6 in. long, winged by the decurrent edges of the blade. *Inflorescence* of short 1 to 1.5 in. long, densely tawny-pubescent, drooping, corymbs in the axils of tawny, leaf-like, often nearly 1 in. long, bracts from the young branches below the end leaves; peduncles about .7 in. long, slender, pedicels slender, up to .5 in. long; bracteoles subulate, short, tawny; buds ovate, .2 to .25 in. long. *Calyx-lobes* ovate, thin, villous without, ciliate, .1 to .15 in. long, marked with prominent black dots, recurved in flower; tube short. *Corolla-lobes* obovate, obtuse, .2 to .25 in. long, oblique, unequal, marked by prominent round or oblong black dots, tube short. *Stamens*

a little shorter than the corolla-lobes, acuminate, with 2 rows of prominent black dots behind the anthers; filaments short. *Ovary* ovoid, surmounted by a short, .1 in. long, subulate style, glabrous. *Berry* .2 in. in diam., black when dry, ribbed.

KEDAH: on Langkawi Island, *Curtis* 2133. PENANG: *Ridley* 10216. PERAK: *Ridley* 8269.

6. *ARDISIA FERRUGINEA*, Mez Monog. Myrs. 108 (1901). A shrub (?); branchlets slender, densely ferruginous-tomentose. *Leaves* membranous; linear- or oblong-lanceolate, bluntly acute at apex, rounded at base; glabrous or slightly rusty-scaly above, rusty-pubescent beneath; entire; glands not apparent; 3 to 4.5 in. long, .75 to 1 in. broad; midrib slender, nerves very faint; petiole .1 to .2 in. long, rusty-pubescent. *Stipules* small, linear-falcate. *Flowers* in densely ferruginous-pubescent, bipinnate panicles in the axils of upper leaves; peduncles .5 to .75 in. long; bracts linear subulate about .15 in.; pedicels slender, .1 to .2 in. long; bracteoles minute; buds conical. *Calyx-lobes* ovate, obtuse, ciliate, connate to rather over one-third, with wavy glandular dots. *Corolla-lobes* shortly connate at the base, broadly and obliquely ovate, short acuminate, gland-dotted. *Stamens* a little shorter than the corolla-lobes; anthers large, ovate, gradually acute, scarcely punctate; filaments very short. *Ovary* ovoid, glabrous, style slender.

JOHORE: at Kampong Sunpai, *Lake & Kelsall (Ridley 4032)*.

This species does not seem to differ very much from *A. Miqueliana*, Scheff. in Tijdsch. Ned. Ind. XXXI. 367, in respect to leaves, but that species has terminal and not axillary flowers.

7. *ARDISIA LANKAWIENSIS*, King & Gamble, n. sp. A tree; branchlets smooth, glabrous, obscurely striate, with raised lines from the edges of the bases of the leaf-petioles. *Leaves* coriaceous; elliptic or elliptic-lanceolate, acuminate at apex, acute at base, glabrous; entire; glandular dots frequent near the margins; 3.5 to 5 in. long, 1.25 to 1.5 in. broad; midrib slender; main-nerves obscure, about 12 to 14 pairs, anastomosing near the margin, secondary nerves and reticulations similar; petiole .5 to .6 in. long, channelled above by the decurrent margins of the blade. *Flowers* pink, in long-peduncled, closely congested racemes in the axils of the uppermost leaves; peduncles 3 to 3.5 in. long, flattened, glabrous; pedicels .5 to .7 in. long, striate, slender; bracteoles minute, caducous. *Calyx-lobes* ovate, acute, ciliate, with many glands on the back, .075 in. long. *Corolla-lobes* ovate, acuminate, much gland-dotted, .25 to .3 in. long. *Stamens* a little shorter than the corolla-lobes, ovate-lanceolate, mucronate, dehiscing on the margins but more widely near the top. *Ovary* rounded, obscurely 5-lobed; style .2 in. long, twisted and

wrinkled. *Fruit* a depressed, obscurely 5-angled berry, .2 in. in diam., pericarp very smooth inside.

KEDAH: on Lankawi Island, *Ridley* 8313.

8. *ARDISIA ANDAMANICA*, Kurz For. Fl. II. 108 (1877) and in Journ. As. Soc. Beng. XLVI. ii. 225. A small or medium-sized evergreen shrub reaching 15 feet high and 2 in. in diam.; branches slender with reddish-brown bark, striate when dry, branchlets glabrous. *Leaves* entire, membranous; oblong lanceolate, narrowly long acuminate at apex, cuneate at base; glabrous on both surfaces but with many scattered glandular dots and occasional peltate scales; 3 to 6 in. long, .75 to 1.75 in. broad; midrib slender; main-nerves about 20 pairs, very thin and inconspicuous, at about 60° with the midrib, at first straight then arching upwards to and along the margin; petiole .3 to .5 in. long, channelled above. *Inflorescence* a loose terminal panicle 2 to 3 in. long, with few slender umbel-like racemes on .3 to .5 in. long, squarrose peduncles; pedicels slender, .3 in.; bracteoles small, ovate, deciduous. *Calyx-lobes* acute, triangular, .05 in. long, minutely ciliate at the edges, dotted with black glands; tube rather shorter than lobes. *Corolla-lobes* ovate, acute, .15 in. long, glabrous, with inconspicuous nerves and few scattered round or oblong glands. *Stamens* a little shorter than corolla-lobes; anthers ovate, apiculate, .1 in. long, glabrous on the back or with few black glands; filaments .05 in. *Ovary* rounded, glabrous; style filiform, long exsert, .15 in. long. *Berry* round or slightly pyriform, smooth, .3 in. in diam. Clarke in Hook. f. Fl. Br. Ind. III. 521; Mez Monog. Mys. 110. *Ardisia nerifolia*, A. DC. Prod. VIII. 127 in part (not of Wall.), Trans. Linn. Soc. XVII. t. 8 (*fig. only*).

MALACCA: *Griffith* (K.D.) 3570; *Hullett* 830; *Stolietzka*. PERAK: *Ridley* 9718; *Wray* 867, 943, 971, 1033; *King's Collector* 5692, 8064. JOHORE: *Ridley* 3717.—DISTRIB. Andamans, Mergui.

9. *ARDISIA TUBERCULATA*, Wall. Cat. 2274 (1829). A shrub, reaching 10 feet in height; branchlets smooth, stout, reddish, uppermost flattened, glabrous. *Leaves* entire, coriaceous; elliptic, bluntly acuminate at apex, attenuate or rounded at the base; glabrous and shining above, covered beneath with rather deciduous peltate scales, dark when dry; 3 to 6 in. long, 1 to 2 in. broad; midrib prominent; main-nerves obscure, about 15 pairs, starting at an angle of about 75° from the midrib, then arched upwards to and along the margin; secondary nerves more slender, reticulations obscure; petiole .3 to .5 in. long, thick, rough, winged by the decurrent margins of the blade. *Inflorescence* a lax, leafy, terminal, tripinnate, 3 to 6 in. long, panicle; rachis flexuous, flattened, often scaly; primary peduncles squarrose, .6 to 1 in. long, supported by ovate acuminate leafy bracts; secondary peduncles also squarrose,

·3 to ·5 in. long with subulate bracts; ultimate racemes umbellate, 6-8-flowered; pedicels slender, short, ·1 to ·15 in. long; bracteoles subulate; buds ovoid, obtuse, glabrous. *Calyx-lobes* ovate, acute or rounded, ·05 in. long; margin ciliate, dotted with black glands. *Corolla-lobes* broadly ovate, blunt, glabrous, ·1 in. long, with very few dots; tube very short. *Stamens* a little shorter than the corolla-lobes; anthers acute, but gland-dotted behind; filaments minute, broad. *Ovary* globose; style subulate, longer than the petals. *Berry* obovoid, smooth, ·15 to ·2 in. in diam. A. DC. in Trans. Linn. Soc. XVII. 119, Prod. VIII. 130; Miq. Fl. Ind. Bat. II. 1026; Clarke in Hook. f. Fl. Br. Ind. III. 521, *except var.*; Mez Monog. Myrs. 112, fig. 16. *A. chrysophylloides*, Miq. Fl. Ind. Bat. Suppl. 574.

PENANG: Wallich 2274. MALACCA: Derry 394. PAHANG: Ridley 1071. JOHORE: Ridley 6438. SINGAPORE: Griffith (K.D.) 3564; Maingay (K.D.) 1014; Ridley 2817, 8916, 1916(A).—DISTRIB. Bangka Teysmann.

10. *ARDISIA OPHIRENSIS*, Mez Monog. Myrs. 113 (1901). A shrub (?); branchlets pale brown, flattened, smooth; innovations minutely ferruginous-scaly. *Leaves* coriaceous; elliptic, shortly acuminate at apex, rounded or somewhat acute at base; pale and somewhat shining on both surfaces, the under covered with minute brown peltate scales; glands scattered, numerous; 3 to 6 in. long, 1·75 to 2·25 in. broad; midrib thick, prominent; main-nerves prominent, raised on both surfaces, 10 to 12 pairs, starting at an angle of about 75° with the midrib, at first straight then curving upwards to meet some way from the margin in a prominent network; secondary nerves prominent, reticulations transverse; petiole ·4 to ·5 in. long, thick, bordered above by the decurrent margins of the blade. *Inflorescence* a terminal, leafy, angular, tripinnate panicle, about 3 to 4 in. long; rachis flexuous, flattened, scaly; peduncles squarrose, about 1 in. long, supported by ovate-oblong, reflexed, leafy bracts; pedicels ·3 in. long, slender, in fruit very spreading. *Calyx-lobes* ovate, acute, ·05 in. long, back dotted with prominent large glands. *Corolla-lobes* elliptic-ovate, rather oblique, shortly connate, nervose; glands few, near the apex, black. *Stamens* rather shorter than the corolla-lobes; anthers ovate, large, not glandular, apiculate; filaments short, slender. *Ovary* ovoid, glabrous; style long, subulate, exsert. *Berry* black when dry, ·15 in. in diam., with prominent glands. *A. tuberculata* var. *ophirensis*, Clarke in Hook. f. Fl. Br. Ind. III. 522.

MALACCA: Hullett 754; Ridley 621; Miller 9. On the top of Mount Ophir.

11. *ARDISIA LABISLÆFOLIA*, King & Gamble, n. sp. A small tree; branchlets thick, slightly flattened, smooth, glabrous below, lepidote-

scaly above. *Leaves* coriaceous; elliptic or elliptic-oblong, shortly and rather abruptly acuminate at apex, rounded at base; glabrous above when old, when young densely covered, as is the under-surface always, with rather large reddish-brown peltate scales, margins recurved; 6 to 8 in. long, 2 to 4 in. broad; midrib thick, prominent, impressed above; main-nerves 24 to 30 pairs, irregularly spaced, at first parallel, leaving the midrib nearly at right angles, then near the margin curving upwards to and along the margin and anastomosing with the prominent secondary nerves which resemble the main ones; reticulations prominent in an elegant network, all more or less raised above when dry; petiole .5 to .8 in. long, thick, bordered above by the decurrent margins of the blade. *Inflorescence* a pyramidal, rusty-scaly, bracteate, tripinnate panicle, up to 6 in. long, the branches bearing sub-umbellate, pedunculate clusters of small flowers; rachis somewhat flattened, rusty-scaly; bracts leafy spatulate; bracteoles minute, ovate; pedicels .1 to .2 in. long, reflexed. *Calyx-lobes* ovate, .06 in. long, ciliate, scaly and glandular-dotted; tube one-third of lobes. *Corolla-lobes* deep pink, ovate-acute, .14 in. long, with a very few black glands. *Stamens* nearly as long as corolla-lobes; anthers ovate, acute, .1 in. long, apiculate; filaments rather thick, .3 to .4 in. long, minutely pubescent. *Ovary* rounded, glabrous; style slender, exsert. *Berry* globose, often depressed at top, .15 to .2 in. in diam., black when dry.

PERAK: *Wray* 320, 1566; *Scortechini*. Hilltops at 6,500 to 7,000 feet.

12. *ARDISIA MONTANA*, King & Gamble, n. sp. A shrub reaching 4 to 6 feet in height; branchlets brown, somewhat angular, uppermost covered with a nearly furfuraceous glandular tomentum. *Leaves* coriaceous; elliptic-oblong or oblong-lanceolate, obtusely acuminate at apex, rounded or attenuate at base; scaly above, densely ferruginous-hairy and scaly beneath, scales stellate; glandular dots scattered, obscure; margins slightly recurved; 4 to 6 in. long, 1 to 2 in. broad; midrib prominent, impressed above; main-nerves 20 pairs, obscure, irregular, starting nearly at right angles to the midrib and curving upwards to and along the margin; secondary nerves many, reticulations obscure; petiole .5 in. long, channelled above by the decurrent margins of the blade, densely scaly and ferruginous-pubescent. *Inflorescence* a rather lax, terminal, pyramidal, bi-tri-pinnate, leafy panicle, up to 6 in. long in fruit, shorter in flower, the branches bearing sub-umbellate pedunculate clusters of minute flowers; rachis somewhat flattened, furfuraceous-scaly; branches squarrose; peduncles .5 to .7 in. long; umbel-peduncles .5 in. long; pedicels .2 in. long, often reflexed; bracts leafy, deciduous; bracteoles ovate, very small. *Calyx-lobes* ovate-acute, under .05 in. long, margins scarious ciliate, dotted with large glands.

Corolla-lobes slightly longer than calyx-lobes, ovate, glabrous, gland-dotted. *Stamens* as long as corolla-lobes; anthers ovate, apiculate; filaments extremely short. *Ovary* rounded, glabrous; style subulate, rather thick, scarcely exsert. *Berry* red, globose, .15 in. in diam., gland-dotted when dry.

PERAK: Wray 327, 3869; Scortechini 296; King's Collector 8029. Rocks and hilltops at 3,000 to 7,000 feet.

13. *ARDISIA SINUATA*, King & Gamble, n. sp. A shrub or small tree, reaching a height of 10 to 15 feet and a diam. of stem of 2 to 3 in.; branchlets pale brown, sinuate, compressed, with raised lines joining the sides of the bases of the petioles, minutely scaly-pubescent or nearly glabrous. *Leaves* chartaceous; elliptic-oblong, acute or shortly acuminate at apex, rounded or attenuate at base; glabrous above, minutely scaly beneath when young, afterwards glabrate; glandular dots few, scattered; 3 to 6 in. long, 1 to 2 in. broad; midrib slender; main-nerves 10 to 12 pairs, .3 to .4 in. apart, starting from the midrib at an angle of 60° and at once curving upwards to and along the margin; secondary nerves and reticulations faint; petiole .3 to .4 in. long, channelled above by the decurrent margins of the blade. *Inflorescence* a lax, terminal, bracteate, nearly glabrous, bi-tri-pinnate panicle 5 to 7 in. long, the branches bearing subumbellate clusters of small flowers; rachis flat, sinuate; bracts leafy, uppermost lanceolate recurved, .5 to 1 in. long; bracteoles minute, ovate; pedicels slender, .1 in. long. *Calyx-lobes* triangular-ovate, glabrous, ciliate, gland-dotted, .04 in. long. *Corolla-lobes* pale green or pink, ovate, acute; margins transparent. *Stamens* nearly as long as corolla-lobes; anthers broadly ovate, shortly apiculate; filaments very short. *Ovary* rounded, glabrous; style slender, exsert, .1 to .15 in. long. *Berry* globose, .15 in. in diam., obscurely striate and black when dry.

PERAK: Wray 2408, 3023; King's Collector 4599.

14. *ARDISIA COLORATA*, Roxb. Hort. Beng. 16 (1814), Fl. Ind. I. 581, and Fl. Ind. Ed. Carey and Wall. II. 271. A large shrub or small tree, reaching 25 feet in height and a girth of 1 foot; branchlets compressed, pale brown, more or less lepidote-scaly, furnished with somewhat zigzag raised lines proceeding downwards from the sides of the bases of the petioles. *Leaves* chartaceous; oblong-lanceolate or elliptic-lanceolate, acute or shortly acuminate at apex, cuneate at base; glabrous on both surfaces, entire; glandular dots many, irregularly scattered, chiefly visible on the upper surface; 5 to 10 in. long, 1.5 to 3 in. broad; midrib prominent beneath, impressed above; main-nerves 20 to 30, also prominently raised beneath and impressed above, usually .3 to .4 in. apart, starting at an angle of 70° to 75° with the midrib, at first straight

then arched upwards to and along the margin; secondary nerves many, slender, 1 to 2 between each pair of main-nerves, reticulations oblique; petiole rather thick, .5 to .8 in. long, channelled above, winged by the decurrent margins of the blade. *Inflorescence* a pyramidal terminal panicle, 4 to 12 in. long, tripinnate, ferruginous scaly, bearing clustered umbellate racemes of flowers; rachis much flattened, as are its branch peduncles; primary branches 2 to 6 in. long, peduncle .5 in., bracts caducous; secondary branches .5 to 1 in. long, peduncles .2 to .4 in., bracteoles small, ovate-acuminate; pedicels slender. .1 to .2 in. long; umbels many-flowered. *Calyx-lobes* ovate, bluntly acute, .05 to .08 in. long, densely gland-dotted, margins scarious and ciliate; tube rather shorter than lobes. *Corolla-lobes* pink, ovate-acute, oblique, unequal, about .15 in. long, not gland-dotted; tube very short. *Stamens* a little shorter than corolla-lobes; anthers sagittate, acuminate; filaments very short. *Ovary* ovoid, glabrous; style thick, .2 in. long. *Berry* globose, .2 to .25 in. in diam., deep red to black, obscurely ribbed when dry, shining. Clarke in Hook. f. Fl. Br. Ind. III. 520; Mez Monog. Myrs. 113. *A. pyramidalis*, Roth Nov. Pl. Sp. 123 (not of Cav.). *A. Rothii*, A. DC. in Trans. Linn. Soc. XVII. 117, Prod. VIII. 126. *A. anceps*, Wall. in Roxb. Fl. Ind. l.c. 280, and Cat. 2261; DC. Prod. l.c.; Kurz in Journ. As. Soc. Beng. XLVI. II. 224, and For. Fl. II. 107; Scheff. Myrs. 77. *A. polycarpa*, Wall. Cat. 2285. *A. grandiflora*, Wall. Cat. 2272.

KEDAH: *Ridley* 5509. PERAK: *Scortechini* 20, 203, 397, 1505, 1568; *King's Collector* 798, 1301, 3099, 3284, 3567, 6473, 6823, 7741, 8252, 10866; *Ridley* 5508. PROVINCE WELLESLEY: *Ridley* 6945. SELANGOR: *Ridley* 7559; *Goodenough* 10551. MALACCA: *Maingay* (K.D.) 1008; *Goodenough* 1762; *Derry* 553, 915, 1075; *Ridley* 1245, 1581, 2817.—DISTRIB. India, Burma, Malay Islands.

VAR. *polynura*, Clarke in Hook. f. Fl. Br. Ind. III. 520. *Leaves* paler when dry than in the typical form; wide, reaching 4.5 in. in width, sometimes reaching 15 in. in length; more usually elliptic, oblong or obovate, more rounded at base; all nerves more prominent. *Panicle* wide at the base; pedicels much reflexed; rachis very much flattened. *A. polynura*, Miq. in Pl. Jungh. I. 198, and Fl. Ind. Bat. II. 1022; Scheff. Myrs. 81.

PERAK: *Ridley* 3000; *Scortechini* 1290, 1412; *Wray* 1643, 1950, 2810; *King's Collector* 527, 2152, 2197, 2629, 3643, 3655, 3657, 4119, 4751, 6922, 8640. MALACCA: *Griffith* (K.D.) 3568.—DISTRIB. Java.

VAR. *complanata*, Clarke l.c. *Panicles* smaller, rusty-pubescent; flowers and berries smaller; panicle, rachis, and branches much flattened. *Leaves* usually narrower and smaller, rarely over 7 in. long

and 2.75 in. broad. *A. complanata*, Wall. Cat. 2277; Wall. in Roxb. Fl. Ind. ed. Carey & Wall. II. 210; DC. Prod. VIII. 126; Scheff. Myrs. 78; Miq. Fl. Ind. Bat. II. 1024. *A. sanguinolenta*, Bl. Bijdr. 685 (not of Wall.). *A. Zollingeri*, DC. Prod. VIII. 670.

PENANG: *Wallich* 2277; *Curtis* 1052, 22494. PERAK: *Wray* 2896, 3929; *Scortechini* 144, 112; *King's Collector* 7680.—DISTRIB. Chittagong, Java, Sumatra.

VAR. *salicifolia*, King & Gamble. *Leaves* lanceolate, 5 to 7 in. long, 1 to 1.5 in. broad, glabrous, obscurely gland-dotted; main-nerves not prominent. *Panicles* spreading, leafy; rachis zigzag, much flattened; bracteoles persistent.

PERAK: *Wray* 2960; *King's Collector* 3216, 6816, 8563. MALACCA: *Hervey*.

VAR. *elliptica*, King & Gamble. *Leaves* elliptic or elliptic-obovate, acuminate at apex, cuneate at base, glabrous; 4.5 to 8 in. long, 2 to 3 in. broad; main-nerves fewer, 15 to 20 pairs, less prominent. *Panicles* rather short and stout, 4 to 6 in. long, pyramidal, rachis less flattened, scarcely zigzag.

PERAK: *Wray* 3293; *King's Collector* 3326, 3453, 5057, 6473, 6624, 6820, 8856.

15. *ARDISIA CRASSA*, Clarke in Hook. f. Fl. Br. Ind. III. 518 (1882). A small tree; branches pale brown, rounded, stout; branchlets somewhat flattened above and with raised lines from below the base of the petioles. *Leaves* coriaceous; oblong, acute or slightly blunt-acuminate above, cuneate at base; glabrous and shining above, rufescent and with inconspicuous rounded scales beneath; entire; 4 to 9 in. long, 1.5 to 2.5 in. broad; midrib prominent beneath; main-nerves nearly regular at first, nearly at right angles to midrib, afterwards arching upwards and round parallel to the edge, 20 to 27 pairs, secondary obscure. *Inflorescence* a terminal rusty-pubescent panicle, 5 to 6 in. long, with remote branches ending in closely packed umbels; rachis thick, much flattened, flexuose; branches first at right angles, then curved, .5 to .8 in. long; pedicels very short, thick; bracteoles ovate, blunt, about .1 in. long. *Calyx-lobes* thick, ovate-orbicular, .2 in. long, minutely ferruginous-pubescent, overlapping to right; tube about half the length of the lobes. *Corolla-lobes* broadly ovate, unequal, obliquely and shortly acute, .15 in. long. *Stamens* shorter than corolla-lobes; anthers ovate, acute; filaments very short, broad at base. *Ovary* rounded, glabrous; style short, about .1 in. long, subulate. *Berry* globose, depressed, not striate, .25 in. in diam. Mez Monog. Myrs. 114.

MALACCA: *Mainjaya* (K.D.) 1015; *Goodenough* 1808.—DISTRIB. Borneo.

16. *ARDISIA PLATYCLADA*, King & Gamble, n. sp. A small tree or shrub reaching 10 to 15 feet in height; branchlets pale brown, prominently marked by zigzag raised lines joining the sides of the bases of the petioles; uppermost ones prominently flattened and covered with rusty furfuraceous scales, as are also the young leaves. *Leaves* chartaceous; oblong or elliptic-oblong, abruptly acuminate at apex, attenuate and somewhat rounded at base; both surfaces covered when young with rusty stellate scales, glabrescent when old; margins undulate, recurved; 4 to 6 in. long, 1.5 to 2 in. broad; midrib slender but prominent beneath, impressed above; main-nerves 14 to 18 pairs, .3 to .4 in. apart, rather irregularly parallel, leaving the midrib at an angle of about 65° and joining at .1 to .2 in. from the margin in a very prominent intramarginal looped nerve; secondary nerves and reticulations obscure; petiole none or very short, rarely .2 in. long, rugose, rusty-scaly, and bordered by the decurrent margins of the blade. *Inflorescence* a terminal, compact, bracteate, rusty-scaly, pyramidal, bi-tri-pinnate panicle, 4 to 5 in. long, the flowers in dense subumbellate clusters on the branches; rachis flattened, flexuose; bracts foliaceous, spatulate or oblong-lanceolate, .5 to 1.5 in. long; bracteoles small, triangular-subulate; pedicels glabrous, cernuous, about .1 in. long; buds very small, conical. *Calyx-lobes* pink, lanceolate, .04 in. long, ciliate, obscurely red-gland-dotted; tube as long as or rather shorter than the lobes. *Corolla-lobes* waxy-white, ovate-acuminate, .07 in. long, slightly gland-dotted; tube very short. *Stamens* shorter than corolla-lobes; anthers ovate, apiculate; filaments very short. *Ovary* rounded, minutely pubescent at top; style straight, .15 in. long, exsert. *Berry* globose, .15 to .2 in. in diam., glandular-rugose, dark blue, black when dry.

PERAK: *Seorteihini* 232; *King's Collector* 824, 4569, 5863, 8136, 10140; usually in dense mixed forest.

A. pterocaulis, Miq.; Mez Monog. Myrs. 111, a tree of the forests of the Sumatran mountains, much resembles this at first sight, but the leaves are bigger, the flower panicles much larger and more open, with shorter pedicels, and the nerves of the leaves do not meet in a prominent looped intramarginal nerve. (*Forbes* 1992 in Herb. Calc.)

17. *ARDISIA POROSA*, Clarke in Hook. f. Fl. Br. Ind. III. 522 (1882). A shrub, reaching 8 feet in height; branches flexuose, almost zigzag, winged by lines decurrent from the bases of the leaf-petioles. *Leaves* chartaceous; oblong, acute at apex, cuneate at base or sometimes rounded-acute; glabrous, pale beneath; entire, margin often recurved; glands small and obscure; 5 to 9 in. long, 1.5 to 2.5 in. broad; midrib rather slender, prominent beneath; main-nerves obscure, irregular, about

20 to 25 pairs; secondary faint, all arching upwards into an irregular intramarginal ring and reticulate; petiole .4 in. long, narrowly winged by the decurrent blade. *Inflorescence* a loose terminal few-flowered panicle up to 6 in. long; rachis flexuous; branches racemose, at right angles to rachis; peduncles 1 to 1.5 in. long, curving upwards; pedicels .5 to .7 in. long, slender, curved upwards; bracteoles minute, ovate, deciduous; flowers 3-5-, usually 4-merous; buds slender. *Calyx-lobes* ovate, .04 in. long, obscurely dotted; tube short. *Corolla-lobes* ovate-lanceolate, pink, .3 in. long by .1 in. broad, recurved in flower, not dotted but striate. *Stamens* as long as corolla-lobes; anthers very slender, opening by terminal pores as well as longitudinally; filaments very short, thick. *Ovary* conical, gradually passing into a slender style .25 in. long. *Berry* globose, .25 in. in diam., ribbed, glossy black when ripe. Koord. & Val. Bijdr. V. 260; Mez Monog. Myrs. 118.

PERAK: *Scortechini* 116, 1511; *King's Collector* 3108. MALACCA: *Griffith* (K.D.) 3578; *Maingay* (K.D.) 1012; *Wray* 39; *Goodenough* 1528; *Hervey*.

18. *ARDISIA DIVERGENS*, Roxb. Hort. Beng. 85 (1814), Fl. Ind. I. 583, and Fl. Ind. ed. Carey & Wall. II. 275. A small tree, reaching 20 feet in height; branchlets slender, smooth, rounded. *Leaves* chartaceous; elliptic or lanceolate, shortly acuminate at apex, rounded at base, drying reddish-brown; glabrous on both surfaces; entire, margins slightly incurved; glandular dots large, prominent, especially near the margin; 3 to 5 in. long, 1 to 2 in. broad; midrib prominent beneath; primary nerves 8 to 12 pairs, irregular, arched and joining in an intramarginal prominent nerve with a smaller, less prominent nerve near the edge; secondary nerves few, slender, reticulate; petiole .15 to .3 in. long, winged by the decurrent blade. *Inflorescence* a loose terminal rusty-pubescent panicle, 2 to 3 in. long, ultimate branches umbelled, 3-5-flowered; main peduncle .5 to 1 in. long, secondary peduncles about .5 in. with lanceolate leafy recurved bracts; pedicels about .4 in. long, thickened above, glandular; bracteoles ovate, deciduous; flowers red, buds short, conical. *Calyx-lobes* rounded, .05 in. in diam., ciliate, conspicuously dotted with few large, transparent, light brown glands; tube short. *Corolla-lobes* ovate, acute, .15 to .2 in. long, unequal in size, and oblique; tube very short, dots very few. *Stamens* a little shorter than the corolla-lobes; anthers large, ovate-acute; filaments very short. *Ovary* ovoid, glabrous, attenuated into a .1 in. long style. *Berry* round, smooth, somewhat depressed, tipped by the persistent style. Wall. Cat. 2269; A. DC. Prod. VIII. 130; Clarke in Hook. f. Fl. Br. Ind. III. 521; Mez Monog. Myrs. 117. *A. punctata*, Jack;

Roxb. Fl. Ind. ed. Carey & Wall. II. 275 (not of Lindl.). *A. punctulosa*, D. Dietr. Syn. Pl. I. 615; Miq. Fl. Ind. Bat. II. 1025.

PENANG: *Jack*; *Wallich* 2269; *Maingay* (K.D.) 1020; *Curtis* 1769.

19. *ARDISIA SUMATRANA*, Miq. Pl. Jungh. I. 195 (1853), Fl. Ind. Bat. II. 1018, and Suppl. 247. A large shrub or small tree, reaching 15 to 20 feet in height and 3 to 4 in. in diam. of stem; branches pale brown, smooth; branchlets minutely ferruginous-scaly. *Leaves* chartaceous; elliptic-oblong or -obovate, rather suddenly acute at apex, acute or cuneate at base; entire, glabrous; glands large, frequent near the margin; 3 to 6 in. long, 1.5 to 2.5 in. broad; midrib slender, prominent beneath, impressed above; main-nerves 12 to 15 pairs, irregularly spaced, starting at an angle of about 50° with the midrib, curving upwards to and along the margin; secondary nerves and innovations indistinct; petiole .3 to .5 in. long, bordered above by the decurrent, often crose, margins of the blade. *Inflorescence* a compact, shortly pyramidal, 3 to 4 in. long, squarrosely bipinnate panicle; common peduncle none or scarcely .5 in. long; bracts minute, triangular; branch peduncles .7 to 1 in. long, minutely ferruginous-scaly as is the rachis; pedicels .2 to .3 in. long, slender; buds ovoid, conical; flowers waxy-white, pedicels and rachis pink. *Calyx-lobes* orbicular, .1 in. broad, ciliate, with scarious margins, much overlapping; glandular dots very few, scattered. *Corolla-lobes* shortly connate, ovate, acute, much twisted, .15 in. long; margins thin, denticulate; glands few, large and brown. *Stamens* about two-thirds the length of the corolla-lobes; anthers ovate-acute, .1 in. long, a few large black glands on the back. *Ovary* ovoid, glabrous; style subulate, .15 in. long. *Berry* bright red at first afterwards black, globose, shining, .2 in. in diam., smooth, faintly striate. *Scheff. Myrs.* 84; *Koord. & Val. Bijdr.* V. 268; *Mez Monog. Myrs.* 121.

PERAK: *King's Collector* 771, 5639, 10836.—DISTRIB. Sumatra, *Beccari* 325, 724; *Forbes* 2083 &c.; Java.

20. *ARDISIA LANCEOLATA*, Roxb. Hort. Beng. 85 (1814), Fl. Ind. I. 583, and Fl. Ind. ed. Carey & Wall. II. 275. A large glabrous shrub or small tree, reaching 15 to 25 feet in height; branches cylindric, pale, smooth; branchlets sometimes fugaciously ferruginous-scaly. *Leaves* coriaceous; elliptic-oblong or -obovate, shortly acuminate at apex, long-cuneate at base; entire or sometimes slightly crenate near the apex; glabrous on both surfaces; glandular dots large scattered, more numerous near the margins; 6 to 11 in. long, 2 to 3.5 in. broad; midrib prominent beneath, impressed above; main-nerves 12 to 15 pairs, oblique, starting at an angle of about 50° with the midrib, and at first more or less parallel, then arching upwards to join in an irregular intramarginal nerve; secondary nerves similar but shorter, reticulations scarcely prominent,

irregular; petiole .5 to .7 in. long, winged by the decurrent blade, the wings overlapping. *Inflorescence* a spreading, terminal or sometimes sub-axillary, panicle, 4 to 6 in. long; rachis flexuose, angular or flattened; branches stout, flattened, swollen at base, bearing corymbose racemes of about 7-8 flowers; pedicels .6 to 1 in. long, stout, narrowly clavate, striate, minutely ferruginous-pubescent; bracteoles small, obtuse, deciduous. *Calyx-lobes* orbicular, .2 in. in diam., enlarged and spreading in fruit, glabrous or slightly pubescent; margins scarious and fimbriate-ciliate, base thickened; glandular dots many, prominent; tube short. *Corolla* ovate acuminate, pink, much twisted in bud, .35 in. long, of which one-third tube; lobes unequal in size, oblique, dots not prominent. *Stamens* large, shorter than corolla-lobes; anthers ovate acute, dehiscing longitudinally, back with few large usually oblong prominent black glands. *Ovary* globose; style .1 to .2 in. long, subulate, twisted. *Berry* globose, depressed, smooth, .25 to .3 in. in diam., black when dry. Wall. Cat. 2292; A. DC. Prod. VIII. 126; Miq. Fl. Ind. Bat. II. 1025; Clarke in Hook. f. Fl. Br. Ind. III. 519; Mez Monog. Myrs. 122. *A. speciosa*, Bl. Bijdr. 684; A. DC. l.c. 133; Miq. in Pl. Jungh. I. 197 and Fl. Ind. Bat. II. 1022; Scheff. Myrs. 88; Mez Monog. Myrs. 123. *A. purpurea*, Reinw.; Bl. Bijdr. 684; A. DC. l.c. 129; Miq. in Pl. Jungh. I. 197 and Fl. Ind. Bat. 1026; Scheff. Myrs. 88; Koord. & Val. Bijdr. V. 265. *A. Hasseltii*, Blume; Scheff. Myrs. 86; Mez Monog. Myrs. 123. *A. mucronata*, Bl. Bijdr. 685; A. DC. l.c. 126; Scheff. Myrs. 83; Koord. & Val. Bijdr. V. 269; Mez Monog. Myrs. 123. *A. Leschenaultii*, DC. l.c. 133; Miq. Pl. Jungh. I. 197 and Fl. Ind. Bat. II. 1022; Scheff. Myrs. 89. *A. plagioneura*, Scheff. Myrs. 85; Koord. & Val. Bijdr. V. 268.

PENANG: *Roxburgh*; *Curtis* 2755. PERAK: *Seortechini* 1824; *Wray* 192, 1401, 2480, 2863, 3659; *King's Collector* 2954, 3200, 4528, 4785, 6586, 6785, 8730, 10049. MALACCA: *Griffith* (K.D.) 3569, 3579; *Derry* 512, 1117. JOHORE: *Lake & Kelsall* 4033. SINGAPORE: *Major McNair*; *Cantley* 133; *Ridley* 6136, 6436.—DISTRIB. Java, Sumatra, Borneo, Celebes.

21. *ARDISIA LITTORALIS*, Andr. Repos. X. t. 630 (1811). A glabrous shrub of succulent character, reaching 8 to 10 feet in height; branches thick, rounded; buds lanceolate. *Leaves* succulent-coriaceous; obovate or oblong-obovate, rounded or bluntly acute or almost lanceolate at apex, cuneate at base; entire; glandular dots many, scattered, inconspicuous; 2 to 5 in. long, 1 to 2.5 in. broad; midrib prominent; main-nerves invisible in the fresh plant, obscure when dry, irregular, 13 to 18 pairs, at an angle of about 60° with the midrib, curved upwards to and along the margin; secondary nerves similar, slender, reticulations

obscure; petiole .3 in. long, thick, winged by the decurrent margins of the blade, which are often erose or wrinkled. *Inflorescence* of axillary umbellate racemes of about 8 flowers each, racemes shorter than the leaves, about 2 in. long; common peduncle about 1 in. long, usually recurved; pedicels .3 in. long, enlarged in fruit to .5 in. and then clavate thickened; bracteoles oblong, obtuse, deciduous; flowers rose-coloured, buds conica .4 in. long. *Calyx-lobes* orbicular, .1 in. in diam., ciliate, edges somewhat scarious, elsewhere thickly dotted with black glands, tube rather longer than lobes. *Corolla-lobes* ovate acuminate, oblique, unequal, lineolate and much gland-dotted, .3 in. long; tube short. *Stamens* nearly as long as corolla-lobes; anthers ovate, acute, united in a cone, opening longitudinally and obscurely septate in the cells; filaments short, on broad bases confluent into a ring adherent to the corolla-lobes. *Ovary* sub-globose, ending in a subulate style .3 in. long. *Berry* globose, depressed, .2 in. in diam., smooth, bright red, turning purplish-black when ripe; black glands many, small. Kurz For. Fl. II. 110 and Journ. As. Soc. Beng. XLVI. II. 226. *A. obovata*, Bl. Bijdr. 688; DC. Prod. VIII. 132. *A. humilis*, Clarke in Hook. f. Fl. Br. Ind. III. 529 (not of Vahl. and in part only); Mez Monog. Myrs. 127, fig. 20, A-E. *A. umbellata*, Roxb. Hort. Beng. 16; Fl. Ind. I. 582; Fl. Ind. ed. Carey & Wall. II. 273; Lodd. Bot. Cat. t. 531. *A. solanacea*, Wall. Cat. 2283A (part), 2283D (not of Roxb.). *A. polycephala*, Wight Ill. Ind. Bot. t. 145 (not of Wall.). *Climacandra obovata*, Miq. Pl. Jungh. I. 199, Fl. Ind. Bat. II. 1030; Scheff. Myrs. 05; Koord & Val. Bijdr. V. 271. *C. littoralis*, Kurz in Journ. As. Soc. Beng. XL. II. 68.

PENANG: Curtis 217; Phillips. PERAK: Wray 1866, 2373; *Scortechini* 1053; King's Collector 4960. MALACCA: Griffith; Maingay (K.D.) 1010; Hervey. KELANTAN: Ridley. PAHANG: Ridley 1638. SINGAPORE: Hullett 331, 649; Cantley 153.—DISTRIB. Malay Islands and eastwards to South China and the Philippines; westwards to Ceylon (C.P. 1803) and Travancore (Wight 1767).

Climacandra multiflora, Miq., and *C. salicifolia*, Miq., are probably only varieties of this species, which seems to be a coast shrub only.

22. *ARDISIA KUNSTLERI*, King & Gamble, n. sp. A shrub or small tree, usually 6 to 10 feet high, rising sometimes to 20 feet, and with a stem about 2 to 3 in. in diam.; branchlets thick, dark brown, uppermost and innovations rusty-pubescent; leaf-buds lanceolate. *Leaves* coriaceous-chartaceous; elliptic, or elliptic-oblong, shortly acuminate at apex, cuneate at base; minutely pubescent or scaly on both surfaces, afterwards glabrate; entire or obscurely undulate-crenate on the margins

which are somewhat reflexed; glandular dots many, prominent in the areolations of the leaves and along the margins; 8 to 15 in. long, 2·5 to 5 in. broad; midrib slender; main-nerves 20 to 24 pairs, irregularly spaced, starting at an angle of about 65° with the midrib, at first straight then curving upwards to and along the margin where they anastomose; secondary nerves usually one between each pair of main-nerves, reticulations oblique, all raised on the lower surface when dry; petiole 1 to 2·5 in. long, sometimes shorter, thick, channelled above by the decurrent margins of the blade, which are connivent. *Inflorescence* lateral or axillary, a ·5 to ·7 in. long corymbiform minutely pubescent raceme of about 18 to 22 flowers, on a thick flattened peduncle 2 to 4 in. long; bracts small, lanceolate, very early caducous; pedicels slender, clavate, ·7 to 1 in. long, curved upwards in flower downwards in fruit; buds ovoid, ·25 in. long. *Calyx-lobes* orbicular, ·1 in. long, margins scarious ciliate, covered with many black glandular dots; tube shorter than lobes, minutely pubescent without. *Corolla-lobes* dark blue without, pink within, ovate, acute, ·2 in. long, minutely ciliate, prominently dotted, tube ·05 in. long. *Stamens* shorter than corolla-lobes; filaments very short; anthers ovate acuminate, the connective studded on the back with prominent black glands in 2 rows. *Ovary* ovoid, glabrous; style slender, ·15 in. long. *Berry* globose, blueish-black, ·3 in. in diam., faintly striate when dry.

PERAK: *King's Collector* 2207, 2970, 3060, 3264, 4071, 4110, 6486; *Ridley* 9530.

This species is distinguished by its large elliptic leaves, comparatively small flowers, and large fruits, but comes in some respects near to *A. oxyphylla* and in others to *A. solanacea*, and to *A. polycephala*, Wall.

23. *ARDISIA SOLANACEA*, Roxb. Cor. Pl. 27. t. 27 (1795), Hort. Beng. 16, Fl. Ind. I. 580, and Fl. Ind. ed. Carey & Wall. II. 269. A large shrub, reaching 6 to 8 feet in height; bark ash-coloured, branches stout, glabrous, grey, somewhat angular, buds lanceolate. *Leaves* coriaceous; oblong or elliptic-oblong, acuminate at apex, cuneate at base, glabrous, entire; glandular dots many scattered in the areolations of the nerves and especially near the margin; 6 to 10 in. long, 2 to 3·5 in. broad; midrib slender, somewhat impressed above; main-nerves 12 to 20 pairs, unequally spaced, leaving the midrib at an angle of about 60°, at first straight but soon curving upwards to and along the margin and then anastomosing; secondary nerves many, rather prominent as are the reticulations; petiole stout, ·5 to ·8 in. long, channelled above by the decurrent and often connivent margins of the blade. *Inflorescence* of pedunculate corymbiform racemes, bearing 10 to 16 flowers, from the

axils of the upper leaves or of the scars of fallen leaves, 2 to 4 in. long; peduncle 1 to 2·5 in. long, stout, flattened above as is the very short rachis of the raceme; bracteoles concave, thin, prominently gland-dotted; pedicels ·7 to 1 in. long, more or less clavate, slender at first, thicker in fruit; buds conical, ·4 in. long. *Calyx-lobes* orbicular, ciliate, scarious on the margins, ·15 to ·2 in. long, prominently black-gland-dotted; tube nearly equal to lobes. *Corolla-lobes* pink, ovate, rounded, ·3 to ·35 in. long, prominently gland-dotted, minutely ciliate on the margins, otherwise glabrous; tube extremely short. *Stamens* about two-thirds the length of the corolla-lobes; filaments short, stout, conical; anthers ovate-sagittate, ·2 in. long, acute, apiculate, the back of the connective studded with prominent large black glands in a double row. *Ovary* ovoid, glabrous; style slender, ·25 in. long. *Berry* globose, dark blue or black, ·3 in. in diam. Willd. Sp. Pl. I. 1063; Bot. Mag. t. 1677; Wall. Cat. 2283 A-K; Mez Monog. Myrs. 132, fig. 20 F-K; Cooke Bomb. Fl. II. 86. *A. humilis*, A. DC. in Trans. Linn. Soc. XVII. 118 (*not of* Vahl); Wight Ic. t. 1212; Dalz. & Gibs. Bomb. Pl. 137; Clarke in Hook. f. Fl. Br. Ind. III. 529 (*in part*); Brandis For. Fl. 287; Kurz in Journ. As. Soc. XLVI. II. 226, and For. Fl. II. 100; Prain Beng. Pl. 645. *A. elliptica*, Bedd. Fl. Sylv. p. CXXXVIII. (*not of* Thunb.).

PERAK: *Wray* 1900, 3000; *King's Collector* 6011.—DISTRIB. India, Burma.

VAR. *elata*, King & Gamble. A small tree reaching 25 to 35 feet in height, and 6 to 8 in. in diam. *Leaves* thinner, oblong-lanceolate; main-nerves less prominent than in the type. *Inflorescence* with rather longer stouter peduncles and more numerous flowers. *Berry* slightly larger.

PERAK: *Scortechini* 679; *King's Collector* 4717, 5770.

This variety is scarcely worthy of being classed as such, but, at any rate in the herbarium, the specimens are easily separable.

24. *ARDISIA LURIDA*, Blume Bijdr. 687 (1826). A large shrub, reaching 20 feet in height and 3 to 4 in. in diam. of stem; branchlets thick, glabrous, as are the lanceolate acuminate leaf-buds. *Leaves* entire, coriaceous; lanceolate- or sub-obovate-oblong, shortly acuminate at apex, gradually cuneate at base; glabrous and dark green above, pale and ferruginous-brown beneath; glands many, regularly scattered in the areoles of the net venation; 5 to 10 in. long, 1·5 to 2·5 in. broad; midrib prominent; main-nerves 16 to 20 pairs, slender, irregular, starting at about 60° with the midrib, parallel at first and then arched up to and along the margin where they meet; secondary nerves similar, reticulations obscure; petiole ·4 to ·7 in. long, winged by the decurrent edges of the blade, the

wings connivent above when dry. *Inflorescence* a short (2 to 3 in. long), axillary, few-flowered, sub-umbellate, minutely ferruginous-pubescent, peduncled raceme; peduncles 1 to 1.5 in. long, flattened; pedicels .4 to .6 in. in flower, longer in fruit and then clavate; flowers large, waxy, pinkish-white; buds rounded, .4 to .5 in. long. *Calyx-lobes* ovate-orbicular, emarginate, scarious and ciliate at the edges, puberulous outside, .2 in. in diam., glandular dots conspicuous, of various sizes, black and brown mixed; tube short. *Corolla-lobes* ovate, obtuse, oblique, concave and keeled, .4 in. long, .2 in. broad, glandular dots and lineoles prominent, tube very short. *Stamens* two-thirds as long as petals; anthers hastate, mucronate, opening by longitudinal slits, prominently dotted on the back with large black glands. *Ovary* rounded, ending in a short subulate style. *Berry* globose, apiculate, .4 in. in diam., smooth, gland-dotted. A. DC. Prod. VIII. 130; Miq. Fl. Ind. Bat. II. 1019; Scheff. Myrs. 71; Koord. & Val. Bijdr. V. 245; Mez Monog. Myrs. 130.

PERAK: *Ridley* 7172, 10319.—DISTRIB. Java.

25. *ARDISIA OXYPHYLLA*, Wall. Cat. 2291 (1829). A shrub; branchlets rounded, smooth; buds narrowly lanceolate, glabrous. *Leaves* chartaceous; elliptic, acute or shortly acuminate at apex, acutely narrowed at base, entire; glabrous above, glabrous beneath except for a few minute scales; glandular dots many, especially near the margin; 3 to 7 in. long, 1 to 2.5 in. broad; midrib slender, prominent; main-nerves about 16 pairs, irregular, usually at about an angle of 60° with the midrib, more or less parallel at first, then arching nearly to the margin; secondary nerves slender, like the main-nerves, reticulations irregular; petiole .4 to .7 in. long, winged by the decurrent margins of the blade. *Inflorescence* an axillary, long-peduncled, short, few-flowered (5 to 8) subumbellate raceme, about 2 to 4 in. long; peduncles 1 to 2 in. long, angular when dry; pedicels .4 in. long, .7 in. in fruit, slender; buds rounded, .3 in. long. *Calyx-lobes* ovate-rotundate, obtuse, .1 in. in diam., ciliate on the scarious edges, prominently dotted with numerous black and brown glands; tube short. *Corolla-lobes* broadly ovate, sub-acute or obtuse, oblique, .25 to .3 in. long, prominently dotted with many black or brown round glands and fewer elongate lineolate ones. *Stamens* nearly as long as corolla-lobes, almost quite sessile; anthers sagittate, long-acute, the connective prominently marked on the back with large black conspicuous glands. *Ovary* rounded, ending in a short .15 in. long style, glabrous. *Berry* globose, .3 in. in diam., fleshy, smooth. A. DC. in Trans. Linn. Soc. XVII. 120, Prod. VIII. 130; Clarke in Hook. f. Fl. Br. Ind. III. 528 *variety excepted*; Stapf in Trans. Linn. Soc. Ser. 2. IV. 204; Mez Monog. Myrs. 131.

PENANG: *Wallich* 2291; *Curtis* 668; *Ridley* 7093. PERAK: *King's Collector* 5624, 5913, 5929, 6185, 8218, 10504. PROVINCE WELLESLEY: *Ridley* 6953.—DISTRIB. Andamans or Tenasserim, *Helfer* (K.D.) 3571, 3585; Borneo.

26. *ARDISIA SCORTECHINII*, King & Gamble, n. sp. A tree reaching 40 to 50 feet in height and 8 to 12 in. in diam.; branchlets round, dark brown, lenticellate, leaf-buds acuminate. *Leaves* entire, coriaceous; obovate, acute at apex, cuneate at base; glabrous, margins incurved; glandular dots many, obscure; 5 to 7 in. long, 1.5 to 2 in. broad; midrib prominent slender; main-nerves 14 to 16 pairs, very oblique, at about 30° to the midrib, curved upwards and joining parallel to the margin; secondary nerves similar but more slender, reticulations curved, surrounding the dots; petiole .4 in., rather broadly edged by the decurrent margins of the blade, which are nearly connivent above; stipules leafy, more or less persistent. *Inflorescence* 2 in. long, of short axillary peduncled, umbellate racemes 8–12-flowered, in the axils of short leafy bracts; peduncles thick, about 1 in. long, flattened; pedicels .5 in., thickened and longer in fruit; bracteoles ovate, acute, boat-shaped, deflexed, persistent; flowers reddish-pink. *Calyx-lobes* orbicular, obtuse, .2 to .25 in. long, emarginate, ciliate, scarious on the edges, with many parallel veins and many prominent round or oblong mixed black and brown glandular dots; tube short. *Corolla-lobes* ovate, acute, oblique, .35 in. long, unequal, with very few dots, some round some lineolate, tube very short. *Stamens* shorter than corolla-lobes; anthers long acuminate, villous on the connective on both sides, back marked with large black glands; filaments short, very thick. *Ovary* ovoid, surmounted by the conical, subulate, .2 in. long, glabrous style. *Berry* globose, smooth, .3 in. in diam., bluish black.

PERAK: *Scortechini*; *King's Collector* 4662, 4672—on rich soil, in dense jungle, up to 800 feet.

27. *ARDISIA PENDULA*, Mez Monog. Myrs. 125 (1901). Apparently a shrub; branchlets thick, glabrous below, ferruginous-pubescent at the extremities, leaf-buds lanceolate, ferruginous-pubescent. *Leaves* chartaceous; elliptic lanceolate, long acute at apex, cuneate at base; entire but sometimes very faintly crenate near the apex; glabrous above, glabrous or slightly ferruginous-pubescent beneath; glandular dots scattered, more numerous and prominent near the margins; 4 to 7 in. long, 1.5 to 2 in. broad; midrib slender; main-nerves 10 to 12 pairs, irregular, starting from the midrib at about an angle of 60°, then arching upwards and joining near the margin; secondary nerves slender, minor nerves reticulate; petiole .3 to .5 in. long, winged by the decurrent edges of the blade. *Inflorescence* of 3 to 5 in. long axillary peduncled ferruginous-

pubescent racemes; peduncles about 2 in., pedicels .4 to .5 in. long, curved. *Calyx-lobes* ovate, rounded, with many glandular dots, .1 in. long; tube short. *Corolla-lobes* ovate-elliptic, rounded, much gland-dotted. *Stamens* shorter than the petals; anthers acute, dotted on the back; filaments very short. *Ovary* ovoid, glabrous. *Berry* globose, black when dry, .25 in. in diam., much gland-dotted. *A. attenuata*, Miq. Fl. Ind. Bat. II. 1020 and Suppl. I. 575 (not of Wall.); Scheff. Myrs. 68. *A. reclinata*, Blume; Scheff. l.c.

MALACCA: *Goodenough* 1295.—DISTRIB. Java, Sumatra. A poor specimen only available.

28. *ARDISIA HULLETTII*, Mez Monog. Myrs. 130 (1901). Apparently a shrub; branchlets light brown, round, smooth; leaf-buds lanceolate, glabrous, black. *Leaves* membranous; oblong-lanceolate, acuminate at apex, acuminately narrowed at base; entire, glabrous on both surfaces; glands light-brown, large, in the areoles of beautifully netted venation; 4 to 7 in. long, 1.5 to 2 in. broad; midrib slender; impressed above; main-nerves many, slender, irregular, 20 to 24 pairs, parallel at first and then arching upwards and joining in a narrow intramarginal ring; secondary nerves many, like the main-nerves, reticulations numerous; petiole .4 in. long, slender, only very narrowly winged. *Inflorescence* an axillary, short, few- (1-5) flowered, glabrous, umbellate raceme, peduncle .5 to .7 in. long; pedicels .5 in. long, recurved, more or less clavate; buds conical, .3 to .4 in. long. *Calyx-lobes* scarcely overlapping, ovate-orbicular, ciliate, .1 to .15 in. long, minutely gland-dotted; tube short. *Corolla-lobes* ovate-acuminate, upper edges incurved, oblique, unequal, many-nerved, sparsely black-gland-dotted; tube very short. *Stamens* a little shorter than the corolla-lobes; anthers oblong, mucronate, with 2 lines of prominent black glands on the back; filaments short, spreading at base. *Ovary* ovoid, thick, glabrous; style short, subulate. *Berry* brown, smooth, globose, .2 in. in diam., seed white-ringed at base.

MALACCA: on Mount Ophir, *Hullett* 769, 778.

29. *ARDISIA OBLONGIFOLIA*, King & Gamble, n. sp. A shrub; branchlets brown, glabrous, with faint decurrent raised lines from either side of the insertion of the leaf-petioles; leaf-buds lanceolate acuminate. *Leaves* chartaceous; oblong, acute at apex, cuneate at base; glabrous, entire; glandular dots scattered but not prominent except near the margins which are reflexed; 7 to 10 in. long, 2 to 2.5 in. broad; midrib prominent, impressed above; main-nerves 22 to 26 pairs, starting at an angle of nearly 80° from the midrib, at first straight and near the margin curving upwards to and along it; secondary nerves many, usually at least 1 to 2 between each pair of main-nerves, reticulations in an elegant network;

petiole rather slender, .8 to 1 in. long, bordered above by the decurrent margins of the blade. *Inflorescence* an axillary corymbose raceme of about 8 flowers and about .5 in. long on a 1.5 to 2 in. long flattened peduncle; pedicels .75 in. long, clavate. *Calyx-lobes* orbicular, ciliate, gland-dotted, about .1 in. long; tube as long; rest of flowers unknown. *Berry* globose, .2 in. long, glandular-dotted.

PERAK: at 1,000 feet, *Wray* 3797.

30. *ARDISIA TETRASEPALA*, King & Gamble, n. sp. A shrub; branchlets slender, pale brown, with indistinct raised lines from the sides of the leaf-petioles, sinuate, slightly scaly above. *Leaves* chartaceous; elliptic or elliptic-ovate, gradually acuminate at apex, rounded at base; glabrous above, pale brown when dry, very slightly pubescent on and near the midrib beneath; glandular dots many scattered, prominently raised on the upper surface, margins slightly recurved; 4.5 to 6.5 in. long, 1.5 to 2.5 in. broad; midrib prominent below; main-nerves about 16 to 20, irregularly spaced, starting at an angle of 60° from the midrib, curved upwards, dividing and anastomosing with the secondary nerves in a marginal network, all raised beneath; petiole .2 to .3 in. long, channelled above. *Inflorescence* a pseudo-terminal subumbellate 8-12-flowered scarcely .2 in. long raceme in the axil of the uppermost leaf; peduncle about .5 in. long, pedicels slender, about .5 in. long. *Calyx-lobes* 4, ovate-orbicular, ciliate, gland-dotted, about .1 in. long, reflexed in fruit: rest of flower unknown. *Berry* globose, .25 in. in diam., black when dry and prominently dotted with oblong glands.

JOHORE: at Jaffaria and Gunong Palai, 1,500 feet, *G. King*.

We place this species in *TINUS* instead of in *TINOPSIS* because not only does the inflorescence seem to be only apparently terminal but its sub-umbellately racemose character seems to approximate more nearly to that of the former section.

31. *ARDISIA BIFLORA*, King & Gamble, n. sp. A small shrub, 4 to 8 feet high; branches smooth, pale brown; branchlets divaricate, slender. *Leaves* chartaceous; oblong-lanceolate, acuminate at both apex and base; glabrous; entire or very faintly crenulate; glandular dots many, black, large, in the areoles of the reticulations; 3 to 5 in. long, .75 to 1.5 in. broad; midrib slender; main-nerves 12 to 14 pairs, at an angle of about 55° with the midrib, curving upwards to and along the margin where they meet in a wavy intramarginal nerve; secondary nerves many, reticulations irregular; petiole slender, .2 to .5 in. long, sometimes longer. *Inflorescence* a lateral, 2-flowered, pedunculate umbel, 1.5 in. long; peduncle and pedicels each .75 in. long, slender. *Calyx-lobes* ovate, scarious and ciliate on the margins, prominently gland-dotted, .05 in. long; tube as long; rest of flower unknown. *Berry*

black, globose, .25 in. in diam., ribbed and prominently gland-dotted.

PERAK: in dense jungle on limestone hills at 300 to 800 feet, *King's Collector* 4296, 4711; *Wray* 3343. It is very near *A. paupera*, Mez, of Sumatra, but the long slender peduncle and pedicels distinguish it.

A specimen collected by Scortechini (without number) has similar leaves, but the inflorescence is pseudo-terminal and branched, with more than 2 flowers and very short pedicels.

Ridley's No. 2670 from Pahang seems to be *Ardisia rhyncophylla*, Clarke, but the specimen is imperfect, and we hesitate to describe it as a Malay plant.

32. *ARDISIA TAHANICA*, King & Gamble, n. sp. A shrub (?); branchlets brown, shining, somewhat flattened; innovations scaly and hirsute, leaf-buds ferruginous-pubescent, lanceolate. *Leaves* chartaceous; linear-lanceolate, acuminate at both ends; glabrous above, scaly beneath and slightly pubescent along the midrib; margins entire, recurved; glandular dots numerous, scattered, conspicuous on the under surface; 4 to 6 in. long, .7 to .9 in. broad; midrib slender; main-nerves obscure, about 12 pairs, starting at a very oblique angle and curving upwards to and along the margin; secondary nerves similar, reticulations obscure; petiole slender, .4 to .6 in. long. *Inflorescence* an umbellate peduncled raceme, 1.5 to 2 in. long, from the axils of some of the upper leaves; peduncle slender, .7 to 1.2 in. long; flowers about 5-8, pedicels slender, .5 in. long. *Calyx-lobes* semi-orbicular, scarious and ciliate on the margins, rusty-pubescent on the back and with many glandular dots, .05 in. long; tube as long as lobes: rest of flower not seen. *Berry* globose, depressed, .2 in. in diam., prominently striate.

PAHANG: *Ridley* 2669, in Tahan woods.

Goodenough No. 10552, from Selangor, is also possibly the same species, but the leaves reach 1.5 in. in breadth and the peduncle and pedicels are stouter.

33. *ARDISIA VILLOSA*, Roxb. Hort. Beng. 85 (1814), Fl. Ind. I. 582, and Fl. Ind. ed. Carey & Wall. II. 274. A small shrub, reaching 6 to 8 feet in height; branchlets rounded, from nearly glabrous to densely ferruginous-pilose, the hairs moniliform. *Leaves* chartaceous; oblong-lanceolate or lanceolate, acute or acuminate at apex, cuneate at base; more or less distinctly but shallowly crenate, the crenations broad, margins recurved; glabrous to minutely rusty-hirsute above, densely red-villous beneath, especially on the nerves; glandular dots many, black, prominent; 4 to 8 in. long, .75 to 2.5 in. broad; midrib prominent; main-nerves 8 to 12 pairs, very irregular, slender, obscure, arching upwards and ending in the crenature-glands; secondary nerves similar, meeting the main-nerves, reticulations faint; petiole .4 to .8 in.

long, rusty-villous. *Inflorescence* a sessile or short-peduncled, more or less rusty-villous, umbellate raceme at the end of the main branchlets or at the ends of long-peduncled axillary 2-leaved branchlets; bracts ovate-lanceolate, .1 to .2 in. long, deciduous; pedicels .3 to .4 in. long, secund; buds conical. *Calyx-lobes* pink, linear-oblong or lingulate, obtuse or slightly acute, .25 to .3 in. long, .075 in. broad, glabrous to thickly rusty-villous, apex often recurved, glandular lines and dots scattered; tube exceedingly short. *Corolla-lobes* pale pink, ovate-acute or -acuminate, .25 to .3 in. long, prominently dotted with round or oblong glands, much twisted in bud; tube short. *Stamens* shorter than the petals, .2 in. long; anthers ovate, acuminate, dehiscent by wide pores in the upper half; filaments very short. *Ovary* globose, crowned by a slender .2 in. long style, the base of the style and top of ovary minutely pubescent. *Berry* globose, .25 in. in diam., bright red, sparingly pubescent. A. DC. Prod. VIII. 136; Wall. Cat. 2280A; Miq. Pl. Jungh. 191, Fl. Ind. Bat. II. 1017; Scheff. Myrs. 90; Kurz in Journ. As. Soc. Beng. XLVI. ii. 227 and For. Fl. II. 113; Clarke in Hook. f. Fl. Br. Ind. III. 525 *var. excepted*; Koord. & Val. Bijdr. V. 253. *A. vestita*, Wall. in Roxb. Fl. Ind. ed. Carey & Wall. II. 274; A. DC. l.c.; Miq. l.c.; Mez Monog. Myrs. 141. *A. mollis*, Bl. Bijdr. 689. *A. tavoyana*, A. DC. in Trans. Linn. Soc. XVII. 125.

PENANG: *Maingay* (K.D.) 1011; *Ridley* 9357; *Curtis* 1597. PERAK: *Scortechini* 638; *Wray* 151, 862, 2967, 3149; *King's Collector* 1819, 3138, 6104, 6448, 7915, 10052. PAHANG: *Ridley* 2176. SELANGOR: *Ridley* 1558; *Curtis*. MALACCA: *Griffith* (K.D.) 3588; *Hervey*; *Ridley*; *Cuming* 2390. SINGAPORE: *Ridley*, 2833, 2816.—
DISTRIB. Burma, Sumatra, Java, Borneo, and eastwards to Tonkin and Hainan.

VAR. *glabrata*, Kurz l.c. *Leaves*, at least when full grown, glabrous. *Calyx* glabrous or nearly so. Stapf in Trans. Linn. Soc. Ser. 2, IV. 204. *A. glabrata*, Bl. Bijdr. 692; A. DC. Prod. VIII. 136; Miq. Fl. Ind. Bat. II. 1022.

PERAK: *Ridley* 2899; *Wray* 2801, 3414; *King's Collector* 949, 4612, 6188, 6255, 7696; *Scortechini* 315. — DISTRIB. Java, Sumatra, Borneo.

Ridley's 5510 from Kedah seems to be a form of this with smaller leaves and shorter calyx-lobes, but can hardly be separated as a second variety.

34. *ARDISIA VIRENS*, Kurz For. Fl. II. 575 (1877), and Journ. As. Soc. Beng. XLVI. ii. 226. A small glabrous shrub; branchlets slender, pale, somewhat compressed and twisted. *Leaves* membranous, oblong or oblong-lanceolate, acuminate at apex, cuneate at base; faintly

crisped-crenulate with large glands in the crenulations; pale and glabrous on both surfaces; glandular dots scattered, in the areoles of the reticulations; 4 to 6 in. long, 1·5 to 2 in. broad; midrib prominent, somewhat impressed above; main-nerves about 12 to 14 pairs, irregular and irregularly spaced, usually starting at an angle of about 60° with the midrib, at first straight, branching and joining in an intramarginal nerve close to the margin and passing through the crenature glands; secondary nerves many, slender, reticulations many, curved; petiole ·4 to ·6 in. long, winged by the decurrent margins of the blade. *Inflorescence* an almost sessile terminal corymb, composed of long-peduncled sub-umbellate racemes; peduncles 1 to 1·5 in.; pedicels ·5 to ·8 in. long; buds conical ·25 in. long. *Calyx-lobes* oblong, obtuse, thin, ·075 in. long, conspicuously dark-brown-gland-dotted; tube short. *Corolla-lobes* ovate, bluntly acuminate, oblique, unequal, conspicuously marked by few dark brown lines and dots, ·3 in. long; tube very short. *Stamens* shorter than corolla-lobes, ·2 in. long, obtusely hastate; anthers opening by broad longitudinal slits, conspicuously black-gland-dotted on back; filaments short. *Ovary* rounded, style slender, ·2 in. long. *Berry* globose, pale, somewhat depressed, ·3 to ·4 in. in diam., conspicuously marked with round or oblong purple dots, somewhat fleshy. Clarke in Hook. f. Fl. Br. Ind. III. 524; Stapf in Trans. Linn. Soc. Ser. 2, IV. 203; Mez Monog. Myrs. 147.

PERAK: *Wray* 1444 at 2,000 feet.—DISTRIB. Assam, Cachar, Manipur, Yunnan, Borneo.

35. *ARDISIA WRAYI*, King & Gamble, n. sp. A single-stemmed treelet or shrub reaching 5 feet in height, but usually smaller; upper part of stem ·25 in. thick, brown, with spongy bark and scurfy scales; leaf-buds glabrous, lanceolate-acuminate. *Leaves* membranous; oblong-lanceolate, long acuminate at apex, long cuneate at base; margins recurved; somewhat scaly on both surfaces, scurfy along the midrib beneath; glandular dots prominent scattered; broadly crenate, the crenatures shallow with large glands; deep green above, red or purple beneath; 6 to 10 in. long, 1·5 to 3 in. broad; midrib slender; main-nerves 12 to 20 pairs, irregular in angle and distance, curving upwards to and along the margin where they or their branches end in the glands of the crenatures; secondary nerves few, reticulations many scarcely prominent; petiole ·7 to 1·3 in. long, somewhat flattened, bordered by the decurrent margins of the blade. *Inflorescence* of glabrous sub-umbellate racemes from the axils of the uppermost leaves, usually crowded so as to present almost the appearance of a terminal cluster; peduncles usually ·5 in. long, occasionally shorter but often longer, even up to 2 in., flattened; racemes very short, much marked by the scars of very

caducous bracteoles ; flowers 8 to 12 ; pedicels slender below, flattened above, twisted and curved, .3 to .4 in. long ; buds ovoid. *Calyx-lobes* ovate, acute, .1 in. long, prominently black-gland-dotted. *Corolla-lobes* waxy, reddish or purple, ovate, .15 to .2 in. long, sparsely gland-dotted. *Stamens* nearly as long as corolla-lobes ; filaments very short, thick ; anthers ovate, acute, connective much gland-dotted on back. *Ovary* rounded ; style short, slender, glabrous. *Berry* globose, red, rugose, .3 in. in diam., prominently gland-dotted when dry.

PERAK : *Wray* 438, 2795, 3280, 4051 ; *Scortechini* 418 ; *King's Collector* 1888, 3631, 6938, 7514, in dense jungle on rich soil, both in low-level localities and up to 4,000 feet in the mountains ; one specimen, rather more slender, thinner and more glabrous, from the top of rocks (K.C. 7514).

K.C. No. 6938 from mountains at 3,000 to 4,000 feet, has the main-nerves nearly at right angles to the midrib, while other specimens have it at 60° or even 45° ; these are, however, intermediate, and all that can be said is that the character is a variable one. The species seems to resemble the *A. macrocarpa*, Wall., of Northern India, in its habit of growth.

36. *ARDISIA MINOR*, King & Gamble, n. sp. Apparently a short (12 to 18 in. high) treelet or undershrub ; lower part of stem with side rootlets ; stem .2 to .25 in. thick, rusty-pubescent, dark brown. *Leaves* coriaceous ; elliptic, long caudate-acuminate at apex, attenuate or cuneate at base often unequally ; margins recurved, very shallowly crenate, the crenatures with large prominent glands ; glabrous on both surfaces but somewhat scaly ; 5 to 7 in. long, 2 to 2.5 in. broad ; midrib slender ; main-nerves about 15 pairs, starting at an angle of about 50° with the midrib, and thence straight to the margin where they or their branches end in the crenature glands ; secondary nerves similar to the main-nerves, reticulations oblique, all raised beneath when dry ; petiole thick, rugose, rusty-pubescent, .7 to 1 in. long, winged by the decurrent margins of the blade. *Inflorescence* of very short, rusty-pubescent, umbellate racemes of about 5 to 6 flowers from the axils of the uppermost leaves ; peduncle scarcely .2 in. long, thick ; racemes about .2 in. long ; bracteoles many, ovate or oblong, recurved ; pedicels thick, .3 to .4 in. long, flattened, recurved. *Calyx-lobes* ovate acute, .1 to .15 in. broad, glabrous, prominently gland-dotted, nearly free. *Corolla-lobes* ovate acute, .2 in. long, glabrous, dotted prominently with large black glands. *Stamens* shorter than corolla-lobes ; filaments very short, thick ; anthers oblong acuminate, the connective gland-dotted at the back, .1 in. long. *Ovary* rounded, glabrous ; style .1 in. long, subulate. *Berry* not known.

PERAK : *Scortechini*.

Very near *A. Wrayi*, but differs especially in the coriaceous leaves and the shorter and much thicker pedicels.

37. *ARDISIA PERAKENSIS*, King & Gamble, n. sp. A small bush ; branchlets pale brown, smooth, wrinkled when dry ; innovations densely rusty-glandular-pubescent. *Leaves* membranous ; elliptic-lanceolate, long acute both at apex and base ; nearly glabrous on both surfaces but with small peltate scales, young leaves rusty-glandular-pubescent ; margin slightly recurved, shortly and shallowly crenate or nearly dentate except on the lower third and at the apex, glands in the crenatures present, obscure ; glandular dots absent or very sparse ; 2·5 to 4 in. long, ·75 to 1·25 in. broad ; midrib slender ; main-nerves about 16 pairs, rather irregular in angle and distance, meeting near the margin in an irregularly looped intramarginal nerve, reticulations many, transverse, all raised on lower surface ; petiole slender, ·2 to ·4 in. long, bordered by the decurrent margins of the blade. *Inflorescence* of small, 2-3-flowered, rusty-glandular, pubescent, pedunculate umbels from the axils of upper leaves or of reduced bract-like leaves ; peduncles ·3 in. long ; pedicels ·1 to ·2 in. long ; bracteoles ovate, minute ; buds ovoid, pale pink. *Calyx-lobes* triangular-ovate, acute, minutely pubescent and gland-dotted, ·05 in. long. *Corolla-lobes* ovate, acute, ·1 to ·15 in. long, glabrous, sparsely black-gland-dotted. *Stamens* a little shorter than corolla-lobes ; filaments almost none ; anthers ovate, acute, ·1 in. long. *Ovary* rounded, glabrous ; style subulate, ·075 in. long. *Berry* not known.

PERAK : at 300 feet in Upper Perak, *Wray* 3462.

38. *ARDISIA MEZIANA*, King & Gamble, n. sp. A herbaceous under-shrub, 1 to 2 feet in height, stem 2 in. in diam. ; bark soft, pale brown, upper parts and innovations rusty-glandular pubescent. *Leaves* chartaceous ; elliptic-obovate, shortly and abruptly acuminate at apex, cuneate at base ; glabrous above, sparsely glandular-pubescent beneath ; margins rather narrowly crenate-dentate except in the lower third to half and at the acumination, recurved, glands in the crenatures obscure ; glandular dots many, scattered, inconspicuous ; 3·5 to 5·5 in. long, 1·5 to 2 in. broad ; midrib slender ; main-nerves 10 to 14 pairs, at an angle of about 60° with the midrib, at first straight afterwards curved upwards to anastomose near the margin ; secondary nerves few, reticulations oblique, all more or less raised on both surfaces when dry ; petiole ·3 to ·5 in. long, somewhat thickened below, densely rusty-glandular-pubescent. *Inflorescence* of very short, sessile, rusty-glandular-pubescent racemes of about 6 flowers each, in the axils of the leaves all

down the stem, the racemes .1 to .15 in. long; bracteoles ovate, scarious, conspicuously black-gland-dotted and ciliate; pedicels short, .1 to .15 in. long, stout; buds ovoid; flowers waxy-white. *Calyx-lobes* 5, ovate, acute, ciliate, hyaline, with conspicuous black dots, .05 in. long; tube as long as lobes. *Corolla-lobes*, ovate, blunt, .1 in. long, conspicuously black-gland-dotted; tube very short. *Stamens* nearly as long as corolla-lobes; filaments short, thick; anthers ovate-lanceolate, long apiculate, the connective studded on the back with large black glands. *Ovary* rounded, style filiform as long as corolla. *Berry* not seen.

PERAK: on limestone rocks in open jungle at 500 to 800 feet, *King's Collector* 5838.

We have dedicated this well-marked species to C. Mez, whose Monograph of MYRSINÆ has done so much for the elucidation of the Natural Order, and whose study of *Ardisia* in particular has been of so much help to us.

39. *ARDISIA RIDLEYI*, King & Gamble, n. sp. A slender shrub or treelet, reaching 10 to 15 feet in height and about 1 in. in diam.; branchlets dark brown, slender, minutely ferruginous-pubescent; leaf-buds lanceolate, densely ferruginous-pubescent. *Leaves* membranous; oblong-lanceolate, long acuminate at apex, acuminate or somewhat rounded at base; prominently crenate, the crenatures usually regular, margin slightly recurved; glabrous on both surfaces; glandular dots few, scattered; 4 to 8 in. long, 1.25 to 1.75 in. broad; midrib slender; main-nerves about 12 pairs, at irregular angles and spaces, ending in the crenatures of the margin; secondary nerves and reticulations obscure; petiole .2 to .7 in. long, bordered by the decurrent margins of the blade. *Inflorescence* a 3-6-flowered, sessile, umbellate raceme in the axil of the uppermost leaf of the branchlets; raceme about .2 in. long; pedicels slender, .7 to 1.4 in. long, minutely rusty-pubescent; buds ovoid, acute. *Calyx-lobes* 5, broadly triangular, acute, .075 in. long, sparsely black-gland-dotted, rusty-pubescent. *Corolla-lobes* broadly ovate, acute, .15 in. long, glabrous, densely and closely black-gland-dotted. *Stamens* a little shorter than the corolla-lobes; filaments very short, thick; anthers oblong, hastate, mucronate, .1 in. long. *Ovary* rounded, glabrous, style slender, .05 in. long. *Berry* dark red, ovoid, apiculate, sparsely striate and gland-dotted, .25 to .3 in. in diam.

PERAK: in dense forest at 2,500 to 4,500 feet, *Wray* 209; *King's Collector* 5019. SELANGOR: *Ridley* 8534. SINGAPORE: *Ridley* 6434.

Very like *A. crenata* var. *angusta* but has broader and thinner leaves, differently nerved.

40. *ARDISIA CRENATA*, Roxb. Hort. Beng. 85 (1814), Fl. Ind. I. 583,

and Fl. Ind. ed. Carey & Wall. II. 276. An evergreen small glabrous shrub; branchlets thick, somewhat fleshy, striate with faint lines decurrent from the bases of the leaves; leaf-buds small, conical. *Leaves* chartaceo-coriaceous; lanceolate to oblong-lanceolate, acute or sub-obtuse at apex, acuminate narrowed at base; margins crispately crenate with glands in the crenatures, recurved; glabrous on both surfaces; glandular dots scattered in the areoles of minor nerves, sometimes prominent, often obscure; 2 to 4 in. long, .75 to 1.5 in. broad; midrib slender; main-nerves 10 to 14 pairs, irregular, slender, arching upwards and joining in an intramarginal nerve close to the margin which passes through the crenature glands; secondary nerves similar but fainter, reticulations curved; petiole .2 in. long, narrowly winged by the crisped edges of the decurrent blade. *Inflorescence* of short, sessile or shortly peduncled, paniced racemes, springing from the branchlets just below the terminal pair of leaves; pedicels .2 to .4 in. long, slender, longer and thicker in fruit, generally recurved; buds conical, .15 to .2 in. long; flowers 4- or 5-merous, waxy pink or white. *Calyx-lobes* ovate, .05 to .1 in. long, scarious at the edges, dotted with black glands in the middle; tube very short. *Corolla-lobes* rose-pink, ovate-oblong, bluntly acuminate, .2 in. long, oblique, unequal, sparsely dotted with round or elongated glands, sometimes papillose at the base within. *Stamens* shorter than corolla-lobes; anthers ovate-oblong, acute, with few glands on the back; filaments very short. *Ovary* ovoid, surmounted by a twisted subulate slender style .15 in. long. *Berry* globose, .25 in. in diam., scarlet, succulent, obscurely striate, crowned by the persistent style. Wall. Cat. 2262; Bot. Mag. t. 1950; Clarke in Hook. f. Fl. Br. Ind. III. 524; Koord. & Val. Bijdr. VI. 190. *A. glandulosa*, Bl. Bijdr. 690 (not of Roxb.). *A. crenulata*, Lodd. Bot. Cat. t. 2 (not of Vent.). *A. crispa*, A. DC. in Trans. Linn. Soc. XVII. 124 and Prod. VIII. 134; Scheff. Myrs. 72; Miq. Fl. Ind. Bat. II. 1020; Kurz in Journ. As. Soc. Beng. XLVI. ii. 226 and For. Fl. II. 113; Mez Monog. Myrs. 144, fig. 22. *A. densa* and *A. polysticta*, Miq. Fl. Ind. Bat. Suppl. 575, 576. *Bladhia crispa*, Thunb. Fl. Jap. 97; Kaempf. Ic. Pl. Jap. t. 7.

KEDAH: Ridley 5517. PENANG: Wallich 2262; Maingay (K.D.) 1009; Phillips; Curtis 337; Deschamps; G. King; J. Scott. MALACCA: Griffith (K.D.) 3583/1; Cuming 2254; Hullett 637; Derry 944. PERAK: Scortechini; Wray, 1257; King's Collector 1337, 4180, 4903, 7847 8706, 10566. SELANGOR: Ridley 10553. PAHANG: Ridley 24; Havi-land. JOHORE: Fox 11285.—DISTRIB. Assam, Burma, Sumatra, Java, Borneo, and eastwards to South China and Japan. Ridley (Trans. Linn. Soc. III. (1893) 317) says the berries are "sweet and eatable."

VAR. *angusta*, Clarke, l.c. *Leaves* narrowly lanceolate; flowers in a simple umbellate raceme, pedicels divaricate, buds obtuse.

MALACCA: *Griffith* (K.D.) 3584.

41. *ARDISIA ROSEA*, King & Gamble, n. sp. A small shrub reaching 4 to 6 feet in height; branchlets divaricate, purplish-brown when dry, glabrous; buds lanceolate. *Leaves* membranous; elliptic, cuspidately acuminate at apex, cuneate at base; broadly crenate with shallow crenatures and prominent glands, the margin recurved; glabrous on both surfaces; glandular dots extremely numerous, prominent on the under surface which is paler than the upper when dry; 2 to 4 in. long, 1 to 1.5 in. broad; midrib slender; main-nerves obscure, 8 to 12 pairs, irregular, branching and usually ending in the crenature-glands; secondary nerves and reticulations indistinct; petiole red, slender, .25 to .5 in. long, bordered by the decurrent crisped margins of the blade. *Inflorescence* a corymbiform terminal or pseudo-terminal panicle of umbellate racemes, the branches divaricate, minutely rusty-pubescent; common peduncle, above the last leaf, short, about .05 in.; branch peduncles slender, .5 to 1 in. long; pedicels slender, .2 to .4 in. long, up to .5 in. long in fruit, flattened in flower; flowers in each umbel about 12, usually recurved; buds ovoid, acute. *Calyx-lobes* 5, triangular-ovate, .05 in. long, glabrous, not glandular; tube as long as lobes, lobes reflexed in fruit. *Corolla-lobes* waxy-white tinged with pink, or pink only, ovate-acuminate, .2 in. long, much twisted to the left, not glandular. *Stamens* nearly as long as corolla-lobes; filaments slender, .05 in. long; anthers ovate, blunt, .1 in. long, with very few glands. *Ovary* rounded, glabrous; style filiform, .15 in. long. *Berry* black, globose, .25 in. in diam., smooth, tipped with the long slender persistent style.

PERAK: *Wray* 32, 402; *Scortechini* 295, 664; *Ridley* 5511, 9720; *King's Collector* 3247, 6247, 8057; in dense forests in the mountains from 3,000 feet elevation to the top of Gunung Batu at 6,700 feet.

42. *ARDISIA LONGEPEDUNCULATA*, King & Gamble, n. sp. A shrub; branchlets slender, rusty-pubescent, divaricate. *Leaves* membranous; oblong-lanceolate, long acuminate at apex, attenuate at base; crenulate with shallow glandular crenatures, margin recurved; glabrous on both surfaces, pale beneath when dry; glandular dots many, scattered, prominent on the under surface when dry; 4 to 6 in. long, 1.25 in. broad; midrib slender; main-nerves 12 to 16 pairs, curved upwards to and along the margin usually to end in the crenature-glands; secondary nerves and reticulations obscure; petiole slender, .5 in. long, bordered by the decurrent crisped margins of the blade. *Inflorescence* a terminal

pyramidal panicle of long-peduncled racemes, 5 to 6 in. long and 6 to 9 in. broad, branches and rachis all rusty-pubescent; common peduncle about 1 in. long; branch peduncles 2 to 3 in. long, at right angles to the rachis and curved upwards; racemes about .5 in. long, about 8-flowered; pedicels slender, somewhat clavate, twisted, .5 to 1 in. long; bracteoles subulate, caducous; buds ovoid, acuminate. *Calyx-lobes* triangular, blunt, .05 in. long, rusty-pubescent; tube as long. *Corolla-lobes* pink, ovate, long acuminate, .25 in. long, rusty-pubescent within, not gland-dotted; tube very short. *Stamens* much shorter than corolla-lobes; anthers oblong, acute; filaments very short. *Ovary* rounded, style subulate, .25 in. long. *Berry* purplish-black, globose, .2 in. in diam.

PERAK: at low levels, *Wray* 296.

43. *ARDISIA MAINGAYI*, King & Gamble. A "bush or small tree" (*Wray*), "slender tree" (*Scortechini*); branchlets smooth, bark brown, pith rather small; innovations glandular-pubescent. *Leaves* membranous; sub-opposite or falsely whorled; elliptic-obovate or obovate-lanceolate, attenuately or abruptly acuminate at apex, attenuately cuneate at base; glabrous on both surfaces except for a few scattered glandular hairs, pale beneath; margin finely toothed except on the lower third, the teeth caudate and glandular; 6 to 11 in. long, 2 to 3.5 in. broad; midrib slender above, thickened below; main-nerves 15 to 20 pairs, irregular in angle and distance, but usually at about 50° with the midrib, straight for about half-way and then curved to and along the margin; secondary nerves and reticulations very faint; petiole none or very short, the base of the leaf almost half stem-clasping. *Inflorescence* of slender, 6 to 8 in. long, sparsely glandular-pubescent, panicles of long peduncled sub-umbellate racemes, from the axils of upper leaves, of abortive leaves, or of the scars of fallen leaves below them; common peduncle slender, 2 to 3 in. long; branch peduncles very slender, divaricate, .5 to 1.5 in. long, supported by linear subulate .2 to .3 in. long bracts; racemes .3 to .5 in. long, 8-12-flowered; bracteoles small, subulate; pedicels slender, flattened above; buds ovoid acute. *Calyx-lobes* ovate, obtuse, .05 to .1 in. long, recurved in fruit, minutely pubescent, ciliate on the margins. *Corolla-lobes* white, ovate, acute or acuminate, .15 in. long, glabrous, gland-dotted. *Stamens* much shorter than corolla-lobes; filaments short, dilated at base; anthers oblong, bluntly mucronate, .1 in. long. *Ovary* rounded, glabrous; style slender, .05 in. long. *Berry* red, .3 in. in diam., longitudinally ribbed when dry. *A. odontophylla*, Wall., var. *Maingayi*, Clarke in Hook. f. Fl. Br. Ind. III. 526.

PERAK: *Wray* 304, 953, 1597; *Scortechini* 335, 339; *Curtis*.

MALACCA: *Maingay* (K.D.) 1016, in the mountains about 4,500 feet and below.

Although Wray and Scortechini describe this more or less as a "tree," *Maingay*'s specimen is that of a semi-herbaceous undershrub about 24 in. high, sending out roots from above the ground-level.

44. *ARDISIA THEÆFOLIA*, King & Gamble, n. sp. A small shrub reaching 3 feet in height; branchlets brown, smooth, the uppermost parts and innovations rusty-glandular-pubescent. *Leaves* chartaceous; elliptic, long acuminate at apex, acuminate at base; alternate or sub-opposite or falsely whorled; minutely glandular-pubescent on both surfaces, scaly beneath; margins recurved, finely toothed except on the lower third and on the acumination, the teeth erect, glandular; glandular dots very numerous and prominent on both surfaces; 2 to 3 in. long, .7 to 1.2 in. broad; midrib slender; main-nerves 10 to 14 pairs, close, curved upwards to near the margin, reticulations obscure; petiole .4 in. long, bordered by the decurrent margins of the blade. *Inflor-escence* a 1.5 to 2.5 in. long panicle with short racemose branches in the axil of a leaf or of a subulate .2 in. long linear abortive leaf between the leaves on the upper part of the branches; branches .5 in. long, slender, divaricate; bracteoles minute, linear; flowers 2 to 5 in each raceme, buds ovoid. *Calyx-lobes* 5, rounded, .05 in. long, ciliate. *Corolla-lobes* 5, white, ovate, acute or obtuse, .15 in. long, gland-dotted. *Stamens* as long as corolla-lobes; filaments very short; anthers broadly oblong, mucronate. *Ovary* rounded, gradually produced in an erect or curved style, .1 in. long. *Berry* pyriform or nearly globose, .2 in. in diam., smooth, slightly ribbed when dry.

PERAK: on Ulu Bataug Padang at 4,900 feet, *Wray* 1513; *Scortechini*.

45. *ARDISIA ODONTOPHYLLA*, Wall. Cat. 2279 (1829) (*not of* Lindl.); A. DC. Trans. Linn. Soc. XVII. 125, t. VI., Prod. VIII. 135; Clarke in Hook. f. Fl. Br. Ind. III. 525; Mez Monog. Myrs. 150. *A. pavonina*, Herb. Hamilt. *vide* DC. in Prod. l.c.—DISTRIB. India (Assam and Cachar).

VAR. *Lobbii*, Clarke in Hook. f. Fl. Br. Ind. III. 526. An almost herbaceous undershrub reaching to about 2 feet in height, the stems rooting from nodes near the base; bark fleshy, pale brown; pith large; upper part of stem densely fulvous-villous; leaf-buds small, short. *Leaves* membranous, sub-opposite; elliptic or elliptic-oblong or obovate-lanceolate, acute at apex, cuneate at base and sometimes slightly rounded; the margins sharply serrate except for a short distance near the base; glabrous above except on the hirsute midrib, rusty-tomentose beneath, the midrib and main-nerves usually ferruginous-

villous on the lower surface; glands scattered, not prominent; 4 to 8 in. long, 1.5 to 3.5 in. broad; midrib thick, prominent; main-nerves 8 to 12 pairs, prominent, irregular in distance and angle, curving upwards to and along the margin; secondary nerves few, reticulations transverse; petiole variable, stout, .4 to 1 in. long, ferruginous-villous, rarely glabrescent. *Inflorescence* of short (under 1 in. long) lax, few-flowered, pubescent, simple or compound, umbellate racemes, from the axils of leaves below the summit or of a linear subulate abortive leaf about .5 in. long; peduncles slender, .5 to 2 in. long; pedicels slender, .3 to .7 in. long, recurved; bracteoles short, subulate; buds ovoid. *Calyx-lobes* ovate, obtuse, ciliate, .1 in. long, slightly pubescent, marked with faint brown striæ; tube short. *Corolla-lobes* pink, ovate, obtuse or bluntly acuminate, .15 to .2 in. long, unequal, marked with many light brown linear and round glands; tube short. *Stamens* half the length of the petals; anthers broad, oblong, .1 in. thick, emarginate; filaments very stout. *Ovary* ovoid, gradually narrowed into a slender subulate style .1 in. long, the top of the ovary and base of the style short pubescent. *Berry* globose, scarlet, fleshy, .25 in. in diam., smooth.

PERAK: *Wray* 2285, 2975; *King's Collector* 2583, 2978, 3053, 7367. SELANGOR: *Ridley* 7560. PAHANG: *Ridley* 2270, 5825. SINGAPORE: *Lobb* 316, an undershrub of dense forests in wet localities.

Ridley's Pahang specimens have smaller leaves and longer calyx-lobes, with fewer-flowered inflorescences, the whole plant more thickly fulvous-villous, but do not seem capable of separation.

46. *ARDISIA BAMBUSETORUM*, King & Gamble, n. sp. A small semi-herbaceous shrub 1 to 2 feet high; stem pale brown about .25 in. in diam., bark spongy, pith large. *Leaves* membranous; oblong or oblong-lanceolate or obovate-oblong, acute at apex, narrowly attenuate at base and slightly rounded; glabrous on both surfaces, slightly scaly only beneath; glands few, scattered, chiefly near the margin; margins very briefly and irregularly toothed, usually recurved; 4 to 6 in. long, 1 to 1.5 in. broad; midrib slender; main-nerves 8 to 10 pairs, starting at an angle of about 50° with the midrib, curved upwards, and often branching, to and along the margin, where they anastomose in a rough intramarginal nerve; secondary nerves few, reticulations oblique; petiole .4 to .6 in. long, channelled above. *Inflorescence* of lateral pedunculate racemes 1 to 1.5 in. long supported by a linear abortive leaf .5 in. long; peduncle .7 to .8 in. long, raceme the same; bracteoles small subulate about .1 in. long; pedicels slender, clavate, .4 to .5 in. long recurved; buds ovoid; flowers white.

Calyx-lobes 5, linear-oblong, acute, reflexed, .05 to .07 in. long, not gland-dotted. *Corolla-lobes* ovate-oblong, .15 in. long, dotted with elongated brown glands. *Stamens* shorter than the corolla-lobes; filaments short; anthers oblong, obtuse, emarginate, .1 in. long. *Ovary* rounded, glabrous; style slender, curved, .1 in. long. *Fruit* not seen.

PERAK: in dense bamboo forest, *King's Collector* 10095.

This is scarcely more than a var. of *A. odontophylla*, but is recognised by the somewhat different leaves, white flowers, glabrous ovary and style, and the absence of fulvous tomentum.

6. ANTISTROPHE, A. DC.

Slender shrubs, with puberulous branchlets. *Leaves* alternate, entire or dentate, lanceolate, acuminate, glandular, petiole margined. *Flowers* hermaphrodite, in sub-sessile axillary umbels or solitary, pedicels slender, bracts small. *Calyx* small, 5-lobed, persistent; lobes acute, imbricate. *Corolla* deeply 5-cleft; lobes lanceolate acuminate, overlapping to the left in bud. *Stamens* 5, inserted on the throat of the corolla; filaments short; anthers free, hastate-lanceolate, the connective produced upwards in a membranous tip, cells dehiscing longitudinally and introrsely. *Ovary* ovoid, attenuated in a filiform style, stigma punctiform; ovules many on a globose central placenta. *Fruit* a globose berry, pericarp coriaceous, endocarp chartaceous. *Seed* 1, albumen ruminated; embryo cylindrical, transverse.—DISTRIB. Species 4, Indian and Malayan.

Inflorescence 1–2-flowered, glabrous; leaves caudate acuminate .. 1. *A. caudata*.
 Inflorescence 4–6-flowered, hirsute; leaves short acuminate 2. *A. Curtisii*.

1. ANTISTROPHE CAUDATA, King & Gamble, n. sp. A shrub or small tree; branches smooth, divaricate, nearly glabrous; branchlets puberulous, with faint raised lines from the bases of the leaf-petioles; innovations rusty-pubescent. *Leaves* membranous; elliptic-lanceolate, caudate-acuminate at apex, attenuate or somewhat rounded at base; entire or undulate on the margins; glabrous on the upper, minutely puberulous or glabrous and with pale peltate scales on the lower, surface; glandular dots very many, scattered, prominent; 3 to 4 in. long, 1 to 2 in. broad; midrib slender, conspicuous below; main-nerves 8 to 12 pairs, prominent beneath, at an angle of about 60° with the midrib, arching upwards, forking and obscurely anastomosing near the margin, the lowest pair of nerves more oblique than the rest; secondary nerves short, slender, reticulations indistinct; petiole .1 to .2 in. long, edged by the decurrent margins of the blade which are almost connivent above. *Inflorescence* of short, axillary, usually only 1–2-flowered sub-

sessile umbels, with very minute bracts; pedicels slender, clavate, .4 in. long; buds conical, long acuminate, .3 in. long, glabrous. *Calyx-lobes* ovate, acute, .05 in. long, ciliate on the edges, gland-dotted in two central lines. *Corolla-lobes* ovate, long-caudate-acuminate, .3 in. long, glabrous, dotted with few elongate glands. *Stamens* inserted at the base of the corolla-lobes and nearly as long as them (.25 in.); anthers sagittate-lanceolate with prominent rows of glands on the back, connective produced upwards in a membranous tip. *Ovary* ovoid, glabrous; style subulate, .25 in. long, very slender. *Berry* globose, .25 in. in diam., smooth, obscurely vertically striate.

PERAK: at Gunong Batu Pateh, 3,400 feet, *Wray* 456, 978, 3242; *Curtis* 3324.

This species at first sight resembles *A. oxyantha*, A. DC., of North-East India, but has smaller and differently-veined leaves, with different glands and smaller flowers.

2. ANTISTROPHE CURTISII, King & Gamble, n. sp. A shrub (?); branchlets round, rusty-glandular-hirsute, zigzag, with faint raised lines from the bases of the petioles of the leaves; innovations densely rusty-glandular-hirsute. *Leaves* membranous; elliptic or elliptic-oblong, acuminate at apex, rounded at base, entire; nearly glabrous above except on the midrib, sparsely rusty-hirsute beneath; 3.5 to 5 in. long, 1.5 to 2 in. broad; midrib slender, raised beneath; main-nerves about 10 pairs, at about an angle of 50° with the midrib, curved upwards, forked and broadly anastomosing near the margin, lowest pair not more oblique than the others; secondary nerves and reticulations obscure; petiole .2 in. long, crispedly channelled above. *Inflorescence* of densely rusty-hirsute, sub-sessile, axillary, 4-6-flowered, umbellate racemes, .1 to .15 in. long; bracteoles subulate, .05 in. long; pedicels slender, .3 to .5 in. long; buds caudate-acuminate, .3 in. long. *Calyx-lobes* linear subulate, .1 in. long, densely rusty-hirsute. *Corolla-lobes* ovate at base, long caudate-acuminate, .3 in. long, scarcely dotted, 3-5-nerved, sparsely hirsute without. *Stamens* rather shorter than the corolla-lobes, connivent in a cone; anthers sessile, lanceolate sagittate, the back with 2 rows of prominent round or elongate glands, the connective produced in a blunt membranous tip. *Ovary* ovoid, style slender, as long as anthers. *Berry* not seen.

PERAK: in Kuran Valley, below the gap, 4,000 feet, *Curtis* 3390.

7. ÆGICERAS, Gaertn.

Sea-coast shrubs, or small trees; branches cylindrical, glabrous. *Leaves* scattered, petioled, entire, glabrous, alternate. *Flowers* large

(for the Order) white, pedicellate, without bracteoles, in terminal or axillary umbels or panicles, pedicels slender. *Calyx* 5-lobed; lobes obtuse, coriaceous, twisted to the left, overlapping to the right; tube none. *Corolla* with short tube; lobes 5, acute, overlapping to the right in bud, afterwards recurved. *Stamens* 5, inserted on the corolla-tube; filaments elongate, connate into a tube below; anthers with transversely septate cells, cordate-lanceolate, introrse, dehiscing longitudinally. *Ovary* fusiform, narrowed into an elongated style; stigma acute; ovules many, immersed in a central globose placenta. *Fruit* cylindrical, curved, acute, coriaceous, 1-seeded; pericarp coriaceous, afterwards splitting, testa membranous. *Seed* elongate, exalbuminous; radicle inferior, enlarged at the base, joined with the cotyledons into a cylindrical tube; germination often taking place while still on the plant, as in some *Rhizophora*.—DISTRIB. Two species, of the sea-coasts of India, Burma, the Malay Peninsula and Islands, to South China and tropical Australia.

ÆGICERAS MAJUS, Gaertn. Fruct. I. 216, t. 46, fig. 1 (1788). A shrub or small tree reaching 15 to 20 feet in height, evergreen, all parts glabrous; branches greyish-black, smooth; branchlets reddish. *Leaves* coriaceous; obovate, rounded obtuse or emarginate at apex sometimes even obcordate, cuneate at base, margins recurved; glandular dots many, inconspicuous; 1.5 to 3.5 in. long, 1 to 1.5 in. broad; midrib slender, raised above or sometimes depressed; main-nerves about 10 pairs, slender, raised above, straight at first then curving upwards; secondary nerves slender, few, reticulations not prominent; petiole .2 to .3 in. long, thick, bordered by the decurrent margins of the blade. *Inflorescence* a terminal, axillary or leaf-opposed many- (15 to 20) flowered umbel, sessile or very short peduncled; bracts oblong-lanceolate, deciduous; pedicels slender, .3 to .5 in. long; buds conical. *Calyx-lobes* concave, gibbous at the base, broadest at top, .25 in. long, .15 in. broad, with parallel veins and scattered black dots in the lower part. *Corolla-lobes* ovate, acuminate, glabrous, parallel-veined, .25 in. long, recurved; tube as long as lobes, villous hairy within. *Stamens* longer than corolla-lobes, exsert; filaments connate half-way up, linear, connate part densely villous, free part glabrous .2 in. long; anthers .1 to .15 in. long, dorsifixed, cells prominently septate. *Ovary* ovoid, surmounted by a subulate angular style, .3 in. long, black-gland-dotted below. *Fruit* a long acuminate pale brown capsule, up to 3 in. long, .25 in. in diam., glabrous. *Seed* 1, elongate, filling the capsule, embryo inverse, funicle very long. Willd. Sp. Pl. I. 1185; Roem. & Schult. Syst. Veg. IV. 511; Roxb. Fl. Ind. III. 130; A. DC. in Ann. Sc. Nat. 2, XVI. t. 9A, and Prod. VIII.

142; Wight Icon. t. 146; Miq. Fl. Ind. Bat. II. 1031; Scheff. Myrs. 97; Benth. Fl. Austral. IV. 277; Dalz. & Gibs. Bomb. Fl. 137; Bedd. Fl. Sylv. CXXXIX. Anal. pl. XIX. III.; Clarke in Hook. f. Fl. Br. Ind. III. 533; Trimen Fl. Ceyl. III. 74; Cooke Fl. Bomb. II. 88; Koord. & Val. Bijdr. V. 276; Pax in Engl. & Prantl Pflanzenfam. IV. i. 97, fig. 57; Schimp. Strandfl. 44, figs. 1, 2; Prain Beng. Pl. 645. *Æ. fragrans*, Koenig Ann. of Bot. I. 129, t. 3; Wall. Cat. 2326; Wight in Hook. Bot. Misc. III. 84, t. 21. *Æ. minus*, A. DC. l.c. 142. *Æ. Malaspinæa*, DC. l.c. 143. *Æ. obovatum*, Blume Bijdr. 693. *Æ. corniculatum*, Blanco Fl. Filip. 79; Kurz in Journ. As. Soc. Beng. XLVI. II. 227 and For. Fl. III. 114; Mez Monog. Myrs. 55, fig. 8. *Rhizophora corniculata*, Linn. Sp. Pl. Ed. 3 (1764), 635. "Pou-Kandel," Rheede Hort. Mal. VI. 36. *Mangium fruticosum corniculatum*, Rumph. Herb. Amb. III. 117.

PENANG: Wallich 2326; Curtis 52, 513. PERAK: King's Collector 4961. MALACCA: Maingay (K.D.) 1017; Griffith (K.D.) 3538. SINGAPORE: Ridley 2801A, 3632A.—DISTRIB. Sea-coast of India from Sind to Ceylon, the Sundarbans, Burma, and the Andaman Islands; eastwards to the Malay Islands, South China, the Philippines and Australia. One of the coast plants included under the general name of "Mangroves."

Order LXXI. SAPOTACEÆ.

Trees or shrubs, with milky juice, generally evergreen, young parts often rusty-tomentose. *Leaves* alternate, rarely sub-opposite, coriaceous or rarely membranous, entire, penniveined; stipules none or very caducous. *Flowers* usually hermaphrodite, small or medium-sized, solitary or fascicled in the axils of the leaves, sometimes (*Sarcosperma*) paniculate; bracts and bracteoles very small or wanting. *Calyx* inferior, persistent or deciduous; lobes 4 to 8, much imbricate, occasionally biseriate with the outer ones valvate. *Corolla* gamopetalous; tube short, campanulate or urceolate; lobes as many as, or 2 to 4 times as many as, those of the calyx. *Stamens* inserted on the corolla-tube in 1 to 2 series and opposite to them, sometimes alternating with staminodes; filaments short, erect; anthers ovate-lanceolate or linear-sagittate, 2-celled, the connective sometimes produced. *Disk* hypogynous, often inconspicuous or wanting. *Ovary* superior, sessile, often villous, 2-5- or more celled; style shortly conical or elongate-subulate, glabrous; stigma terminal, punctiform; ovules solitary in the cells, attached to the inner angle. *Fruit* an indehiscent, 1-8-seeded berry, pericarp usually fleshy. *Seeds*, if solitary, conform to

the fruit; if more than one compressed, ellipsoid; hilum conspicuous; testa usually crustaceous, shining; embryo straight, exalbuminous with fleshy cotyledons, or albuminous with flat cotyledons; radicle inferior, usually small.—DISTRIB. About 320 species, in the tropical regions of the whole world, genera about 24.

Calyx-lobes 1-seriate, imbricate; stamens 5 to 6:—

Staminodes none 1. CHRYSOPHYLLUM.

Staminodes present:—

Flowers sessile or in panicles 2. SARCOSPERMA.

Flowers in axillary fascicles 3. SIDEROXYLON.

Calyx-lobes 2-seriate, outer series valvate:—

Calyx segments 4:—

Seeds albuminous:—

Stamens 8 4. ISONANDRA.

Stamens 12 or more 5. PAYENA.

Seeds exalbuminous, stamens 12 or more 6. BASSIA.

Calyx segments 6 to 8:—

Staminodes none, seeds exalbuminous 7. PALAQUIUM.

Staminodes present, seeds albuminous 8. MIMUSOPS.

1. CHRYSOPHYLLUM, Linn.

Trees with milky juice. *Leaves* coriaceous, glabrous or pubescent on the under-surface, main-nerves usually very many, thin; stipules none. *Flowers* small, in axillary fascicles, usually hermaphrodite. *Calyx* 5-7-lobed; lobes subequal, imbricate. *Corolla* tubular-campanulate or sub-rotate, 5-7-lobed; lobes imbricate, entire. *Stamens* equal in number with, and opposite to, the corolla-lobes, attached to the tube or the base of the lobes; filaments subulate or filiform; anthers ovate or triangular, extrorse or laterally dehiscing; staminodes none. *Ovary* villous, 5-, rarely 6-7-celled, style glabrous; ovules one in each cell, attached to the central placenta. *Fruit* a fleshy or coriaceous berry, globose, 5-celled or less by abortion. *Seeds* large; testa very hard, dull or shining; hilum conspicuous; embryo as large as the seed, erect, cotyledons flat in fleshy albumen, radicle inferior.—DISTRIB. About 60 species, chiefly tropical American, a few only in Asia, Africa and Australia.

CHRYSOPHYLLUM ROXBURGHII, G. Don Gen. Syst. IV. 33 (1837). A slender, erect tree reaching 40 to 60 ft. in height, evergreen; branches horizontal; bark smooth, grey; young branchlets and innovations ferruginous-pubescent. *Leaves* coriaceous, glabrous, alternate; oblong-lanceolate, suddenly caudate-acuminate at the apex which is sometimes obtuse, cuneate at base and unequal, undulate on the margins; 3 to 6 in. long, 1.25-2 in. broad; midrib slender, prominent

beneath; main-nerves very numerous, parallel, nearly at right angles to midrib, meeting in an intramarginal nerve; secondary nerves similar, reticulations slanting; petiole thick, .25 in. long, pubescent. *Flowers* small, in rounded axillary fascicles; pedicels slender, .1 to .2 in. long, ferruginous-pubescent. *Calyx-lobes* 5, ovate, glabrous or pubescent outside, thick, ciliate on the margins, .07 to .1 in. long; tube short. *Corolla* tubular-campanulate, .1 in. long; lobes 5, short, ciliate on the margins. *Stamens* 5, shorter than the corolla, opposite the corolla-lobes and inserted on the base of the tube; filaments slender; anthers ovate, apiculate and ending in a minute tuft of hairs, extrorse, slits somewhat lateral. *Ovary* rounded, obscurely 5-lobed, surrounded by a thick tuft of long ferruginous hairs; style thick, cylindro-conical, glabrous; cells 5. *Fruit* a globose or obscurely 5-lobed berry 1 to 1.5 in. in diam., strongly 5-lobed when dry, ferruginous-tomentose when young afterwards smooth, yellowish-green, with thick glutinous pulp. *Seeds* .6 in. long, .5 in. broad, flattened, the outer edge curved, the inner nearly straight; hilum oblong, conspicuous, pale; testa very hard, thick, shining, chestnut-brown; embryo erect, cotyledons flat, .4 in. broad, ovate, obtuse, 3-nerved; radicle large, cylindric. A. DC. Prod. VIII. 162; Clarke in Hook. f. Fl. Br. Ind. III. 535; Bedd. Fl. Sylv. t. 236; Kurz For. Fl. II. 118 and in Journ. As. Soc. Beng. XLVI. ii. (1877) 228; Trimen Fl. Ceyl. III. 76; Dalz. & Gibs. Bomb. Fl. 138; Cooke Bomb. Fl. II. 88; Burck Ann. Gard. Buit. V. i. (1886), 4; Koord. & Val. Bijdr. I. 130. *C. acuminatum*, Roxb. Fl. Ind. I. 599; Wall. Cat. 4160 (not of Lamk.). *C. lanceolatum*, A. DC. l.c.; Miq. Fl. Ind. Bat. II. 1035. *C. javanicum*, Steud. Nom. Ed. II. i. 359. *Nycteristition lanceolatum*, Bl. Bijdr. 676.

MALACCA: Griffith (K.D.) 3600; Maingay (K.D.) 980; Goodenough 1739. SINGAPORE: Ridley 2756, 5837.—DISTRIB. British India; Burma; Java; Sumatra.

Curtis No. 1072, collected at Batu Fereyngy, Penang, and now in the Kew Herbarium, seems to be a new species of *Chrysophyllum*. The leaves are chartaceous, lanceolate, acuminate at both ends, glabrous, shining, 2 to 4 in. long, .75 to 1 in. broad, the veins indistinct. *Flowers* unknown. *Fruit* a fleshy berry, .5 in. in diam., 5-lobed when dry, glabrous. *Seeds* .4 in. long, .25 in. broad, rounded on the outside, narrowed and somewhat concave within; testa hard, dark chestnut-brown, shining; hilum narrow. It might be called *C. Curtisii*, n. sp., King & Gamble.

2. SARCOSPERMA, Hook. f.

Glabrous trees. *Leaves* coriaceous or chartaceous, opposite and alternate, oblong; stipules caducous. *Flowers* small, sessile or fascicled

on the branches of a simple or compound panicle, sessile or shortly pedicellate; bracteoles minute. *Calyx-lobes* 5, rounded, sub-equal, much imbricate. *Corolla* broadly campanulate; tube short; lobes 5, rounded, entire, much imbricate. *Stamens* 5, inserted on the tube of the corolla and opposite to its lobes; filaments very short; anthers obtuse, laterally or extrorsely dehiscent. *Staminodes* 5, small, subulate or rounded. *Ovary* glabrous, 1-2-celled; style short; stigma somewhat lobed, capitate. *Fruit* an ellipsoid berry, 1-2-seeded; pericarp coriaceous, scarcely thick. *Seeds* 1-2; testa crustaceous; hilum nearly basal; albumen none; embryo fleshy.—DISTRIB. Species 3, in North-East India, Burma, Malaya and S. China.

SARCOSPERMA PANICULATUM, Stapf & King in Hook. f. Ic. Plant. t. 2690 (1901). A tree, reaching 50 to 70 feet in height and 18 to 20 in. in diam.; branchlets thick, dark brown, glabrous. *Leaves* chartaceous; sub-opposite, elliptic-oblong, bluntly acuminate at apex, acute or rounded or often rhomboid at base; glabrous on both surfaces, nearly black when dry; 4 to 8.5 in. long, 1.5 to 3 in. broad; midrib slender; main-nerves 7-8 pairs, slender, distant, often nearly 1 in. apart, starting at an angle of about 60° with the midrib and at once curving upwards to and along the margin; secondary nerves many and, like the transverse reticulations, inconspicuous; glandular pits in the axils of most of the main-nerves; petiole .5 to .7 in. long, channelled above and with two minute rounded auricles below the blade. *Flowers* solitary or clustered on the branches of a leafy compound panicle of racemes, the racemes often 2 in. long; bracteoles minute, triangular; pedicels rarely reaching .05 in. in length, stout; buds globose. *Calyx-lobes* 5, imbricate, rounded, usually 3 larger with somewhat scarious margins, 2 smaller thicker and slightly acute, shortly campanulate. *Corolla-lobes* 5, closely imbricate, rounded, glabrous, .05 in. long, the margins revolute; tube as long as lobes. *Stamens* 5, inserted on the top of the tube; filaments very short; anthers ovate, rounded, introrse, or laterally dehiscent. *Staminodes* alternating with the stamens, minute, nearly orbicular, crenulate. *Ovary* conical, furrowed; style very short, thick, stigma capitate, minutely 2-4-lobed. *Fruit* drupaceous, ellipsoid, seeds, 1-2. *Bracca paniculata*, King in Journ. As. Soc. Beng. LXIV. ii. 101.

PERAK: *Scortechini*; King's Collector 7970, 8086, 10284, 10554, 10672, 10835; among large bamboos, on river-banks, or in mixed forest.

3. SIDEROXYLON, Linn.

Trees or shrubs, sometimes armed, with milky juice. *Leaves* coriaceous or thinner, entire, alternate; stipules none. *Flowers*

small, in fascicles in the axils of the leaves or of the scars of fallen leaves, sub-sessile or shortly pedicelled. *Calyx* of 5-6 imbricate, usually orbicular and obtuse segments. *Corolla* campanulate, or tubular-campanulate, with 5 or rarely 6 lobes, the lobes imbricate. *Stamens* as many as the corolla-lobes and opposite to them, attached to the tube or at its base; filaments linear, usually short; anthers ovate or lanceolate; staminodes alternating with the stamens, lanceolate. *Ovary* usually villous, with 5 or fewer cells; style cylindric; stigma small; ovules erect, placentas axile. *Fruit* an ovoid or globose fleshy berry, 5- or less-seeded, usually with one seed only. *Seeds* compressed, generally solitary; testa hard, crustaceous, usually shining; hilum oblong or linear; embryo erect, cotyledons flat or thickened, in fleshy albumen; radicle short, inferior.—**DISTRIB.** About 60 species, mostly of tropical regions in both hemispheres, a few only extratropical in South Africa or Australasia.

- Leaves more than 3 in. broad, yellowish when dry, main-nerves very prominent 1. *S. malaccense*.
 Leaves under 3 in. broad, green or brown when dry:—
 Leaves nearly glabrous, membranous, obovate-acuminate .. 2. *S. Maingayi*.
 Leaves pubescent beneath, at least on the nerves:—
 Corolla-tube longer than the lobes; leaves elliptic, grey-silky beneath 3. *S. Derryanum*.
 Corolla-tube shorter than the lobes:—
 Leaves obovate, main-nerves not very prominent or regular 4. *S. ferrugineum*.
 Leaves oblong-lanceolate, main-nerves very prominent and regular 5. *S. firmum*.

SPECIES IMPERFECTLY KNOWN: 6. *S. Wallichianum*.

1. **SIDEROXYLON MALACCENSE**, Clarke in Hook. f. Fl. Br. Ind. III. 537 (1882). A large tree, reaching 40 to 60 feet in height; branches pale brown; ultimate branchlets ferruginous-pubescent, as are the leaf-buds and young leaves. *Leaves* coriaceous; often, not always, crowded towards the ends of the branchlets; obovate-oblong, rounded or shortly acute at apex, somewhat cuneate at base; deep-green above, pale bluish-green beneath, yellow when dry, densely rusty-pubescent beneath when young, glabrous on both surfaces when old except for rusty hairs on the midrib and main-nerves beneath; 6 to 8 in. long, 3 to 4.5 in. broad; midrib very thick and prominent; main-nerves 8-14 pairs, very prominent, starting at about an angle of 60° with the midrib, parallel at first, ultimately arched upwards; reticulations not prominent, obliquely joining the main-nerves; petiole 1 to 1.5 in. long, thick, enlarged at base, bordered above by the slightly decurrent margins of the blade. *Flowers* fasciculate, shortly pedicelled, in the axils of the leaves, above

the scars of fallen leaves or on the year-old wood below the leaves and shoots of the year; pedicels .1 to .2 in. long, rusty-tomentose. *Calyx-lobes* 5, imbricate, .15 to .2 in. long, densely rusty-pubescent without, rounded. *Corolla* tubular-campanulate, .15 in. long, absent in ♀ flowers; lobes very short, obtuse, imbricate. *Stamens* attached to the base of the corolla-tube; anthers ovate, apiculate, opening by side-slits; staminodes linear-lanceolate. *Ovary* thickly rusty-pubescent, flattened at top, obscurely 5-lobed, 5-celled; style cylindric. *Berry* fleshy, somewhat oblong, rounded, tipped with the persistent style, thickly covered with velvety orange-red tomentum and about .5 in. in diam. *Seeds* not accurately known.

PENANG: *Curtis* 1452. PERAK: *Wray* 136; *King's Collector* 6550. MALACCA: *Maingay* (K.D.) 994; *Holmberg* 704. SINGAPORE: *Ridley* 6130, 6499; *Cantley* 89.

Mr. Cantley says that this tree gives the true "Daru-daru" or "Dedâru" wood of the Malay Peninsula.

2. SIDEROXYLON MAINGAYI, Clarke in Hook. f. Fl. Br. Ind. III. 536 (1882). A tree with rusty-pubescent branchlets and young shoots. *Leaves* membranous; crowded towards the ends of the branchlets; obovate, shortly acuminate at apex, cuneate at base; rusty-pubescent when young, glabrous when old or rusty-pubescent on the midrib and main-nerves; 4 to 8 in. long, 1.5 to 3 in. broad; midrib prominent; main-nerves 8 to 11 pairs, starting at an angle of nearly 60° to the midrib, at first parallel then arching upwards to near the margin; transverse reticulations more or less parallel; petiole 1 to 1.5 in. long, bordered by the decurrent margins of the blade. *Flowers* fasciculate, sessile or with very short pedicels, chiefly on the previous year's wood below the leaves and shoots of the year. *Calyx-lobes* 5, imbricate, rounded, rusty-pubescent without, .075 to .1 in. in diam. *Corolla* tubular-campanulate, as long as or rather shorter than the calyx, wanting in ♀ flowers; lobes very short, obtuse, imbricate. *Stamens* short; filaments slender; anthers ovate; staminodes linear-lanceolate. *Ovary* thickly rusty-pubescent, flattened at top; style cylindric. *Berry* fleshy, 1.5 in. in diam., ovoid or globular, full of guttapercha. *Seeds* 4, compressed, .7 in. long by .3 to .35 in. broad; rounded outside, nearly straight within, the long narrow oblong hilum covering nearly the whole margin; testa hard, shining, dark chestnut-brown; albumen firm, white; cotyledons plane, appressed, elliptic; radicle inferior.

NEGRI SEMBILAN: *Ridley* 10084. MALACCA: *Maingay* (K.D.) 993; *Hervey*. SINGAPORE: *Ridley* 8928, 9223.

The fruit description is chiefly taken from Maingay's notes in the Kew Herbarium.

3. *SIDEROXYLON DERRYANUM*, King & Gamble, n. sp. A tree; branchlets grey, uppermost appressed-pubescent; innovations with nearly black hairs. *Leaves* chartaceous; elliptic, very abruptly short-acuminate at apex, broadly cuneate at base; margins more or less recurved; glabrous above, densely silvery-pubescent beneath; 3 to 5·5 in. long, 1·5 to 3 in. broad; midrib prominent, impressed above; main-nerves 12 to 18 pairs, parallel, starting at an angle of about 75° with the midrib, meeting near the margin in a faint intramarginal looped nerve; secondary nerves similar, rather prominent, reticulations few, obscure; petiole ·3 to ·5 in. long, channelled above, pubescent with nearly black hairs. *Flowers* fascicled, about 5 together in the axils of the leaves or of the scars of fallen leaves; pedicels ·25 in. long, tawny-pubescent; buds oblong, conical. *Calyx-lobes* 5, rounded, obtuse, the 2 outer thick very pubescent, the 3 inner somewhat scarious, pubescent only on the middle of the back. *Corolla* campanulate, ·2 in. long; tube ·15 in. long, glabrous within, with a few sparse hairs without; lobes 5, ovate, imbricate, margins recurved. *Stamens* 5, short, inserted at the top of the tube; filaments conical; anthers ovate-cordate, dehiscing by side-slits; staminodes subulate, glabrous. *Ovary* villous, obscurely 5-lobed, 5-celled; style very short; stigma obscurely 5-lobed. *Berry* oblong, dark blue, glabrous, the top flat and crowned with the remains of the style, ·6–7 in. long, 1-seeded. *Seed* oblong, ·6 in. long by ·3 in. in diam. truncate obliquely at the base; testa thick, light-brown, striate; hilum rather small, sub-basal; albumen thin; cotyledons thick; radicle small.

PERAK: *Derry-Curtis* 3641.

The colour of the silvery under-surface of the leaves is difficult to describe—it is sometimes dark and smoky-looking.

4. *SIDEROXYLON FERRUGINEUM*, Hook. & Arn. Bot. Beech. Voy. 266, t. 55 (1841). A small tree; branches rough, ultimate branchlets ferruginous-pubescent like the leaf-buds and young leaves, branchlets with a raised line downwards from each leaf or scar of a fallen leaf. *Leaves* coriaceous; obovate or oblong-lanceolate, rounded or bluntly acute at apex, attenuate at base; shining above, densely appressed ferruginous-silky beneath when young, ultimately nearly glabrous; 2·5 to 6 in. long, 1 to 3 in. broad; midrib prominent; main-nerves 10 to 12 pairs, fairly prominent, especially above, starting at about an angle of 60° with the midrib, at first nearly parallel then arching upwards to meet near the margin; secondary nerves similar, reticulations oblique; petiole ·5 to ·7 in. long, the edges bordered by the decurrent margins of the blade, enlarged at base. *Flowers* fasciculate, shortly pedicelled, in the axils of

the leaves or above the scars of fallen leaves on year-old wood below the leaves and shoots of the year; pedicels $\cdot 1$ to $\cdot 2$ in. long, covered like the obtuse buds with rusty tomentum. *Calyx-lobes* round, $\cdot 025$ to $\cdot 075$ in. in diam., with scarious margins, closely imbricate, rusty-pubescent outside. *Corolla* campanulate, $\cdot 1$ in. long; tube short; lobes 5, imbricate, rounded, crenulate, sparingly pubescent near the base within, in ♀ flowers wanting or deciduous. *Stamens* very short, attached to the corolla-tube above the base; filaments linear; anthers rounded, opening by marginal slits; staminodes subulate or somewhat hastate, acuminate. *Ovary* depressed, obscurely 5-lobed, pubescent; stigma short, cylindric, with 5 minute punctiform styles. *Berry* ovoid, shining $\cdot 35$ by $\cdot 3$ in., 1–2-seeded. *Seeds* ovoid, $\cdot 25$ by $\cdot 15$ in.; testa shining, dark brown, thick; hilum large, oblong; albumen thick; cotyledons flat. A. DC. Prod. VIII. 178; Clarke in Hook. fil. Fl. Br. Ind. III. 537. *S. attenuatum*, A. DC. l.c.; Wight Ic. t. 1590; Kurz For. Fl. II. 117, and in Journ. As. Soc. Beng. XLVI. ii. (1877) 229. *Mimusops? attenuata*, Wall. Cat. 4150.

KEDAH: Langkawi, *Curtis*. PENANG: *Curtis* 273, 703, 704. PERAK: *Scortechini* 1463; *King's Collector* 1224. MALACCA: *Maingay* (K.D.) 982; *Griffith* (K.D.) 3604; *Goodenough* 1735. SINGAPORE: *Wallich* 4150; *Lobb* 319; *Ridley* 5643, 5908. A sea-shore tree, found also by *Ridley* on Tiuman Island and at Kwala Pahang (Trans. Linn. Soc. Ser. 2. III. 317).—DISTRIB. Burma, Andaman Islands, Nicobar Islands, Malay Archipelago to the Philippines and S. China.

5. *SIDEROXYLON FIRMUM*, Pierre; Burek in Ann. Jard. Buit. V. 17, tab. III. (1885). A small tree; branchlets thick, striate, brown; innovations ferruginous-pubescent. *Leaves* coriaceous; oblong-lanceolate, shortly acuminate at apex, narrowly acute at base; glabrous above, rusty-pubescent on the nerves beneath and on young leaves; margins recurved; 4 to 5 in. long, 1 to 1.5 in. broad; midrib strong, prominent, impressed above; main-nerves 12 to 16 pairs, very prominent, about $\cdot 2$ to $\cdot 3$ in. apart, starting at an angle of about 40° with the midrib, parallel, curved near and along the margin; reticulations transverse, very regular and prominent; petiole 1 to 1.5 in. long, channelled above and bordered by the decurrent margins of the blade, rusty-pubescent. *Flowers* fascicled, 4 to 6 together in the axils of the leaves; pedicels variable, $\cdot 3$ to $\cdot 6$ in. long, rusty-pubescent, slender in flower, thickened in fruit. *Calyx-lobes* 5, rounded, imbricate, $\cdot 15$ in. long, densely rusty-pubescent, 3 outer thick, 2 inner more or less scarious on the margins. *Corolla* campanulate, $\cdot 15$ in. long, 5-lobed, glabrous within, slightly hairy without; tube rather short; lobes oblong, rounded. *Stamens* inserted on the top of the tube; filaments glabrous; anthers ovate-apiculate;

staminodes subulate, about .05 in. long. *Ovary* villous; style clavate, glabrous. *Fruit* an oblong or somewhat obovoid berry, depressed at apex, glabrous, fleshy, supported by the somewhat enlarged persistent calyx-lobes, seed usually 1. *Seed* oblong, obtuse above, somewhat pointed below, little compressed, .6 in. long, .25 in. broad and thick; testa chestnut-brown, shining, crustaceous; hilum linear, flat, occupying nearly the whole inner face of the seed; albumen thick; cotyledons leafy, flat, oblong, 3-nerved; radicle inferior, pointed. *Chrysophyllum firmum*, Miq. Fl. Ind. Bat. Suppl. 579.

PENANG: at West Hill, *Curtis*, 1575.—DISTRIB. Bangka, *Teysmann*; Philippines.

The Bangka specimens have the leaves up to 2.5 in. broad, but in other respects we find no difference from *Teysmann's* type in the Penang plant.

SPECIES IMPERFECTLY KNOWN.

6. *SIDEROXYLON WALLICHIANUM*, G. Don Gen. Syst. IV. 28 (1837). A tree (?); branchlets pale brown, ferruginous-villous as are the innovations. *Leaves* chartaceous; elliptic-obovate, obliquely acuminate at apex, cuneate at base, crowded towards the ends of the branchlets; 6 to 8 in. long, 3 to 4 in. broad; midrib thick; main-nerves 6 to 7 pairs, curved upwards, distant, reticulations prominent; petiole thick, densely tawny-pubescent. *Calyx-lobes* apparently 5, short, rounded, rusty-pubescent. Miq. Fl. Ind. Bat. II. 1037. *S. (?) rugosum*, Wall. Cat. 4158.

The only sheet of this is in the type Herbarium of Wallich's plants with the Linnean Society of London. The remains of flowers are very slight, but they seem to show that the plant belongs to this genus. The note "a small plant growing on rocks—flowers white—from the hills" attached to the sheet, seems to refer to some other plant, for the specimen itself has every appearance of having come from a tree.

4. *ISONANDRA*, Wight.

Trees with milky juice. *Leaves* coriaceous, entire, alternate, penniveined, the main-nerves and midrib prominent, the rest usually rather obscure. *Flowers* small, in axillary shortly pedicellate clusters in the axils of present or fallen leaves. *Calyx* of 4 segments, the two outer opposite, more or less valvate; the two inner also opposite, imbricate. *Corolla* tubular, campanulate; lobes 4, much imbricate, somewhat twisted. *Stamens* 8, sub-equal, attached near the base of the corolla, both opposite to and alternate with the lobes; filaments short; anthers lanceolate, sagittate at base, extrorse; staminodes absent. *Ovary* 4-celled, villous; style linear. *Berry* somewhat small, ovoid or oblong with a fleshy pericarp. *Seed* usually 1 only, scarcely flattened; testa thick, shining, crustaceous; hilum

lateral, long; albumen fleshy, cotyledons flat, radicle inferior.—DISTRIB. About 7 species, 6 of which in South India and Ceylon.

1. *ISONANDRA PERAKENSIS*, King & Gamble, n. sp. A small tree reaching 30 to 40 feet in height; ultimate branchlets, leaf-buds and young leaves appressed greyish-brown-pubescent. *Leaves* coriaceous; obovate-oblong, rounded at the apex, cuneate sometimes unequally at the base; the margins reflexed, glabrous and dull above, thickly brown-pubescent beneath; 2 to 3·5 in. long, 1 to 1·5 in. broad; midrib prominent; main-nerves 8 to 10 pairs at about 60° with the midrib, reticulations very inconspicuous; petiole ·2 to ·3 in. long, rather stout. *Flowers* fasciculate, on very short, ·1 in. long, thick, angular pedicels in the axils of upper leaves; buds ·15 in. long, obtuse, brown-appressed-pubescent. *Calyx* of 4 lobes, an outer pair and an inner pair, the outer valvate, the inner shining within, minutely ciliate; lobes ·15 in. long. *Corolla* 4-lobed; lobes rounded, about equal to the tube, together about equal to the calyx. *Stamens* 8, filaments thickened; anthers lanceolate, sagittate at base, extrorse. *Ovary* slightly hairy, conical, surmounted by a short linear style as long as the calyx; cells 4. *Berry* oblong, acute, smooth, ·4 to ·5 in. long. *Seeds* ellipsoid, acute at apex, scarcely flattened, ·35 by ·15 in.; hilum large, oblong; testa dark brown, hard, smooth, shining; albumen fleshy; embryo large, cotyledons oblong.

PERAK: at 1,000 to 1,500 feet elevation, *King's Collector* 7138.

DOUBTFUL SPECIES.

2. *ISONANDRA RUF*A, King & Gamble, n. sp. A small tree, reaching 20 to 30 feet in height and 4 to 6 in. in diam.; younger branchlets and innovations densely ferruginous pubescent. *Leaves* membranous; obovate, long acuminate sometimes abruptly at apex, cuneate and finally more or less rounded at base; sparsely pubescent above when young, nearly glabrous when old; roughly pubescent beneath, especially on the nerves; 5 to 7 in. long, 1·5 to 2·5 in. broad; midrib prominent; main-nerves 8 to 10 pairs, irregularly distanced, at first at an angle of about 45° with the midrib, then arching upwards; secondary nerves and reticulations prominent; petiole ·3 in. long, slender, rusty-pubescent, channelled above; stipules very short, subulate, rusty-pubescent, very caducous. *Flowers* solitary or in pairs in the axils of the upper leaves or on the upper branchlets, very small; pedicels slender, ·25 in. long, recurved. *Calyx-lobes* 4, densely ferruginous-pubescent; 2 outer valvate, ovate, ·2 in. long; 2 inner imbricate, ovate, somewhat scarious and ciliate on the margins. *Corolla* tubular-campanulate; ·2 to ·25 in. long; tube slender, minutely

hairy without and near the mouth within; lobes 6 (?), linear oblong, .1 in. long, erect. *Stamens* 6 (?), .1 in. long; filaments very slender, villous; anthers ovate, penicillate-apiculate. *Ovary* rounded, glabrous; style slender, curved, .2 in. long. *Fruit* an oblong berry, about 1 in. long and .5 in. broad. *Seed* 1, testa thin, shining.

PERAK: *Scortechini* 159; *King's Collector* 4550, in dense jungle at 500 to 800 feet.

In only one flower were any traces found of the corolla and stamens, and there seemed to be 6 corolla-lobes instead of 4, and 6 stamens instead of 8. We consider it best, however, to leave the species here for the present and until better material is available.

5. PAYENA, A. DC.

Trees with milky juice. *Leaves* membranous or chartaceous, often silky beneath; stipules caducous. *Flowers* fascicled, rather few together, in the axils of the leaves on the upper part of the branchlets, pedicellate. *Calyx-lobes* 4, the 2 outer usually valvate enclosing the 2 inner generally imbricate. *Corolla* campanulate; tube broad, short; lobes 8, imbricate, in one or two series. *Stamens* 16, inserted on the corolla-tube; filaments short; anthers usually extrorse, ovate to linear, connective produced in an acumen; staminodes none. *Ovary* villous, usually 8-celled; style linear-subulate. *Fruit* an oblong or ovoid fleshy berry, few-seeded. *Seeds* oblong, usually somewhat compressed; testa crustaceous, shining; hilum oblong or linear, conspicuous; albumen thin; cotyledons leafy, thin, flat, nearly as long and broad as the cavity of the seed; radicle inferior, generally rather conspicuous.—*DISTRIB.* About 6 to 7 species, found in the Malay Peninsula and Archipelago.

Flowers large, reaching .75 in. in length:—

- Leaves 6 to 9 in. long, silky-pubescent beneath .. 1. *P. Maingayi.*
- Leaves 4 to 5 in. long, glabrous on both surfaces .. 2. *P. longipedicellata.*

Flowers medium-sized or small, under .75 in. in length:—

Flowers in fascicles near the ends of the branchlets, having the appearance of a terminal inflorescence:—

- Flowers moderate-sized, berry obpyriform, acuminate at tip .. 3. *P. Havilandi.*
- Flowers small, berry oblong conical, truncate at tip .. 4. *P. Leerii.*

Flowers in fascicles in the axils of the leaves, never apparently terminal:—

- Leaves glabrous, pedicels slender, flowers small .. 5. *P. lucida.*
- Leaves ferruginous-pubescent, pedicels short, flowers rather large .. 6. *P. dasyphylla.*

SPECIES IMPERFECTLY KNOWN.

- Leaves sessile 7. *P. sessilis.*

Leaves petiolate :—

Leaves under 4 in. long, obovate or elliptic-obovate, more or
less obtuse 8. *P. obtusifolia*.
Leaves over 4 in. long, oblong-lanceolate, acuminate .. 9. *P. sclangorica*.

1. *PAYENA MAINGAYI*, Clarke in Hook. f. Fl. Br. Ind. III. 547 (1882). A large guttapercha-yielding tree, reaching 80 feet in height and a considerable girth; branchlets dark brown, smooth, younger branchlets and innovations rusty-tomentose; leaf-buds golden pubescent, scales .2 to .3 in. long, lanceolate. *Leaves* chartaceous; oblong, acuminate at the apex sometimes caudately sometimes abruptly, cuneate at the base; glabrous above except on the midrib, covered beneath with a silky golden-brown pubescence, afterwards glabrate; 6 to 9 in. long, 2 to 3 in. broad; midrib prominent, minutely pubescent above or glabrous; main-nerves 20 to 25 pairs, .3 to .5 in. apart, starting at an angle of about 70° with the midrib, at first parallel, ultimately ending in a looped intramarginal nerve; secondary nerves between the main-nerves, obscure like the reticulations; petiole 1 in. long, bordered above by the decurrent margins of the blade; stipules linear, subulate, .3 in. long, golden-pubescent, quickly caducous. *Flowers* fascicled, 2 to 6 together in the axils of the leaves; pedicels slender, .75 in. long, up to 1 in. in fruit and then thickened, clavate, brown-pubescent. *Calyx*-lobes 4, .4 to .5 in. long, densely brown-pubescent outside; outer pair valvate, ovate-acute, thick; inner pair imbricate, concave, keeled, acuminate, rather thin. *Corolla* white, campanulate, .6 to .8 in. long, glabrous; tube about .2 in. long; lobes 8, lanceolate, in 2 rows, the outer 4 enclosing the inner 4. *Stamens* 16, inserted on the top of the tube, .25 in. long; filaments thick; anthers as long as filaments, ovate, extrorse, crowned by a long mucro formed by the produced connective, the mucro ciliate or truncate or bifid at the apex. *Ovary* ovoid, pubescent, tapering into a subulate .8 in. long style, cells 8. *Fruit* an oblong, golden-pubescent or nearly glabrous berry up to 1.5 in. long by .8 in. broad, crowned by the remains of the persistent style, and supported by the persistent calyx-lobes, seeds 1 to 2. *Seeds* oblong, convex on one side, somewhat concave on the other, 1 to 2 in. long by .5 in. broad and .2 in. thick; testa light brown, shining, crustaceous; hilum conspicuous, slender; albumen thin; cotyledons oblong rounded, .8 in. long by .225 in. broad; radicle rather large, inferior. Pierre in Bull. Linn. Soc. Par. I. 526. *Chrysophyllum* ? *molle*, Wall. Cat. 4161.

PENANG: *Curtis* 1565. PERAK: *Scortechini* 172, 346; *Wray* 3423; *King's Collector* 7223, 7918; in open jungle or rich soil from 300 up to 2,000 feet. MALACCA: *Griffith* (K.D.) 3610; *Maingay* (K.D.)

990; *Curtis* 3483. SINGAPORE: *Ridley* 6239, 6497. *Curtis* says it is the "Taban Percha" of the Malays.

The drawing of the flower in *Engl. & Prantl Naturl. Pflanzen-Fam. IV. i. 132*, fig. 69 A-C seems a little doubtful. The identification of *Wall. Cat. 4161* seems also doubtful, for *Payena Maingayi* much resembles in leaf *Palaquium Gutta* var. *oblongifolia*.

2. *PAYENA LONGIPEDICELLATA*, *Brace MS.* in *Herb. Calc.* A tree, reaching 100 to 130 feet in height; branches slender, silvery-grey, innovations rusty-pubescent. *Leaves* chartaceo-coriaceous; oblong or elliptic-oblong, shortly acuminate at apex, rounded unequally at the base; glabrous on both surfaces, margins slightly recurved; 4 to 5 in. long, 1.5 to 2 in. broad; midrib slender, impressed above; main-nerves about 18 pairs, indistinct, starting at about 85° with the midrib, at first parallel, near the margin joined in an intramarginal looped nerve; secondary nerves nearly as prominent as main-nerves, often branching backwards, reticulations few, indistinct; petiole .7 to .8 in. long, channelled above and bordered by the margins of the decurrent blade; stipules small, ovate-acute, rusty-pubescent, very caducous. *Flowers* fascicled, 1-3 together, in the axils of lower leaves or of the scars of fallen leaves; pedicels 1 to 1.5 in. long, slender, curved, striate when dry, clavate above, puberulous; flower-buds conical, large. *Calyx-lobes* 4; 2 outer valvate, ovate-acute, thick, .5 in. long, sparsely rusty-pubescent; 2 inner lanceolate-acuminate, concave, thickly keeled, .6 in. long, densely tawny-pubescent on the back. *Corolla* tubular-campanulate, .8 in. long; tube .3 in. long, glabrous; lobes 8, 4 outer enclosing 4 inner, ovate-acuminate, glabrous. *Stamens* 16, inserted in 1 row, below the top of the tube but alternate ones covered by the others; filaments very short, slender; anthers .15 in. long, ovate, rusty-hirsute, extrorse, the connective produced in a broad mucro divided in 2 diverging lobes at the tip. *Ovary* oblong, style a little longer than the corolla-lobes. *Fruit* not known.

PERAK: *King's Collector* 2940.—DISTRIB. Borneo, *Haviland* 3035.

3. *PAYENA HAVILANDI*, *King & Gamble*, n. sp. A large tree (?); branchlets grey, slender, innovations appressed rusty-pubescent. *Leaves* chartaceo-coriaceous; elliptic, abruptly acuminate at apex, attenuate usually unequally at base; glabrous above, glabrous beneath except on the midrib which is appressed-rusty-pubescent, margins recurved; 2.5 to 3 in. long, 1.25 to 1.75 in. broad; midrib slender; main-nerves 10 to 12 pairs, not very prominent, rather irregular, starting at about an angle of 60° with the midrib, meeting close to the margin in an intramarginal looped nerve; secondary nerves and reticulations scanty but prominent, raised beneath; petiole .4 to .5 in. long,

channelled above and bordered by the decurrent margins of the blade; stipules small, ovate-falcate, densely ferruginous-pubescent. *Flowers* fascicled, 3-4 together, in the axils of upper leaves or of terminal leafless branchlets, giving the appearance of a terminal corymbose inflorescence; pedicels .8 to 1 in. long, densely rusty-pubescent, recurved; buds ovate, .25 in. long, obtuse. *Calyx-lobes* 4, outer pair rounded, thick, appressed pubescent to nearly glabrous; inner pair thinner, scarious, ciliate. *Corolla* campanulate, .3 to .4 in. long, longer than the calyx, glabrous; lobes 8, oblong, cordate at base, crenate or ciliate on the margins, veined; tube as long as lobes. *Stamens* 16, usually in 2 rows; filaments slender, glabrous; anthers ovate, the connective broad and produced in a broad glabrous acumen, sharp in bud, flattened later on. *Ovary* linear-oblong; style slender, .5 in. long. *Fruit* an obpyriform fleshy berry, 1.5 in. long and .75 in. broad, surmounted by the persistent conical style, seed 1. *Seed* oblong, 1 in. long, .6 in. broad, flattened; testa crustaceous, shining, chestnut-brown; hilum narrow, elongated; albumen thick; cotyledons broadly oblong, .5 in. long, nerved; radicle rather large, nearly .15 in. long.

KEDAH: Lankawi Island, *Ridley* 8329. PENANG: *Curtis* 777. SINGAPORE: *Ridley* 4959, 9203.—DISTRIB. Borneo, *Haviland* 2098, 2320.

P. CROIXIANA, Pierre in Bull. Soc. Linn. Par. I. 524 seems to be this species or very near it. The following is Pierre's description:—

A huge tree. *Leaves* oval or sub-oblong, long acuminate, glabrous; 2-3 in. long, .3 in. broad; main-nerves 24 to 28, petiole .25 in. *Flowers* 3, axillary, sub-terminal; peduncles .2 to .3 in. long, .6 in. in fruit. *Sepals* ovate, ciliate. *Corolla-tube* pubescent without; lobes oblong, truncate at the apex, ciliate; filaments very short; anthers sub-oblong with a long connective, obtuse, pilose on both sides. *Ovary* 8-celled, tomentose, urceolate at the base of the style. *Berry* oblong, .8-1.2 in. long, .5-6 in. broad, glabrous, 1-seeded; pericarp .06 in. thick; hilum under .04 in. broad, laterally extended over the whole height; cotyledons .8 in. long; .02 in. broad, radicle .14 in. long.

MALACCA: St. Pol Lias; Mad. Errington de la Croix in Paris Mus. "*Sundek*."

4. *PAYENA LEERII*, Benth. & Hook. f.; Pierre in Bull. Soc. Linn. Par. i. 524 (1885). A tree, reaching 80 to 100 feet in height and a considerable girth; branchlets grey, slender; innovations minutely rusty-pubescent. *Leaves* chartaceous; elliptic, abruptly acuminate at apex, acute or somewhat rounded at base; upper surface glabrous, shining, lower surface sparsely pubescent to glabrous; margins undulate, recurved; 2 to 4 in. long, 1 to 2 in. broad; midrib prominent, impressed

above; main-nerves 14 to 18 pairs, slender, about .2 in. apart, inconspicuous, more or less parallel, starting at an angle of about 80° with the midrib, straight almost to the margin where they are connected by a looped intramarginal nerve; secondary nerves many, forking backwards, reticulations faint; petiole slender, .75 in. long, channelled above by the decurrent margins of the blade; stipules short, subulate, pubescent, very caducous. *Flowers* fascicled, 3-4 together, in the axils of upper leaves, or on terminal leafless branchlets, giving the impression of a terminal inflorescence; pedicels slender, .4 in. long, pubescent. *Calyx-lobes* 4, .15 in. long, the 2 outer ovate-valvate, minutely pubescent; the 2 inner ovate, truncate at apex, almost scarious on the margins, pubescent, imbricate. *Corolla* campanulate; tube .05 in. long, glabrous; lobes 8, imbricate, the 4 rather smaller outer embracing the 4 larger inner, ovate-obtuse, .15 in. long. *Stamens* 16, inserted in one row on the top of the corolla-tube, those opposite the lobes longer than and behind those alternate with them; filaments very short, hairy; anthers ovate, .075 in. long, extrorse, the connective produced in a rather thick penicillate mucro. *Ovary* villous, depressed, obscurely 8-lobed; style subulate, glabrous above, pubescent below, .2 in. long; cells 8. *Fruit* an ovate-oblong conical reddish-green berry, 1.5 to 1.75 in. long, obscurely ribbed and rough, at first tipped with the conical remains of the style, afterwards truncate seed 1. *Seed* 1 in. long, about .4 in. broad, oblong; testa thin crustaceous, dark brown; hilum long, narrow; albumen thin; cotyledons oblong, .85 in. long, .35 in. broad, faintly 3-nerved; radicle small, inferior. Kurz in Journ. As. Soc. Beng. XL. (1871) II. 69; Burck in Ann. Jard. Buit. V. (1885) 56, tab. VIII.; Engl. and Prantl Pflanzenfam. IV. i. 133, fig. 70. *Keratephorus Leerii*, Hassk. Retzia I. (1856) 101; Miq. Fl. Ind. Bat. II. 1039. *Azaola Leerii*, Teysm. & Binnend. in Nat Tijdschr. Neerl. Ind. VI. 116.

PERAK: *Wray* 1539, at 4,900 feet on Batang Padang; *King's Collector* 523. SINGAPORE: *Cantley* 20.—DISTRIB. Sumatra, Bangka, Borneo (?), Amboina. *Vern.* "Getah Sundek." It gives a second-rate variety of guttapercha.

To this species probably belong *Ridley* 11313, *Curtis* 3631, and *David* 10857, all apparently from Sumatra—*Vern.* "Getah Sundi." The specimens have leaves only.

Curtis' No. 3640 "Getah Sundek" from the Dindings is either this species or *P. Havilandi*; but the fruit is globose, not elongate or obconical. It seems, however, to have been more or less attacked by insects, and may not show its proper shape.

5. PAYENA LUCIDA, A. DC. Prodr. VIII. 197 (1844). An evergreen tree

reaching a height of 60 feet and considerable girth; branchlets slender, dark brown, innovations rusty-tomentose. *Leaves* chartaceous; elliptic, elliptic-oblong or elliptic-lanceolate, obtusely and rather abruptly caudate-acuminate at apex, acute at base and unequal-sided; glabrous on both surfaces, the margins slightly recurved; 4 to 5 in. long, 1.5 to 2 in. broad; midrib prominent, slender; main-nerve 10 to 12 pairs, not prominent, rather irregular, .3 to .4 in. apart, starting at an angle of about 60° with the midrib, straight at first, arching near the margin to meet in a looped intramarginal nerve; secondary nerves and reticulations rather scanty; petiole .4 in. long, channelled above; stipules very minute, linear, silky-pubescent, caducous. *Flowers* fascicled, 1 to 4 together, in the axils of upper leaves; pedicels slender, .7 to .8 in. long, somewhat clavate, minutely silky; buds conical, .1 to .2 in. long. *Calyx-lobes* 4, 2 outer valvate, thick, enclosing 2 inner, broad, ovate, obtuse, ciliate, often scarious on the margins, .2 in. long. *Corolla* white, campanulate, .2 to .3 in. long; tube short; lobes 8, oblong, obtuse or rounded in 2 rows, 4 outer enclosing 4 inner. *Stamens* 16, .12 in. long; filaments short, thick; anthers ovate, the connective produced into an obtuse, glabrous, often bifid acumen, cells extrorse. *Ovary* villous, rounded; style subulate, glabrous, .3 in. long, 6-celled. *Fruit* an oblong, ferruginous-pubescent berry, 1 to 1.5 in. long, .7 in. broad, 1-seeded. *Seed* oblong, bluntly acute at both ends, flattened, .8 in. long, .5 in. broad, .3 in. thick; testa chartaceous, chestnut-brown, shining; hilum about .15 in. broad occupying the whole inner edge; albumen thick; cotyledons oblong, thin, flat, faintly nerved as the leaves, .6 in. long, .4 in. broad; radicle rather large, inferior. Kurz For. Fl. II. 121, Journ. As. Soc. Beng. XL. ii. 69, and XLVI. ii. 230; Clarke in Hook. f. Fl. Br. Ind. III. 547; Pierre in Bull. Soc. Linn. Par. I. 525. *Mimusops lucida*, Wall. Cat. 4147; G. Don Gen. Syst. IV. 35 (*not of Poir.*).

PENANG: Wallich 4147. PERAK: *Seorteehini* 1989; Wray 2266, 3114, 3191, 3482; *King's Collector* 3364, 3734, 6636. SINGAPORE: Lobb 307; Ridley.

VAR. *Wightii*, Clarke in Hook. f. Fl. Br. Ind. III. 548. *Leaves* large, up to 6 in. long and 2.5 broad, coriaceous; pedicels stout; sepals large, rusty-tomentose. *Payena polyandra*, Bth. & Hook. f.; Pierre in Bull. Linn. Soc. Par. I. 526. *Isonandra polyandra*, Wight Ic. t. 1589. *Keratephorus Wightii*, Hassk. in Retzia I. 101.

Of this variety Clarke makes two forms, which he distinguishes chiefly by the former having short acuminations to the leaves, the latter long acuminate leaves. We have separated the material into these two groups as well as we can.

Form (1): Leaves up to 6 in. long, 2.5 in. broad, abruptly acuminate, shining

above, ferruginous-red beneath when dry; flower-buds ovoid, .2 in. long or more, rusty-pubescent. Pedicels stout, clavate; fruit oblong, depressed at top; anther-connective not so broad as in *P. lucida*.

MALACCA: *Griffith* (K.D.) 3605 (*part*); *Maingay* (K.D.) 194; *Hervey*; *Derry* 937; *Holmberg* 794; *Goodenough* 1977. PERAK: *King's Collector* 8705.

Form (2): Leaves up to 6 in. long, oblong-lanceolate, long-acuminate, reddish beneath when dry; nerves more prominent than in *P. lucida*; pedicels slender, .8 to 1.2 in. long; buds ovoid, sometimes flattened, .2 to .3 in. long, rusty-pubescent; young fruit oblong conical, tipped by the persistent style; old fruit oblong, over 1 in. long. *P. costata*, King MS. in Herb. Calc.

MALACCA: *Griffith* (K.D.) 3605 (*part*); *Maingay* (K.D.) 989; *Goodenough* 1853; *Derry* 654; *Curtis* 3644, 3660. PENANG: *Curtis* 1516. PERAK: *King's Collector* 3734, 4081, 7842, 7957, 10466, 10496, 10978. PAHANG: *Ridley* 2672. SELANGOR: *Goodenough* 10545. SINGAPORE: *Ridley* 3995, 5070, 6508, 11305.

VAR. *nigra*, King & Gamble. Leaves much larger than in the specimens of true *P. lucida*, elliptic, long caudate-acuminate at apex, more or less rounded at base, undulate on the margins, 6 to 8.5 in. long, 2.5 to 4 in. broad; main-nerves and intramarginal nerve very prominent, raised beneath; flower-buds and pedicels often golden-pubescent. Flowers as in *P. lucida*.

PERAK: *Wray* 1170; *Scortechini*.

P. LOWIANA, Pierre in Bull. Soc. Linn. Par. I. 524, seems to be one of the varieties of *P. lucida* or a species allied to it. The following is Pierre's description:—

A huge tree. Leaves with petiole .4 in. long; blade 5 in. long, 1.2–1.6 in. broad, oblong-lanceolate, obtusely acuminate, glabrous; main-veins 24, distant. Fruiting peduncles axillary, 1–1.2 in. long, solitary. Berry oblong, 1.3 in. long by .8 in. broad, sub-glabrous, crowned at the top with the remains of the style. Seed solitary, 1.1 in. long, .35 in. in diam., erect; hilum lateral, .08 in. broad; cotyledons oblong, attenuate at the apex, .8 in. long by .2 in. broad; radicle .15 in. long. *P. lucida* MS. in Herb. Mus. Par.

PERAK: *Sir Hugh Low*; *St. Pol Lias* No. 272.

6. PAYENA DASYPHYLLA, Pierre in Bull. Soc. Linn. Par. I. 527 (1885). A large tree, reaching 80 to 100 feet in height and considerable girth; branches spreading, branchlets greyish-brown, moderately thick; innovations densely ferruginous-pubescent. Leaves membranous; oblong or elliptic-oblong or obovate-oblong, often unequal-sided; acuminate at apex, acute, cuneate or somewhat rounded at base; glabrous above except on the midrib and near the base, densely ferruginous-pubescent beneath, when old nearly glabrous; 4 to 8 in. long, 1.5 to 3 in. broad; midrib thick, pubescent on both surfaces; main-nerves 12 to 16 pairs, unequally spaced, starting at about 60° with the midrib, produced straight to meet a looped intramarginal nerve; secondary

nerves rather prominent, reticulations irregular; petiole .5 in. long, thick, densely rusty-pubescent, channelled above; stipules subulate, rusty-pubescent, short, early caducous. *Flowers* fasciated, 1 to 3 together, in the axils of the leaves; pedicels thickly rusty-pubescent, .4 to .6 in. long, somewhat enlarged in fruit; buds ovoid. *Calyx-lobes* 4, 2 outer thick, valvate, .3 in. long, triangular-rounded, densely rusty-pubescent; 2 inner concave, slightly imbricate, .35 in. long, thickly keeled, scarious on the margins and ciliate, rusty-pubescent around the keel. *Corolla* tubular-campanulate, .3 in. long; tube .1 in. long, glabrous; lobes 8, the 4 outer enclosing the 4 inner but inserted in one row, oblong, obtuse. *Stamens* 16, .175 in. long, inserted on the top of the tube; filaments .05 in. long, villous; anthers nearly linear, extrorse, the connective produced in a .05 in. long, blunt or even bifid acumen. *Ovary** conical, villous as is the base of the .35 in. long subulate style. *Fruit* an ovoid densely tawny-pubescent berry .75 to 1 in. long, umbonate at the tip and crowned with a portion of the style. *Seeds* .4 to .5 in. long, elliptic-acute; testa dark brown, shining; hilum narrow; albumen thin. Burck in Ann. Jard. Buit. V. 51. *Isonandra dasyphylla*, Miq. Pl. Jungh. 201 and Fl. Ind. Bat. II. 1038; de Vriese Journ. Bot. Neerl. I. 256.

PERAK: *Scortechini* 1242; *King's Collector* 2611, on Larut Peak at 3,000 to 3,500 feet.—DISTRIB. Sumatra, Java.

De Vriese says the gutta is only used for adulteration, but that Motley did not agree in this belief.

VAR. *glabrata*, King & Gamble. Lower surface of the leaves nearly glabrous, apex abruptly long-acuminate; pedicels .8 to 1 in. long; fruit nearly spherical.

PERAK: *Scortechini* 536. SINGAPORE: at Selitar, *Ridley* 5644.

7. *PAYENA SESSILIS*, King & Gamble, n. sp. A tree (?); branchlets grey, rough, uppermost somewhat angular when dry. *Leaves* coriaceous, sessile; obovate, obtuse or emarginate; glabrous on both surfaces, margins recurved; 2 to 4 in. long, 1 to 1.5 in. broad; midrib prominent, raised on both surfaces; main-nerves not prominent on the upper surface, raised on the lower, about 8 pairs, at about 50° with the midrib, straight but soon anastomosing with the prominent reticulations which are also raised on the lower surface; stipules ovate, acute or obtuse, glabrous, caducous. *Flowers* fasciated, 2 to 3 together, on small tubercles in the axils of upper leaves; pedicels slender, black, .5 in. long, supported by small hard glabrous bracts. *Calyx-lobes* in fruit 4, .2 in. long, ovate-acute, glabrous; rest of flower not seen. *Fruit* a globose glabrous berry, black when dry, prominently surmounted by the

persistent long curved style; cells apparently 4 to 6. *Seeds* oblong, obtuse at top, acute at base, .3 to .4 in. long, rounded on the outer, straight on the inner side; hilum long, narrow; testa thin crustaceous, brown; albumen rather thin; cotyledons oblong, flat, .15 to .2 in. in length; radicle rather large,

SINGAPORE: *Ridley* 5076.

8. *PAYENA* *OBTUSIFOLIA*, King & Gamble, n. sp. A tree; branchlets stout, greyish-brown, prominently marked by the scars of fallen leaves and the tubercles of fallen flower fascicles, young branchlets and leaves rusty-brown in colour. *Leaves* coriaceous; clustered at the ends of the branchlets, obovate or elliptic-obovate, obtuse, emarginate or shortly acute at apex, cuneately attenuate at base; glabrous on the upper surface, rusty-coloured and sometimes pubescent on the lower; 2.5 to 3 in. long, 1 to 1.5 in. broad; midrib stout, main-nerves 10 to 12 pairs, starting at about 60° with the midrib, slightly curving upwards, inconspicuous above as are the reticulations; petiole .5 to .75 in. long, channelled above by the decurrent margins of the blade. *Flowers* fascicled, 4 to 8 together (to judge by scars only) in the axils of the leaves, or of the scars of fallen leaves; pedicels .5 in. long, clavate, pubescent; buds about .3 in. long, truncate. *Calyx-lobes* 4, 2 outer valvate, ovate-acute, .3 in. long, pubescent; 2 inner imbricate, ovate, golden-pubescent on the back, ciliate on the margins. *Corolla* not seen. *Ovary* ovoid-conical, glabrous, 8-celled; style .35 in. long, linear. *Fruit* not seen.

PERAK: *Scortechini* 340.

9. *PAYENA* *SELANGORICA*, King & Gamble, n. sp. A tree (?); branchlets dark brown, rough. *Leaves* chartaceo-coriaceous; oblong-lanceolate, acuminate at apex, narrowly attenuate at base, glabrous above, slightly pubescent on the sides of the midrib beneath; 4 to 6 in. long, 1 to 1.7 in. broad; midrib prominent, impressed and keeled above; main-nerves about 16 pairs, indistinct, parallel, at about 80° with the midrib, straight at first, anastomosing near the margin with the secondary nerves and reticulations, which are visible but not prominent; petiole .5 to .7 in. long, channelled above, enlarged at base. *Flowers* fascicled, 2 to 3 together, in the axils of the leaves; pedicels rather thick, .6 to .8 in. long, striate, appressed rusty-pubescent. *Calyx-lobes* 4, outer pair valvate .3 in. long, ovate-acute, thick below, thinner above; inner pair ovate, .25 in. long, scarious on the margins; both appressed rusty-pubescent; rest of flower not seen. *Ovary* pubescent, cylindrical, depressed at top; fruit immature, seed apparently albuminous, with an elongated hilum.

SELANGOR: *Ridley* 7387.

6. *BASSIA*, Linn.

Trees with milky juice. *Leaves* coriaceous or chartaceous, often clustered at the ends of the branchlets; stipules caducous. *Flowers* fascicled, in the axils of the leaves or of the scars of fallen leaves, pedicellate, pedicels frequently reflexed. *Calyx-lobes* 4, the 2 outer usually valvate, enclosing the 2 inner imbricate. *Corolla* campanulate; tube broad; lobes 6 to 12, contorted in bud, erect in flower, imbricate. *Stamens* twice the number of the corolla-lobes or more, inserted in one or more rows on the corolla-tube; filaments usually short; anthers generally lanceolate, laterally or extrorsely dehiscent; connective generally produced in an acumen; staminodes none. *Ovary* villous, 4-12- (usually 6-8-) celled; style linear, subulate, more or less elongate. *Fruit* a globose or oblong or ovoid berry, few-seeded. *Seeds* ellipsoid, usually compressed; testa crustaceous, shining; hilum oblong or linear, conspicuous; albumen none; cotyledons thick, fleshy; radicle small.—
 DISTRIB. About 40 species, found in India, Ceylon, the Malay Peninsula, and Malay Archipelago.

In several of the species the fruit is unknown, and some of these may prove, when it becomes available, to belong to *Payena*, which is hardly separable except by the important character of having albuminous seeds and leafy cotyledons.

We have not followed Baillon and Engler in changing the name of this genus to *Illipe*, as we agree in the opinions expressed by Drs. Trimen ("Flora of Ceylon") and Cooke ("Flora of Bombay") that the word *Illipe* was not intended by König to be employed as the name of a genus, but was merely mentioned as being the vernacular name employed by the natives of Malabar for one of the species.

- Flower-buds large, nearly .75 in. long, conical; intramarginal nerve of leaves prominent; pedicels thick, 1.5 to 2 in. long .. 1. *B. aristulata*,
 Flower-buds moderately large, about .4 in. long, globose; intramarginal nerve present; pedicels short, about .4 in. long :—
 Intramarginal nerve conspicuous; leaves 10 to 14 in. long .. 2. *B. Kingiana*.
 Intramarginal nerve faint; leaves 4 to 6 in. long .. 3. *B. Kunstleri*.
 Flower-buds moderately large, .4 in. long or rather less, conical :—
 Leaves large, over 6 in. long; main-nerves prominent :—
 Pedicels over 1 in. long; leaves coriaceous, silky-pubescent beneath; main-nerves straight, intramarginal nerve present; connective of anthers penicillate 4. *B. penicillata*.
 Pedicels under .6 in. long; leaves chartaceous, sparsely pubescent beneath; main-nerves curved, no intramarginal nerve; connective of anthers not penicillate 5. *B. malaccensis*.
 Leaves moderate-sized, under 6 in. long; main-nerves not prominent 6. *B. Curtisii*.
 Flower-buds small, under .3 in. long, usually conical, generally in many-flowered fascicles :—
 Pedicels usually under .5 in. long :—
 Pedicels and flower-buds densely tawny-pubescent; connective of anthers produced in a long point 7. *B. laurifolia*.

Pedicels and flower-buds thinly rusty-pubescent; connective of anthers produced in a short ciliate point 8. *B. rupicola*.

Pedicels .5 in. long or longer:—

Flowers fascicled in the axils of upper leaves generally, rarely on old wood below them:—

Leaves glabrous, coriaceous, main-nerves indistinct .. 9. *B. perakensis*.

Leaves grey-silky-pubescent beneath, almost coriaceous, main-nerves distinct but not prominent 10. *B. argentea*.

Leaves only slightly pubescent beneath, chartaceous, main-nerves very prominent 11. *B. Braceana*.

Flowers fascicled chiefly in the axils of the scars of fallen leaves, on old wood:—

Leaves chartaceous, elliptic; main-nerves prominent .. 12. *B. longistyla*.

Leaves coriaceous, oblong; main-nerves not prominent:—

Main-nerves of leaves (under 6 in. long) curved upwards, but no intramarginal nerve; anther-connective long-apiculate 13. *B. cuprea*.

Main-nerves of leaves (over 6 in. long) meeting in an intramarginal nerve; anther-connective shortly apiculate 14. *B. Motleyana*.

SPECIES OF WHICH FLOWERS ARE IMPERFECTLY KNOWN.

Leaves under 5 in. long, obovate, obtuse, greenish-brown when dry 15. *B. cuneata*.

Leaves 5 to 7 in. long, oblong-lanceolate, greyish-green when dry 16. *B. penangiana*.

Leaves 6 to 8 in. long, obovate-oblong, orange-red when dry .. 17. *B. erythrophylla*.

1. *BASSIA ARISTULATA*, King & Gamble, n. sp. A tree; branchlets stout, brown, lenticellate. *Leaves* coriaceous; oblong, shortly and rather suddenly acute at apex, somewhat rounded unequally and then decurrent at base; glabrous on both surfaces except on the midrib beneath; margins slightly recurved; 6 to 10 in. long, 3 to 4 in. broad; midrib thick, prominent, impressed above; main-nerves 24 to 28 pairs, conspicuous, parallel, .3 to .4 in. apart, starting at about 75° with the midrib, scarcely curved, meeting in a conspicuous intramarginal looped nerve; reticulations oblique, not prominent; petiole 1.5 to 2 in. long, grooved above, much thickened below. *Flowers* fascicled, about 2 to 6 together, in the axils of the leaves or of the scars of fallen leaves, on very short tubercles; pedicels thick, 1.5 to 2 in. long, densely golden-pubescent, flattened under the flower; buds elongate, conical, nearly .75 in. long. *Calyx-lobes* 4, .5 to .7 in. long; the 2 outer valvate, triangular-ovate, pubescent; the 2 inner imbricate, concave, ovate, pubescent. *Corolla-tube* short, .2 to .3 in. long, funnel-shaped, densely pubescent inside; lobes 8 to 9, oblong-lanceolate, .4 in. long, pubescent without. *Stamens* many, up to 36, in 2 or 3 rows, lowest row about 8 to 9, second row 16 to 18, third row 8 to 9, inserted on the top of the corolla-tube; filaments very short, pubescent; anthers

oblong, thin, .2 in. long, opening along their edge; connective black, prominent, ending in a long sharp awn, the anthers usually twisted half round. *Ovary* silky-pubescent, flat at top, style glabrous about equal to corolla, cells 10 to 12. *Fruit* not known.

PERAK: at Goping, *Scortechini* 1984.

Said by *Scortechini* to give a guttapercha.

2. *BASSIA KINGIANA*, Brace MS. in Herb. Calc. A tree, reaching 50 to 60 feet in height, and 10 to 15 in. in diam.; branchlets thick. *Leaves* coriaceous, dark green; obovate-oblong, rounded and then shortly and abruptly acuminate at apex, cuneate at base; glabrous on both surfaces, margins slightly reflexed; 10 to 14 in. long, 3.5 to 4.5 in. broad; midrib very strong, prominent; main-nerves about 20 pairs, conspicuous, .5 to .7 in. apart, starting nearly at right angles to the midrib and curving upwards to meet in a conspicuous intramarginal looped nerve; secondary nerves few but prominent; reticulations distant, not numerous; petiole 2 in. long, grooved above, swollen at base, and then conspicuously rugose when dry; stipules subulate-acuminate from a broad base, very quickly caducous. *Flowers* fascicled, about 3 to 5 together, on small tubercles above the scars of fallen leaves on the previous year's wood; pedicels recurved, thick, .4 in. long, enlarged above, covered as also the calyx with appressed tawny pubescence; buds globose, about .4 in. long. *Calyx-lobes* 4, .4 in. in diam.; outer 2 imbricate, rounded emarginate, thick; inner 2 also imbricate, concave, ciliate on the margins. *Corolla-tube* funnel-shaped, .15 in. long, rusty-hirsute without, pubescent within; lobes 12 to 16, white, much imbricate or in 2 rows, spatulate, ciliate on the margins, hirsute, .25 in. long. *Stamens* many, 32 to 36, in 2 rows on the top of the corolla-tube; filaments .1 in. long, rather stout, densely hirsute; anthers linear-oblong, .125 in. long; connective produced into a broad appendage, penicillate at tip, in bud merely aristate. *Ovary* rounded, villous; style thick, curved, pubescent, .3 in. long, with minute stigmatic lobes; cells about 8. *Fruit* a globose, thickly tawny-pubescent, berry, .75 in. in diam., surmounted by the long subulate persistent style, seeds 1 to 2. *Seed* not seen.

PERAK: *King's Collector* 3314, 3678, 7389; in open jungle at 300 to 500 feet. SINGAPORE: *Ridley* 6238, 6294.

3. *BASSIA KUNSTLERI*, Brace MS. in Herb. Calc. A tree with spreading branches, reaching a height of 30 to 40 feet and 10 to 15 in. in diam.; branchlets slender, grey, innovations rusty-pubescent. *Leaves* chartaceous; obovate-oblong or oblong, abruptly acuminate at apex, acuminate at base, glabrous on both surfaces; 4 to 6 in. long,

1.5 to 2 in. broad; midrib slender, prominent; main-nerves 15 to 20 pairs, starting at an angle of about 60° to the midrib and curving upwards to meet in a faint intramarginal looped nerve; secondary nerves and reticulations prominent; petiole slender, 1 to 1.5 in. long, bordered above in its upper part by the decurrent margins of the blade, base enlarged, sometimes twisted. *Flowers* solitary or fascicled 2 to 3 together in the axils of the leaves, or above the scars of fallen leaves; pedicels thick, .3 to .4 in. long, usually recurved, densely rusty- or golden-pubescent like the calyx-lobes and fruit; buds ovoid-orbicular about .4 in. long. *Calyx-lobes* 4, .4 in. long; outer valvate, ovate-orbicular; inner imbricate, concave, somewhat emarginate, thin and ciliate on the edges. *Corolla* tubular-campanulate; tube about .125 in. long, glabrous on both sides; lobes 16, in 2 rows, very much imbricate, shortly spatulate, rounded at top, fimbriate on the margins, shortly pubescent within, 3-nerved. *Stamens* about 32, in 2 rows, mixed with long unicellular brown hairs; filaments thick, about 0.5 in. long; anthers oblong, opening by marginal slits, often twisted half round; connective conspicuous, produced in a sharp mucro. *Ovary* rounded, villous; style subulate, .5 to .7 in. long; cells about 8. *Fruit* an ovoid densely pubescent brown berry, .8 to 1 in. long, 1-2-seeded, surmounted by the persistent style. *Seed* ovoid, obliquely pointed below, rounded above, .7 in. long, .4 in. in diam., sometimes flattened on one side; testa thin, crustaceous, chestnut-brown, shining; hilum very large, obovate; albumen none; cotyledons thick, .5 in. long, ovate; radicle small, pointed.

PERAK: on Larut peak, at 500 to 2,600 feet, *King's Collector*, 3241, 3547, 3964, 6410; *Wray* 2643, 3201; *Curtis* 3694; *Ridley* 5536.

4. *BASSIA PENICILLATA*, King & Gamble, n. sp. A large tree, reaching 60 feet in height with a girth of 4 feet; ultimate branchlets and innovations densely ferruginous-pubescent. *Leaves* coriaceous; oblong or somewhat obovate-oblong, shortly and abruptly acute at apex, unequally rounded at base; glabrous above, thickly golden-silky-pubescent beneath when young, afterwards glabrate; margins recurved; 6 to 10 in. long, 2.5 to 3.5 in. broad; midrib thick, prominent, impressed and keeled above; main-nerves 24 to 28 pairs, conspicuous, parallel, .3 to .5 in. apart in large leaves, starting at about 80° with the midrib, curved only near the margin to meet in an inconspicuous looped intramarginal nerve; secondary nerves many in large leaves; reticulations oblique, not prominent; petiole 1.2 to 1.5 in. long, thickened below. *Flowers* fascicled, about 1 to 4 together in the axils of the leaves, on very short rusty-pubescent tubercles; pedicels 1 to 1.2 in. long, slender, pubescent; buds conical. *Calyx-lobes* 4, sometimes 5, .4 in. long; outer pair ovate-acuminate, densely rusty-pubescent, thick; inner pair,

sometimes 3, ovate acuminate, thinner, pubescent on the back, ciliate and more or less scarious on the margins. *Corolla* campanulate, .4 in. long; tube nearly .2 in. long, glabrous outside, densely ferruginous hairy within in the upper half; lobes 10 (?), lanceolate, acuminate, as long as tube. *Stamens* 20 in 1 row, but the 10 opposite the corolla-lobes behind the 10 alternate with them; filaments .05 in. long, hairy; anthers linear-sagittate, extrorse, the connective produced in a long penicillate acumen. *Ovary* rounded, densely hairy, as is the lower half of the .75 in. long slender style; cells 10. *Fruit* not known.

PROVINCE WELLESLEY: at Tassek Glugor, *Curtis* 3737, said to be common. Vern. name "*Minjato*."

In its leaves this species greatly resembles *B. aristulata*, but the slender pedicels, smaller flowers, acuminate calyx, and penicillate anthers at once distinguish it.

5. *BASSIA MALACCENSIS*, King & Gamble. A large tree (?); branchlets dark brown, rough, with prominent old leaf-scars, innovations nearly glabrous. *Leaves* chartaceous or almost membranous; obovate or obovate-oblong, obtuse or shortly and abruptly acute at apex, cuneate at base; glabrous above, sparsely and minutely pubescent beneath when young, glabrous when old; 6 to 12 in. long, 4 to 6.5 in. broad; midrib prominent, thick; main-nerves very conspicuous, 14 to 16 pairs, parallel, in average leaves .5 in. apart, in large ones often nearly 1 in., starting at an angle of 60° with the midrib, at once curving gently upwards to and along the margin; secondary nerves few, reticulations mostly transverse, not prominent; petiole 1 to 2 in. long, slightly bordered above to about half-way down by the decurrent margins of the blade, base much swollen, wrinkled. *Flowers* fascicled 4 to 8 together in the axils of the leaves or of the scars of fallen leaves, on rather thick pubescent tubercles; pedicels .4 to .6 in. long, pubescent; buds when young rounded-conical. *Calyx-lobes* 4; 2 outer valvate or slightly imbricate, ovate, bluntly acute or mucronate, rusty-pubescent, .25 in. long; 2 inner imbricate, ovate-acute, margins sometimes scarious, sometimes ciliate, back thickly rusty-pubescent, more or less keeled. *Corolla* campanulate; tube very short, rarely .1 in. long, with a short ring of hairs at the mouth inside; lobes 10-12, lanceolate, obtuse, sub-2-seriate, .25 to .3 in. long, glabrous except for a few stiff hairs outside. *Stamens* 20 to 24 in 2 rows; the inner almost or quite sessile, alternate with the corolla-lobes; the outer with short densely pubescent filaments, longer than the inner ones; anthers narrowly lanceolate with long hairs, opening on the margins; connective produced in a long hair-like acumen. *Ovary* hairy, elongate, conical, style .25 in. long. *Fruit* a fleshy obovate-oblong berry with somewhat flattened top, surmounted

by the persistent base of the style and supported by the persistent calyx-lobes, nearly 1 in. long. *Seed* 1, oblong, acute at the top, .7 in. long, .35 in. broad, and about .3 in. thick; testa shining, crustaceous, chestnut-brown; hilum .15 to .2 in. broad; albumen none; cotyledons thick, inner face somewhat striate; radicle rather large, inferior. *Payena malaccensis*, Clarke in Hook. f. Fl. Br. Ind. III. 547. *Keratephorus Wightii*, Maingay MS. (not of Hassk.).

MALACCA: *Griffith* (K.D.) 3610; *Maingay* (K.D.) 992. PERAK: *Wray* 1229; *Scortechini* 314. SINGAPORE: *Ridley* 2082, 2757, 5643, 6042, 6132, 6133, 6498, 6499, 6500, 6531, 8078, 10159.

Wray says this species gives only a sticky gutta in small quantities.

6. *BASSIA CURTISII*, King & Gamble, n. sp. A tree, reaching 40 to 50 feet in height; branches greyish-brown, strongly marked by the scars of fallen leaves and the prominent tubercles of fallen flowers, innovations very slightly rusty-pubescent, thick. *Leaves* very coriaceous; clustered at the ends of the branchlets, obovate or sometimes lanceolate-obovate, obtuse emarginate or very suddenly and shortly blunt-acuminate; glabrous on both surfaces, margins strongly recurved; 4 to 6 in. long, 1.25 to 2.5 in. broad; midrib stout, prominent; main-nerves not prominent, 14 to 15 pairs, at an angle of about 70° with the midrib, .3 to .4 in. apart, straight, joined near the margin by a looped intramarginal nerve; secondary nerves prominent, reticulations few; all raised on the under surface; petiole .7 to 1 in. long, rather thick, bordered by the decurrent margins of the blade, base swollen. *Flowers* fascicled, many (10 to 12) together on prominent tubercles in the axils of the scars of fallen leaves below the leaf-cluster, and covering the branchlets densely for a distance of about 4 in.; pedicels .25 (buds) to .5 (flower) in. long, somewhat angular, decurved, densely pale tawny-pubescent; buds ovoid-conical. *Calyx-lobes* rounded, obtuse, densely tawny-pubescent, .2 in. long, the outer pair thick, the inner somewhat keeled, scarious on the margins. *Corolla* campanulate, rather longer than the calyx; tube short, glabrous except for the ring of hairs at the insertion of the stamens; lobes 8, oblong spathulate, ciliate and hirsute at the tip. *Stamens* 16; filaments short, slender, villous; anthers ovate-acute, the connective ending in a sharp conical acumen, extrorse. *Ovary* rounded, villous; style thick glabrous, stigmas minute; cells 8. *Fruit* an oblong berry, covered without with appressed golden pubescence, .5 to .7 in. long, .5 in. broad, crowned with the persistent style and supported by the persistent calyx; seeds 1-2, placentas thin. *Seeds* oblong, pointed at the ends; testa crustaceous, shining; hilum narrow; albumen none; cotyledons thick, fleshy, radicle small.

PENANG: *Curtis* 1451, 3536. PERAK: *Wray* 512, Vern. "Gutta Gannu"; *Seorteehini* 1408.

This species comes near both to *B. Motleyana*, from which it differs in having more coriaceous leaves, larger flowers, and a pubescent fruit; and to *B. cuneata*, in which the leaves (judging from the poor specimens in Kew Herbarium) are thinner and the fruit larger and nearly glabrous, with more rounded seeds and a broad hilum.

7. *BASSIA LAURIFOLIA*, King & Gamble, n. sp. A tree reaching 60 feet in height and a diam. of 12 to 18 in.; branches spreading; branchlets pale brown, rather thick, innovations densely pubescent with yellowish-tawny hairs. *Leaves* chartaceous; obovate-lanceolate, gradually acuminate at apex, also at base; glabrous on both surfaces except on the sides of the midrib beneath; 5 to 10 in. long, 1.5 to 3.5 in. broad; midrib prominent, impressed and keeled above; main-nerves prominent, regular, 14 or 15 pairs, about .3 in. apart, starting at about 45° with the midrib, gradually curving upwards; reticulations obliquely transverse, faintly marked; petiole .75 to 1 in. long, slender, glabrous above, tawny-pubescent at base, bordered by the decurrent margins of the blade and marked above by the produced keel of the midrib; stipules linear-subulate, tawny-pubescent, nearly .5 in. long, very caducous. *Flowers* fascicled, about 6 together, on hairy tubercles in the axils of the leaves or of the scars of fallen leaves near the top of the branchlets; pedicels .4 to .5 in. long, usually recurved, densely tawny-pubescent, thicker in fruit; buds small, conical. *Calyx-lobes* 4, about .2 in. long, rather narrowly ovate; the outer pair obtuse; the inner acute, all densely tawny-pubescent without, glabrous within. *Corolla* campanulate; tube .05 in. long with a ring of hairs at the mouth inside; lobes 8, oblong-spathulate, .1 in. long, glabrous. *Stamens* 14 to 16, .1 in. long; filaments short, thickly hairy; anthers linear-sagittate, the connective produced in a long sharp acumen. *Ovary* rounded, glabrous; style slender, .3 in. long; cells apparently 8. *Fruit* a black glabrous oblong berry about .6 to .7 in. long and .4 in. broad. *Seed* 1, ovoid, .5 to .6 in. long, slightly compressed; testa thin, crustaceous, shining, dark brown; hilum broad; albumen none; cotyledons oblong, fleshy, about .3 in. long and nearly .2 in. broad; radicle inferior, rather large.

PERAK: on low ground, *King's Collector* 3104, 3718, 3720.

VAR. *obtusa*, King & Gamble. *Leaves* obtuse with an abrupt acumen. *Calyx-lobes* obtuse, thickened at tip. *Corolla-lobes* ciliate at the apex, glandular-striate; anthers and produced connective very hirsute.

PENANG: *Curtis* 159, 2254, 3589—a small tree, fairly common.

VAR. *parvifolia*, King & Gamble. *Leaves* smaller than in type;

innovations not tawny-pubescent. *Calyx-lobes* more rounded and glabrous; pedicels longer.

KEDAH: on Kedah Peak, *Ridley* 5506.

Ridley's No. 2673 from Tahan Woods, Pahang, is very near *B. laurifolia*, but the pedicels are much longer and the calyx-lobes not tawny-pubescent. The material is insufficient for description.

8. *BASSIA RUPICOLA*, King & Gamble, n. sp. A tree reaching 40 to 60 feet in height and 15 to 20 in. in diam.; branchlets dark grey, marked by the prominent scars of fallen leaves, innovations puberulous; leaf-bud scales ovate-lanceolate, .25 in. long. *Leaves* coriaceous; obovate-oblong, bluntly acute at apex, cuneately attenuate at base; dull and glabrous on both surfaces; 3.5 to 5.5 in. long, 1.5 to 2 in. broad; midrib thick, conspicuous; main-nerves 8 to 10 pairs, starting at an angle of 45° with the midrib, then curving upwards, sometimes rather indistinct, about .4 in. apart; reticulations many, obscure, obliquely transverse; petiole .5 to 1 in. long, grooved above and bordered by the decurrent base of the blade, swollen below. *Flowers* fascicled, about 5 together, in the axils of the leaves, on small tubercles; pedicels .15 in. long, ferruginous-pubescent like the calyx and buds. *Calyx-lobes* 4, 2 outer valvate; 2 inner valvate or imbricate, ovate, .2 to .25 in. long; all more or less recurved and ciliate at tip. *Corolla* tubular-campanulate, lobes and tube nearly equal, mouth of tube inside with a ring of soft ferruginous hairs; lobes oblong, ciliate at tip, sparsely hairy without, nerves spreading. *Stamens* 16, inserted above the ring of hairs in the mouth of the tube; filaments slender, .05 in. long, pubescent; anthers ovate-mucronate, tip ciliate, extrorse. *Ovary* ovoid; style curved, .3 in. long, stigma flat, minute. *Fruit* not seen.

PERAK: in rocky creeks on Gunong Batu at 1,500 to 2,000 feet, *King's Collector* 7411.

9. *BASSIA PERAKENSIS*, King & Gamble, n. sp. A tree reaching 60 to 80 feet in height and a considerable girth; branchlets thick, dark grey, prominently marked by the scars of fallen leaves and the tubercles on which the flower fascicles grew. *Leaves* coriaceous; oblong or obovate-oblong, shortly and abruptly acuminate at apex, acuminately narrowed at base; margins recurved, glabrous on both surfaces; 4 to 6 in. long, 1.5 to 2.5 in. broad; midrib stout, prominent; main-nerves slender, indistinct, 14 to 18 pairs, starting at an angle of 50° with the midrib, parallel, straight at first, arching near the margin to join in an intra-marginal looped nerve which is also met by the secondary nerves between the main ones; reticulations faintly marked on both surfaces; petiole .75 to 1 in. long, rather thick, bordered above by the decurrent

margins of the blade, swollen below. *Flowers* in fascicles of up to 10 to 12, on tubercles in the axils of the leaves or above the scars of fallen leaves on the previous year's wood; pedicels .5 to .6 in. long, slender, flattened below the flowers, densely pubescent at first, afterwards nearly glabrous, recurved in fruit; buds small, conical. *Calyx-lobes* 4, .2 in. long; 2 upper ovate-acute, densely pubescent, valvate; 2 lower imbricate, also densely pubescent, ciliate on the margins, somewhat keeled, ovate-acute. *Corolla* funnel-shaped; lobes 8, throat villous. *Stamens* about 16; filaments short glabrous; anthers sagittate. *Ovary* globose, villous, 8-celled, style .3 to .4 in. long, stigma minutely lobed. *Fruit* an ovoid densely pubescent berry about .7 to .9 in. in diam., crowned by the persistent style; seeds 1-2. *Seed* ovoid-oblong, .65 in. by .35 in., acute at base; testa shining, chestnut-brown, thin, crustaceous; bilum large, oblong; albumen none; cotyledons oblong, .45 in. long, .25 in. broad, radicle very small.

PERAK: *King's Collector* 512, 3846; *Curtis* 3695, on the Larút hill up to 2,500 feet.

10. *BASSIA ARGENTEA*, Clarke in Hook. f. Fl. Br. Ind. III. 545 (1882) (*not of de Vriese*). A large tree; branchlets rather thick, greyish-brown. *Leaves* coriaceous-chartaceous; elliptic or elliptic-oblong, abruptly acuminate at apex, acute and often unequal at base; glabrous above, shining grey-silky beneath when young, nearly glabrous when old; 4 to 7 in. long, 2.5 to 3 in. broad; midrib prominent, thick; main-nerves 13 to 15 pairs, about .4 in. apart, starting at about 60° with the midrib, at first straight then curving upwards; reticulations many, very oblique; petiole 1 in. long, upper part bordered by the decurrent margin of the blade, swollen below and rugose. *Flowers* fascicled in clusters of 6 to 10 in the axils of the leaves, or above the scars of fallen leaves; pedicels slender, about .5 in. long, appressed-pubescent; buds conical. *Calyx-lobes* 4, outer and inner pairs both valvate; lobes ovate, .2 to .25 in. long, acute, pubescent. *Corolla* tubular-campanulate, tube .1 in. long; lobes 8 to 9, .15 in. long, linear-oblong. *Stamens* usually 24, in 3 rows, inserted on the top of the tube on a ring of rusty hairs; filaments very small or none; anthers ovate, densely hirsute, black-apiculate. *Ovary* rounded, depressed above, villous; style .2 to .3 in. long, villous half-way up, subulate; stigma capitate; cells 8 to 10. *Fruit* not seen.

MALACCA: *Maingay* (K.D.) 991, 1524; *Derry* 941.

Bassia argentea, de Vriese, seems to be a *Sideroxylon*, cf. Burck & Koord. & Val.

11. *BASSIA BRACEANA*, King & Gamble, n. sp. A tree with spreading branches, reaching 50 to 70 feet in height and 10 to 20 in. in diam.; branchlets pale brown. *Leaves* chartaceous; bright green, glossy.

oblong or elliptic-oblong, acuminate both at apex and at base; glabrous above, minutely pubescent on the nerves or in the axils of the nerves beneath; 4 to 8 in. long, 2 to 3 in. broad; midrib thick, impressed above; main-nerves 14 to 18 pairs, regular, parallel, conspicuous, about .4 in. apart, starting at about 60° with the midrib, arching upwards to join near the margin; reticulations oblique, slender but conspicuous, joining the main-nerves more or less horizontally; petiole .8 to 1.4 in. long, grooved above and bordered by the decurrent margins of the blade, thickened and somewhat curved below. *Flowers* fasciculate, usually 4 to 7 together, in the axils of the leaves, or above the scars of fallen leaves on the last year's wood below; pedicels .4 to .6 in. long, thickened above, otherwise slender, slightly pubescent. *Calyx-lobes* 4, .15 to .25 in. long; 2 outer opposite ovate rounded, enclosing the 2 inner concave rounded; sometimes ciliate on the margins, sometimes slightly emarginate, all more or less golden-pubescent without, enlarged after flowering. *Corolla* cream-coloured; tube cylindrical, short, about .1 in. long only; lobes more or less spreading, 8 to 9, linear-oblong, .2 in. long, slightly twisted. *Stamens* 16 to 18, in 2 rows, inserted on the top of the tube inside above a thick ring of tawny hairs; filaments very short; anthers ovate-lanceolate, strigosely hirsute, the connective ending in a long dark acumen. *Ovary* globose, glabrous; style .15 in. long, stigmas very minute; cells about 8. *Fruit* an oblong green fleshy berry, .8 to 1 in. long, crowned by the remains of the style; seed usually 1 only. *Seed* ovoid, flattened, .8 in. long, .5 in. broad, and .25 in. thick; testa chestnut-brown, shining, crustaceous; hilum elongate, pale, conspicuous; albumen none; cotyledons thick, .5 to .6 in. long, ovoid, somewhat acute; radicle minute.

PENANG: *Curtis* 3063. PERAK: *King's Collector* 1846, 3195, 3275, 3740, 6447, 7584, 10412; *Seortechini* 314, 1483; *Wray* 1775, 2613, 2694.

VAR. *lanccolata*, King & Gamble. *Leaves* narrower, more lanceolate-acuminate; main-nerves closer. *Flowers* more numerous in the fascicles and fascicles more numerous on the last year's wood. *Corolla-lobes* often unequal in length, acute. *Anthers* with the acumen bifid.

PERAK: *Wray* 189, 1248, up to 3,400 feet.

13. *BASSIA LONGISTYLA*, King & Gamble, n. sp. A large tree, reaching 80 to 100 feet in height; branchlets thick, dark greyish-brown, innovations minutely pubescent. *Leaves* chartaceous; elliptic, shortly and rather abruptly acuminate at both apex and base; glabrous on both surfaces; 3.5 to 5 in. long, 1.5 to 2 in. broad; midrib slender; main-nerves 12 to 14 pairs, leaving the midrib almost at right

angles and curving upwards to meet near the margin; secondary nerves somewhat prominent as are the reticulations; petiole .6 to .8 in. long, slender, grooved above. *Flowers* fascieled, often up to 10 together, on tubercles above the scars of fallen leaves on the last year's wood; pedicels slender, glabrous, .5 to .7 in. long. *Calyx-lobes* 4, .15 to .2 in. long, ovate, somewhat acute, somewhat pubescent outside, the 2 outer enclosing the 2 inner. *Corolla* with very short (.05 in. long) cylindrical tube; lobes 8 to 9, rather spreading, oblong-lanceolate, obtuse or emarginate, prominently nerved, glabrous. *Stamens* 16 to 18, .2 in. long, inserted in 2 rows on the top of the tube above a short ring of tawny hairs; filaments .125 in. long, slender; anthers ovate, .075 in. long, apiculate, extrorse. *Ovary* cylindrical, style .5 in. long, surmounted by a minute rounded stigma. *Fruit* unknown.

PERAK: *King's Collector* 2680. SINGAPORE: *Ridley* 6498 (?).

This species comes very near to *B. Braceana*, but the anthers differ so much that we hesitate to join them.

13. *BASSIA CUPREA*, King & Gamble, n. sp. A tree reaching 60 to 70 feet in height; branchlets thick, brown, uppermost somewhat angular. *Leaves* coriaceous; oblong, obtuse or emarginate at apex, attenuate at base and somewhat unequal; glabrous above, sparsely hairy on the nerves beneath, otherwise glabrous; 4.5 to 6 in. long, 2.5 to 3 in. broad; of a coppery-brown colour when dry; midrib very thick and prominent; main-nerves 10 to 12 pairs, starting at an angle of about 50° with the midrib, curving upwards to and along the margin; reticulations visible but not strong; petiole thick, .75 to 1 in. long, bordered above by the decurrent margin of the blade. *Flowers* fasciculate in the axils of the leaves or of the scars of fallen leaves, 2 to 5 or more in a fascicle, fragrant; pedicels .5 in. long, pubescent; buds conical, .3 in. long. *Calyx-lobes* 4, .25 in. long; 2 outer valvate, broadly ovate, shortly pubescent; 2 inner rounded concave, shallowly emarginate, ciliate and scarious on the margins, pubescent without. *Corolla* .4 in. long; tube funnel-shaped, .1 in. long, mouth densely brown-hirsute; lobes 8-9, erect or spreading, .3 in. long, oblong, rounded at apex, long brown-silky-pubescent on back, strigosely hairy within. *Stamens* 18 to 22, inserted on the mouth of the tube; filaments hairy, .05 in. long; anthers ovate-acuminate, .15 in. long, the connective produced in a long usually curved acumen, strigosely hirsute. *Ovary* oblong, glabrous, 8-10-celled, ending in a style .5 in. long surmounted by a minutely 9-10-lobed flat stigma. *Fruit* not seen.

PERAK: *Scortechini* 1879.

This species comes near to *B. Motleyana*, Clarke, but the flowers are much larger and different.

14. *BASSIA MOTLEYANA*, Clarke in Hook. f. Fl. Br. Ind. III. 546 (1882). An erect lofty tree of swampy places; branchlets dark brown, marked by prominent leaf-scars. *Leaves* coriaceous; elliptic, shortly and abruptly acuminate at apex, cuneate at base, the two sides sometimes unequal; glabrous on both surfaces; 4 to 5 in. long, 1·5 to 2·5 in. broad; midrib prominent, raised above; main-nerves 10 to 12 pairs, irregularly spaced, generally at about an angle of 60° with the midrib, meeting near the margin in a looped intramarginal nerve; secondary nerves prominent, similar to the main-nerves, reticulations few; petiole ·8 to 1·2 in. long, rather thick, bordered by the decurrent margins of the blade. *Flowers* fascicled, many together (10 to 12), in the axils of the leaves or of the scars of fallen leaves below the terminal tuft, often fully clothing the branchlets for a distance of 6 in. or more; pedicels slender, ·4 to ·7 in. long, buds ovoid. *Calyx-lobes* 4, ·15 to ·2 in. long, ovate, obtuse or somewhat acute, sparsely pubescent, the inner pair somewhat scarious on the margins. *Corolla* campanulate, ·15 to ·2 in. long; tube short, about $\frac{1}{3}$ of the whole; lobes 8, 4 outer enclosing 4 inner, oblong-spathulate, obtuse at tip and ciliate ferruginous-pubescent. *Stamens* 16, inserted on the top of the tube on a ring of long ferruginous hairs; filaments short, slender; anthers ovate-lanceolate, short-apiculate. *Ovary* rounded, villous, 6–8-celled; style ·5 in. long, thick, sparsely pubescent. *Fruit* an obovoid glabrous berry, acute at top and furnished with the remains of the persistent style; calyx-lobes also persistent; ·5 in. long, ·3 in. broad, 1–2-seeded. *Seeds* oblong, acute at both ends; testa crustaceous, shining; albumen none; cotyledons fleshy; radicle small. Burck in Ann. Jard. Buit. V. 44. *Isonandra Motleyana*, de Vriese in Miq. Journ. Bot. Neerl. I. (1861) 257.

MALACCA: *Griffith* (K.D.) 3608; *Derry* 1026. JOHORE: *Ridley* 6496. SINGAPORE: *Ridley* 5645, 5896.—DISTRIB. Borneo (*vide* Burck).

De Vriese says the milky juice gives a gutta of bad quality, being more waxy and fragile than that of other kinds.

VAR. *Scortechinii*, King & Gamble. *Leaves* much larger, 6 to 8 in. long, 2·5 to 3·5 in. broad, main-nerves 15 or 16 pairs. *Fruit* nearly globose—a dark green berry, shining when dry.

PERAK: *Scortechinii*, at Port Weld, No. 1550; *King's Collector* 5454, 6735, on low, wet ground—a tree reaching 60 to 80 feet in height and 15 to 20 in. in diam.

15. *BASSIA CUNEATA*, Bl. Bijdr. 675. A tree (?); branchlets dark brown, scarred, rather thick. *Leaves* coriaceous; clustered at the ends of the branchlets, greenish-brown when dry, obovate, obtuse-emarginate or very shortly and abruptly acute at apex, cuneate at base;

glabrous, margins slightly recurved; 4 to 5 in. long, 2 to 3 in. broad; midrib stout, prominent, impressed above; main-nerves not prominent, about 20 pairs, nearly at right angles to the midrib, anastomosing near the margin with the secondary nerves; reticulations transverse; petiole .6 to 1 in. long, bordered by the decurrent margins of the blade. *Flowers* in axillary fascicles as long as the petiole, not seen. *Fruit* a globose berry .75 to 1 in. in diam., 1-3-seeded. *Seeds* .5 to .7 in. long, .5 in. broad and thick, ovoid, not compressed, pointed at both ends; testa crustaceous, chestnut-brown, shining; hilum very broad (.4 in.); albumen none; cotyledons fleshy, semi-ellipsoidal. Miq. Fl. Ind. Bat. II. 1041; A. DC. Prod. VIII. 199; Clarke in Hook. f. Fl. Br. Ind. III. 546; Koord. & Val. Bijdr. I. 154.

MALACCA: *Maingay* (K.D.) 986. SINGAPORE: *Ridley* 6502.—
DISTRIB. Java.

16. *BASSIA PENANGIANA*, King & Gamble, n. sp. A tree (?); branchlets dark grey. *Leaves* chartaceous; oblong-lanceolate, acutely attenuate at both ends; glabrous, greyish-green when dry; 5 to 7 in. long, 1.5 to 2.5 in. broad; midrib broad, conspicuous, impressed above and then keeled; main-nerves 10 to 12 pairs, starting at an angle of about 50° with the midrib and curved upwards to and along the margin; reticulations transverse, raised above; petiole 1 to 1.2 in. long, bordered by the decurrent margins of the blade, swollen at base; stipules very small, ovate, pubescent, caducous. *Flowers* in fascicles of about 5 to 6 in the axils of the leaves; pedicels slender, .4 to .5 in. long, appressed rusty-pubescent. *Calyx-lobes* 4, ovate, obtusely acuminate, recurved, .2 in. long, lower half thick, wrinkled, upper half thinner, somewhat scarious, sparsely appressed golden-pubescent. *Corolla* tubular-campanulate, .25 in. long; lobes 8 (?), oblong-spathulate, glabrous within, golden-pubescent without; tube rather shorter than lobes. *Stamens* 16 (?), inserted in a ring of hairs on the top of the tube; filaments slender; anthers linear-oblong, hirsute, the connective produced in a rather long, somewhat blunt, penicillate mucro. *Ovary* conical, glabrous; style slender, .3 in. long; cells 8.

PENANG: *Curtis* 1450.

17. *BASSIA ERYTHROPHYLLA*, King & Gamble, n. sp. A tree, 40 to 50 feet in height and 1 foot in diam.; branchlets thick, grey, marked with the scars of fallen leaves and the tubercles of fallen flowers. *Leaves* coriaceous: obovate-oblong, shortly and bluntly acuminate at apex, unequally attenuate at base; glabrous, orange-red when dry, margins slightly recurved; 6 to 8 in. long, 1.5 to 2.5 in. broad; midrib thick, prominent below, impressed above; main-nerves 10 to 12 pairs, rather irregular, starting at an angle of 60° from the midrib and

curved upwards to and along the margin; reticulations transverse, prominent, raised beneath; petiole 1·5 to 2 in. long, thickened at base, bordered above by the decurrent margins of the blade, younger ones golden-pubescent; stipules linear-subulate, ·3 to ·4 in. long, quickly caducous. *Flowers* fascicled, about 5 to 6 together, on raised tubercles above the scars of fallen leaves on year-old wood; pedicels in fruit thick, ·5 to ·6 in. long, golden-pubescent. *Calyx-lobes* 4, in fruit ovate-acute or rounded, densely golden-pubescent on both surfaces, thick; rest unknown. *Fruit* a globose, golden-pubescent, berry somewhat depressed at top and bearing the remains of the persistent style, ·5 to ·6 in. in diam. *Seed* not seen.

PENANG: at Highlands, *Curtis* 3652 (Kew) or 5652 (Calc.).

7. PALAQUIUM, Blanco.

Trees, often of great size and containing a milky juice. *Leaves* usually coriaceous, obovate or oblong, petioled, entire, sometimes covered beneath with a dense silky or tawny pubescence. *Flowers* fasciculate, in the axils of the leaves or of the scars of fallen leaves, pedicellate. *Calyx* of 6 lobes, the outer 3 valvate, the inner 3 imbricate. *Corolla* usually campanulate, tube short; lobes 6, imbricate, often contorted in bud. *Stamens* 12 or more (up to 18), opposite to and alternate with the corolla-lobes, those alternate often shorter and sometimes inserted higher up the tube; anthers ovate-lanceolate, dehiscence extrorse, connective produced; staminodes none. *Ovary* villous, 6-celled; style subulate. *Fruit* a fleshy, ovoid or ellipsoid, berry, 1–2-seeded. *Seeds* large, exalbuminous; the testa crustaceous; cotyledons thick, fleshy; radicle pointed, inferior.—DISTRIB. About 50 to 60 species, found in South India, Ceylon, Eastern Bengal, Burma, the Malay Peninsula and Archipelago, the Philippines, and Samoa (1 sp.). *DICHOPSIS*, Thw. in. Gen. Pl. II. 658.

Pedicels never over ·75 in. long, distributed for some distance down the upper branchlets:—

Leaves large, 5 to 12 in. long, obovate-obtuse; branchlets stout, nearly ·5 in. thick:—

Leaves nearly glabrous and glaucescent beneath, main-nerves distant, irregular 1. *P. obovatum*.

Leaves ferruginous-pubescent or tomentose beneath, main-nerves fairly close and regular:—

Leaves appressed-pubescent beneath, midrib glabrous on upper surface 2. *P. Maingayi*.

Leaves spreading-tomentose beneath, midrib hairy on upper surface 3. *P. Clarkeanum*.

Leaves rarely over 6 in. long, branchlets rarely ·25 in. thick:—

Leaves always more or less obovate:—

- Leaves golden-silky-pubescent beneath :—
 Main-nerves close, over 20 pairs 4. *P. Gutta*.
 Main-nerves about $\frac{1}{2}$ in. apart, under 20 pairs .. 5. *P. Oxleyanum*.
 Leaves not or only very slightly silky-pubescent
 beneath :—
 Leaves conspicuously red or yellow when dry .. 6. *P. xanthochymum*.
 Leaves not conspicuously red or yellow when dry,
 usually brown or greenish-brown :—
 Leaves over 3 in. long 7. *P. bancanum*.
 Leaves 2 to 3 in. long 8. *P. Ridleyi*.
 Leaves under 2 in. long 9. *P. microphyllum*.
 Leaves elliptic, not obovate :—
 Produced connective of anthers bifid at point; leaves
 glabrous 10. *P. hexandrum*.
 Produced connective of anthers simple at point; leaves
 grey-pubescent beneath 11. *P. Herveyi*.
 Pedicels 1 in. long or longer, clustered only at the extreme ends
 of the branchlets; leaves oblong-lanceolate, 3-6 in. long .. 12. *P. stellatum*.

1. *PALAEQUIM OBOVATUM*, King & Gamble. A big tree with a foxy odour (Ridley), evergreen; the branches thick, brown, marked by the very prominent scars of fallen leaves; leaves clustered towards the ends of the branchlets; innovations rusty-pubescent. *Leaves* coriaceous; obovate-cuneate or obovate-oblong, obtuse or very shortly acute at apex, cuneate at base; recurved and somewhat undulate on the margins; glabrous above, glaucescent beneath; 5 to 12 in. long, 2 to 4 in. broad; midrib thick, prominent, impressed above, much raised beneath; main-nerves about 12 pairs, at an angle of 40° to 45° with the midrib, inconspicuous above, raised and prominent beneath; reticulations many, oblique, obscure; petiole thick, .7 to 1 in. long, bordered above by the decurrent margins of the blade, glabrescent or slightly rusty-pubescent. *Flowers* in clusters in the axils of the leaves or on tubercles above the scars of fallen leaves; pedicels 3 to 5 together, .3 to .5 in. long, rusty-pubescent; buds at first globose, afterwards elongate by the growth of the corolla. *Calyx-lobes* 6; outer 3 triangular-ovate, thick, pubescent outside, .15 in. long; inner 3 imbricate, ovate-obtuse, .1 in. long, margins scarious. *Corolla* campanulate; tube very short; lobes 6, imbricate and twisted, .4 to .5 in. long, glabrous without, slightly pubescent within. *Stamens* 12, the 6 longer opposite to, the 6 shorter alternate with, the lobes of the corolla, ovate lanceolate, apiculate, thickly rusty-villous; filaments as long as anthers, slender, glabrous. *Ovary* globose; style .5 in. long, subulate, glabrous. *Fruit* a globose berry, .75 to 1 in. in diam., pulp fleshy, seeds 1 to 2. *Seed* ovoid, scarcely flattened on one side, pointed at base; testa thin, shining; albumen none, cotyledons fleshy. *Diehopsis obovata*, Clarke in Hook. f. Fl. Br. Ind. iii. 542. *Isonandra obovata*, Griff. Notul. iv. 293; Kurz

For. Fl. II. 120 and Journ. As. Soc. Beng. XLVI. ii. 230. *Bassia?* *hypoleuca*, Miq. Fl. Ind. Bat. Suppl. 582 (*vide* Kurz).

PENANG: *Holmberg* 783. MALACCA: *Griffith* (K.D.) 3606; *Maingay* (K.D.) 985, 996; *Curtis* 3480, 3481, 3482; *Hervey* 2754; *Derry* 59, 88; *Ridley* 10079; *Goodenough* 1994. SINGAPORE: *T. Anderson* 122; *Ridley*.
—DISTRIB. Tenasserim, Sumatra,

Curtis says it gives a low class bastard gutta of little value. Vern. "Niato bunga" "Niato tunbaga" "Niato balam."

2. *PALAQIUM MAINGAYI*, King & Gamble. A tree; stems reaching 60 feet in height and 10 to 15 in. in diam.; branchlets dark brown, rough, about $\cdot 4$ in. in diam., marked by the large scars of fallen leaves; innovations densely short-rusty-pubescent. *Leaves* chartaceous; obovate, obtuse at apex, cuneate or slightly rounded and more or less auricled at base; margins recurved; glabrous above except on midrib, thickly ferruginous-pubescent beneath; 5 to 13 in. long, 3 to 7 in. broad; midrib stout, impressed above, prominent beneath, main-nerves 12 to 20 pairs, $\cdot 5$ to $\cdot 8$ in. apart, starting at an angle of about 55° with the midrib, parallel to near the margin and then curving upwards to join in a marginal nerve; reticulations not prominent, obliquely joining the main-nerves; petiole 1 to $1\cdot 5$ in. long, thickly rusty-pubescent, channelled above by the decurrent margins of the blade; stipules subulate falcate, $\cdot 5$ in. long, very caducous. *Flowers* fasciculate, up to 10 together, in the axils of the leaves or of the scars of fallen leaves; pedicels $\cdot 5$ to $\cdot 7$ in. long, rusty-pubescent. *Calyx-lobes* 6; outer 3 valvate, ovate, densely pubescent, $\cdot 15$ in. long; inner 3 imbricate, orbicular, depressed at top, scarious and ciliate on the margins, $\cdot 15$ in. long. *Corolla* campanulate; tube short ($\cdot 1$ in.); lobes 6, imbricate, overlapping to the right, ovate-oblong, glabrous, $\cdot 25$ to $\cdot 35$ in. long. *Stamens* 12, $\cdot 25$ in. long, opposite to and alternate with corolla-lobes; anthers ovate, apiculate, slightly rusty-hirsute behind; filaments as long as anthers, slender. *Ovary* rounded; style $\cdot 2$ to $\cdot 4$ in. long, subulate; cells 6. *Fruit* a shining, green, fleshy berry, about $\cdot 5$ in. long, supported by the persistent calyx. *Seeds* 2, oblong; testa dark brown, crustaceous; albumen none. *Diehopsis Maingayi*, Clarke in Hook. f. Fl. Br. Ind. III. 543.

PERAK: *Wray* 524, 553, 2215, up to 2,000 feet; *King's Collector* 6644. MALACCA: *Maingay* (K.D.) 996/2; *Hervey*.

P. Ottolanderi, Koord. & Val. of Java is near this species, but is readily distinguished by its larger flowers and long pointed fruit.

3. *PALAQIUM CLARKEANUM*, King & Gamble. A large tree, with thick rough bark and spreading branches, reaching 100 to 150 feet in

height and 2 to 4 feet in diam. of stem; branchlets stout, uppermost .5 in. in diam., prominently pitted with the scars of fallen leaves, densely ferruginous-tomentose. *Leaves* chartaceous; obovate, obtuse at apex, cuneate at base; glabrous above except on the midrib which is strongly pubescent, densely ferruginous-tomentose beneath; margins recurved; 8 to 10 in. long, 4 to 5 in. broad; midrib very thick; main-nerves 18 to 22 pairs, rather irregular, starting at about 70° to 80° with the midrib, straight at first then arching at and along the margin, impressed above; reticulations obliquely transverse, prominent; petiole .7 to 1 in. long, thick, densely ferruginous-tomentose, enlarged at base. *Flowers* not seen. *Fruit* an oblong, glossy, bright green berry, 2 in. long, 1-seeded. *Seed* oblong, acute at both ends, rounded on the back, flattened at the hilum, 1.2 in. long, .5 in. broad; testa thin, chartaceous, shining, chestnut-brown; hilum oblong; cotyledons oblong, fleshy. *Dichopsis Clarkeana*, Brace MS. in Herb. Calc.

PERAK: at Waterfall Hill, 600 feet, *Wray* 530; on open hills near Larut at 500 to 1,000 feet, *King's Collector* 3796.

Wray says the gutta it gives is not enough in quantity to be worth extraction. The tree is evidently closely allied to *P. Maingayi*, and might almost be made a variety of that species.

4. PALAQUIUM GUTTA, Burck in Ann. Jard. Buit. V. 24, t. IV. (1885). A large evergreen tree; branchlets rough, prominently marked with the scars of fallen leaves and with longitudinal wrinkles; innovations minutely ferruginous-pubescent. *Leaves* coriaceous; obovate or obovate-oblong, abruptly and usually shortly acuminate at apex rarely rounded, cuneate at base; margins slightly recurved; glabrous above, densely appressed-golden-silky-pubescent beneath especially when young, when old glabrescent; 3 to 5 in. long, 1.5 to 2.5 in. broad; midrib prominent, impressed above; main-nerves 24 to 30 pairs, indistinct, starting at rather more than 60° with the midrib, parallel and arching only close to the margin; secondary nerves and reticulations inconspicuous, the latter very oblique; petiole 1 to 1.5 in. long, slender, grooved above, slightly thickened at base, appressed-golden-pubescent. *Flowers* in fascicles of about 4 to 5, in the axils of the leaves or of the scars of fallen leaves on the previous year's wood; pedicels thick, .1 to .2 in. long, somewhat angular, densely golden-pubescent. *Calyx-lobes* 6; 3 outer valvate, triangular-ovate, .3 in. long; 3 inner imbricate, rather longer and more acute, golden-pubescent without. *Corolla* rotate-campanulate; tube shorter than the calyx; lobes 6, ovate, obtuse, imbricate and twisted at first, afterwards spreading, .25 in. long, glabrous. *Stamens* 12, opposite to

and alternate with the corolla-lobes, inserted at the top of the tube; filaments equal, slender; 1 in. long; anthers shorter than the filaments, ovate, extrorse, the connective produced in a broad point. *Ovary* sub-globose, slightly pubescent, 6-celled; ovules oblong, one in each cell; style .4 to .5 in. long, filiform; stigma obtuse. *Fruit* a 1-2-seeded berry, .6 to .7 in. in diam., ovoid, acute at top; pulp very glutinous, hard. *Seeds* oblong, rounded at the ends; hilum very large, elliptic, occupying about one-half of the surface; testa shining. Pierre in Bull. Soc. Linn. Par. I. 498; Engl. & Prantl Pflanzenfam. IV. i. 135, fig. 71; Baill. Hist. des Pl. XI. fig. 296. *Dichopsis Gutta*, Benth. in Gen. Pl. II. 658; Clarke in Hook. f. Fl. Br. Ind. III. 543. *Isonandra Gutta*, Hook. Lond. Journ. Bot. VI. 463 t. 16; Walp. Ann. i. 496; Miq. Fl. Ind. Bat. II. 1038 t. XXXVI.; Benth. & Trim. Med. Pl. t. 167.

PENANG: *Curtis* 780, 3535, 3582, 3633, 3635. PERAK: *Wray* 522. MALACCA: *Maingay* (K.D.) 983. DINDINGS: *Hallifax* (*Curtis* 3639). SINGAPORE: *Lobb* 290; *Ridley* 9519, 11320.

The true guttapercha tree, perhaps the most valuable of all the trees of the Peninsula. It gives the "Taban" Gutta or "Taban Merah." It has become very scarce in a wild state, but is now being much planted, so perhaps it may soon again become common (see also H. C. Hill, Reports on Forest Conservancy in the Straits Settlements and the Federated Malay States, and Burn-Murdoch in "Indian Forester," XXXI. 309, "Some Facts about Gutta Percha.") *Ridley*, in Trans. Linn. Soc. III. (1893), 317, says the tree was seen by him in several places in the Tahan woods, and that a considerable amount of guttapercha is collected there.

VAR. *oblongifolia*. A large tree; stem reaching 80 feet in height and up to 2 feet in diam. *Leaves* larger than in the typical form, obovate-oblong or lanceolate-oblong; longer, abruptly acuminate, reaching 7 in. in length and 3 in. in breadth, rather more conspicuously golden-pubescent. *Flowers* similar but a little larger, pedicels a little shorter. *Fruit* rather larger, less acute at top. *P. oblongifolium*, Burck in Ann. Jard. Bot. Buit. V. 25 tab. V. *Isonandra Gutta* var. *oblongifolia*, de Vriese, Tuinbouw Flora (1856), III. 226. *Isonandra Gutta*, var. β . *sumatrana*, Miq. Fl. Ind. Bat. II. 1038, and Suppl. 581.

PERAK: *Curtis* 3637, 3725; *Wray* 535; *Murton*; *King's Collector* 6475. JOHORE: *Curtis* 3632—in open forest in the hills at 500 to 1,000 feet.—DISTRIB. Sumatra, Borneo. Gives guttapercha like the type.

We are unable to find sufficient characters for separating this, as a species, from *P. Gutta*, as is done by Burck. The specimens available seem to point to a regular series of intermediates, so that it can scarcely be even maintained as a variety. It is possible that *P. malaccense* and *P. formosum*, Pierre in Bull. Soc. Linn. Par. I. 498, are both forms of *P. Gutta*, but we have seen no specimens. Beccari in "Nelle

Foreste di Borneo," p. 558, suggests the identity of the latter species with *P. oblongifolium*.

5. *PALAQIUM OXLEYANUM*, Pierre in Bull. Soc. Linn. Par. I. 498 (1885), *non* Burck. A large tree; branchlets dark brown, marked by prominent scars of fallen leaves; innovations minutely ferruginous-pubescent. *Leaves* coriaceous; oblong-obovate, abruptly and shortly acuminate at apex, cuneately attenuate at base; glabrous above, densely appressed-golden-pubescent beneath, finally glabrate, margins recurved; 5 to 8 in. long, 2.5 to 3 in. broad; midrib prominent, thick, impressed above; main-nerves 14 to 18 pairs, irregular, sometimes branched, .4 to .5 in. apart, starting at an angle of about 60° with the midrib, curved near the margin to meet in a rather faint looped intramarginal nerve; secondary nerves few; reticulations few, horizontally transverse; petiole 1 to 1.5 in. long, somewhat thickened at base, minutely rusty-pubescent, channelled above and bordered for some distance by the decurrent margins of the blade; stipules minute, falcate, caducous. *Calyx-lobes* 6; 3 outer rather thicker than 3 inner, ovate, sub-acute, densely ferruginous-pubescent, .25 in. long. *Fruit* a nearly globose berry, 1 in. long and about .75 in. in diam. *Seeds* oblong; testa shining, crustaceous. *Dichopsis pustulata*, Hemsl. in *Herb. Kew*.

PENANG: *Curtis* 3582. PERAK: *Curtis* 3631, 3638, 3724—on the hills up to 2,500 feet; *Wray* 511 (*part*), 590; *Douglas*; *Phillips*. SELANGOR: *Curtis* 3763, 3764. SINGAPORE: *Maingay* (K.D.) 983 (the No. 1948 quoted by Pierre); *Jas. Collins* (a pustulate form apparently diseased).

This species gives apparently the "taban sutra" or "taban putih" guttapercha, which is not one of the best quality.

VAR. *glabrata* King & Gamble. *Leaves* smaller, about 1.5 in. broad, glabrate beneath, rarely slightly golden-pubescent; *fruit* oblong; *branchlets* grey, very rough with scars of fallen leaves and flowers.

PERAK: *Wray* 511 (*part*), 518.

P. Oxleyanum, Burck Ann. Jard. Buit. v. (1886) 33, is a different plant altogether (see *Teysmann's* specimen in *Herb. Kew*).

6. *PALAQIUM XANTHOCHYMUM*, Pierre ex Burck in Ann. Jard. Buit. V. 30 (1885). A large handsome tree; the stem reaching 80 to 120 feet in height and 2.5 to 3 feet in diam.; branchlets dark brown, innovations rusty-pubescent; leaf-bud scales lanceolate, ciliate, about .1 in. long. *Leaves* coriaceous, glossy-green; obovate, obtuse and often emarginate at apex, cuneate at base; glabrous on both surfaces, margin recurved, reddish when dry; 2.5 to 4 in. long, 1.5 in. broad; midrib prominent,

impressed above; main-nerves obscure, about 12 to 14 pairs at about 60° with the midrib; reticulations scarcely visible; petiole $\cdot 5$ to $\cdot 6$ in. long, channelled above by the decurrent margins of the blade; stipules ovate, ciliate, very small, caducous. *Flowers* fascicled, up to 8 together, in the axils of the leaves or of the scars below them; pedicels slender, recurved, $\cdot 2$ in. long; buds very small, conical. *Calyx-lobes* 6, $\cdot 1$ in. long; 3 outer valvate, 3 inner imbricate, ovate-acute, rusty-pubescent. *Corolla* campanulate, $\cdot 3$ in. long, tube short; lobes 6, imbricate, oblong, blunt. *Stamens* 12, inserted on the top of the tube; filaments stout, curved; anthers ovate-sagittate, mucronate, extrorse. *Ovary* rounded, glabrous; style $\cdot 1$ in. long, subulate. *Fruit* an ovoid berry, glabrous. *Isonandra xanthoehyma*, de Vriese Nat. Tijdschr. Ned. Ind. XXI. 311, and Miq. Journ. Bot. Neerl. i. 259. *Dichopsis rubens*, Clarke in Hook. f. Fl. Br. Ind. III. 543.

PERAK: *King's Collector* 7288—on low ground and rich soil. MALACCA: *Maingay* (K.D.) 995. SINGAPORE: *Cantley* 63; *Ridley* 3774. —DISTRIB. Borneo.

Produces a guttapercha of a yellowish colour and second quality (de Vriese).

7. PALAQUIUM BANCANUM, Burek in Ann. Jard. Buit. V. 43 (1885). A very large evergreen tree; stems reaching 80 to 100 feet (Curtis), 100 to 120 feet (Kunstler) in height, with a girth of 10 to 12 feet; branchlets rough, prominently marked with the scars of fallen leaves, upper branchlets and innovations slightly but minutely rusty-pubescent. *Leaves* coriaceous; clustered at the ends of the branchlets, obovate or obovate-oblong, abruptly and very shortly acute at the otherwise rounded apex, cuneate at base; margins slightly recurved; glabrous on both surfaces, the lower with very minute glandular scales; 3 to 4 in. long, 1.5 to 2.5 in. broad; midrib prominent, impressed above; main-nerves very obscure, about 14 to 16 pairs, inclined at nearly 70° to midrib and at first parallel, afterwards arching, reticulations very faint; petiole $\cdot 7$ to 1 in. long, edged above with the decurrent margins of the blade, glabrous. *Flowers* fasciculate, clustered about 2 to 4 together in the axils of the leaves or of the scars of fallen leaves, often on a length of as much as 4 to 5 in. of the branchlet; pedicels and calyx minutely ferruginous-pubescent; pedicels $\cdot 1$ to $\cdot 15$ in. long, thick. *Calyx-lobes* 6, the 3 outer valvate rounded, the 3 inner imbricate acute, $\cdot 15$ to $\cdot 2$ in. long. *Corolla* campanulate, tube as long as calyx; lobes 6, ovate, spreading, as long as tube, glabrous except a slight rusty pubescence within. *Stamens* 12, the 6 longer opposite to, the 6 shorter alternate with, the corolla-lobes; filaments inserted on the top of the tube, slender; anthers ovate, apiculate, extrorse. *Ovary* flattened-

cylindrical, the top rusty-hirsute; style as long as corolla, subulate, glabrous; cells 6. *Fruit* a fleshy oblong or obovate berry, smooth, .75 in. long, .5 in. thick, 1-seeded.

PENANG: *Curtis* 3583, 3659. PERAK: *Wray* 3984; *King's Collector* 6506, 6509. SINGAPORE: *Ridley* 6019, 6134, 6502, 6507; *Fox* 11307 at Bukit Timah; *Cantley* 73.—DISTRIB. Bangka.

Said to give a kind of "guttapercha."

8. *PALAQIUM RIDLEYI*, King & Gamble, n. sp. A tree (?); branchlets blackish-grey, rough, innovations minutely rusty-pubescent. *Leaves* chartaceous-coriaceous; elliptic or elliptic-obovate, obtuse, emarginate or slightly acute at apex, cuneate at base; glabrous on both surfaces, margins slightly recurved; 2 to 3 in. long, 1 to 2 in. broad; midrib broad; main-nerves 8 to 10 pairs, starting at an angle of about 50° with the midrib, curving upwards to and along the margin, .2 to .3 in. apart; reticulations many, transverse, impressed above; petiole .5 to .7 in. long flattened and bordered by the decurrent broad margins of the blade; stipules small, ovate, hirsute, caducous. *Flowers* small, fascicled in groups of 6 or 7 together in the axils of the uppermost leaves; pedicels rather thick, about .25 in. long, sparsely appressed-pubescent. *Calyx-lobes* 6, .1 in. long; 3 outer rounded, shortly mucronate, glabrous, wrinkled when dry; 3 inner thin, scarious on the margins, ciliate, rusty-pubescent on both sides. *Corolla* tubular-campanulate, .15 in. long, glabrous; lobes 6, oblong, obtuse, erose at tip; tube as long as lobes. *Stamens* 12, inserted on the top of the tube opposite to and alternate with the lobes; filaments slender as long as the lobes; anthers ovate-acute. *Ovary* conical, glabrous below, villous above, surmounted by a conical thick style, .05 in. long, 6-celled. *Fruit* not seen.

SINGAPORE: *Ridley* 3591A.

9. *PALAQIUM MICROPHYLLUM*, King & Gamble, n. sp. A tree (?); branchlets rounded, rough, dotted with scars of fallen leaves and flowers; innovations dark ferruginous-pubescent. *Leaves* coriaceous; obovate, obtuse or slightly obtusely-acute at apex, cuneate at base; glabrous on both surfaces, margins recurved; 1 to 2 in. long, .7 to 1 in. broad; midrib slender, impressed above; main-nerves indistinct, about 8 to 10 pairs, nearly at right angles to the midrib; reticulations very faint even when dry; petiole .4 to .5 in. long, bordered above by the decurrent margins of the blade. *Flowers* fascicled, 1 to 3 together, above the scars of fallen leaves on the past year's wood; pedicels .2 in. long, rusty-pubescent. *Calyx-lobes* 6; outer 3 valvate, ovate-acute, .15 to .2 in. long, densely tawny-pubescent; inner 3 imbricate, ovate,

blunt, scarious and ciliate on the margins, tawny-pubescent on the back, .1 to .15 in. long. *Corolla* tubular-rotate; the tube very short, scarcely .05 in. long; the 6 lobes oblong or nearly spatulate, .1 to .15 in. long, reflexed in flower, sparsely hairy without. *Stamens* 12, filaments slender, recurved; anthers ovate, .075 in. long, bi-mucronate. *Ovary* tawny-villous, conical; style .15 to .2 in. long, straight; cells 6. *Fruit* not seen.

SINGAPORE: at Bukit Timah, *Ridley* 10840.

10. *PALAEQUIM HEXANDRUM*, King & Gamble. A tree; branchlets light brown, innovations ferruginous-pubescent. *Leaves* chartaceous, glabrous; elliptic-oblong, shortly and bluntly acute at apex, attenuate and more or less unequal at base; 4 to 5 in. long, 2 to 2.5 in. broad; midrib thick, prominent; main-nerves 10 to 13 pairs, starting at about 65° to midrib then arched upwards, reticulations obscure. *Flowers* fasciculate, 3 to 4 together in the axils of the leaves or the scars of fallen leaves; pedicels slender, .4 in. long, minutely pubescent. *Calyx-lobes* 6; 3 outer valvate, 3 inner more or less imbricate, pubescent outside, ciliate, .05 to .07 in. long, apex scarcely acute. *Corolla* campanulate; tube .1 in. with a ring of hairs near the mouth inside; lobes 6, imbricate, .15 in. long, oblong obtuse, spreading. *Stamens* 12, inserted on the top of the tube, 6 opposite to and 6 alternate with the lobes, the alternate ones shorter; filaments slender; anthers exsert, ovate-lanceolate, bi-mucronate, as long as filaments. *Ovary* rounded, thickly rusty-pubescent; style subulate, .25 in. long. *Fruit* a fleshy berry, about .75 in. in diam., smooth, 1-seeded. *Seed* ovoid, .7 in. long, .5 in. broad, scarcely flattened; testa thin, brown, shining; hilum very large, occupying about one-half of the seed; albumen none. *Dichopsis hexandra*, Clarke in Hook. f. Fl. Br. Ind. iii. 543. *Isonandra hexandra*, Griff. Notul. IV. 292. *Payena Griffithii*, Kurz For. Fl. II. 121, and Journ. As. Soc. Beng. XLVI. ii. 230 (*vide* Clarke, *but with doubt*).

MALACCA: *Griffith* (K.D.) 3609; *Maingay* (K.D.) 984. SINGAPORE: *Ridley* 11373.—DISTRIB. Burma (?)

11. *PALAEQUIM HERVEYI*, King & Gamble, n. sp. A large tree; branchlets rather stout, dark brown; innovations minutely rusty-pubescent; leaf-bud scales lanceolate, .15 in. *Leaves* chartaceo-coriaceous; elliptic or elliptic-obovate, very shortly acute or sometimes emarginate at apex, cuneately attenuate often unequally at base; glabrous above except on midrib and nerves, sparsely rusty-pubescent beneath, afterwards glabrate, cinereous when dry; 2 to 3.5 in. long, 1.25 to 1.75 in. broad; midrib prominent; main-nerves 5 to 7 pairs at about 45° with the midrib and arching upwards, reticulations obscure; petiole .5 in. long

bordered above by the decurrent margins of the blade, rusty-pubescent. *Flowers* small, fascicled 4 to 6 together in the axils of the leaves or on tubercles above the scars of fallen leaves; pedicels .3 in. long, slender, decurved, pubescent; buds very small, globose. *Calyx* 6-lobed, 3 outer valvate, and 3 inner imbricate, .1 in. long, lobes ovate acute, pubescent. *Corolla* campanulate; tube short, rusty-hirsute without; lobes 6, oblong-linear, recurved in flower, hairy within at the base, .15 in. long, imbricate. *Stamens* 12; filaments long, exsert; anthers ovate, mucronate, extrorse, as long as filaments, hirsute. *Ovary* subglobose, rusty-pubescent, 6-celled; style slender, .3 in. long; stigma capitate. *Fruit* not seen.

PERAK: *Wray* 1104. MALACCA: *Maingay* (K.D.) 995; *Scortechini* 1892; *Hervey*. Vern. "Jongek" (*Hervey*).

Wray says the gutta is sticky and worthless.

12. PALAQUIUM STELLATUM, King & Gamble. A large tree, stems reaching over 100 feet in height; branchlets rather thick, dark brown, rough with the scars of fallen leaves; innovations ferruginous-pubescent. *Leaves* membrano-chartaceous, clustered at the ends of the branchlets; oblong-lanceolate, shortly acuminate at apex, cuneate at base; nearly glabrous above, pale and when young tomentose beneath, rusty-stellate-tomentose (*Scortechini*) on the nerves on both sides; 3 to 6 in. long, 1 to 1.5 in. broad; midrib prominent; main-nerves 10 pairs, starting at about 60° with the midrib and at once curving upwards; reticulations prominent on both sides in an elegant network; petiole .75 to 1 in. long, slender, densely rusty-pubescent. *Flowers* fasciculate, 3 to 5 together in the axils of the upper leaves, forming almost a terminal leafy corymb of about 20 to 25 flowers; pedicels slender, about 1 in. long, densely rusty-pubescent. *Calyx-lobes* 6, densely rusty-pubescent, in 2 series; the outer of 3 valvate, ovate, rounded lobes, the inner of 3 ovate ciliate lobes with scarious margins; both .25 to .3 in. long. *Corolla* campanulate, .3 to .4 in. long, the tube a little shorter than the lobes; the lobes imbricate, twisted in bud, rounded at top, glabrous. *Stamens* 12 in one series; filaments on the base of the tube and attached to it, free above, .2 in. long, thickened below, slender above; anthers oblong-lanceolate, apiculate, extrorse, .1 in. long, glabrous. *Ovary* rusty-pubescent, sub-globose; style slender, .35 in. long; cells 6 (?). *Fruit* not seen. *Diehopsis stellata*, *Scortechini* MS. in Herb. Calc.

PERAK: *Scortechini*, 1855.

A very distinct species, looking very like a *Bassia*. *Scortechini* says it yields good gutta, but in small quantities.

8. MIMUSOPS, Linn.

Trees with milky juice. *Leaves* chartaceous or coriaceous, with many usually inconspicuous parallel main-nerves. *Flowers* solitary or fascicled in the axils of the upper leaves on the branchlets. *Calyx-lobes* 6 or 8, in 2 series, the outer valvate enclosing the inner imbricate. *Corolla* with short tube; lobes 18 or 24 or more in 2 rows, one-third of the number in the inner, the rest in the outer, row; lobes of the outer row often divided.* *Stamens* 6 or 8, attached to the corolla-tube opposite the inner lobes; filaments short, dilated, free or connate in a tube with the staminodes; anthers lanceolate, extrorse, usually apiculate by the production of the connective. *Staminodes* alternate with and as many as the stamens, sub-petaloid, usually fimbriate. *Ovary* hirsute, 6–8-celled. *Fruit* a globose or ovate fleshy berry, epicarp crustaceous; seeds few or solitary. *Seeds* ovate or oblong, often oblique, slightly compressed; hilum basal or lateral; testa hard, shining; albumen fleshy, thin; cotyledons flat, leafy.—DISTRIB. Species about 30; in the tropics of both hemispheres.

Calyx-segments 8; stamens 8; staminodes acuminate, hairy .. 1. *M. Elengi*.
 Calyx-segments 6; stamens 6; staminodes fimbriate, glabrous .. 2. *M. Kauki*.

1. MIMUSOPS ELENGI, Linn. Sp. Pl. 349 (1753). An evergreen tree, stems reaching 40 to 50 feet in height, and with a large girth; ultimate branchlets with dark brown rusty pubescence. *Leaves* chartaceous; elliptic, shortly acuminate at apex, rounded (often unequally), at base; glabrous on both surfaces, shining above; margins slightly recurved; 3 to 5 in. long, 1·5 to 2·5 in. broad; midrib prominent, raised on both surfaces; main-nerves numerous, the first pair from the base forming intramarginal nerves, which are looped where they meet the 14 to 16 pairs of main-nerves; secondary nerves like the main-nerves and, with the reticulations, forming an elegant network; petiole ·6 to 1 in. long, slender; stipules triangular-subulate, very small, ferruginous-pubescent, very caducous. *Flowers* white, fragrant, solitary or in fascicles of 2 to 6 in the axils of the upper leaves; pedicels ·3 to ·7 in. long, often deflexed, appressed-ferruginous-pubescent; buds ovoid, acute. *Calyx-lobes* 8, ·3 in. long, ovate-lanceolate, acuminate; the 4 outer valvate, broader than the 4 inner imbricate and channelled on the back; all rusty-pubescent without, glabrous within. *Corolla* with a very short tube, scarcely over ·05 in. long; lobes 24, in 2 rows, the 16 outer linear-lanceolate, the 8 inner rather broader and shorter, linear-oblong. *Stamens* 8,

* The outer corolla-lobes are now usually considered to be of the character of stipules to the inner row which constitute the regular petals.

opposite the lobes of the inner row; filaments slender, .05 in. long; anthers oblong, glabrous, apiculate. *Staminodes* alternate with the anthers, oblong-lanceolate, acuminate, toothed, clothed on the back and sides with pale stiff hairs. *Ovary* silky-pubescent, 6-celled; style slender, grooved, as long as corolla. *Fruit* an ovoid berry about 1 in. long; yellow when ripe, 1- rarely 2-seeded. *Seed* oblong, .75 in. long, .5 broad and about .25 thick, rounded above, hollowed at base where is the small oval hilum; testa crustaceous, dark brown, shining; albumen thin; cotyledons oblong, leafy, nearly as large as the seed cavity; radicle inferior. Roxb. Cor. Pl. I. 15. t. 14, and Fl. Ind. II. 236; Gaertn. f. Fruct. I. 198, t. 42; Lamk. III. t. 300; Baillon Hist. Pl. XI. 267, figs. 302-309; Engl. & Prantl Pflanzenfam. IV. i. 152, fig. 82 E-J; Burek Ann. Jard. Buit. V. (1886) 61; Wall. Cat. 4146; A. DC. Prod. VIII. 202; Clarke in Hook. f. Fl. Br. Ind. III. 548; Dalz. & Gibs. Bomb. Fl. 140; Wight Ic. t. 1586; Brandis For. Fl. 293; Bedd. Fl. Sylv. t. 40; Kurz in Journ. As. Soc. Beng. XLVI. ii. 231, For. Fl. II. 123; Trimen Fl. Ceyl. III. 86; Prain Beng. Pl. 649; Cooke Fl. Bomb. II. 95. *M. obtusifolia*, Bl. Bijdr. 672. "*Elengi*" Rheede Hort. Mal. I. 33 t. 20. Rumph. Herb. Amb. II. 189 t. 63.

PERAK: *Scortechini* 1122. MALACCA: *Griffith* (K.D.) 3612; *Maingay* (K.D.) 995/2, 998; *Cuming* 2265.—DISTRIB. India, Ceylon, Burma, cultivated in other tropical regions; the fallen corollas are used to make garlands.

2. *MIMUSOPS KAUKI*, Linn. Sp. Pl. 349 (1753). A large evergreen tree; branchlets thick greyish-brown, extremities somewhat ferruginous-scaly or -pubescent. *Leaves* coriaceous, clustered towards the ends of the branchlets; obovate or elliptic-obovate, obtuse, emarginate or very slightly acute at apex, cuneate at base; glabrous above, densely and smoothly grey-silky-pubescent beneath; the margins slightly recurved; 2 to 4 in. long, 1.25 to 2.75 in. broad; midrib prominent; main-nerves very indistinct, about 14 to 16 pairs, parallel, meeting near the edge in a looped intramarginal nerve; petiole .5 to 1.5 in. long, moderately thick, channelled above. *Flowers* thickly clustered towards the ends of the branchlets; pedicels .75 to 1 in. long, appressed grey-silky-pubescent, angular. *Calyx-lobes* 6, .25 in. long; 3 outer valvate, ovate, acute, grey-silky-pubescent; 3 inner imbricate, similar but rather thinner. *Corolla* with a very short tube and 18 (or more, exceptionally) lobes in 2 rows; the outer row 12, lanceolate, acute; the inner 6, spatulate; all .1 in. long or nearly so, glabrous. *Stamens* 6 to 8, usually 6, extrorse; filaments .1 in. long, conical, glabrous; anthers .1 in. long, linear, blunt. *Staminodes* alternating with the stamens, .2 to .25 in. long, cuneate, deeply and irregularly fimbriate at apex.

Ovary villous, ovoid, 6-celled; ovules elliptic; style exsert, .4 in. long, slender. *Fruit* an ovoid rough berry, .1 in. long, 2-4-seeded. *Seeds* obliquely obovoid, somewhat curved near the base, .6 to .7 in. long by .4 to .5 in. broad and .4 in. thick; hilum lateral towards the base, .35 in. long, linear-oblong; testa thick, crustaceous, chestnut-brown; albumen thin; cotyledons flat, leafy, oblong, .3 to .35 in. long; radicle inferior, rather large. Wall. Cat. 4149E (*upper half*); A. DC. Prod. VIII. 203; Clarke in Hook. f. Fl. Br. Ind. III. 549; Miq. Fl. Ind. Bat. II. 1042; Koord. & Val. Bijdr. I. 156; Burek in Ann. Jard. Buit. V. (1886) 64. *M. Balata*, Gaertn. f. Fruct. III. 133. *M. Balota*, Bl. Bijdr. 673. *M. Hookeri*, A. DC. Prod. VIII. 204. *M. Bojcri*, A. DC. l.c. 205 (*vide Miquel*). *M. dissecta*, R. Br. Prod. 531. *M. Browniana*, Benth. Fl. Austral. IV. 285.—Rumph. Herb. Amb. iii. 19. t. 8 *flor. exc.*

PERAK: *Scortechlini*. MALACCA: *Griffith* (K.D.) 3614; *Maingay* (K.D.) 987.—DISTRIB. Amherst in Burma, *Wallich*; Malay Islands; tropical Australia—cultivated elsewhere for its edible fruit.

The following new species from the Andaman Islands seems worthy of description here.

MIMUSOPS ANDAMANENSIS, King & Gamble, n. sp. A tree (?); branchlets slender, grey; innovations, with inflorescence and leaf-petioles, covered with appressed pale tawny tomentum. *Leaves* coriaceous; elliptic-obovate, shortly acute at apex, cuneate at base; margins recurved; glabrous on both surfaces; 3 to 4 in. long, 2 to 3 in. broad; midrib slender; main-nerves about 15 pairs, parallel, very inconspicuous, secondary nerves similar to main-nerves, less prominent; petiole slender, .75 to 1 in. long, channelled above. *Inflorescence* of 1-3-flowered sessile umbels in the axils of the upper leaves; pedicels slender, .8 to 1 in. long, angular; buds ovoid-conical, .4 in. long. *Calyx-lobes* 8 in 2 series; outer 4 lanceolate, acuminate, valvate, reflexed when open, .4 to .5 in. long; inner 4 as long, linear-lanceolate, deeply channelled on the back, scarcely imbricate. *Corolla-lobes* 24, the inner series of 8, oblong-lanceolate, glabrous, obtuse, each bearing behind it two narrow acute, simple or deeply bifid lobes, rather shorter than and narrower than the 8 inner lobes. *Stamens* 8, opposite the inner corolla-lobes, and shorter than them; filaments slender, slightly hirsute, .075 in. long; anthers linear-sagittate, the connective produced in a long apiculus, often bifid. *Staminodes* alternate with the stamens and rather shorter than them, densely hirsute, linear-lanceolate, long acuminate, midrib black. *Ovary* rounded, 8-lobed, pubescent; style subulate, glabrous, stigma minutely cleft; cells 8, each with a narrow central ovule. *Fruit* unknown.

Hill jungle near Port Mout, S. Andaman, *King's Collector*.

In the characters of the corolla-lobes this species seems to be intermediate between *Mimusops* and *Imbricaria*, and, since Engler has recently reduced *Imbricaria* to a section of *Mimusops*, we have no hesitation in describing it under that genus.

Order LXXII. EBENACEÆ.

Shrubs or trees with usually hard wood. *Leaves* alternate, rarely sub-opposite, entire, usually coriaceous, ex-stipulate. *Flowers* usually diœcious, regular; the females usually (and the males sometimes) solitary; the males (and the females occasionally) in short, usually bracteate, axillary or extra-axillary cymes; pedicels articulated. *Calyx* inferior, gamosepalous, campanulate or tubular, with 3 to 7 valvate, imbricate or contorted, often accrescent, lobes. *Corolla* gamopetalous, variously shaped; the lobes 3 to 7, usually contorted, sometimes imbricate or valvate in bud. *Stamens* in the ♂ and ♀ flowers in a single series, and as many as the corolla-lobes, or 2- or more-seriate and 2 or more times as many; filaments shorter than the anthers, free or in pairs, or variously connate below; anthers linear, usually with longitudinal dehiscence, the connective often apiculate; in the ♀ flowers reduced to staminodes with empty or abortive anthers, or absent. *Disk* none. *Carpels* in the ♂ flowers abortive or absent; in the ♂ or ♀ flowers connate into a sessile superior ovary, with 2 to 8 usually more or less united styles; the cells as many as or twice as many as the styles with imperfect septa; ovules twice as many as the styles, anatropous, pendulous from the inner angles of the cells. *Fruit* a coriaceous or fleshy berry, several- or few-seeded. *Seeds* pendulous, usually oblong, vertically furrowed; testa thin; albumen copious, uniform or ruminant; embryo axial; radicle superior.—DISTRIB. About 320 species, in the tropics generally.

Flowers often 3-merous; ovary 3- or 6-celled ..	..	..	1. MABA.
Flowers mostly 4-5-merous; ovary 4-5 or 8-10-celled ..	..	..	2. DIOSPYROS.

1. MABA, Forst.

Trees or shrubs; leaves alternate, entire. *Flowers* diœcious (monœcious in *M. Maingayi*), axillary, shortly pedicellate or in small dense cymes; usually 3-merous, rarely 4- or 5-merous. *Calyx* 3- to 5-fid or partite, rarely sub-truncate, often cup-shaped and accrescent. *Corolla-tube* usually longer than the calyx; lobes of the limb 3, twisted to the right hand. *Male flowers: stamens* 3 to 21; filaments distinct, in pairs or otherwise united; anthers oblong; ovary rudimentary. *Female flowers: staminodes* 0 to 12; *ovary* 3-celled or perfectly or imperfectly 6-celled, 6-ovulate. *Fruit* ellipsoid or globose, baccate, glabrous or hairy, 1-6-celled and 1-6-seeded, rather dry or fleshy; albumen not ruminant.—DISTRIB. Species about 70; tropical.

Leaves opposite or almost opposite	..	..	..	1. <i>M. Hierniana.</i>
Leaves alternate:—				
Leaves puberulous on the lower surface, their veins prominent..				2. <i>M. venosa.</i>
Leaves densely velvety pubescent on the lower surface, their veins obsolete	..	..	..	3. <i>M. olivacea.</i>
Leaves glabrous or nearly so:—				
Leaves broadly ovate or elliptic, 3 to 5 in. long and 1·65 to 2·65 in. broad; main-nerves 3 to 5 pairs		..	..	4. <i>M. merguensis.</i>
Leaves oblong to oblong-lanceolate 1·5 to 3 in. long and ·65 to 1·35 in. broad:—				
Main-nerves 6 or 7 pairs; fruit globular	..	..	..	5. <i>M. Clarkeana.</i>
Main-nerves obsolete; fruit obliquely ellipsoid	..	..	..	6. <i>M. perakensis.</i>
Leaves polymorphous (mostly elliptic obovate or sub-rotund); fruit globular, fusiform	..	..	..	7. <i>M. buxifolia.</i>

1. MABA HIERNIANA, King & Gamble, n. sp. A small glabrous shrub; young branches much thinner than a goose-quill, pale, glabrous. *Leaves* opposite, thinly coriaceous; oblong-elliptic, the apex shortly acuminate, the base cuneate, the edges slightly recurved when dry; both surfaces hepatic-brown when dry and shining, the reticulations on the upper distinct; main-nerves 8 to 10 pairs, curved, ascending and forming wide arches near the edge, prominent on the lower surface, faint on the upper; the midrib bold on both; length 6 to 10 in.; breadth 2 to 3·5 in.; petioles ·3 to ·6 in. *Male flowers* unknown. *Female flowers* rotate, ·4 in. across, almost sessile, in axillary or extra-axillary fascicles of 2 or 3. *Calyx* spreading, divided almost to the base into 3 to 5 rotund, minutely crenate, slightly imbricate lobes. *Corolla* nearly twice as long as the calyx, deeply divided into 5 broadly oblong blunt lobes with slightly recurved edges; staminodes 3 or 4, with short thick filaments and broad antherodes. *Ovary* depressed-hemispheric, with short, thick, conical style and small stigma. *Fruit* not seen.

PERAK: King's Collector 7920.

2. MABA VENOSA, King & Gamble. A tree 15 to 50 feet high; young branches twice as thick as a crow-quill, the bark pale and deciduously cinereous-puberulous. *Leaves* alternate, thinly coriaceous; oblong-elliptic, acute or shortly acuminate, the base slightly cuneate or rounded; both surfaces dark olivaceous when dry; the upper shining, glabrous except the puberulous depressed midrib and main-nerves; the reticulations minute but distinct; lower puberulous everywhere and the midrib prominent; main-nerves 6 to 9 pairs, prominent, curved, spreading, interarching boldly near the edge; length 4·5 to 6·5 in.; breadth 2 to 3 in.; petioles ·35 to ·5 in. *Male* and *female flowers* alike, in densely crowded extra-axillary cymose fascicles of 5 or 6, not longer than the petioles; flowers mostly sessile, one or

two in each fascicle on a short densely hairy pedicel, rotate, '3 or '4 in. in diam. *Calyx* very coriaceous, divided to the base into 3 spreading broadly ovate lobes with broad blunt apices and concave bases, partly adpressed-pilose and partly glabrescent. *Corolla* smaller and less coriaceous than the calyx, tubular, glabrous, its lobes ovate-elliptic. *Male flowers* with 6 stamens in 2 rows, 3 of them small; anthers cordate, filaments flat; rudimentary ovary ovoid, apiculate, with a dense ring of coarse hair at its base. *Female flowers* with a few flat staminodes; the ovary broadly ovoid apiculate, hirsute in its lower part; styles 3, glabrous, distinct, the stigmas broad. *Fruit* ovoid-globular, glabrous, .75 in. long and .6 in. in diam., blunt at apex and base, the latter subtended by the 3- sometimes 4-lobed, thick, almost woody, accrescent calyx, its lobes spreading, their edges reflexed. *Seeds* elliptic, plano-convex. *Diospyros venosa*, Wall. Cat. 4126.

SINGAPORE: *Ridley* 4961; *King's Collector* 3495, 3862, 7643.

3. MABA OLIVACEA, King & Gamble, n. sp. A tree 50 to 70 feet high; young branches half as thick as a goose-quill, puberulous, pale cinereous when dry. *Leaves* coriaceous, alternate; elliptic, shortly and abruptly apiculate, the base rounded or cuneate, the edges much recurved when dry; upper surface olivaceous, shining, glabrous except the depressed rusty-puberulous midrib; lower surface softly velvety-pubescent, olivaceous, the hair on the bold midrib and 5 to 8 pairs of curved spreading rather prominent main-nerves rusty; length 3 to 5.5 in.; breadth 1.5 to 2.25 in.; petiole .4 in., tomentose. *Male flowers* sessile, .15 in. long, in branched condensed axillary and extra-axillary cymes less than 1 in. long; bracteoles broad, blunt, small. *Calyx* .1 in. long, tubular-campanulate, tomentose outside, glabrous inside, divided nearly to the base into 4 broadly ovate obtuse erect lobes. *Corolla* cylindrical-campanulate, glabrous except the hairy edges of the 4 oblong lobes. *Stamens* 8 large and 4 small, lanceolate, on short filaments. *Female flowers* not seen. *Fruit* ellipsoid, blunt at each end, the apex crowned by the short style, glabrous, about .5 in. long, and .4 in. in diam. *Calyx* at the base of the fruit thick, spreading, .6 in. across, with 4 ovate, blunt lobes with reflexed edges.

PERAK: *King's Collector* 7877; *Wray* 1269. LANKAWI: *Curtis* 1661.

4. MABA MERGUENSIS, Hiern in Trans. Camb. Phil. Soc. XII. 134 (1873). A small, nearly glabrous tree; young branches thicker than a crow-quill. *Leaves* alternate, thinly coriaceous, ovate or elliptic, shortly and obtusely acuminate, the base cuneate or rounded; main-nerves 3 to 5 pairs, slightly curved, ascending; length 3 to 5.5 in.; breadth 1.65 to 2.65 in.; petiole about .25 in. long. *Male flowers* in dense minutely

pubescent branching axillary cymes only 1 to 1·5 in. in diam. *Calyx* less than ·25 in. long, with 3 or 4 obtuse triangular lobes. *Corolla* slightly larger than the calyx, shortly 3- or 4-lobed. *Stamens* 14 to 16, glabrous; rudimentary ovary minute. *Female flowers* 3- or 4-merous. *Calyx* lobed half-way down. *Corolla* 3- or 4-merous; *Staminodes* 3 or 4. *Ovary-cells* 6, 1-ovulate. *Styles* 3, distant, glabrous. *Fruit* sub-globular; its calyx ·5 in. in diam. with 3 ovate acute spreading lobes. Kurz in Journ. As. Soc. XLVI., ii. 232, and For. Fl. II. 139; Clarke in Hook. f. Fl. Br. Ind. III. 552.

PENANG: *Helper* (K.D.) 3618; *Curtis* 705, 718.—DISTRIB. Burma.

Very imperfectly represented in Herbaria.

5. MABA CLARKEANA, King & Gamble, n. sp. A tree 20 to 30 feet high; young branches twice as thick as a crow-quill, puberulous when young, ultimately glabrous, cinereous with small black striæ. *Leaves* alternate, coriaceous; oblong, the apex blunt and sometimes minutely notched, the base cuneate; upper surface olivaceous, glabrous, shining when dry; lower surface dull, paler, sparsely and deciduously adpressed-pubescent and the minute reticulations rather distinct; main-nerves 6 or 7 pairs, spreading, very faint on both surfaces; midrib bold in the lower, depressed on the upper surface; length 1·5 to 3 in., breadth ·65 to 1·25 in.; petioles ·1 in. long. *Male flowers* small (only ·1 to ·15 in. long), crowded in sessile cymes ·25 to ·5 in. long, in the axils of the upper leaves, with a few oblong bracteoles. *Calyx* sessile or subsessile, adpressed-pubescent outside, glabrous inside, divided half-way down into 3 sub-erect broadly ovate acute lobes. *Corolla* smaller than the calyx, densely sericeous outside, glabrous inside, divided to the base into 3 ovate-lanceolate, with an inner row of 3 or 6 similar but narrower, lobes. *Stamens* 6, in pairs, joined by the bases of their broad filaments; anthers lanceolate. *Female flower* unknown. *Fruit* globular, ·35 in. in diam., glabrous. *Calyx* at its base thick, with 3 obtuse angles. *Seeds* 3, 3-sided, ·25 in. long.

PERAK: *King's Collector* 4816.

6. MABA PERAKENSIS, King & Gamble, n. sp. A tree 50 to 60 feet high; young branches as thick as a crow-quill, minutely puberulous becoming glabrous, dark-coloured, sub-glaucous. *Leaves* coriaceous, alternate; rather broadly oblong to oblong-lanceolate, the apex acute, the base broad and rounded or slightly cuncate; both surfaces dark olivaceous, the upper shining, the lower dull; main-nerves obsolete; midrib minutely pubescent, prominent on the lower surface, depressed on the upper; length 2·5 to 3 in., breadth ·75 to 1·35 in.; petioles

·15 in. long. *Male flowers* about ·15 in. long, 8 or 10 together in dense sessile axillary clusters not much exceeding the petioles. *Calyx* sessile or nearly so, campanulate, slightly pubescent outside, glabrous inside, deeply divided into 3 broadly ovate acute lobes. *Corolla* tubular; adpressed-sericeous externally, glabrous inside, cut half-way down into 3 ovate acute lobes. *Stamens* 12, 6 of them united by the bases of their filaments; anthers of all lanceolate apiculate, their bases cordate. *Female flower* not known. *Fruit* obliquely ellipsoid, the apex shortly apiculate, glabrous; the calyx at the base sub-ligneous, flat, deeply divided into 3 broad ovate-rotund lobes with reflexed edges and blunt tips. *Seeds* 2, oblong.

PERAK: *Wray* 3130; *King's Collector* 3945, 5519.

7. MABA BUXIFOLIA, Pers. Syn. II. (1807) 606. A bush or small tree; young branches puberulous at first, ultimately glabrous. *Leaves* small, alternate, coriaceous; varying from elliptic to obovate, the apex sub-acute or obtuse, the base always narrowed; upper surface olivaceous, the lower brown; the midrib bold; reticulations rather distinct on the upper surface only; main-nerves 4 to 6 pairs, spreading, slightly prominent on the upper surface, indistinct on the lower; edges slightly recurved; length ·35 to 1 in.; breadth ·3 to ·6 in.; larger in the varieties; petiole less than ·5 in. *Flowers* solitary, or 2 to 3 in short cymes, 3-merous. *Calyx* ·1 in. long, campanulate, with short triangular lobes. *Corolla* campanulate with short triangular lobes. *Male flowers*: *stamens* 6 to 12, glabrous; rudimentary ovary hairy. *Female flower*: *stamens* none; *ovary* 3-celled; style at the apex 3-lobed. *Fruit* globose or ellipsoid, ·35 in. long, 1-seeded. *Calyx* at its base cupular, often very short; albumen equable. *Wight* Ic. t. 763; A. DC. Prod. VIII. 240; *Thwaites* Enum. Pl. Ceyl. 183; *Trimen* Fl. Ceyl. III. 89; *Hiern* in Trans. Camb. Phil. Soc. XII. 116; *Kurz* For. Fl. II. 139; *Clarke* in Hook. f. Fl. Br. Ind. III. 551. *M. littorea*, Br. Prod. 527. *M. Cumingiana*, *M. madagascariensis*, *M. guineensis*, *M. Smithiana*, A. DC. l.c. 241. *M. neilgherrensis*, *Wight* III. t. 148 bis. E. *M. Ebenus*, *Wight* Ic. tt. 1288-9 (not of Spreng.). *Maba*? *Wall.* Cat. 7461. *Ferreola buxifolia*, *Roxb.* Cor. Pl. I. 35, t. 45, and Fl. Ind. III. 790.

MALACCA: *Maingay* (K.D.) 979; *Griffith* (K.D.) 3641. LANGKAWI: *Curtis* 2557. PENANG: *Curtis* 708.—DISTRIB. Malay Archipelago, Br. India, N. Australia, Philippines, tropical Africa.

A variable species, of which two varieties are recognised by Mr. C. B. Clarke in Hooker's "Flora of British India." Both these have leaves longer than as above described, but neither occurs in our region.

2. DIOSPYROS, Linn.

Trees, rarely shrubs. *Leaves* alternate or rarely sub-opposite, entire. *Flowers* diœcious, very rarely polygamous, axillary and short-pedicelled, or in small cymes; the ♀ often, and the ♂ sometimes, solitary; usually 4- or 5-merous, rarely 3-merous. *Calyx* usually deeply-lobed, rarely truncate, often in the ♀ larger than in the ♂ and often accrescent and plicate or auriculate in fruit. *Corolla* tubular with short deep lobes, or salver-shaped, or campanulate; the lobes contorted to the right in bud. *Stamens* in the ♂ *flowers* 4 to 64, often 16; their filaments distinct, paired or polyadelphous; anthers linear, rarely short; *ovary* rudimentary. In the ♀ *flowers*, *staminodes* 0 to 16; *ovary* 4-5-celled or imperfectly 8-10-celled; the cells usually with 1, rarely with 2 ovules; styles or stigmas 1 to 4. *Fruit* a globose, ellipsoid or ovoid-conic, berry, usually subtended by the enlarged (sometimes woody) calyx; flesh pulpy or viscid. *Seeds* oblong, usually compressed; albumen equable or (rarely) ruminant.—DISTRIB. About 220 species, chiefly in the tropics.

Leaves membranous or thinly coriaceous, glabrous or hairy; ♂ flowers in small cymes or fascicles, 4-5-merous; stamens usually 8, 12, or 16; flowers sub-solitary; ♀ calyx longer than that of the ♂, not accrescent or but slightly so, in fruit:—

Leaves under 5 in. long:—

- Fruit globular, glabrous; stamens 16 1. *D. Wrayi*.
- Fruit cylindrical or oblong-conical, glabrous; stamens about 16; leaves 1 to 1.4 in. long, and under .65 in. broad .. 3. *D. microphylla*.
- Fruit ellipsoid:—

Stamens 8:—

Fruit puberulous:—

- Leaves usually under 2.25 in. long, lanceolate or sub-rhomboidal 2. *D. subrhomboidea*.
- Leaves usually over 2.25 in. long, elliptic-oblong .. 6. *D. Scortechinii*.
- Fruit glabrous; leaves 2.5 to 4.5 in. long .. 5. *D. graciliflora*.
- Stamens 12; leaves 3.25 to 5 in. long; fruit glabrous .. 7. *D. flavicans*.
- Fruit not known; stamens 12; leaves under 2 in. long .. 4. *D. dumosa*.
- Leaves over 5 in. long; fruit ovoid-conic, rusty-setose; stamens 6 to 12 8. *D. apiculata*.

Leaves coriaceous, upper surface glabrous and shining; flowers mostly 4-merous, a few 5-merous; ♂ flowers in small cymes or clusters; calyx deeply lobed, often larger in the ♀ and differing in shape from that of the ♂:—

Calyx 4-lobed:—

Leaves under 5 in. long:—

Leaves under 1.5 in. broad:—

- Calyx of ♀ flower densely sericeous-pubescent, lobes reniform; fruit ovoid or sub-globose, rusty villous, its calyx 1 in. in diam. 9. *D. lanceifolia*.

- Calyx-margins of ♀ flower tomentose, lobes broadly ovate; fruit globose, ultimately glabrous, .75 in. long 14. *D. lucida*.
- Leaves 1.5 to 2.5 in. broad :—
- Stamens about 12; main-nerves of leaves 8 to 9 pairs 10. *D. pachyphylla*.
- Stamens about 16; main-nerves of leaves 6 to 7 pairs 11. *D. clavigera*.
- Stamens 16, in pairs; main-nerves of leaves 5 pairs 13. *D. styraciformis*.
- Leaves usually more than 5 and less than 7.5 in. long :—
- Leaves under 6.5 in. long, over 2.5 in. broad; fruit olive-shaped, nearly 2 in. long and 1.25 in. in diam. .. 12. *D. bilocularis*.
- Leaves under 2.5 in. broad :—
- Leaves under 6.5 in. long; main-nerves of leaves not visible, probably many pairs; fruit depressed-globose, 1.35 in. in diam.; persistent calyx thick, woody .. 25. *D. oleifolia*.
- Leaves under 7.5 in. long; main-nerves 5 to 8 pairs; fruit ellipsoid, 1 in. in diam.; persistent calyx with large membranous lobes 27. *D. paniculata*.
- Leaves usually more than 6 and less than 12 in. long :—
- Leaves beneath covered with appressed sericeous hair; stamens 20 to 24; main-nerves of leaves not visible .. 21. *D. argentea*.
- Leaves beneath glabrous except the midrib, which is covered with dark hair; main-nerves of leaves 7 to 8 pairs; fruit glabrous 17. *D. tristis*.
- Leaves beneath glabrous or only minutely puberulous :—
- Leaves usually 3 to 3.5 in. broad :—
- Main-nerves of leaves 8 to 10 pairs; apex caudate-acuminate, base cuneate 18. *D. pauciflora*.
- Main-nerves of leaves 10 to 12 pairs; apex acute, base rounded 19. *D. ellipsoidea*.
- Leaves reaching 4 in. broad; fruit glabrescent :—
- Main-nerves of leaves 8 to 14 pairs; apex sub-acute 23. *D. Horsfieldii*.
- Main-nerves of leaves 16 to 20 pairs; apex shortly acuminate 24. *D. toposioides*.
- Leaves 3.5 to 4.5 in. broad; main-nerves of leaves 8 to 12 pairs; apex acute; fruit densely rusty-tomentose, ridged 28. *D. Kunstleri*.
- Leaves 8 to 14 in. long, 2.5 to 5 in. broad; main-nerves 14 to 18 pairs; fruit sub-globose, 1 in. in diam., immersed in the thickened calyx 20. *D. Wallichii*.
- Leaves 10 to 18 in. long, 2 to 4 in. broad; main-nerves 14 to 20 pairs; fruit depressed-globose, 2 in. in diam., seated on a cupular calyx 22. *D. rigida*.
- Calyx 5-lobed :—
- Leaves glabrous beneath, 7 to 9 in. long, 3 to 3.75 in. broad; main-nerves 16 to 18 pairs 15. *D. oblonga*.
- Leaves puberulous on the midrib and main-nerves beneath, 5.5 to 7.5 in. long, 2.5 to 3.25 in. broad; main-nerves 10 to 12 pairs 16. *D. Helferii*.
- Leaves glabrous beneath, 5.5 to 9 in. long, 1.5 to 2.5 in. broad; main-nerves 10 to 12 pairs 26. *D. brachiata*.
- Leaves thinly coriaceous, glabrous above, puberulous beneath; both ♂ and ♀ flowers in few-flowered cymes, on long, slender, extra-axillary peduncles, pendulous; calyx 5-lobed, not accrescent in fruit 29. *D. nutans*.

SPECIES IMPERFECTLY KNOWN.

Calyx of fruit long, woody, its lobes pointed and much reflexed, leaves glabrous	30. <i>D. reflexa</i> .
Leaves oblong, hairy beneath, cordate at the base. Calyx in fruit small. Fruit globular, rusty-pubescent	31. <i>D. penangiana</i> .
Leaves quite glabrous, elliptic, narrowed at each end, not cordate. Fruit globular with small calyx	32. <i>D. rufa</i> .
Leaves coriaceous, quite glabrous, oblong, areolar-reticulate. Male flowers in terminal tomentose cymes	33. <i>D. areolata</i> .
Leaves membranous, oblong or oblong-elliptic, glabrous. Female flowers in fascicles of about 3. Calyx with reniform lobes; pedicels bi-bracteolate. Corolla salver-shaped	34. <i>D. Curtisii</i> .
Leaves membranous, puberulous beneath. Male flowers in dense short hairy glomeruli. Stamens 8	35. <i>D. glomerulata</i> .
Leaves puberulous beneath. Calyx-lobes 4; stamens 16	36. <i>D. caliginosa</i> .

1. *DIOSPYROS WRAYI*, King & Gamble, n. sp. A shrub 4 to 12 feet high; young branches as thick as a crow-quill, cinereous- or rusty-puberulous. *Leaves* small, alternate, membranous; ovate-lanceolate to narrowly elliptic, shortly acuminate, the base cuneate; both surfaces dark olivaceous; the upper very shining and minutely reticulate, glabrous except the puberulous depressed midrib; the lower more brown and dull, the midrib pubescent and prominent, the reticulations less distinct; length 2 to 4 in., breadth .75 to 1.5 in.; petioles .05 to .1 in. *Male flowers* .25 in. long, 2 to 4 together in small axillary cymes, black when dry, puberulous, pedicels very short. *Calyx* less than .1 in. long, narrowly campanulate with 4 deep ovate lobes. *Corolla* three times as long as the calyx, salver-shaped, sub-glabrous; limb with 4 oblong lobes. *Stamens* 16, united in pairs by the bases of the unequal filaments, broadly lanceolate, inserted near the base of the tube. *Female flowers* like the ♂ but longer—especially the calyx. *Staminodes* about 8, lanceolate. *Ovary* glabrescent, ovoid-conic, tapering into a rather long style; stigmas 4, fleshy, short. *Fruit* globular, crowned by the short style, glabrous, shining, black when ripe (when dry); calyx at its base .75 in. across, coriaceous, deeply divided into 4 oblong blunt or sub-acute reflexed lobes.

PERAK: *Scortechini*; *Wray* 2764, 3272, 3955; *King's Collector* 2076, 2993.

2. *DIOSPYROS SUB-RHOMBOIDEA*, King & Gamble, n. sp. A shrub 4 to 6 feet high; young branches thinner than a crow-quill, softly tawny-pubescent, pale brown when dry. *Leaves* small, alternate; lanceolate or ovate-lanceolate or sub-rhomboidal, bluntly acuminate, the base cuneate; both surfaces olivaceous-brown when dry, the upper dark, glabrous except the puberulous midrib, the lower sparsely adpressed pubescent especially on the bold midrib; main-

nerves 4 or 5 pairs, curved, ascending, faint on both surfaces; length 1·5 to 2·25 in., breadth ·6 to ·8 in.; petiole about ·1 in. *Male flower* ·6 in. long, solitary, axillary on a short tomentose pedicel with 2 broad bracteoles. *Calyx* less than ·1 in. long, pubescent outside, glabrous inside, deeply divided into 4 broad obtuse almost quadrate imbricate lobes. *Corolla* salver-shaped; the tube cylindric, tapering to the apex, tomentose outside; limb as long as the tube but less hairy outside, glabrous inside like the tube, deeply divided into 4 oblong sub-acute lobes with inflexed edges, twisted to the right in bud. *Stamens* 8, attached near the bottom of the tube, 4 shorter than the others; anthers all lanceolate, and on short filaments. *Female flower* not known. *Fruit* ellipsoid, sparsely adpressed-puberulous, crowned by the conic style, ·8 or ·9 in. long and ·4 in. in diam. *Calyx* at its base ·25 in. across, flat, with 4 spreading, broad, blunt lobes.

PERAK: *Wray* 4055; *King's Collector* 7302.—DISTRIB. Sumatra, *Forbes* 2004.

3. DIOSPYROS MICROPHYLLA, Bedd. Ic. Pl. Ind. Or. 27, t. cxxxiii. (1874), and Fl. Sylv. Madr. cxlv. A tree 20 to 30 feet high; young branches as thick as a crow-quill or thinner, densely pubescent. *Leaves* thinly coriaceous, alternate, distichous; ovate-lanceolate, sub-rhomboid, the apex sub-acute, the base cuneate; upper surface dark olivaceous-brown, glabrous except the pubescent depressed midrib; the lower dark brown, puberulous, the midrib pubescent; main-nerves obsolete on both surfaces; length 1 to 1·4 in., breadth ·45 to ·65 in.; petiole ·05; the largest leaves towards the ends of the branches. *Male flowers* solitary or 3 together in a minute cyme. *Calyx* ·05 long, deeply 4-lobed, tube glabrate. *Corolla* slightly longer than the calyx with 4 rounded lobes. *Stamens* about 16. *Female flowers* ·2 in. long, axillary, solitary, pedicellate or in a pair on a short peduncle. *Calyx* campanulate, deeply divided into 4 sub-rotund imbricate very obtuse lobes, sericeous on the middle outside and on the edges, otherwise glabrous. *Corolla* salver-shaped, somewhat longer than the calyx, deeply cut into 4 unequal rotund lobes, adpressed-puberulous on the back of the lobes, otherwise glabrous. *Ovary* ovoid, sericeous near the apex and base; style thick, 2-fid; stigmas 4. *Ovary* 4-celled, ellipsoid, conic, 4-celled, cells 1-ovuled. *Fruit* cylindric or oblong-conical, dry, glabrous, 1-celled, 1- rarely 2-seeded, ·75 to 1 in. long. *Clarke* in Hook. fil. Fl. Br. Ind. III. 559. *D. burifolia*, Hiern in Trans. Camb. Phil. Soc. XII. 218. *D. vaccinioides*, Wall. Cat. 4130 (*in part*). *Leucoxyllum burifolium*, Blume Bijdr. 1169; *Miq.* Fl. Ind. Bat. II. 1050; *Choisy* Mem. Ternstr. 43 t. 2.

MALACCA: *Griffith* (K.D.) 3643; *Walker* 170; *Maingay* (K.D.) 966. SINGAPORE: *Ridley* 6045. PENANG: *Curtis* 1513, 7175. PERAK:

Scortechini 2052.—DISTRIB. Andaman Islands, South India, Malay Archipelago.

4. *Diospyros dumosa*, King & Gamble, n. sp. A small tree; young branches as thick as a crow-quill, glabrous, dark-coloured when dry. *Leaves* small, alternate, membranous; lanceolate, shortly acuminate, the base cuneate; upper surface dark olivaceous when dry, glabrous; lower yellowish, slightly puberulous on the slightly prominent midrib and 4 or 5 pairs of curved ascending nerves; length 1·5 to 2 in.; breadth ·5 to ·75 in.; petiole ·05 in. *Male flowers* ·5 in. long, in small axillary sessile fascicles of 3 or 4. *Calyx* ·25 in. long, deeply divided into 3 or 4 ovate-lanceolate acuminate lobes, concave along the midrib, and with undulate edges, pubescent. *Corolla* twice as long as the calyx, narrowly tubular, deeply divided into 4 narrow oblong glabrous lobes, the tube pubescent inside and outside. *Stamens* 12, inserted at its base on unequal slender filaments; anthers broadly lanceolate, much apiculate. *Female flowers* solitary, axillary, shortly pedicellate, ·4 in. long. *Calyx* cleft to the base into 4 large broadly ovate reniform bluntly acuminate undulate lobes, sparsely adpressed-pubescent on both surfaces, ·25 in. long and as much across. *Corolla* a little longer but less hairy than the calyx, fleshy, tubular, tetragonous, divided for half its length into 4 narrow oblong lobes. *Staminodes* 8, linear-lanceolate, apiculate, on slender filaments. *Ovary* narrowly ellipsoid, tapering to the rather long style, glabrous. *Fruit* unknown.

PERAK: *Wray* 3508. JUNKSEYLON (Tongka): *Curtis* 2907.

5. *Diospyros graciliflora*, Hiern in Trans. Camb. Phil. Soc. XII. 191 (1873). A glabrous tree 40 to 50 feet high; young branches less than half as thick as a goose-quill, deciduously puberulous, dark-coloured and striate when dry. *Leaves* thickly membranous, alternate; rather narrowly elliptic, shortly and bluntly apiculate to caudate-acuminate, the base much narrowed and often slightly oblique; both surfaces dull dark olivaceous-brown when dry, glabrous except for some minute hairs on the nerves beneath; main-nerves about 5 pairs, curved, ascending, depressed or obscure on the upper surface, pale and slightly prominent on the lower like the midrib; length 2·5 to 4·5 in., breadth ·75 to 1·35; petioles ·1 to ·2 in. *Male flowers* ·5 in. long, few together, in small axillary cymes about as long as the petioles, sessile, puberulous. *Calyx* large, two-thirds to one-half the length of the corolla, but much wider, deeply divided into 4 large ovate-rotund undulate semi-erect lobes. *Corolla* narrowly tubular, one-third to one-half longer than the calyx; the tube externally with 4 lines of pubescence, otherwise glabrescent; limb with 4 deeply oblong broad blunt glabrous spreading sub-undulate lobes. *Stamens* 8, in two rows,

4 of them smaller than the other 4; anthers linear-lanceolate, apiculate, the filaments flat, very short; rudimentary ovary small, narrowly ovate, glabrous. *Female flowers* like the ♂ and often mixed with them, but sometimes solitary. *Ovary* broadly ovoid, with short style, glabrous. *Fruit* ellipsoid, 1 in. long and .75 in. in diam., glabrous, crowned by the short remains of the style, and subtended by the calyx with 4 spreading, undulate, sub-glabrous lobes. *D. flavicans*, Hiern in Trans. Camb. Phil. Soc. XII. 205 (as to female plant partly). *D. decipiens*, Clarke in Hook. fil. Fl. Br. Ind. III. 563.

MALACCA: *Maingay* (K.D.) 972 (♀ only). PERAK: *Scortechini* 181, 198; *Wray* 1298, 2843, 3214, 4227; *King's Collector* 884, 3298, 3354, 3366, 3588, 3394, 5173, 6742, 7990, 10463. PENANG: *Curtis* 3041.—DISTRIB. Java, *Beccari* 1560.

6. DIOSPYROS SCORTECHINII, King & Gamble, n. sp. A tree 15 to 30 or even 50 feet high; young branches as thick as a crow-quill, tawny-puberulous, angled, pale when dry. *Leaves* alternate, small, membranous; narrowly elliptic-oblong, acuminate, much narrowed at the base to the short petiole; both surfaces olivaceous-brown when dry, the upper glabrous, the lower often puberulous, especially on the midrib; main-nerves 8 to 12 pairs, spreading, curved, ascending, somewhat distinct on the lower surface, faint on the upper as are the transverse reticulations; length 2 to 4 in., breadth .6 to 1.25 in.; petiole .1 to .15 in. *Male flowers* .5 in. long, in shortly pedunculate axillary fascicles of 2 or 3, or solitary and pedicellate. *Calyx* .1 in. long, tomentose outside, glabrous inside, .1 in. long, campanulate, deeply divided into 4 broad almost truncate lobes. *Corolla* coriaceous, .3 in. long, glabrous; tube tapering a little to the apex; lobes 4, oblong, sub-acute, spreading. *Stamens* 8; anthers shortly lanceolate, as long as the filaments. *Female flowers* longer than the ♂, solitary, the pedicel as long as the calyx, tomentose. *Ovary* ellipsoid, densely pilose; style short, conic; stigmas small, glabrous. *Fruit* ellipsoid, crowned by the very short style, puberulous. *Calyx* at its base cupular, .2 in. across, tomentose outside, .75 in. long and .4 in. in diam.

PERAK: *Curtis* 2092; *King's Collector* 2407, 4126, 5002, 5296, 6356; *Scortechini* 377; *Wray* 638.

7. DIOSPYROS FLAVICANS, Hiern in Trans. Camb. Phil. Soc. XII. 205 (1873). A tree 40 to 70 feet high; young branches rather thicker than a crow-quill, cinereous-puberulous becoming glabrous. *Leaves* alternate, thin, coriaceous; elliptic to oblong-elliptic, apex shortly acuminate, the base cuneate; upper surface when dry olivaceous, glabrous, the lower pale brown, densely puberulous on the stout midrib; main-nerves 5 to

7 pairs, curved, ascending; length 3.25 to 5 in., breadth 1.35 to 2.5 in.; petioles .1 to .15 in. *Male flowers* .45 in. long, 2 to 6 together, in axillary or extra-axillary bracteate sessile tomentose fascicles. *Calyx* sub-sessile, campanulate, pubescent outside, glabrous inside; the limb deeply divided into 5 broadly ovate, bluntly acuminate spreading lobes. *Corolla* salver-shaped; tube slightly inflated and glabrous in the lower half outside, cylindric and pubescent in the upper half, inside glabrous; limb with 4 broadly oblong obtuse glabrescent spreading lobes. *Stamens* 12, of different lengths, attached in 3 rows in the tube; anthers lanceolate-cordate, apiculate; filaments slender and of varying length; rudimentary ovary none. *Female flowers* conspicuously bi-bracteate, in cymes like the ♂ but shortly pedunculate. *Calyx* as in the ♂ but less deeply lobed. *Fruit* ellipsoid, not much narrowed at the ends, slightly tetragonous, glabrous, .75 in. long and about .35 in. in diam., crowned by the short remains of the style; the calyx clasping its base, about half as long, with 4 deep triangular lobes. *Seeds* 4, ridged. Clarke in Hook. fil. Fl. Br. Ind. III. 562; Kurz in Journ. As. Soc. Beng. XLVI., ii. 236, For. Fl. II. 135. *Guatteria?* *flavicans*, Wall. Cat. 7295. *Ebenacea*, sp. 2, Griff. Notul. IV. 291.

MALACCA: *Griffith* (K.D.) 454, 3623; *Maingay* (K.D.) 972 (as to male plant only); *Helper* (K.D.) 3639? PENANG: *Curtis* 1602. SELANGOR: *Ridley* 10556. PERAK: 2058; *King's Collector* 2480, 3354, 3380, 3774, 6149, 6633, 10007.

8. *Diospyros apiculata*, Hiern in Trans. Camb. Philos. Soc. XII. 186 (1873). A shrub or small tree; young branches half as thick as a goose-quill, fulvous-hirsute. *Leaves* alternate, membranous; oblong or elliptic-oblong, sometimes rather oblanceolate, finely caudate-acuminate, slightly narrowed to the rounded or somewhat cuneate base; both surfaces dark olivaceous-brown when dry, transversely reticulate; upper surface sparsely adpressed-pubescent, the midrib and main-nerves pubescent and slightly depressed; lower surface darker, and with many long rather coarse hairs, especially on the prominent midrib and 8 to 10 pairs of slightly curved ascending main-nerves; length 5.5 to 7 in., breadth 1.5 to 2.5 in.; petiole .1 in., tomentose. *Male flowers* about 3 together, axillary, sub-sessile, .35 in. long. *Calyx* 4- to 5-partite, about .25 in. long, pubescent, lobes narrowly lanceolate. *Corolla* tubular, 4-lobed, .4 in. long, the lobes spreading, oval, obtuse. *Stamens* 6 to 12, unequal, glabrous; anthers linear-oblong, acuminate; filaments often geniculate, dilated and somewhat united at the base, rudimentary ovary small, hairy. *Female flowers* 1 to 3 together on short axillary, minutely hispid cymes.

Fruit sub-sessile, solitary, ovoid-conic, finely rusty-setose, especially in the upper half, about 1 in. long and $\cdot 5$ to $\cdot 75$ in. across, apiculate. *Seeds* about 4, albumen not ruminant. Clarke in Hook. fil. Fl. Br. Ind. III. 553.

MALACCA: *Maingay* (K.D.) 1514. PERAK: *King's Collector* 5127, 6770. PENANG: *Curtis* 1584.

9. *DIOSPYROS LANCEEFOLIA*, Roxb. Hort. Beng. 93 (1814). A tree; young branches twice as thick as a crow-quill, adpressed-puberulous, dark brown when dry. *Leaves* alternate, coriaceous; oblong, lanceolate or oblong-lanceolate, acute or acuminate, the base rounded or cuneate, the edges recurved; both surfaces olivaceous-brown when dry, the upper darker and shining, the lower paler and dull; main-nerve 7 to 9 pairs, spreading, faint on both surfaces; midrib bold on the lower surface, depressed on the upper; length 2 to 3 in.; breadth $\cdot 65$ to 1 in.; petiole $\cdot 15$ to $\cdot 2$ in. *Male flowers* sessile in clusters. *Calyx* $\cdot 15$ in. long with 4 ovate tawny-sericeous lobes. *Corolla* $\cdot 35$ to $\cdot 5$ in. long, narrowed upwards, the lobes $\cdot 15$ in. long. *Stamens* about 16; anthers linear, glabrous or slightly pilose at the base; filaments minutely pilose. *Female flowers* solitary or in pairs on the branches below the leaves, $\cdot 5$ in. long. *Calyx* $\cdot 3$ in. long, very coriaceous, densely sericeous-pubescent on both surfaces, deeply divided into 4 erect, broadly reniform, acute lobes. *Corolla* a little longer than the calyx, densely sericeous-tomentose outside, the tube glabrous inside; lobes of limb 4, oblong, very thick. *Staminodes* 8, linear compressed. *Ovary* broadly ovate, acuminate, densely silky; stigmas 4, glabrous. *Fruit* ovoid or sub-globose, rusty-villous; its *calyx* 1 in. in diam. with thickened tube and spreading lobes. Roxb. Fl. Ind. II. 537; A. DC. Prod. VIII. 232; Hiern in Trans. Camb. Phil. Soc. XII. 213; Kurz in Journ. As. Soc. XLVI., ii. 236, and For. Fl. II. 136; Clarke in Hook. fil. Fl. Br. Ind. III. 562. *D. multiflora*, Wall. Cat. 4144; A. DC. l.c. 231. *D. amœna*, Wall. Cat. 4139; A. DC. l.c. 231.

SINGAPORE: *Ridley* 4964. PAHANG: *Ridley* 1601.—DISTRIB. Assam range of hills, Burma, Sumatra.

The chief characters separating this from *D. lucida*, Wall., are the longer lobes of the calyx of the female flower and the somewhat larger and more hairy fruit. This species is not common within our area, whereas *D. lucida* is a common tree.

10. *DIOSPYROS PACHYPHYLLA*, Clarke in Hook. fil. Fl. Br. Ind. III. 568 (1882). A tree; young branches rather thinner than a goose-quill, deciduously puberulous, soon glabrous. *Leaves* coriaceous, alternate; elliptic or oblong, sub-acute, the base rounded; both surfaces when

dry rather pale olivaceous-brown, glabrous; the upper shining, the lower glaucous, dull; main-nerves 8 or 9 pairs, curving upwards, faint on both surfaces midrib bold on the lower surface, depressed on the upper; length 3 to 5 in., breadth 1·5 to 2·5 in.; petiole ·25 to ·4 in. *Male flowers* in short rusty-pubescent axillary and extra-axillary cymes from ·5 to ·75 in. long, bracts ovate, ·1 in. long. *Calyx* ·15 in. long, campanulate, adpressed rusty-tomentose on both surfaces, cut half-way into 4 broad triangular erect lobes. *Corolla* tomentose externally (*vide* C. B. Clarke) nearly ·5 in. long, its lobes about ·1 in. *Stamens* about 12; anthers linear, with villous connective and glabrous filaments. *Female flowers* unknown. *Fruit* globular, the apex concave and bearing the short remains of the style, ·65 in. in diam., minutely rusty adpressed-pubescent, becoming glabrous; the *calyx* at its base woody, cupular, with 4 broad lobes with reflexed apices.

MALACCA: *Maingay* (K.D.) 974. SINGAPORE: *Ridley* 5644.

This does not agree with *D. undulata*, Wall., of which Hiern, in Trans. Camb. Phil. Soc. XII. 215, makes it a variety. It comes much nearer to, but is smaller in all its parts than, the plant named by us *D. Wallichii*, which was originally issued as *D. macrophylla*, Wall. Cat. 4141.

11. DIOSPYROS CLAVIGERA, Clarke in Hook. fil. Fl. Br. Ind. III. 558 (1882). A tree; all parts glabrous except the minutely pilose-ciliate margin of the calyx. *Leaves* alternate, coriaceous, elliptic, tapering slightly to each end (sub-rhomboidal); both surfaces warm brown when dry, the upper glabrous, shining, the lower dull; main-nerves 6 or 7 pairs, little curved, ascending, slightly prominent on the lower surface, faint on the upper; length 3·25 to 4·5, breadth 1·5 to 2·15 in.; petioles ·15 to ·2 in. *Male flowers* 3 to 16 together in small sub-sessile axillary and extra-axillary cymes. *Calyx* ·15 in. long, deeply divided into 4 obtuse lobes. *Corolla* (in bud) ·35 in. long, clavate, glabrous outside, the upper part very thick, 4-lobed. *Stamens* about 16, glabrous; anthers oblong, shortly apiculate. *Female flower* and fruit unknown. *D. Ebenum*, Hiern (*not of Koenig*) in Trans. Camb. Phil. Soc. XII. 208 (*in part*).

MALACCA: *Maingay* (K.D.) 971; *Griffith* (K.D.) 3635. LANGKAWI: *Curtis* 3418. SINGAPORE: *Maingay* 5066.

12. DIOSPYROS BILOCULARIS, Oliver in Hook. Ic. Pl. t. 2336 (1894). A glabrous tree 60 to 80 feet high; young branches about the thickness of a goose-quill, dark purplish when dry and shining, slightly striate. *Leaves* thickly coriaceous; elliptic, sub-acute, the base slightly cuneate, the edges (when dry) recurved; both surfaces olivaceous when dry, the upper shining, the lower paler and dull; midrib inconspicuous and

slightly channelled on the upper surface, bold on the lower; main-nerves 10 to 12 pairs, slightly curved, spreading, interarching far from the edge, faint on both surfaces; length 5 to 6.5 in., breadth 2.5 to 3.25 in. *Male flowers* .65 in. long (in bud) on rusty-pubescent pedicels .3 to .4 in. long, in axillary and extra-axillary fascicles of 2 to 4, with a few tomentose bracteoles at their bases. *Calyx* very coriaceous, .25 in. long and nearly as much in width at the mouth; limb 4-lobed, the lobes very short and broad. *Corolla* narrowly tubular, .4 in. long, very thick; lobes of limb long, narrowly oblong. *Stamens* 16; sub-sessile, linear, sub-equal, apiculate; rudimentary ovary none. *Female flower*; calyx and corolla as in the ♂, staminodes none; *ovary* oblong or oval-ovoid, narrowed at the apex, longer than the calyx, 2-celled; ovules 2 in each cell and pendulous. *Fruit* olive-shaped, shortly apiculate, 1.5 to 2 in. long and 1 to 1.25 in. in diam. at the middle, yellow when ripe; its pedicel obovate, stout, woody, .4 in. long; calyx in ripe fruit flat, with 4 broad blunt lobes. *Seed* solitary; pericarp thin, only .3 in. across, albumen large stellately ruminant. *Maba Maingayi*, Hiern in Trans. Camb. Phil. Soc. XII. 107; Clarke in Hook. fil. Fl. Br. Ind. III. 552.

MALACCA: *Maingay* (K.D.) 976; *Derry* 1092. SINGAPORE: *Ridley* 27, 2755, 4920. PERAK: at elevations of 1,500 to 2,000 feet, *King's Collector* 7383.

13. DIOSPYROS STYRACIFORMIS, King & Gamble, n. sp. A tree(?); young branches rusty-pubescent, slightly thicker than a crow-quill. *Leaves* thinly coriaceous; elliptic to elliptic-lanceolate, the apex sub-acute or acute, the base cuneate; upper surface dark olivaceous, shining, glabrous except the depressed midrib; the lower surface dull, paler, with deciduous rufous pubescence, especially on the prominent midrib; main-nerves about 5 pairs, ascending, little curved, slightly prominent on the lower surface only; length 2.5 to 4 in., breadth 1 to 2 in.; petiole .2 to .35 in. *Male flowers* a few together in short cymes grouped in small axillary clusters. *Calyx* .2 in. long, narrowly campanulate, densely rusty-tomentose externally like the corolla, the mouth with deep narrowly-triangular teeth. *Corolla* .5 in. long, narrowly tubular, cut half-way down into 4 oblong blunt lobes. *Stamens* 16, in pairs, unequal, linear, apiculate; filaments unequal in length; rudimentary ovary none. *Female flowers* solitary, calyx much longer than in the ♂; its 4 lobes thick, broad, reniform, rusty-pubescent. *Corolla* not known; *ovary* hairy. *Fruit* globose with the apex truncate and depressed in the middle, densely but minutely pale rusty-tomentose, .5 in. long and about .65 in. in diam. *Calyx* at its base deeply cupular with 4 spreading triangular teeth. *D. nov. spec.*, C. B. Clarke in Herb.

Kew. *D. hirsuta*, Linn. fil., ? var., Hiern in Trans. Camb. Phil. Soc. XII. 165.

MALACCA : *Maingay* (K.D.) 969. SINGAPORE : *Ridley* 3787.

Ridley's No. 1084, from Bukit Timah, in Singapore, seems to belong to this. The only specimen I have seen is imperfect.

14. *DIOSPYROS LUCIDA*, Wall. Cat. 4127 (1829). A tree 40 to 50 feet high; young branches from half as thick to as thick as a crow-quill, minutely puberulous, becoming glabrescent, dark-coloured. *Leaves* alternate, coriaceous; oblong or elliptic-oblong, sub-acute or obtuse, the base rounded or cuneate, sometimes a little oblique; both surfaces when dry pale olivaceous-brown, glabrous; main-nerve 5 to 9 pairs, spreading, curved, faint on the lower surface, slightly depressed on the upper; midrib bold on the lower surface, somewhat depressed on the upper; length 1.25 to 4.5 in., breadth .5 to 1.5 in.; petioles .2 to .4 in. *Male flowers* sessile, in small fascicles. *Calyx* nearly .15 in. long, campanulate, with 4 erect broadly triangular lobes, tomentose on both surfaces. *Corolla* narrowly tubular, more than twice as long as the calyx, tetragonous in bud, sericeous-tomentose outside, the tube glabrous inside; limb deeply divided into 4 narrowly oblong thick lobes. *Stamens* 12 to 16, in pairs united by their short filaments and face to face; anthers linear, glabrous, minutely apiculate, and on short sericeous filaments; rudimentary ovary linear. *Female flowers* 1 or 2 together, axillary or extra-axillary, sub-sessile. *Calyx* longer than in the ♂, lobed nearly to the base; lobes broadly ovate, their recurved margins minutely tomentose. *Fruit* globose, .75 in. or more in diam., sub-truncate and slightly umbonate at the apex, adpressed rusty-pubescent at first, ultimately glabrous, 4-6-seeded; the accrescent *calyx* at its base woody, cupular, .6 in. across with 4 short broad reflexed lobes; albumen of seed not ruminant. A. DC. Prod. VIII. 233; Clarke in Hook. fil. Fl. Br. Ind. III. 568. *D. hirsuta*, var. *lucida* Hiern in Trans. Camb. Phil. Soc. XII. 163 (not of Linn. fil.)

MALACCA : *Griffith* (K.D.) 3637; *Maingay* (K.D.) 970, 973, 977, 3,500; *Derry* 1439. PERAK : *Scortechini*; *Wray* 3018, 3056. PENANG : *Curtis* 250, 1602; *King's Collector* 1050, 1760. SINGAPORE : *Ridley* 2119, 2749, 3580, 4962, 4963, 6129, 8115, 9212, 9517.

This is probably only a southern form of the Indian species *D. lanceafolia*, Roxb.

15. *DIOSPYROS OBLONGA*, Wall. Cat. 4124 (1829). A tree; young branches thinner than a goose-quill, purplish-brown when dry, glabrous. *Leaves* alternate, coriaceous, glabrous; oblong-elliptic, shortly and abruptly apiculate, the base rounded or slightly cuneate; both surfaces

faintly reticulate, quite glabrous, shining; main-nerves 16 to 18 pairs, spreading, little curved, interarching boldly at a little distance from the edges, prominent on the lower surface, depressed on the upper; midrib very bold on the lower surface, depressed on the upper; length 7 to 9 in., breadth 3 to 3·75 in.; petiole ·4 in., very stout. *Male flowers* about ·5 in. long, salver-shaped, in short axillary cymes, coriaceous, subsessile, ·5 in. long. *Calyx* and *corolla* everywhere adpressed-tomentose. *Calyx* shorter than the corolla, campanulate, cleft to near the base into 5 oblong, blunt, sub-erect lobes. *Corolla-tube* narrow, not constricted at the throat; limb with 5 large broad rotund lobes with recurved edges. *Stamens* 10, united in pairs by the bases of their filaments, the inner ones smaller, all inserted on the base of the calyx-tube. *Female flowers* 1 to 5 together, ·25 to ·3 in. long, with 5 deep ovate-oblong auriculate sub-plicate lobes. *Corolla* ·35 in. long, densely hairy outside, deeply lobed; staminodes 5; *ovary* 10-celled, rusty-hairy. *Fruit* sub-globose, sub-truncate at base and apex, glabrous when ripe; the hispid accrescent *calyx* ·75 in. across, its lobes auriculate; albumen of seed not ruminant. A. DC. Prod. VIII. 243; Hiern in Trans. Camb. Phil. Soc. XII. 243; Clarke in Hook. fil. Fl. Br. Ind. III. 569; Miq. Fl. Ind. Bat. II. 1045.

MALACCA: *Maingay* (K.D.) 967. PENANG: *Curtis* 1564, 2487, 3658. SINGAPORE: *Ridley* 2747, 3031, 6311. PERAK: *King's Collector* 3794, 4924, 7237, 8278.

16. DIOSPYROS HELFERI, Clarke in Hook. fil. Fl. Br. Ind. III. 569 (1882). A tree 20 to 30 feet high; young branches half as thick as a goose-quill, pale puberulous, the bark dark. *Leaves* alternate, coriaceous; elliptic or elliptic-oblong, sub-acute or obtuse, the base broad or sub-acute; the upper surface dark olivaceous-brown when dry, glabrous except the depressed puberulous midrib, the reticulations minute but distinct; lower brown, glabrescent but puberulous on the rather stout midrib and nerves; main-nerves 10 to 12 pairs, rather faint, spreading, horizontal, interarching boldly about ·25 in. from the edge; length 5·5 to 7·5 in., breadth 2·5 to 3·25 in.; petiole ·4 to ·5 in., stout, pubescent. *Male flowers* unknown. *Female flowers* ·5 in. long, axillary, solitary or 2 together, sessile. *Calyx* coriaceous, densely pubescent inside and out, deeply divided into 5 broadly oblong, sub-acute lobes, accrescent, and becoming concave along the midribs of the lobes. *Corolla* somewhat longer than the calyx, sericeous externally; the tube short, the limb-lobes deep, broadly oblong, blunt; staminodes few, flat. *Ovary* broadly ovoid, densely sericeous-tomentose. *Fruit* ovoid-ellipsoid, nearly 1 in. long, and slightly less in diam., glabrous; the accrescent *calyx* embracing its base deeply 5-lobed, plicate.

MALACCA: *Griffith* (K.D.) 3632. KEDAH: *Curtis* 2596, 8327?; *Ridley* 327.

17. *DIOSPYROS TRISTIS*, King & Gamble, n. sp. A tree 40 to 50 feet high; young branches half as thick as a goose-quill, covered with deciduous almost black tomentum. *Leaves* alternate, coriaceous; oblong-elliptic, shortly acuminate, the base rounded or cuneate; both surfaces dingy olivaceous-brown when dry, minutely reticulate; upper surface glabrous, shining, the lower dull, the prominent midrib densely clothed with dark hairs; the 7 or 8 pairs of prominent ascending main-nerves and the intermediate spaces with a few similar hairs with bulbous bases; length 6 to 9 in., breadth 2 to 2.75 in.; petioles .4 to .5 in. *Male flowers* .3 in. long, in short axillary cymes .75 in. long, the branches and pedicels densely dark rusty-tomentose outside. *Calyx* glabrous inside; the mouth with 5 broad short obtuse teeth. *Corolla* fleshy, glabrous, like the calyx in shape and of about the same length. *Stamens* 24; anthers lanceolate, shortly appendiculate at the apex, sessile. *Female flowers* unknown. *Fruit* depressed-globose, glabrous, shining, nearly 2 in. in diam.; the *calyx* at its base thick, woody, flat, 1.5 in. across, with 5 spreading triangular lobes.

PERAK: *Wray* 2190; *King's Collector* 5521.

18. *DIOSPYROS PAUCIFLORA*, King & Gamble, n. sp. A glabrous shrub or small tree; young branches rather thinner than a goose-quill, their bark dark and rough. *Leaves* rather large, alternate, very coriaceous; oblong-lanceolate or -oblanceolate, shortly caudate-acuminate, the base slightly cuneate; upper surface olivaceous, shining, lower ochraceous, dull; main-nerves 8 to 10 pairs, spreading, curved, and interarching boldly .1 or .2 in. from the slightly recurved edge; length 5 to 10 in., breadth 1.75 to 3 in.; petiole .25 to .3 in., corrugated. *Male flowers* .3 in. long, sessile and in sessile axillary fascicles of from 3 to 6. *Calyx* .25 in. long, narrowly tubular, somewhat narrowed at base and apex, coriaceous, pale in colour, the mouth with 4 broad triangular short erect lobes, outer surface with a layer of minute adpressed tawny tomentum and scattered over it many black adpressed hairs; the interior paler, pustular, with a few similar scattered hairs and a thick ring of them near the base surrounding the rudimentary ovary and clothing it also. *Corolla* slightly longer than the calyx, fleshy, widely tubular, divided for half its length into 4 broad obtuse lobes with a broad line of adpressed black hairs along the midrib of each outside, the rest of the outer surface adpressed-sericeous, the interior quite glabrous. *Stamens* 12, viz., 8 in pairs standing face to face and united by their short filaments, and 4 free; anthers of all linear, densely hairy, on short glabrous filaments. *Female flowers* not seen.

PERAK : *King's Collector* 7363, 7749.

19. *DIOSPYROS ELLIPSOIDEA*, King & Gamble, n. sp. A tree or shrub; young branches somewhat thinner than a goose-quill, deciduously and densely rusty-puberulous. *Leaves* alternate, thinly coriaceous; oblong to elliptic-oblong, rarely slightly oblanceolate, apex acute, base rounded; both surfaces when dry olivaceous-brown, the upper glabrous, the midrib sometimes rusty-puberulous, the lower surface darker, minutely puberulous; midrib and 10 to 12 pairs of curved ascending nerves faintly prominent on the lower and depressed on the upper surface; length 6 to 10 in.; breadth 2·25 to 3·5 in.; petioles ·25 to ·3 in. *Male flowers* in dense axillary cymes of 6 to 12, not much longer than the petioles; bracteoles few, broad, densely rusty-tomentose. *Calyx* sub-sessile, tomentose externally, glabrous internally, divided into 4 sub-rotund blunt lobes. *Corolla* glabrous, very fleshy towards the apex, with 4 broad deep lobes. *Stamens* at the base of the tube, broadly ovate, apiculate, filaments flattened. *Female flowers* in subsessile clusters of 3 or 4. *Calyx* with 4 rounded lobes, reflexed, coriaceous, and in fruit only ·35 in. across. *Fruit* ellipsoid, glabrous, crowned by the short style and subtended by the reflexed broadly-lobed small calyx, 1 to 1·25 in. long and ·8 in. in diam. *Seeds* few, ellipsoid, apiculate, two of the sides compressed.

PERAK : *King's Collector* 2233, 3250, 7098, 7269, 7320, 7689, 8215; *Scortechini* 1615.

20. *DIOSPYROS WALLICHI*, King & Gamble. A tree 30 to 60 feet high; young branches covered with minute coarse hair, the older verrucose. *Leaves* alternate, coriaceous; oblong or elliptic-oblong, apex acute, base cuneate or rounded; edges slightly recurved; upper surface glabrous and shining, lower paler, minutely pubescent at first but becoming glabrescent, both olivaceous when dry; midrib depressed on the upper surface, bold on the lower; main-nerve 14 to 18 pairs, slightly curved, spreading, prominent on the lower surface, faint on the upper; length 8 to 14 in., breadth 2·5 to 5 in.; petiole ·5 to ·75 in. *Male cymes* ·5 to ·75 in. long, in clusters (often crowded) on the branches, 7-10-flowered; bracteoles broad, blunt, concave, thick like the calyx and corolla, and like them densely rusty-tomentose externally. *Calyx* ·1 to ·15 in. long, tubular; the mouth with 4 blunt triangular erect teeth; tomentose on both surfaces. *Corolla* thrice as long as the calyx; narrowly tubular, glabrous inside. *Stamens* 16, in 2 rows, the inner attached to the outer at the bases of their filaments; all linear; rudimentary ovary small, hairy. *Female flower* rather larger than the ♂, but in smaller cymes; the *calyx* tetragonous and deeply grooved, very fleshy, becoming woody, very large and boldly 4-angled and

grooved in the ripe fruit. *Corolla* as in the ♂, but somewhat longer. *Staminodes* about 16. *Ovary* conical densely hairy; stigma glabrous, with 4 deep oblong truncate lobes. *Fruit* 1 in. in diam., nearly twice as much across the calyx, sub-globose, deeply immersed in the large thickened calyx, its apex truncate-concave; seeds 4 or 5. *D. macrophylla*, Wall. Cat. 4141 (not of Blume). *D. undulata*, Wall. A. DC. Prod. VIII. 233; Hiern in Trans. Camb. Phil. Soc. XII. 216 (in part); Kurz in Journ. As. Soc. Beng. XLVI. ii. 23, and For. Fl. II. 135 (in part); Clarke in Hook. fil. Fl. Br. Ind. III. 568.

PENANG: *Curtis* 1085; *Ridley* 7174. MALACCA: *Maingay* (K.D.), 974; *Griffith* (K.D.) 3636. PERAK: *Scortechini* 1976; *Wray* 2535, 2865. *King's Collector* 2966, 2982, 4058, 6779, 7459, 7619, 10123. KEDAK: *Curtis* 2594. SELANGOR: *Ridley* 2748, 8544.

This is the plant issued by Wallich as No. 4141 of his Catalogue under the name *D. macrophylla*. Being different from the older *D. macrophylla* of Blume, a new name had to be found for it. This was done by De Candolle, who reduced it, as a variety, to Wallich's *D. undulata* with the type specimen of which in Wallich's own herbarium it does not agree. De Candolle was followed by Hiern, Kurz, and Clarke; we now restore it to specific rank. The true *D. undulata*, Wall., is a Burmese species. It is found also in the Andaman Islands, but it has not as yet been collected in Malaya.

21. DIOSPYROS ARGENTEA, Griff. Notul. IV. 288 (1854). A tree 15 to 50 feet high; young branches about as thick as a goose-quill, covered with sub-deciduous yellowish silky hairs. *Leaves* large, coriaceous; oblong, apex acute, base rather abruptly cuneate or rounded; upper surface warm brown when dry, glabrous and shining, the midrib depressed; lower densely covered with yellowish adpressed sericeous hair, the midrib very stout; main-nerve invisible on both surfaces; length 6 to 10 in.; breadth 1.65 to 3.5 in.; petioles .1 to .25 in. *Male flowers* in somewhat supra-axillary few-flowered shortly pedunculate spike-like cymes 1 to 1.25 in. long (peduncle included); bracts ovate .2 in. long. *Calyx* .25 in. long, deeply 4-lobed, villous. *Corolla* .35 in. long, tubular, lobed half-way down, very villous outside. *Stamens* 20 to 24. *Female flower* solitary on a peduncle .2 in. long; calyx campanulate, .5 in. long, with ovate lobes. *Corolla* .65 in. long. *Staminodes* 4 to 5. *Ovary* 4-celled, 8-ovuled, densely hairy; styles 4, erect, hairy. *Fruit* ellipsoid, apiculate, 2 to 2.5 in. long and 1 to 2 in. in diam., densely rusty-tomentose; the *calyx* persistent, its lobes enlarged, broad, very coriaceous, shortly hairy. Hiern in Trans. Camb. Phil. Soc. XII. 262; Clarke in Hook. fil. Fl. Br. Ind. III. 569. *D. discolor*, Wall. Cat. 4131 (not of Willd.).

MALACCA: *Griffith* (K.D.) 3625; *Maingay* (K.D.) 968, 970; *Goodenough*

1301, 1476. SINGAPORE: *Ridley* 3648, 5898; *Hullett* 825. PERAK: *Wray* 172, 1392; *King's Collector* 4812, 5862, 6387, 6896, 8003, 8142; *Seortechini* 498. PANGKORE: *Curtis* 1365. SELANGOR: *Ridley*. 10271. PAHANG: *Ridley* in *Trans. Linn. Soc. Ser. 2, III.* 318 in Tahan woods.

22. DIOSPYROS RIGIDA, Hiern in *Trans. Camb. Phil. Soc.* XII. 257 (1873). A tree 30 to 60 feet high; young branches as thick as a goose-quill, minutely dark rusty-tomentose. *Leaves* alternate, very coriaceous, large; oblong or elliptic-oblong, equal-sided, the apex sub-acute, the base rounded and neither oblique nor cordate; upper surface dark olivaceous-brown when dry, shining, minutely reticulate; lower paler olivaceous-brown, covered except the midrib with a very thin film of minute tomentum, minutely reticulate; midrib very bold on the lower surface, pubescent at the sides, slightly depressed on the upper; main-nerves 14 to 20 pairs, spreading, interarching .35 in. from the edge, slightly distinct on the lower surface, invisible on the upper; length 10 to 18 in., breadth 2 to 4 in.; petiole .4 to .6 in., very stout. *Male flowers* when in bud .4 in. long and nearly .3 in. in diam., few, in short extra-axillary cymes, densely covered with black tomentum; the pedicels stout, deflexed, about .75 in. long. *Calyx* densely tomentose, ovoid, tapered to the apex, its mouth with 4 broad shallow blunt teeth. *Corolla* (apparently) not much longer than the calyx, very coriaceous, glabrous, the tube ovoid; the lobes short, oblong, blunt. *Stamens* about 20, inserted at the base of the tube, unequal; anthers lanceolate, apiculate, almost sessile. *Female flowers* unknown. Ripe *fruit* in cymes, depressed-globose, glaberulous, with a woody rind, 1.75 in. in length from base to apex and 2 in. in diam.; remains of style none; *calyx* at base of fruit cupular, 1.5 in. across, divided into 4 reticulate leathery spreading broadly ovate lobes; peduncle .75 to 1.25 in. long, with dark hispid hairs.

PERAK: *King's Collector* 4024, 5732, 5971, 6801; *Wray* 3708.—
DISTRIB. Borneo.

23. DIOSPYROS HORSFIELDII, Hiern in *Trans. Camb. Phil. Soc.* XII. 193 (1873). A tree 20 to 40 feet high, all parts except the cymes glabrous; young branches thinner than a goose-quill, pale. *Leaves* alternate, coriaceous; oblong-elliptic or ovate-oblong, apex sub-acute, base slightly cuneate or rounded, the edges slightly recurved when dry; upper surface when dry olivaceous-green, lower surface brown; the midrib and nerves depressed; the reticulations, midrib, and 8 to 14 pairs of curved spreading main-nerves very bold and prominent; length 6 to 10 in., breadth 2.5 to 4 in.; petioles .35 in. *Cymes* 2 to 3 in. long,

covered with black pubescence, few-flowered, collected on extra-axillary or axillary tubercles, sometimes forming small panicles, consisting mostly of ♂ flowers, and often with only a few ♀, with many oblanceolate blunt bracts .25 to .3 in. long, and some smaller bracteoles; branches of the cyme striate when dry. *Calyx* .15 in. long, divided to its base into 4 broadly ovate undulate lobes. *Corolla* in bud cylindric, tetragonous at the base; about .4 in. long, tomentose, deeply divided into 4 narrowly elliptic blunt lobes. *Stamens* about 16 in 2 rows, united into a tube, the anterior row smaller than the posterior, all narrow and apiculate, the filaments short and hairy. *Female flowers* like the ♂ as to calyx, but with corolla somewhat longer and with about 12 flat staminodes. *Ovary* ovoid-conic, tomentose, attenuated into a long style. *Stigma* with several small lobes; ovary 8-celled. *Fruit* when ripe ovoid-globular, 1 to 1.25 in. in diam., glabrescent, subtended by the accrescent calyx with large reticulate undulate lobes. *Seeds* compressed, oblong. Clarke in Hook. fil. Fl. Br. Ind. III. 571. *D. frutescens*, Hassk. Pl. As. Rar. 467 (not of Blume).

MALACCA: Griffith (K.D.) 3620. PERAK: *Seortechini* 1765; King's Collector 8261.—DISTRIB. Java.

Specimens of this sent from Herbarium Koordersianum, Buitenzorg, have pentamerous flowers; but in other respects they do not differ from the Perak specimens in Herb. Calcutta.

24. DIOSPYROS TOPOSIODES, King & Gamble, n. sp. A glabrous tree 15 to 40 feet high, sometimes only a shrub; young branches rather thinner than a goose-quill, pale brown and striate when dry. *Leaves* alternate, coriaceous; oblong-elliptic, shortly acuminate or acute, base rounded; edges slightly recurved when dry; both surfaces pale olivaceous when dry, minutely but distinctly reticulate, the upper shining, the lower darker and dull; midrib channelled on the upper surface, strong and prominent on the lower; main-nerves 16 to 20 pairs, spreading, little-curved, interarching far from the edge, the intermediate nerves nearly as prominent; length 7 to 11 in.; breadth 2 to 4 in.; petiole .3 to .4 in. long, stout, wrinkled when dry like the midrib. *Male flowers* .25 in. long, on pedicels longer than themselves, in cymose axillary panicles about 1 in. in length. *Calyx* coriaceous, glabrous, campanulate, with wide truncate entire or sub-entire mouth. *Corolla* slightly exceeding the calyx, ovoid, inflated below, contracted to the 4-toothed apex. *Stamens* numerous, linear, slightly auricled at the base, filaments very short. *Female flowers* when in bud .3 in. long, conical. *Calyx* acutely 4-angled in bud; the 4 lobes deltoid, very coriaceous, puberulous outside, rusty-tomentose inside like the ovary and young

fruit, accrescent in fruit. *Corolla* slightly longer than the calyx, tubular, with 4 short erect ovate lobes, quite glabrous. *Staminodes* about 12, flattened, villous behind. *Ovary* conical, densely rusty-tomentose. *Stigma* glabrous, short, with 8 small lobes. *Fruit* in cymes, depressed-globular, 1 to 1.25 in. in diam., much exceeding the minutely reticulate calyx, glabrescent, minutely tuberculate. *Seeds* compressed.

PERAK: *King's Collector* 4106, 4361, 4889, 5769, 8242, 8357; *Scortechini*; *Ridley* 3079, 10302?

The leaves of this in texture and reticulations much resemble those of *D. Toposia*, Ham. The flowers and inflorescence are, however, different from those of that species.

25. *DIOSPYROS OLEIFOLIA*, Wall. Cat. 4128 (1829). A tree; young branches twice as thick as a crow-quill, almost black when dry, sparsely pubescent. *Leaves* coriaceous, alternate; narrowly oblong to elliptic, sub-acute or acute, the base cuneate; upper surface pale olivaceous, glabrous, shining; the lower yellowish, dull, for the most part glabrous, but usually with sparse adpressed black detachable hairs near the midrib and base; main-nerves invisible on either surface; midrib strong on the lower surface, slightly depressed on the upper, length 6.5 in.; breadth 2 in.; petiole .25 in. long. *Male cymes* on axillary peduncles about .3 in. long, each bearing 3 unequally pedicellate flowers .5 in. long; all very dark in colour and with black hairs like those on the outer surface of the calyx. *Calyx* .4 in. long, tubular-campanulate, densely adpressed rusty-tomentose inside, cut half-way down into 4 triangular erect lobes. *Corolla* tubular, slightly longer than the calyx, very thick, densely tomentose like the interior of the calyx; its lobes 4, very thick, oblong, spreading slightly. *Anthers* attached near the base of the tube, 16, linear-lanceolate, sessile. *Female flowers* on longer panicles than the males; pedunculate calyx with 4 triangular acute lobes, velvety outside, tawny-tomentose inside. *Fruit* depressed-globose, 1.35 in. in diam.; the pericarp woody, glabrous when ripe, tawny-tomentose when young, the persistent *calyx* at its base thick, woody, nearly 1 in. in diam., with dark tomentum outside. A. DC. Prod. VII. 132; Kurz in Journ. As. Soc. Beng. XLI., Pt. II. 72, id. XLVI., Pt. II. 235, and For. Fl. II. 132; Hiern in Trans. Camb. Phil. Soc. XII. 204; Clarke in Hook fl. Fl. Br. Ind. III. 567.

PENANG: *Curtis* 1573. PERAK: *King's Collector* 3876; *Scortechini*.
—DISTRIB. Burma, Java.

26. *DIOSPYROS BRACHIATA*, King & Gamble, n. sp. A glabrous tree

20 to 40 feet high; young branches half as thick as a goose-quill. *Leaves* alternate, coriaceous; elliptic-oblong, acute or shortly acuminate, the base slightly cuneate or rounded; upper surface pale olivaceous when dry, lower pale brown; main-nerves 10 to 12 pairs, curved, ascending, prominent like the midrib on the lower surface, depressed somewhat on the upper; length 5·5 to 9 in.; breadth 1·5 to 2·5 in.; petioles ·3 to ·5 in. *Male flowers* about ·5 in. long. *Calyx* ·2 in. long, campanulate, divided almost to the base into 5 ovate-acute erect lobes, each folded vertically along the midrib so as to form a deep dorsal groove, everywhere minutely rusty-tomentose. *Corolla* twice as long as the calyx, narrowly tubular; the tube 5-angled, externally divided, the 5 lobes twice as long as the tube, linear-oblong, contorted in æstivation, the external half of each lobe tawny-tomentose, the inner half and the whole of the anterior surface glabrous. *Stamens* 14, linear, apiculate, sub-sessile. *Female flowers* ·4 in. long, collected in compound umbellate axillary cymes 1·5 to 1·75 in. long and about as much across, the branches compressed, rusty-puberulous, spreading, bearing a few oblong obtuse bracts; flower-pedicels varying in length from ·1 to ·2 in., bibracteolate. *Calyx* fleshy, tomentose outside, deeply divided into ovate-acuminate erect grooved lobes. *Corolla* tubular, tomentose outside, glabrous inside, very thick, deeply divided into 4 oblong lobes. *Staminodes* about 8, lanceolate, flattened. *Ovary* ovoid, tapering into a short style, tomentose. *Fruit* depressed-globose, puberulous, ·75 to ·9 in diam., and about the same from below the calyx to the somewhat concave apex; *calyx* woody, thick, 1 in. wide, with triangular deeply grooved sub-acute lobes.

PENANG: *Curtis* 1453, 1454, 10230.

27. DIOSPYROS PANICULATA, Dalz. in Hook. Kew Journ. IV. 109 (1852). A tree 50 to 70 feet high; young branches less than half as thick as a goose-quill, rusty-puberulous. *Leaves* thinly coriaceous, alternate; elliptic or elliptic-oblong, shortly and bluntly apiculate or acuminate; the base cuneate or rounded; both surfaces pale olivaceous when dry, the reticulations minute and distinct, especially on the glabrous upper surface; main-nerves 5 to 8 pairs, curving upwards and forming arches far from the edge, bold like the midrib on the lower surface and slightly depressed on the upper; lower surface softly pubescent; length 4 to 7·5 in., breadth 1·65 to 2·5 in.; petiole ·25, stout, channelled, pubescent. *Male and female flowers* not seen. *Fruit* in lax racemoid cymes, ellipsoid, crowned by the small remains of the style, rufous-hirsute when young, ultimately glabrous, 1·5 in. long and 1 in. in diam.; the accrescent calyx at its base with 4 large broadly ovate membranous lobes with many vertical nerves and numerous distinct

minute reticulations, each lobe 1·25 long and nearly as wide. Dalz. & Gibs. Flora Bombay, 141; Bedd. Ic. Pl. Ind. Or. t. cxxv, and Fl. Sylv. Madr. cxliv; Hiern in Trans. Camb. Phil. Soc. XII. 190; Clarke in Hook. fil. Fl. Br. Ind. III. 570.

PERAK: *King's Collector* 7637, 8163.

The scanty specimens from Perak are in fruit only, but the leaves and fruit agree so well with those of *D. paniculata*—a species hitherto known only from the west of the Indian Peninsula—that, in spite of the anomalous geographical distribution, we, temporarily at least, refer the Perak specimens to that species.

28. *DIOSPYROS KUNSTLERI*, King & Gamble, n. sp. A tree 20 to 40 feet high; young branches as thick as a goose-quill, glabrous. *Leaves* alternate, large, thickly membranous; elliptic to elliptic-oblong, acute, the base rounded; both surfaces, when dry, olivaceous-brown, the lower rather darker than the upper, somewhat shining, faintly reticulate; main-nerves 8 to 12 pairs, much curved, spreading, ascending, and forming wide arches ·25 in. from the edge, prominent on the lower surface like the midrib, somewhat depressed on the upper; length 8 to 12 in., breadth 3·5 to 4·5 in.; petioles ·25 to ·35 in. *Male flowers* unknown. *Female flowers* in short axillary and extra-axillary puberulous cymes, nearly 1 in. long, pedicellate; bracts narrow, nearly as long as the pedicels, oblong. *Fruit* in short stout cymes (unripe) depressed-globular, crowned by the short remains of the style, with 4 or 5 vertical ridges, everywhere densely rusty-tomentose, subtended by the accrescent almost woody calyx, with 4 deep reniform-cordate apiculate erect undulate lobes.

PERAK: *King's Collector* 4343, 7633, 8229.

29. *DIOSPYROS NUTANS*, King & Gamble, n. sp. A shrub or small tree 8 to 16 feet high; young branches less than one-third as thick as a goose-quill, deciduously villous, the older much thicker with deeply channelled dark-coloured, sub-glabrous bark. *Leaves* alternate, thinly coriaceous; oblong or sub-ob lanceolate-oblong, apex shortly caudate-acuminate, the base rounded; both surfaces brown when dry, the upper glabrous, the lower puberulous, but often villous on the prominent midrib; main-nerves 7 to 10 pairs, curved, ascending, interarching near the margin, the reticulations distinct; length 5 to 7 in., breadth 1·5 to 2·25 in.; petiole ·15 in. *Cymes* umbellate, few-flowered, borne on the apices of slender slightly supra-axillary flexuous puberulous peduncles much longer than the leaves (often twice as long); bracteoles few, small, lanceolate, concave. *Male flowers* in different cymes from the females, ·5 in. long, on short pedicels less than ·1 in. long. *Calyx* puberulous, campanulate, with 5 long lanceolate lobes. *Corolla* four times as long

as the calyx, narrowly tubular, slightly constricted at the throat, hairy outside, glabrous inside; the limb with 5 deep oblong lobes. *Stamens* 10, linear-elliptic, apiculate, inserted in the bottom of the tube, 5 sessile and 5 with filaments. *Female flowers* shorter than the ♂, with small filamentous staminodes. *Ovary* narrowly ovoid, densely rufous-hirsute, attenuated into a long pubescent style crowned by 5 short glabrous reflexed small stigmas. *Fruit* narrowly ellipsoid, sparsely hairy, .6 to 1 in. long and .5 in. in diam., crowned by the persistent style and subtended by the non-acrescent calyx. *Seeds* few, narrowly ellipsoid.

PERAK: *Scortechini* 674, 1678; *King's Collector* 378, 2675, 2987, 3573, 7087.

Differs from all the other Malayan species by its long peduncled pendulous inflorescence.

SPECIES IMPERFECTLY KNOWN.

30. *DIOSPYROS REFLEXA*, King & Gamble, n. sp. A tree 50 to 70 feet high; young branches as thick as a goose-quill, covered with a layer of minute deciduous rusty pubescence. *Leaves* alternate, thickly coriaceous; oblong to elliptic, shortly acuminate, the base cuneate; upper surface olivaceous-brown when dry, the lower pale brown, both minutely reticulate; main-nerves 8 to 10 pairs, spreading, interarching .15 in. from the slightly recurved edges; length 5 to 7.5 in., breadth 1.75 to 3 in.; petiole .4 or .5 in. *Flowers* unknown. *Fruit* hemispheric with depressed truncate apex, under 1 in. in diam.; the calyx embracing the very base of the fruit with 4 fleshy much reflexed revolute triangular fleshy lobes, densely rusty-tomentose like the fruit.

PERAK: *King's Collector* 7676, 7747.

The curious fleshy calyx with much-reflexed lobes distinguishes this from all the other Malayan species.

31. *DIOSPYROS PENANGIANA*, King & Gamble, n. sp. A tree 20 to 30 feet high; young branches twice as thick as a crow-quill, covered with deciduous hair of two sorts, namely, a uniform coat of minute rusty tomentum with long rusty bristle-like hairs protruding through it. *Leaves* alternate, coriaceous; oblong, shortly and bluntly acuminate, narrowed below the middle to the rather broad auriculately cordate base; upper surface when dry pale brown, shining, glabrous except the puberulous depressed midrib; lower surface reddish-brown, transversely reticulate, with pubescence like that of the young branches on the stout midrib and 10 to 14 pairs of ascending rather straight main-nerves, otherwise glabrescent; length 5.5 to 7.5 in., breadth 1.25 to 2.25 in.; petioles .15 to .2 in. long, hispid. *Male and female flowers* unknown.

Fruit sessile, globular, from .75 to 1 in. in diam., densely covered with minute rufous tomentum, crowned by the short remains of the style and subtended by the small calyx with 5 broad reflexed lobes.

PENANG : *Curtis* 2221.

Collected only in Penang. In leaves this resembles the Bornean plant named by Hiern *Maba?* *cordata*. The 5-cleft calyx of this is suggestive rather of *Diospyros* than of *Maba*.

32. *DIOSPYROS RUFA*, King & Gamble, n. sp. A tree 60 to 80 feet high; young branches about half as thick as a goose-quill or thicker, glabrous, brown and rough when dry. *Leaves* alternate, thickly coriaceous; oblong-elliptic, sometimes oblanceolate, the apex shortly and bluntly acuminate, the base much narrowed; upper surface warm brown when dry, glabrous, very shining; the lower dull, glabrous or slightly puberulous towards the base; main-nerves 7 to 10 pairs, spreading, little curved, interarching near the slightly incurved edges, slightly prominent on the lower surface and somewhat depressed on the upper when dry; length 5.5 to 7.5 in., breadth 1.75 to 2.25 in.; petioles .4 to .6 in., stout, channelled. *Male and female flowers* unknown. *Fruit* globular-ovoid, blunt, 1.25 to 1.5 in. long and about 1.15 in. in diam., densely rusty-tomentose. *Calyx* at base flat, 4-angled, .4 in. in diam., rusty-tomentose.

PERAK : *King's Collector* 3330, 4945, 5409, 6712.

33. *DIOSPYROS AREOLATA*, King & Gamble, n. sp. A tree 50 to 60 feet high; young branches thinner than a goose-quill, rusty-puberulous becoming glabrous. *Leaves* alternate, very coriaceous; oblong, subacute, the base rounded; both surfaces glabrous except the puberulous midrib and sometimes the main-nerves, hepatic-brown when dry; the upper shining, minutely and faintly areolate; the lower dull and boldly areolar-reticulate; midrib bold on the lower surface, slightly depressed on the upper; main-nerves about 7 pairs, curved, ascending abruptly, faint on the lower surface, almost invisible on the upper; length 4.5 to 6 in.; breadth 1.5 to 1.75 in.; petioles .5 or .6 in. *Male flowers* (only buds seen) under .5 in. in length, collected near the ends of the branches in tomentose cymes .5 to 1 in. long. *Calyx* coriaceous, on a thick pedicel shorter than itself, ovoid in bud; the mouth with triangular short teeth. *Corolla* like the calyx, but glabrous and fleshy. *Stamens* about 21; anthers linear, apiculate, nearly uniform, sub-sessile or on short broad flat filaments, sometimes slightly attached in groups of 3. *Female flower* probably solitary, much broader than the ♂. *Calyx* velvety outside and inside, divided nearly to the base into 4 ovate-triangular very acute lobes .4 in. long. *Corolla* fleshy, glabrous, .6 in. long, its

tube wide with staminodes like the anthers of the ♂ but not so numerous; limb about as long as the tube, with 4 deep, broad, subquadrate spreading lobes. *Ovary* ovoid-conic, densely rusty-pilose. *Stigmas* 4, oblong, fleshy, glabrous. *Fruit* unknown.

PERAK: *Scortechini* 476; *King's Collector* 5813.

34. *DIOSPYROS CURTISII*, King & Gamble, n. sp. A tree (?); young branches rather thicker than a goose-quill, rugulose and dark-coloured when dry, glabrous. *Leaves* alternate, thinly membranous; oblong or oblong-elliptic, shortly and bluntly acuminate, base rounded or slightly cuneate; both surfaces glabrous, the upper olivaceous when dry, the lower brown; main-nerves 7 to 9 pairs, slightly curved, ascending, faint on both surfaces; the midrib prominent on the lower surface, slightly so on the upper; length 2.5 to 5 in., breadth 1.25 to 2 in.; petioles .2 in. *Male flowers* not seen. *Female flowers* .25 in. long, in extra-axillary or axillary fascicles of about 3 on the younger branches; pedicels about .2 in. long, cinerous-pubescent, each with 2 oblong obtuse bracteoles at its base, about .5 in. long. *Calyx* coriaceous, nearly .2 in. broad at the base, deeply divided into 4 triangular-reniform glabrescent lobes. *Corolla* partially glabrous, about as long as the calyx, salver-shaped; tube short; limb divided into 4 deep, broadly ovate, spreading lobes. *Staminodes* about 4, linear-lanceolate, compressed. *Ovary* narrowly oblong, tapering into the short thick style, densely tawny-tomentose. *Fruit* unknown.

PULAU POONGAH: *Curtis* 2942.

35. *DIOSPYROS GLOMERULATA*, King & Gamble, n. sp. A tree 40 to 60 feet high; young branches rather thicker than a crow-quill, densely clothed with minute rufous pubescence. *Leaves* membranous, alternate; elliptic, shortly and bluntly apiculate, the base rounded or slightly cuneate; upper surface olivaceous when dry, glabrous; the lower brown, puberulous, midrib bold; main-nerves 5 or 6 pairs, slightly curved, ascending; length 2.25 to 3.5 in., breadth 1.25 to 1.75 in.; petiole about .1 in. *Male flowers* .2 in. long, crowded in dense sessile axillary and extra-axillary globular capitules .4 in. across. *Calyx* sessile, campanulate, tomentose, deeply divided into 4 broadly triangular subacute erect lobes. *Corolla* tubular, tetragonous, thick, about as long as the calyx; tube glabrous, the 4 lobes pubescent outside, oblong. *Stamens* 8, separate. *Anthers* broadly lanceolate, apiculate, filaments short. *Female flowers* and *fruit* not known.

PERAK: *King's Collector* 8590.

The following description of a *Diospyros* from Pahang is taken from Ridley's account of the Flora of the Eastern Coast of the Malay Peninsula.

36. *Diospyros caliginosa*, Ridley in Trans. Linn. Soc. Ser. 2, III. 318 (1893). A graceful lofty tree; bark black; branches pubescent. *Leaves* alternate, elliptic-oblong, acute; 8 in. long, 3 in. broad; main-nerves 13 pairs; glabrous above, minutely pubescent beneath on the midrib and nerves; petiole .25 in. long, minutely pubescent. *Flowers* on old wood, fasciated; peduncles short, covered with a black pubescence. *Calyx* of ♂ flower patelliform; sepals 4, broadly ovate, obtuse, covered without and on the margin with black hair. *Corolla* urceolate, white, silky, .5 in. long; lobes 4, short, ovate, recurved. *Stamens* 16, collected in pairs; filaments thick, minutely hispid; anthers glabrous, long-conical with acute tips. *Ovary* abortive, 4-lobed, irregular, the lobes furrowed; style conical. Flowers of ♀ not seen. *Fruit* small, globose, surrounded by the accrescent sepals.

PAHANG: in thick woods at Kota Glanggi and Kwala Tembeling, *Ridley*.

We are unable, having seen no specimen, to make quite sure of the place of this species. It seems to come very near to No. 17 *D. tristis*, King & Gamble.

Order LXXIII. STYRACEÆ.

Trees or shrubs. *Leaves* alternate, simple; stipules none. *Flowers* in simple or branched axillary or terminal racemes or spikes, sometimes solitary; usually white, rarely red; bracts small, often minute or obsolete. *Calyx* gamosepalous, the tube more or less adnate to the ovary, so that it may be superior or inferior; limb 4-5-toothed or truncate, persistent. *Corolla* of 4 to 5 petals, the tube usually short, sometimes none; petals imbricate or sometimes valvate or contorted. *Stamens* adnate to the petals, equal in number to them or double or very many; 1-many-seriate; filaments free or connate; anthers round or linear, dehiscent laterally. *Ovary* inferior or superior, 2-5-celled or sometimes, by the separation of the septa, 1-celled; style filiform, sometimes thick; stigma capitate, entire or lobed; ovules 1 or more, on the inner angle of each cell, pendulous or erect. *Fruit* drupaceous, indehiscent, 1-, rarely 2-3-seeded. *Seeds* albuminous, testa thin or coriaceous, hilum generally broad; embryo straight or curved, cotyledons terete or flattened; radicle cylindrical or short.—**DISTRIB.** Warmer regions of Asia, Australia, and America, absent from Africa; genera 7 or 8, species about 350.

Stamens many, in several series	1. SYMPLOCOS.
Stamens 10, in one series	2. STYRAX.

1. SYMPLICOS, Linn.

Trees or shrubs. *Leaves* alternate, often turning yellow when dry, entire or toothed. *Flowers* white, sometimes red, in axillary simple or compound spikes or racemes, sometimes in few-flowered fascicles, occasionally reduced to one flower; bracts small, solitary at the base of the pedicels; bracteoles 1 to 3, small, at the base of the flower. *Calyx-tube* adnate, short when in flower, campanulate, often enlarged in fruit; lobes 5, imbricate. *Petals* 5 in one series, or 6 to 10 in two series, free or somewhat connate, or sometimes connate in a tube, imbricate. *Stamens* adnate to the corolla, at the base of the petals or higher up the tube, numerous, many-seriate, the outer the longest; filaments filiform, or sometimes flattened; anthers short, dehiscing in longitudinal parallel cells. *Ovary* inferior, or semi-superior, 2-5-celled; style filiform; stigmas capitate, slightly lobed; ovules 2, pendulous from the inner angle of each cell. *Fruit* an oblong, ovoid or sub-globose drupe; endocarp woody or thin, often ridged or ribbed, 1-3-seeded. *Seeds* usually 1 only (by abortion); embryo terete, straight or curved, in the centre of fleshy albumen; cotyledons much shorter than the radicle.—
 DISTRIB. Warmer regions of Asia, Australia and America, species about 290 to 300.

Filaments more or less pentadelphous; corolla-tube divided nearly to the base (Subg. I. HOPEA):—

Fruit (where known) more or less ampulliform; embryo curved (Sect. i. PALURA):—

Inflorescence compound, branching at any rate at the base:—

Branches of the inflorescence paniculately racemose, drupe nearly .5 in. long 1. *S. odoratissima*.

Branches of the inflorescence racemose:—

Racemes densely ferruginous-tomentose; pedicels scarcely .05 in. long, thick 2. *S. fulvosa*.

Racemes ferruginous-villous; pedicels .2 in. long, slender; leaves elliptic, under 4 in. long 3. *S. nivea*.

Racemes pulverulent; pedicels .2 in. long, slender; leaves obovate 4. *S. pulverulenta*.

Racemes glabrous or slightly pubescent; pedicels longer than .05 in., slender:—

Leaves over 4 in. long and 2 in. broad; calyx-lobes glabrous 5. *S. monticola*.

Leaves under 4 in. long and 1.5 in. broad; calyx-lobes pubescent 6. *S. fasciculata*.

Branches of the inflorescence spicate:—

Leaves beneath and inflorescence glabrous or nearly so; endocarp of seed thin { 7. *S. spicata*.
 var. *malasica*.

Leaves beneath and inflorescence ferruginous-villous; endocarp of seed hard, bony 8. *S. ferruginea*.

- Inflorescence simple, racemose; racemes very short, almost reduced to fascicles 9. *S. Ridleyi*.
- Fruit (where known) ovoid-oblong, not ampulliform; embryo straight (Sect. ii. *LODHRA*):—
- Inflorescence paniculate, branching usually from the base only:—
- Branches of the inflorescence racemose, more than .5 in. long:—
- Leaves glabrous or nearly so; fruit glabrous:—
- Leaf-margins prominently broad-crenate, apex shortly and bluntly acuminate 10. *S. celastrifolia*.
- Leaf-margins obscurely crenate or entire:—
- Leaf-margins prominently glandular, texture almost coriaceous 11. *S. adenophylla*.
- Leaf-margins not glandular, texture chartaceous .. 12. *S. perakensis*.
- Leaves very hairy; fruit villous 13. *S. Brandiana*.
- Branches of the inflorescence racemose, under .5 in. long; leaf-margins entire or nearly so 14. *S. concolor*.
- Inflorescence unbranched:—
- Inflorescence racemose:—
- Racemes 2 to 3 in. long, slender, few-flowered .. 15. *S. calycodactylos*.
- Racemes very short:—
- Leaves coriaceous, acute or rounded or emarginate at apex; fruit ovoid-oblong, under .5 in. long .. 16. *S. ophirensis*.
- Leaves chartaceous, long-acuminate at apex, cuneate at base; fruit cylindric-oblong, over .5 in. long .. 17. *S. Curtisii*.
- Leaves chartaceous; fruit not known:—
- Leaves 6 to 7 in. long, abruptly acuminate at apex, usually sub-cordate at base, quite glabrous .. 18. *S. crassipes*.
- Leaves 4 to 7 in. long, long acuminate at apex, rounded at base, ferruginous-pilose beneath .. 19. *S. penangiana*.
- Inflorescence spicate:—
- Drupes large, over 1 in. in length; endocarp with 8 prominent sharp ridges; leaves nearly glabrous:—
- Leaves usually under 6 in. long and 2 in. broad; young inflorescence without prominent bracts .. 20. *S. cerasifolia*.
- Leaves usually over 6 in. long and 2 in. broad; young inflorescence prominently bracteate so as to appear strobilate 21. *S. rigida*.
- Drupes small, under .5 in. long; endocarp with faint ridges only; leaves rusty-pubescent beneath; young inflorescence strobilate 22. *S. rubiginosa*.
- Filaments connate in a staminal tube; corolla-tube elongate (Subg. II. *CORDYLOBLASTE*):—
- Corolla-tube scarcely .3 in. long 23. *S. confusa*.
- Corolla-tube about 1 in. long:—
- Inflorescence densely rusty-tomentose; leaves pubescent beneath 24. *S. Maingayi*.
- Inflorescence slightly grey-pubescent; leaves glabrous .. 25. *S. Scortechinii*.

Subgenus I.—HOPEA.

1. SYMPLOCOS ODORATISSIMA, Choisy ex Zoll. Syst. Verz. 136 (1854). A tree with spreading branches reaching 60 to 70 feet in height and 18 to 24 in. in diam. of stem; branches grey, stout; branchlets dark greyish-brown, angled, striate, minutely puberulous; leaf-buds acuminate, .15 in. long. *Leaves* thinly coriaceous; elliptic or elliptic-obovate or elliptic-oblong, shortly acuminate at apex, cuneate or slightly rounded at base; glabrous on both surfaces; margin entire or serrate, blackish-brown when dry; 3 to 6 in. long, 2 to 2.5 in. broad; midrib slender, prominent beneath, impressed above; main-nerves 8 to 10 pairs, arching upwards to and along the margin where they meet in an intramarginal looped nerve near it; reticulations transverse, not prominent; petiole .4 to .6 in. long, flattened above. *Inflorescence* of grey-pubescent panicles, 1.5 to 2 in. long, axillary to the upper leaves, longer in fruit and stouter; branches paniculately racemose; bracts very small, deciduous; bracteoles 2, below the calyx-tube, ovate-acute, reflexed, .05 in. long; pedicels .15 in. long. *Calyx-tube* .05 in. long, pubescent; lobes 5, as long as tube, rounded. *Corolla-tube* very short; lobes ovate-obtuse, .15 in. long, pubescent on back, ciliate, white. *Stamens* in 5 bundles opposite corolla-lobes, very many, 80 to 100 in all; filaments slender; anthers rounded. *Ovary* villous; style thick, .075 in. long, stigma lobed; cells 3, ovules 2 in each cell. *Fruit* an ampulliform drupe, .4 to .5 in. long, .25 in. broad, lower part rounded, upper cylindrical, crowned by the calyx-rim and connivent lobes, the calyx-rim .075 in. broad; exocarp corky, rusty-brown, slightly pubescent; endocarp hard. *Seeds* 1 to 3, usually 1 only perfect; testa membranous, albumen fleshy; embryo slightly curved, .15 in. long, radicle long. Miq. Fl. Ind. Bat. I. Pt. 2, 468; Koord. & Val. Bijdr. VII. 148; Brand Monog. Synpl. 35. *Dicalyx odoratissimus*, Blume Bijdr. 1116.

PERAK: *King's Collector* 10030, 10411, 10777. SINGAPORE: *Ridley* 4428 (this latter specimen has leaves up to 8 in. long and 3.5 in. broad).—DISTRIB. Sumatra (*Beccari* 834), Java, Borneo (*Beccari* 4014).

This is var. *divaricata*, Brand, which seems to us hardly separable, unless by the leaves being almost entire. In the Java and Sumatra specimens of *G. odoratissima* the leaves are markedly serrate.

2. SYMPLOCOS FULVOSA, King & Gamble, n. sp. A very large tree, reaching 150 feet in height (*Scortechini*); branchlets dark-brown, young ones and innovations densely ferruginous-tomentose. *Leaves* chartaceo-coriaceous; elliptic, abruptly long blunt-acuminate at apex the acumen often curved, cuneate or attenuate at base; glabrous and shining above,

glabrous and dull beneath, ferruginous-brown when dry; margins faintly crenate-serrate, with a row of glands, slightly recurved; 3 to 4.5 in. long, 1.25 to 2 in. broad; midrib slender, slightly impressed above; main-nerves 6 to 8 pairs, the lowest pair close to the margin, the rest gradually more distant upwards, curved upwards to and along the margin where they meet in a looped intramarginal nerve; reticulations many, forming an elegant network; petiole .75 in. long. *Inflorescence* of tripartite sessile panicles of racemes, the racemes 1 to 2 in. long, densely ferruginous-tomentose; bracts and bracteoles minute, hidden in the tomentum; pedicels thick, .05 in. long; flowers white, then yellowish. *Calyx-tube* short; lobes very short, rounded, densely tomentose without. *Corolla-tube* short; lobes ovate-oblong, glabrous, .15 in. long, 3-5-nerved. *Stamens* many, obscurely separated in bundles; filaments slender; anthers very small rounded. *Ovary* and disk glabrous, style glabrous, .075 in. long, stigma capitate; cells 3. *Fruit* unknown.

PERAK: *Seorteehini* 563, 567.

3. *SYMPLOCOS NIVEA*, Brand Monog. Sympl. 36 (1901). A tree, reaching 50 to 60 feet in height; branchlets slender, rounded, dark brown, glabrous; leaf-buds ovate-acuminate, tawny-pubescent. *Leaves* chartaceo-coriaceous; elliptic or elliptic-oblong, acute or acuminate at apex, cuneate at base; glabrous and shining above, glabrous and pale beneath, dark olive-brown when dry; margins obscurely undulate-crenate, recurved; 3 to 4 in. long, 1 to 1.75 in. broad; midrib slender, impressed above; main-nerves 5 to 6 pairs, irregularly spaced and often branched, at first straight then curved upwards to and along the margin where they anastomose in a looped intramarginal nerve; reticulations obscure; petiole slender, .3 to .4 in. long. *Inflorescence* an axillary panicle of villous racemes 2 to 3 in. long, the racemes 12-15-flowered; bracts and bracteoles ovate-lanceolate, villous, quickly caducous; pedicels slender, .2 in. long. *Calyx-tube* adnate to the ovary; lobes 5, oblong-obtuse, .1 in. long, glabrous, persistent. *Corolla* pure white; lobes twice as long as those of the calyx. *Stamens* about 60, as long as the corolla. *Ovary* glabrous, 1-celled, ovules apparently 2; style slender from a conical villous base. *Fruit* unknown.

PENANG: at Pulau Boetong, Government Hill and Muka Head, *Curtis* 715.

4. *SYMPLOCOS PULVERULENTA*, King & Gamble, n. sp. A tree (?); ultimate branchlets and inflorescence grey- or golden-pulverulent-scaly; leaf-buds lanceolate-acuminate. *Leaves* membranous; obovate, abruptly short acuminate at apex, cuneate often unequally at base; glabrous on both surfaces except on the nerves, olive-green when dry; margins

entire; 5 to 7 in. long, 2 to 3 in. broad; midrib slender, impressed above; main-nerves 8 to 9 pairs, curving upwards to and along the margin; reticulations transverse, prominent and slightly raised above; petiole .7 to .8 in. long, smooth, pulverulent-pubescent. *Infloriscence* of axillary panicles of racemes about 2 in. long; main rachis .7 in. long; branches sub-opposite, about 2 pairs, .5 to 1 in. long; bracts short, ovate, caducous; bracteoles 2, ovate-acute, under the calyx-tube; pedicels slender, .15 to .2 in. long; flowers yellow, buds globose. *Calyx-tube* funnel-shaped, .06 in. long; lobes 5, short, rounded. *Corolla-tube* short; lobes 5, ovate, obtuse, pulverulent-pubescent. *Stamens* very numerous, probably 200 at least, in 5 bundles opposite the corolla-lobes; filaments slender; anthers very small, rounded. *Ovary* and disk pubescent; style stout, stigma capitate; cells 2, ovules several. *Fruit* not known.

SINGAPORE: at Chanchukam, *Ridley* 4786.

5. *SYMPLOCOS MONTICOLA*, King & Gamble, n. sp. A shrub or small tree reaching 20 feet in height and 3 in. in diam. of stem; branchlets somewhat slender, pale brown, sinuous; leaf-buds small, acuminate. *Leaves* chartaceous; elliptic or elliptic-oblong, acuminate at apex, cuneate or somewhat rounded at base; glabrous on both surfaces, greenish-brown when dry; margins serrate except near the base, slightly recurved; 4 to 6 in. long, 2 to 2.5 in. broad; midrib slender, pale, impressed above; main-nerves 6 to 8 pairs, close near the base, gradually more distant, curved upwards to meet in a looped intramarginal nerve; secondary nerves few, reticulations transverse; petiole .25 in. long, channelled above. *Infloriscence* a fascicle of racemes either from the axils of leaves a little below the last, or from the new wood below them; racemes .5 to 1.5 in. long, 6-8-flowered, all parts nearly glabrous; bracts ovate, very minute; pedicels 0 to .1 in. long; bracteoles 2, ovate, acute, ciliate, .05 in. long, at the base of the calyx-tube. *Calyx-tube* short; lobes as long (.1 in.), thin, glabrous, round. *Corolla-tube* very short; lobes 5, thin, oblong, obtuse, .2 in. long, 3-nerved. *Stamens* many, more than 80, in 5 bundles opposite the corolla-lobes; filaments slender; anthers rounded. *Ovary* and disk glabrous or slightly pubescent; style short, .1 in. long; stigma capitate; cells 3. *Fruit* not known.

PERAK: *Scortechini* 533; *King's Collector* 3804, 6927, in dense jungle on the summits of mountains at 4,000 to 4,600 feet.

6. *SYMPLOCOS FASCICULATA*, Zoll. Syst. Verz. 136 (1854). A tree with spreading branches reaching 40 to 50 feet in height and 10 to 15 in. in diam. of stem; branchlets pale greyish-brown, slender, innovations greyish-pubescent. *Leaves* thinly chartaceous or membranous; oblong-lanceolate, long acuminate at apex, the acumen curved and mucro-

nate, rounded or obtusely rhomboid at base; glabrous and shining above, glabrous beneath except on the midrib, yellowish when dry; margins entire or obscurely and distantly serrate, slightly recurved; 2 to 4 in. long, .7 to 1.5 in. broad; midrib slender, impressed above, minutely pilose beneath; main-nerves about 5 to 7 pairs, indistinct, curved upwards and meeting in an intramarginal looped nerve rather distant from the margin; secondary nerves and reticulations slender, obscure; petiole .2 in. long, bordered above by the decurrent margin of the blade and minutely pilose. *Inflorescence* a short fascicle of axillary cymes or racemes .5 to .7 in. long, ashy-pubescent; bracts very minute; pedicels slender, .15 in. long; bracteoles 3, minute, ovate, acute, ciliate. *Calyx-lobes* 5, rounded, obtuse, .05 in. long, pubescent without. *Corolla-lobes* oblong, obtuse, .1 to .15 in. long, glabrous, 5-nerved; tube very short or almost none. *Stamens* in 5 bundles opposite the corolla-lobes, about 20 to 25 or sometimes more; filaments slender, outer ones exsert; anthers minute, rounded, emarginate. *Ovary* depressed at top, disk glabrous, cells 3; style slender, .075 in. long, ending in a flattened 3-lobed stigma. *Fruit* an ampulliform drupe, ovoid below for .2 in. in length, .15 in. in diam., glabrous, 5-6-ribbed, tipped by a cylindric beak .05 in. long and by the persistent calyx-lobes; exocarp thin, endocarp hard, furrowed, furnished within with 3 to 6 strong ribs, enclosing a much-lobed seed; testa thin; albumen fleshy; embryo very slightly curved, .15 in. long. *Miq.* Fl. Ind. Bat. I. Pt. 2. 467; *Clarke* in Hook. f. Fl. Br. Ind. III. 574; *Koord. & Val. Bijdr.* 7. 150; *Brand Monog. Sympl.* 34. *Dicalyx tinctorius*, *Bl. Bijdr.* 1116.

PENANG: *Curtis* 3171. PERAK: *Wray* 1865, 2418, 2466, 2739, 3561; *Seortechini* 128, 1527; *King's Collector* 1042, 2021, 3003, 4739, 5175, 5337, 10525. SELANGOR: *Ridley* 8209. MALACCA: *Maingay* (K.D.) 958; *Griffith* (K.D.) 3665; *Holmberg* 867. JOHORE: *G. King*. SINGAPORE: *Murton* 143; *Ridley* 3626A, 8209.—DISTRIB. Sumatra (*Forbes* 2355, 2358, 2563, 2812); Java (*Forbes* 218); Borneo (*Beccari* 2380; *Haviland* 1024, 1545).

After a great deal of trouble the seed with albumen and embryo were separated. The walls of the shell of the fruit are furnished inside with projecting ribs, so that the seed resembles that of a small walnut and the embryo is slightly curved, long and narrow, and might be called straight. *Koorders & Valetton's* description is thus confirmed.

7. SYMPLOCOS SPICATA, *Roxb. Hort. Beng.* 40 (1814), and *Fl. Ind. II.* 541; *Wall. Cat.* 4417; *A. DC. Prod.* VIII. 254; *Wight Ill. t.* 150; *Miq. Fl. Ind. Bat. I. Pt. 2.* 465; *Bedd. Fl. Sylv. Madr. cxlix*; *Brandis For. Fl.* 300; *Kurz in Journ. As. Soc. Beng. XLVI. ii.* 239 and *For. Fl. II.* 146; *Clarke* in *Hook. f. Fl. Br. Ind. III.* 573; *Trimen Fl. Ceyl. III.* 104;

Cooke Fl. Bomb. II. 108; Koord. & Val. Bijdr. VII. 144. *S. polycarpa*, Wall. Cat. 4423; DC. l.c. 255; Kurz fl.c. *S. Loha*, Don Prod. 144; DC. l.c. 255. *S. racemosa*, Wall. Cat. 4418 (*in part, not of Roxb.*)

VAR. *malasia*, Clarke in Hook. f. Fl. Br. Ind. III. 573. A small tree with spreading branches, reaching 30 to 40 feet in height and 1 foot in diam. of stem; branchlets dark grey-brown, smooth, innovations glabrous; buds lanceolate acuminate. *Leaves* coriaceous-chartaceous, alternate; elliptic- or oblong-lanceolate, acute or acuminate at apex, cuneate at base; entire or serrate, glabrous on both surfaces, turning yellow when dry; margin distantly and slightly denticulate, glandular; 4 to 7 in. long, 1.5 to 2.5 in. broad; midrib thick, impressed above; main-nerves about 10 pairs, irregular, curved upwards and branching towards the margin; secondary nerves few; reticulations prominent on the under surface; petiole .4 to .7 in. long, channelled above. *Inflorescence* an axillary panicle of spikes, the branches mostly near the base; spikes 1.5 to 4 in. long, glabrous or slightly pubescent; bracts very small, deciduous; bracteoles under each flower 3, ovate, acute or obtuse, ciliate, .05 in. long. *Calyx-lobes* 5, rounded, imbricate, glabrous, tube as long as lobes, the latter .05 in. long. *Corolla* 5-lobed, white or yellowish; tube very short; lobes ovate-orbicular, .1 to .15 in. long. *Stamens* indefinite, about 40, the outer ones longer than the petals, inserted on the corolla-tube; filaments slender; anthers short, rounded. *Ovary* inferior, 3-celled; ovules 3 to 4 in each cell; style thick, .1 in. long, stigma capitate. *Fruit* a globose drupe .15 to .2 in. long, surmounted by a rim formed by the short calyx-lobes, smooth, olive-coloured, exocarp and endocarp thin, ribbed. *Seed* 1, testa thin, albumen rather scanty; embryo curved.

PERAK: Wray 2798; *Scortechini*; King's Collector 6299, 6903. MALACCA: Griffith; Maingay (K.D.) 957; Derry 506.

VAR. *acuminata*, Brand Monog. Sympl. 40. *Leaves* long acuminate, blunt at the tip, serrulate, 3 to 5 in. long, 1 to 2 in. broad; main-nerves 7 to 8 pairs, all nerves and reticulations, except the impressed midrib, prominent on the upper surface in young leaves. *Flowers* sometimes pedicellate. *Fruit* somewhat urceolate, ribbed. *Symplocos acuminata*, Miq. Fl. Ind. Bat. I. Pt. 2. 467. *Dicalyx acuminatus*, Bl. Bijdr. 1119.

PERAK: *Scortechini* 1556. — DISTRIB. Java, Sumatra (*Forbes* 3208).

VAR. *attenuata*, Clarke in Hook. f. Fl. Br. Ind. III. 573. *Leaves* long acuminate at apex, long attenuate at base, 3 to 4 in. long, 1 to 1.25 in. broad; margins serrate. Spicate branches of the inflorescence slender, usually short. *Fruit* small, often only .1 to .15 in. in diam.

S. attenuata, Wall. Cat. 4426; A. DC. Prod. VIII. 256; Brand Monog. Sympl. 39.

KEDAH: *King's Collector* 1764.—DISTRIB. Assam, Burma.

8. SYMPLOCOS FERRUGINEA, Roxb. Hort. Beng. 40 (1814), Fl. Ind. II. 542. A tree with spreading branches reaching 50 to 60 feet in height and 1 foot in diam. of stem; branchlets stout, dark brown, smooth, innovations densely ferruginous-villous. *Leaves* coriaceous; elliptic or elliptic-lanceolate, acuminate at apex, cuneate at base; glabrous and shining above, ferruginous-villous especially on the nerves beneath, turning yellow when dry; margins serrulate, denticulate or almost entire, recurved; 5 to 8 in. long, 1.5 to 3 in. broad; midrib stout, very prominent beneath, impressed above; main-nerves 12 to 14 pairs, prominent beneath, parallel at first and straight for some distance then arching near the margin; secondary nerves few; reticulations obliquely transverse, not prominent; petiole .3 to .5 in. long, densely rusty-villous, thick. *Inflorescence* an axillary panicle of spikes, 2 to 6 in. long, the spikes and panicle short in bud, longer in flower, much elongated in fruit, the branches of the panicle mostly near the base, densely ferruginous-villous; bracts very small, ovate-acute, villous; bracteoles under each flower 3, the central one .12 in. long, ovate-acuminate, the two outer shorter, ovate-acute, the three together as long as the calyx. *Calyx* 5-lobed; lobes ovate-obtuse, .1 in. long, pubescent without. *Corolla* 5-lobed, white, rotate; tube .05 in. long; lobes .1 in. long, oblong-obtuse, 3-nerved. *Stamens* indefinite, 40 to 70, in 5 fascicles inserted on the corolla-tube; filaments slender, gradually increasing in length from the inside outwards, the outer ones a little longer than the petals; anthers rounded, short. *Ovary* depressed, disk glabrous; cells 3; style thick, .1 to .2 in. long, stigma 3-lobed; ovules several in each cell. *Fruit* a globose or ampulliform drupe, faintly ribbed, .15 to .2 in. long, surmounted by the persistent calyx with enlarged connivent teeth; exocarp thin; endocarp very hard, bony, about 12-14-ribbed, globose below, cylindric and very short above. *Seed* 1, testa thin, albumen rather scanty; embryo curved, .1 to .15 in. long. Wall. Cat. 4412; A. DC. Prod. VIII. 257; Miq. Fl. Ind. Bat. I. Pt. 2. 466; Clarke in Hook. f. Fl. Br. Ind. III. 574 (*var. exc.*); Koord. & Val. Bijdr. VII. 141; Brand Monog. Sympl. 40. *S. mollis*, Wall. Cat. 4433; G. Don Gen. Syst. IV. 3. *S. Verhuelii*, Jungh. & de Vriese Pl. Nov. Ind. Or. 12; Miq. l.c. 467. *S. javanica*, Kurz in Journ. As. Soc. Beng. XLVI. ii. 239 (*syn. S. rubiginosa exc.*) and For. Fl. II. 145. *S. laehnobotrya*, and *S. Horsfieldiana*, Miq. Fl. Ind. Bat. Suppl. 475. *Dicalyx javanicus*, Blume Bijdr. 1117.

PENANG: *Wallich* 4433; *Phillips*; *Curtis* 206; *King's Collector*

1353. PERAK: *Wray* 3387; *Scortechini* 900; *King's Collector* 925, 4376, 4395, 4683, 5235, 6219, 7091, 8646, 11019. PAHANG: *Ridley* in *Trans. Linn. Soc. Ser. 2, III. 318*. MALACCA: *Maingay* (K.D.) 956.—
DISTRIB. Assam, Burma, Java (*Forbes* 682, 798, 861, 1203), Sumatra (*Forbes* 2614, 2691, 3150; *Beccari* 842), the Moluccas, the Philippines, and S. China.

The leaves in this species are very variable; for instance, those of *King's Collector* Nos. 4395, 4683 have oblong-lanceolate leaves 6 to 8 in. long and about 2 in. broad, with more distant nerves, and are nearly glabrous beneath; but some of the leaves approach very nearly to those of other specimens, and we cannot therefore separate it as a variety. The marked elongation of the fruiting inflorescence is another source of difficulty in superficial identification.

9. SYMPLOCOS RIDLEYI, King & Gamble, n. sp. A medium-sized tree; branchlets glabrous, angled, striate; leaf-buds acuminate, glabrous. *Leaves* coriaceous; ovate or oblong, acuminate at apex, attenuate at base; glabrous on both surfaces, shining above, greenish-yellow when dry; margins entire or remotely and faintly denticulate, recurved; 3 to 4 in. long, 1 to 1.5 in. broad; midrib slender, raised above; main-nerves 8 to 9 pairs, raised on both surfaces, straight, meeting in a looped intra-marginal nerve; secondary nerves few; reticulations prominent, raised above; petiole .3 in. long, channelled above. *Inflorescence* of sessile or very short few-flowered axillary racemes, as long as the petiole; rachis silky-pubescent; bracts and bracteoles orbicular, ciliate, pubescent; pedicels none or very short. *Calyx-lobes* orbicular, thin, ciliate, .1 in. broad, concave; tube very short. *Corolla-tube* very short, lobes ovate, .12 to .15 in. long, 3-5-nerved, white. *Stamens* about 50, in bundles opposite the corolla-lobes; filaments slender, the outer ones a little longer than the corolla-lobes; anthers rounded. *Ovary* villous, 3-celled, ovules 2 in each cell; disk glabrous; style thick, .1 in. long, stigma capitate, lobed. *Fruit* not known.

SINGAPORE: *Ridley* 5684.

A species very closely allied to *S. phyllocalyx*, Clarke, of N. India and China, and to *S. japonica*, A. DC. of Japan.

10. SYMPLOCOS CELASTRIFOLIA, Griff. MS.; Clarke in Hook. f. Fl. Br. Ind. III. 575 (1882). A tree (?); branchlets smooth, slender, glabrous. *Leaves* chartaceous; elliptic or elliptic-oblong, shortly and bluntly acuminate at apex, cuneate at base; glabrous on both surfaces, greenish-brown above, yellowish beneath when dry; margins crenate, slightly recurved; 2.5 to 5 in. long, 1.5 to 2.25 in. broad; midrib slender, impressed above; main-nerves 6 to 8 pairs, irregular, not prominent, at first straight, then curving upwards and branching to meet

near the margin in an intramarginal network; reticulations obscure; petiole .2 to .3 in. long, bordered by the decurrent margins of the blade. *Inflorescence* a few- and basally-branched pubescent panicle of long slender racemes, 2.5 to 3 in. long; racemes 12-16-flowered; pedicels .1 in. long; bracteoles 2, lanceolate, .05 in. long, ciliate, pubescent. *Calyx-tube* .05 in. long; lobes 5, oblong, obtuse, .075 in. long. *Corolla* white, sweet-scented; tube very short; lobes ovate-oblong, .2 in. long. *Stamens* in 5 bundles opposite the corolla-lobes, 40 to 70, the outermost the longest and equal to the corolla-lobes. *Ovary* depressed, disk glabrous; cells 3; style .125 in. long, stigma capitate. *Fruit* an ovoid-ellipsoid drupe, .25 in. long, smooth, tipped with the rim and erect teeth of the persistent calyx. *Seeds* 1 to 3, testa membranous; embryo slender, straight, .1 in. long. Brand Monog. Sympl. 48.

PENANG: *Curtis* 3459. MALACCA: *Griffith* (K.D.) 3651.—DISTRIB. Borneo (*Teysmann*, *Motley*, *Beccari* 2374, *Haviland* 509B, 1642, 3706).

11. SYMPOCOS ADENOPHYLLA, Wall. Cat. 4427 (1829). A tree reaching 50 to 60 feet in height, stem 15 to 20 in. in diam.; branchlets dark brown, smooth, upper parts and innovations dark rusty-glandular-pubescent. *Leaves* chartaceo-coriaceous; narrowly lanceolate to elliptic-lanceolate and elliptic; obtusely long caudate-acuminate at apex, cuneate or attenuate at base; glabrous on both surfaces, shining or not, olive-brown or dark reddish-brown when dry; margins crenate or subentire, the crenatures with large glands, sometimes recurved; 3 to 5 in. long, .7 to 1.5 in. broad; midrib slender, impressed above; main-nerves 5 to 8 pairs, distant, arching upwards to join in a looped intramarginal nerve at about two-thirds of the distance to the margin; secondary nerves and reticulations obscure; petiole .3 to .5 in. long, often bent. *Inflorescence* a 3- and basally-branched axillary panicle of racemes, glandular-rusty-pubescent, 1 to 2 in. long, racemes about 12-flowered; bracts ovate-acute, caducous; pedicels .05 to .1 in. long; bracteoles minute, thin, obtuse. *Calyx-tube* glabrous or minutely pubescent, .05 in. long; its teeth very minute, triangular or rounded, rusty-pubescent. *Corolla* yellowish-white, tube short; lobes oblong, rounded, about .15 in. long, incurved at tip. *Stamens* 40 to 50, in 5 bundles opposite the corolla-lobes, outer ones as long as those lobes; filaments slender; anthers small, rounded. *Ovary* depressed, disk glabrous, cells 3; style slender, .1 in. long; stigma capitate. *Fruit* an oblong-cylindrical or ellipsoid drupe .3 to .35 in. long and half as broad, smooth, pale yellowish-brown, crowned with the minute, inconspicuous, much-incurved, persistent calyx-teeth; exocarp smooth, thin; endocarp bony, ribbed. *Seed* 1; embryo straight, pendulous. G. Don Gen. Syst. IV. 3; A. DC. Prod. VIII. 257; Miq. Fl. Ind. Bat. I. Pt. 2, 466;

Clarke in Hook. f. Fl. Br. Ind. III. 575; Brand Monog. Sympl. 48; Stapf in Trans. Linn. Soc. 2nd Ser. IV. 204. *S. iteophylla*, Miq. Fl. Ind. Bat. Suppl. 476; Brand l.c. *S. baneana*, Miq. l.c.

KEDAH: *Ridley* 5533. PENANG: *Wallich* 4427A; *Maingay* (K.D.) 959; *Curtis* 402, 445. PERAK: *Wray* 1119, 3842, 3925, 4123; *Scortechini* 490; *King's Collector* 1269, 2606, 6873. SELANGOR: *Ridley* 7553, 8549. MALACCA: *Griffith* (K.D.) 3649. SINGAPORE: *Wallich* 4427B; *G. Thomson*; *Hullett* 828; *Walker* 255; *Ridley* 3635A, 3809.—DISTRIB. Sumatra (*Beccari* 147); Bangka (*Horsfield* 39); Borneo (*Beccari* 2115, *Lobb*, *Haviland* 1187).

A variable species as regards the leaves and the length of the inflorescence; the prominent glands on the margins of the leaves are a noticeable character.

12. *SYMPLOCOS PERAKENSIS*, King & Gamble, n. sp. A tree with spreading branches reaching 50 to 60 feet in height; stem 15 to 20 in. in diam; branchlets dark brown, very slender. *Leaves* chartaceous; elliptic, long caudate-acuminate at apex, cuneate at base; glabrous on both surfaces, green when dry; margins entire, recurved; 2 to 3.5 in. long, 1 to 1.5 in. broad; midrib slender; main-nerves 6 to 7 pairs, the two lowest near the margin and produced upwards along it, the others curved upwards to meet in a looped intramarginal nerve, which is rather prominent; secondary nerves and reticulations obscure; petiole .2 in. long, channelled above. *Inflorescence* a sessile 3-branched panicle of racemes axillary to the upper leaves or on the branchlets below them, 1 to 2 in. long or less; panicle branches and racemes very slender, the latter about 8–10-flowered; rachis grey-pubescent; 1 bract and 2 bracteoles, ovate-acute, scarcely .05 in. long, persistent; pedicels about .05 in. long. *Calyx-tube* short; lobes 5, rounded, grey-pubescent, ciliate, .05 in. long, as long as tube. *Corolla-tube* short; lobes oblong, white, .125 in. long. *Stamens* about 40, in 5 bundles opposite the corolla-lobes; filaments slender, exsert; anthers rounded, minute. *Ovary* villous; cells 3; style rather thick, villous, .1 in. long, stigma small. *Fruit* a cylindrical glabrous drupe, .4 to .5 in. long, .25 in. in diam., the top rusty-hirsute and crowned by the persistent rusty-hirsute calyx-lobes, the calyx-rim .1 in. broad; exocarp fleshy, endocarp hard, bony. *Seeds* 3, testa rather thick, embryo straight.

PERAK: *Scortechini* 646; *Wray* 2593, 2944; *King's Collector* 4446, 4570, 4586, 7863, 10163, 10501, 10515, 10801, 10985. SELANGOR: *Ridley* 10223.

This species is very near to *S. adenophylla*, but the leaves are entire, much thinner and smaller, and not glandular, and the inflorescence is more compound, more slender, grey- and not rusty-pubescent, and has rounded calyx-lobes.

13. *SYMPLOCOS BRANDIANA*, King & Gamble, n. sp. A small tree reaching 15 to 25 feet in height; stem 4 to 6 in. in diam.; branchlets round, densely covered with soft ferruginous tomentum and long stiff hispid hairs; innovations densely ferruginous-silky-tomentose. *Leaves* membranous; ovate-oblong, long acuminate at apex, rounded or cordate at base; pilose on both surfaces, at length glabrescent above, paler beneath, olive-brown when dry; margin entire, recurved, thickly villous; 3 to 6 in. long, 1 to 2 in. broad; midrib slender, prominent beneath; main-nerves about 8 pairs, much curving upwards to join as a looped intra-marginal nerve, raised beneath; reticulations obscure; petiole scarcely 1 in. long. *Inflorescence* of axillary few-flowered racemes or panicles up to 1.5 in. long, lax-flowered; rachis slender, thickly ferruginous-villous, as are the bracts and calyx; bracts leaf-like, cuspidate-acuminate, .2 to .4 in. long; bracteoles 2, similar but smaller; pedicels .1 in. long; flowers white. *Calyx-tube* very short; lobes linear-lanceolate, .1 to .2 in. long. *Corolla-tube* very short; lobes elliptic-obtuse, glabrous, 3-nerved, .15 in. long. *Stamens* 60 to 70 or even more, in 5 bundles opposite the corolla-lobes; filaments slender; anthers small, rounded. *Ovary* and disk villous, style slender, stigma capitate. *Fruit* oblong-cylindrical, light blue, constricted above the middle, villous, .8 in. long, .3 in. broad; exocarp fleshy, endocarp crustaceous; cells 3, the lower one bearing 1 seed; albumen fleshy; embryo slightly curved.

PERAK: *Curtis* 2030; *Scortechini* 346, 349 on Maxwell's Hill, 3,000 feet; *Wray* 677 at Waterfall Hill, Larut; *King's Collector* 1887, in dense jungle on rocky creeks.

We have named this handsome species in honour of the author of the most recent monograph of the genus.

14. *SYMPLOCOS CONCOLOR*, Brand Monog. Sympl. 65 (1901). A tree, reaching 30 to 40 feet in height; branchlets dark brown, innovations tawny-pubescent. *Leaves* thin coriaceous; oblong or oblong-obovate, abruptly acuminate at apex, the acumen mucronate, attenuate at base; glabrous on both surfaces, shining above; margins entire or obscurely dentate; 3 to 4 in. long, 1-1.5 in. broad; midrib slender, slightly raised above; main-nerves 6 to 7 pairs, rather obscure, arching upwards to anastomose near the margin; reticulations prominent; petiole about .1 in. long. *Inflorescence* of sessile or very shortly peduncled, 3-branched panicles up to .5 in. long, all golden-pubescent, about 10-12-flowered; bracts ovate-acute, small; bracteoles smaller, 2 to each pedicel; pedicels slender, about .1 in. long. *Calyx-tube* funnel-shaped, .05 in. long; lobes 5, rounded, short. *Corolla-tube* very short; lobes oblong, .1 in.

long. *Stamens* about 60, scarcely exsert. *Ovary* and disk silky-pubescent; style slender, stigma capitate, 3-4-lobed. *Fruit* an oblong glabrous drupe, .3 in. long, .15 to .2 in. broad, surmounted by the slightly depressed disk which is shortly overtopped by the calyx-lobes.

PENANG: on Penam Bukit at 2,000 feet, *Curtis* 1039.

15. *SYMPLOCOS CALYCODACTYLOS*, Brand Monog. Sympl. 63 (1901). A tree (?); branchlets villous with long tawny spreading bristles, innovations densely villous. *Leaves* membranous; oblong-lanceolate, long-acuminate at apex, rounded at base, sometimes almost cordate; both surfaces covered sparsely with tawny bristles, especially on and along the nerves beneath; margins distantly long glandular denticulate; 4 to 5.5 in. long, 1.5 to 2 in. broad; midrib slender, impressed above; main-nerves about 8 pairs, curving slightly upwards at an angle of about 30° with the midrib to anastomose near the margin; reticulations prominent, primary ones transverse parallel; petiole stout, villous, .15 to .2 in. long. *Inflorescence* a slender, axillary, tawny-villous raceme, 2 to 3 in. long, with about 4 to 5 flowers; bracts lanceolate-acuminate, .25 in. long, caducous; pedicels .5 in., very slender, ending in a dense tuft of tawny bristles beneath the calyx. *Calyx-tube* short; lobes 5, linear oblong, densely tawny-bristly without, glabrous within, .25 in. long. *Corolla-tube* short; lobes 5, obovate, glabrous, as long as calyx-lobes or slightly longer. *Stamens* about 80, 5-adelphous, filaments flattened; anthers small, rounded. *Ovary* and disk villous; style slender, .1 in. long; stigma small, capitate. *Fruit* unknown.

PERAK: at Waterloo, 3,000 feet, *Curtis* 1330.

16. *SYMPLOCOS OPHIRENSIS*, Clarke in Hook. f. Fl. Br. Ind. III. 479 (1882). A bush (Wray), or more probably a small tree; branches terete, nearly black, glabrous; innovations appressed-tawny-pubescent; buds ovate-acuminate, silky, .1 in. long. *Leaves* coriaceous; elliptic or elliptic-lanceolate, acute or rounded or sometimes emarginate at apex, cuneate or rounded at base; glabrous and usually shining above, sparsely pubescent beneath when young, afterwards glabrous, reddish-brown when dry; margins entire or very obscurely denticulate, recurved; 2 to 4 in. long, 1 to 1.5 in. broad; midrib stout, impressed above; main-nerves 8 to 10 pairs, raised on both surfaces, straight at first, then curving upwards and joining in an intramarginal looped nerve; secondary nerves many, similar, reticulations prominent; petiole stout, .1 to .2 in. long. *Inflorescence* of very short racemes, from the axils of the upper leaves or from the new wood below them; racemes .3 to .4 in. long, silky-pubescent, 5-7-flowered; bracts and bracteoles very small, ovate, acute; pedicels 0 to .1 in. long. *Calyx-lobes* 5, silky-pubescent, ovate-acute, ciliate, .6 in. long; tube .1 in. long. *Corolla-tube* short; lobes

white, oblong-obtuse, $\cdot 2$ in. long, 5-nerved. *Stamens* in bundles of 6 to 12 each opposite the corolla-lobes, 30 to 60 in all; filaments slender, outer as long as petals; anthers rounded, very small. *Ovary* and disk nearly glabrous at top; style slender, $\cdot 15$ to $\cdot 2$ in. long, stigma capitate; cells 3, ovules 2 in each cell. *Fruit* ovoid-cylindric, blueish-purple when ripe, $\cdot 3$ to $\cdot 4$ in. long, $\cdot 2$ in. broad, surmounted by calyx-rim with patent lobes, nearly as wide as the top of the fruit; exocarp crustaceous; endocarp very hard, bony, obscurely ribbed and irregularly indented. *Seed* 1, testa membranous, albumen fleshy, embryo straight. Brand Monog. Sympl. 58. *Symplocos* No. 42, Herb. Ind. Or. Hook. f. & Th.

PERAK: on Gunong Bubu, 5,000 feet, Wray 3919; *Scortechini*. MALACCA: on Mount Ophir, Griffith (K.D.) 3650; Ridley 10083; Derry 623; Lobb.

The specimens of Wray and Scortechini have the leaves rounded at both ends, but there seems no reason to keep them as a separate variety from the specimens from Mount Ophir which are acute at apex and cuneate at base.

17. SYMPLOCOS CURTISII, Oliv. in Hook. Icon. t. 1757 (1888). A shrub or small tree, reaching 10 to 15 feet in height; branchlets slender, pale brown, glabrous; leaf-buds small, acuminate, pubescent. *Leaves* chartaceous; elliptic, abruptly long acuminate at apex, cuneate at base; glabrous on both surfaces, pale greenish-brown when dry; margins obscurely denticulate, slightly recurved; 4 to 9 in. long, $1\cdot 5$ to 3 in. broad; midrib slender, raised beneath, impressed above; main-nerves 5 to 7 pairs, the lowest pair very near the margin, the rest gradually more and more distant, all curving upwards to and along the margin, where they form an intramarginal looped nerve; secondary nerves very few or none; reticulations transverse, fairly prominent, rather distant; petiole $\cdot 2$ to $\cdot 4$ in. long, channelled above. *Inflorescence* of short (up to $\cdot 4$ in. long) racemes axillary to the upper leaves or on the young wood below them; racemes about 5-flowered; bract ovate-acute, $\cdot 1$ in. long, keeled, villous; bracteoles 2, similar but smaller; pedicels stout, about $\cdot 05$ in. long. *Calyx-tube* about $\cdot 1$ in. long; lobes 5, ovate, obtuse, as long as tube, all minutely pubescent without. *Corolla-tube* very short, lobes elliptic-oblong, $\cdot 2$ in. long, 5-nerved, white. *Stamens* many, 60 or more; filaments slender, longer than corolla-lobes; anthers rounded, minute; staminal bundles only noticeable in bud. *Ovary* villous, disk glabrous; style slender, $\cdot 2$ in. long, stigma capitate; cells 3, ovules 2 in each cell. *Fruit* a cylindric oblong berry, bright blue when ripe, $\cdot 5$ to $\cdot 8$ in. long, somewhat constricted at about one-third distance from the top; the top surmounted by the calyx-rim and connivent teeth; exocarp

crustaceous, endocarp woody; cells 1 to 3. *Seed* usually 1, testa membranous, albumen fleshy, embryo straight. Brand Monog. Sympl. 69.

PENANG: *Curtis* 1099. PERAK: *Wray* 692, 2830; *Seorteechini* 328, 646, 1423; *King's Collector* 2084, 2099, 2406, 8431.

18. SYMPLOCOS CRASSIPES, Clarke in Hook. f. Fl. Br. Ind. III. 580 (1882). A tree (?); branchlets stout, smooth, grey. *Leaves* stoutly chartaceous; large, elliptic-lanceolate, abruptly acuminate at apex, subcordate or obtusely rhomboid at base; glabrous on both surfaces; margins sub-entire, slightly recurved; 6 to 7 in. long, 2 to 3 in. broad; midrib prominent, thick; main-nerves 10 to 12 pairs, irregular and at irregular angles, usually only slightly curved upwards to meet in a looped intramarginal nerve .25 in. from margin; secondary nerves and few transverse reticulations prominent; petiole very stout, .15 to .2 in. long. *Racemes* axillary, 4-flowered; pedicels very small, .1 in. long at most; bracts ovate-acute, like the rachis and calyx densely ferruginous-pubescent. *Calyx-tube* very short; lobes ovate, .075 in. long. *Corolla-tube* short; lobes .1 to .15 in. long, oblong-obtuse. *Stamens* about 30, slightly exsert. *Ovary* 3-celled; disk fulvous-pilose. *Fruit* not known. Brand Monog. Sympl. 52.

MALACCA: on Mount Ophir, *Maingay* (K.D.) 960.

19. SYMPLOCOS PENANGIANA, King & Gamble, n. sp. A small tree (?); branchlets rounded, upper ones and innovations densely dark ferruginous-hirsute. *Leaves* chartaceous; lanceolate, long acuminate at apex, somewhat rounded at base; glabrous above, sparsely pilose beneath with long stiff ferruginous hairs especially on and along the nerves; greenish-brown when dry; margins distantly but sharply serrate in the middle part, entire on the acumination and near the base, revolute; 4 to 7 in. long, 1 to 1.25 in. broad; midrib prominent beneath, impressed above; main-nerves 4 to 6 pairs, irregularly distant, curving upwards and meeting about .2 in. from the margin in a looped intramarginal nerve; secondary nerves and transverse reticulations scanty but prominent; petiole short, .15 in. long, stout, hirsute. *Inflorescence* a sessile very short raceme or panicle of flowers on the young branches; bracts several, very small, densely rusty-hirsute. *Calyx-tube* short; lobes 5, oblong, obtuse, .125 in. long, glabrous within, densely rusty-hirsute without. *Corolla-tube* short; lobes 5, oblong, rounded, .2 in. long. *Stamens* about 30; filaments slender; anthers rounded. *Ovary* villous; style slender, pubescent, .15 in. long; stigma capitate. *Fruit* unknown.

PENANG: at West Hill, 2,500 feet, *Curtis* 325.

20. SYMPLOCOS CERASIFOLIA, Wall. Cat. 4434 (1829). A tree, reaching 60 feet and even 80 feet in height; stem with a diam. of 20 in.; branchlets glabrescent, smooth, somewhat angled, reddish-brown; leaf-

buds nearly globose, scales rounded, acuminate. *Leaves* coriaceous-chartaceous; oblong or elliptic-oblong, acuminate at apex, cuneate or attenuate at base; glabrous above, sparsely pilose on the nerves beneath otherwise glabrous, dark greenish-brown when dry; margins crenately serrate except at the very base and on the acumination, slightly recurved; 5 to 7 in. long, 1 to 2 in. broad, midrib slender, impressed above; main-nerves 6 to 8 pairs, conspicuous, at once curving upwards and round to join each other in a well-marked looped ring .2 to .3 in. from the margin; reticulations transverse; petiole .5 to .7 in. long, slender, channelled above. *Inflorescence* of axillary and sub-terminal pubescent spikes; the rachis stout, angular; bracts broad, round, villous, early caducous; bracteoles 2, ovate-acute, .075 in. long, villous; flowers about 12 in each spike. *Calyx-tube* short, .05 in. long; lobes lanceolate, acute, pilose, .125 in. long. *Corolla-tube* short; lobes oblong-acute, 3-nerved, .2 in. long. *Stamens* about 30, or very numerous—over 100 (Scortechini), on the corolla-tube, fascicles not well separated; filaments very slender; anthers rounded, very minute. *Ovary* and disk slightly hairy; style slender, curved, .2 in. long, stigma capitate; cells 3, ovules 2 to 3 in each cell. *Fruit* a cylindrical oblong drupe 1.5 to 2 in. long, 1 in. broad, truncate at both ends and tipped above by the persistent calyx-tube and lobes, the rim about .2 in. broad; smooth, yellowish-brown; exocarp thick, corky; endocarp woody with 7 to 8 sharp star-like ridges. *Seed* 1, testa membranous; albumen thin, embryo straight, pendulous; radicle long. A. DC. Prod. VIII. 257; Clarke in Hook. f. Fl. Br. Ind. III. 580; Miq. Fl. Ind. Bat. I. Pt. 2. 466; Brand Monog. Sympl. 52. *Bobua cerasifolia*, Miers in Journ. Linn. Soc. XVII. 304.

PENANG: *Wallich* 4434; *Curtis* 1503, 3096. PERAK: *Wray* 445, 3003; *Scortechini* 515; *King's Collector* 6283, 6950. MALACCA: *Maingay* (K.D.) 962

Scortechini considered his No. 515 to represent a species separate from *S. cerasifolia*, but with a large series of specimens before us we find it difficult to agree to this.

21. SYMPLOCOS RIGIDA, Clarke in Hook. f. Fl. Br. Ind. III. 581 (*not of* Wall.) (1882). A tree with spreading branches, reaching 60 to 80 feet in height and 18 to 24 in. in diam. of stem; branchlets stout, dark brown, glabrous, angled when dry, marked with the prominent round raised scars of fallen leaves; branch-buds large, covered with oblong glandular-serrate stipular scales, softly silky on the back; leaf-buds acuminate, .3 to .5 in. long, silky-pubescent. *Leaves* coriaceous-chartaceous; oblong or oblong-lanceolate, acute or shortly acuminate at apex, attenuate at base; glabrous on both surfaces

and usually shining, dark greenish-brown when dry; margins entire or very shortly serrate, recurved when dry; 6 to 12 in. long, 2·5 to 5 in. broad; midrib stout, much raised beneath, impressed above; main-nerves 10 to 13 pairs, raised beneath, curving upwards to and along the margin; secondary nerves few or none; reticulations transverse, parallel, not prominent; petiole ·7 to 1·3 in. long, stout, glabrous. *Inflorescence* of simple spikes, strobilate when young and scarcely ·5 in. long, in flower 1·5 to 2 in. long with pubescent rachis, in fruit reaching 3 in. long with stout nearly glabrous rachis, in the axils of upper leaves or the young branchlets below them; bracts broadly ovate, acute, concave, minutely grey or tawny-pubescent; bracteoles 2, lanceolate-acute, ·1 in. long, all early deciduous; buds ovoid, grey-pubescent. *Calyx-tube* ·075 in. long; lobes 4, ovate-acute, blunt, ·1 to ·15 in. long, both grey-pubescent. *Corolla-tube* short, lobes 5, white, oblong, acute, ·25 in. long, 5-nerved. *Stamens* in 5 bundles opposite the corolla-lobes, about 60; filaments very slender, outer ones longer than corolla-lobes; anthers rounded, minute. *Ovary* and disk glabrous; style curved, ·25 in. long, stigma capitate; cells 3, ovules 2 in each cell. *Fruit* ovoid-oblong, 1 to 1·5 in. long, ·75 to 1 in. broad, waxy greenish-white when half ripe, dark blue when ripe; pale brown, shining, smooth, obscurely angled when dry; surmounted by the calyx-rim ·15 in. broad with erect calyx-teeth; exocarp thick, fleshy; endocarp very hard, woody, with 8 sharp star-like ridges; cells 3. *Seeds* 1 to 3, testa thin fibrous, albumen fleshy, embryo straight, radicle long. Brand Monog. Sympl. 52. *Doxomma rigidum*, Miers in Trans. Linn. Soc. Ser. 2. Bot. I. 104. *Barringtonia rigida*, Clarke in Hook. f. Fl. Br. Ind. II. 510.

PERAK: *Wray* 1294, 3207; *Seortechini* 2046; *King's Collector* 4246, 4277, 4613, 5045, 5048, 6095, 6179, 7260, 7898, 8543, 10013. SELANGOR: *Ridley* 10544. MALACCA: *Maingay* (K.D.) 767, 965. SINGAPORE: *Cantley* 50; *Ridley* 1798, 5960.

22. SYMPLOCOS RUBIGINOSA, Wall. Cat. 4432 (1829). A large shrub or a tree sometimes reaching 70 to 100 feet in height and 15 to 20 in. or more in diam. of stem; branches stout, grey, nearly glabrous; branchlets stout, angled, glabrous or cinnamomeous- or ferruginous-hirsute; leaf-buds lanceolate, ·3 to ·4 in. long. *Leaves* coriaceous-chartaceous; obovate-oblong, acute or shortly and abruptly acuminate at apex, cuneate at base; glabrous above, pubescent especially on the nerves beneath, the pubescence pale rusty-brown, pale greenish-brown when dry; margins shortly dentate especially on the upper half, sometimes nearly entire, recurved; 5 to 11 in. long, 2 to 4 in. broad; midrib stout, prominent beneath, impressed above; main-

nerves 10 to 13 pairs, parallel, very prominently raised beneath and usually impressed above, curving upwards to and along the margin; secondary nerves few or none; reticulations many, prominent, transverse, parallel; petiole thick, densely pubescent, .5 to 1 in. long. *Inflorescence* of simple erect spikes, from the axils of upper leaves or from the young branchlets below them; spikes 1 to 2 in. long, softly cinnamomeous-pubescent, the rachis stout especially in fruit; flowers about 12 to 16 in each spike, each flower supported by a broad ovate rounded bract .175 in. long and two ovate-acute bracteoles .1 in. long. *Calyx-lobes* ovate-lanceolate, acute, .06 to .07 in. long; tube as long as lobes. *Corolla-tube* short, lobes white, oblong, .15 in. long, 3-nerved, glabrous. *Stamens* in 5 bundles opposite to the corolla-lobes, usually about 30; filaments unequal, the outer ones longer than the corolla-lobes; anthers minute, round. *Ovary* and disk glabrous, style slender, about .15 in. long, stigma capitate or lobed; cells 3. *Fruit* an ovoid-oblong drupe, .4 in. long, .25 in. broad, surmounted by the calyx-rim .1 in. in diam., pale brownish-yellow when dry, glabrous or softly pilose; exocarp thin, crustaceous, fragile; endocarp woody, faintly ridged; seeds usually 3. A. DC. Prod. VIII. 257; Miq. Fl. Ind. Bat. I. Pt. 2. 466; Clarke in Hook. f. Fl. Br. Ind. III. 580; Brand Monog. Sympl. 53. *Lodhra rubiginosa*, Miers in Journ. Linn. Soc. XVII. 299.

PENANG: *Wallich* 4432; *Curtis* 528, 1692; *G. King*. PERAK: *Scortechini* 1825; *King's Collector* 5192, 5771, 7112, 8105, 10015, 10021. MALACCA: *Maingay* (K.D.) 955; *Griffith* (K.D.) 3652. JOHORE: *Ridley* 11115. SINGAPORE: *Cantley* 72; *Ridley* 4117.—DISTRIB. Sumatra (*Forbes* 1991), Borneo (*Beccari* 1216, *Haviland* 1679, 3480).

Subgenus II.—CORDYLOBLASTE.

23. SYMPLOCOS CONFUSA, Brand Monog. Sympl. 88 (1901). A shrub, 5 to 8 feet high (Lobb); branchlets rough, dark brown, marked with prominent cushion-like scars, uppermost ones and innovations ferruginous-pubescent. *Leaves* chartaceous; variable in shape, elliptic-oblong to ovate-lanceolate bluntly acute at apex, attenuate often unequally at base; margins entire or slightly undulate, recurved; glabrous on both surfaces; 3 to 4 in. long, 1.5 to 2 in. broad; midrib slender; main-nerves irregular, about 6 pairs; secondary nerves and reticulations also irregular, indistinct; petiole .2 to .3 in. long, slightly pubescent. *Inflorescence* of very short, 1-4-flowered, axillary, grey-silky racemes about .25 in. long; bracts very small, ovate-acute; bracteoles also minute, 2 to each pedicel; pedicels .05 to .1 in. long; flowers white, sweet-scented. *Calyx-tube*

campanulate, grey-silky, .1 in. long; lobes 5, short, rounded, ciliate. *Corolla-tube* funnel-shaped, .2 to .3 in. long, glabrous; lobes 5, oblong, obtuse, spreading, .15 in. long. *Stamens* very many (40 to 60), inside a staminal tube somewhat longer than the corolla-tube; filaments very short, slender; anthers small, rounded. *Ovary* and disk villous; style slender, hirsute or glabrescent, .3 to .5 in. long; stigma large, capitate. *Fruit* not known. *S. Henschelii*, Benth. & Hook. f. ex Clarke in Hook. f. Fl. Br. Ind. III. 588; Forbes & Hemsl. in Journ. Linn. Soc. XXVI. 73.

MALACCA: on Mount Ophir, *Griffith* (K.D.) 3644; *Lobb*; *Maingay* (K.D.) 954.—DISTRIB. Borneo (*Beccari* 2405), China.

This species, which in the Fl. Br. Ind. was placed under *S. Henschelii*, has been separated by Brand, who considers the true *S. Henschelii* (*Cordyloblaste Henschelii*, Moritzi in Bot. Zeit. vi. 604 (1848), to be a Java plant only. It is not thought necessary to maintain Clarke's var. *hirtistylis*.

24. SYMPLOCOS MAINGAYI, Benth. ex Clarke in Hook. f. Fl. Br. Ind. III. 588 (1882). A tree with spreading branches reaching 40 to 60 feet in height and 10 to 15 in. in diam. of stem; branches stout, light brown; branchlets and innovations densely ferruginous-velvety-pubescent. *Leaves* chartaceous; elliptic-oblong, shortly acuminate at apex, broadly attenuate or rounded at base; glabrous or with a few scattered hairs above, sparsely pubescent beneath except the nerves which are hirsute, marked also beneath by numerous faint transverse lines; margins entire; 4 to 6 in. long, 2 to 2.5 in. broad; midrib stout, very prominent beneath, impressed above; main-nerves 8 pairs, curving upwards and joining in a looped intramarginal nerve, impressed above; secondary nerves few and with the reticulations irregular; petiole .3 to .5 in. long, stout, densely ferruginous-pubescent. *Inflorescence* of stout densely ferruginous-pubescent racemes, 1 to 1.5 in. long, bearing about 8 to 10 flowers, in the axils of the upper leaves; bract 1, ovate, acute, .2 in. long; bracteoles 2, similar but smaller; pedicels stout, .1 to .15 in. long. *Calyx-tube* campanulate, densely rusty-pubescent; teeth 5, rounded, .05 in. long. *Corolla-tube* narrow funnel-shaped, 1 to 1.5 in. long, densely white-tomentose without; lobes .5 in. long, oblong, reflexed. *Staminal-tube* adnate to the corolla-tube as far as the lobes, then free above it; top of tube truncate, 15-20-lobed, the lobes separable as ligules; stamens inserted irregularly on the tube and lobes, about 40 to 60; free part of filaments short, slender; anthers ovoid. *Ovary* and disk hairy; style slender, as long as corolla-tube, stigma capitate; cells 3. *Fruit* obovoid, obtuse, glabrous, 1.75 in. long, 1.25 in. broad, crowned

with the remains of the calyx-rim $\cdot 125$ in. wide, pericarp very thick, woody. Brand Monog. Sympl. 90.

PERAK: *King's Collector* 6728. MALACCA: *Maingay* (K.D.) 961.

25. SYMPLOCOS SCORTECHINII, King & Gamble, n. sp. A tree (?); branchlets pale brown, slender, scurfy; innovations sparsely grey-pubescent. *Leaves* chartaceous; oblong-lanceolate, attenuately blunt-acuminate at apex, cuneate at base; glabrous on both surfaces dark brown when dry, margins entire; 4 to 5 in. long, $1\cdot 5$ to 2 in. broad; midrib slender, raised beneath, impressed above; main-nerves 8 to 10 pairs the lowest close to the margin, the others curved upwards to meet in a looped intramarginal nerve; secondary nerves many and, with the reticulations, irregular, fairly prominent; petiole $\cdot 5$ in. long, channelled above, slightly pubescent when young. *Inflorescence* of axillary or pseudo-terminal racemes, $\cdot 7$ to 1 in. long, sometimes giving the appearance of a terminal panicle; rachis grey-pubescent, angular; bract and 2 bracteoles lanceolate-acuminate, $\cdot 1$ to $\cdot 15$ in. long; pedicels $\cdot 2$ in. long. *Calyx-tube* campanulate, $\cdot 2$ in. long, grey-pubescent without, as are the rounded obtuse $\cdot 05$ in. long teeth. *Corolla-tube* slender, funnel-shaped, 1 to $1\cdot 5$ in. long, densely white-tomentose without; lobes $\cdot 5$ in. long, oblong-obtuse, much imbricate in bud. *Staminal-tube* adnate to the corolla-tube as far as the lobes, then free above it, top of tube truncate, about 15-lobed, the lobes separable as ligules; stamens inserted irregularly on the tube and lobes, about 40 to 50; free part of filaments short, slender; anthers rounded. *Ovary* and disk hairy; style slender, as long as corolla-tube, stigma capitate; cells 3, ovules 2 in each cell. *Fruit* obovoid-oblong, obtuse, glabrous, $1\cdot 75$ in. long, $1\cdot 2$ in. broad, crowned with the remains of the calyx-rim $\cdot 1$ in. in diam.; pericarp thick, corky; seed 1.

PERAK: *Scortechini*.

This species comes very near to *S. Maingayi* in respect to its flowers and fruit, but the branches are much more slender, the dense ferruginous tomentum is absent, and the leaves are different, so we have no hesitation in describing it as a new species.

The following Bornean species seems worthy of description here: it may possibly be found also in the Peninsula:—

SYMPLOCOS HAVILANDI, King & Gamble, n. sp. A small tree (?); branchlets stout, somewhat flattened, yellowish-brown; leaf-buds conical, glabrous. *Leaves* coriaceous; elliptic, abruptly acuminate at apex, acute at base; glabrous on both surfaces, orange-brown when dry; margins entire, recurved; 3 to 4 in. long, $1\cdot 25$ to $1\cdot 75$ in. broad; midrib stout, impressed above; main-nerves 7 to 8 pairs, the lowest pair near the margin and more acutely angled (about 45°) than the others, straight at first at an angle of 60° , then curved to meet in a widely looped intramarginal nerve, prominently raised above when dry; secondary-nerves and reticulations also raised; petiole $\cdot 4$ to $\cdot 5$ in. long, stout, rough, the upper half winged by the decurrent margin of the blade. *Inflorescence* a nearly sessile, few-branched panicle of racemes, about $1\cdot 5$ in. long;

flowers about 12; rachis glabrous, flattened; bracts and bracteoles minute, caducous; pedicels none or very short, scarcely .05 in. long; buds globose. *Calyx-tube* .05 in. long; lobes orbicular, ciliate, as long as tube. *Corolla-tube* very short; lobes 5, .15 in. long, ovate-oblong, ciliate. *Stamens* about 50, in 5 bundles of about 10 each, opposite the corolla-lobes; anther-cells orbicular; filaments slender, the longest as long as the petals. *Ovary* conical, glabrous; style slender, .1 in. long, stigma capitate. *Fruit* not known.

BORNEO: in Sarawak, near Kuching, *Haviland* No. 1954.

2. STYRAX, Linn.

Trees and shrubs, usually more or less lepidote or stellate-tomentose on all parts except the upper-surface of the leaves, rarely glabrous. *Leaves* various in shape, entire or serrulate. *Flowers* generally white, in lax axillary or terminal, simple or compound, often pendulous racemes; bracts very small. *Calyx* campanulate, free or slightly adnate to the base of the ovary, truncate or 5-toothed. *Corolla-tube* short; lobes 5, erecto-patent, elliptic-oblong, imbricate or valvate. *Stamens* 10, 1-seriate at the base of the corolla-tube; filaments more or less flattened, continuous with the connective; anthers large, linear, the cells parallel, erect. *Ovary* nearly free, at first 3-celled, later often 1-celled; style subulate; stigma capitate, somewhat 3-lobed; ovules few in each cell, in free ovaries nearly all erect from the lower basal angle, in half-adnate ovaries upper pendulous lower erect. *Fruit* globose or ellipsoid, seated on the cupuliform or patelliform calyx, breaking up irregularly. *Seeds* 1 or rarely 2 or more, integuments 2, the outer chartaceous or hardened, the inner membranous; albumen fleshy, copious; embryo straight, axile or excentric; cotyledons broad, with a longish terete radicle.—DISTRIB. Warmer regions of Asia and America, a few extending to temperate Asia and South Europe, species about 60.

Leaves green beneath, slightly stellate-pubescent 1. *S. serrulatum*.

Leaves white or greyish-white beneath, with occasional rusty-stellate hairs:—

Leaves small, under 5 in. long and 2.5 in. broad; calyx about one-third of the length of the corolla 2. *S. Benzoin*.

Leaves large, over 5 in. long and 2.5 in. broad; calyx about half of the length of the corolla 3. *S. crotonoides*.

1. *STYRAX SERRULATUM*, Roxb. Fl. Ind. II. 415 (1832). A shrub or small tree, reaching 50 feet in height; branches slender, branchlets stellately grey-pubescent. *Leaves* membranous; ovate or ovate-lanceolate, acuminate at apex, rounded or cordate, sometimes acute at base; nearly glabrous above, glabrescent beneath, but with stellate hairs on both sides of the nerves; margins sparingly and irregularly serrate, sometimes sub-

entire, slightly revolute; 1·5 to 5 in. long, 1 to 2 in. broad; midrib slender; main-nerves 6 to 8 pairs, curving upwards and anastomosing near the margin; secondary nerves and reticulations prominent, the latter transverse; petiole ·2 in. long, stellate-pubescent. *Racemes* terminal or from the axils of the uppermost leaves of the branchlets, 6–8-flowered or fewer, sometimes reduced to 1 only, sometimes paniculate from the absence of leaves, 1 to 2 in. long; rachis slender, densely white-stellate-pubescent; pedicels ·2 in. long; bracteoles linear, nearly as long as pedicels; flowers white. *Calyx* campanulate; tube white-pubescent without, glabrous within, ·15 in. long; teeth 5, ·05 in. long, irregular, repand-dentate, white-pubescent on both sides. *Corolla-tube* ·15 in. long, cylindric; lobes 5, ·25 in. long, oblong, sub-acute, densely white-pubescent without and within except the lower part of the tube. *Stamens* 10, 2·5 in. long; filaments inserted on the corolla-tube, wide and white-tomentose at the base, narrower and glabrous above, continued in the connective; anthers broadly linear, erect, as long as the filaments, rounded at top, cells 2 parallel. *Ovary* densely white-villous; style slender, ·3 in. long; stigma small, capitate; cells 3. *Fruit* ellipsoid, ·4 to ·5 in. long, ·3 in. broad, white- or grey-pubescent, supported by the patelliform calyx; pericarp fleshy, rather thin, irregularly breaking up. *Seeds* 1, rarely 2 or more; outer integument smooth, hard, shining, brittle; inner one membranous, brown; albumen firm, grey; embryo erect, nearly as long as the endosperm; cotyledons cordate, ·15 in. long; radicle thick, terete, as long as cotyledons. Wall. Cat. 4402; A. DC. Prod. VIII. 267; Hook. f. in Bot. Mag. t. 5950 (*syn. exel.*); Kurz in Journ. As. Soc. Beng. XLVI. ii. 237 and For. Fl. II. 142; Clarke in Hook. f. Fl. Br. Ind. III. 588; Prain Beng. Plants I. 656. *S. Porterianus*, Wall. Cat. 4401; A. DC. l.c.; Miq. Fl. Ind. Bat. I. Pt. 2, 463. *S. floribunda*, Griff. Notul. IV. 287.

PENANG: *Wallieh* 4401; *Phillips*; *Curtis* 1187, 1538; *Ridley* 7176. PERAK: *King's Collector* 1662.—DISTRIB. India, at 3,000 to 7,000 feet from Nepal to Assam, Chittagong and Burma.

The plant is frequently affected by galls.

2. *STYRAX BENZOIN*, Dryand. in Phil. Trans. Vol. LXXVII. 308, t. 12 (1787). A tree with slender drooping branches, reaching 60 to 80 feet in height and 2 to 3 feet in diam. of stem; branches rounded, glabrous; upper branchlets rusty-grey-stellate-pubescent. *Leaves* chartaceous; elliptic, acuminate at apex, attenuate or rounded at base; glabrous above, densely grey-stellate-pubescent beneath; margins entire or rarely slightly denticulate; 4 to 5 in. long, 1·5 to 2·5 in. broad; midrib slender, prominent beneath, impressed above; main-nerves 6 to 8 pairs, curving

upwards to and along the margin; reticulations transverse, regular, prominent; petiole .3 to .5 in. long, channelled above, densely grey-stellate-pubescent. *Racemes* paniculate, terminal or axillary to the upper leaves, grey-stellate-pubescent; bracts ovate, caducous; pedicels slender, angular, .1 to .2 in. long; bracteoles linear, as long as the pedicels or nearly so; flowers silvery-white. *Calyx* cupular, .15 in. long, densely grey-stellate-pubescent without; teeth 5, minute. *Corolla-tube* .15 in. long, cylindric; lobes 5, .3 in. long, oblong-linear, acute, white-pubescent without and more or less within, recurved. *Stamens* 10, .3 in. long, attached to the tube of the corolla; filaments flattened, .15 in. long, white-pubescent, continued in the connective; anthers linear, slender, erect, acute at tip, as long as filaments, cells parallel. *Ovary* conical, villous above; style slender, .3 in. long; stigma small, capitate; cells 3, ovules 2 or more in each cell, placentas central. *Fruit* depressed-globose, variable in size, reaching .8 in. in diam. and .6 in. in height; white-pubescent, supported by the flattened persistent patelliform calyx; pericarp corky, rather thick, irregularly dehiscent. *Seed* usually 1, pale-brown with a broad basal hilum; outer integument hard, brittle, inner membranous; albumen firm; embryo horizontal or oblique, nearly as long as the endosperm; cotyledons flattened, oblong-cordate, .2 in. long; radicle smooth, .15 in. long, cylindric. Blume Bijdr. 671; Roxb. Fl. Ind. II. 416; A. DC. Prod. VIII. 260; Benth. & Trim. Med. Pl. III. t. 169; Miq. Fl. Ind. Bat. I. Pt. 2, 463; Clarke in Hook. f. Fl. Br. Ind. III. 589; Gürke in Engl. & Prantl Pflanzenfam. IV. i. 178, fig. 93; Koord. & Val. Bijdr. VII. 132.

PERAK: *Wray* 808, 1208; *Scortechini* 1998; *King's Collector* 4459, 7840, 7884, 8615, 10203, 10305. MALACCA: *Maingay* (K.D.) 963, 964; *Griffith* (K.D.) 3668. SINGAPORE: *Ridley* 2650.—DISTRIB. Sumatra (*Beccari* 699; *Forbes* 3120A); Java (*Forbes* 1183).

This species gives the gum "Benzoin," or "Benjamin," of commerce. The plant is often affected by galls, causing curious tassel-like excrescences on the branches. The tree has the odour of violets (*Wray*).

3. *STYRAX CROTONOIDES*, Clarke in Hook. f. Fl. Br. Ind. III. 589 (1882). A tree, 60 to 80 feet high and 15 to 20 in. in diam. of stem; branches spreading and drooping; branchlets rather thick, grey, ultimate ones and innovations densely clothed with whitish-grey and rusty-stellate tomentum, the rusty hairs large and scattered among the rest. *Leaves* chartaceo-coriaceous; broadly oblong or elliptic-oblong, abruptly acuminate at apex, attenuate or cuneate at base; glabrous above except on the nerves, densely white-tomentose beneath, and with scattered rusty-stellate hairs; margins entire or undulate; 5 to 7 in. long, 2.5 to

4 in. broad; midrib prominent beneath, impressed and stellate-pilose above; main-nerves about 10 pairs, prominent, arched upwards to and along the margin; reticulations prominent, transverse; petiole .3 to .4 in. long, stellate-pubescent. *Racemes* in terminal and axillary panicles, 4 to 8 in. long, densely white-tomentose and rusty-stellate-pilose, including calyx; pedicels very short, 0 to .15 in. long; bracts oblong-lanceolate, glandular-dentate, .25 in. long; bracteoles 2, linear-subulate, .15 in. long; flowers creamy-white. *Calyx-tube* cupular, .2 to .25 in. long, truncate; teeth 5, very minute. *Corolla-tube* short, .15 long, glabrous at the very base, appressed white-pubescent above; lobes 5, valvate, .3 in. long, linear-oblong, acute, afterwards recurved. *Stamens* 10, about .3 in. long; filaments short, flat, glabrous, continued in the connective which is white-pubescent on the back; anthers .2 in. long, linear, mucronate, cells parallel. *Ovary* 5-lobed, white-villous, conical; style slender, as long as corolla; stigma capitate; cells 3, ovules 5 to 6, erect. *Fruit* ovoid, grey-pubescent, mucronate, .75 to 1 in. in diam., supported by the cupuliform calyx; pericarp thick, corky. *Seed* 1, outer integument pale brown, smooth, crustaceous, with a broad basal hilum, inner integument membranous; albumen firm, endosperm cushion-like; embryo somewhat oblique; cotyledons cordate, .2 in. long; radicle thick, terete, as long as cotyledons. *Crotoni affinis* sp. Wall. Cat. 7348.

PERAK: *Scortchini* 179; *King's Collector* 7775, 7967, 8558, 10734. SINGAPORE: *Wallich* 7848; *Cantley* 60.

This species, like the others, is also frequently found with large tassel-like insect galls in place of the inflorescence.

Order LXXIV. OLEACEÆ.

Erect or climbing shrubs or trees, unarmed. *Leaves* usually opposite, rarely alternate or verticillate, simple or pinnately 3-few-foliolate, entire or toothed; stipules none. *Inflorescence* sometimes dichotomously cymose and centrifugal, sometimes trichotomously paniculate, some or all branches centripetal; cymes or panicles axillary or terminal. *Flowers* hermaphrodite, often dimorphous, sometimes polygamous or diœcious, regular. *Calyx* free, usually small, campanulate, 4- or more-toothed or -lobed, rarely 0. *Corolla* gamopetalous; tube long or short; lobes or petals 4 to 12, imbricate or induplicate-valvate in bud. *Stamens* usually 2, sometimes 4, inserted on the corolla, or hypogynous if the petals are free or 0; filaments usually short; anthers rather large, ovate or oblong, rarely linear, dehiscing on the margin. *Ovary* free, 2-celled; style short or long; stigma simple or 2-lobed; ovules 1 to 2, rarely more, in each cell, attached to the inner angle near

the apex or base. *Fruit* capsular, loculicidally 2-valved or indehiscent, or a berry or drupe. *Seeds* solitary or 2 in each cell, erect or pendulous; testa thin or bony; albumen fleshy or horny or 0; embryo straight; radicle inferior or superior.—DISTRIB. Tropical and temperate regions of the world; genera about 18, species about 280.

Corolla-lobes imbricate :—

- | | | | |
|---|----|----|---------------|
| Seeds exalbuminous; usually climbing shrubs | .. | .. | 1. JASMINUM. |
| Seeds albuminous; small trees.. | .. | .. | 2. OSMANTHUS. |

Corolla-lobes valvate :—

Radicle superior; trees or erect shrubs :—

- | | | | |
|--|----|----|---------------|
| Corolla-tube very short, petals often in pairs | .. | .. | 3. LINOCIERA. |
|--|----|----|---------------|

- | | | | |
|-----------------------------------|----|----|----------|
| Corolla tubular, sometimes absent | .. | .. | 4. OLEA. |
|-----------------------------------|----|----|----------|

- | | | | |
|-----------------------------------|----|----|---------------|
| Radicle inferior; climbing shrubs | .. | .. | 5. MYXOPYRUM. |
|-----------------------------------|----|----|---------------|

Nyctanthes Arbor-tristis, Linn., is found in gardens in cultivation.

1. JASMINUM, Linn.

Erect or climbing shrubs. *Leaves* opposite or rarely alternate, simple trifoliolate or imparipinnate, generally entire; petiole usually articulate. *Flowers* often handsome, white pink or yellow, often sweet-scented, in 2- or 3-chotomous or simple cymes or sometimes solitary, axillary or terminal, inflorescence centrifugal; bracts linear and small or ovate, sometimes petaloid, bracteoles usually linear. *Calyx-tube* usually funnel-shaped or campanulate; lobes 4 to 9, linear, long or short or 0. *Corolla-tube* narrow, more or less elongate; lobes 4 to 9, spreading, much imbricate. *Stamens* 2, usually included in the corolla-tube; filaments short; anthers oblong, attached to the filaments at the back near the base, cells parallel, connective broad, usually produced in a mucronate point. *Ovary* 2-celled; ovules usually 2 in each cell, attached near the base; style filiform, long or short, often both in different flowers on the same plant; stigma oblong or capitate, generally bifid. *Berry* didymous or simple by suppression of one carpel; carpels globose, ellipsoid or elongate, pericarp usually of two layers, the outer (exocarp) membranous, the inner (endocarp) fleshy or fibrous. *Seeds* usually 1 in each carpel, sometimes 2, testa very thin; albumen none; cotyledons plano-convex; radicle inferior, very small, included within the cotyledons or slightly exsert.—DISTRIB. Tropical and warm temperate regions of Asia, Africa, and Australia, one species in Europe, many in cultivation: about 90 species in all.

Leaves simple :—

Leaves penninerved, basal pair of nerves not opposite nor produced to form an intramarginal nerve :—

Inflorescence terminal :—

- | | | | | |
|---------------------------|----|----|----|-----------------------|
| Erect or straggling shrub | .. | .. | .. | 1. <i>J. Sambac</i> . |
|---------------------------|----|----|----|-----------------------|

Climbing shrubs :—

Calyx-lobes $\cdot 2$ in. long or longer ; leaves rather large :—

Leaves chartaceous :—

Leaves and branchlets fulvous-pilose, main-nerves 10 to 12 pairs	2. <i>J. Griffithii</i> .
Leaves and branchlets glabrous, main-nerves 6 to 8 pairs	3. <i>J. Maingayi</i> .

Leaves membranous :—

Calyx-lobes spreading, $\cdot 25$ in. long or longer ; fruiting pedicels thickened	4. <i>J. Wrayi</i> .
Calyx-lobes erect, $\cdot 5$ in. long ; pedicels very short	5. <i>J. Curtisii</i> .

Calyx-lobes under $\cdot 2$ in. long, pubescent ; leaves small :—

Corolla-tube short, $\cdot 25$ in. long	6. <i>J. decussatum</i> .
Corolla-tube $\cdot 6$ to $\cdot 8$ in. long	7. <i>J. bifarium</i> .

Inflorescence axillary 8. *J. adenophyllum*.

Leaves penninerved, basal pair of nerves opposite, produced to form an intramarginal nerve :—

Basal pair of nerves prominent, branchlets round :—

Flowers in few-flowered long-peduncled cymes ; pedicels 1 to $1\cdot 5$ in. long	9. <i>J. longipetatum</i> .
Flowers in many-flowered short-peduncled cymes ; pedicels under $\cdot 5$ in. long	10. <i>J. smilacifolium</i> .

Basal pair of nerves not prominent, branchlets 4-angular .. 11. *J. insigne*.Leaves 3-foliolate 12. *J. Scortechinii*.

1. *JASMINUM SAMBAC*, Ait. Hort. Kew. I. 8 (1789). A sub-erect, straggling, scarcely climbing shrub ; branches terete, smooth ; branchlets slender, pubescent. *Leaves* membranous ; variable, usually ovate, often broadly so, acute or obtuse at apex, cuneate or rounded or cordate at base ; glabrous above, pubescent on the nerves beneath, often with tufts of hair in the axils of the main-nerves ; margins recurved ; $1\cdot 5$ to $4\cdot 5$ in. long, 1 to $2\cdot 5$ in. broad ; midrib slender, impressed above, raised beneath ; main-nerves 4 to 6 pairs, arching upwards to and along the margin, raised beneath ; reticulations distinct on both sides ; petiole $\cdot 1$ to $\cdot 25$ in. long, pubescent, articulate in the middle. *Flowers* white, very fragrant, solitary or in 2–3-flowered terminal pubescent cymes ; bracteoles linear-subulate ; pedicels $\cdot 25$ in. long, pubescent. *Calyx*-tube campanulate, $\cdot 1$ in. long ; teeth 5 to 9, linear-subulate, $\cdot 1$ to $\cdot 25$ in. long. *Corolla*-tube slender, funnel-shaped, $\cdot 5$ in. long ; lobes 8 to 9, spreading, as long as tube, oblong acute or obtuse. *Stamens* included in the tube ; filaments short ; anthers oblong. *Ovary* rounded ; style slender ; stigmas 2, clavate. *Berry* didymous or with 1 carpel only by suppression ; carpels black, $\cdot 25$ in. in diam., sub-globose, surrounded by the sub-erect persistent calyx-teeth. Bot. Reg. t. 1 ; Bot. Mag. t. 1785 ; Wall. Cat. 2868 ; A.D.C. Prod. VIII. 301 ; Wight Ic. t. 704 ; Dalz. & Gibs. Bomb. Fl. 137 ; Brandis For. Fl. 311 ; Kurz in Journ. As. Soc.

Beng. XLVI. ii. 242, and For. Fl. II. 153; Clarke in Hook. f. Fl. Br. Ind. III. 591; Blume Bijdr. 677; Miq. Fl. Ind. Bat. II. 542; Cooke Bomb. Fl. II. 111; Prain Beng. Plants 659. *J. fragrans*, Salisb. Prod. 12. *J. undulatum*, Willd. Sp. Pl. I. 36 (not of Ker). *J. Zambae*, Roxb. Hort. Beng. 2, and Fl. Ind. Ed. Carey & Wall. I. 87. *J. quinqueflorum*, Heyne; Wall. Cat. 2878; A.D.C. l.c. 302. *J. pubescens*, Wall. Cat. 2880, not of Willd. *Nyctanthes Sambae* and *undulatum*, Linn. Sp. Pl. 8. *Mogorium Sambae*, Lamk. Dict. IV. 210; Ill. t. 6, fig. 1. *M. undulatum*, Lamk. Dict. IV. 212. "Kudda-mulla," Rheede Hort. Mal. VI. tt. 50, 51. Burm. Thes. Zeyl. t. 58, fig. 2.

PERAK: *Seortechini* 997.—DISTRIB. India, Ceylon, Burma, Siam.

Much cultivated in India and in all tropical regions. The cultivated forms have many-flowered cymes and rounded corolla-lobes, and they are often found with double flowers.

2. *JASMINUM GRIFFITHII*, Clarke in Hook. f. Fl. Br. Ind. III. 593 (1882). A slender climbing shrub; branchlets densely and patently fulvous-villous. *Leaves* chartaceous; ovate- or elliptic-oblong, bluntly acute or acuminate at apex, rounded or cordate at base; fulvous-pilose on both surfaces, sparsely above, more densely beneath but glabrescent when old, the uppermost often whitened; 4 to 6 in. long, 1.5 to 3.5 in. broad; midrib prominent beneath; main-nerves 10 to 12 pairs, at first straight then arching upwards to join in a prominent looped intramarginal nerve; secondary nerves few; reticulations rather indistinct; midrib and all nerves impressed above and pilose, raised and densely fulvous-villous beneath, tufted in the axils; petiole stout, .2 to .4 in. long. *Flowers* creamy-white, in terminal, many-flowered, fulvous-pilose cymes, 1 to 1.5 in. long and up to 2 in. broad; bracts leafy, lanceolate, about .5 to 1 in. long, few; bracteoles many, linear, similar to calyx-lobes, of various lengths. *Calyx-tube* slender, .1 in. long; lobes 5, linear, .2 in. long. *Corolla-tube* slender, slightly enlarged above, .75 in. long; lobes 5, spreading, .25 in. long, elliptic, apiculate; lobes and tube minutely pubescent without. *Stamens* included or slightly exsert; filaments broad; anthers oblong-lanceolate with a broad connective, .15 to .2 in. long. *Ovary* glabrous; style slender; stigma clavate. *Berry* didymous; carpels waxy-white, globose, .3 to .4 in. in diam., pericarp crustaceous, glabrous. *Seed* usually one, testa fibrous; cotyledons thick, plano-convex, .2 in. in diam.

PERAK: *King's Collector* 10229. MALACCA: *Griffith* (K.D.) 3704. SINGAPORE: *Ridley* 8455.

VAR. *cuspidata*, King & Gamble. *Leaves* thinner than in the type, oblong, abruptly and sharply cuspidate-acuminate at apex, attenuate and

abruptly rounded at base, 5 to 5.5 in. long, 1.5 to 2 in. broad, much less pilose, main-nerves 8 to 10 pairs; seeds 1 to 2, testa crustaceous.

PENANG: *Curtis* 2787. MALACCA: *Maingay* (K.D.) 998. JOHORE: at Gunong Palai, 1,400 feet, *G. King*.

3. *JASMINUM MAINGAYI*, Clarke in Hook. f. Fl. Br. Ind. III. 594 (1882). A climbing shrub; branchlets light brown, terete, internodes somewhat elongate, innovations and inflorescence tawny-pubescent. *Leaves* chartaceous; ovate or ovate-oblong, acuminate and often mucronate at apex, rounded or attenuate or cuneate at base; glabrous on both surfaces; margins recurved; 3 to 6 in. long, 2 to 2.5 in. broad; midrib stout; main-nerves 6 to 8 pairs, arching upwards to join in a looped intramarginal nerve about .2 in. from the margin; secondary nerves few; reticulations distant, obscure; all nerves strongly impressed above and raised beneath; petiole .5 to .7 in. long, articulate in the middle, twisted, the bases of each pair connected by a raised nodal line. *Flowers* in terminal or axillary, paniculate, tawny-pubescent, trichotomous cymes, 1.5 to 2 in. long, sessile or peduncled; bracts oblong or spatulate, leafy; bracteoles linear, about .25 in. long or less; pedicels blueish, .15 in. long; flowers white, sometimes slightly tinged with pink. *Calyx-tube* campanulate, .07 to .1 in. long; teeth 6, linear-subulate, .325 in. long. *Corolla-tube* slender, .5 to .7 in. long, glabrous; lobes 8 to 10, spreading, rotate, oblong-lanceolate, apiculate, .4 in. long, with prominent nerves. *Stamens* included in the corolla-tube; filaments slender, appressed to the tube; anthers oblong, mucronate, .15 in. long, connective broad. *Ovary* cylindrical, glabrous; style slender, .4 to .5 in. long; stigma clavate. *Fruit* of one carpel, oblong, .5 in. long, .3 in. broad, exocarp thin shining, endocarp fibrous. *Seeds* 2, testa thin. Hook. f. Bot. Mag. t. 7823.

PENANG: *Maingay* (K.D.) 1000; *Curtis* 643. PERAK: *Scortechini* 139, 304; *Curtis* 2032; *King's Collector* 2761, 2762, 3975.—DISTRIB. Borneo (*Haviland & Hose* 911).

VAR. *kedahensis*, King & Gamble. *Branchlets* and inflorescence thickly rusty-pubescent. *Leaves* more ovate, rounded at base, nerves fewer, rarely 3 to 4 pairs, the two lower pairs very strong. *Drupe* nearly globose.

KEDAH: *Ridley* 5535.

A well-marked variety which may prove, when better known, to be a species.

4. *JASMINUM WRAYI*, King & Gamble, n. sp. A slender climbing shrub; branchlets pale brown, slender, terete. *Leaves* membranous; oblong or obovate-oblong, acuminate at apex, attenuate or rounded, sometimes slightly auricled at base; glabrous on both surfaces except

for tufts of tawny hairs in the axils of the main-nerves beneath; 3 to 7 in. long, 1.5 to 2.5 in. broad; midrib very slender, raised beneath; main-nerves about 7 pairs, curving upwards to and along the margin where they are obscurely connected in an intramarginal looped nerve, usually slightly impressed above and raised beneath; secondary nerves and reticulations obscure; petiole .3 to .5 in., slender, twisted. *Flowers* cream-coloured, in terminal, about 15–20-flowered corymbose cymes 2 to 3 in. long; peduncle 1 to 1.5 in. long, branches at right angles to rachis in fruit, .7 to 1 in. long; bracts lanceolate-acuminate, .5 in. long; bracteoles linear-subulate, .2 to .3 in. long; pedicels slender in flower, clavately-thickened in fruit and then .3 to .5 in. long. *Calyx-tube* very short; lobes 5, linear-subulate, spreading, curved, .25 in. long, glabrous or slightly pilose. *Corolla-tube* slender, .75 in. long, slightly enlarged above; lobes 8 to 9, narrow, .3 to .4 in. long. *Stamens* included in the corolla-tube; filaments short; anthers oblong, long-mucronate. *Ovary* cylindrical, depressed; style slender; stigma slightly clavate. *Fruit* didymous; carpels ovoid-globose, greenish-white, .25 to .5 in. long, exocarp thin shining, endocarp fibrous. *Seed* 1, testa very thin, membranous; cotyledons plano-convex, thick.

PERAK: Wray 2297, 2905, 3147; *King's Collector* 1838, 2484.

VAR. *hispida*, King & Gamble. Upper branchlets and inflorescence including calyx sparsely hispid, also midrib and main-nerves of leaves beneath; under-surface of leaves often pubescent; main-nerves up to 10 pairs.

PERAK: *King's Collector* 5893, on limestone hills. SELANGOR: *Curtis* 3774.

VAR. *axillaris*, King & Gamble. *Leaves* rather small, sparsely pubescent, especially on the midrib and main-nerves; inflorescence axillary, few-flowered (5 to 7), calyx hispid; fruit large, up to .5 in. in diam.

PERAK: on Maxwell's Hill, 3,000 feet—a slender climber, *Scortechini* 273.

5. *JASMINUM CURTISII*, King & Gamble, n. sp. A climbing shrub (?); branchlets slender, terete, minutely rusty-pubescent. *Leaves* membranous; ovate or ovate-oblong, acuminate at apex, rounded at base; glabrous on both surfaces except for pubescence on the nerves above and tufts of hair in the axils of the main-nerves beneath; 3 to 5 in. long, 1 to 2 in. broad; midrib slender; main-nerves 5 to 6 pairs, distant, curving upwards and joining in a looped nerve .1 to .2 in. from the margin, raised and prominent on both surfaces; secondary nerves and reticulations few, irregular; petiole .4 in. long, pubescent, twisted, articulate in the middle, the bases of each pair connected by a faint

nodal line. *Flowers* in a terminal trichotomous rusty-pubescent cyme, supported by pale (white?) leafy, ovate-lanceolate, pubescent bracts 1 to 1.25 in. long; bracteoles similar but smaller; pedicels .15 in. long; flowers in each cyme about 15 to 20. *Calyx-tube* campanulate, .15 in. long; lobes 6, linear-subulate, .5 in. long. *Corolla-tube* slender, cylindrical, 1 in. long; lobes 8 to 9, spreading or recurved, .5 in. long, oblong-lanceolate, acute. *Anthers* oblong, .125 in. long, mucronate. *Ovary* cylindrical, glabrous; style slender; stigmas 2, clavate. *Fruit* not known.

PERAK: at Ipoh, *Curtis*.

A remarkable species, distinguished by the very long hair-like calyx-lobes and the coloured or white large leafy bracts and bracteoles.

6. *JASMINUM DECUSSATUM*, Wall. Cat. 2860 (1829). A climbing shrub; branchlets slender, densely rusty-pubescent. *Leaves* chartaceous; ovate or ovate-lanceolate, acuminate at apex, rounded at base; sparsely pubescent above, more densely so beneath; 2 to 4 in. long, 1 to 1.5 in. broad; midrib rather stout; main-nerves 4 to 5, lowest pair obscure, rest curved upwards to meet near the margin, impressed above, raised beneath; petiole .3 to .4 in. long, pubescent, articulate near the base, the bases of each pair of petioles (as also branchlets) joined by a raised nodal line on either side. *Flowers* in densely pubescent axillary and terminal trichotomous corymbose cymes about 1 to 2 in. long, supported by a pair of large leaf-like bracts; bracteoles linear-subulate; pedicels .1 to .2 in. long. *Calyx-tube* short; teeth 6, subulate, .1 in. long. *Corolla-tube* slender, .25 in. long; lobes 8 to 9, as long as tube, oblong-lanceolate, apiculate. *Stamens* included in the corolla-tube; filaments short; anthers oblong, .1 in. long, mucronate. *Ovary* rounded, glabrous; style slender, longer than the corolla-tube (in short-stamened flowers); stigmas two, clavate. *Fruit* of one ellipsoid carpel, .2 to .3 in. long, glabrous. A. DC. Prod. VIII. 306; Kurz in Journ. As. Soc. XLVI. ii. 241, and For. Fl. II. 151; Clarke in Hook. f. Fl. Br. Ind. III. 596.

PENANG: *King's Collector* 1425, at Trang, 100 to 300 feet.—DISTRIB. Burma (*Wallich* 2860, *Griffith* 3699).

7. *JASMINUM BIFARIUM*, Wall. Cat. 2866 (1829). A climbing shrub; branchlets slender, terete, brown when dry, pubescent or nearly glabrous. *Leaves* chartaceous, usually bifarious; ovate or ovate-oblong, acuminate at apex, rounded or truncate sometimes almost cordate at base; pubescent or sometimes nearly glabrous on both surfaces; 2 to 3 in. long, 1 to 1.5 in. broad; midrib slender, pubescent, impressed above, raised beneath; main-nerves 4 to 6 pairs, pubescent, prominent beneath, arched upwards to join in an intramarginal nerve; secondary nerves and reticulations very obscure; petiole .2 to .3 in. long, twisted, articu-

late in the middle, the bases of each pair connected (as are the branchlets) on either side by a raised nodal line. *Flowers* white, in few- (4-12-) flowered, pubescent, sub-capitate cymes, sub-sessile in the axils of the two uppermost bract-like leaves; bracteoles linear-subulate, .15 in. long; pedicels .1 in. long. *Calyx-tube* campanulate; teeth 5 to 7, linear-subulate, .1 to .15 in. long. *Corolla-tube* slender, cylindric, .6 to .8 in. long; lobes 6 to 9, ovate-oblong, spreading, apiculate, .2 to .3 in. long. *Stamens* included in the corolla-tube; filaments short, slender; anthers oblong, mucronate, .1 to .15 in. long, connective broad. *Ovary* cylindric, glabrous; style slender, exsert; stigmas 2, clavate. *Fruit* a didymous berry; carpels ovoid, .5 in. long, .2 in. broad; exocarp membranous shining, endocarp fibrous. *Seed* conform to carpel, testa very thin, membranous. A.D.C. Prod. VIII. 305; Clarke in Hook. f. Fl. Br. Ind. III. 595. *J. braeteatum*, Wall. Cat. 2867. *J. nummularoides*, Blume Mus. Lugd. Bat. I. 275; Miq. Fl. Ind. Bat. II. 537.

PENANG: *Wallieh* 2866, 2867; *Curtis* 1920; *Ridley* 9361. PERAK: *Wray* 4180; *King's Collector* 860, 4920, 10699; *Deschamps*; *Scortechini* 59, 144, 238. SELANGOR: *Ridley* 7550, 8567. PAHANG: *Ridley* in Trans. Linn. Soc., Ser. 2, III. 319.—DISTRIB. Java.

VAR. *glabra*, Clarke in Hook. f. Fl. Br. Ind. III. 595. *Leaves* larger, elliptic, rhomboid or rounded at the base, more glabrous, less bifarious; calyx-teeth rather longer. *J. Lessertianum*, A.D.C. Prod. VIII. 304.

JUNKSEYLON (Tongka): *Curtis* 2911. PENANG: *Maingay* (K.D.) 999; *Deschamps*. PERAK: *Wray* 4180; *Scortechini*; *Kunstler* 122. MALACCA: *Griffith* (K.D.) 3708; *Goodenough* 1995. JOHORE: *Ridley* 4217. SINGAPORE: *Lobb*; *Ridley* 10760.—DISTRIB. Sumatra.

8. JASMINUM ADENOPHYLLUM, Wall. Cat. 2876 (1829). A very slender wiry climber; branchlets extensively twining, glabrous. *Leaves* membranous; ovate-lanceolate to elliptic-oblong, variable, acuminate and mucronate at apex, cuneate at base; glabrous above except on the midrib, glabrous beneath except the tuft of tawny hairs in the axils of the main-nerves; margins somewhat undulate; 1.5 to 5 in. long, .75 to 1.5 in. broad; midrib slender; main-nerves very slender, obscure, about 6 pairs, curving upwards to meet in a faint intramarginal looped nerve; petiole slender, twisted, articulate in the middle, .2 to .3 in. long, hispid. *Flowers* white, solitary, or 2 to 3 together in a slender, sometimes leafy, umbel from the axils of the leaves; peduncle .75 to 1.25 in. long, flattened above and with a pair of opposite bracts near the middle; bracts of umbel 2, linear-subulate, .3 in. long; pedicels very slender, .75 to 1 in. long, clavately enlarged in fruit. *Calyx-tube* campanulate, glabrous, ribbed, .1 in. long; lobes linear-subulate, keeled on the back,

sparsely hispid, .4 to .5 in. long, points recurved. *Corolla-tube* slender, funnel-shaped, .75 in. long; lobes as long or slightly longer, 8 to 9, recurved, oblong-ligulate, about .25 to .3 in. broad. *Stamens* included in the corolla-tube; filaments short, slender; anthers oblong, mucronate, .15 in. long, connective broad. *Ovary* cylindrical; style slender; stigma clavate. *Fruit* globose, shining, young carpels .25 in. in diam. A.D.C. Prod. VIII. 314; Clarke in Hook. f. Fl. Br. Ind. III. 597.

PENANG: *King's Collector* 1736.—DISTRIB. Khasia Hills (*Wallich*).

This species is clearly quite a small climber, and while the Penang specimens have only small leaves those from the Khasia Hills show comparatively large ones, but this is not unnatural, and we believe the identification to be correct.

9. *JASMINUM LONGIPETALUM*, King & Gamble, n. sp. A large climbing shrub, reaching 30 to 40 feet; branchlets slender, terete, pale brown. *Leaves* chartaceo-coriaceous, 3-nerved; elliptic, acute or shortly acuminate at apex, attenuate or cuneate or slightly rounded at base; glabrous on both surfaces; margins slightly recurved; 2 to 6 in. long, 1.5 to 3 in. broad; midrib slightly impressed above, shortly raised beneath; main-nerves 7 to 8 pairs, the basal pair opposite, at about 25° with the midrib produced in an intramarginal nerve about .25 in. from the margin, looped where the others, which are at about 65° with the midrib, join it; secondary nerves and reticulations very indistinct; petiole .2 to .4 in. long, twisted. *Flowers* white tinged with pink, fascicled 3 to 6 together in the axils of the upper leaves, forming sessile umbellate cymes; bracts very small, ovate-acute, deciduous; pedicels 1 to 1.5 in. long, very slender, summit enlarged in fruit. *Calyx-tube* short; lobes 6, glabrous, linear-subulate, .1 in. long, margins inflexed. *Corolla-tube* very slender, .75 in. long; lobes 9, linear-oblong, acute, 3-5-nerved, .75 to 1 in. long, much recurved in flower. *Stamens* within the tube; filaments short, slender; anthers oblong, .175 in. long, obtuse. *Ovary* glabrous, 2-celled; style slender; stigma flattened, minutely pubescent. *Fruit* didymous; carpel usually 1 only by suppression, black, globose, .4 to .5 in. in diam.; pericarp fleshy, glabrous. *Seeds* 2, testa very thin, cotyledons plano-convex.

PERAK: *King's Collector* 2765, 6005—on rich soil at 300 to 800 feet elevation, scarce. SINGAPORE: *Ridley* 10937.

A particularly handsome and well-defined species, which is well worthy of garden cultivation.

10. *JASMINUM SMILACIFOLIUM*, Griff. MS., Clarke in Hook. f. Fl. Br. Ind. III. 600 (1882). A large glabrous climbing shrub; branchlets pale brown, terete. *Leaves* coriaceous, 3-nerved; ovate, abruptly caudate-

acuminate at apex, obtuse or nearly cordate at base; margins entire, recurved; 5 to 7 in. long, 3 to 4 in. broad; midrib very prominent, impressed above, much raised beneath; two lowest main-nerves very prominent, similar to the midrib, curved upwards to form a pair of intramarginal nerves meeting at the apex; remaining main-nerves irregular, 3 to 4 pairs, inconspicuous; secondary nerves and reticulations raised above; petiole .75 in. long, twisted, articulate in the middle. *Inflorescence* of axillary 5–20-flowered cymes; rachis jointed, terete; bracts spatulate, .1 to .2 in. long; bracteoles smaller, linear; pedicels .2 to .3 in. long, greatly enlarged in fruit; flowers white, tinged with pink. *Calyx* campanulate, tube .15 in. long; teeth 5, .05 in. long. *Corolla-tube* slender, cylindrical, .75 to 1 in. long; lobes oblong, acute or apiculate, .75 in. long, .2 in. broad. *Stamens* inserted in the throat of the tube; filaments short; anthers linear-oblong, .25 in. long, mucronate. *Drupe* didymous; carpels ellipsoid, .1 in. long, .3 to .4 in. broad, smooth, shining.

MALACCA: *Griffith* (K.D.) 3698; *Maingay* (K.D.) 997.

11. JASMINUM INSIGNE, Blume Mus. Bot. Lugd. Bat. I. 278 (1849).

An extensively climbing shrub; branches obscurely quadrangular with pale-grey corky bark; branchlets acutely quadrangular, glabrous, the edges pale-corky-winged. *Leaves* chartaceo-coriaceous; opposite, occasionally whorled; elliptic or elliptic-oblong, acute at apex, cuneate at base; glabrous on both surfaces; margins recurved; 2 to 8 in. long, 1 to 4 in. broad; midrib slender, raised beneath; main-nerves 6 to 7 pairs, the basal pair faint, opposite, at about 30° with the midrib, produced in an intramarginal nerve .1 to .2 in. from the margin, looped where the others, which are at 50° to the midrib, join it; secondary nerves and reticulations obscure; petiole .4 to 1.2 in. long, twisted, the upper part bordered for a short distance by the decurrent margins of the blade. *Flowers* white, in compact, many-flowered, glabrous cymes from the axils of the leaves or (more usually) from the stem; bracteoles subulate, .1 to .15 in. long, caducous; pedicels stout, .2 in. long, somewhat angular. *Calyx-tube* campanulate, .25 in. long; lobes 4 to 5, linear-subulate, unequal, .25 to .35 in. long, points hooked. *Corolla-tube* slender, .75 to 1 in. long, somewhat inflated above; mouth slightly thickened; lobes 4 to 5, spreading, ovate-oblong, apiculate, .5 in. long, .3 to .4 in. broad. *Stamens* in the tube of the corolla; filaments flattened; anthers oblong, mucronate, .25 to .3 in. long. *Ovary* glabrous, rounded; style slender, clavate, obscurely cleft in 2 short stigmas; cells 2. *Fruit* didymous; carpels oblong, smooth, white when ripe. Miq. Fl. Ind. Bat. II. 541. *J. cauliflorum*, Scortechini MS. in Herb. Calcutta.

PERAK : at Theripay Taipay, *Scortechini* ; *Wray* 2840 ; *Cantley* 23 ; *King's Collector* 2890, 3398, 7059.—DISTRIB. Sumatra, *Forbes* 2906.

A very fine species of well-marked characters.

12. *JASMINUM SCORTECHINII*, King & Gamble, n. sp. A slender climbing shrub, reaching 60 feet in length ; branchlets dark-coloured, glabrous. *Leaves* thin when young, almost coriaceous when old, 3-sometimes 1-foliolate, opposite or sub-opposite ; terminal leaflet ovate or lanceolate, acuminate at apex, rounded at base ; glabrous on both surfaces, upper surface shining, nearly black when dry, lower surface dull, reddish when dry ; 2·5 to 4 in. long, 1 to 1·5 in. broad ; lateral leaflets similar but slightly smaller and often lanceolate ; midrib slender, raised beneath ; main-nerves very indistinct, apparently 6 to 8 pairs ; petiole ·75 in. long, petiolule of end leaflet ·5, of side leaflets ·3 in. long, all grooved, slender, articulate below the leaflet. *Flowers* white, in axillary or terminal trichotomous cymes, terminal ones often paniculate ; peduncles ·5 to 1 in. long ; bracts ovate-acute or subulate, ·1 in. long ; cymes sparsely scaly ; bracteoles at the base of the calyx minute ; pedicels ·1 to ·2 in. long, very much enlarged in fruit and then reaching ·5 to ·7 in. in length and ·3 in. in diam. at top. *Calyx-tube* campanulate, ·125 in. long ; teeth 5, very short, triangular. *Corolla-tube* slender, enlarged above, ·4 to ·6 in. long ; lobes 5, ovate-cordate, obtuse, ·3 to ·4 in. long, spreading. *Stamens* included in the corolla-tube ; filaments short ; anthers oblong, mucronate, ·15 in. long, connective broad. *Ovary* cylindrical, glabrous, 2-celled ; style slender, as long as the corolla-tube ; stigma clavate. *Fruit* didymous ; carpels ellipsoid, ·75 to 1 in. long, ·5 in. broad ; pericarp thin, crustaceous, blackish-brown. *Seed* nearly filling the cavity ; testa thin, fragile ; cotyledons oblong-obtuse, slightly auricled at base, ·5 to ·6 in. long by ·25 in. broad, plano-convex.

PENANG : *Curtis* 1227, 2031. PERAK : *Scortechini* 383, 479 ; *Ridley* 10679 ; *King's Collector* 7006, 7009 ; *Curtis* 169.

The description is largely after *Scortechini* MS. The species comes very near *J. lanceolaria*, Roxb., but differs in its more slender habit, thinner leaves, and large ellipsoid carpels.

Ridley's No. 8325 from Lankawi Island, Kedah, is a twiggy, apparently erect shrub with trifoliolate leaves, the leaflets all obovate-orbicular emarginate, the end one reaching 1·7 in. long and 1·3 in. broad, the side ones only about ·6 in. long and broad. The fruits are of one carpel about the size of a small pea, and the flowers are unknown. It may possibly not be a *Jasminum* (Herb. Kew).

The following species from Borneo is of interest, and may perhaps be found later on in the Peninsula :—

JASMINUM SARAWACENSE, King & Gamble, n. sp. A climbing shrub ; branchlets pale brown, terete ; internodes rather long. *Leaves* opposite, chartaceous ; elliptic-

oblong, long-acuminate at apex, cuneate at base; both surfaces glabrous; margins recurved; 4 to 7 in. long, 1.75 to 2.75 in. broad; midrib strong, impressed above, raised beneath; main-nerves 4 pairs, the lowest pair near the margin at an angle of about 30° with the midrib, the remaining pairs at about 50°, curving upwards to meet in an intramarginal looped nerve, which is also met by secondary nerves above the fourth pair; reticulations irregular, not prominent; petiole .5 to .75 in. long, twisted in the middle. *Inflorescence* of axillary, long-peduncled, trichotomous, pubescent, corymbose cymes, about 1 in. broad at top, usually 1 pair from each node; peduncle terete, 2 to 3 in. long, sometimes branched, minutely pubescent; branches very short, .2 in. long; pedicels clavate, .1 to .15 in. long; bracts and bracteoles linear-subulate, .25 in. long, one pair of bracteoles to each terminal fascicle of 3 flowers; flowers white, buds clavate, 1 in. long. *Calyx-tube* campanulate, .15 in. long; lobes 6, linear-oblong, applicately infolded at the middle inwards, .15 to .2 in. long, pubescent. *Corolla-tube* cylindrical, 1 in. long; lobes 6, spreading, oblong, rounded at top, .4 to .5 in. long, prominently 3-5-nerved. *Stamens* 2, inserted at about the middle of the tube within; filaments short, decurrent within the tube; anthers linear-oblong, .2 in. long. *Ovary* cylindrical, truncate and depressed at top, 2-celled; style very slender; stigma clavate. *Fruit* not known.

BORNEO: near Kuching in Sarawak, *Haviland & Hose* 3489.

2. OSMANTHUS, Lour.

Trees or shrubs, glabrous. *Leaves* opposite, evergreen, entire or dentate. *Flowers* small, axillary or terminal, fascicled or in very short racemes, hermaphrodite or polygamous. *Calyx* short, 4-toothed or -lobed. *Corolla-tube* short or long; lobes 4, broad, obtuse, imbricate. *Stamens* 2, more rarely 4, inserted on the corolla-tube; anthers ovate, sub-extrorsely dehiscent. *Ovary* 2-celled, ovules 2 in each cell, pendulous from its apex; style short or cylindrical, 2-lobed or sub-entire. *Drupe* ovoid or globose; exocarp fleshy, endocarp bony or crustaceous. *Seeds* usually solitary, pendulous; testa thin; albumen fleshy; cotyledons flat; radicle short, superior.—DISTRIB. N.W. Himalaya and eastwards to China and Japan, also in Western North America; about 8 to 10 species.

OSMANTHUS SCORTECHINII, King & Gamble, n. sp. A tree, reaching 40 to 50 feet in height, and 10 to 15 in. in diam. of stem; branchlets terete with pale grey, somewhat corky, bark. *Leaves* coriaceous; lanceolate, shortly acuminate at apex, cuneate at base; both surfaces glabrous; margins entire, recurved; 2 to 4 in. long, .75 to 1.25 in. broad; midrib thick, impressed above, raised beneath; main-nerves very obscure, about 5 to 6 pairs; petiole broad, .3 to .6 in. long, channelled above and bordered by the decurrent margins of the blade. *Flowers* in very short, close, axillary racemes, reaching .5 in. long in fruit, supported by a pair of ovate, acute, coriaceous bracts; pedicels slender, .05 in. long. *Calyx* membranous, .06 in. long; lobes 4, slightly serrate. *Corolla* campanulate, tube .05 in. long; lobes .1 in. long, oblong, obtuse, margins incurved.

Stamens 4, slightly exsert, inserted between the corolla-lobes at the top of the tube; filaments slender; anthers small, ovate, cells dehiscent on the margins or somewhat extrorsely. *Ovary* conical, glabrous; style slender, subulate, .04 in. long; cells 2, ovules in each cell apparently 2. *Drupe* globose, .2 to .3 in. in diam.; dark greenish-blue when ripe, exocarp thin, fleshy, endocarp crustaceous. *Seed* 1, testa membranous; albumen fleshy, ruminant; cotyledons oblong, flat, narrow; radicle superior.

PERAK: *Seortechini* 414—at Thaipeng; *Wray* 682; *King's Collector* 5029, 6978.

The structure of the wood, so far as the examination of a very small branch goes, confirms the placing of this plant in the genus *Osmanthus*.

To this species seems also to belong *King's Collector* 3663, which has a bright red drupe reaching .5 in. in length, slightly ribbed and with a spatulate embryo having the radicle nearly as long as the cotyledons, each .1 in. It may be called VAR. *oblonga*.

3. LINOCIERA, Swartz.

Shrubs or trees. *Leaves* opposite, entire. *Flowers* small, in axillary or extra-axillary, rarely terminal, panicles or cymes; bracts generally small, sometimes rather enlarged and leafy; bracteoles very small. *Calyx* small, 4-fid or -toothed. *Corolla* of 4 petals, long or short, nearly free or cohering by pairs or very shortly connate, induplicate-valvate in bud. *Stamens* 2, rarely 4, inserted at the base of the petals and usually between the two cohering ones; filaments short; anthers elliptic or oblong, dehiscent on the margin or slightly extrorse; connective broad, often apiculate. *Ovary* 2-celled, ovules 2 in each cell, pendulous from its apex; style short; stigma bifid or entire. *Drupe* globose or ellipsoid; exocarp fleshy, thin, endocarp bony or crustaceous. *Seed* usually solitary, pendulous; testa thin; albumen fleshy or 0, if fleshy the cotyledons flattened, radicle superior.—DISTRIB. Tropics of both hemispheres, species about 40.

Leaves over 4 in. long, main-nerves prominent beneath:—

Panicles 4 to 6 in. long, drupe .75 in. long	..	..	1. <i>L. pauciflora</i> .
Panicles 2 to 4 in. long, drupe 1.7 in. long	..	..	2. <i>L. macrocarpa</i> .
Panicles 1.5 to 2 in. long, drupe not known	..	..	3. <i>L. paludosa</i> .

Leaves under 4 in. long, main-nerves obscure beneath, cymes scarcely 1 in. long

.. 4. *L. caudata*.

1. LINOCIERA PAUCIFLORA, Clarke in Hook. f. Fl. Br. Ind. III. 609 (1882). A small tree, reaching 30 to 40 feet in height and 1.5 to 2 feet in diam. of stem; branches moderately stout, pale grey, smooth, swollen at the nodes, internodes slightly angular; branchlets darker coloured,

slender; leaf-buds linear-lanceolate. *Leaves* coriaceous; elliptic-oblong, rounded or shortly obtusely acuminate at apex, cuneate at base; glabrous on both surfaces, but with prominent raised glandular papillæ; 4 to 9 in. long, 2 to 4 in. broad; midrib stout, slightly impressed above, prominently raised beneath; main-nerves 11 to 13 pairs, fairly prominent and regular, curving upwards to and along the margin near which they anastomose; secondary nerves and reticulations obscure; petiole .7 to 1.3 in. long, thickened at base. *Flowers* pale yellow or white, in compound axillary panicles, 4 to 6 in. long; main branches 1 to 2 in. long; rachis slender, glabrous, somewhat angular; bracts leafy, ovate or spatulate, .5 to 1 in. or sometimes longer; bracteoles ovate-acute, very small; pedicels slender, .05 to 1.5 in. long, much thickened and pale in fruit even when quite young. *Calyx-tube* short; teeth 4, ovate-acute, .05 in. long. *Corolla-lobes* in two pairs, oblong, .1 to .15 in. long, slightly hairy within. *Stamens* .05 in. long; filaments short, broad, anthers elliptic, emarginate, with a gland on the front of the connective. *Drupe* ellipsoid, .75 in. long, .3 to .4 in. broad, blueish-black when ripe; exocarp fleshy, endocarp thin, crustaceous. *Seed* 1, testa pergamaceous; albumen none; cotyledons fleshy, .55 in. long; radicle very small, superior. *Olea* (?) *pauveiflora*, Wall. Cat. 2812; A.DC. Prod. VIII. 288. *Chionanthus palembanica*, Miq. Fl. Ind. Bat. Suppl. 558; Kurz For. Fl. II. 159, and Journ. As. Soc. Beng. XLVI. ii. 243.

KEDAH: *Curtis*. PENANG: *Wallich* 2812A, B; *G. King*; *Curtis* 695, 2773; *King's Collector* 1693; *Ridley* 10178. PERAK: *Ridley* 7160; *Seorteehini* 952; *King's Collector* 4172, 4834. SINGAPORE: *Ridley* 5079.—DISTRIB. Tenasserim, Andamans, Borneo (*Haviland* 1766).

2. *LINOCIERA MACROCARPA*, King & Gamble. A small tree; branchlets pale greyish-brown, stout, lenticellate; innovations ashy-pubescent. *Leaves* coriaceous; obovate-oblong or obovate-lanceolate, obtuse or very shortly and bluntly acuminate at apex, long cuneate at base; glabrous on both surfaces; margins entire or slightly recurved; 6 to 10 in. long, 2 to 3.5 in. broad; midrib very stout, broad and plane above, much raised beneath; main-nerves 14 to 17 pairs, prominent beneath, curved only near the margin to meet in a faint looped intramarginal nerve; secondary nerves and reticulations obscure; petiole 1 to 1.5 in. long, enlarged at base. *Flowers* in ashy-pubescent panicles, 2 to 4 in. long; bracts leafy, sometimes oblong-lanceolate, more generally spatulate; bracteoles linear-subulate, short; pedicels variable, often 0; rachis and pedicels much enlarged in fruit. *Calyx* pubescent; tube short; lobes ovate-acute, .05 in. long. *Corolla-tube* very short; lobes oblong-linear, .1 to .15 in. long, margins much incurved. *Stamens* .075 in. long; anthers oblong; filaments very short,

connective produced in a conical acumen. *Ovary* pubescent; style short; stigma 2-lobed. *Drupe* oblong-ellipsoid, 1·7 in. long, 1 to 1·2 in. broad; exocarp thick, granular; endocarp hard, ·15 in. thick, obscurely ridged outside. *Seed* 1, testa membranous, albumen fleshy. *L. insignis*, Clarke in Hook. f. Fl. Br. Ind. III. 610. *Chionanthus macrocarpa*, Blume Mus. Bot. I. 319 (1849); Koord. & Val. Bijdr. VIII. 239. *C. insignis*, Miq. Fl. Ind. Bat. Suppl. 559 (1862). *C. montanus*, Kurz in Journ. As. Soc. Beng. XLVI. ii. 243, and For. Fl. II. 159.

SINGAPORE: at Bukit Mandai, *Ridley* 4580.—DISTRIB. Tenasserim (*Helper* (K.D.) 3688), Martaban (*Kurz*), Sumatra (*Teysmann*, *Beccari* 826), Borneo (*Beccari* 725).

3. *LINOCIERA PALUDOSA*, King & Gamble, n. sp. A small tree (*Wray*), large tree, 60 to 80 feet high, and 15 to 20 in. in diam. of stem (*King's Collector*); branchlets thick, pale greyish-brown. *Leaves* coriaceous; oblong, bluntly acute at apex, also at base; glabrous on both surfaces except on the nerves which are minutely pubescent; margins recurved; 6 to 12 in. long, 2 to 4 in. broad; midrib thick, prominent, slightly raised above, strongly so beneath main-nerves 11 to 15 pairs, impressed above, prominently raised beneath, ·75 to 1 in. apart, at first straight then curving upwards to and along the margin to anastomose and form a prominent looped intramarginal nerve; secondary nerves few; reticulations transverse, not prominent; petiole stout, wrinkled, ·5 in. long. *Flowers* yellow, with a brown centre, in pubescent panicles 1·5 to 2 in. long from the branchlets between the leaf-nodes in the axils of small tubercles; peduncles stout, grey-pubescent, ·2 in. long; bracts ovate, grey-pubescent; bracteoles ovate-acute, recurved; pedicels 0·5 in. long. *Calyx-tube* short, lobes ovate-acute or triangular, ciliate, ·025 in. long, one lobe sometimes enlarged. *Corolla-lobes* in 2 pairs, linear-oblong, obtuse, ·2 in. long, ·05 in. broad, glabrous. *Stamens* ·05 in. long; filaments broad, short; anthers rounded, connective with an obscure gland. *Ovary* conical, glabrous; style short; stigmas 2. *Fruit* not known.

PERAK: at Sungie Larut, *Wray* 2424; on low wet ground, *King's Collector* 6476.

4. *LINOCIERA CAUDATA*, King & Gamble, n. sp. A tree, reaching 30 to 40 feet in height and 5 to 7 in. in diam. of stem; branches slender, pale grey, ultimate branchlets darker. *Leaves* chartaceous; lanceolate, caudate-acuminate at apex, cuneate at base; glabrous on both surfaces; margins entire, recurved; 3 to 4 in. long, 1 to 1·25 in. broad; midrib slender, raised above, scarcely raised beneath; main-nerves very obscure, about 4 to 5 pairs, curving sharply upwards to meet in an intramarginal looped nerve; petiole ·1 to ·2 in. long, grooved above.

Flowers in axillary or extra-axillary, few-flowered, trichotomous, paniculate cymes about 1 in. long; rachis glabrous, somewhat angular; bracts and bracteoles small, ovate, acute. *Calyx* .05 in. long, tube short; lobes 4, ovate, obtuse. *Corolla-tube* scarcely any; lobes in 2 pairs, oblong, .1 in. long. *Stamens*: filaments broad; anthers oblong, cells extrorsely dehiscent; connective apiculate. *Ovary* glabrous, conical; style very short; stigma bifid. *Drupe* (immature) obovoid, .3 to .4 in. long, seed apparently albuminous.

PERAK: *King's Collector* 3212, 6857, in dense jungle on high mountains at 3,500 to 4,000 feet.

This species is rather near *L. monticola*, Bl., but the leaves are narrower and the inflorescence longer.

4. OLEA, Linn.

Trees or shrubs. *Leaves* opposite, entire or toothed. *Flowers* small; hermaphrodite, diœcious or polygamous; in axillary, rarely terminal trichotomous panicles; bracts small. *Calyx* short, 4-toothed or -lobed. *Corolla-tube* short; lobes 4, induplicate-valvate, sometimes 0. *Stamens* 2, on the corolla-tube or sub-hypogynous; filaments short; anthers ovate or oblong, cells dehiscent on the margin or slightly extrorse, in ♂ flowers sometimes introrse. *Ovary* 2-celled; ovules 2 in each cell, attached laterally to the septum or sub-pendulous; style short; stigma obtuse, capitate or bifid. *Drupe* ellipsoid or sub-globose; exocarp fleshy; endocarp bony or crustaceous, usually 1-seeded. *Seed* pendulous; testa thin; albumen fleshy, sometimes slightly ruminant; cotyledons flat, radicle superior.—DISTRIB. South Europe and Asia, tropical and South Africa, New Zealand; about 35 species.

Inflorescence more than 3 in. long; leaves oblong lanceolate, acute, usually over 4 in. in length	..	..	..	1. <i>O. dentata</i> .
Inflorescence under 3 in. long; leaves elliptic-lanceolate, acuminate, under 4 in. in length	..	..	..	2. <i>O. maritima</i> .

SPECIES IMPERFECTLY KNOWN.

Leaves 8 to 14 in. long; inflorescence extra-axillary on old wood; drupes flattened	..	..	..	..	3. <i>O. platycarpa</i> .
Leaves 2 to 3 in. long; inflorescence axillary or extra-axillary on young wood; corolla-lobes linear, .1 in. long; drupes not known	..	..	..	..	4. <i>O. ardisioides</i> .

1. *OLEA DENTATA*, Wall, Cat. 2840 (1829). A tree, 40 to 60 feet high; branchlets light brown, smooth, innovations minutely pubescent. *Leaves* coriaceous; oblong-lanceolate, bluntly acute at apex, cuneate or rounded at base; glabrous on both surfaces, but when young pubescent on the nerves beneath; margins entire or distantly dentate, slightly recurved; 3.5 to 5.5 in. long, 1 to 2 in. broad; midrib slender, im-

pressed above, raised beneath; main-nerves obscure, 8 to 10 pairs, arching upwards to join in a looped nerve near the margin, impressed above; petiole .4 in. long. *Flowers* in axillary or extra-axillary, leafy, tri-pinnate, minutely pubescent, paniculate cymes, 3 to 6 in. long, branches trichotomous, ultimate cymes umbellate; bracts leafy, oblong or lanceolate, .5 to 1.5 in. long; pedicels slender, .05 to .1 in. long; bracteoles minute, ovate-acute. *Calyx* minutely pubescent, .05 in. long; lobes 4, ovate, obtuse. *Corolla* tubular-campanulate, .15 in. long; lobes 4, rounded, .05 in. long. *Stamens* very small, inserted at the base of the corolla-tube; filaments very short; anthers ovoid, sub-extrorsely dehiscent. *Ovary* ovoid; style none; stigma capitate; cells 2, ovules 2 in each cell. *Drupe* not seen. A.D.C. Prod. VIII. 286; Kurz in Journ. As. Soc. Beng. XLVI. ii. 245, and For. Fl. II. 157; Clarke in Hook. f. Fl. Br. Ind. III. 613.

PENANG: *Curtis* 222, 950, 2267.—DISTRIB. Burma.

2. *OLEA MARITIMA*, Wall. Cat. 2813 (1829). A large shrub or small tree; branchlets terete, pale brown; innovations minutely pubescent. *Leaves* coriaceous; elliptic-lanceolate, acuminate at apex, cuneate or somewhat rounded at base; glabrous on both surfaces; margins entire or distantly serrate on their upper half; 3 to 4 in. long, 1 to 2 in. broad; midrib slender, impressed above, raised beneath; main-nerves obscure, 7 to 10 pairs, meeting near the margin in a looped intramarginal nerve; reticulations scanty; petiole .2 to .3 in. long, minutely pubescent when young, finally glabrous. *Flowers* dull white, polygamous, in slender, minutely pubescent, trichotomous paniculate cymes with few branches; ultimate cymes umbellate, usually .75 to 1 in. long in flower, up to 1.5 in. long in fruit, rarely axillary, usually extra-axillary; each pair of peduncles supported by a pair of ovate lanceolate leafy bracts .3 to .5 in. long; common peduncles .7 in. long; pedicels .05 to .1 in. long, bracteoles none. *Calyx* .05 in. long, minutely rusty-pubescent; tube short; lobes 4, ovate-acute, as long as tube. *Corolla* campanulate, .1 to .15 in. long; lobes 4, obtuse, as long as tube, induplicate-valvate, apparently absent in ♀. *Stamens* .07 in. long, inserted near the base of the corolla-tube; filaments slender; anthers as long as filaments, reniform, cells sub-extrorsely dehiscent. *Ovary* conical; style none; stigma capitate; cells 2, ovules in each cell pendulous. *Drupe* globose, .2 in. in diam., black when ripe, wrinkled when dry; exocarp thin, fleshy, endocarp crustaceous. *Seed* 1, testa very thin, albumen copious; cotyledons elliptic, nearly .1 in. long; radicle somewhat thick. G. Don Gen. Syst. IV. 49; A.D.C. Prod. VIII. 288; 288; Clarke in Hook. f. Fl. Br. Ind. III. 612; Miq. Fl. Ind. Bat. II. 547.

MALACCA: *Griffith* (K.D.) 3679; *Maingay* (K.D.) 1022; *Cuming* 2318; *Ridley* 3284, 10731. PAHANG: a common bush on the sandy heaths, *Ridley* in Trans. Linn. Soc. Ser. 2. III. 319. SINGAPORE: *Wallich* 2813; *Walker* 183; *Ridley* 3616A, 8420; *King's Collector* 1138; *Murton* 62.—DISTRIB. Malay Islands.

SPECIES IMPERFECTLY KNOWN.

3. *OLEA PLATYCARPA*, King & Gamble, n. sp. A small tree with spreading branches, reaching 25 to 30 feet in height; branchlets stout, pale brown, smooth, marked by the prominent horse-shoe-shaped scars of fallen leaves. *Leaves* coriaceous; obovate-oblong or oblong-lanceolate, abruptly acuminate at apex, cuneate at base; glabrous on both surfaces and with scattered glands; margins entire, slightly recurved; 8 to 14 in. long, 3 to 5 in. broad; midrib very stout and prominent; main-nerves 14 to 16 pairs, curving upwards to join in a looped intramarginal nerve close to the margin; secondary nerves few; reticulations irregular, obscure; petiole 1 in. long, base enlarged, wrinkled. *Flowers* dioecious, in extra-axillary, sessile, paniculate, trichotomous cymes, usually on old wood, 1 to 1.5 in. long, supported by a cluster of sheathing scarious bracts; bracts of panicle branches and bracteoles ovate-acute; pedicels very short, stout, somewhat angular. *Calyx* short, .05 in. long; teeth (in ♀ flowers) ovate, obtuse, ciliate. *Corolla* none in ♀, ♂ not seen. *Ovary* conical, rugose; style 0; stigma 2-lobed, mitriform. *Drupe* ovate-oblong, flattened, .7 in. long, .5 in. broad; exocarp thick, wrinkled when dry; endocarp thick, granular; cells 2. *Seed* 1, pendulous from the summit of the thin central persistent septum; testa membranous; albumen thick, fleshy; cotyledons ovoid, .15 in. long, radicle rather stout.

PERAK: at low levels on the hills, *King's Collector* 5541, 7649; *Hervey*.

The absence of male flowers renders the identification of the genus of this plant somewhat uncertain, but we consider it belongs rightly to *Olea*.

4. *OLEA ARDISIODES*, King & Gamble, n. sp. A small tree; branches slender, terete, with yellowish bark; branchlets minutely pubescent. *Leaves* coriaceous; lanceolate, long acuminate at apex, cuneate at base; glabrous on both surfaces; margins entire, recurved; 2 to 3 in. long, .6 to .1 in. broad; midrib slender, impressed above, raised beneath; main-nerves 5 pairs, curving upwards to meet in a looped intramarginal nerve, obscure; secondary nerves and reticulations very obscure; petiole slender, .1 to .2 in. long. *Flowers* in axillary or extra-axillary

slender paniculate cymes, 1 to 2 in. long; rachis somewhat angular, minutely pubescent; bracts leafy, lanceolate, .5 to 1 in. long; bracteoles similar or sometimes subulate-spathulate; pedicels slender, .1 in. long, reflexed. *Calyx-tube* very short; lobes 4, ovate-acute, .025 in. long, ciliate. *Corolla-tube* .03 to .05 in. long; lobes 4, induplicate-valvate, linear, .1 in. long. *Stamens* 2, inserted at the base of the corolla-tube, .05 in. long; filaments slender; anthers elliptic, cells dehiscing laterally, connective mucronate. *Ovary* conical; style 0; stigma minute, bifid; cells 2. *Fruit* not seen.

PERAK: on Gunong Bubu, 5,000 feet, *Wray* 3871. PAHANG: *Barnes* 10896.

We have hesitated whether to describe this species as *Olea* or *Linociera*, for the corolla-tube is not very long, and the lobes are like those of the latter genus, but the character of the leaves is distinctly that of *Olea*.

5. MYXOPYRUM, Blume.

Large scandent shrubs with quadrangular branches. *Leaves* opposite, large, triplinerved, entire or denticulate. *Flowers* small, yellow, very numerous, in axillary and terminal trichotomous panicles. *Calyx-tube* short, lobes 4. *Corolla* fleshy; tube urceolate; lobes 4, concave, induplicate-valvate in bud. *Stamens* 2, inserted on the base of the corolla-tube; filaments very short; anthers rather large, ovate, cells dehiscing laterally. *Ovary* 2-celled; style very short or 0, stigma 2-lobed; ovules 1 to 2 in each cell, attached near the base at the inner angle. *Fruit* a 1-2-seeded sub-globose berry; pericarp crustaceous. *Seeds* 1 to 4, erect, testa membranous, albumen thick; cotyledons flat, ovate, radicle inferior.—DISTRIB. India and Malaya, 3 species.

MYXOPYRUM NERVOSUM, Blume Bijdr. 683 (1826). A large climbing shrub; branches with fibrous pale brown bark; branchlets prominently quadrangular. *Leaves* coriaceous; elliptic or elliptic-oblong or elliptic-lanceolate, acuminate at apex, cuneate or rounded at base; glabrous on both surfaces; margins entire or denticulate in the upper half, prominently recurved; 4 to 7 in. long, 1.5 to 3.5 in. broad; midrib thick, prominent beneath, impressed above; main-nerves 4 to 6 pairs, the lowest pair opposite, very prominent, starting a little above the base and forming an intramarginal nerve looped only after where it meets the rest at about two-thirds of the way up, the next pair not opposite and only starting from about half the length of the leaf; secondary nerves few, reticulations irregular, prominent in dry specimens; petiole .3 to .5 in. long, often twisted, channelled above, articulate at the base. *Flowers* sessile, in terminal or axillary or extra-axillary, trichotomous, minutely

pubescent panicles, 1·5 to 3 in. long; rachis angular, swollen at the nodes; bracts subulate, recurved, ·1 in. long; bracteoles triangular, minute. *Calyx-tube* very short; lobes 4, triangular, acuminate. *Corolla* yellowish- or greenish-white, fleshy; tube urceolate, ·05 to ·1 in. long; lobes oblong, incurved, ·05 in. long, induplicate-valvate in bud. *Stamens* 2, inserted on the tube of the corolla; filaments very short, broad; anthers ovate, rather large. *Ovary* ovoid; style 0; stigma 2-lobed; cells 2, ovules 2 in each cell, erect from a minute basal central placenta. *Berry* ovoid or globose, ·5 to ·7 in. in diam., rough, surmounted by the persistent stigma, blueish-black when ripe; cells 2. *Seeds* 2 to 4, erect on an enlarged placenta at the base of the central dissepiment; albumen fleshy, testa membranous. Mus. Bot. Lugd. Bat. I. 320, t. 51; A.DC. Prod. VIII. 290; Miq. Fl. Ind. Bat. II. 549; Clarke in Hook. f. Fl. Br. Ind. III. 618.

PENANG: *Curtis* 2849. PERAK: *Wray* 2139, 2834, 4179; *Scortechini* 532, 598*b*; *King's Collector* 3584, 4544, 7392, 8845. MALACCA: *Main-gay* (K.D.) 996/3—DISTRIB. Sumatra (*Forbes* 1585, in the Lampongs); Java.