

Annotated list of seed plants of Singapore (IV)*

HSUAN KENG

Department of Botany
University of Singapore

II. Angiosperms-Dicotyledons (continued)

29. BIXACEAE

Key to the genera

A. Leaves entire; flowers pale pink

Bixa

A. Leaves 3-5-lobed; flowers yellow

Cochlospermum

Bixa orellana Linn.

Shrub or small spreading tree; leaves heart-shaped; flowers pale pink; fruit a purple capsule with soft hairs; seeds with a pulpy coat containing a orange-red juice — *Anatto* — which is used as a dye in cosmetics and in dairy products. Native of trop. America, planted as an ornamental. Vern. *Kesumba*, 紅木, 胭脂木。

Cochlospermum religiosum Alston

Small tree; leaves 3-5-lobed; flowers golden yellow; fruit pear-shaped, smooth; seeds coiled, covered with long hairs — *yellow cotton tree*. Native of India, planted as an ornamental.

30. VIOLACEAE

Key to the genera

A. Herbs; corolla irregular

Viola

A. Shrubs or trees; corolla regular

Rinorea

Rinorea anguifera (Lour.) O.K.

Shrub or small tree; leaves ovate, serrate; flowers small, white, in axillary cymes; capsule 3-5 cm across, covered with soft, long hairs; in dry woods, Bukit Timah, Chan Chu Kang, Chua Chu Kang (*Ridley s.n.* in 1894). Called *Alsodeia echinocarpa* Korth. in Ridley's Flora. Vern. *Sebilek*.

Rin. lanceolata (Wall.) O.K.

In forests, Ang Mo Kio, Changi (Ridley 1813). Called *Alsodeia grandiflora* Ridl. & *Al. floribunda* King in Ridley's Flora.

Viola odorata Linn.

Native to Europe, occasionally planted in pot. 香堇菜。

* Continued from *Gdns' Bull. Sing.* 27 : 266, 1974.

31. FLACOURTIACEAE

Key to the genera

- A. Flowers bisexual.
 - B. Leaves without 2 glands.
 - C. Ovary superior; berry entirely free; flowers in axillary clusters *Casearia*
 - C. Ovary half-inferior; capsule connate with the calyx in the lower half; flowers in racemes *Homolium*
 - B. Leaves with 2 distinct glands at the base of the blade; fruit a berry *Scolopia*
- A. Flowers unisexual
 - D. Flowers in axillary clusters; fruit baccate with a ring of 4-8 bifid styles *Flacourtia*
 - D. Flowers in spikes or panicles
 - E. Flowers in panicles; capsules 3-valved *Osmelia*
 - E. Flowers in racemose spikes; fruit baccate *Ryparosa*

Casearia capitellata Bl.

Shrub or small tree, pubescent; flowers green, few in axillary clusters; fruit orange, subglobose (1.2 x 0.8 cm); Gardens' jungle, Chua Chu Kang (*Ridley* s.n. in 1892). As *Cas. lobbiana* Turcz. in *Ridley's Flora*.

Cas. clarkei King

Tree; flowers small, in dense clusters; fruit ovoid, bright yellow (5-6 x 2.5-3 cm); Chan Chu Kang (*Ridley* 6334).

Cas. tuberculata Bl.

Small tree; flowers white, often galled; fruit oblong (4-5 x 1.6 cm), orange-red; once collected by Wallich (7197) in 1822. *C. coriacea* Vent in *Ridley's Flora*.

Flacourtia jangomas (Lour.) Raeusch.

Small tree, thorny below; fruit purple or red, edible, 1.5-2.5 cm across. Cultivated around villages, possibly native of India. Vern. *Rukam*.

Flac. rukam Z. & M.

Small tree, thorny below; flowers small, in axillary clusters; berry globose, pink to reddish, good for making jams; fruit from the cultivated form is also edible; in damp forest, Chua Chu Kang (*Ridley* s.n. in 1894).

Homalium grandiflorum Benth.

Buttressed tree; flowers in racemes or panicles; calyx teeth 7-9; capsules spindle-shaped; in lowland forests, rare, Gardens' jungle, Tanglin, Kranji.

Osmelia philippina Benth.

Tree; flowers in panicles, densely yellow tomentose, fruit a capsule, red, tomentose; in lowland forest, Chan Chu Kang (*Ridley* s.n. in 1894), Bukit Timah, Bukit Mandai.

Pangium edule Reinw.

Seeds of this species, known as *Buah Keluak*, imported from northern Malaya, used as culinary flavour.

Ryparosa hullettii King

Shrub or tree; male spikes 30–40 cm long; female spikes 4–8 cm long; berry fusiform, with leathery pericarp, 2–3 seeded; in dense forest, rare, Fern Valley of B.T.N.R. (*Ngadiman* 35947) and Chan Chu Kang.

Ryparosa wallichii Ridl.

Tree; flowers small, male spikes 5–8 cm long; once collected in Gardens' jungle. No specimen available.

Scolopia macrophylla (W. et A.) Clos.

Shrub or small tree, thorny; flowers greenish white, in racemes; connective of anthers producing into an appendage; berry orange to black; in mangroves, Changi (*Ridley* 1818), Serangoon.

32. TURNERACEAE*Turnera subulata* J.E. Smith

Different from the following species by its broader leaves and by the presence of a dark purple eye in the corolla; native of tropical America.

Turn. ulmifolia L.

Herb, erect or ascending; leaves ovate, serrate, with a pair of small glands at the base of blade; flowers bright yellow; cultivated, now escaped and naturalized in open sandy places. Native of the West Indies.

33. PASSIFLORACEAE

A. Flowers unisexual; fruit capsular

Adenia

A. Flowers bisexual; fruit baccate

Passiflora

***Adenia microphylla* Koord. var. *singaporeana* (Wall. ex D. Don) de Willde**

Slender woody climber; fruit spindle-shaped, 5 cm long; in margins of thickets, B.T.N.R. (*Ridley* 5710), Gardens' Jungle, Chan Chu Kang, Nee Soon. Called *Adenia singaporeana* Engl. in *Ridley's* Flora.

Passiflora foetida Linn.

Slender climber; leaves 3-lobed; flowers white; fruit orange, globose (1.5–2 cm across), enclosed in the green, fimbriate, sticky involucre of 3 bracts. A common weed, native of S. America, \pm naturalized.

Pass. laurifolia Linn.

Climber; leaves oblong; flowers violet-banded with white; fruit as big as a hen's egg, yellow with 2 green bracts at the base. Native of S. America; cultivated and escaped. Vern. *Buah susu*.

Pass. quadrangularis Linn.

Large climber; stem 4-angled, soft; leaves ovate; flowers 10–12 cm across, purple-banded with white; fruit pale green, oblong, to 18 cm long. The Granadilla, a native of S. America, sometimes cultivated.

Pass. subrosa Linn.

Small climber; leaves 3-lobed; flowers greenish, without true corolla; fruit globose, 1.2 cm across, green to dark purple. Native to S. America, escaped as a weed. Several other species are planted.

34. CARICACEAE

Carica papaya Linn.

Small tree, soft-wooded, with milky sap, mostly unbranched; leaves large, palmately lobed; flowers mostly unisexual, greenish yellow; berry cylindric to ellipsoid. The Papaya, native of Trop. America is widely cultivated as a fruit tree. Vern. Betik, 木瓜, 蕃木瓜。

35. CUCURBITACEAE

Key to the genera

- | | |
|--|----------------------|
| A. Anther-locules straight; flowers very small, in panicles | <i>Gymnopetalum</i> |
| A. Anther-locules conduplicate, worm-shaped. | |
| B. Corolla divided about $\frac{1}{2}$ to the base or less; coarse vines with solitary, yellow flowers and very large fruits | <i>Cucurbita</i> |
| B. Corolla divided nearly to the base, or the petals nearly free. | |
| C. Corolla-lobes fimbriate; fruit many-seeded | <i>Trichosanthes</i> |
| C. Corolla-lobes entire or nearly so. | |
| D. Flowers white; calyx-tube of the male flowers elongated; anthers included | <i>Lagenaria</i> |
| D. Flowers mostly yellow; calyx-tube of the male flowers short; anthers usually exerted. | |
| E. Anthers not or scarcely cohering; stamens inserted near the mouth of the calyx-tube. | |
| F. Male flowers racemose; fruit cylindric, smooth or angled, opening at the end | <i>Luffa</i> |
| F. Male flowers solitary; fruit ellipsoid, indehiscent | <i>Benincasa</i> |
| E. Anthers more or less cohering; stamens inserted below the mouth of the calyx-tube. | |
| F. Male flowers clustered, short-pedicelled | <i>Cucumis</i> |
| F. Male flowers racemose, or solitary and long-pedicelled, usually bracteolate | <i>Momordica</i> |

Benincasa hispida (Thunb.) Cogn.

Wax gourd is an ancient cultigen of unknown origin; also called *B. cerifera* G. Savi.; two common varieties are used as vegetables: the one with large, round, or ovoid fruit covered with white wax-like substance, *Tung Kwa* 冬瓜, the other with smaller cylindric fruit covered with silky white hairs, *Mo Kwa* 毛瓜. Vern. *Kundor*.

Citrullus lanatus (Thunb.) Mansf.

Also called *C. vulgaris* Schrad.; the water melon is a native of S. Africa; fruits of several varieties are found in the market, mostly imported. Vern. *Mendikai*, 西瓜。

Cucumis sativus L.

The cucumber is prob. a native of N. India; annual herb, climbing by simple tendrils; growing locally for its edible fruit. Vern. *Timun china*, 黄瓜。

Cucurbita moschata Duch. ex Poir.

The winter squash and several closely related species (*C. maxima* Duch., *C. pepo* L.) are natives of Mexico and C. America, occasionally planted; fruits in the market are mostly imported. Vern. *Labu Merah*, *Labu Ayer*, 南瓜, 番瓜。

Gymnopetalum cochinchinensis Kurz

Slender creeping herb, leaves 3–5-lobed; flowers white; fruit orange coloured, oblong (2 x 5 cm), 10-ridged, beaked; occasionally found in open places. No specimens available. Vern. *Sipam*.

Lagenaria siceraria Standl.

The bottle gourd is prob. a native of Africa; two common varieties in cultivation are: the one with the fruit slightly curved, large, pear-shaped, whitish green and hairy when young, used as cooked vegetable; the other has the fruit constricted in the middle, when ripe treated and used as a flask. Vern. *Labu ayer puteh*, 壺瓜, 葫蘆。

Luffa acutangula Roxb.

The angled Loofah is probably a native of trop. Asia; young fruit cooked and served as vegetables. Vern. *Ketola sanding*, 角瓜。

Luffa aegyptiaca Mill.

The smooth Loofah is probably a native of trop. Asia; young fruit edible, less common than angled Loofah; the network of strong fibre of the ripe fruit is used as a sponge; also called *L. cylindrica* Roem. Vern. *Ketola manis*, 絲瓜。

Momordica charantia L.

The bitter gourd is probably a native of trop. Asia; fruit pale orange, with smooth tubercled ridges; seeds white or brown, with scarlet arils; the unripe fruit used as vegetable. Vern. *Peria laut*, 苦瓜。

Trichosanthes arguina Linn.

The long and twisted, snake-like fruit with dark green and lighter patches; — *serpent gourd* — a less common vegetable, probably native of India. Vern. *Ketola ular*, 蛇瓜。

Trich. celebica Cogn.

Slender climber; leaves 3-foliolate; flowers, white, night-blooming; the corolla tubular, fimbriate; fruit yellow to red, ovoid (8 x 12 cm); seeds flat, embedded in slimy dark green pulp. Tanglin, Chan Chu Kang (*Ridley* 6783).

Trich. wallichiana Wight.

Fruit red, ellipsoid, obtuse, 5–10 cm long; at one time very common in woods and hedges in Singapore (Pulau Ubin, *Ridley* 446). Vern. *Akar Timun Gagak*, or *Crow's Pumpkin*.

Trich. wawraei Cogn.

Fruit, oblong, red. Mandai (Sinclair 40269).

36. BEGONIACEAE**Begonia coccinea** Hook. f.

Erect, branched, glabrous; leaves obliquely oblong, not white-spotted, often red-margined; flowers red; pot plant, from Brazil.

Beg. heracleifolia Cham. & Schl.

Leaves rounded, shallowly 5-9-lobed, hairy on both surfaces, dark green above, brown-spotted; flowers white or pink, from Mexico.

Beg. masoniana Hort.

Leaves brightly green, with a purplish-black cross-shaped spot on the upper surface; the *Iron Cross Begonia* is a variety which originated in a garden.

Beg. rex Putz.

Rhizome creeping, often above the ground; leaves obliquely ovate, shallowly dentate or deeply lobed, white-banded or-spotted above, red hairs on nerves; flowers pale pink, native of India.

Beg. semperflorens Link & Otto

Erect, branched, glabrous or sparsely hairy; flowers pinkish white; from Brazil.

37. DILLENIACEAE

Key to the genera

- A. Woody climber; filaments broadened; follicles dehiscent; seeds arillate, the aril fimbriate *Tetracera*
- A. Trees or shrubs, erect; filaments not broadened.
 - B. Follicles dehiscent; seeds arillate, the arils fleshy *Wormia*
 - B. Follicles enclosed in the thickened pulpy sepals, indehiscent; seeds not arillate *Dillenia*

Dillenia aurea Sm.

Sometimes cultivated as a roadside tree; wild in northern Malaya.

Dil. grandifolia Wall. ex Hook. f. et Thoms.

Large tree, with buttresses and stilt roots; leaves elliptic to obovate with a rounded or obtuse tip and a narrowed base, in sappling can reach 1 meter long; flowers without petals; in dense forests; Bukit Timah (*Corner 34906*), Garden's jungle; called *D. scortechinii* King or *D. exima* Miq. in Malayan literature.

Dil. indica Linn.

Flowers 15–20 cm. across, the petals white; once wild near Reservoir and Bukit Panjang (*Ridley 3702*), now survived in cultivation.

Dil. reticulata King

Tall tree, with stilt roots and apetalous flowers; leaves elliptic to oblong, with a rounded or emarginate tip and a rounded base; sappling leaves 1 to 1.5 meter long; flowers with yellow petals; Bukit Timah, Gardens' Jungle. No specimens available.

Tetracera akara (Burm. f.) Merr.

Tall woody climber, in forests; Gardens' Jungle, Changi, Mandai Road (*Sinclair 40025Q*; called *T. sylvestris* Ridl. in Ridley's Flora.

Tetr. arborescens Jack.

Climber, not rare, found along Cluny Road and at Kranji (*Ridley 262*); also called *T. euryandra* Vah. or *T. lucida* Wall.

Tetr. fagifolia Bl.

In woods, Gardens' Jungle (*Ridley 6381*), Seletar, not common; also called *T. sumatrana* Miq.

Tetr. indica (Christm & Panz.) Merr.

Climbing and scrambling shrub, common in open country, often forming thickets; flowers pinkish (Singapore, *Hullett* 489). Formerly called *T. assa* DC. in Malayan literature.

Tetr. macrophylla Wall. ex Hook. f. & Thom.

Climber, common in woods; Tanglin, Changi (*Hullett* s.n. in 1893), often remaining sterile.

Wormia excelsa Jack.

Tall tree; Bukit Timah, Gardens' Jungle, Seletar (*Nur* 6382); alternative name is *Dillenia excelsa* (Jack) Gilg, should one consider *Dillenia* and *Wormia* being congeneric.

Wormia pulchella Jack.

Small bushy tree; leaves deep green; flowers pale yellow; Tanglin, Bukit Timah, Mandai Road (*Sinclair* 40270), in wet places. Alternative name is *Dillenia pulchella* (Jack) Gilg.

Wormia suffruticosa Griff.

Large shrub; leaves with a folded winged petiole; flowers bright yellow; fruits when ripe split open like a star; common all over the Island (*Ridley* 3966). Alternative name is *Dillenia suffruticosa* (Griff.) Mart. Vern. *Simpoh Ayer*.

38. ACTINIDIACEAE

Saurauia tristyla DC.

Tree; leaves oblanceolate; flowers unisexual, pinkish, 2–3 in cymes, axillary or on small tubercles on the branches; fruit globose; Bukit Timah, *Ridley* 10440. The correct name is *S. pentaphylla* (Jack) Hoogl. ined. to be validated in volume 30 of this Bulletin.

39. HYPERICACEAE

Key to the genera

- | | |
|---|-------------------|
| A. Trees; flowers white to pink; seeds winged | <i>Cratoxylum</i> |
| A. Herbs; flowers yellow; seeds not winged | <i>Hypericum</i> |

Cratoxylum arborescens Bl.

Large tree; flowers deep red, in panicles; capsule purplish, with many seeds; Bukit Timah, Gardens' Jungle, Seletar (*Sinclair* 40008), in woods. Vern. *Geronggang*.

Crat. formosum (Jack) Dyer.

Tree; flowers rose-pink; in open country; Bukit Timah (*Whitmore* 78), Bukit Mandai, Chua Chu Kang. Vern. *Derum*.

Crat. cochinchinense Bl.

Tree; bark red, peeling off in strips or angular pieces; flowers pink to dark red; Bukit Timah, Bukit Mandai (*Nur 358a*), Changi, Chan Chu Kang, in woods. As *Crat. polyanthum* Korth. in Ridley's Flora. Vern. *Derum selunchor*, 黃牛木。

Hypericum japonicum Thunb. ex Murray

Tiny herb with yellow flowers, formerly found in pepper plantations at Bukit Mandai and Chua Chu Kang (*Mat s.n.* in 1894), now probably extinct.

40. GUTTIFERAE

Key to the genera

- A. Ovary 1-2-chambered; flowers bisexual.
 - B. Ovary 1-chambered; leaves with numerous parallel side veins **Calophyllum*
 - B. Ovary 1-2-chambered, with 1 or 2 ovules in each chamber *Mesua*
- A. Ovary 4-5 (-12)-chambered.
 - C. Flowers unisexual, dioecious; petiole-base clasping the twig *Garcinia*
 - C. Flowers polygamous; petiole-base not clasping the twig *Mammea*

Calophyllum austrocoriaceum Whitmore

Gardens' Jungle (*SFN 39452*), MacRitchie Reservoir.

Cal. biflorum Henders. & Wyatt-Smith.

Sungei Hanto, opposite Pulau Serimbun (*SFN 39532*).

Cal. costulatum H. & Wyatt-Smith.

Bukit Timah (no specimens available).

Cal. ferrugineum Ridl.

Common; Bukit Timah, Changi, Tanjong Gul (*Ridley 1959*).

Cal. incrassatum Henders. & Wyatt-Smith.

In lowland forest; Bukit Timah, Mandai, Sungei Morai (*Ridley 5071*).

Cal. inophyllum L.

Tree; leaves with numerous fine, parallel side veins; flowers white, in raceme-like inflorescence; fruit like a small pingpong ball, waxy green; common on the sea-shores, often planted in gardens, several parts of the plant are used in native medicine; Bajau (*Ridley s.n.*), Pulau Seletar, P. Ubin. Vern. *Penaga Laut*, 瓊崖海棠樹。

Cal. macrocarpum Hook. f.

Rare, one old collection from Changi (*Goodenough s.n.*).

'Cal. molle King'

Once collected in swamp forest at Mandai (*SFN 37715*), but not an exact match; to be referred to a taxon related to *C. pisiferum* Pl. & Tr.

Cal. pulcherrimum Wall. ex Choisy

Common; Gardens' jungle, Changi (*Ridley 4636*), Kranji, Bukit Mandai, Bukit Timah.

*Grateful acknowledgement is made to Dr. Peter F. Stevens for additional information on the genus *Calophyllum* incorporated in this script.

'Cal. retusum Wall. ex Choisy'

Not common; Nee Soon, Jurong (*Corner* s.n. in 1932). Superfluous name for *Cal. burmannii* Wight, to be renamed as *Cal. sundaicum* P.F.S. ined.

Cal. rigidum Miq. (= *Cal. kunstleri* King)

Rare; Bukit Mandai (*Ridley* 1955), Jurong.

Cal. rubiginosum Hend. & Wyatt-Sm.

Easily confused with *Cal. wallichianum*, but differs from the latter by its pale yellow twigs with rusty tomentum; Bukit Timah (*Ridley* 6196), Chua Chu Kang.

Cal. saigonense Pierre (= *Cal. curtisii* King)

Once collected at Gardens' jungle (*SFN* 39434).

Cal. soulattri Burm.

Gardens' jungle, Bukit Timah, Seletar; formerly called *Cal. spectabile* Willd. *Ridley's* Flora. Vern. *Bintangor Bunut*.

Cal. tetrapterum Miq. (= *Cal. floribundum* Hook. f.)

Common, variable; Water Catchment Area, Gardens' jungle (*Ridley* 6935), Bukit Timah.

Cal. teysmannii Miq. (= *Cal. inophylloide* King var. *singaporense* H. & W.-Sm.)

Rare; Changi, Gardens' jungle (*Ridley* 6941).

Cal. wallichianum Planch. et Tr.

Leaves coriaceous, oblong; petiole long, dark red; Bukit Timah (*Ridley* 6333), Chua Chu Kang. Vern. *Bintangor Merah*.

Garcinia atroviridis Griff. ex T. Anders.

Young leaves light red; flowers red, large; fruit orange yellow, 12–16-ribbed. Vern. *Asam Gelugor*.

Gar. bancana Miq.

Along tidal rivers; Kranji, Seletar (*Ridley* s.n. in 1893), Changi.

Gar. dulcis (Roxb.) Kurz

Planted in gardens and villages; fruit round, compressed, light yellow. Vern. *Mundu*.

Gar. eugenifolia Wall. ex T. Anders.

Tree; flowers white, sweet; in woods; Chan Chu Kang, Changi, Seletar (*Mohd Shah* 2367), Tanjong Gul, Pulau Ubin.

Gar. forbesii King

Small tree; flowers cream or pink; fruit small, apple-like, red, edible; Gardens' Jungle, Bukit Mandai (*Ridley* 3585a), Chua Chu Kang.

Gar. griffithii T. Anders.

MacRitchie Reservoir (*Burkill* 3202), Bukit Timah.

Gar. hombroniana Pierre

Flowers cream coloured; like the mangosteen but the fruit smaller; along sea shores, Chan Chu Kang, Changi (*Ridley* s.n. in 1890), Blakang Mati, Pulau Ubin.

Gar. mangostana Linn.

The mangosteen is a common fruit tree, its origin unknown, but it may have been brought into cultivation in S.E. Asia. It is likely that the mangosteen fruits are developed parthenocarpically. Vern. *Manggis*, 山竹, 莽吉柿。

Gar. nervosa Miq.

Shrubby, stem and branches 4-ridged and narrowly winged. Very rare; found on Serangoon Road and Pulau Ubin. Recently found in MacRitchie (*Sinclair* 10764).

Gar. nigrolineata Planch. ex T. Anders.

Tree; flowers small, yellow; fruit small, globose, edible; in woods and open country, Changi (*Ridley* 3611a), Sungei Morai.

Gar. parvifolia Miq.

In lowland and secondary forests; Gardens' jungle, Water Catchment Area (*Sinclair*, 39657).

Gar. rostrata (Hassk.) Miq.

Near *Gar. eugenifolia*, possibly not distinct (fide Whitmore); Bukit Mandai (*Ridley* 5824).

Mammea americana L.

The mammee apply, native of S. America, is occasionally cultivated.

Mesua ferrea L.

Medium-sized tree; wood hard, heavy and durable – Ironwood Tree. Native of Malaya. Vern. *Penaga*.

41. THEACEAE

Key to the genera

- A. Leaves alternate, distichously arranged in two rows on one plane.
 - B. Flowers minute (less than 0.5 cm across), unisexual, several in axillary clusters *Eurya*
 - B. Flowers larger (about 1 cm across), bisexual, singly or 2-3 in leaf-axils *Adinandra*
- A. Leaves alternate, spirally arranged on branches.
 - B. Leaves sessile; petals twisted; fruit a capsule, dehiscing from base by 5 thin, leathery valves *Ploiarium*
 - B. Leaves petiolate; petals imbricate.
 - C. Fruit dehiscent, dehiscing from top by 5 thick woody valves; seeds winged *Gordonia*
 - C. Fruit indehiscent; seeds not winged.
 - D. Fruit drupe-like (or actually an inrehiscent capsule), with very thick hard wall; plants hairy *Pyrenaria*
 - D. Fruit a berry; with soft leathery wall; plants glabrous *Ternstroemia*

Adinandra acuminata Korth.

Like *Adin. dumosa*, but leaves thinner and more pointed, and petals fully open; in woods, Gardens' Jungle, Sembawang, Chan Chu Kang, Bukit Timah (*Ridley* 6771).

Adin. dumosa Jack

Small tree or shrub; flowers cream white, the petals always remaining closed; berry with a long pointed style, carried away and sucked by bats; open country, especially common in secondary jungles all over the Island (Bukit Timah, *Goodenough* 1953). Vern. *Tiup tiup*.

Adin. hullettii King

Branches and lower surfaces of leaves densely covered with brown hairs; not common, Gardens' jungle, Seletar (*Ridley* 3655), Bukit Timah.

Eurya acuminata DC.

Shrub or small tree; flowers minute (less than 0.5 cm across), yellowish, unisexual; several crowded in leaf axils; along forest margins, Nee Soon, Mandai (*Baker* s.n. in 1917).

Gordonia multinervis King

Like *Gord. singaporeana*, but petioles not winged to the base; in forests, relatively rare; Bukit Timah (*Corner* 36435).

Gord. penangensis Ridl.

Small tree; branches silky pubescent; rare, in forests of Water Catchment Area (*Ridley* 6284).

Gord. singaporeana Wall. ex Ridl.

Large tree; branches glabrous; flowers 3–4 cm across; fruit an elongate, 5-valved capsule; seeds with an oblique long wing; Bukit Timah, Jurong, Changi (*Ridley* 3812), also common in Water Catchment Area.

Pyrenaria acuminata Planch.

Small tree; branches hairy; flowers white; fruit green, 3.5–4 cm across, like a small apple, indehiscent; in thick woods, Bukit Timah (*Ngadiman* 34535), Tanglin, Water Catchment Area.

Ploiarium alternifolium (Vahl) Melchior

Shrub or rarely a tall, slender tree, glabrous; flowers pinkish white; fruit a 5-valved capsule, opening from base upwards; both in dry secondary jungles and in swampy areas, Tanglin, Jurong, Changi, Water Catchment Areas, Bukit Timah (*Goodenough* 1945). Called *Archytaea vahlii* Choisy in *Ridley's Flora*. Vern. *Riang Riang*.

Ternstroemia bancana Miq.

Small tree, glabrous; flowers yellowish, 2 cm across, unisexual; berry ovoid, few-seeded, about 3 cm long; in forests, Bukit Timah, Seletar (*Ridley* 1948).

Terns. wallichiana (Griff.) Engl.

Like the above species, but with slightly larger flowers (2.5 cm across) and bigger fruit (to 3.5 cm long), near the sea, Changi, Pulau Tekong (*Ridley* 1807).

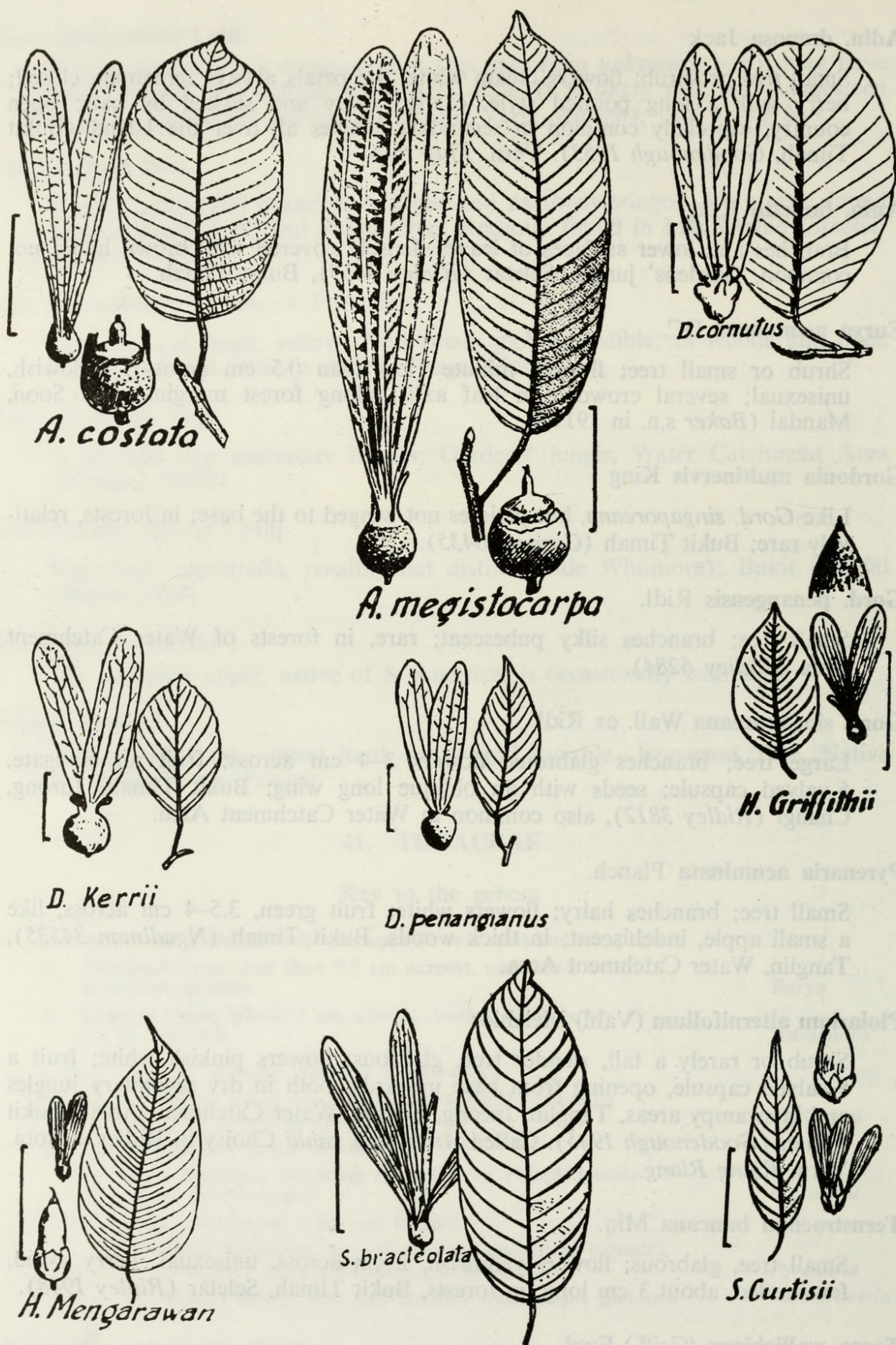


Figure 1. Leaves and fruits of Singaporean species of *Anisoptera* (A), *Dipterocarpus* (D), *Hopea* (H), and *Shorea* (S). Scale in 5 cm.
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42. DIPTEROCARPACEAE

Key to the genera

- A. Sepals in fruit woody and persistent, not developed into conspicuous wings *Vatica* (in part)
- A. Sepals in fruit enlarged and developed into wings.
 - B. 3 outer wings (or enlarged sepals) much larger than the 2 inner ones *Shorea*
 - B. 2 outer wings much larger than the 3 inner ones.
 - C. Wings with at least 7 longitudinal veins *Hopea*
 - C. Wings with 5 conspicuous veins *Vatica* (*maingayi*)
 - C. Wings with only 3 prominent veins.
 - D. Persistent calyx tube free from the nut *Dipterocarpus*
 - D. Persistent calyx-tube united with the nut *Anisoptera*

***Anisoptera costata* Korth.**

Large tree; leaves 12 x 6 cm, dull yellow and hairy on the veins on the lower surface; Garden's jungle; Bukit Timah (*Sinclair* 40623). Vern. *Mersawa Kesat*.

***Anis. megistocarpa* Sloot.**

Leaves slightly larger than above species (15 x 7 cm), coarsely hairy, dark reddish brown on the upper surface; Garden's jungle (*Ridley* 6684); Bukit Timah. Vern. *Mersawa Merah*.

***Balanocarpus heimii* King**

Ridley (in *Roy. Asiat. Soc. Str. Br.* 33: 28, 1900) suggested that the district name *Changi* was derived from *Chengal*, a vernacular name for this species, and postulated its occurrence in Singapore prior to 1850. According to *Symington*, this species is endemic to but widely distributed in the Malay Peninsula, and it occurs in every State except *Perlis* and *Malacca*. Its heavy and durable wood is well known. It is also the source of *damar penak*, one of the finest natural dammars from this part of the world. *Ridley's* postulation is highly plausible, although there is no specimen of this species from Singapore available.

***Dipterocarpus cornutus* Dyer**

Large tree; leaves large (25 x 15 cm), smooth, pale yellow, minutely tomentose beneath; about 20-nerved; common in regenerated forests; Bukit Timah, *Changi*, *Mandai* (*Ridley* 3753). Vern. *Keruing Gambang*.

***Dip. kerrii* King**

Leaves rather small (12 x 7 cm), shining, about 9-nerved, long-petioled; Bukit Timah, *Dalvey Road* (*Corner* 31429). Vern. *Keruing Gondol*.

***Dip. penangianus* Foxw.**

Leaves rather small (12.5 x 6 cm), drying dull grey-brown, about 10-12-nerved; fruit top-shaped, warty, the wings up to 15 cm long; Bukit Timah (*Ngadiman* 35569); according to *Dr. Ashton in sched.*, this plant should be called *Dipt. caudatus* Foxw.

Hopea griffithii Kurz

Large tree, with smooth bark; dried leaves 6.5 x 3.5 cm, dull, purple-brown, with midrib depressed on the upper surface; Bukit Timah (Henderson 35928), Garden's jungle. Vern. *Merawan Jantan*.

Hop. mengarawan

Large tree, fissured-barked, buttressed; leaves larger than those of above species (10 x 3.5 cm), drying yellowish brown; common; Bukit Timah (Kiah 36494), formerly also found in Chan Chu Kang. Vern. *Merawan Penak*.

Shorea bracteolata Dyer

Large tree; leaves elliptic-oblong, 12.5 x 6 cm, glabrous; petioles about 2 cm long; Dalvey Road (no specimen available). Vern. *Meranti Pa'ang*.

Shor. curtisii Dyer ex King

Crown light-coloured; leaves lanceolate, 10 x 3 cm, acuminate, glaucescent beneath; Bukit Timah (Symington 3478). Vern. *Seraya*.

Shor. gibbosa Brandis

Leaves ovate-lanceolate, 8 x 3 cm, glabrous; flowers pinkish; Garden's jungle (Ridley 6079). Vern. *Damar Hitam Gajah*.

Shor. gratissima Dyer

Leaves small (9 x 3.5 cm), ovate-lanceolate, smooth; flowers white; common; Garden's jungle, Kranji, Chan Chu Kang, Bukit Timah (Corner 34642). Vern. *Meranti Laut*.

Shor. leprosula Miq.

Crown yellowish brown; leaves elliptic, 12.5 x 5 cm, yellow-tomentose beneath; common; Garden's jungle, Bukit Timah (Ngadiman 35909). Vern. *Seraya*.

Shor. macroptera Dyer

Bole comparatively smooth; leaves leathery, oblong, 15 x 5 cm, variable; fruit wings auriculate; common; Garden's jungle (Burkill 1272), Chan Chu Kang. Vern. *Meranti*.

Shor. ovalis Bl.

Twigs hairy; leaves elliptic-oblong, 18 x 7 cm, scabrid; flowers white; rare; Garden's jungle (Sinclair 40664). Vern. *Meranti Kepong*.

Shor. parvifolia Dyer

Large tree, bark closely fissured; leaves small (9 x 4 cm), ovate-elliptic or oblong-lanceolate; Bukit Timah (Ngadiman 35795), Garden's jungle. Vern. *Meranti Sarang Punai*.

Shor. pauciflora King

Bole grayish brown, scaly; leaves ovate-oblong, 9 x 5.5 cm, acuminate, about 10-nerved, tertiary veins inconspicuous; flowers yellow; Garden's jungle, MacRitchie Reservoir (Sinclair 8917).

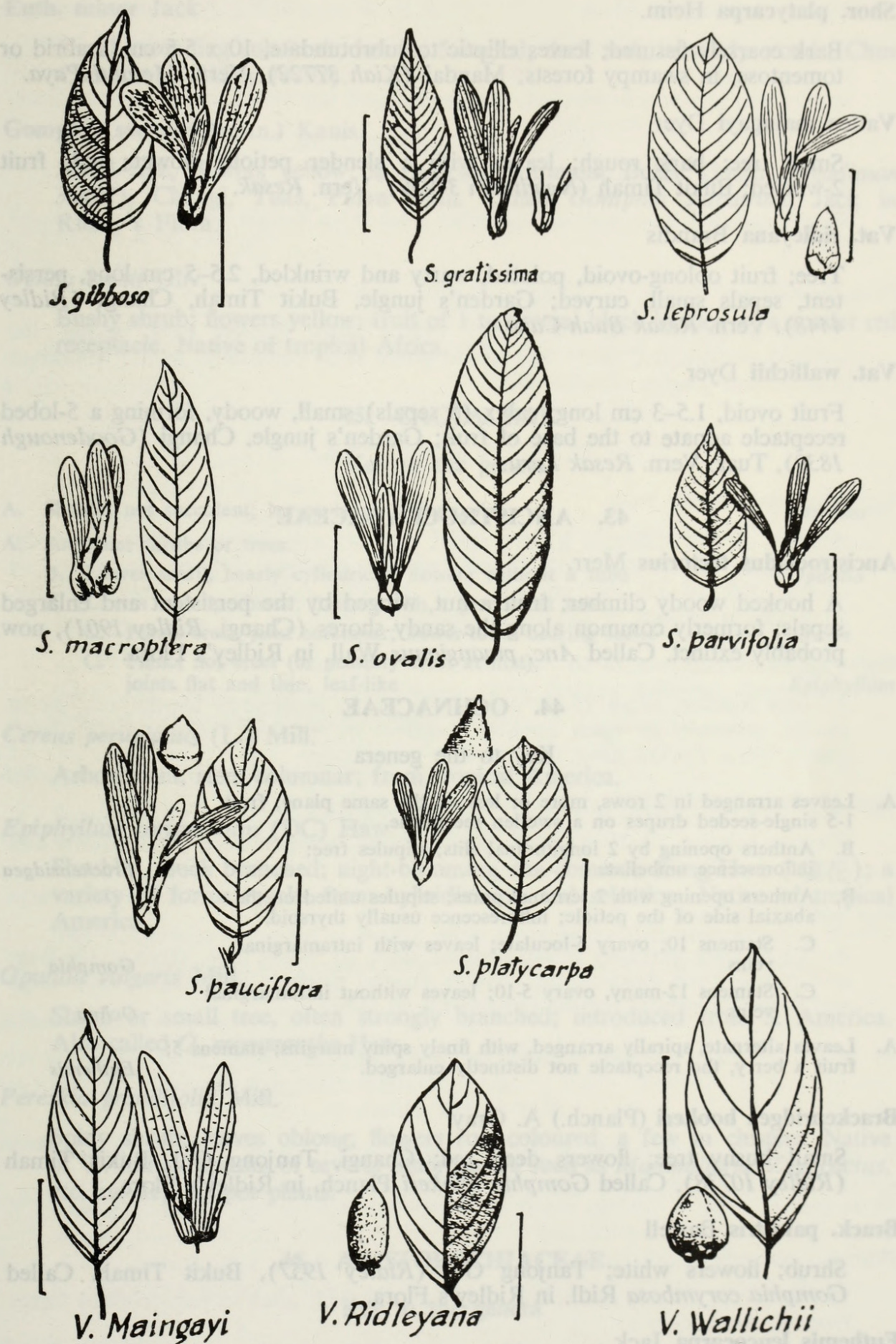


Figure 2. Leaves and fruits of Singaporean species of *Shorea* (S) and *Vatica* (V).
Scale in 5 cm. U.M.P. copyright reserved

Shor. platycarpa Heim.

Bark coarsely fissured; leaves elliptic to subrotundate, 10 x 5.5 cm, scabrid or tomentose, in swampy forests; Mandai (*Kiah* 37722). Vern. *Meranti Paya*.

Vatica maingayi Dyer

Small tree; bark rough; leaves with a slender petiole; flowers red; fruit 2-winged; Bukit Timah (*Ngadiman* 34959). Vern. *Resak*.

Vat. ridleyana Brandis

Tree; fruit oblong-ovoid, pointed, warty and wrinkled, 2.5–5 cm long, persistent, sepals small, curved; Garden's jungle, Bukit Timah, Changi (*Ridley* 4448). Vern. *Resak Buah Cana*.

Vat. wallichii Dyer

Fruit ovoid, 1.5–3 cm long; calyx (5 sepals) small, woody, forming a 5-lobed receptacle adnate to the base of fruit; Garden's jungle, Changi (*Goodenough* 1839), Tuas. Vern. *Resak Laru*.

43. ANCISTROCLADACEAE**Ancistrocladus tectorius** Merr.

A hooked woody climber; fruit a nut, winged by the persistent and enlarged sepals; formerly common along the sandy shores (*Changi, Ridley 1901*), now probably extinct. Called *Anc. pinangianus* Wall. in *Ridley's Flora*.

44. OCHNACEAE

Key to the genera

- A. Leaves arranged in 2 rows, more or less on the same plane; fruit 1-5 single-seeded drupes on a swollen receptacle.
 - B. Anthers opening by 2 longitudinal slits; stipules free; inflorescence umbellate *Brackenridgea*
 - B. Anthers opening with 2 terminal pores; stipules united on the abaxial side of the petiole; inflorescence usually thyrsoid.
 - C. Stamens 10; ovary 5-loculate; leaves with intramarginal veins *Gomphia*
 - C. Stamens 12-many, ovary 5-10; leaves without intramarginal veins *Ochna*
- A. Leaves alternate, spirally arranged, with finely spiny margins; stamens 5; fruit a berry, the receptacle not distinctly enlarged. *Euthemis*

Brackenridgea hookeri (Planch.) A. Gray

Small bushy tree; flowers deep red; Changi, Tanjong Gul, Bukit Timah (*Ridley 10738*). Called *Gomphia hookeri* Planch. in *Ridley's Flora*.

Brack. palustris Bartell

Shrub; flowers white; Tanjong Gul (*Ridley 1957*), Bukit Timah. Called *Gomphia corymbosa* Ridl. in *Ridley's Flora*.

Euthemis leucocarpa Jack

An under shrub; flowers white; berries rounded, white; in sandy woods, Kranji, Pasir Panjang (*Ridley 14156*), Changi.

Euth. minor Jack

Small ascending subshrub; berries 5-angled, dark red; in sandy woods, Chua Chu Kang (*Ridley 14191*).

Gomphia serrata(Gaertn.) Kanis

Small tree; flowers yellow, in panicles; common; Bukit Timah (*Ngadiman 36492*), Changi, Tuas, Pulau Ubin. Called *Gomphia sumatrana* Jack in *Ridley's Flora*.

Ochna kirkii Oliv.

Bushy shrub; flowers yellow; fruit of 1 to several black berries on a scarlet red receptacle. Native of tropical Africa.

45. CACTACEAE

Key to the genera

- A. Shrubs, not succulent; leaves large, oblong, flat *Pereskia*
- A. Succulent shrubs or trees.
 - B. Leaves small, nearly cylindrical; flowers without a tube *Opuntia*
 - B. Leaves usually absent; flowers with a prominent tube.
 - C. Plants erect, joint columnar; flower-tubes bearing scales *Cereus*
 - C. Plants not erect (or possibly erect at first); joints flat and thin, leaf-like *Epiphyllum*

***Cereus peruvianus* (L.) Mill.**

Arborescent, stem columnar; from tropical America.

***Epiphyllum oxypetalum* (DC) Haw.**

Shrubby, much branched; night-blooming, the common Keng Hwa (瓊花); a variety of forms results from hybridization and selection. Native of tropical America.

***Opuntia vulgaris* Mill.**

Shrub or small tree, often strongly branched; introduced from S. America. Also called *O. monacantha* Haw.

***Pereskia grandifolia* Mill.**

Spiny shrub; leaves oblong; flowers rose-coloured, a few in clusters. Native of W. Indies. Species of several other genera such as *Mammillaria*, *Zygocactus*, etc. are kept as pot plants.

46. ARISTOLOCHIACEAE

Key to the genera

- A. Climbers; perianth spathulate tubular, zygomorphic; capsule globose *Aristolochia*
- A. Erect or creeping shrubs; perianth bell-shaped, 3-lobed, \pm regular; capsule elongate *Thottea*

Aristolochia unguifolia Mast.

A climber with large trilobed leaves and purple flowers; once found by Ridley in wet grassland at Jurong (Ridley 5836). Probably extinct. Several other species are however cultivated, the commonest one being *Arist. tagala* Cham. which is introduced from Malaya.

Thottea dependens Klotzsch.

Shrub; perianth-tube globose; collected once from Sungei Morai (Goodenough 5570).

Thot. grandiflora Rottb.

A low shrub, covered with rough brown hairs; flowers dark purple, the perianth bell-shaped, hairy with raised green veins externally; locally abundant in Reservoir jungles (Burkill 3162).

47. NEPENTHACEAE**Nepenthes ampullaria** Jack

Pitchers of two different kinds: aerial pitchers cup-shaped larger, to 25 cm long, green or spotted with purple; ground pitchers globose, in groups or whorls; lids of all the pitchers very narrow; common in open country, especially in borders of woods (Symington 22984).

Nep. gracilis Korth.

Pitchers tubular, small (9–10 cm long), green, sometimes tinged red; leaves sessile; common in open country, borders of belukar; Seletar (Md. Shah 2400). Vern. *Peviok Kera*, 豬籠草,

Nep. phyllamphora Willd.

Pitchers tubular, 12–15 cm long, green; leaves long-petiolate; rare, Changi and Jurong (no specimens available).

Nep. rafflesiana Jack

Aerial pitchers narrowly funnel-shaped, large, to 30 cm long, green at the base and purplish-red towards the mouth; ground pitchers urn-shaped; lids large and broad; common; Jurong (Ridley s.n. in 1889).

48. CARYOPHYLLACEAE

Key to the genera

- | | |
|---|-----------------|
| A. Erect herb; leaves lanceolate or oblong; flowers solitary, showy | <i>Dianthus</i> |
| A. Slender trailing herb; leaves kidney-shaped; flowers very small in cymes | <i>Drymaria</i> |

Dianthus chinensis L.

Annual herb; flowers red or red-and-white banded, often in polypetalous form: from E. Asia, 石竹。

Dianthus caryophyllus L.

Cut flowers of the carnation are sold by florists, imported.

Drymaria cordata (L.) Willd. ex R. & S.

Tiny trailing herb, from temperate regions to tropical mountains, only recently collected from Chua Chu Kang (*Sinclair 38589*).

49. AMARANTHACEAE

Key to the genera

- A. Leaves spirally arranged.
 - B. Fruit 1-seeded.
 - C. Flowers bisexual, in axillary, head-like clusters *Allmania*
 - C. Flowers unisexual, in spikes or panicles *Amaranthus*
 - B. Fruit many-seeded; flowers in spikes, thick combs, or loose panicles *Celosia*
- A. Leaves opposite.
 - D. Lower flowers accompanied by fascicled hooks; inflorescence spike-like *Cythula*
 - D. Flowers not accompanied by hooks.
 - E. Flowers in head-like clusters.
 - F. Heads small axillary *Alternanthera*
 - F. Heads large, terminal *Gomphrena*
 - E. Flowers in a large terminal, elongate spike *Achyranthes*

Achyranthes aspera L.

A tall herb, more or less woody below, erect or ascending; leaves opposite, thick and hairy; spikes stiff, elongate with flowers pointing downwards; in waste places or near villages (*Ridley 10632*).

Allmania nodiflora R. Br. ex Wight

Spreading herb; leaves long and narrow; flowers in round, nodding heads; in sandy places near the sea; Changi (*Md. Nur 29745*).

Alternanthera amoena (Lem) Voss

The Telanthera, a native of Brazil, with green or reddish branches and leaves, is often planted in bordering paths and flower beds and in fish tanks.

Alternanthera sessilis (L.) DC.

Creeping herb; leaves opposite; flowers in small globular, axillary heads; in waste ground (*Hullett 580*). Vern. *Keremak*.

Amaranthus lividus L.

Slightly creeping herb, without spines; leaves oblong or rhomboid, sometimes with a notched tip; flowers unisexual, in dense spikes; a weed, common in waste ground, Pulau Ubin (*Ridley 4690*); but often eaten as vegetable; as *Amar. blitum* Miq. (broader leaves with a notched tip) and *Amar. viridis* L. (narrower leaves with a pointed tip) in Malayan literature. Vern. *Bayam*.

Amar. spinosus L.

Erect spinous herb, much branched; a common weed in waste places. Jurong (*Ridley 8920*). Vern. *Bayam Duri*.

Amar. tricolor L.

The Chinese spinach (莧菜) has two forms: green-leafed and variegated-leafed (variously known as *Amar. caudatus* L. or *Amar. paniculatus* L.). They are cultivated either as a pot-herb or as an ornamental. Vern. *Bayam*.

Celosia argentea L.

Erect herb; leaves spirally arranged; flowers in dense, elonged racemes; a pantropical weed occasionally found in waste places; Mt. Pleasant (*Hullett 154*); two commonly cultivated forms which originated from this wild species are: (1) var. *plumosa*, having a large paniculate inflorescence with many plummy slender side branches and (2) var. *cristata*, having heavy headed, convolute combs. (Cockscomb, 雞冠花).

Cythula prostrata Bl.

Creeping and ascending herb; leaves opposite; spikes long; flowers 1-3 in a cluster, the peripheral flowers sterile, with many stiff, hooked hairs on the perianth; in waste places (*Hullett 379*). Vern. *Nyarang*.

Gomphrena globosa L.

Herb; leaves opposite; flowers in a terminal globular head ("Bachelor's button"); native of tropical America, often cultivated as an ornamental.

50. CHENOPODIACEAE*Spinacia oleracea* L.

The spinach (菠菜) is imported from the hill stations in Malaya; its leaves are served as vegetable. It is a native of West Asia. Another less common root vegetable, the sugar beet (*Beta vulgaris* L. 甜菜), also belonging to this family, is a native of S. Europe.

51. AIZOACEAE

Key to the genera

- | | |
|---|-----------------|
| A. Erect slender herb; flowers minute, in cymes | <i>Mollugo</i> |
| A. Prostrate succulent herb; flowers conspicuous solitary | <i>Sesuvium</i> |

Mollugo pentaphylla L.

Annual herb, glabrous; leaves 3-5 or more in a node; flowers small, yellowish or reddish; in sandy and exposed places; Changi (*Ridley* s.n. in 1893). Vern. *Sepit*, 粟米草。

Sesuvium portulacastrum L.

Prostrate or ascending herb or undershrub; flowers rose-pink with many stamens; on clay soil near the seashores; Changi (*Hullett 406*). Vern. *Gelang Laut*.

52. PHYTOLACACEAE*Rivina humilis* L.

Erect herb or subshrub; flowers pinkish, 4-merous, in racemes; berry bright red. Native of tropical America. Occasionally naturalized.

53. NYCTAGINACEAE

Key to the genera

- A. Herbaceous plants.
 - B. Flowers tiny, in cymes, bracts small *Boerhaavia*
 - B. Flowers showy, solitary; involucre bracts 5, green *Mirabilis*
- A. Woody plants.
 - C. Woody climbers; flowers bisexual, 3 in a simple cyme, subtended by 3 large coloured involucre bracts *Bougainvillea*
 - C. Tree or shrub; flowers unisexual and many in small cymes; bracts inconspicuous *Pisonia*

***Boerhaavia diffusa* L.**

A prostrate herb, finely branched; flowers very small, pinkish; sandy places near the seashore; Geylang (*Ridley 9131*).

***Bougainvillea glabra* Choisy**

Leaves smooth; stem less thorny; flowering bracts rose-red; native of Brazil.

***Boug. spectabilis* Willd.**

Leaves hairy; stem thorny; flowering bracts purplish red; native of Brazil. In addition to this two, several horticultural varieties and hybrids are found in gardens. 九重葛。

***Mirabilis jalapa* L.**

Herb; flowers white, red, pink or yellow, unfolding in the afternoon (*Four O'clock*); native of tropical America. Vern. *Bunga Pukul Empat*. 晚飯花。

***Pisonia grandis* R. Br.**

Shrub or small tree; sometimes cultivated near the sea for its bright yellowish-green leaves which are also edible, called the *Lettuce tree*; native of Andamans and elsewhere.

54. BASELLACEAE

***Basella alba* L.**

Twining herb, rhizomatous; leaves and branches succulent, green or purple (as *Bas. rubra* L. and treated a separate species by some authors); cultivated and served as a vegetable; native to S. E. Asia and Africa. Vern. *Remayong*, *Gendola*, 落葵。

55. PORTULACACEAE

Key to the genera

- A. Flowers solitary or in clusters; ovary half-inferior; capsule opening by a lid *Portulaca*
- A. Flowers in racemes or panicles; ovary superior; capsule opening by 3 valves *Talinum*

Portulaca oleracea L.

Succulent herb, prostrate on open sandy places; flowers with 5 bright yellow petals; common; in waste places, Changi (Ridley s.n. in 1894); sometimes served as a vegetable. Vern. *Segan*, 馬齒莧。

Port. quadifida L.

A smaller plant; stem with tufts of white hairs on the joints; flowers with 4 yellow petals; in waste places, Changi (Ridley 9566).

Port. grandiflora Hook.

A native of Brazil, with large red, often polypetalous flowers, sometimes planted in gardens.

Talinum paniculatum (Jacq.) Gaertn.

Perennial herb; stem cylindrical; flowers in a large panicle, opening in the afternoon; native of tropical America, cultivated as a vegetable or an ornamental. Also called *Tal. patens* Usteri.

Tal. triangulare (Jacq.) Willd.

Stem 3-angulate; flowers in racemes, opening in the morning. Native of W. Indies.

56. POLYGONACEAE**Key to the genera**

A. Twining herbs by the aid of tendrils

Antigonon

A. Erect herbs without tendrils

Polygonum

Antigonon leptopus Hook. & Arn.

Perennial herb, climbing by tendrils arising from the end of inflorescences; flowers pink or rarely white; native of Mexico, misleadingly called "Hololulu Creeper".

Polygonum barbatum L.

Herb, to 1 m tall; flowers small, white, in spikes; common along ditches; Gelang, Chang Chu Kang, Holland Road (Ridley 3756). Vern. *Tebok Seludang*, 毛蓼。

Poly. chinensis L.

A herb found in E. and S. E. Asia and also on high mountains in Malaya; planted as an ornamental or medicinal plant.

Poly. hydropiper L.

A cosmopolitan herb, also found in northern Malaya. Its young leaves and shoots, peppery in taste, are sometimes used as a flavouring.



Keng, Hsuan. 1976. "Annotated list of seed plants of Singapore (IV)." *The Gardens' bulletin, Singapore* 28(2), 237–258.

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