

## The Gesneraceae of the Malay Peninsula.

By H. N. RIDLEY.

There is perhaps no order of plants in the Malay Peninsula which contains so large a percentage of ornamental flowering species, as that of the Gesneraceæ or Cyrtandreae. Few indeed are those which either in foliage or more often in flower do not strike the eye of a botanist in our hill woods. Unfortunately a considerable number are by no means easy of cultivation and among these the most difficult are the small half-shrubby kinds, *Didymocarpi* and *Didissandras* which possess the most beautiful flowers of every colour from white to red, blue and yellow. A bank covered with a mass of *Didymocarpus quinquevulnera* as it may be seen along the Tras route or in the Pahang woods is worth going a long way to see.

The number of species recorded in this paper as occurring in the Malay Peninsula is 121 and it is probable that at least as many more remain uncollected, as several of the genera are remarkably local, so that each mountain ridge may be expected to produce one or more species. In the Flora of British India the number of species recorded from the Malay Peninsula was 22, but at the time that that part of the work was published (1884) almost all that were known were from Penang, Singapore and Malacca. Since then I have myself collected a large number, in Perak, Pahang, Selangor and elsewhere. Mr. Curtis obtained a very large series of new species from the limestone Islands of Lankawi, a very rich district, and I have also seen the collections of Scortechini, Kunstler and Wray from the Perak Hills, loaned to me by Dr. Prain of the Calcutta Gardens. In 1895 I published in the Linnean Society's Journal a paper on *Cyrtandraceæ Malayenses* (vol. XXXII p. 497) containing a list of 72 species, all that were known at the time.



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### GENERA.

*Æschynanthus*, an epiphytic genus with plumed seeds easily drifted by the wind, is the most widely diffused genus in the surrounding islands. One Borneo-Siamese species occurs as far south as Lankawi, several occur in Sumatra and Borneo as well as the Peninsula, and the number of endemic species is small compared with other genera.

*Agalmyla* is a small genus of climbers, of which one species is abundant in the Perak hills, and Sumatra and Java. It has also plumed seeds.

*Didissandra* as laid down by Mr. Clarke comprised all *Didymocarpus* as defined by him which had four complete stamens instead of two. I have preferred to separate from *Didymocarpus* the plants with short-tubed flower, and very short stamens with a distinctly longer style. This principle excludes also from *Didissandra* several of Mr. Clarke's sections. Such plants as *D. ornata* of Borneo are more nearly allied to *Boea* and *Paraboea* than to *Didymocarpus*. *Didissandra* thus as far as regards the Malay Peninsula includes two sections, which might almost be made distinct genera: the section *Cyrtandroides* (Clarke) tall shrubby plants with distant leaves and flowers in the lower axils, two species; and the very distinct section *Speciosæ*, with 71 species of small shrublets with crowded leaves and large and showy blue, white or yellow flowers, a very distinct group, of which I have not seen any species even from Sumatra or Borneo. In some respects they approach the section *Heteroboea* of *Didymocarpus*, and one very charming white flowered plant *Didymocarpus venustus* possesses all the characteristics of this group of *Didissandra* except that it has but two stamens.

*Didymocarpus* even excluding the genera *Loxocarpus* and *Paraboea* contains a considerable variety of forms but it is very difficult at present to split the genus further. It includes all the long tubed plants with two filiform stamens and a simple stigma. Among the aberrant forms we find *D.*



*corchorifolia* a stout much branched woody shrub, with flowers of the form of a snapdragon (*Antirrhinum*) the upper and lower lips of the corolla being pressed together, and some species such as *D. pumila* quite dwarf and stemless with short flowers, but with the pistil and stamens of other species. *D. lilacina* from Pahang is also quite abnormal having very small flowers borne on a short peduncle adnate to the leaf petiole. This would perhaps be better made into a distinct genus; many of the other species however fall into natural groups, such as the section *Heteroboea*, shrublets with crowded rough leaves, and large trumpet-shaped flowers slender axillary peduncle. The plants of this section are almost confined to the Peninsula disappearing north of Penang, and less abundant in Borneo and Sumatra.

*Didymocarpi* seem more scanty in Borneo than in the Malay Peninsula, and the sections most abundant there are those that are rare here. A group of almost stemless little plants, lanceolate or oblanceolate sometimes peltate leaves and small violet or white flowers (§ *Kompsoboea* of Clarke excluding *D. Kompsoboea* a plant closely allied to *D. platypus*) is represented by *D. heterophylla*, *D. perdita* etc., in the Peninsula where they are characteristic of the low country or bases of the hills, and several species occur in the Natunas and Lingga Island. The lowland *Salicinae* with narrow crowded leaves sometimes deeply cut occur in Borneo as far as Labuk Bay and in Lingga. These two groups are absent from the hill forests of the interior above 1,000 feet elevation.

The species of this genus are as local in their distribution as those of *Didissandra*; of forty-four species only four have been met with outside the Peninsula and most of the endemic species are only at present known from single localities of small area.

*Chirita* is a genus also of somewhat heterogeneous nature, distinguished by its bifid style. The flowers are in many species of an azure blue, an unusual color in the order, and frequently have the mouth of the corolla



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tube bearded with yellow hairs. The headquarters of the genus is India and Southern China, but a number of species occur in Java and Sumatra, mostly in the limestone districts. Six species occur in the Peninsula, five of which are endemic and one gets to Siam.

*Loxocarpus*, a small genus referred to *Didymocarpus* as a section by Mr. Clarke, seems sufficiently distinct in its short tubed and short stamened flowers and horn-like capsule. All the species are closely allied. There are about 7, of which three endemic ones occur in the Malay Peninsula, the remainder in Borneo.

The next three genera comprise the plants with short tubed flowers, 2 very short stamens with longer style, and narrow cylindric fruit. *Paraboea* is merely distinguished from *Boea* by its capsule not twisting when splitting. The genus was amalgamated with *Didymocarpus* by Clarke, but should certainly be kept separate. In *P. cordata* and two allied species, the corolla is campanulate. The other species have hardly any tube to the corolla at all. This latter section is confined to limestone rocks, while *P. cordata* and its allies are found on granite or sandstone. The flowers are all small and white or at most tinted with pink. There are about 20 species known, some from Borneo and Siam. All the 12 Malay Peninsula species are endemic.

*Boea* resembles *Paraboea* except that the capsule is spirally twisted in dehiscing. It includes about 22 species, ranging India, Khasiya hills, through Burma, China, Formosa and Cochin China, the Malay islands to New Guinea, and the Philippines to Australia and New Ireland. All the species known to me inhabit limestone rocks, except *B. elegans*, which grows on the granite precipices of Kedah Peak. They are usually half-shrubby plants with silvery white leaves covered with felted silky hairs. There are two sections, one has usually tall leafy stems rising from a large rosette of leaves, with a woody stem below which grows in clefts of rocks. The flowers



are often very large quite flat, azure blue or rose color, and very beautiful. The other section has a slender peduncle rising from the tuft of leaves, as in *Paraboea*, and the leaves are often covered with red or ochre wool beneath, the flowers are smaller often quite small, white rose or lilac. All the species recorded from the Peninsula, 9 in number, are endemic.

*Phylloboea* differs only from *Boea* in the calyx being trifid instead of five lobed. Two species are known, one from Burma and the endemic species of the Lankawi islands. The latter has rather weak leafy stems, with silvery leaves like those of *Boea*, and purple blue flowers.

*Boeica* is a small genus of five species differing from *Paraboea* only in having four complete stamens. Four of the species which are half shrubby plants with much branched cymes on a long slender peduncle, are found in India and Burma. The only one from our region is a very small plant with a short peduncle bearing 2 or 3 pink flowers which occurs in the Lankawi islands.

In the remaining genera of the order the fruit is not a long slender beaked capsule but oblong, or almost globose, or a pyxis.

*Orchadocarpa* is a monotypic genus, containing a single species, a dwarf plant with a lax cyme of lilac flowers, the sepals free to the base, longer than the small oblong hairy capsule. It seems most nearly allied to *Loxonia* a native of Java and Sumatra.

*Rhyncoglossum* is a weak erect almost glabrous herb with a raceme of blue flowers. Two species are known, one from the Philippines, the other occurring in India and Burma and through all the Malay islands to the Philippines. It seems to be very common throughout this region but is rare in the Peninsula.

*Epithema* is a small genus of soft limestone rock herbs with a tuft of very small blue or white flowers in a head, and a



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pyxis-like capsule, opening by a cap. The species are very closely allied and perhaps might all be classed as one somewhat variable one, except a single African species. The others extend over all the islands and into India, and our single species occurs wherever there are limestone rocks.

*Monophyllaea* is also a limestone rock genus remarkable for possessing a single often very large leaf, and a scorpioid cyme or panicle of very small white flowers. There are 9 species known ranging from Southern Siam to Sumatra, Borneo and Java. Two species occur in the Peninsula, one also in Java and Sumatra, and the other endemic.

*Stauroanthera* is a small genus of 3 species of soft herbs with blue or violet flowers. Two species occur in the Peninsula and also in Burma and Assam, the third species in the genus is Javanese.

*Rhynchothecum* is a genus of 9 species of which 6 are Indian and Burmese, two occur in Java one of which is not rare in the hills of the Peninsula. It is a small shrub with panicles of small cream white flowers.

*Cyrtandromæa* are shrubby plants of rather coarse habit occurring on banks in woods. They have white flowers protruding from a red calyx, rather showy. Nine species are recorded from Tenasserim and the Nicobar islands to Sumatra and Java. Three species occur in the Peninsula one of which is found also in Sumatra.

*Cyrtandra* is a large genus of 170 species occurring from the Sandwich islands through the Malay islands into the Peninsula as far north as Penang. Abundant in the Polynesian and Malay islands, they are scanty in the Peninsula where we have only 7 kinds of which four are endemic. The other three occur in Sumatra also. They are shrubby plants with heads of yellow white or red flowers from the axils of the lower leaves. The fruits are sausage shaped corky berries, with minute seeds.



They inhabit dense forests often forming large patches on the ground. A few are however epiphytic.

#### Summary of Distribution.

There are at present known 121 species of the order in the Peninsula, belonging to 18 general. Of these 95 are endemic, 7 occur also in Burma and Siam, 17 occur also in Sumatra and 9 in Borneo, 5 only in Java, only a single species occurs in India beyond Burma, and only 4 in the islands further east than Java.

**Habitats.** The greater number of species are hill plants growing on rocks or banks at an altitude of from 1 to 6000 feet elevation. The species occurring in the low-lying country are few, one or two species of *Didymocarpus* chiefly of the *Heterobocea* section and some *Cyrtandras* and *Stauranthera*. Besides which are several of the epiphytic *Aeschynanthi*. All these lowland plants disappear as one ascends the hills and are replaced by a different series. The limestone rocks are very prolific in species and several genera are quite peculiar to them. Such are *Boea*, *Monophyllæa*, *Epithema*, *Phylloboea*.



Genus.		Distribution.				No of Species.
Aeschynanthus	...	Indo-Malaya, Siam, Hongkong	...			70
Agalmyla	...	Malaya	...	...	...	3
Didissandra	...	„	...	...	...	20
Didymocarpus	...	Indo-Malaya	...	...	...	100
Chirita	...	Indo-Malaya, China	...	...	...	50
Loxocarpus	..	Malay Peninsula and Borneo	...			7
Paraboea	...	Siam, Malay Peninsula, Borneo	...			20
Boea	...	India, Siam, Malaya, China	...			22
Phylloboea	...	Siam	...	...	...	2
Boeica	...	Burma, Malay Peninsula	...			5
Orchadocarpa	...	Endemic	...	...	...	1
Rhynchoglossum	...	Tenasserim to Malay Islands	...			2
Epithema	...	Trop. Africa, India, Malaya	...			6
Monophyllaea	...	Siam, Malay Islands	...	...	...	9
Stauroanthera	...	Assam to Java	...	...	...	3
Rhynchotecom	...	India to Philippines	...	...	...	9
Cyrtandromœa,	...	Tenasserim, Nicobars, and Islands				9
Cyrtandra	...	Malay Peninsula and Islands to Polynesia	...	...	...	170



No. of Mal. Pen. Species.	Endemic.	Burmah and Siam	Sumatra.	Borneo	Java-	Other Islands.
11	3	1	5	5	2	1
1	...	...	1	...	1	...
13	13	..	..	...	...	...
44	40	...	3	2	...	1 Lingga,
6	5	1	...	...	...	...
3	3	...	...	...	...	...
12	12	...	...	...	...	...
9	9	...	...	...	...	...
1	1	...	..	...	...	..
1	1	...	...	...	...	...
1	1	..	...	...	...	...
1	...	1	1	...	1	Amboina Timor Philip- pines.
1	...	...	1	1	1	...
2	1	..	1	...	1	...
2	...	2	...	...	...	...
1	...	1	1	...	1	...
3	2	..	1	...	...	...
7	4	1	3	1	1	1



## GESNERACEÆ.

Herbs or shrubs, usually pubescent, leaves opposite or apparently alternate, one of each pair being much reduced, simple entire or lobed. Inflorescence axillary, cymose or racemose or paniced, bracts small or large, sepals 5 often connate, corolla tubular or campanulate, more or less distinctly bilabiate, 5 lobed, lobes oblong or rounded. Stamens 4 or 2 rudimentary or absent, didynamous when four, filaments linear or filiform, or short and thick anthers linear or oblong, or scutiform connivent in pairs, 2 celled, cells splitting on the inner face. Disc cylindric or annular or absent, ovary cylindric or oblong. Style slender simple, stigma capitate, cordate or bilobed. Fruit a capsule linear cylindric fusiform, or oblong, splitting dorsally, seeds very numerous minute, plumed in epiphytic species, elliptic and not plumed in terrestrial species; or a fleshy berry (*Cyrtandra*.)

Species about 600, all tropical species with a few in sub-tropical climates.

## I. Fruit capsular cylindric.

## A. Seeds plumed.

Stamens 4 perfect

1 *Æschynanthus*.

Stamens 2 perfect

2 *Agalmyla*.

## B. Seeds not plumed.

Corolla infundibuliform, filaments long filiform.

Stamens 4

3 *Didissandra*

Stamens 2.

Stigma entire capitate obovate

4 *Didymocarpus*.

Stigma bifid

5 *Chirita*.

Corolla tube short campanulate.

Stamens 2.

Capsule conic

6 *Loxocarpus*.

Capsule cylindric not twisted

7 *Paraboea*.

Capsule cylindric twisted



- |               |                       |
|---------------|-----------------------|
| Calyx 5 lobed | 8 <i>Boea</i> .       |
| Calyx 3 lobed | 9 <i>Phylloboea</i> . |
| Stamens 4     | 10 <i>Boeica</i> .    |
- II. Capsule ovoid or ellipsoid.
- |  |                           |
|--|---------------------------|
| Stamens 2.   |                           |
| Sepals free to base                                  | 11 <i>Orchadocarpa</i> .  |
| Calyx campanulate, half lobed                        | 12 <i>Rhyncoglossum</i> . |
| Stamens 4.   |                           |
| Capsule circumsciss                                  | 13 <i>Epithema</i> .      |
| Capsule irregularly splitting                        |                           |
| Herbs with one leaf, Flowers minute                  | 14 <i>Monophyllæa</i> .   |
| Herb with several alternate leaves,<br>Flowers large | 15 <i>Stauranthera</i> .  |
| Shrubs leafy.  |                           |
| Calyx split to base, Flowers small                   | 16 <i>Rhynchotechum</i> . |
| Calyx tubular shortly lobed, Flowers<br>large        | 17 <i>Cyrtandromæa</i> .  |
- III. Fruit a sausage shaped berry.
- |           |                       |
|-----------|-----------------------|
| Stamens 2 | 18 <i>Cyrtandra</i> . |
|-----------|-----------------------|

*Æschynanthus*, Jack.

Epiphytes or rock plants, with slender creeping or erect half woody stems, leaves opposite, or whorled fleshy or coriaceous entire, ovate or lanceolate. Flowers large usually showy red yellow or green in axillary or terminal heads, pedicelled. Bracts ovate or lanceolate small. Calyx tubular or campanulate sub-entire or more or less lobed, or sepals free to the base. Corolla tubular curved, dilated above shortly 2 lipped, upper lip of 2 lobes erect lower of 3 lobes deflexed. Stamens 4 perfect didynamous usually exsert, anthers connivent in pairs, loculi oblong parallel, ovary superior, with a short cup-shaped disc at the base. Style as long as stamens or shorter. Stigma dilate, or peltate. Capsule long cylindric base usually empty and narrower, (gynophore) 2 valved



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loculicidally. Seeds innumerable minute oblong rugose with one or more hyaline scabrid hairs from near the hilum, and one from the apex.

Species 64 India, Malaya and Hongkong. Chiefly Malayan.

*Polytrichium*, seeds with a plume of hairs at one end, a single hair at the other.

Calyx tube very short	1	<i>Æ. Motleyi</i>
Sepals free to base	2	<i>Æ. marmorata</i>

*Haplotrichium*, seeds with a single hair at each end

Calyx deeply cut into lobes.		
Leaves in whorls	3	<i>Æ. speciosa</i>
Leaves in pairs.		
Corolla tube long 2-3 inches		
Sepals hairy	4	<i>Æ. longiflora</i>
Sepals glabrous	5	<i>Æ. Perakensis</i>
Corolla tube short thick under an inch	6	<i>Æ. Hildebrandtii</i>
Erect woody epiphytes		
Calyx tubular, lobes short,	7	<i>Æ. Rhododendron</i>
Calyx tubular lobes long acute	8	<i>Æ. longicalyx</i>
Creeping epiphytes, flowers axillary or terminal		
Leaves glabrous	9	<i>Æ. Lobbiana</i>
Leaves pubescent	10	<i>Æ. radicans</i>
Calyx cup-shaped small green	11	<i>Æ. Wallichii</i>
Calyx widely campanulate red	12	<i>Æ. obconica</i>

1. *Æ. Motleyi*, Clarke, Dec. Prodr. Ser. II. 5. p. 20. Epiphytic erect or branches pendulous about 12-18 inches long woody. Leaves opposite lanceolate or ovate lanceolate acute edges undulate or not, fleshy, light green above, pink beneath; 3-4 inches long,  $\frac{1}{2}$ -1 $\frac{1}{2}$  inch wide, petiole  $\frac{1}{4}$  inch long. Flowers solitary or few, axillary pendulous, pedicel  $\frac{1}{4}$  inch long or less. Calyx tube short  $\frac{1}{8}$  inch



lobes linear  $\frac{3}{4}$ -1 inch long glabrous blackish red. Corolla  $\frac{3}{4}$ -1 $\frac{1}{4}$  inch long dilated upwards, lobes rounded sparingly hairy, base of tube dilate, light green, tips of petals dark purple brown. Stamens brown, filaments glabrous. Ovary oblong with 5 glandular patches at the base. Style very short cylindric, stigma capitate. Capsule cylindric narrowed at the tip 9-13 inches long, seed  $\frac{1}{16}$  inch long oblong blunt pustular, plume  $\frac{1}{2}$  inch long.

Singapore Chanchu Kang (Ridley 6244), Kranji. Johor, Batu Pahat. Pahang, Pulau Manis, Pahang River, (Ridley 2151). Perak, Larut Hills, Kurau (Wray 245); Batang Padang (Wray 1475), Kinta at Goping (King's Coll. 4463).

Distrib. Borneo, Sumatra, Ceram.

2. *Æ. marmorata*, T. Moore, Pax and Fl. Gard. iii. (1852-1853) p. 56.

Epiphyte with erect woody stems about 12 inches tall. Leaves fleshy lanceolate acute narrowed at the base 2-3 inches long  $\frac{1}{2}$  inch wide, above light green with lighter variegations, beneath dull green with transverse purple bars, petiole  $\frac{1}{4}$  inch long. Flowers solitary or few together axillary, pedicels slender,  $\frac{1}{4}$  inch long, calyx tube very short (hardly any) lobes linear pubescent,  $\frac{3}{8}$  inch long corolla tube little more than an inch long dilated upwards, curved lobes rounded pubescent green with brown bars in the mouth. Stamens 1 $\frac{1}{2}$  inch long, filaments hairy. Style hairy, stigma bilobed. Capsule 6 inches long, rather thick. Seed oblong pustular, plume  $\frac{1}{2}$  inch long.

N. E. Brown, Gard. Chron. 18, 1882, p. 787, Clarke lc 38.

*Æ. Zebrina*, Van Houtte, Cat. 1851.

Penang Government Hill (Curtis 2142, 1700); Lankawi Islands, Gunong Raya (Curtis 2142).

Distrib. Mergui, Siam.



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3. *Æ. speciosa*, Hook fil. Bot. Mag. t. 4320.

Shrubby with erect rather stout stems 12 inches tall. Leaves fleshy lanceolate acute whorled 4 or 5 to a whorl, edges smooth or undulate 3-6 inches long  $\frac{3}{4}$ - $1\frac{3}{4}$  inch wide petiole  $\frac{1}{8}$ - $\frac{1}{4}$  inch long. Flowers subterminal clustered 10 or more together large and showy. Bracts lanceolate linear hairy  $\frac{1}{4}$  inch long. Pedicels slender  $\frac{1}{2}$  inch long. Calyx lobes linear free to base pubescent  $\frac{1}{2}$  inch long. Corolla tube 3 inches long narrow cylindric at base filled and curved at upper part, lobes rounded, all pubescent. Stamens  $\frac{1}{2}$  inch longer, filaments slender slightly pubescent. Style stout pubescent.

Paxt. Mag. 14, 199. Fl. des Serres Ser. 1 t. 267. Miq. Fl. Ind. Bat. 2718. Clarke lc p. 33.

Perak, Bruseh near Bidor (W. G. Napier); Selangor Bukit Hitam (Kelsall); Tomoh, (Machado).

Distrib. Java, Borneo.

4. *Æ. longiflora*, De C. Prodr. IX. p. 262.

Stem erect woody over a foot tall. Leaves in distant pairs opposite ovate acuminate shortly narrowed to base, fleshy 5 inches long by 2 inches wide, petiole  $\frac{1}{2}$  inch long. Flowers several terminal in a cluster, pedicels  $\frac{1}{2}$  inch long hairy. Calyx lobes narrowly linear hair  $\frac{1}{2}$  inch long, free nearly to the base. Corolla tube 3 inches long base cylindric above dilated scarlet hairy lobes short rounded. Stamens, filaments slender pubescent  $\frac{3}{4}$  inch longer than corolla. Style rather stout. Capsule cylindric narrow over 6 inches long.

Hassk. Cat. Hort. Bogor, Ed. 2. 154; Hook. Bot. Mag. t. 4328. Vriese Pl. Ind. Bat. Reinwdt. p. 9. Fl. des Serres Ser. 1. t. 288. Paxt. Mag. 15, p. 25. Miq. Fl. Ind Bat. 2 p. 717. Clarke lc p. 32.

*Lysionotus longiflora*, Bl. Bijdr. p. 766.

Pahang, and trees along the Tahan River rare, (Ridley 2167).

Distrib. Java.



5. *Æ. Perakensis*, Ridl. Journ. Linn. Soc. XXXII. 499.

Shrubby epiphyte, stems about 2 feet long. Leaves coriaceous lanceolate acuminate, 3-7 inches long, 1-2 inches wide, nerves inconspicuous. Flowers in a terminal fascicle, on pedicels nearly half an inch long. Bracts subulate  $\frac{1}{8}$  inch long. Sepals linear  $\frac{1}{4}$  inch long glabrous, free to the base. Corolla 2-2 $\frac{1}{2}$  inches long, tube narrow at the base dilate upwards curved nearly glabrous deep red lobes rounded. Stamens  $\frac{3}{4}$  inch longer filaments glabrous or sparingly pubescent. Fruit over a foot long. Seed narrowly oblong pustular with a single hair at each end.

Perak, Larut Hills 5500 feet (Ridley, Curtis 11447);  
Thaiping (King's Coll. 8314), (Kunstler 2337).

Endemic.

6. *Æ. Hildebrandtii* Hemsley, Bot. Mag. t. 7365. Shrubby epiphyte, with the branches about 6 inches long often rooting. Leaves in distant pairs ovate acute with a rounded base,  $\frac{1}{2}$  inch long and as wide; fleshy sessile glabrous. Flowers few terminal on the ends of the branches, pedicels  $\frac{1}{4}$  inch long. Calyx lobes free to base linear acuminate pubescent  $\frac{1}{6}$  inch long. Corolla tube thick curved, little dilated  $\frac{3}{4}$  inch long glabrous orange, lobes rounded short red pubescent, stamens shortly exsert hairy. Capsule 6 inches long, base narrowed sterile.

Pahang, K'luang Terbang, Gunong Benom, (Barnes).  
Perak, Larut Hills alt. 4500 (Ridley).

Distrib. Burma.

7. *Æ. Rhododendron*, Ridley, Journ. Linn. Soc. vol. XXXII. p. 500. An erect epiphytic shrub 1-2 feet tall stems woody stout. Leaves opposite in distant pairs fleshy-coriaceous ovate acuminate 2 inches long 1 $\frac{1}{2}$  inch wide, nerves inconspicuous, keel prominent. Flowers axillary and terminal several together, pedicels about  $\frac{1}{2}$  an inch long, calyx tubular an inch long deep purple with short acute lobes glabrous. Corolla 3 inches long, tube thick dilated above glabrous lobes rounded oblong  $\frac{1}{2}$  inch long pubes-



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cent, deep red with three black streaks on the lower lobes. Stamens very shortly exsert, little longer than the corolla, pubescent. Capsule cylindric rather stout 4 inches long, base narrowed into a gynophore. Seeds with a single hair at each end; brown scabred.

Perak Larut Hills from 2500-6000 feet elevation (Ridley, Curtis 1311) Scortechini 58. 388. Plus River (Wray) Scortechini 468 b; 58 (King's Coll. 2332).  
Endemic.

8. *Æ. longicalyx*, n.sp. Stems woody over a foot long. Leaves ovate acuminate thick fleshy 2-3 inches long  $1-1\frac{1}{2}$  inch wide glabrous, keel prominent, nerves obscure. Flowers terminal large, pedicels  $\frac{1}{2}$  inch long. Calyx elongate tubular glabrous  $1\frac{1}{4}$  inch long red, with five long thin lanceate acute points  $\frac{1}{2}$  inch long. Corolla 3 inches long red with dark blotches in the mouth, glabrous outside, mouth pubescent, lobes rounded. Stamens nearly as long as the corolla, pubescent; style stout pubescent, stigma capitate.

Selangor Senangko Pass, (A. M. Burnmurdoch); Perak (Scortechini 36 a) Gunong Batu Putih (Wray 1636).

Endemic and rare.

8. *Æ. Lobbiana* Hook. Bot. Mag. t 4260.

Climbing epiphyte with slender stems rooting along tree trunks, leaves lanceolate or ovate lanceolate  $1\frac{1}{2}$  2 inches long,  $\frac{1}{4}-\frac{3}{4}$  inch wide, glabrous shortly petioled, in pairs coriaceous. Flowers in axillary and terminal fascicles, 3 to 5 together, pedicels slender  $\frac{3}{4}$  inch long or less. Calyx tubular 1 inch long with very short lobes dark purple, thickly pubescent. Corolla tube 2 inches long thick curved lobes broad rounded, thickly pubescent deep red. Stamens barely exserted. Capsule 13 inches long cylindric on a gynophore. Seed very small oblong pustular with a hyaline mass at the hilum and a single long white hair at each end.



Fl. des Serres ser. 1, t. 246, Miq. Fl. Ind. Bat. 2,271  
Clarke l.c. 44.

Singapore, Sungei Tengeh (Ridley 2710) Kranji (2706);  
Johor, Batu Pahat (Ridley), Gunong Pulai (King), Jambu  
Larang (Fielding); Malacca (Maingay), Mt. Ophir, Ayer  
Panas (Ridley 1572); Selangor, Pahang Track; Pahang,  
Pekan (Ridley), Kuantan (Durnford); Perak, Larut  
Hills to 5000 feet alt. (Curtis); (Scortechini 36 a 330 b,)  
Gunong Batu Putih; Sungei Ryah (Scortechini 39);  
Caulfields Hill (Scortechini 352) (Wray 873); Penang,  
Government Hill (Curtis); Kedah, Gunong Jerai, (Ridley  
5513); Lankawi, Gunong Raya (Curtis 2503).

Distrib. Sumatra, Borneo and Java.

Common in mangrove swamps and forests. The leaves  
vary a good deal, those of mountain forms being fleshier  
smaller and more ovate than those of lower levels.

10. *Æ. radicans*, Jack, Trans. Linn. Soc. 14, p. 43: Calc. Journ.  
Nat. Hist. 4, p. 62.

Epiphytic or rupestral, stems creeping and rooting at  
the nodes, hairy, several feet long. Leaves ovate obtuse,  
base broad, shortly petioled hairy  $\frac{1}{2}$ - $1\frac{1}{4}$  inch long,  $\frac{1}{2}$ - $\frac{3}{4}$   
inch wide. Flowers axillary 1-2 together, pedicel  $\frac{1}{2}$  inch  
long. Calyx tubular hairy deep red, lobes obtuse or  
subacute  $\frac{3}{4}$  inch long. Corolla thick curved and hairy red,  
lobes subacute glabrescent within. Stamens hardly ex-  
sert, filaments glabrous. Capsule pubescent cylindric  
acuminate slender 10 inches long.

Spreng. Syst. 2,838; R. Br. Benn. Pl. Jav. Rar. p.  
115; Ann. Sc. Nat. 2, vol. 13, p. 160; De Vriese Pl. Ind.  
Bat. Review p. 10; Miq. Fl. Ind. Bat. 2,720; Clarke l.c.  
p. 41.

*Trichosporum radicans*, Nees, Flora 1825, p. 144, Bl.  
Bijdr. p. 764.

Singapore, Bukit Timah (Ridley 2704), Kranji; Pahang,  
Tahan river (Ridley); Malacca, (Griffith, Cuming 2387);  
Sungei Rambai (Derry t205), Sungei Buluh; Sungei Ujong



(Cantley); Perak, Bujong Malacca (Ridley), Sungei Rayah (Scortechini 37), Tringganu, Bundi (Rostado).

Var. *lanuginosa*, calyx "green," densely white woolly as is the outside of the corolla tube; Perak (Scortechini 330b).

Distrib. Borneo, Sumatra.

On rocks and trees. Native name "Akar Burunas." The leaves used for poulticing for headaches.

11. *Æ. Wallichii*, R. Br. Benn. Pl. Jav. Rar., p. 116, Ann. Sc. Nat. 2, XIII, p. 160.

Stems rather slender woody glabrous. Leaves lanceolate or elliptic, acuminate narrowed at the base into the petiole 3 inches long. 1-1 $\frac{1}{4}$  inch wide, glabrous, petiole  $\frac{1}{4}$  inch. Flowers few together subterminal pedicel  $\frac{1}{4}$  inch long slender. Calyx small cup shaped green  $\frac{1}{4}$  inch long, hairy almost entire. Corolla  $\frac{3}{4}$  inch long, tube stout lobes rather large rounded red, hairy. Stamens included, filaments glabrous. Capsule 8 inches long narrow terete. Clarke l.c. 48.

Singapore (Wallich 798 A) Bukit Mandai, Chan Chu Kang, Kranji (Ridley); Johor, Tanjong Kopang (Ridley), Ulu Batu Pahat (Kelsall); Malacca, Mt. Ophir (Lobb); Perak, Bujong Malacca (Curtis).

Distrib. Sumatra, Borneo.

12. *Æ. obconica*, Clarke l.c. 50.

Stems about a foot or more long woody glabrous. Leaves in pairs coriaceous glabrous elliptic, oblong or ovate acuminate narrowed at the base into the petiole 1 $\frac{1}{2}$ -3 inches  $\frac{3}{4}$ -1 $\frac{1}{2}$  inch wide, petiole  $\frac{1}{4}$  inch long. Flowers subterminal a few in a cluster, pedicels  $\frac{1}{4}$  inch long, hairy. Calyx obconic wide  $\frac{1}{4}$  inch long hairy, mouth entire deep red. Corolla  $\frac{1}{2}$  inch long tube thick and short, lobes rounded, hairy deep red, with yellowish white central bars. Stamens very shortly exsert, filaments nearly glabrous. Capsule 8 inches long cylindric. Hook. fil. Bot. Mag. t. 7336.



Selangor, Klang (Beccari), Kwala Lumpur. Perak, Batu Kuran (Curtis 2990), Larut Hills (Ridley 2905), Blanja (Wray 149), Bujong Malacca (Curtis 3335) (Scortechini 1861); Dindings, Pangkor (Curtis 1338), Relan Tujor (Wray 1772), Gunong Chabang (Scortechini 28), Ulu Bubong (King's Coll. 10179).

Endemic. On trees in dense forest.

## 2. *Agalmyla*, Bl.

Climbing shrubs with loose bark. Leaves alternate long petioled, herbaceous lanceolate or ovate lanceolate. Flowers showy scarlet in compact axillary cymes. Calyx deeply 5 cleft, lobes narrow acute. Corolla tubular scarlet, ventricose above, two-lipped, lobes ovate obtuse 5, stamens perfect 2, longexsert; filaments slender, anthers connivent, imperfect, stamens 2-3. Disc annular thick. Ovary linear, superior, glabrous. Style as long as stamens or longer. Stigma 2 lipped, capsule linear long 2 valved, loculicidally. Seeds sessile small oblong with a single hair at each end.

Species 3, Malayan.

*A. staminea*, Bl., Bijdr. p. 767. Stems very long twining hairy at length glabrous. Leaves elliptic oblong, 8 inches long 3-4 wide, acuminate at both ends, light-green, backs strigose, nerves 8-10 pairs; petiole 6-8 inches long hairy. Cymes sub-sessile, pedicels strigose, bracts lanceolate, calyx long, lobes lanceolate acute pubescent, free nearly to base. Corolla 1 inch long curved dilate, scarlet pubescent, lobes short rounded. Stamens exsert for 1 inch glabrous, anthers oblong. Style stout glabrous, or very short. Capsule 14 inches long slender.

R. Br. Benn. Pl. Jav. Rar., p. 116; Ann. Sc. Nat. 2, Vol. XIII, p. 161; Hook Ic. Pl. t. 733; De Vriese, Pl. Ind. Bat. Reinw. 10; Hook., Bot. Mag. t. 5747, Clarke l.c. 56.

*Justicia parasitica*, Lam. Ill. i, p. 42, *Cyrtandra staminea* Vahl 1, p. 105.



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Perak, Larut Hills (Curtis 2042) (Ridley 2916), Scortechini (King's Coll. 6170); Bujong Malacca (Ridley).

Distrib. Java, Sumatra (Forbes 1864). Climbing on trees.

### 3. *Didissandra*.

Shrublets or herbs with short or tall stems hairy, leaves opposite in remote pairs or crowded at the tip. Flowers solitary on subterminal peduncles or several on short axillary peduncles. Bracts small usually narrow, sepals free to the base or nearly so, 5 lanceolate or ovate, corolla blue white pink or yellow, narrowly tubular dilated upwards, occasionally broadly tubular infundibuliform, limb bilobed usually unequally, lobes rounded. Stamens 4 perfect, in two pairs, filaments long slender, anthers ovate or elliptic adhering by their faces, loculi parallel, connective sometimes prolonged into a horn. Disc annular, small. Ovary cylindric sessile, style as long or longer, stigma broad ovate. Capsule cylindric linear elongate, rarely short and thick, sessile splitting along the upper edge not twisted.

Species about 20, Malay peninsula and Sumatra.

*Note*.—Clarke, in making this genus, included in it several very different sections. I would exclude of these all the species with a short campanulate corolla and short filaments such as his section *Stilpnothrix*, and reserving his section *cyrtandroides* and § *speciosæ*. Of this latter, apparently confined to the peninsula, no species of the originally described sections belong; they form however a very characteristic group closely allied to some of the *Didymocarpi*.

§ 1. *Cyrtandroides*. Tall shrubs with distant nodes, flowers several together in axillary clusters.

Leaves minutely crenulate

1. *D. frutescens*

Leaves entire

2. *D. Johorica*

§ 2. *Speciosæ*. Stems woody short, leaves crowded at the top, flowers solitary rarely 2 on subterminal peduncles, bractcate plants with the habit of *Didymocarpi* of the section *Heterobæa*.



Leaves entire or obscurely crenulate glabrous above.

Flowers orange 3. *D. flammea*

Flowers violet purple

Corolla tube slender infundibuliform 4. *D. violacea*

Corolla very broad cylindric 5. *D. atropurpurea*

Leaves serrate or dentate

Glabrous above

Sepals linear lanceolate hairy 6. *D. glabrescens*

Sepals broadly lanceolate glabrous 7. *D. Wrayi*

Leaves hairy above

Capsule slender cylindric

Sepals lanceolate acuminate  $\frac{1}{4}$  inch 8. *D. hirta*

9. *D. serratifolia*

Sepals oblong ovate  $\frac{1}{8}$  inch 10. *D. atrocyanea*

Capsule short and thick 11. *D. latisepala*

Leaves runcinate 12. *D. guercifolia*

Leaves deeply lobed 13. *D. filicina*

1. *D. frutescens*, Clarke, Mon. Phan. p. 67, Pl. 7.

Shrub with woody stems 3-4 feet tall, stems appressed-hairy. Leaves opposite in alternate pairs distant elliptic lanceolate to oblanceolate minutely crenulate apex subacute, narrowed cuneate at the base 7-9 inches long 3-4 inches wide above sprinkled with fine hairs, beneath covered with appressed hairs especially on the nerves and reticulations, nerves about 13 pairs, petiole  $1\frac{1}{2}$ -3 inches long hairy, cymes axillary sessile with short hairy branches 1 inch long, flowers 1-3 on a branch. Sepals lanceolate narrow red hairy, corolla tube white infundibuliform pubescent lobes rounded. Anthers ovoid filaments curved in the middle. Ovary glabrous, style pilose. Stigma sub-bilobed. Capsule slender cylindric 3 inches long glabrous longitudinally ribbed.

*Didymocarpus frutescens*, Jack, Mal. 'Misc. 1, part 2, p. 5; Trans. Linn. Soc. 14, p. 39; Calc. Journ. Nat.



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Hist. 4 (1844), p. 58; Br. Benn. Pl. Jav. Rar., p. 119; Ann. Sc. Nat. 2, vol. 13, p. 165; Miq. Fl. Ind. Bat. 2, p. 726.

*Henckelia frutescens*, Spreng., Syst. Curæ Post. p. 13.

Penang Hill, (Wallich 780) (Curtis 828) (Maingay 1222); Perak, Larut Hills (Wray 1723) Ridley 2912; Tapa (Wray 826), Kinta River (King's Coll. 837); Dindings, Lumut (Ridley 7171); Malacca (Griffith 3856).

Distrib. Sumatra (Jack, in Herb. Deless. fide Clarke but Jack only records it from Penang).

On banks in forests from 300 feet to 2000 alt. local but abundant.

### 2. *D. Johorica*, n.sp.

Shrubby 2-3 feet tall pustular below hairy above. Leaves alternate below opposite above lanceolate acuminate long cuneate at the base, margins entire 6 inches long  $1\frac{1}{4}$  wide sprinkled with short conic hairs above shortly scabrid hairy beneath, nerves 6-7 pairs ascending. Cymes axillary peduncles slender hairy 1 inch long. Bracts short linear lanceolate. Flowers 3-4 in peduncle. Sepals small linear lanceolate acute hairy, corolla pink. Capsule slender cylindric hispid  $1\frac{1}{2}$  inch long.

Johor, Gunong Panti (Ridley 4175).

The flowers of this were unfortunately lost in drying so I am unable to describe it fully. Endemic rare.

### 3. *D. flammea*, Ridl., Journ. Linn. Soc., XXXII, 503.

Stem about 2 inches long hardly woody pubescent. Leaves oblong-obtuse ashy green shining above glabrous, edges and nerves beneath hairy 4 inches long  $1\frac{1}{4}$  wide, petiole short pubescent. Peduncle erect stout 3 inches long purple pubescent. Flowers few pendulous. Sepals narrowly lanceolate acuminate green with purple pairs half an inch long. Corolla base narrow abrupt dilate cylindric orange hairy outside, lobes short rounded, lower ones a little longer, red. Stamens in 2 pairs, filaments



slender terete hispid above white anthers globose. Pistil white pubescent straight. Stigma clubbed. Disc ring shaped, capsule short cylindric purple  $1\frac{1}{2}$  inch long.

Legeh (Machado).

Endemic rare.

4. *D. violacea*, n.sp.

Stem woody about 6 inches tall. Leaves tufted at the top, thin oblanceolate subfalcate, narrowed at the base into the petiole, tip acuminate, margins sinuate, entire, glabrous above, petiole and midrib covered with red multicellular hairs. Peduncles numerous erect 2-3 inches long sparingly red hairy. Bracts linear lanceolate narrow  $\frac{1}{4}$  inch long closely appressed to the calyx. Sepals linear lanceolate glabrous  $\frac{1}{4}$  inch long corolla  $1\frac{1}{2}$  inch long violet tube rather narrow gradually dilated forwards, sparingly pubescent lobes unequal, lower lip much longer. Stamens 4, the longer pair hardly  $\frac{1}{4}$  longer than the shorter ones; Pistil glabrous rather short. Stigma broad, capsule  $1\frac{1}{2}$  inch long moderately thick splitting along the upper edge.

Perak, summit of Gunong Batu Putih alt. 6700 (Wray 383) (Scortechini 389b).

Endemic.

Near *D. Wrayi*, but flowers smaller.

5. *D. atropurpurea*, Ridl., l.c. 504. Stem 2 inches long woody, leaves lanceolate or obovate narrowed at the base obscurely crenate bases unequal 4 inches long  $1\frac{1}{2}$  inch broad glabrous above, beneath hairy on the raised nerves, petiole  $1-1\frac{1}{2}$  inches long. Peduncles erect glabrous purple 2 flowered 2 inches long. Flowers nearly sessile. Bracts 2 ovate  $\frac{1}{4}$  inch long  $\frac{1}{8}$  inch wide purple, sepals nearly free to the base lanceolate acute  $\frac{1}{4}$  inch long glabrous, corolla 2 inches long  $\frac{1}{2}$  inch through narrowed at the base widely dilate above deep purple lobes short rounded, lower ones longer. Stamens in 2 pairs filaments straight anthers oblong appressed, style subequal thick



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glabrous, stigma clubbed. Capsule 2 inches long, thick narrowed at the tip.

Perak, Hermitage Hill on rocks (Ridley), Gunong Inas (Scortechini 1322).

Endemic. Scortechini's poor specimen is this I think, he says however flowers pale red.

6. *D. glabrescens*, n.sp. Stem woody, leaves elliptic lanceolate or oblanceolate coarsely serrate 4 inches long 1 inch wide, above glabrous, beneath dotted glabrous, except the midribs and nerves red hairy, petiole 1 inch long hairy. Peduncle slender 4-5 inches long hairy, with 1 or 2 lanceolate oblong bracts at the top  $\frac{1}{8}$  inch long. Flowers solitary. Sepals linear lanceolate obtuse-hairy  $\frac{1}{8}$  inch long. Corolla "mauve," "dark blue"  $1\frac{1}{2}$  inch long tube gradually dilated upwards lobes rounded pubescent, anthers subglobose. Style capitate broad. Capsule  $1\frac{3}{4}$  inch long cylindric slender.

Perak, Summit of Gunong Batu Putih 6700 feet alt. (Wray 384) (King's Coll. 8055), Kinta (King's Coll. 7191).

Near *D. atrocyanea* but the leaves are nearly glabrous, and narrower with a longer petiole and the peduncle bracteate.

Endemic.

7. *D. Wrayi*. Stem woody bare below, leaves alternate lanceolate oblique acuminate dentate narrowed at the base into the petiole 4-6 inches long,  $1\frac{1}{2}$ -2 inches wide nerves 16 pairs elevated on both surfaces, glabrous above whitish beneath midrib and nerves below covered with coarse reddish trichomes, petiole  $\frac{1}{2}$  inch long covered with rough multicellular trichomes. Peduncles from the upper axils slender one flowered 3-4 inches long covered at the base with red multicellular hairs. Bracts 2 ovate broad appressed to the calyx  $\frac{1}{4}$  inch long glabrous, sepals broadly lanceolate obtuse glabrous  $\frac{1}{2}$  inch long white, corolla  $1\frac{1}{4}$  inch long white pencilled with violet, tube



thick over  $\frac{1}{4}$  inch through, pubescent lobes broad rounded, stamens 4 didynamous, anthers rounded, style stout.

Perak, Summit of Gunong Batu Putih (Wray 334, 383) (King's Coll. 8036).

Endemic.

8. *D. hirta*. Stem woody 3 inches long, leaves oblanceolate oblique acuminate serrate, narrowed to the base 4-9 inches long, 2 inches wide sprinkled above with pale multicellular hairs especially long on the marginal teeth, beneath glabrous except on the midrib and nerves, covered with rather long multicellular hairs. Scape 3-4 inches long, hairy with catenulate multicellular hairs, sepals  $\frac{1}{4}$  inch long lanceolate acuminate very hairy. Corolla violet with a darker centre, tube 1 inch long broad cylindric sprinkled with multicellular hairs, lobes large rounded  $\frac{1}{2}$  inch long glabrous, stamens 2 pairs unequal, stigma capitate.

Perak, Bujong Malacca (Ridley).

Endemic.

9. *D. serratifolia*. Stem woody 4-5 inches tall covered with red hairs above. Leaves opposite oblanceolate acuminate, base long cuneate, doubly serrate 6-8 inches long by 2 inches wide sprinkled with pale multicellular hairs above beneath glabrous except for the red multicellular hairs on the nerves and midrib, nerves about 17 pairs, petiole 1 inch long or less hairy, peduncle slender 4 inches long hairy 1 flowered, sepals lanceolate acuminate  $\frac{1}{4}$  inch long recurved at length covered densely with long red multicellular hairs. Corolla  $1\frac{1}{2}$  inch long narrowed at the base dilate upwards, tube broad, sparingly hairy, lobes rounded, lower ones longer than the upper one. Stamens in 2 subequal pairs half the length of the tube, filaments attached close to the base sinuate, style stout, stigma capitate, capsule  $1\frac{1}{2}$  inch long subcylindric thick  $\frac{1}{8}$  through glabrous.

Perak, Bujong Malacca (Ridley 9779).

Endemic.



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### 10. *D. atro-cyanea*.

Stem woody about 6 inches, leaves crowded at the top oblong or lanceolate oblong inæquilateral at the base strongly serrate (drying black),  $4\frac{1}{2}$  inches long nearly 2 inches wide, above sprinkled with conical processes formed by the pushing in of the leaf from the under surface, each bearing a short pale hair, beneath punctate and sprinkled with the mouths of the intrusions, glabrous except for the nerves and reticulations which are covered with rufous hairs, petiole winged to base covered with multicellular hairs. Scape 3 inches long covered with red hairs one flowered. Sepals oblong ovate glabrescent or with red hairs  $\frac{1}{8}$  inch long. Corolla nearly 2 inches long, base shortly narrowed tube broad cylindric pubescent, lobes short rounded subequal, deep purple mouth almost black, stamens 4, filaments slender. Capsule glabrous cylindric curved  $1\frac{1}{2}$  inch long.

Perak (Scortechini 368b), Bujong Malacca (Ridley, Curtis 3298).

Endemic.

### 11. *D. latisepala*, Ridl. l.c. 503.

Stem short woody, leaves crowded above oblong-ob lanceolate, base unequal 7 inches long 2 wide or less crenate-dentate sparingly hispid red and nerves beneath covered with red hairs petiole an inch long. Peduncle 6 inches long hispid. Flowers few sepals ovate  $\frac{1}{8}$  inch long glabrous, corolla 1 inch long cylindric dilated upwards glabrous, lobes short rounded. Stamens 4, filaments linear, anthers subglobose, pistil glabrous, stigma clubbed. Capsule short thick fusiform  $\frac{1}{2}$  inch long.

Legoh (Machado.)

Endemic.

### 12. *D. quercifolia*, Ridl. l.c. 504.

Stem woody hairy, 6 inches long or less, leaves crowded above lanceolate runcinate, base narrowed deep green glabrous above, beneath glaucous with keel and



nerves covered with brown hairs 6-8 inches long 2 inches wide, petiole 1 inch or less long hairy. Peduncles 6 inches long sparsely hairy, flowers 1-2 large, bracts lanceate broad hispid. Sepals broadly lanceolate obtuse green glabrous. Corolla 2 inches long dilated cylindric from a narrow base lemon yellow glabrous, lobes short rounded. Pistil cylindric, stigma clubbed capsule 3 inches long glabrous cylindric.

Perak, Larut Hills, (Scortechini 292-300 (Curtis 2041) Ridley 2910); Bukit Rengas (Fox H. B. S. 10683.)

Endemic.

13. *D. filicina*.

Stem woody pale rather slender 6 inches long. Leaves tufted at the top lanceolate deeply lobed with oblong rounded lobes about 13 on each side 3-5 inches long 1 inch wide glabrous above, paler beneath with red appressed hairs on the midrib, petiole  $\frac{1}{2}$  inch long with red appressed hairs. Peduncle slender red hairy  $1\frac{1}{2}$  inch long 1 flowered. Bracts small ovate  $\frac{1}{16}$  inch long. Pedicel  $\frac{1}{4}$  inch long. Sepals elliptic rounded dark red sparingly hairy  $\frac{1}{8}$  inch long. Corolla  $1\frac{1}{2}$  inch long base narrow dilated upwards trumpet shaped sparingly pubescent at the base purple paler beneath outside throat, inside dark purple with 6 white lines down the base inside in the tube, lower lip longer than the upper one lobes rounded. Stamens 4 in two pairs, the connective prolonged into a triangular horizontal horn. Disc annular capsule sub-follicular  $1\frac{1}{2}$  inch long glabrous.

Perak, Gunong Chabang (Scortechini 14) on rocks overhanging a creek.

Endemic.

4. *Didymocarpus*.

Herbs or usually small shrubs, stems simple or branched, erect or prostrate. Leaves opposite or the alternate ones reduced, seldom wanting, ovate or lanceolate herbaceous, usually pubescent or hairy, petioled. Peduncles axillary, bearing one



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or more flowers in a cyme. Sepals free to the base or nearly so, 5 short. Corolla infundibuliform bilabiate, lobes equal or the lower ones longer than the upper. Stamens 2 complete, filaments filiform, rising from about half way down the tube, anthers reniform connivent by the edges. Staminodes 2 short hooked, ovary cylindric passing into the style. Stigma capitate or ovate entire. Disc annular or absent. Capsule cylindric narrow usually splitting along the upper edge. Seeds numerous minute ellipsoid not plumed.

Species about 100. Distribution, India and Malaya.

### 1. *Elatae*.

Stem tall branched, shrubby. Leaves in distant pairs opposite unequal.

Bract one cup-shaped appressed together, corolla lips,

1 *D. corchorifolia*

Stem long and weak. Bracts 2 ovate

2 *D. sulphurea*

Stem weak. Bracts ovate amplexicaul  
Flowers yellow.

3 *D. citrina*

Bracts oblong glabrous. Flowers  
claret color

4 *D. purpurea*

### 2. *Didymanthus*.

Stem erect herbaceous, leaves in distant pairs. Flowers very small  $\frac{1}{4}$  inch

long axillary. Flowers medium size

5 *D. parviflora*

Flowers yellow.

Leaves lanceolate acute

6 *D. flava*

Leaves ovate acuminate

7 *D. ramosa*

Leaves unequal narrowly lanceolate

8 *D. flavescens*

Flowers white.

Leaves opposite equal hairy or pubescent

ovate edges pubescent

9 *D. hispidula*

Edges conspicuously red hairy

10 *D. hirta*

Leaves lanceolate thinly pubescent

11 *D. viscida*

Leaves subglabrous equal longpetioled

12 *D. albina*



- Leaves glabrous unequal  
 Flowers solitary on short peduncles 13 *D. alternans*  
 Flowers in pairs on long peduncles  
     from upper axils 14 *D. glabrata*  
 Stem erect herbaceous little branched.  
 Flowers yellow, corolla cylindric trumpet-shaped.  
 Leaves petioled silky in distant pairs.  
 Corolla 2 inches long 15 *D. malayana*  
 Corolla 1 inch long 16 *D. albomarginata*  
 Leaves crowded above hairy.  
 Flowers small congested 17 *D. flavobrunnea*  
 Stem woody short. Leaves glabrous  
     congested at the top not petioled 18 *D. longipes*  
 Stem woody. Leaves alternate lanceolate inæquilateral  
 Flowers blue 19 *D. inæqualis*  
 Stem woody. Leaves crowded or distant  
     elliptic petioled. Flowers small white 20 *D. alba*

### 3. *Reptantes*.

- Prostrate or creeping herbs. Leaves in distant pairs  
     equal or unequal hairy or pubescent.  
 Flowers blue or white. Leaves hairy rarely glabrous.  
 Flower in uppermost axil peduncle short  
     21 *D. reptans*  
 Leaves velvety elliptic. Flowers solitary  
     terminal 22 *D. ophirensis*  
 Flowers numerous on slender pedicels 23 *D. pulchella*  
 Flowers orange or yellow. Sepals hairy 24 *D. crocea*  
 Sepals narrower subglabrous 25 *D. ascendens*

### 4. *Heteroboea*.

Stems woody usually short with the leaves crowded  
 towards the top, more or less hairy above, and little or  
 not branched. Leaves hairy silky or rarely glabrous  
 lanceolate serrate narrowed at the base into a winged



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petiole, alternate. Peduncles slender axillary in the upper axils, one rarely 2 flowered. Bracts usually small solitary linear. Corolla large showy white, crimson or blue rarely yellow, filaments long slender. Capsule narrow cylindric.

Flowers solitary, bracts very small.

Leaves glabrous wrinkled 26 *D. rugosa*.

Leaves tessellate not wrinkled glabrous

or with scattered hairs with swollen bases

obovate. Capsule over 2 inches long 27 *D. platypus*

Capsule shorter 1 inch long 28 *D. kompsoboea*

Leaves not tessellate hairy or pubescent

Leaves broad covered with close short hairs.

Flowers white tipped crimson 29 *D. quinquevul-*  
*nera*

Flowers deep crimson 30 *D. atrosan-*  
*guinea*.

Leaves narrow lanceolate hairy distant

Stem branched flowers yellow 31 *D. hirsuta*

Leaves silky pubescent on both surfaces 32 *D. bombycina*

Leaves crowded thickly appressed hairy.

Flowers white or blue 33 *D. crinita*

Leaves crowded covered with short scattered  
hairs above; deep green with central white bar.

Flowers white 34 *D. fasciata*

Flowers in pairs on a long peduncle.

Bracts very broad 35 *D. venusta*

#### 5. *Salicinae*.

Small shrubby plants with narrow  
leaves crowded at the top. Flowers small.

Leaves entire 36 *D. densifolia*

Leaves serrate. Flowers  $\frac{1}{8}$  inch long 37 *D. salicina*

„ „ Flowers  $\frac{3}{4}$  inch long 38 *D. serrata*

Leaves deeply cut pinnate 39 *D. pectinata*



6. *Acaules*.

Stemless or nearly so. Leaves crowded.

Flowers paniced, lips very unequal 40 *D. violacea*

Flowers 1-2 racemose. Flowers  
large blue 41 *D. lacunosa*

Flowers small. Leaves elliptic peltate 42 *D. perdita*

Leaves obovate crenulate, capsule very  
short and broad 43 *D. puncticu-  
lata*

Capsule linear narrow 44 *D. heterophylla*

Leaves small entire silky 45 *D. pumila*

Affinity doubtful.

Stem tall. Leaves alternate distant

Panicles small adnate to petioles 46 *D. lilacina*

§ 1. *Elatae*.

1. *D. corchorifolia*, R. Br. Benn. Pl. Jav. Rar. p. 119, Ann. Sc. Nat. 2, Vol. 13, p. 164.

A shrub from 4 to 6 feet tall much branched with a stout woody stem. Leaves opposite but unequal ovate subacute inæquilateral, base rounded serrate 3-5 inches long  $1\frac{1}{2}$ -2 inches wide covered with soft short felted hair on both sides, but most on the back, petiole 1-3 inches. Panicles lax axillary 2-3 inches long, peduncles short pubescent. Flowers numerous. Bracts cup-shaped. Calyx entire cup-shaped  $\frac{1}{4}$  inch long 5-toothed. Corolla  $\frac{3}{4}$  inch long white apple-green in the throat, or often purplish white, tube straight thick, lobes rounded, upper lip recurved, base appressed to the broad decurved lower lip which is much longer. Capsule cylindric, one inch long pubescent splitting to near the tip. Clarke Mon. Phan. 85., Ridl. Jour. Bot. 1890, p. 68.

Selangor, Pahang Track (Ridley 8553); Perak, Bujong Malacca, Ridley 9775, (Curtis 3130), (King's Coll. 10, 979 & 10, 998), Kinta (Kings' Coll. 7220); Penang (Wallich 792) Government Hill (Curtis 1239), Maingay 1227.



Endemic on rocks. This is the biggest species of *Didymocarpus* and the most woody one known to me. It is also peculiar in having the two lips of the corolla mouth pressed together, quite like those of a snapdragon (*Antirrhinum*).

2. *D. sulphurea*, n. sp.

A shrubby creeper 6 to 10 feet long. Stem pubescent branched with long internodes. Leaves opposite but very unequal, one 3 inches long by  $\frac{3}{4}$ -1 inch wide, the opposite one  $\frac{1}{2}$ - $\frac{3}{4}$  inch long  $\frac{1}{6}$ - $\frac{1}{4}$  inch wide ovate or lanceolate acute base unequal cuneate margins crenulate dentate, deep green above purple beneath, nerves 6-7 pairs elevated on both surfaces, sprinkled all over on both surfaces with short hairs, more hairy on the back. Peduncles axillary filiform 4-6 inches long pubescent, branches at the top two or 3 each bearing as many flowers. Bracts 2 to each pair of flowers ovate glabrous  $\frac{1}{8}$  inch long. Sepals elliptic ovate obtuse glabrous. Corolla infundibuliform  $\frac{1}{2}$  inch long glabrous, upper lip short recurved lower one longer. Stamens exsert shortly, filaments thick pubescent. Style stout. Stigma excavate at the top. Capsule  $1\frac{1}{2}$ -3 inches long rather thick cylindric acuminate, glabrous.

Perak, Larut Hills, Gunong Hijau (Scortechini 6a) also on Chabang and G. Bubu, Gunong Batu Putih (King's Coll. 8059) Wray 219, Bujong Malacca (Ridley 9774).

Var. *breviflora*, bracts and sepals narrower acute pubescent.

Corolla smaller  $\frac{1}{4}$  inch long. Capsule pubescent  $\frac{3}{4}$  inch long.

Selangor, Bukit Kutu (Ridley 7582). Endemic.

3. *D. citrina*, Ridl., Journ. Linn. Soc., XXXII, 508.

A soft weak herb about a foot tall pubescent. Leaves soft ovate or ovate lanceolate crenulate velvety, opposite but unequal largest 2-3 inches long  $1\frac{1}{4}$  inch wide, petioles  $\frac{1}{2}$ -3 inches long. Panicles axillary 3 inches long base



pubescent above glabrous hairy. Pedicels  $\frac{1}{2}$ -1 inch long terete glabrous. Bracts cordate ovate acute nearly amplexicaul polished green with red edges. Sepals triangular spreading stiff green, edges red. Corolla lemon yellow pendulous, tube an inch long funnel shaped, base narrowed, mouth dilate  $\frac{1}{2}$  inch across, upper lobes broad rounded recurved, lower ones larger. Stamens 2, filament short sinuate, pubescent, anthers subtriangular. Ovary and style  $\frac{1}{2}$  inch long pubescent. Stigma peltate. Disc cylindric. Capsule an inch long angled glabrous.

Kedah, Gunong Jerai at 2,000 feet alt. (Ridley 5518).  
Endemic.

4. *D. purpurea*, Ridl., Journ. Linn. Soc., XXXII, 508.

Stem herbaceous 12-18 inches tall. Leaves ovate crenulate acute inæquilateral velvety 4 inches long 2 inches wide petiole  $\frac{1}{4}$  to  $\frac{1}{2}$  inch long. Peduncle erect subterminal glabrous 3 inches tall. Panicle erect 4 inches long with slender branches. Bracts small ovate. Calyx lobes spreading oblong glabrous short. Corolla tubular with a tube narrowed at the base, dilated upwards, purple, lobes rounded, lower ones longer. Stamens 2 filaments filiform included. Staminodes filiform. Ovary cylindric. Stigma broad discoid. Capsule  $\frac{1}{2}$  inch long glabrous cylindric stipitate.

Lankawi, Gunong Chinchin, 1000-1500 feet alt. (Curtis 2567).

Endemic.

§ 2. *Didymanthus*.

5. *D. parviflora*, n. sp.

A small erect herb about 1 foot tall or less much branched. Stem slender covered with appressed hairs. Leaves opposite equal lanceolate acute 1 inch long  $\frac{1}{4}$  inch wide, above glabrous punctulate, beneath yellow pustular with short translucent hairs longer and multicellular along the edge keel and nerves, nerves 5 pairs,



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petiole  $\frac{1}{4}$  inch hairy. Flowers solitary axillary on slender hairy peduncles  $\frac{1}{4}$  inch long. Sepals linear obtuse pubescent. Corolla  $\frac{1}{4}$  inch long yellow pubescent tube broad straight, lobes short broad rounded. Stamens nearly as long as corolla lobes, anthers large white reniform, filaments glabrous. Pistil as long as stamens pubescent. Stigma capitate entire. Capsule slender pubescent.

Negri Sembilan, Gunong Angsi (Ridley) fl. Feb.

Endemic.

6. *D. flava*, Ridl., Journ. Linn. Soc., XXXII, 507.

Stem a foot tall scabrid branched. Leaves lanceolate acute base narrowed denticulate scabrid beneath covered on the nerves with short hairs 3 inches long  $1\frac{1}{2}$  inch wide, petiole  $\frac{1}{2}$  inch long. Cymes axillary and subterminal on hairy peduncles 1-2 inches long, pedicels  $\frac{1}{2}$  inch long. Flowers 4 or 5. Calyx short lobes hispid lanceolate. Corolla glabrescent yellow  $\frac{3}{4}$  inch long tube straight dilate upwards lobes short obtuse. Style slender pubescent. Capsule cylindric  $1\frac{1}{2}$  inch long hispid.

Perak, Larut Hills (Ridley 2914) (Curtis 2690) (King's Coll. 2151) a small leaved form.

Endemic.

Var. *purpurascens*.

Stems stouter over a foot tall hairy. Leaves opposite equal, obliquely ovate acute, often purple as is the stem.

Perak, Bukit Kapayung, Sungei Siput (Ridley).

7. *D. ramosa*, n. sp.

Stem slender branched, pubescent with appressed hairs over a foot tall. Leaves distant opposite, but one of each pair much smaller, ovate acuminate, thin rounded or slightly narrowed at the base glabrous above, sparingly hairy on the nerves beneath, nerves about 7 pairs 2-3 inches long  $1\frac{1}{2}$  wide or smaller, petiole  $\frac{1}{8}$  inch long. Peduncles slender from the lower axils  $1-1\frac{1}{4}$  inch long, 2 flowered viscid hairy. Sepals lanceolate acuminate

Jour. Straits Branch.



viscid hairy  $\frac{1}{8}$  inch long. Corolla tube straight hardly dilated  $\frac{1}{2}$  inch long greenish yellow, bilabiate, lower lobe longer than upper lobes rounded. Stamens 2 filaments long filiform, anthers oblong. Ovary long cylindric style long slender. Stigma capitate small.

Perak, Gunong Batu Putih (Wray 868).

Endemic.

8. *D. flavescens*, n.sp.

Stems slender over a foot long covered with short appressed hairs. Leaves distant opposite but unequal, lanceolate acuminate at both ends entire sprinkled over on both sides with short scattered hairs  $1\frac{1}{2}$ -2 inches long  $\frac{1}{2}$  inch wide, petiole  $\frac{1}{6}$  inch long, silky hairy. Peduncles slender subterminal 1 inch long pubescent, one flowered. Sepals linear hairy. Corolla yellowish white  $\frac{1}{2}$  inch long pubescent tube straight cylindric hardly dilated above, bilabiate lobes short rounded. Stamens 2 filaments filiform. Ovary short cylindric. Style short pubescent stigma capitate.

Selangor, Kwala Kubu (Ridley 7585).

Endemic rare.

9. *D. hispidula*, Ridl., Journ. Linn. Soc., XXXII, 507.

Stem 6-12 inches tall hispid. Leaves opposite equal ovate or lanceolate acute or acuminate at both ends, 3-5 inches long 1-2 inches wide above scabrid beneath, hairy especially on the nerves, petiole 1 inch long. Peduncles 1-3 erect from the upper axils 3 inches long hairy with three or 4 terminal branches, bearing a few flowers. Pedicels hispid half an inch long. Bracts linear  $\frac{1}{4}$  inch long. Calyx  $\frac{1}{4}$  inch long lobes lanceolate hairy. Corolla glabrous an inch long white with violet streaks in the lower lip, tube straight funnel shaped upper lobes ovate subacute, lower ones longer. Stamens 2, filaments slender nearly straight filiform. Staminodes short clubbed 2, ovary fusiform pubescent. Style terete. Stigma capitate. Capsule  $1\frac{1}{2}$  inch long straight cylindric.



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Perak, Larut Hills 4-6000 feet elevation, (Curtis 2037, 1312) Ridley, King's Coll. Abundant on banks.

Var? *Selangorensis*.

Leaves shorter glabrous above. Sepals longer. Fruit 3 inches long softly velvety.

Selangor, Gunong Semangko (Curtis 3752).

This may be specifically distinct but the specimens are out of flower.

10. *D. hirta*, n.sp.

Stem herbaceous branched about a foot tall, thickly covered with rather long reddish multicellular hairs. Leaves opposite ovate or ovate lanceolate subacute serrulate narrowed at the base 3 inches long  $1-1\frac{1}{2}$  inches wide, above rather densely hairy, with multicellular hairs, edge hairy, beneath keel and veins covered with close long pale hairs, petiole  $\frac{1}{4}$  inch long hairy. Peduncles subterminal  $2\frac{1}{2}$  inch long very hairy, red. Bract very small linear, Flowers solitary on the peduncles. Sepals linear narrow hairy  $\frac{1}{6}$  inch long. Corolla absent. Capsule 2 inches long cylindric closely but very shortly hairy. Pistil cylindric. Style long pubescent. Stigma discoid.

Selangor, above the Gap, Semangko Pass (Curtis).

Near *D. hispidula* but much more hairy. I have seen no corollas.

Endemic.

11. *D. viscida*, n.sp.

Stems slender 6 inches or more tall shortly roughly hairy. Leaves opposite lanceolate or ovate lanceolate thin acuminate, base inæquilateral, 3-4 inches long  $1-1\frac{1}{2}$  inch wide above sparingly scabrid hairy, beneath hairy on the nerves about 6 pairs, petiole half an inch long roughly hairy. Peduncle subterminal 2 inches long viscid hairy, cyme branches 1 inch long. Calyx lobes very short lanceolate viscid hairy. Corolla little over  $\frac{1}{2}$  inch



long, tube swollen at base then infundibuliform white, sparingly pubescent. Stamens 2, included, filaments filiform. Style shorter. Capsule slender cylindric acuminate viscid hairy 1 inch long.

Perak, Gunong Keledang (Ridley 9781).

Endemic.

12. *D. albina*, n.sp.

Stem 2-3 feet tall herbaceous appressed hairy. Leaves opposite equal lanceolate or ovate lanceolate acuminate at base and apex, margins shortly serrate 5 inches long by  $1\frac{3}{4}$  inch wide glabrous except the midrib on the back covered with appressed hairs petiole appressed hairy  $1\frac{1}{2}$  inch long. Peduncle axillary 3 inches long, with a lax few branched terminal panicle 1 inch long. Bracts and bracteoles linear. Sepals lanceolate acuminate  $\frac{1}{10}$  inch long. Corolla  $\frac{1}{2}$  inch long waxy white slightly pubescent, tube cylindric limb distinctly bilobed. Filaments glabrous, anthers ovate lanceolate. Style and pistil pubescent.

Perak, Gunong Batu Putih (King's Coll. 8070).

This is allied to *D. hispida*, Ridl., but with nearly glabrous leaves more lanceolate and smaller flowers.

Endemic.

13. *D. alternans*, n.sp.

Stem about a foot tall erect not branched scabrid hairy above rather slender. Leaves sub-alternate or opposite lanceolate acuminate base cuneate thin entire or slightly serrate base inæqualateral 3 inches long by  $1\frac{1}{4}$  wide nearly glabrous except the midrib on the back and petiole  $\frac{1}{4}$  inch long which are scabrid hairy, opposite leaf reduced to a small ovate blade  $\frac{1}{2}$  inch long or wanting. Flowers solitary axillary on short pedicels slender  $\frac{1}{8}$ - $\frac{1}{4}$  inch long with 2 linear small bracts, all pubescent. Calyx lobes lanceolate acute hairy  $\frac{1}{8}$  inch long. Corolla  $\frac{1}{2}$  inch long white centre yellow tube narrowed at the base dilate upwards pubescent lobes subequal rounded, lips not very



distinct. Stamens 2 filaments filiform included anthers elliptic connate. Staminodes filiform short clubbed. Style fairly long hairy. Stigma capitate. Capsule slender cylindric glabrous 1 inch long.

Perak, Bujong Malacca (Ridley 9777) (Curtis 3133), Larut Hills (Curtis 3133) (King's Coll. 2311).

Endemic, on banks at 2-4000 feet elevation.

In some specimens both the leaves of the pair are fully developed, in others one is reduced to a very small ovate abortive leaf.

14. *D. glabrata*, n.sp.

Slender herb branched over a foot tall, almost glabrous except for a little pubescence on the upper part of the stem and petioles. Leaves opposite subequal or one leaf larger than the other, elliptic or ovate  $1\frac{1}{2}$ -2 inches long 1 inch wide, or less margins entire apex subacute, base cuneate or rounded oblique nerves 7 pairs, with midrib pubescent petiole slender pubescent  $\frac{1}{4}$  inch longer or less. Peduncles axillary 2 inches long from the upper axils pubescent 2 flowered. Bracts very small linear. Pedicels  $\frac{1}{4}$  inch long pubescent. Sepals narrowly lanceolate  $\frac{1}{8}$  inch long. Corolla white (not seen). Capsule linear acuminate  $1\frac{1}{2}$  inch long pubescent.

Johor, Gunong Pantu (King's Coll. 209).

Endemic, allied to *D. alternans*, very glabrous for a *Didymocarpus*.

15. *D. malayana*, Hook fil., Gard. Chron. 1896, vol. II, p. 123, fig. 24. Bot. Mag. t. 7526.

Stem very short to 3 inches long. Leaves ovate obtuse shortly petioled to lanceolate acute long petioled 7 inches long  $2\frac{3}{4}$  inch wide nerves conspicuous, 15 pairs silky hairy. Peduncles stout silky hairy 3-4 inches long scapose with 2 flowers at the top or with 2 erect branches 3 inches long bearing 8 or 9 flowers each. Flowers nodding. Calyx lobes linear obtuse pubescent long. Corolla 2 inches long bright yellow, tube narrowed at the base



gibbous inflated above, hairy, lobes rounded subequal. Stamens 2, filaments included filaments curved, glabrous, anthers shield-shaped with 2 projecting horns on each. Staminodes minute tooth like. Ovary hairy conic, disc cylindric. Style long glandular pubescent. Stigma capitate. Capsule cylindric 1-1½ inch long.

Perak, Bujong Malacca (Curtis 3300) (Ridley 9773), Tanjong Malim (Baldwin, Chabong (Scortechini 189); Selangor, Gunong Semangko (Curtis 3300); Bukit Kutu (Ridley 7530).

Endemic, at an altitude of from 1500 to 3000 feet, abundant. A very beautiful plant.

16. *D. albomarginata*, Hemsley, Journ. Bot. XXV (1889) p. 204.

Stem 6-12 inches tall pubescent red. Leaves elliptic or ovate obtuse, with a broad or cuneate base dark green edges and nerves white sparsely hairy above silky beneath nerves about 10 pairs 3-4 inches long 1-1½ inch wide. Peduncles axillary and sub terminal hairy pink 3 inches long racemose or sparingly branched. Calyx lobes lanceolate hairy. Corolla yellow, tube narrow pinkish white dilate upwards, lobes subequal rounded. Stamens 2, filaments thickened at the base curved, anthers reniform with short processes. Staminodes 2 filiform hooked ovary cylindric conic pubescent. Style long. Stigma wider discoid. Capsule cylindric acuminate rather thick, lip upcurved hairy ¾ inch long.

Perak, Larut Hills, 3-5000 feet (Wray) (Curtis 2039, 2991) (Ridley 2908) King's Coll. 1817).

Endemic, closely allied to *D. malayana* and difficult to tell in dried specimens except from the much smaller flowers.

17. *D. flavobrunnea*, Ridley, Trans. Linn. Soc., p. 329.

Stem slender seldom branched densely pubescent 3-4 inches tall. Leaves alternate ovate lanceolate acute base unequal narrowed, serrate 7 inches long 3 inches wide, nerves and midrib beneath covered with shining brown



hairs, above sparingly pubescent. Peduncles 8 inches long stiff hispid branched shortly dichotomously above. Branches short crowded. Flowers numerous, small. Bracts lanceolate acuminate  $\frac{1}{4}$  inch long hispid. Pedicels short. Sepals linear narrow pubescent. Corolla 1 inch long tube cylindric gradually dilated towards the lips lobes unequal rounded short, tube brownish outside limb yellow with an orange spot in the mouth and some red streaks. Stamens 2, with filiform filaments, ovary elliptic. Capsule 1 inch long, narrowed gradually from the base splitting above nearly to the apex, glabrous.

Pahang, Tahan River woods (Ridley 2163).

Endemic, the fruit crowded at the top of the peduncle radiating in all directions gives this the appearance of one of the *Paraboeas*.

18. *D. longipes*, Clarke. Mon. Phan. p. 87.

Stem woody 2 inches long hairy at the top. Leaves oblanceolate narrowed to the base obscurely serrate glabrous deep green above, hairy on the midrib purple beneath 8 inches long  $2\frac{1}{4}$  wide. Peduncles 9-18 inches tall rather stout purple pubescent. Flowers few racemose (occasionally paniced) pendent very shortly pedicelled. Calyx lobes linear acuminate pubescent purple  $\frac{1}{8}$  inch. Corolla  $1\frac{1}{2}$  inch long pale yellow pubescent tube straight little dilated upwards, lobes upper two short rounded, lower lobes longer oblong. Stamens 2, filaments adnate to tube near the mouth short thick, anthers reniform connate, just included, with 2 short appressed horn like processes of the connective. Ovary elongate conic passing into the terete style. Stigma discoid. Disc cylindric. Capsule  $1\frac{1}{4}$  inch long rather thick splitting along the upper sege.

Malacca, Mt. Ophir (Griffith 3854) (Cuming 2385) (Maingay 2723) (Ridley 3179).

On rocks in woody places. Endemic.

This is a very distinct plant from the *malayana* set in its short subterranean stem, and large rosette of glabrous



leaves. The flowers however are those of the *malayana* group and the anthers have the short connective horn on one side which seems almost peculiar to these.

19 *D. inæqualis*, Ridley, Journ. Linn. Soc., XXXII, p. 506.

Stem woody 5 inches or more tall  $\frac{1}{8}$  inch thick brown-pubescent. Leaves alternate distant lanceolate inaequilateral acute serrate narrowed to the base, velvety above, pubescent beneath 5 inches long  $1\frac{1}{2}$  inch wide or smaller, petiole distinct pubescent  $\frac{1}{2}$  inch long. Peduncles from the upper axils  $1\frac{1}{2}$  inch long pubescent. Flowers crowded pedicellate. Bract linear nearly  $\frac{1}{4}$  inch long. Calyx campanulate lobes not free to the base linear,  $\frac{1}{8}$  inch long pubescent. Corolla blue 1 inch long tube slender enlarged upwards, lobes short rounded. Filaments long slender. Ovary elongate cylindric. Stigma obconic. Capsule cylindric glabrous  $1\frac{1}{2}$  inch long.

Lankawi, Gunong Chinchang (Curtis 2568).

Endemic. A peculiar plant not very closely allied to any other.

20. *D. alba*, n.sp.

Stem woody creeping ascending, hairy pubescent. Leaves crowded towards the top lanceolate scute base 2 inches long  $\frac{1}{4}$ - $\frac{1}{2}$  inch wide softly densely hairy on both sides, petiole densely hairy  $\frac{1}{2}$  inch long. Peduncles short  $\frac{1}{2}$  inch or less long one-flowered densely hairy. Calyx lobes free to base linear acuminate long hairy  $\frac{1}{8}$  inch long. Corolla quite white  $\frac{1}{2}$  inch long base cylindric gradually dilated upwards hairy lobes short rounded, lobes short subequal. Stamens 2 filaments rather short filiform. Staminodes 3 filiform clubbed shorter. Pistil pubescent. Capsule  $\frac{3}{4}$  inch long curved acuminate splitting along the upper surface glabrous.

Perak, Bujong Malacca (Curtis 3299).

Var. *major*.



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Stems taller over a foot. Leaves more remote and less hairy, peduncles longer, 1 inch in flower,  $1\frac{1}{4}$  long in fruit. Corolla 1 inch long.

Perak, Gunong Bubu (Wray 390b).

Endemic.

§ 3. *Reptantes*.

21. *D. reptans*, Jack. Malay Misc. 1, p. 2, p. 3 (1820); Trans. Linn. Soc. 14, p. 35.

Stems 6 inches or more long creeping villous. Leaves opposite ovate or elliptic obscurely crenulate blunt narrowed at the base or rounded sprinkled with villous hairs above, more hairy beneath,  $\frac{3}{4}$ -3 inches long  $\frac{1}{2}$ - $\frac{3}{4}$  inch wide, Peduncles slender subterminal one-flowered hairy 1 inch long. Bract very small. Pedicel  $\frac{1}{4}$  inch. Calyx lobes linear villous  $\frac{1}{8}$  inch long. Corolla  $\frac{1}{2}$  inch long, white with purple and yellow streaks in the mouth tube, pubescent trumpet-shaped, lobes rather large rounded. Stamens 2, filaments far included filiform. Staminodes very short. Ovary cylindric. Style slender. Stigma discoid. Capsule 1 inch long slender splitting nearly to the apex, abrid.

Spreng. Syst 2, p. 837; Don. Gen. Syst. 4, p. 659; R. Br; Pl. Jav. Rar. p. 119; Ann. Sc. Nat. 2, vol. 13, p. 164. Miq. Fl. Ind. Bat. 2726; Clarke, Monogr. Phan 17-95.

Penang (Wallich 787) (Maingay 1223) (Lobb 335), Pulau Betong (Curtis 1706).

Var. *monticolo* Ridl., Journ. Linn. Soc, l.c. 511.

More slender and creeping for  $1\frac{1}{2}$  feet or more. Shoots covered with rufous hairs. Leaves narrower lanceolate 2-3 inches long  $\frac{3}{8}$  inch wide, acute narrowed into the petiole. *D. producta*, Clarke, Monog. Phan. V, p. 96.

Selangor, Pahang, Track (Ridley 8561), Ginting Bidai (Ridley 7586); Negri Sembilan, Bukit Tumiang, and Bukit Sulu (Cantley's Coll.); Perak, Gunong Batu Putih



(Wray 9 27 & 480); Dindings, Simpiti near Lumut (Ridley 3073) Larut Hills to the top (Curtis 2040 & 2992) (Ridley 2913) (Scortechini 20 & 257 a) a remarkable rufous haired form. Goping (King's Coll. 1099).

Distrib. Sumatra.

The form from the top of the Larut Hills has much narrower more glabrous leaves but the plant is remarkably variable in foliage. It forms often great masses in woods and is quite common in the hilly districts. The type form of the species is a rock plant confined to Penang, but the commonest form is the variety *monticola*. Clarke's *D. producta* was based on one of Horsfield's Sumatran plants in the British Museum. This type seems to me identical with some of the hill forms in the peninsula.

Var. *violascens*.

Stems ascending for a foot or so. Leaves rather remote nearly glabrous above except the edges and midrib densely hairy, more hairy beneath, nerves elevated densely appressed hairy. Flowers purplish white.

Selangor, Rawang (Ridley 7583), Dusun Tua (7584).

22. *D. Ophirensis*, n.sp.

Stem long creeping over a foot long. Leaves opposite somewhat unequal elliptic dark green with white on the nerves 1-3 inches long  $\frac{1}{2}$ -1 inch wide base rounded, above sprinkled with short hairs, edges entire thickly hairy, beneath paler more hairy, nerves 5-6 pairs densely hairy, petiole  $\frac{1}{4}$  inch long hairy. Peduncles subterminal 1 inch long hairy. Sepals linear  $\frac{1}{8}$  inch long densely hairy. Corolla  $\frac{3}{4}$  inch long gradually dilate forwards, rather broad at the top, hairy purple and white, upper lip much shorter than lower one. Stamens filiform little shorter than the corolla. Style slender. Stigma capitate. Capsule cylindric hairy 1 inch long.

Malacca, lower part of Mount Ophir (Ridley 3185). I took this at first to be *D. marginata*, Clarke, which was based on a plant collected in Malacca or Luzon by Lobb,



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but which from description may be a form of the very variable *D. reptans*, and the locality of which is doubtful.

##### 23. *D. pulchella*, n.sp.

Stems slender 3-6 inches long purple covered with appressed hairs. Leaves opposite elliptic obtuse 1-2 inches long dark green above with a central white stripe, dotted with short hairs beneath purple, sprinkled with hairs, the nerves and edges hairy, petiole  $\frac{1}{4}$ - $\frac{1}{2}$  inch long hairy. Peduncles axillary 1 inch long slender hairy. Bract linear very small. Pedicel  $\frac{1}{2}$  inch long slender hairy. Calyx lobes narrowed linear  $\frac{1}{8}$  inch hairy. Corolla white, with yellow in the mouth, nearly 1 inch long, tube cylindric hardly dilate sparingly hairy lobes oblong rounded. Stamens 2 fertile, filaments filiform straight, anthers oblong. Ovary slender cylindric pubescent, with style  $\frac{3}{8}$  inch long. Capsule narrow cylindric upcurved  $1\frac{1}{2}$  inch long pubescent.

Pahang, Kwala Lipis (Machado, H.B.S. 11629).

Endemic.

##### 24. *D. crocea*, n.sp.

Stems creeping a foot or more long succulent pubescent. Leaves opposite but unequal ovate obtuse 1-3 inches long  $\frac{3}{4}$ -1 inch wide softly hairy green with white veins, nerves beneath elevated. Petiole  $\frac{1}{2}$  inch long or much shorter. Peduncles sub-terminal 1 inch long 1 flowered softly hairy. Bracts 2 short linear. Sepals linear pubescent  $\frac{1}{6}$  inch long. Corolla 2 inches long, bilabiate pubescent orange-yellow, tube narrowed at the base dilate gibbous above, lobes rounded darker orange, lower lip longer than upper. Stamens 2 filaments sinuate, anthers with 2 processes each on the back. Staminodes filiform hooked. Style slender. Stigma capitate. Capsule rather thick curved upwards  $1\frac{1}{4}$  inch long pubescent.

Perak, Gunong Keledang on banks (Ridley 9776) (Curtis 3301), Sungkei (King's Coll. 3014).

Endemic, local on banks.



25. *D. ascendens*, Ridl., Journ. Linn. Soc., l.c. 512.

Stem creeping ascending branched above, rather slender 4-8 inches tall, branches 2 inches long or more. Leaves crowded above opposite subequal ovate entire subacute narrowed or broad at the base, silky hairy, dark green edges white silky,  $1\frac{1}{2}$  inch long  $\frac{1}{2}$ -1 inch wide, petiole 1 inch long or less. Peduncles very short  $\frac{1}{2}$  inch long hairy. Flowers solitary. Sepals linear acuminate silky. Corolla orange yellow  $1\frac{1}{2}$  inch long narrow cylindric dilated forwards pubescent, lobes short rounded subequal. Stamens 2 filaments long thick, anthers triangular obtuse. Ovary cylindric pubescent. Style long. Stigma ovate triangular.

Perak, Tapa (Haviland) (Curtis 3106), Goping (King's Coll. 458).

Endemic.

§ 4. *Heteroboaea*.26. *D. rugosa*, n.sp.

Stem short stout woody 2-3 inches long. Leaves crowded at the top oblong oblanceolate winged to the base dentate rather thick glabrous and strongly bullate wrinkled above, beneath pubescent with midrib and nerves hairy, nerves very numerous and close (about 40 pairs) nervules transverse strongly raised 3 to 5 inches long  $1\frac{1}{2}$ -2 wide. Peduncles slender 3 inches long hairy ebracteate. Flowers solitary. Sepals short ovate acute. Corolla tube trumpet shaped 1 inch long lower lip longer than the upper, lobes broad, white with yellow central bar. Stamens 2, anthers narrow connective two horned. Staminodes short very slender hooked. Pistil and style very hairy. Stigma broad reniform.

Perak, Hulu Selama (Scortechini 1273); Kelantan, Kwala Lebir (Dr. Gimlette).

Endemic. Remarkable for the strongly wrinkled thick leaves. The transverse nervules are depressed on the upper surface, the tissue between being pushed up in a bullate manner.



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### 27. *D. platypus*, Clarke, Mon. Phan. 94.

Stem woody below pubescent, leafy above 4-22 inches long. Leaves sessile, oblanceolate alternate 8-13 inches long 3 inches wide margins serrate, above sprinkled with multicellular hairs from a swollen base, beneath glabrous except for the elevated nerves and reticulations, densely appressed hairy. Peduncles numerous axillary 1 inch long slender hairy. Bracts 2 short lanceolate hairy. Pedicel one flowered  $\frac{1}{2}$  inch long hairy. Sepals ovate obtuse hairy  $\frac{1}{10}$  inch long. Corolla from a narrow base dilated forwards  $1\frac{1}{4}$  inch long, sparingly hairy, white with a yellow mouth, lobes broad rounded. Stamens 2 filaments filiform long, anthers reniform, with a process of the connective projecting beyond them. Style long slender. Stigma wide discoid. Capsule cylindric  $1\frac{1}{2}$  inch long pubescent.

Singapore, Bukit Timah, Selitar (Ridley); Johor, Ulu Batu Pahat (Kelsall), Gunong Pulai (Ridley 3729); Malacca (Griffith 3825) (Cuming 2359), Ayer Panas (Derry III); Negri Sembilan, Perhentian Tinggi (Ridley 10097), Bukit Temiang (Cantley); Selangor, Klang (Becari), Kuala Lumpur (Ridley); Perak, Gunong Batu Putih (Wray 934), Goping (King's Coll. 832).

Distrib. Sumatra.

The commonest species in the Peninsula in damp spots in woods in the low country.

Malay Names: — “Poko Julong Rimbah,” “Poko Sambuyen.”

### 28. *D. Kompsobaea*, Clarke, Mon. Phan. 92 t. X.

Stem woody 4-5 inches tall. Leaves crowded at the top oblanceolate acute narrowed towards the base 9 inches long 2 inches wide, margins coarsely crenate-dentate, above glabrous when adult with a few multicellular hairs when young, beneath minutely pubescent nerves and reticulations elevated, midrib and main nerves with long brownish appressed hairs. Peduncles 1 flowered 4



inches long hairy. Sepals ovate  $\frac{1}{8}$  inch long hairy. Corolla white, with yellow in the throat, tube 1 inch long base narrowed above somewhat abruptly swollen, broad nearly glabrous, lower lip longer than upper one. Stamens 2, filaments filiform, anthers oblong. Capsule  $\frac{1}{8}$  inch long, moderately thick pubescent.

Pahang, Tahan River woods (Ridley 2152); Selangor, Bukit Hitam (Kelsall).

Distrib. Borneo.

This is closely allied to *D. platypus* but is distinct in its glabrous upper surface of the leaves shorter and broader flower, broader sepals, and shorter thicker fruit. I believe it is identical with the plant described by Mr. Clarke.

29. *D. quinquevulnera*, Ridl., Trans. Linn. Sec., l.c. 328.

Stem woody 6 to 9 inches tall or less, covered with brown wool. Leaves lanceolate acuminate acute serrate narrowed to the base silky pubescent dark green 6 inches long 2-2 $\frac{1}{2}$  inches wide. Peduncles slender rosy white-ciliate. Flowers numerous. Sepals lanceolate acute. Corolla tube slender dilated forwards 3 inches long white, two lipped lobes rounded crimson or violet purple edged with white with yellow streaks in the throat. Stamens rather thick sinuate, white, anthers reniform ovary cylindric pubescent. Stigma cordate. Capsule cylindric acuminate 3 $\frac{1}{2}$  inches long.

Pahang, Kota Glanggi, Tahan Woods, abundant (Ridley 2154 and 2144); Selangor, Pahang Track 15th mile (Ridley 8559).

Endemic. A most beautiful and floriferous plant, but very impatient of cultivation, often growing in great abundance on banks at low to about 1,500 feet elevation.

30. *D. atrosanguinea*, Ridl. Trans. Linn. Soc., l.c. 328.

Stem woody 6 inches tall,  $\frac{1}{4}$  inch thick. Leaves lanceolate acute crenulate denticulate or dentate, base



broad 9 inches long, 4 inches wide, deep green velvety pubescent above, glaucescent, pubescent beneath with elevated nerves and nervules. Peduncles 3 inches long pubescent. Bract ovate. Sepals linear acute  $\frac{1}{4}$  inch long pubescent red. Corolla pubescent deep red, yellow in the mouth, tube 2 inches long dilate upwards, lobes subequal ovate obtuse. Stamens 2 filaments sinuous rather thick, anthers semiovate. Style longer than the stamens pubescent. Stigma rounded.

Pahang, Tahan woods (Ridley) and Tringanu.

Endemic in woods.

31. *D. hirsuta*, n. sp.

Stem woody over a foot long, branched, densely hairy above with long multicellular hairs. Leaves alternate lanceolate acuminate narrowed to the base petioled or hardly so crenate densely hairy on both surfaces, 6 inches long  $1\frac{1}{2}$  inch wide, petiole  $\frac{1}{2}$  inch long or less. Flowers solitary on the peduncles in the lower and upper axils. Peduncles very slender hairy 1 inch long. Sepals short ovate lanceolate obtuse. Corolla narrow an inch and a half long yellow pubescent. Capsule very narrow cylindric pubescent 3 inches long.

Perak, Goping (King's Coll. 715), Larut Hills (King's Coll. 2529).

The Larut Hills plant is much less hairy than the one from Goping but appears to be the same. The distant leaves are unique in this section.

32. *D. bombycina*, n. sp.

Stem branched woody 3 to 4 feet tall above closely silky pubescent. Leaves lanceolate acuminate 4-6 inches long 1 inch across narrowed to the base minutely crenulate densely silky pubescent, on both sides, nerves very numerous and close. Pedicels short 1 inch long slender, silky. Sepals ovate acute small silky. Corolla tube 1 inch long sparingly pubescent, white tinged with pink or blue trumpet shaped.



Perak, Ulu Bubong 4-600 feet alt. (King's Coll. 10587).

Endemic. Near *D. crinita* but very different in appearance, much taller with narrower leaves and soft silky grey pubescence. The flowers are also smaller.

33. *D. crinita*, Jack, Mal. Misc. 1, 11, p. 1; Linn. Trans. V, 14, p. 33, t. 3, f. 2; Calc. Journ. Nat. Hist. 4, p. 53, t. 15, fig. 2.

Stem woody pubescent 6 inches tall. Leaves narrow lanceolate acute, narrowed to the base shortly and closely serrate 6 inches long 1 inch wide dark green above sometimes with a white longitudinal bar covered closely with short velvety hair, beneath purple with longer hair especially on the nerves. Peduncles about 1 inch long villous, pedicels  $\frac{1}{4}$  inch. Bracts linear all villous. Sepals narrow lanceolate acute villous  $\frac{1}{8}$  inch long. Corolla white or usually pale blue  $1\frac{1}{2}$ -inch long pubescent tube narrowed at the base dilated forwards lobes large rounded subequal. Stamens filaments filiform curved anthers oblong with short lateral processes. Style and ovary cylindric pubescent. Stigma discoid. Capsule slender cylindric 2-3 inches pubescent.

Spreng. Syst 2, p. 837, R. Br. Benn. Pl. Jav. Rar. p. 118; Ann. Sc. Nat. 2, Vol. 13, p. 164; Hook. Bot. Mag. t. 4554; Miq. Fl. Ind. Bat. 2, 724; Clarke, Monogr. l.c. 93.

Pahang, Raub Track (Machado, H.B.S. 11575), Tahan Woods (Ridley 2169), Sungei Ujong, Bukit Sulu (Cantley); Selangor, Ginting Bidai (Ridley 7577); Perak, Larut Hills (Scortechini 294 and Ridley 2907) (King's Collection 2157), Tapa (Curtis 3781); Penang, West Hill (Curtis 410, Deschamps); Kedah, Gunong Terai (Ridley), Tomoh (Machado); Kelantan, Kwala Lebir (Dr. Gimlette).

Var. *Curtisii*.

Leaves oblanceolate acute serrate deep green with a silvery central bar, covered with long multicellular hairs from a swollen base on both sides very dense and longer



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on the back, at the base and on the buds. Scapes 3 inches long hairy slender. Sepals oblong hairy blunt. Corolla 2 inches long blue, tube hairy swollen upwards, lobes unequal one inch across the limb. Stigma broad heart shaped.

Selangor near the Gap (Curtis).

This fine form approaches *D. fasciata* in the form of its leaves and large flowers.

Var. *elongata*.

Stem tall and somewhat branched, leaves scattered narrow and small 3 inches long  $\frac{1}{2}$  inch wide hairy. Flowers small an inch long on slender pedicels 3 inches long or less from the lower as well as the upper axils Pale blue.

Perak, Tapah (Curtis 3781).

*D. crinita* as described here is somewhat variable and possibly some of the forms may be separable specifically.

Woods to 4000 feet elevation. Distribution, Sumatra and Borneo. Malay Name, "Poko Sumbong Merah."

34. *D. fasciata*, n.sp.

Stem woody 6-8 inches tall, with soft hair in the upper parts. Leaves alternate narrowly lanceolate acuminate 4-8 inches long  $1\frac{1}{2}$  inch wide narrowed to base, margins serrulate crenulate above deep velvety malachite green, with a broad central white bar covered with short scattered hairs, back edges and petiole with longer pale silky hairs. Peduncles slender short  $1\frac{1}{2}$  inch long hairy. Bract very small linear. Sepals narrow lanceolate very small. Corolla  $1\frac{1}{2}$  inch long cylindric trumpet shaped white limb edged violet. Capsule very slender 2 inches long or less glabrous.

Pahang, Tahan River in rocky woods (Ridley 2169) rare; Kedah, Gunong Jerai (Ridley).

Distrib. Lingga, Batu Gajah (Hullett).



I have been unable to get this in flower in the peninsula, but the Lingga plant seems identical and has a flower. It is allied to a Bornean plant occurring on Mount. Matang which it much resembles.

35. *D. venusta*, n. sp.

Stem erect woody 12-18 inches tall. Leaves oblong lanceolate subacute crenulate serrate narrowed into the petiole winged to the base 4-6 inches long 1-2 inches wide, nerves elevated on both surfaces, 22 pairs glabrous above, nerves and midrib ferruginous hairy beneath. Peduncles axillary 1 or 2 in an axil 7 inches long hairy. Flowers terminal 2 large white. Bracts 2 oblong cuspidate glabrous  $\frac{3}{8}$  inch long. Pedicels hairy, lower one  $\frac{1}{4}$  upper one  $\frac{1}{2}$  inch long. Calyx lobes free to base linear acuminate pubescent  $\frac{1}{2}$  inch long. Corolla pubescent, tube enlarged upwards infundibuliform  $1\frac{1}{2}$  inch long pure white with a brown spot on the lower lobes, lobes upper shorter than lower, rounded, lower lip  $\frac{1}{2}$  inch long lobes oblong. Stamens included 2 filaments filiform, anthers oblong. Staminodes filiform hooked. Ovary narrow cylindric with style  $\frac{1}{2}$  inch long, all pubescent. Stigma large cordate. Capsule terete acuminate splitting along the upper edge glabrous 2-2 $\frac{1}{2}$  inches long.

Perak, Bujong Malacca (Ridley).

Selangor, Gunong Semangko (Curtis 3751).

Endemic. This beautiful plant hardly belongs to this group. It much more closely resembles a *Didissandra* of the *speciosæ* section but has 2 stamens only.

§ 5. *Salicinae*.

36. *D. densifolia*, n.sp.

Stem woody 3 inches tall. Leaves numerous crowded alternate, lanceolate acuminate narrowed to the base rather thick in texture entire, nearly glabrous when adult except for a few hairs on the midrib  $1\frac{1}{2}$ -5 inches long  $\frac{1}{4}$ - $\frac{3}{4}$  inch wide. Peduncles hairy slender 3 inches



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tall, with a few one flowered short branches. Bracts linear oblong. Sepals linear oblong, pubescent. Corolla not seen. Ovary cylindric pubescent. Style pubescent. Stigma small capitate. Capsule cylindric pubescent 1 inch long splitting nearly to the tip.

Johor, Gunong Janeng (Kelsall)

Endemic.

37. *D. salicina*, Ridl., Trans. Linn. Soc. l.c. 329.

A small shrubby plant 3 to 6 inches tall simple or branched glabrous below pubescent above. Leaves numerous crowded above opposite narrowly lanceolate acuminate glabrous serrate, 3-4 inches long,  $\frac{1}{2}$  inch wide, pale green above reddish beneath petiole slender  $\frac{1}{2}$  inch long or less. Peduncles numerous crowded in the upper axils very slender glabrous red 2 inches long, branches few divaricate pubescent. Flowers very small  $\frac{1}{8}$  inch long pink. Sepals very narrow linear pubescent. Corolla campanulate, lobes ovate acute. Stamens 2, filaments short slender, anthers reniform. Style longer than the corolla, glabrous. Stigma small capitate. Capsule cylindric acuminate  $\frac{3}{4}$  inch long.

Pahang, Tahan River (Ridley 2166). Endemic, stream banks in woods.

38. *D. serrata*, n.sp.

Stem woody 6 inches or less long. Leaves numerous lanceolate acute, strongly toothed, teeth  $\frac{1}{8}$  inch long acute, velvety green above, pale beneath, nerves 40 pairs, 8 inches long 1 inch wide, narrowed at base not petioled glabrous above, midrib with pale hairs beneath. Scape slender hairy 3 inches long. Flowers 4 or 5 nearly sessile. Sepals ovate short hairy. Corolla trumpet-shaped  $\frac{3}{4}$  inch long narrowed at base dilated upwards lower lip longer than upper one,  $\frac{1}{4}$  inch wide 3 lobed, side lobes rounded median longer oblong, white stained with purple outside, yellow in the mouth. Capsule very slender over 1 inch long pubescent pedicelled.



Perak, Larut Hills on rocks in dense forest, below the Tea Gardens, at about 1,000 feet altitude (Ridley).

39. *D. pectinata*, Clarke, Hook. Ic. Pl., t. 2246.

Small shrubby plant, 6 inches or more tall branched or simple. Leaves densely crowded at the top glabrous deeply pinnate 6-7 inches long, lobes  $\frac{3}{8}$  inch long  $\frac{1}{8}$  inch wide at the base, blunt. Peduncles from the upper axils several, pubescent 2 inches long. Calyx "dark blue." Corolla white tomentose  $\frac{1}{3}$  inch long tube cylindric slightly inflated, upper lobe obovate rounded. Stamens 2, filaments curved, anthers oblong. Staminodes absent. Disc tubular. Capsule  $\frac{1}{2}$ - $\frac{3}{4}$  inch long pale glabrous rather thick curved.

Selangor, Rawang (Ridley 7579), Bukit Hitam (Kellsall, H. B. S. 1981); Perak, limestone rocks 4-800 feet alt. (King's Coll. 10711).

Endemic, local banks of streams and rocks.

*D. myricaefolia*, n.sp.

Stem woody 4 to 6 inches long. Leaves crowded at the opposite or alternate narrowly oblong or oblong lanceolate, acute, base narrowed, bluntly serrate 3-6 inches long  $\frac{1}{4}$ - $\frac{3}{4}$  inch wide, above sparingly sprinkled with hairs, midrib more hairy, beneath reddish, midrib and nerves and reticulations hairy, nerves 24 pairs, petiole  $\frac{3}{8}$  inch long red hairy. Scapes slender 3 inches long hairy 1-4 flowered. Sepals linear hairy  $\frac{1}{8}$  inch long. Corolla tube cylindric narrow half an inch long. Capsule narrow straight cylindric pubescent 1 inch long.

British North Borneo, Bongaya, Labuk Bay (Ridley).

Allied to *D. salicina* but with very different foliage.

§ 6. *Acaules*.

40. *D. violacea*, Ridl., Journ. Linn. Soc., XXXII, 509.

Rootstock short, erect stem an inch long densely woolly. Leaves numerous very unequal ovate to lanceo-



late acute oblique toothed, sessile or petioled densely softly hairy 2-8 inches long  $1\frac{1}{4}$  to  $2\frac{1}{2}$  inch wide narrowed at the base, petiole as much as 2 inches long. Panicles 2-5 inches long lax, branches slender pubescent. Calyx lobes oblong lanceolate  $\frac{1}{8}$  inch long glabrous. Corolla tube trumpet-shaped curved  $\frac{1}{2}$  inch long violet, upper lobes short recurved lower ones  $\frac{1}{4}$  inch longer. Stamens 2, filaments filiform. Ovary long terete. Style short. Stigma clubbed. Capsule glabrous cylindric  $\frac{3}{4}$  inch long.

Perak, Hermitage Hill at 5000 feet elevation, on rocks in the stream (Ridley 2909).

Endemic. A very curious plant the affinities of which are quite doubtful.

41. *D. lacunosa*, Hook. fil., Bot. Mag., 7236.

Stemless. Leaves crowded oblong or ovate cordate tomentose petioled crenulate 2-4 inches long  $1\frac{1}{2}$ -3 inches across above pubescent, beneath rusty tomentose especially on the elevated nerves, petiole 2-4 inches long rusty tomentose. Scapes 4-6 inches long 2 to many flowered simple or 3 or 4 branched at the top branches  $\frac{1}{2}$  inch long. Flowers nodding. Corolla an inch long deep violet blue, tube narrow at the base gibbous inflated upwards, lobes short rounded subequal. Stamens included curved swollen near the base narrowed upwards, anthers elliptic not horned. Staminodes filiform  $\frac{1}{3}$  as long. Pistil linear pubescent gradually narrowed into the style. Stigma very shortly bifid. Capsule 2 inches long linear.

Lankawi, Terutau on damp rocks (Curtis 1655).

Endemic. c

42. *D. Perdita*, n.sp.

Stem creeping woody about 4 inches long. Leaves elliptic obtuse rounded peltate margins crenulate 3 inches long  $1\frac{1}{4}$  inch wide above scabrid and sprinkled over with hairs, beneath glabrous except for the midrib and nerves



which are hairy with appressed hairs, margin with hairs on the crenulations, petiole 1-2 inches long hairy. Peduncles slender 4 inches long, subterminal hairy. Calyx lobes lanceolate pubescent. Corolla not seen. Capsule half an inch long narrowed suddenly into the style and only splitting as far as the base of the style. Stigma subbilobed large.

Singapore, Selitar very rare (Ridley).

I found two plants of this together in a small ravine near Selitar in 1889, one in fruit. Since then the locality has been destroyed by cultivation and the plant has disappeared and is probably extinct as these plants are very local in their distribution and I have never seen anything like it elsewhere.

43. *D. puncticulata*, Ridl., Journ. Linn. Soc., XXXII, 510.

Almost stemless. Leaves crowded elliptic or obcuneate or nearly oblanceolate, inaequilateral base truncate, crenate puncticulate hispid, 3 inches long  $1\frac{1}{2}$  inch wide or smaller, nerves beneath elevated hairy. Peduncles subterminal 3 inches long slender thickening in fruit, hairy. Sepals lanceolate acute  $\frac{1}{16}$  inch long hairy. Corolla  $\frac{1}{4}$  inch long hairy violet, tube short broad campanulate, lower lip longer than the upper one, lobes oblong obtuse. Stamens very short filaments thick, anthers large conic shield shaped. Style longer pubescent. Capsule  $\frac{1}{2}$  inch long thick hispid.

Johor, Gunong Panti (Ridley).

Endemic.

44. *D. heterophylla*, Ridl., Trans. Linn. Soc. l.c. 329.

Stem short with a long woody root, woolly above. Leaves crowded very variable in size obovate oblique or lanceolate, crenulate obtuse, 4 inches long  $1\frac{1}{2}$  inch wide or less, above dark green purplish in the centre, glabrous, beneath reddish nerves raised covered with red wool on the back. Peduncles slender hairy 3 inches long, branches short and few. Flowers few



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small. Sepals linear pubescent  $\frac{1}{8}$  inch long. Corolla campanulate  $\frac{1}{4}$  inch long violet pubescent. Style longer, pubescent. Capsule cylindric curved acuminate 1 inch long glabrous, splitting for nearly the whole length.

Pahang, Tahan River (Ridley 2170); Johor, Gunong Janeng (Kelsall).

Endemic. This and the two preceding species belong to a set more characteristic of Borneo and the intermediate islands than of the peninsula.

### 45. *D. pumila*, n.sp.

Stem slender woody 1-3 inches long. Leaves crowded at the top elliptic obovate obtuse narrowed at the base and inaequilateral  $\frac{1}{2}$ -1 $\frac{1}{2}$  inch long  $\frac{1}{4}$ -1 wide above silky pubescent beneath dotted with swollen hair-bases, nerves about 6 pairs elevated hairy with appressed hairs. Peduncles slender erect purple with silky appressed white hairs 2-3 inches tall subterminal. Flowers 1-2 terminal very shortly pedicelled. Bract linear purple. Calyx lobes linear purple pubescent. Corolla  $\frac{1}{4}$  inch long with a short broad tube pubescent purplish white hardly bilabiate lobes rounded pinkish white. Stamens 2, filaments slender short filiform. Ovary slender cylindric. Style longer than stamens. Stigma discoid. Capsule  $\frac{3}{4}$  inch long terete upcurved splitting along the upper edge minutely pubescent.

Selangor, The Gap—Semangko Pass, alt. 3000 feet (Curtis 3782) (Burn-Murdoch).

Endemic. On mossy banks.

### 46. *D. lilacina*, Ridf., Trans. Linn. Soc., l.c. p. 330.

Stem 12-15 inches long, entirely leafy brown pubescent. Leaves alternate spreading lanceolate crenate dentate pubescent dark green pubescent, 4 inches long 1 inch wide, petiole 1 inch long. Pedicels numerous rising from the petiole near the leaf blade slender  $\frac{1}{4}$  inch long pubescent. Sepals very short lanceolate hispid. Corolla campanulate rosy violet sparingly pubescent, lobes



oblong rounded. Stamens 2, filaments thick with slender bases, anthers reniform. Style shorter than the corolla pubescent. Stigma capitate. Capsule  $\frac{5}{8}$  inch rather thick cylindric with a short beak.

Pahang, Tahan River (Ridley 2165).

Endemic. Quite unlike any other species of *Didymocarpus* known to me, and it might perhaps be generically distinguished.

### 5. *Chirita*, Buch-Ham.

Herbs or slender shrubs. Leaves opposite often unequal, or whorled or alternate elliptic or ovate. Peduncles axillary one or more flowered. Bracts free or connate, small or large, calyx 5 lobed with acute lobes, usually large. Corolla infundibuliform or tubular ventricose blue or white, two lipped, lobes rounded. Stamens 2, filaments filiform geniculate, anthers rounded connivent often hairy. Disc annular. Ovary cylindric linear. Style usually long. Stigma ovate or narrow, bifid. Capsule long cylindric.

Species 26. India, China and Malay Islands.

Bracts free.

Stem tall branched cymes axillary 1. *C. elata*

Stem 12 inches or less, cymes subterminal.

Leaves ovate. Corolla  $1\frac{1}{2}$  inch long 2. *C. caliginosa*

Corolla  $\frac{3}{4}$  inch long 3. *C. viola*

Leaves lanceolate alternate 4. *C. sericea*

Bracts connate

Tube  $\frac{1}{2}$  inch long, limb short 5. *C. rupestris*

Tube very short, limb ovate 6. *C. Glasgovii*

### 1. *Ch. elata*, Ridl., Journ. Linn. Soc., XXXII, 518.

A tall rough herb 2 feet high, stem angled branched. Leaves 3 to 6 inches long  $1\frac{1}{2}$ -3 inches wide ovate inaequilateral acute toothed, hairy, with elevated nerves



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hispid, petioles slender 1 inch long, cymes lateral axillary 3 inches long hispid. Sepals lanceolate acuminate hairy  $\frac{1}{8}$  inch long. Corolla funnel shaped hairy 1 inch long claret color, lobes short rounded subequal  $\frac{1}{2}$  inch across. Stamens 2, filaments slender, anthers oblong. Staminodes short with abortive anthers. Ovary short pubescent. Stigma peltate sub-bilobed. Capsule straight cylindric.

Perak, Larut Hills (Wray 2985) (Curtis 2038) (Ridley 2911).

Endemic. In banks in wood, a species very unlike the rest of the genus, but it is difficult to place it anywhere else.

2. *Ch. caliginosa*, Clarke, Mon. Phan., 122.

A soft herb a foot or more tall often branched. Leaves opposite ovate acuminate, base broad or cuneate versus inaequilateral, margins entire or slightly toothed  $2\frac{1}{2}$ -y inches long 1-2 inches wide closely pubescent, petiole  $\frac{1}{2}$  inch long. Flowers several axillary, pedicels  $\frac{1}{2}$ -1 inch long pubescent. Sepals lanceolate acuminate hairy  $\frac{1}{2}$  inch long. Corolla  $1\frac{1}{2}$  inch long azure blue, tube narrow at the base broadly infundibuliform at the apex pubescent, lobes large rounded  $\frac{3}{4}$  inch across the lips. Stamens 2, anthers globose covered with long hairs at base. Style slender pubescent. Stigma bilobed lobes linear. Capsule long 3 inches slender cylindric curved.

Selangor, Kuala Lumpur Caves (Beccari) (Ridley) (Curtis 2359); Perak, Kuala Dipang (Curtis 3109), Batu Kurau (Scortechini 1582).

On limestone rocks local but abundant. A beautiful plant.

Endemic. Beccari's locality is given (l.c.) as Klang like several other limestone rock plants from his collection doubtless obtained at the Kuala Lumpur Caves.

3. *Ch. viola*, Ridl., Journ. Linn. Soc., XXXII, p. 516.

A herb 2 to 10 inches tall pubescent. Leaves ovate acute crenate or serrate or entire very unequal 2-6 inches



long  $1\frac{1}{2}$ -3 inches wide, petiole  $\frac{1}{8}$  inch long. Cymes shors few-flowered. Flowers small pedicels  $\frac{1}{2}$  inch long. Sepals lanceolate acute hispid nearly  $\frac{1}{4}$  inch long. Corolla  $\frac{3}{4}$  inch long violet, tube narrow at the base thin dilate trumpet-shaped, upper lobes short rounded, lower ones ovate obtuse longer, median one longest elliptic, all violet with darker streaks a patch of yellow glandular hairs in the mouth. Stamens 2 exsert, anthers yellow ovoid with a thickened connective, ciliate at the base, with a black spot on each anther, filaments attached to the mouth of the tube. Ovary pubescent. Stigma obliquely bifid, lobes linear obtuse. Capsule terete acute  $1\frac{1}{2}$  inch long minutely pubescent.

Lankawi Islands (Curtis 2570).

Distrib. S. Siam, on limestone rocks.

4. *Ch. sericea*, n.sp.

Herb 3-6 inches tall simple or branched woolly. Leaves alternate, lanceolate acute or acuminate base unequal cuneate 2-3 inches long  $\frac{1}{2}$  inch wide, margins entire, both sides densely covered with short silky hairs. Petiole  $\frac{1}{4}$  inch to 1 inch long. Flowers 1-2 axillary pedicels  $\frac{1}{2}$  inch or less silky hairy, ebracteolate. Sepals narrow linear acuminate densely silky hairy. Corolla blue rarely white, tube half as long again as sepals, lobes broader unequal oblong all hairy. Style slender glabrous. Stigma bilobed lobes elliptic. Capsule cylindric  $1\frac{1}{2}$  inch long, silky hairy.

Perak, Ipoh, limestone rocks (Curtis 3131).

*Var. Scortechinii.*

Capsule shorter  $\frac{1}{2}$  inch long, and thicker  $\frac{1}{8}$  inch through splitting longitudinally into 2 valves. Corolla tube straight, lobes of lower lip broad.

Perak, (Scortechini 112b and 102b).

Endemic.

5. *Ch. rupestris*, n.sp.

A herb about 4-10 inches tall, stem simple or branched glabrescent. Leaves opposite or alternate thin ovate



obtuse 1-3 inches long  $\frac{1}{2}$ -2 $\frac{1}{2}$  inches wide above sprinkled with multicellular hairs. Flowers axillary on a peduncle  $\frac{1}{2}$  inch long hairy 1-2 sessile enclosed in a green cupular bilobed bract  $\frac{1}{2}$  inch long edges recurved and covered with multicellular hairs. Sepals narrowly lanceolate linear hairy nearly  $\frac{1}{2}$  inch long. Corolla tube as long as the bract, hairy blue, little longer than the sepal lobes, rounded. Style and ovary slender hairy. Capsule cylindric slender curved 2 $\frac{1}{2}$  inches long.

Lankawi on damp rocks (Curtis 2120).

Endemic.

6. *Ch. Glasgovii*, n.sp.

A weak herb one foot tall branched. Leaves ovate obtuse thin, 1-3 inches long  $\frac{3}{4}$ -2 inches wide, base rounded, retuse nerves 5 pairs alternate, above sprinkled with multicellular hairs, beneath paler with a few hairs on the nerves otherwise nearly glabrous, petiole slender 1-2 inches long glabrous. Bract convolute bilobed, lobes ovate hairy 1 inch long. Sepals lanceolate acuminate narrow hairy  $\frac{1}{2}$  inch long. Corolla tube 1 inch long minutely hairy dark violet. Capsule cylindric curved 3 inches long glabrous.

Perak, Waterloo near Kuala Kangsa (C. Robertson-Glasgow).

Endemic.

*Ch. Forbesii*, n.sp.

Stem over a foot tall zigzag, internodes 1 $\frac{1}{4}$  inch long glabrous. Leaves alternate ovate acuminate 6 inches long 3 inches across base unequal, sprinkled on both sides with sport pale conic multicellular hairs, petiole  $\frac{1}{2}$ - $\frac{3}{4}$  inch long angled and ribbed. Peduncles axillary on both sides of the stem, slender short  $\frac{1}{4}$ - $\frac{1}{2}$  inch long hairy bearing 2 or 3 flowers on short pedicels. Bracts ovate hairy not connate  $\frac{1}{2}$  inch long caducous. Calyx tubular cylindric  $\frac{1}{2}$  inch long shortly lobed with 5 ovate lobes. Corolla white  $\frac{3}{4}$  inch long pubescent. Stigma bifid with



ovate lobes. Disc cylindric short. Capsule cylindric 3 inches long. Style short.

Sumatra, side of Lintang river edge of forest (Forbes 2579 and 40). Straggling shrub. Flowers white, alt. 900 feet.

Endemic.

6. *Loxocarpus*, Br.

Herbs scapigerous. Leaves ovate or oblong petiolate pubescent. Flowers 1 or more in a peduncled cyme, blue. Sepals 5 free to base or nearly so. Corolla campanulate small hardly bilabiate, lobes rounded. Stamens 2, filaments short thick sinuate, anthers reniform large. Ovary oblong. Style longer than stamens. Stigma capitate. Capsule follicular conic dehiscing along the upper edge.

Species 7. Malay Peninsula and Borneo.

Flowers 1 or 2

Cymes dichatomous many flowered

Capsule short and broad

Capsule horn shaped

1. *L. semitorta*

2. *L. incana*

3. *L. caerulea*

1. *L. semitorta*, Ridl.

Stemless. Leaves numerous ovate or oblong obtuse rather thick base broad  $\frac{1}{2}$ -1 inch long  $\frac{1}{4}$ - $\frac{3}{4}$  inch wide above green silky, beneath with thick red woolly raised nerves, petiole 1-2 $\frac{1}{2}$  inches long thick red woolly. Scapes slender 2-2 $\frac{1}{2}$  inches long silky. Flowers 1 or 2. Calyx lobes lanceolate hairy  $\frac{1}{8}$  inch long. Corolla  $\frac{1}{2}$  inch long tube broad oblique pale blue with violate streaks in the throat, lobes very short and indistinctly marked. Stamens filaments short curved anthers reniform purple. Style and ovary hairy shorter than corolla, larger than stamens. Capsule  $\frac{1}{4}$  inch long horn shaped acuminate with the persistent style, base swollen.

*Didymocarpus semitorta*, Clarke, Mon. Phan., p. 99



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Malacca, Mt. Ophir. (Griffith 3836) (Maingay 1220) (Ridley 3184) and all collectors.

Endemic. On rocks in the stream, "The Mount Ophir Violet."

2. *L. incana*, R.Br. Benn. Pl. Jav. Rar. 115, 120 Ann. Nat. Sci. 2, Vol. 13, p. 167.

Stemless. Leaves ovate cordate serrulate subacute silky tomentose above and beneath 1-3 inches long  $\frac{3}{4}$ -1 $\frac{1}{2}$  inch wide petiole  $\frac{3}{4}$ -1 inch long. Peduncles 2-4 inches long above dichotomously branched viscid hairy. Flowers few or numerous. Calyx lobes lanceolate pubescent hairy white tinted green. Corolla tube straight thick upper lobes oblong recurved, lower lobes oblong, blue, filaments straight, pistil conic, style stout. Stigma capitate. Capsule ovoid tip upcurved, hairy.

Miquel, Fl. Ind. Bat. 2, 737, *L. alata*, A. De C., Prodr. 9, p. 277.

*Didymocarpus incana*, Benth. and Hook, Gen. Pl. 2, 1022; Clarke, Monog. p. 98.

Penang, Govt. Hill, Waterfall (Curtis 297) (Maingay 1228) (Wallich 809, *Loxonia?* *alata*); Selangor, Bukit Kutu (Ridley); Perak, Hermitage Hill (Ridley); Bujong Malacca (Ridley 9782). A very small form with remarkably slender peduncles.

Endemic. On rocks.

3. *L. caerulea*, *Didymocarpus caerulea*, Ridl., Journ. Linn. Soc., XXXII, 513.

Stemless or nearly so. Leaves several ovate base cordate serrate inaequilateral long petioled 2-6 inches long 1 $\frac{1}{2}$ -4 inches wide, silky hairy above tomentose beneath, petiole 2-8 inches long pubescent. Peduncles 6-12 inches tall viscid hairy. Cymes compact or branched with 2 or 3 branches, 2 inches long. Flowers numerous. Bracts lanceolate narrow. Sepals lanceolate narrow shorter than the tube. Corolla pubescent 2 lipped  $\frac{3}{8}$  inch



long as wide, tube short broad campanulate, upper lobes oblong obtuse, lower ones truncate, median one longer, blue with a violet mouth. Stamens exsert, filaments suddenly thickened in the middle sigmoid, anthers connate deep violet. Style slender. Capsule  $\frac{3}{8}$ - $\frac{1}{2}$  inch long lanceolate acute hornshaped upcurved viscid.

Perak, Larut Hills at 5000 feet alt. (Ridley) (King's Coll. 6990) (Scortechini 1427), Gunong Bubu (Wray 3809); Selangor, Bukit Hitam (Kelsall).

Endemic. On rocks.

### 7. *Paraboea*.

Herbaceous plants or with a shrubby stem. Leaves usually in a rosette tomentose or hairy. Flowers small white or pink in simple or panicled cymes, peduncle usually long calyx small. Corolla white explanate campanulate with a very short tube, distinctly two lipped or nearly regular, lobes equal oblong or unequal blunt. Stamens 2 fertile, filaments thick short, anthers large 2-celled connivent by the tips. Disc none. Ovary sessile. Style longer than the stamens stout. Stigma small capitate. Capsule straight narrow slender not twisted splitting longitudinally.

Species about 20. Siam-Malaya.

#### 1. *Campanulatae*. Corolla campanulate.

Panicle large many flowered.

Leaves hairy

1. *P. cordata*

Flowers few 2 or 3 only

Leaves almost or quite glabrous

Leaves elliptic nearly entire

2. *P. campanulata*

Leaves ovate crenate

3. *P. Scortechinii*

Leaves lanceolate linear

4. *P. caerulea*

Flowers very small crowded in a head

few. Leaves pubescent

5. *P. pyroliflora*



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### 2. *Breviflores*. Corolla tube very short.

Cyme compact

Corolla not 2 lipped, lobes equal

Leaves ochreous beneath

Flowers in a simple head

6. *P. capitata*

Inflorescence branched

7. *P. ferruginea*

Leaves purple beneath

8. *P. regularis*

Branches of cyme slender

Corolla lobes subequal

Back of leaves ochreous tomentose 9. *P. polita*

Back of leaves red woolly 10. *P. vulpina*

Lower lip of corolla longer than upper

Leaves spatulate coarsely dentate 11. *P. laxa*

Leaves oblong elliptic crenate 12. *P. Curtisii*

Leaves yellow beneath 13. *P. obovata*

### 1. *P. cordata*, Ridl.

A tall herb 2 feet high stem pubescent. Leaves opposite ovate acuminate inaequilateral at base dentate sparingly hispid above and beneath, nerves 10 pairs hairy beneath 6-7 inches long, 4 inches wide petiole 1 inches long. Peduncles stout 6-8 inches long pubescent bearing a spreading panicle 4-6 inches long. Bracts in pairs at the base of each bifurcation ovate glabrous  $\frac{1}{8}$  inch long. Pedicels slender  $\frac{1}{2}$  inch long glabrous. Sepals lanceolate free to base glabrous  $\frac{1}{8}$  inch long. Corolla campanulate  $\frac{1}{2}$  inch long white tinted violet lobes short equal rounded, with 2 rows of glands on each. Stamens 2, filaments short anthers subglobose large. Staminodes minute pistil slender glabrous no disc. Capsule sausage shaped 4 angled  $1\frac{1}{2}$  inch long glabrous rather thick splitting on two sides. Seeds minute deep red oblong.

*Didymocarpus cordata*, Jack, R. Br. Benn. Pl. Jav. Rar. p. 119; Ann. Sc. Nat. 2, Vol. 13, p. 164; Dec. Prodr. 9, p. 265; Miq. Fl. Ind. Bat. 2, p. 726; Clarke, Mon. Phan. l.c. 84, t. IX.



Penang (Wallich 781) (W. Fox) (Curtis 452) (Maingay 1224); Perak, Larut Hills) (Scortechini 296 and 400a) (Ridley 2913 and 10682) (King's Coll. 2227, 2331 and 6378).

Common on rocks, alt. 2-6000 feet.

Native name "Bunga Chimba." Endemic.

Var. *debilis*, Ridl., Trans. Linn. Soc., l.c. 514. Rhizome fleshy, stem 6 inches tall pubescent. Leaves thin ovate oblique, base obtuse, apex acute or subacute, margin crenate dentate, sparingly hispid  $1\frac{1}{2}$ -4 inches long 1-2 inches long. Panicle 4-6 inches long glabrous weak, few branched branches short and thin. Bracts ovate. Flowers smaller.

Kedah, Gunong Jerai (Ridley).

Var. *ophirensis*, Ridl., l.c.c.

Tall and weak. Leaves thin lanceolate subacute or acute narrowed at the base 6 inches long 2 inches wide. Panicle weak glabrous. Bracts lanceolate. Flowers smaller, white. Fruit smaller curved  $\frac{3}{8}$  inch long.

Malacca, Mount Ophir. On a big cliff in the forest below Padang Batu (Ridley 3183).

2. *P. campanulata*, n.sp.

Stem slender herbaceous a foot tall shortly hairy. Leaves opposite in distant pairs elliptic acute entire or obscurely crenulate, above glabrous except the edge fringed with multicellular hairs beneath, glabrous except the midrib and elevated nerves about 12 pairs scurfily hairy  $2\frac{1}{2}$ - $3\frac{1}{2}$  inches long  $1\frac{1}{4}$  inch wide, petiole scurfy hairy  $\frac{1}{8}$ - $\frac{3}{8}$  long. Peduncles subterminal  $1\frac{1}{2}$  inch long 1 flowered reflex hairy. Bracts 2 alternate linear minute. Pedicel  $\frac{1}{2}$  inch. Sepals linear hairy  $\frac{1}{8}$  inch long. Corolla campanulate half an inch long apparently white, lobes broad rounded. Stamens 2 very short anthers subglobose. Style slender pubescent. Capsule (unripe) cylindric velvety  $\frac{3}{4}$  inch long including the style.



Selangor. Above the Gap on the road to the Sempang mine 3-4000 feet (Curtis), a single specimen.

A very distinct plant of a weedy habit with solitary flowers of the type of *P. cordifolia*.

3. *P. Scortechinii*, n.sp.

Stem herbaceous glabrous. Leaves opposite ovate acuminate, base rounded inaequilateral, margins crenate, quite glabrous, nerves 8 pairs,  $3-3\frac{1}{2}$  inches long  $1-2\frac{1}{2}$  inches wide, petiole  $\frac{1}{2}$  inch long. Peduncle slender erect subterminal 3 inches long glabrous, branches dichotomous few 1 inch long. Flowers solitary on the ends of the branches. Sepals free almost to the base oblong obtuse  $\frac{1}{8}$  inch long glabrous, fleshy. Corolla campanulate  $\frac{1}{2}$  inch long glabrous lobes rounded. Anthers broad elliptic, filaments very short.

Perak, (Scortechini no number or locality). A single incomplete specimen. The plant is allied to *P. cordifolia* of which it has quite the flowers, but the whole thing is quite glabrous.

4. *P. caerulea*, n.sp.

Stem woody 3-4 inches long  $\frac{1}{8}$  inch through. Leaves crowded at the top narrowly lanceolate linear acuminate narrowed gradually to the base 4-5 inches long  $\frac{1}{4}$  inch wide above dark green nearly glabrous, midrib prominent, beneath pale dark green nearly glabrous, midrib prominent, beneath pale cinnamon color, nerves about 30 pairs joined at the tips. Peduncles slender axillary 4 inches long pubescent 1-2 flowered. Sepals linear  $\frac{1}{8}$  inch long obtuse. Corolla campanulate  $\frac{1}{2}$  inch long and nearly as wide at the base pubescent, base pale, lobes deep blue, lobes rounded. Stamens 2, filaments very short sigmoid, anthers broad rounded oblong. Style fairly stout. Stigma heart shaped. Capsule very narrow cylindric 1 inch long.

Tringanu, Bundi (E. Rostado). The upper part of the stem among the leaves is covered with silvery hairs.



The habit of this plant is quite that of *Stilpnothrix ornata* (*Didissandra ornata*, Clarke) a native of Borneo, but it has only 2 not 4 stamens. It differs very much in habit from all others of the genus.

5. *P. pyroliflora*, Ridl.

Stem woody 3 inches tall or more, pubescent. Leaves alternate, ovate or ovatelanceolate acuminate at both ends 3-4 inches long  $1\frac{1}{2}$  inch wide entire bright green, silky pubescent above, beneath paler, petiole over an inch long pubescent. Peduncles several from the upper axils erect 3-4 inches long shortly hairy. Sepals lanceolate short pubescent. Corolla campanulate funnell shaped white  $\frac{3}{8}$  inch long lobes short rounded. Stamens 2, filaments short and thick, anthers large elliptic. Style thick curved upwards longer than the corolla. Stigma very small capitate. Capsule spreading an inch long terete, terminated by rather a long style, glabrous.

*Didymocarpus pyroliflora*, Ridl., Trans. Linn. Soc., p. 330.

Pahang, Tahan river woods (Ridley 2164).

Endemic.

6. *P. capitata*, n.sp.

Stemless, or with a stout rootstock. Leaves in a rosette orbicular base rounded subpeltate 6 inches long 5 inches wide bright green glabrous above ocre yellow beneath tomentose, nerves raised reticulate, petiole stout 2 inches long. Peduncle slender 8 inches tall. Flowers numerous in an umbell at the top, with two broad blunt oblong bracts  $\frac{1}{4}$  inch long, below. Pedicels  $\frac{1}{2}$  inch long. Calyx campanulate lobes linear oblong obtuse  $\frac{1}{8}$  inch long green hairy Corolla  $\frac{1}{2}$  inch across lobes subequal rounded, white. Filaments very short straight, anthers reniform. Style curved up longer white. Capsules spreading linear straight beaked  $1\frac{1}{2}$  inch long.

Perak, Bujong Malacca (Curtis 3215), Kamuning (Machado) on limestone rocks.



Var. *oblongifolia*. Leaves oblong narrowed at the base.

Perak, Kuala Dipang and Sungei Siput (Curtis 3107), Tambun (Ridley 9832), Batu Kurau (Scortechini 1581 and 4325), Goping (King's Collection 456).

Endemic. The leaves are very variable. In one plant from Sungei Siput the leaves are narrowly lanceolate tapering acutely into the petiole, 9 inches long by 2 inches wide. In some plants the bracts at the base of the cyme are developed into very small leaves of the shape and coloring of the basal leaves.

7. *P. ferruginea*, n.sp.

Stemless or nearly so. Leaves in a rosette ovate cordate obtuse crenulate above covered with scattered hairs, below tomentose with longer hairs paler nerves elevated, 3 inches long  $2\frac{1}{2}$  inches wide, petiole  $1\frac{1}{2}$ -2 inches long. Peduncles 3 inches long ferruginous-tomentose. Cyme compact scorpioid ferruginous-hispid. Calyx lobes as long as the corolla green ferruginous-hispid lanceolate. Corolla tube very short limb explanate not bilabiate lobes broad obovate obtuse subequal and similar, white or tinted with rose. Stamens 2 short, filaments broad spatulate thick, apex three toothed, anthers conic connate by the lips. Style no longer. Ovary conic. Stigma rounded entire discoid.

Lankawi on damp rocks (Curtis 2566).

Endemic.

8. *P. regularis*, Ridl.

Stem woody  $1\frac{1}{2}$  inch long. Leaves crowded at the top very unequal oblong lanceolate obtuse base cuneate inaequilateral crenulate dark green glabrous above purple minutely tomentose beneath with elevated nerves 3 inches long  $1\frac{1}{2}$  inches wide, petiole  $1\frac{1}{2}$  inch long tomentose. Peduncles slender pubescent an inch long, branches very short and slender  $\frac{1}{4}$  inch long umbelled brown tomentose. Bracts lanceolate obtuse. Flowers few very



small very shortly pedicelled. Calyx lobes lanceolate brown tomentose as long as the corolla tube. Corolla hardly  $\frac{1}{4}$  inch across white lobes oblong obtuse equal not bilabiate. Stamens 2 filaments sigmoid thick, anthers rounded ovoid. Style longer. Stigma capitate. Capsule  $\frac{1}{2}$  inch long cylindric scabrid rather thick, straight.

*Didymocarpus regularis*, Ridl., Journ. Linn. Soc., XXXII, 515.

Lankawi Islands (Curtis).

Endemic,

9. *P. polita*, n.sp.

Stemless. Leaves in a rosette ovate crenate obtuse, base rounded above deep shining green, beneath ocreous tomentose with nerves and nervules reticulate 7-8 inches long 4-4 $\frac{1}{2}$  inches wide, petiole 4 inches long. Peduncle over a foot long slender with brown ocreous fur, branches few 3 inches long, umbellate. Bracts linear oblong obtuse brown woolly. Pedicels  $\frac{1}{4}$  inch long. Calyx lobes linear green  $\frac{1}{8}$  inch long. Corolla subbilobed  $\frac{1}{2}$  inch across white back tinted pink, lobes rounded. Stamens, 2, filaments thickened at the base, anther orange reniform. Style stout pink at base white above. Stigma capitate.

Perak, Bujong Malacca (Curtis 3214 part).

Perhaps a hybrid between *P. capitata* and *P. vulpina*.

Endemic.

10. *P. vulpina*, n.sp.

Stem 2 inches long thick covered with red wool. Leaves elliptic rounded at each end crenulate above sprinkled with pale multicellular hairs, beneath covered densely with branched rufous hairs arranged stellately, nerves beneath strongly elevated, 6 pairs, reticulations elevated 1 $\frac{1}{2}$ -3 inches long 1-2 inches wide, petiole 1-3 inches densely red woolly. Peduncles slender 6-8 inches long red, with a few branched hairs branches slender 1-3



inches long, trichotomous. Bracts very small linear obtuse glabrous. Sepals narrow linear glabrous. Corolla white  $\frac{1}{4}$  inch across lobes rounded subequal. Stamens 2 anthers very large reniform. Style short thick. Capsule cylindric narrow glabrous.

Perak, Bujong Malacca (Curtis 3214), Hot Springs Ipoh (Curtis 3132).

Endemic. On limestone rocks.

11. *P. laxa*, n.sp.

Stem very short woody and thickly brown tomentose. Leaves obovate coarsely crenate serrate, narrowed at the base into the winged petiole 3-7 inches long 2-3 inches wide dull green densely hairy tomentose on both surfaces. Peduncle slender 5-6 inches long terminated by a much branched umbel of slender branches 3 inches long. Pedicels slender  $\frac{1}{8}$  inch long. Flowers numerous, bracts very small. Calyx shortly 5 cleft, lobes lanceolate short green. Corolla  $\frac{1}{4}$  inch across white or tinted rosy, upper lobes broad oblong recurved lower lips shortly trifid central lobe broadest. Filaments short swollen in the middle, anthers yellow reniform. Style longer. Capsule linear cylindric straight  $\frac{1}{2}$  inch long tipped with the elongate style.

Lankawi at Kwah (Curtis 2571).

Endemic.

12. *P. Curtisii*, n.sp.

Stemless. Leaves oblong elliptic crenate obtuse 6 inches long  $2\frac{1}{2}$  inches wide, above sprinkled with hairs, petiole rufous hairy  $1\frac{1}{2}$  inch long. Scapes 10 inches long rufous tomentose bearing an umbel of 4 or 5 branches at the top about 2 inches long. Bracts at base of umbel oblong obtuse  $\frac{1}{4}$  inch long. Pedicels short rufous tomentose. Calyx lobes linear oblong obtuse hairy  $\frac{1}{8}$  inch long. Corolla  $\frac{1}{2}$  inch across white buds tinted pink, tube very short limb bilobed upper lobes short rounded, lower lobes larger. Stamens filaments very short thick curved,



anthers reniform triangular. Style much longer than stamens bent, ovary cylindric. Stigma wider discoid. Capsule (unripe) cylindric acuminate straight.

Perak, Bujong Malacca (Curtis 3214).

Endemic.

13. *P. obovata*, n.sp.

Stem short. Leaves crowded at the top thin obovate blunt base cuneate 3 inches long  $1\frac{1}{2}$  inch wide thinly arachnoid on both surfaces, beneath yellowish, petiole  $\frac{1}{4}$  inch long. Peduncle slender 3-6 inches long glabrous, branches few terminal. Bracts narrowly oblong obtuse. Sepals oblong obtuse glabrous. Corolla  $\frac{1}{4}$  inch across lower lip longer than upper one lobes oblong rounded. Stamens 2, anthers reniform, filaments short and thick. Style short and thick. Stigma capitate.

Lankawi, Gunong Chinchang (Curtis).

One specimen only seen.

8. *Boea*, Comers.

Herbs or shrublets with a woody stem. Leaves opposite or whorled, generally on the back. Peduncles axillary usually elongate, laxly or compactly cymose or paniced. Bracts small. Flowers large or small blue or white. Calyx of 5 narrow sepals. Corolla widely campanulate with a short tube usually distinctly billobed, lobes ovate obtuse.

Stamens 2 perfect with short curved thick filaments, anthers ovoid coherent, cells ovoid. Disc absent ovary sessile. Style as long glabrous above. Stigma small capitate. Capsule slender cylindric or fusiform cylindric, when ripe spirally twisted. Seeds minute.

Species about 22. India, Siam, China and Malaya. Stems tall leafy, leaves woolly.

Flowers  $1\frac{1}{2}$  inch across

1. *B. paniculata*

Flowers under an inch across

Leaves white beneath

2. *B. verticillata*



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Leaves yellow brown beneath	3. <i>B. caerulescens</i>
Stem short white woolly about 6 inches, Peduncle as long	4. <i>B. elegans</i>
Stems short woolly	
Peduncles shorter than leaves	5. <i>B. lanata</i>
Stems short woody, leaves crowded at the not top woolly	
Peduncles no longer than leaves	6. <i>B. acutifolia</i>
Peduncle tall slender widely branched, Stems woody branched	7. <i>B. divaricata</i>
Peduncles shorter than the leaves	8. <i>B. suffruticosa</i>
Peduncles tall slender, branches umbellate	9. <i>B. parviflora</i>

### 1. *B. paniculata*, Ridl., Journ. Linn. Soc., XXXII, 519.

Stem base woody 4 inches or more long  $\frac{1}{2}$  inch thick, above a rosette of leaves, upper part of stem 1-2 feet long stout deeply grooved, white arachnoid, branches numerous whorled erect 6 inches long covered with brown wool. Leaves crowded in a rosette at the top of the woody portion of the stem lanceolate acuminate narrowed for a long distance at the base 6 inches long 1 inch wide above grey arachnoid, beneath greyish white with cinnamon colored raised nerves. Bracts 4 or 5 at each whorl of branches leafy. Flowers numerous pedicels  $\frac{1}{2}$  inch long. Sepals short lanceolate pubescent  $\frac{1}{8}$  inch long. Corolla tube very short limb  $1\frac{1}{2}$  inch wide blue, lobes large rounded unequal. Filaments short and thick  $\frac{1}{4}$  inch long. Style curved as long. Capsule  $\frac{3}{4}$  inch long thick.

Selangor, limestone rocks, Kuala Lumpur (Kelsall and Ridley 1970, 1976 and 8226); Perak, Sungei Siput (Curtis 3105), Kuala Dipang (King's Coll. 8271), Batu Kurau (Scortechini 1611).

Endemic. A superb plant growing in the cracks of limestone rocks.



2. *B. verticillata*, Ridl., Journ. Linn. Soc., XXXII, 519.

Stem base woody 3 inches or more long nearly  $\frac{1}{4}$  inch in diameter, above herbaceous  $1\frac{1}{2}$  feet tall 4 angled white arachnoid with branches whorled each whorl 3 inches or less apart. Leaves whorled lanceolate acuminate narrowed at the base into a petiole, 4 inches long  $\frac{3}{4}$  inch wide or more, above grey arachnoid beneath white arachnoid with raised nerves. Bracts leafy  $\frac{1}{2}$ - $\frac{1}{4}$  inch long. Flowers numerous blue. Sepals lanceolate subulate arachnoid  $\frac{1}{8}$  inch long. Corolla half an inch wide lobes rounded. Stamens very short, anthers pear-shaped. Style much longer straight. Capsule fusiform acuminate  $\frac{1}{2}$  inch long.

Selangor, limestone rocks at Kuala Lumpur (Kelsall, Ridley 1975, 8551).

Endemic.

3. *B. caerulea*, n.sp.

Whole plant over 2 feet tall, upper part of stem stout grooved woolly. Leaves oblanceolate subobtusely narrowed to the base above dark green densely pubescent, beneath ochreous covered with felted wool, 6-8 inches long  $1\frac{1}{4}$ -2 inches wide, petiole winged to the base or not. Panicle 2 feet or more long large, branches whorled yellow-woolly. Bracts below leaflike above linear narrow yellow. Calyx lobes lanceolate woolly. Corolla tube very short, limb  $\frac{3}{4}$  inch across pale blue upper lobe shorter lobes rounded, lower lip unequally lobed longer, central lobe longest. Stamens 2 anthers reniform conic, large filaments short curved. Style bent on the cylindric ovary pubescent. Stigma large discoid. Capsule thick glabrous  $\frac{3}{4}$  inch long.

Perak, Sungei Siput (Curtis 3137), Kinta (King's Coll. 7175, 7062, 8276).

Endemic.

*B. Havilandi*, n.sp.

Stem 18 inches tall 4 angled woolly. Leaves in whorls of three about 4 inches apart oblong lanceolate obtuse



sessile 8 inches long by 2 inches wide covered with a tomentum, nerves inconspicuous. Panicles axillary and terminal in threes, about 3 inches long, peduncles woolly. Sepals lanceolate woolly 5. Corolla  $\frac{1}{2}$  inch across blue, lobes rounded. Stamens filaments short anthers large semiovoid thick style. Capsule pendulous cylindric 1 inch long  $\frac{1}{8}$  inch through.

Borneo, Sarawak, Braang (Dr. Haviland 641), Bau (Ridley 11724) on limestone rocks.

Endemic.

4. *B. elegans*, Ridl., Journ. Linn. Soc., XXXII, p. 522.

Stem about 6 inches long woody decumbent  $\frac{1}{8}$  inch thick arachnoid. Leaves whorled in threes  $\frac{1}{2}$ -3 inches apart, lanceolate acute narrowed to the base 1-2 $\frac{1}{2}$  inches long  $\frac{1}{4}$ - $\frac{1}{2}$  inch wide above grey arachnoid beneath cinnamon arachnoid. Peduncles from the upper axils slender glabrous 6 inches long. Cyme terminal 3 inches long with few slender branches. Calyx very short lobes lanceolate glabrous. Corolla half an inch across, with broad rounded lobes white pink in the mouth, anthers oblong. Style rather short. Stigma clubbed. Capsule 1 inch long glabrous linear acuminate.

Kedah, Gunong Jerai on granite precipices (Ridley).

Endemic. The only species I have met with not growing on limestone rocks.

5. *B. lanata*, Ridl., l.c. 520.

Stem short stout woody 2 inches long, curved with white wool. Leaves crowded lanceolate acuminate narrowed into a petiole arachnoid above densely woolly beneath 3 inches long  $\frac{3}{4}$  inch wide, petiole woolly 3 inches long winged to base. Panicles few branched axillary dense an inch to 5 inches long. Calyx as long as the corolla tube, lobes lanceolate woolly outside. Corolla thin  $\frac{1}{2}$ - $\frac{3}{4}$  inch across glabrous rose-pink, lobes rounded anthers subglobose. Style thick. Capsule  $\frac{1}{2}$  inch long thick glabrous.



Lankawi, Dayong Bunting on limestone rocks (Curtis 2569).

6. *B. acutifolia*, Ridl., Journ. Linn. Soc., XXXII, p. 519.

Stem woody 3 inches or more long  $\frac{1}{4}$  inch through internodes  $\frac{1}{2}$  inch long. Leaves crowded at the top oblanceolate acute, narrowed to the base 6 inches long  $1\frac{1}{2}$  inch wide above glabrous dotted beneath cinnamon arachnoid. Panicles axillary 6 inches long, peduncles arachnoid, branches short slender. Sepals 3 lanceolate acute  $\frac{1}{8}$  inch long arachnoid. Capsule cylindric acute glabrous  $\frac{3}{4}$  inch long.

Lankawi, Goa Chinta (Curtis 2791).

Endemic.

7. *B. divaricata*, n.sp.

Stem about 4 inches tall thick and woody. Leaves in a rosette on the top oblanceolate crenulate obtuse narrowed into a winged petiole, nerves and nervules beneath elevated 15 pairs, above glabrous beneath covered with a thin brownish tomentum 7 inches long  $2\frac{1}{2}$  inches wide. Peduncles rather stout terete smooth 7-16 inches tall, branches umbelled decompound, a foot or more long. Pedicels of flowers  $\frac{3}{16}$  inch long covered with brown fur. Calyx lobes lanceolate acute green glabrous shorter than the corolla tube. Corolla  $\frac{1}{4}$  inch across pale lilac tube short dilated, limb bilabiate, lobes rounded. Stamens anthers connate rounded with acute bases filaments thick sigmoid. Style slender. Stigma horseshoe-shaped. Capsule cylindric strongly twisted 1 inch long.

Lankawi, Ayer Hangat (Curtis 3683).

Endemic.

8. *B. suffruticosa*, Ridl., Journ. Linn. Soc., p. 518.

A branching shrub 1-2 feet tall, with rather slender branches  $\frac{1}{8}$  inch through angled slightly arachnoid. Leaves scattered lanceolate subacute narrowed at the base 3 inches long  $\frac{1}{2}$  inch wide above nearly glabrous punc-



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tate, beneath covered with brownish tomentum, nerves conspicuous, petiole  $\frac{1}{4}$ - $\frac{1}{2}$  inch long. Panicles axillary dense an inch long with short branches brownish woolly. Buds brown woolly. Calyx longer than the corolla tube. Sepals linear lanceolate thick tomentose outside. Corolla  $\frac{1}{4}$ - $\frac{1}{3}$  inch across white lobes short oblong rounded, anthers oblong obtuse. Capsule fusiform very thick  $\frac{1}{4}$  inch long tipped with the long style.

Lankawi, on a small island north of Kwah (Curtis 3682 and 2565).

Endemic.

### 9. *R. parviflora*, n.sp.

Stem slender shrubby branching covered with ferruginous tomentum. Leaves lanceolate acuminate, base cuneate unequal 4 inches long  $1-1\frac{1}{4}$  inch wide above glabrous, beneath covered with rusty wool, nerves elevated 11 pairs. Peduncle 6 inches long, slender glabrous, panicle umbellate of 6 slender branches in a terminal whorl, branchlets glabrous numerous slender. Bracts very narrow linear. Flowers very small numerous white, pedicels slender  $\frac{1}{8}$  inch. Sepals lanceolate glabrous 5. Corolla very small white, tube very short, lobes upper subacute lower ones oblong, anthers large reniform. Style shorter. Capsule very slender cylindric  $\frac{1}{4}$  inch long terminated by the slender style.

Perak, Hot Springs at Ipoh and Sungei Siput, not common (Curtis 3134), Kinta (King's Coll. 7,108).

Endemic. On limestone rocks.

### 9. *Phylloboea*, Benth.

Herbs or half shrubby. Leaves opposite petioled. Cymes pedunculate many flowered. Bracts large conspicuous. Flowers large pink or blue. Calyx large 2 lipped, one lip 2 lobed, the other 3 lobed or of 3 large connate sepals. Corolla broadly campanulate 2 lipped 3-5 lobed. Stamens 2 short, anthers large rounded. Capsule lanceolate at length twisted.

Jour. Straits Branch



Species 2, one Burmese, one Malayan.

*P. speciosa*, Ridl., Journ. Linn. Soc., XXXII, p. 522.

A shrub 1 or 2 feet tall, stems white tomentose. Leaves in distant pairs lanceolate acuminate 6 inches long  $1\frac{1}{2}$  inch wide, above glabrous, beneath white arachnoid, petiole 1 inch long. Peduncle stout lateral erect nearly a foot tall. Flowers sessile scattered. Bracts ovate lanceolate  $\frac{1}{2}$  inch long white arachnoid. Calyx of three sepals connate ovate oblong woolly  $\frac{3}{8}$  inch long. Corolla an inch long blue, tube broad, lobes 3 two oblong truncate, the third much broader. Stamens short not longer than the ovary. Style long woolly. Capsule 1 inch long lanceolate cylindric acuminate woolly.

Lankawi. Common on limestone rocks on the small islands. (Curtis 2564).

Endemic.

#### 10. *Boeica*, Clarke.

Herbs or half shrubby plants with the habit of *Boea*. Leaves oblong elliptic or lanceolate more or less tomentose or hairy. Inflorescence racemose or paniced, axillary. Flowers small lilac or white. Calyx 5 fid. Corolla tube very short, lobes subequal, rounded. Stamens 4, filaments very short, anthers rounded connivent. Style curved larger than the stamens. Capsule linear cylindric.

Species 4 or 5, Assam, Burma and Malay Peninsula.

Most of the few described species are based on flowerless specimens, and are all very similar, and closely resemble *Boea divaricata* in habit but the capsule is straight and not twisted. The type species however (*B. filiformis* Clarke) has 4 stamens instead of two.

The Malayan one described below, differs from these in habit, and I have seen no fruit, but there is no other genus to which it can be referred on account of its four very short stamens arranged in a circle round the pistil. The only other genus allied to it is *Platystemma*, a Himalayan plant with distinctly two-lipped flowers.



*B. brachyandra*, n.sp.

Stemless. Leaves obovate serrate hairy dark green, obtuse 3 inches long by  $1\frac{1}{2}$  inch wide, nerves 6 or 7 pairs covered beneath with long red hairs, back of leaf punctate. Scape short few flowered about 3 inches long hairy unbranched. Calyx lobes free nearly to base linear hairy green nearly as long as corolla lobes. Corolla tube very short, lobes broad rounded oblong explanate subequal pale lilac, about  $\frac{1}{2}$  inch across. Stamens 4, filaments very short, anthers broad waxy sub-globose connivent round the pistil. Style longer slender curved white. Capsule cylindric narrow 1 inch long scabrid, straight, on pedicels elongated to  $\frac{1}{2}$  inch.

Lankawi, Gunong Chinchang at Kwala Malacca (Curtis).

Found quite dried up in February 1899, and brought alive and flowered in the Botanic Gardens, Penang.

11. *Orchadocarpa*, n. gen.

Herb or shrublet with opposite unequal leaves. Flowers small blue racemose or cymose, pedicelled. Sepals free to base narrow lanceolate. Corolla tube short, limb 2 lipped unequally. Stamens 2, filaments short exserted sinuate, glabrous, anthers bilobed reniform connivent by their edges. Ovary hairy oblong style short. Stigma capitate. Capsule oblong hairy enclosed in the sepals.

*Sp.O. lilacina*, n.sp.

Stem short to 4 inches long stout woody. Leaves crowded at the top long petioled thin ovate or ovate lanceolate acute, strongly serrate covered with closely felled short hairs, base broad inaequilateral 3 to 7 inches long  $1\frac{1}{2}$ -3 inches wide, petiole slender 3-6 inches long. Peduncle 3-4 inches long pubescent villous bearing a terminal pubescent umbelliform panicle, or simply racemose. Sepals linear pubescent  $\frac{1}{6}$  inch long. Corolla pale lilac-blue, tube very short, limb distinctly bilabiate, upper lip smaller, lobes short rounded, lower lip longer



trifid, median lobe longer than the others oblong obtuse, pubescent across. Stamens 2, filaments from the mouth of the corolla tube thick, twisted at the top, anthers large reniform. Ovary oblong pubescent. Style distinct not larger than the calyx. Stigma very small capitate. Capsule short oblong hairy enclosed beaked in the calyx.

Perak (Scortechini 406a), Gunong Batu Putih (Wray 302) 298.

12. *Rhynchoglossum*, Bl.

Herbs succulent and nearly glabrous. Leaves opposite thin. Raceme terminal lax flowers pendent. Calyx campanulate toothed or lobed. Corolla tube cylindric narrowed above, limb bilobed, upper lobe very short bifid, lower much longer 3 lobed. Stamens 2 perfect affixed to the middle of the corolla tube, anthers connivent, cells ellipsoid parallel. Staminal nodes 2, or absent. Disc cylindric. Ovary ovoid glabrous. Style longer. Stigma dilate. Capsule included in the calyx ellipsoid membranous 2-valved. Seeds narrowly ellipsoid smooth.

*R. obliquum*, Bl. Bijdr. 741.

Succulent herb-20 inches tall. Leaves 1-3 inches long  $\frac{1}{2}$ -1 inch wide glabrous or nearly so ovate acuminate, petiole  $\frac{1}{2}$  inch long or less. Racemes lax about 6 inches long, flowers numerous pale to deep violet. Bracteoles filiform  $\frac{1}{2}$ - $\frac{1}{6}$  inch long. Calyx tubular  $\frac{1}{4}$  inch long enlarged in fruit, lobes triangular or lanceolate. Corolla  $\frac{5}{8}$  inch long, lower lip several times longer than the upper one, subtrilobed. Capsule ellipsoid  $\frac{1}{3}$  inch.

Clarke, Mon. Phan. p. 161, Fl. Brt. Ind. IV, p. 367 *R. Blumei*, Dec. Prodr. 9, p. 274; *Loxotis intermedia*, Benth. Scroph. Ind. p. 57, Don Gen. Syst. 4, p. 664 *L. obliqua*, R. Br. Benn. Pl. Jav. Rar. p. 102, t. 24; Miq. Fl. Ind. Bat. 2, p. 731, t. 35, fig. 3.

Perak, Larut Hills (Fox), Batang Padang (Wray 1447), at 2000 feet elevation.

Distrib. Tenasserim and Malay islands.



13. *Epithema*, Bl.

Small rock-herbs, succulent pubescent. Stem simple or branched. Leaves few, alternate or opposite above petioled or sessile, ovate usually cordate. Peduncles long, from the upper axils erect. Bract single ovate or cucullate. Flowers small blue or white in a scorpioid cyme on short pedicels. Calyx campanulate lobes 5 acute. Corolla tube short, limb distinctly 2 lipped, lobes acute or obtuse subequal. Stamens perfect 2 posterior, anterior ones sterile shorter, anthers coherent. Disc unilateral or almost surrounding the ovary. Ovary ovoid. Style longer. Stigma subcapitate. Capsule globose enclosed in the enlarged calyx on a thickened and a longer pedicel splitting transversely (a pyxis). Seeds ellipsoid or oblong, spirally reticulate.

Species about 6 Asiatic, all very closely allied, and one African.

*E. saxatile*, Bl. Bijdr., p. 738.

Succulent herb 3-12 inches tall. Stem viscid pubescent, leaves very variable, opposite, ovate cordate denticulate or crenulate. Stigmose or hairy  $1\frac{1}{2}$ -6 inches long, 1-5 inches across, petiole  $\frac{1}{4}$ - $1\frac{1}{2}$  inch long. Peduncle 1-2 inches long viscid, cyme  $\frac{3}{4}$  inch across subtended by a broad sessile truncate denticulate bract. Flowers numerous subsessile. Calyx viscid pubescent tubular, split about half way down into 5 narrow lobes,  $\frac{1}{4}$  inch long. Corolla tube as long straight white, three upper lobes oblong obtuse tipped with violet, lower two connate broader subovate denticulate thinner pellucid tipped mauve with darker central spots, mouth of tube inside hairy. Stamens 4 in 2 pairs, filaments incurved, adnate to the mouth of the tube white, anthers 2 oblong connate yellowish. Ovary ovoid enclosed in a fleshy truncate yellow disc. Style stout glabrous. Stigma capitate. Capsule globose pubescent surrounded by the much enlarged ovate acute sepals and borne on the thickened elongate to  $\frac{1}{8}$  inch pedicel, circumsciss. Seeds very numerous brown elliptic fusiform spirally ribbed.



Dec Prodr. 9, p. 278; Miquel Fl. Ind. Bat. 2, p. 736; 3 Zoll. Verz. Ind. Arch. 1854, p. 55; Clarke, Mon. Phan. 178.

Pahang, Kota Glanggi (Ridley); Selangor, Kuala Lumpur Caves (Ridley, 8217); Perak, Telor Pinang, Ipoh (Ridley), Batu Kurau (Scortechini 1580) (King's Coll. 10,941), Sungei Ryah (Kunstler 983), Goping (King's Coll. 5872); Lankawi Islands (Curtis 2107).

Distrib. Java, Borneo, Sumatra (Karang Natu Peak Forbes 3122) on limestone rocks.

14. *Monophyllæa*, R. Br.

Succulent herbs with an unbranched stem and one large leaf herbaceous cordate ovate sessile. Peduncles numerous from the leaf base, with racemose or cymose inflorescence. Flowers small white. Calyx deeply 5 cleft, lobes elliptic obtuse. Corolla small white, tube short cylindric, limb distinctly 2 lipped, lobes 5. Stamens 4 perfect, filaments short, anthers cohering in pairs or altogether, disc unilateral or a complete ring. Ovary 1 locular. Style short. Stigma capitate. Capsule membranous inclosed in the enlarged calyx irregularly splitting. Seeds oblong minute reticulate.

Species 7, Malay Peninsula and Islands and Siam.

Leaf glabrous, sepals not spreading in fruit 1. *M. Horsfieldi*

Leaf strigosely hairy, sepals spreading in fruit

2. *M. patens*

*M. Horsfieldi*, R. Br. Benn. Pl. Jav. Rar., p. 121; Ann. Sc. Nat. 2, Vol. XIII, p. 160.

Stem 6 inches to a foot tall. Leaf ovate cordate 6-12 inches long 1-12 inches wide glabrous glaucous beneath. Racemes 2-7 often stout 9 inches long, flowers numerous subsecund, pedicels  $\frac{1}{4}$  inch long glabrous. Sepals glabrous rounded ovate ribbed. Corolla tube short cylindric, upper lip bilobed, lower 3 lobed, lobes rounded, white. Stamens 4 didynamous glabrous, anthers connate. Style short, glabrous, pistil subglobose. Capsule globose enclos-



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ed in the enlarged sepals. Seeds oblong brown reticulate very numerous.

Selangor, Kuala Lumpur Caves (Curtis) (Beccari); Perak, Gopeng (King's Coll. 515 and 443).

Distrib. Sumatra, Batu Pantih (Forbes 2660a) Java (Lobb) on limestone rocks.

### *M. patens*, n.sp.

Stem 1-4 inches long viscid hairy. Leaf ovate cordate to ovate lanceolate strigose hairy 6 inches long 4-6 inches across. Racemes slender 4-20, pubescent 4-5 inches long. Flowers in pairs, pedicels slender pubescent  $\frac{1}{4}$  inch long in fruit. Sepals lanceolate hairy spreading in a stellate manner in fruit, ribbed. Corolla tube short lobes white. Stamens 4 glabrous didynamous. Pistil ovoid. Style short thick glabrous. Capsule globose glabrous. Seeds numerous black tessellated.

Selangor, Kuala Lumpur Caves (Ridley 8222) (King's Coll. 7052); Perak, Kinta, (Curtis 3136), Sungei Siput (3135), Batu Kurau (Scortechini 1574 and 1579) Gopeng (Kunstler 449).

Endemic. On limestone rocks.

### *M. glabra*, n.sp.

Stem succulent 6 inches to a foot tall. Leaf ovate cordate obtuse glabrous glaucous beneath  $2\frac{1}{2}$ -6 inches long 2 to 6 inches wide. Racemes slender glabrous 4 to 10, 2-8 inches long lax. Flowers numerous in pairs, pedicels slender  $\frac{1}{4}$  inch long spreading deflexed. Sepals  $\frac{1}{8}$  inch long in fruit lanceolate acute glabrous not spreading. Corolla brown and white. Capsule, enclosed in the sepals cylindric oblong.

Siam, Kasum (Curtis 3219).

Endemic.

## 15. *Stauroanthera*, Benth.

Herbs succulent pubescent, with alternate leaves, the opposite ones reduced, falcate elliptic acuminate inaequilateral.



Cymes peduncled lax. Bracts small. Flowers medium sized showy. Calyx campanulate lobes five. Corolla campanulate rounded tube short, shortly spurred or gibbous, limb two lipped, lobes rounded nearly equal. Stamens 4 perfect, anthers connate bilocular, bases diverging. Ovary subglobose or ovoid, no disc. Style short. Capsule depressed globose irregularly split. Seeds minute obovoid reticulate.

Species 3. Assam and Malay islands.

Flowers large, base of corolla spurred 1. *S. grandiflora*

Flowers small base of corolla not spurred 2. *S. umbrosa*

*S. grandifolia*, Benth., Scroph. Ind. p. 57.

Succulent herb with a fleshy stem about 6 inches tall. Leave 6 inches long by 4 wide or less oblong obtuse crenulate deep green above bullate glabrous inaequilateral pubescent on both sides petiole 1 inch long. Cyme short pubescent 3 inches long with a few, 9 large flowers. Bract short ovate, flowers  $1\frac{1}{4}$  inch across. Calyx lobes lanceolate ovate pubescent. Corolla tube short and broad with a short spur at the base, lobes short broad rounded, violet with a central yellow bar reaching to the spur. Stamens subequal 4, filaments slender, anthers connate. Ovary ovoid, style shorter than the stamens. Stigma capitate. Capsule.

Clarke De C. Prodr. l.c. 190; Dietr. Syn. pl. 3, 582, R. Br. Benn. Pl. Jav. Rar. p. 121; Hook. Bot. Mag., t. 5409; Miq. Fl. Ind. Bat. 2, p. 735; Clarke, Comm. and Cyrt. Beng. t. 89, bis.

Penang (Wallich 6395) rocks near Balik Pulau (Curtis); Perak, Larut (King's Coll. 2248).

Distrib. Burmah. Rare on rocks.

*S. umbrosa*, Clarke, Comm. and Cyrt. Beng. 189; Dec. Prodr. 189.

Stem 3 to 6 inches tall. Leaves ovate oblong falcate inaequilateral strigosely hairy especially beneath 6-8 inches long 2-4 wide. Cymes spreading few to 10



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flowered peduncles and pedicels hairy. Calyx shortly five-lobed, cup-shaped, lobes triangular,  $\frac{1}{4}$  inch long in flower, larger and spreading in fruit. Corolla  $\frac{1}{2}$  inch long, white with a violet spot in the centre. Ovary unilocular. Capsule circumsciss near the base.

*Cyananthus umbrosa*, Griff. Notul. 4, pl. 154; Ic. Pl. Asiat. 437.

Johor, Gunong Panti (Ridley 4166); Pahang, Tahan Woods (Ridley 2183); Selangor Woods at the Kuala Lumpur Caves (Ridley 8224); Perak, Telok Pinang near Ipoh (Ridley 9773), Kinta (King's Coll. 7144).

Distrib. Assam. In damp rocky woods on the ground.

### 16. *Rhynchotecom*, Bl.

Shrubs little branched, young parts red-woolly. Leaves opposite or alternate. Cymes axillary decomposed. Flowers small numerous. Calyx 5 cleft nearly to the base, lobes narrow. Corolla small campanulate, limb two-lipped, lobes 5 ovate or oblong subequal. Stamens 4 perfect affixed to near the corolla base, filaments short curved, anther cells 2 subparallel. Ovary sessile ovoid, disc very small annular or absent. Style much longer than ovary. Stigma subcapitate. Berry small globose with persistent style, pericarp pulpy. Seeds very small smooth.

Species 9 Indo-Malayan.

*R. parviflorum*, Bl. Bijdr. p. 775.

A little-branched shrub about 3 feet tall, leafy above upper parts ferruginous hairy. Leaves opposite lanceolate acute cuneate at the base serrate, 8 inches long,  $3\frac{1}{2}$  inches wide, dark green glabrous above except the midrib, covered with red wool beneath thickest on the nerves, nerves 13 pairs petiole 1 inch long. Cymes numerous short from the lower part of the stem laxly branched, red-woolly. Flowers very small yellowish white. Sepals nearly free to the base linear lanceolate acute woolly,  $\frac{1}{8}$  inch long. Corolla little longer campanulate lobes oblong



obtuse white. Stamens 4 very short, filaments short and thick. Style longer than the ovary. Capsule ovoid-globose hairy shorter than the sepals.

Clarke, Prodr. p. 195; Miq. Fl. Ind. Bat. 2, 750.  
*Isanthera parviflora*, Ridl., Trans. Linn. Soc., III, 331.

Pahang, Kuala Tahan (Ridley 2171); Penang (Wallich Pulau Betong and Penara Bukit) (Curtis 3035); Perak, Larut Hills (Ridley) (King's Coll. 2237) (Scortechini 1222).

In woods, terrestrial.

Distrib. Java, Sumatra.

### 17. *Cyrtandromoea*, Zoll.

Shrubs with square stems, leafy above. Leaves opposite subequal herbaceous ovate elliptic or lanceolate serrate petioled. Flowers 1 to many in axillary or basal cymes. Bracts 2 in the middle of the pedicel. Calyx tubular shortly 5 toothed or lobed, enlarged in fruit, usually red. Corolla large white tubular thin glabrous, tube dilated at apex lobes rounded subequal. Stamens 4 perfect in 2 pairs subsimilar, filaments linear anthers ovoid small. Pistil longer than stamens. Stigma cupshaped. Capsule globose or oblong enclosed in the enlarged calyx, opening irregularly. Walls membranous. Seed numerous sinuate oblong obtuse ribbed reticulate.

Species ten Malayan.

- |  |                         |
|--|-------------------------|
| Flowers solitary axillary  | 1. <i>C. acuminata</i>  |
| Flowers cymose axillary. Leaves ovate                                | 2. <i>C. megaphylla</i> |
| Flowers cymose at the base of a woody stem. Leaves acuminate at base | 3. <i>C. grandis</i>    |

#### 1. *C. acuminata*, Benth and Hook. fil., Gen. Pl. 2, p. 1020.

A shrubby plant 3 or 4 feet long, stem rather weak, hollow, young parts pubescent. Leaves lanceolate or ovate narrowed into the petiole acute, serrate, strigose



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above pubescent especially on the nerves beneath, 4-6 inches long 2-3 inches wide petiole 1 inch long. Flowers solitary axillary on short  $\frac{1}{8}$  inch long or lanceolate slender hispid peduncles with 2 very small linear tracts in the middle. Calyx tubular  $\frac{1}{2}$  inch long glabrous with short teeth dull red. Corolla nearly straight 1 inch long tube thick lobes rounded white. Capsule oblong 4 angled  $\frac{1}{4}$  inch long, seeds minute deeply reticulate.

Clarke, Mon. Phan., p. 185 ; *Busea subsessilis*, Miq. Fl. Ind. Bat. 2, p. 735.

Selangor, Ginting Bidai (Ridley); Negri Sembilan, Bukit Sulu (Cantley); Perak, Larut Hills (Ridley 2917) (Scortechini 83 and 329a) (King's Coll. 5342 and 2139); Penang (Porter in Wallich's Coll. 808) (Maingay 1232/2) (King) Tonoh (Machado). Tringanu, Bundi (Rostado).

Distrib. Sumatra.

Native Name:—Supujit Jantan, Supujit Bukit and Sumpuh Munahon. The leaves are used for in baths in jungle fever.

In forests on banks at about 1000 feet and upwards.

2. *C. megaphylla*, Hemsl., Ic. Pl. 1555.

Herb about three feet tall. Stem bluntly 4 angled pittey in centre pubescent. Leaves opposite subequal, herbaceous ovate acutely acuminate coarsely serrate, base rounded or subcordate 6-10 inches long 3 inches wide pubescent, petiole 3-5 inches long. Cymes from a little above the axils lax many flowered. Calyx tubular pubescent shortly 5 toothed half an inch long, inflated in fruit. Corolla about 2 inches long white obliquely infundibuliform, lobes rounded subequal, ovary perfectly bilocular.

Perak, Larut Hills at 2100 feet alt. (Wray) (Scortechini), Gunong Batu Putih (King's Coll. 8155); Selangor, Ginting Peras (Ridley 7602).

Endemic in forests.



3. *C. grandis*, n.sp.

A large shrub several feet tall base of stem woody half an inch through, glabrous. Leaves opposite equal herbaceous lanceolate acuminate glabrous narrowed acuminate at the base, margins dentate, 12 inches long 4 inches wide, nerves elevated 10 pairs, petiole  $1-1\frac{1}{4}$  inch long. Cymes large lax borne on the base of the stem, and on the upper part below the leaves, many flowered  $2\frac{1}{2}$  to 6 inches long pubescent. Pedicels  $\frac{1}{4}$  inch long. Calyx tubular pubescent with linear lobes, red half an inch long. Corolla white 1 inch long tube straight thick lobes rounded. Fruit globose  $\frac{1}{2}$  inch long enclosed in the enlarged calyx and seed minute black oblong ribbed and reticulate.

Selangor, Kuala Lumpur (Curtis) (Ridley 10498); 15th mile Pahang Track (Ridley 8552), Bukit Hitam (7576); Perak, Ulu Bubong (King's Coll. 10150), Gunung Batu Putih (King's Coll. 8155).

Endemic. Common on banks in forests but local. A very fine species.

18. *Cyrtandra*.

Half shrubby plants, terrestrial or rarely epiphytic, stems often branched usually tall. Leaves opposite subequal or one smaller. Bracts large or small free or connate. Bracteoles ovate or narrowed or absent. Cymes axillary on long or short peduncles, many flowered. Calyx tubular 2 to 6 lobed usually 5 lobed, lobes lanceolate. Corolla tube short, usually pubescent infundibular straight, lobes 5 subequal or more or less distinctly 2 lipped, usually white spotted or marked with yellow brown, or red. Stamens 2 perfect shortly exsert or included affixed to the corolla, anthers bilocular connivent free or coherent. Staminodes small 2-3. Disc annular or unilateral. Ovary ovoid or oblong. Style long filiform. Stigma sub-bilobed. Berry sausage-shaped or ovoid, firmly fleshy, usually beaked with the persistent style. Seeds numerous minute ellipsoid smooth or obscurely reticulate.



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Species about 170. Malay Peninsula and islands to Polynesia.

Bracts free. Leaves alternate	1. <i>C. dispar</i>
Leaves opposite one much reduced	
Margins entire	
Nerves conspicuous	2. <i>C. suffruticosa</i>
Nerves obsolete	3. <i>C. falcata</i>
Leaves opposite subequal	
Ovovate serrulate	4. <i>C. pilosa</i>
Oblanceolate crenulate	5. <i>C. lanceolata</i>
Ovate or lanceolate	6. <i>C. pendula</i>
Bracts connate into a large white cup	7. <i>C. cupulata</i>

## 1. *C. dispar*, De C., Prodr. 9, p. 282.

Shrub with a stout pale reticulate stem fistulous, obscurely 4 angled. Leaves alternate obovate oblanceolate, petioled strongly toothed especially at the apex inaequilateral glabrous above, red pubescent beneath 12 inches long 4 inches wide petiole an inch long. Flowers small very numerous in axillary cymes, pedicels  $\frac{1}{4}$  inch hispid. Calyx persistent cup-shaped with 5 lanceolate acuminate hairy lobes. Corolla white  $\frac{1}{2}$  inch long tube dilated upwards hairy outside lobes short obtuse rounded. Stamens shorter than the tube, abortive ones very much reduced. Pistil hairy. Fruit  $\frac{1}{4}$  inch long oblong ellipsoid hairy.

Miq. Fl. Ind. Bat. 2, p. 742; Clarke, Dec. Prodr. p. 203, Tab. XXIII.

Penang, Government Hill (Curtis 1204) (Wallich 807) (partim) (Maingay 1232); Perak, Bujong Malacca (Ridley 9703), Larut Hills (Ridley and Fox, Scortechini 367 and 1231, Wray 2196) (King's Coll. 2052, 5731 and 3891).

Distrib. Sumatra.



2. *C. suffruticosa*, Ridl., Trans. Linn. Soc., p. 331.

A large shrub 4 feet tall with hollow 4 angled pale stems  $\frac{1}{4}$  inch thick. Leaves opposite, the alternate one often very much smaller lanceolate abruptly acuminate subfalcate inaequilateral, edges entire, nerves conspicuous about 12 pairs, glabrous when adult, young leaves and petioles red pubescent, 7 to 9 inches long  $2\frac{1}{2}$ -3 inches wide, petiole  $\frac{1}{2}$ - $\frac{3}{4}$  inch long. Peduncles short and thick axillary. Bracts free ovate acute pubescent, 1 inch long  $\frac{1}{2}$  inch across. Flowers about 6 in a head nearly sessile. Calyx deciduous sepals linear. Corolla glabrous over an inch long, base cylindric dilated upwards, lobes rounded obtuse white with brown streaks in the throat, anthers large elliptic. Style pubescent. Fruit  $\frac{3}{4}$  inch long sausage-shaped.

Johor, Tenggara (Fielding,) Pulau Tioman (Ridley) on rocks; Perak (Scortechini 142 b), Gopeng (King's Coll. 4720), Kota Bahru (King's Coll. 569), Tupai, Larut (Wray 2845.)

Endemic. Generally growing on rocks put (King's Coll. 4720) from the top of a high tree. Wray describes the flowers as "white marked in the throat with dark claret. Bracts green without, claret within, fruit light green finely spotted paler."

3. *C. falcata*, n.sp.

Epiphytic about 2 feet tall, stem quadrangular fistulose, pale. Leaves lanceolate acuminate falcate alternate, often with small opposite ones, glabrous when adult, narrowed at the base into the petiole, nerves about 10 pairs, 7 or 8 inches long  $1\frac{1}{2}$  inch wide, petiole 1 inch long pubescent. Cymes axillary shortly  $\frac{1}{8}$  inch peduncled. Bracts broadly ovate acute pubescent  $\frac{1}{2}$  inch long. Flowers few shortly pedicelled. Fruit fusiform  $\frac{1}{2}$  inch long.

Selangor, woods round the Kuala Lumpur Caves (Ridley 8219); Perak (Wray 2845, Scortechini 142b). Endemic rare.



Allied to *C. oblongifolia*, Hook. fil., and *C. suffruticosa*, Ridl., but the leaves are much narrower than those of the latter, and thinner with conspicuous nerves, than those of the former.

4. *C. pilosa*, Bl. Bijdr. p. 770.

Shrub with stout 4-angled hollow stems as much as  $\frac{1}{2}$  inch through, 3 feet tall upper parts pubescent. Leaves opposite obovate narrowed into a winged petiole, margins serrate above more or less covered with pale hairs from a swollen base, in old leaves often glabrescent, beneath covered with red hairs on the nerves, nerves prominent 10-12 pairs 8-18 inches long 3-4 inches wide. Bracts ovate or lanceolate acuminate hairy 1 inch long. Cymes small nearly sessile axillary. Calyx tubular hairy  $\frac{1}{2}$  inch long bifid. Corolla white with one inch long silky hairy, tube infundibuliform stout, upper lobes oblong obtuse, lower two connate shortly bifid obtuse punctate above. Stamens little longer than the tube filament glabrous abortive, stamens short. Fruit ovoid conic acute brown reticulate-tessellate  $\frac{1}{2}$ - $\frac{3}{4}$  inch long.

Don. Gen. Syst. 4, p. 661, De C. Prodr. 9, p. 282, Miq. Fl. Ind. Bat. 2, p. 742, Clarke, Mon. Phan. 231, *C. decurrens*, De Vriese, Pl. Ind. Bat. Reinwdt. p. 14, Miq. l.c. p. 746, Clarke l.c. 233.

Johor, Gunong Panti (Ridley), Bukit Tanah Abang (Kelsall); Negri Sembilan, Bukit Tanga (Napier), Bukit Sulu (Cantley); Selangor, Bukit Kutu (Ridley 7574), Bukit Hitam, Pahang Track 8560 and 8554); Perak, Larut Hills (Ridley 2915) (Curtis 2897) (Scortechini 354 and 270a). King's Coll. 5588); Penang (Wallich 807), Penara Bukit. On banks in forests.

Distrib. Tenasserim to New Guinea.

Native name "Poko Gugunjah Bukit." In rocky woods up to about 2000 feet altitude I am unable to separate specifically the forms, described respectively under the names of *C. pilosa*, Bl., and *C. decurrens*, De Vr., at least as far as applies to the variety *Wallichii* of the latter.



The main distinction seems to be in the amount of hairiness of the leaves, in which point the plant seems very variable. The plant distributed as from "Singapore Lobb" was doubtless from Penang, as it has never since been seen in Singapore and is hardly likely to have occurred here, as it is a hill plant.

5. *C. lanceolata*, Ridl., Journ. Linn. Soc., XXXII, 527.

Stem about a foot tall, the base bare, quadrangular, upper part pubescent. Leaves oblanceolate acute, narrowed at the base creuulate almost entirely glabrous 12 inches long 4 inches wide, petiole. Cymes at the base of the stem below the leaves very shortly peduncled lax many-flowered, pedicels  $\frac{3}{4}$  inch long hispid. Bracts lanceolate small hispid. Calyx  $1\frac{1}{2}$  inch long tubular hispid, lobes 3 linear acuminate. Corolla  $1\frac{1}{2}$  inch long dilate above pubescent, white throat yellow, anthers long narrowed above. Style 1 inch long pubescent. Stigma bilobed lobes oblong linear.

Johor, Gunong Panti (Ridley). Endemic, rare.

6. *C. pendula*, Bl., Bijdr. p. 768.

Stem one or two feet tall. Leaves alternate ovate cordate or lanceolate entire or crenate dark green and glabrous above, often barred with white and covered with reddish tomentum beneath, 8 inches long 4-6 inches wide, petiole 3-6 inches long, opposite leaf in each internode reduced to a subulate process. Capitulum of 20 flowers on peduncles 4 inches long decurved appressed hairy. Bracts lanceolate acuminate hairy. Flowers shortly pedicelled. Calyx tube half an inch long, thin shortly bifid. Corolla tube  $1\frac{1}{2}$  inch long, base narrow curved ventricose upwards, cream-colored or pale yellow, hairy upper lip of two rounded lobes, lower of three broader oblong rounded ones, all creamy white or pale yellow with purple spots in the mouth and tube. Stamens 2 glabrous, filaments purplish sinuate, anthers oblong connivent. Style stout white, stigma transversely oblong. Fruit sausage shaped  $\frac{1}{2}$  inch long.



G. Don. Syst. Prodr. p. 660, De C. Prodr. 9, p. 281, Miq. Fl. Ind. Bat. 2, p. 739, Hook. Ic. Pl. t. 736, Clarke, Dec. Prodr. 242.

Singapore, Bukit Timah (Ridley 2703), King; Johor, Gunong Panti, Pulau Tioman; Pahang, Kuala Tembeling (Ridley); Malacca (Maingay); Selangor, Kuala Lumpur, Bukit Hitam (Ridley); Perak, Larut Hills (Curtis 2036) Scortechini 142*b* and 254*b* (Wray 2845), Ulu Bera (King's Coll. 10810); Sungei Ujong, Bukit Sulu (Cantley).

Distrib. Java and Sumatra.

In rocky woods abundant. Native name "Poko Asam Batu." The leaves are eaten in curries.

7. *C. cupulata*, Ridl., Journ. Linn. Soc., XXXII, p. 527.

A shrubby plant 2 or 3 feet tall, stem terete or more or less four-angled above covered with red hair. Leaves opposite equal, very variable, oblanceolate with an acuminate base serrately toothed scantily hairy above, more hairy beneath, petiole sometimes winged to the base villous an inch long, blade 12 inches long 4 inches wide. Peduncles half an inch long axillary in pairs villous. Bracts connate into a white hairy cup an inch long. Bracteoles short lanceolate acute white. Flowers numerous opening singly little longer than the bract. Corolla 1 inch long curved infundibuliform, 2 lipped pubescent white yellow and brown in the mouth, lobes 5 subequal ovate obtuse. Stamens included 2, pistil short, ovary oblong with a terminal tuft of hair. Style short curved. Stigma clavate bilobed. Fruit  $\frac{1}{2}$  inch long fusiform.

Malacca, lower slopes of Mt. Ophir (Ridley 7575) Sungei Buluh (10550); Pahang, Tahan Woods (Ridley 2150); Perak, Tapa (Wray 1389 and 191), Ulu Bubong (King's Coll. 10250), Larut Hills (Scortechini 366), Chanderiang (King's Coll. 5733).

Endemic in wet woods.





Ridley, H. N. 1905. "The Gesneraceae of the Malay Peninsula." *Journal of the Straits Branch of the Royal Asiatic Society* 44, 1–92.

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