THE GENUS ALANGIUM IN THE NETHERLANDS INDIES

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The present revision comprises, besides the *Alangia* of the Netherlands Indies proper, also those of the Malay Peninsula, North Borneo, and Eastern New Guinea. The materials examined were kindly put at the author's disposal by the Directions of the following herbaria:

B = the Herbarium of the Botanic Garden, Buitenzorg.
BD = the Herbarium of the Botanic Garden, Berlin—Dahlem.
BM = the Herbarium of the British Museum of Natural History, London.
Br = the Herbarium of the Botanic Garden, Brisbane.
E = the Herbarium of the Botanic Garden, Edinburgh.
G = the Herbarium of the University, Groningen.
K = the Herbarium of the Botanic Garden, Kew.
L = the National Herbarium (Rijksherbarium), Leiden.
M = the Herbarium of the Bureau of Science, Manila.
NY = the Herbarium of the Botanic Garden, New York.
S = the Herbarium of the Botanic Garden, Singapore.
Sa = the Herbarium of the Sarawak Museum, Kuching.
U = the Herbarium of the University, Utrecht.
UC = the Herbarium of the University of California, Berkeley.
W = the Herbarium of the Museum of Natural History, Vienna.

Most of the materials were sent to Groningen to be studied there. Moreover, the author had the opportunity to visit the Herbaria of the Botanic Gardens at Kew, that of the British Museum of Natural History at London, and those of LINNAEUS and SMITH preserved among the collections of the Linnean Society at London.

To the Directions of all these Institutes and the Keepers of the Herbaria the author is very thankful for their kind assistance.

Alangium.

Flowers hermaphrodite; calyx tube connate with the ovary, calyx limb free, with 4—10 teeth; petals 4—10, loriformous, valvate, alternating with the calyx-teeth; stamens either isomerous, alternating with the petals

and placed in one whorl, or more, placed in one or more whorls, usually nearly as long as the corolla; anthers linear, with loculi opening laterally and somewhat introrsely; pollen-grains globose; style single, usually nearly as long as the corolla, rarely distinctly shorter; disc intrastaminal, well-developed; ovary 1—2-celled, with one hanging anatropous ovule in each cell, the micropyle directed parallel to the dissepiment, in 2 cells of the same ovary looking in opposite directions. Fruit drupaceous, globose, ellipsoidal or oviformous, often more or less flattened (in the herbarium often strongly flattened and with longitudinal grooves and ribs), crowned by the persistent calyx limb and disc; mesocarp carnose or spongeous; endocarp hard, 1—2-celled with one seed in each cell or with one cell abortive; spermoderm chartaceous or thin-coriaceous; endosperm smooth or slightly grooved; cotyledons foliaceous, flat, palminervous at the base; radicle straight.

Usually trees, more rarely shrubs or woody climbers, the same species sometimes showing different modes of growth. Twigs terete, probably growing nearly horizontally for the greater part in the living state, or even hanging, often slightly dorsiventral. Leaves always alternate (distichous), simple, entire or more rarely lobed or with a small number of large teeth, without stipules; petiole terete or slightly grooved or flattened above, often with articulations at the base and the apex, especially in suckers. Inflorescences axillary, corymbose, all of its branches terminating in flowers. Flowering in the dry season, fruiting in the last part of the dry season and often in the following wet season.

Kara-Angolam & *Angolam* ADANSON, Fam., 2, p. 84 (1763) nomina reicienda; *Angolamia* SCOPOLI, Introd., p. 107 (1777) nom. reic.; *Alangium* LAMARCK, Encycl. méth., bot., 1, p. 174 (1783) nom. conserv.; MIQUEL, Fl. Ind. Bat., I, 1, p. 773 (1856); BENTH. & HOOK.F., Gen. pl., 1, p. 949 (1867); CLARKE, in HOOK.F., Fl. Br. Ind., 2, p. 741 (1879); BOERL., Handl. Fl. Ned. Ind., I, 2, p. 652 (1890); HARMS, in ENGL. & PR., Nat. Pflanzenfam., III, 8, p. 260 (1898); KOORD. & VALETON, Bijdr. Booms. Java, 5, p. 66 (1900); WANGERIN, in ENGL., Pflanzenr., IV, 220*b*, p. 6 (1910); RIDL., Fl. Mal. Pen., 1, p. 892 (1922); *Stylidium* LOUREIRO, Fl. cochinch., 1, p. 220 (1790); *Stelanthes* STOKES, Bot. mat. med., 2, p. 339 (1812); *Marlea* ROXB., Hort. beng., p. 28 (1814) nom. nud.; Pl. corom., 3, p. 80, t. 283 (1819); MIQUEL, Fl. Ind. Bat., I, 1, p. 774 (1856); BENTH. & HOOK.F., Gen. pl., 1, p. 949 (1867); CLARKE, in HOOK.F., Fl. Br. Ind., 2, p. 742 (1879); BOERL., Handl. Fl. Ned. Ind., I, 2, p. 653 (1890); KOORD. & VALETON, Bijdr. Booms. Java, 5, p. 70 (1900); *Pautsavia* JUSS., in Mém. Mus. Par., 3, p. 443 (1817); *Stylis*

POIRET, in LAM., Encycl. méth., suppl., 5, p. 260 (1817); *Diacicarpium* BLUME, Bijdr., 13, p. 657 (1825); *Rhytidandra* A. GRAY, in Un. St. Expl. Exped., Bot., 1, p. 302, t. 28 (1854); *Pseudalangium*, F. v. MUELL., Fragm. Phyt. Austr., 2, p. 84 (1860); *Karangolum* KUNTZE, Rev. gen. pl., 1, p. 272 (1891).

About the polymorphy of the genus, especially about the differences that are important for the distinction and the arrangement of the species, the following remarks may be given.

The stems of different species show, in the main, three modes of growth and ramification.

1. The twigs are monopodia, as, at the beginning of each vegetation period, they continue their growth from the terminal bud. In the flowering plant, the ramification takes place by the inflorescences bearing a terminal leaf-bud growing out to a twig later. This we find in *A. salvifolium* ssp. *hexapetalum*, and probably in *A. longiflorum* and *A. hirsutum*.

2. The twigs are sympodia, as the terminal bud of each vegetation period dies and, at the beginning of the following vegetation period, the twig continues its growth from the uppermost axil. The ramification of the twig takes place from the 2 or 3 preceding axils of the same twig. This case we find in *A. chinense*, *A. rotundifolium* and *A. Kurzii*.

N.B. In *A. nobile* the twigs probably are monopodia, whereas the ramification takes place from few upper axils of the former vegetation period.

3. The twigs are monopodia, continuing their growth, at the beginning of each vegetation period, from the terminal bud. The ramifications, however, originate from the axils of the young leaves of the last vegetation period; each of these ramifications is nearly as strong as the adjacent part of the main twig, this almost causing pseudodichotomy. By this early development of axillary branches the position of the leaves is highly influenced in such a way, that their insertions turn downward; in herbarium specimens, the leaf really bearing a branch in its axil often appears to be placed in the fork between the twig and its branch. Very distinctly we see this in *A. Griffithii*, *A. villosum* and *A. Warburgianum*, less distinctly in *A. scandens*, *A. Havilandii*, *A. Ridleyi* and *A. javanicum*. The latter probably is caused by the later development of the ramifications.

The nervation of the leaves is a valuable character for the distinction of species, but for the natural arrangement of the species it is of little importance. The main nervation varies from purely pennate to purely

palmate, with all kinds of intermediary stages. Real secundary nerves are, in general, restricted to the marginal zone and the basal lobes of cordate leaves, especially in such cases as that of *A. nobile*, where the leaves are at the same time strongly nerved and deeple cordate. Much more peculiar are the arcuate veins, formed by slightly thickened portions of the reticulate venation. The more roundish the lamina, the more arcuate these veins; the more oblong the lamina, the more transverse these veins. (Cfr. Fig. 1*a*, 2*d*, 3*a*, 4*a*, 5*a*.)

The more or less developed asymmetry of the lamina has no greater importance. This asymmetry varies from very strong to nearly none; always the largest side of the lamina is turned towards the tip of the twig.

More important for the natural arrangement of the species is the structure of the inflorescence. This structure is between racemose and cymose. In outline the inflorescence is corymbose; each time that it is branched the number of branches is small and all branches are terminated by a flower. But the branches are not always inserted at the same height, and between them and the terminal flowers there are often 1 or 2 smaller, sterile bracts.

There may be distinguished three main types among them.

1. The first type of inflorescence is sessile or more rarely shortly pedunculed; the branches, including the pedicels, are distinctly developed; the sterile bracts as well as the fertile ones are well-developed, and the sterile ones often are removed upward to the bases of the flowers. Instead of the terminal flower of the main axis there is a leaf-bud from which, at the beginning of the next vegetation period, a twig takes its origin. This type of inflorescence we find in *A. salvifolium* ssp. *hexapetalum*, *A. hirsutum* and *A. longiflorum*. (Cfr. fig. 1*a*.)

2. In the second type of inflorescence the peduncle is always distinct and often rather long, as are the branches and even the pedicels; bracts are often absent and where there occur two branches at the same height there is never more than one bract, and this is turned towards the earth. The smaller sterile bracts are lacking or there is one, or rarely 2, and they are often removed to the bases of the flowers. This type of inflorescence we find in *A. chinense*, *A. Kurzii*, *A. rotundifolium*, *A. scandens*, *A. Griffithii*, *A. villosum*, *A. Warburgianum* and *A. ferrugineum*. (Cfr. fig. 2*d* and 3*a*.)

3. The third type of inflorescence is either sessile with few long primary branches and short secundary and further branches and pedicels, or there is only one main branch so that the inflorescence is rather

long-peduncled. This type of inflorescence occurs in *A. nobile, A. Havilandii, A. Ridleyi* and *A. javanicum.* Bracts are lacking or rare (as in the second type), in *A. nobile* and *A. Havilandii,* or they are well-developed and then often removed to the bases of the flowers, in *A. Ridleyi* and *A. javanicum.* (Cfr. fig. 4*a* and 5*a.*)

The number of stamens is usually the same as that of the petals and calyx teeth; in a small number of species, however, the number of petals is 2—5 × that of the petals and calyx teeth. Among the species occurring in the area dealt with in this publication, *A. salvifolium* ssp. *hexapetalum, A. longiflorum* and *A. hirsutum* belong to this group.

For the distinction of species the form of the filament is rather important. Sometimes the filament can be divided into a thicker or broader lower, and a thinner or narrower upper portion, and in that case the lower portion can even be prolongated before the base of the upper portion and can be hairy in a different way. This difference between a lower and an upper portion is distinct in *A. salvifolium* ssp. *hexapetalum, A nobile, A. Havilandii* and *A. Griffithii* (cfr. fig. 1*c*, 2*m*, 4*c*, 4*f*, 4*h*), less distinct and moreover variable in *A. chinense, A. rotundifolium, A. scandens, A. Kurzii, A. villosum* and *A. ferrugineum.* In the other species it is absent (cfr. fig. 1*f*, 3*l*, 5*c*, 5*k-q*, 5*y-aa*).

Among the floral organs also the form of the style and the stigma is of great importance for the distinction and the arrangement of the species. A part of the species have a rather cylindrical style and a capitate stigma, that is shortly 4-lobed with crenate or superficially divided lobes. This is the case in *A. salvifolium* ssp. *hexapetalum, A. longiflorum, A. hirsutum, A. chinense, A. rotundifolium, A. Kurzii, A. scandens* and *A. Griffithii.* (Cfr. fig. 1*b*, 1*d*, 2*g.*) Another part has a style slightly thickened from the base to the tip, and a stigma deeply split into 2 long and narrow lobes, that are entire and stigmatose at the inside. To this group belong *A. villosum, A. ferrugineum* and *A. Warburgianum.* (Cfr. fig. 3*b*, 3*k.*) A third part have a style thin at the base and gradually thickened towards the apex, and a stigma that is obtuse-conical and with 4 longitudinal stigmatose stripes. This is the case in *A. nobile, A. Havilandii, A. Ridleyi* and *A. javanicum.* (Cfr. fig. 4*b*, 4*g*, 5*b.*)

Of little importance is the fact, that the calyx tube may be grooved or smooth. In general the calyx tube is more or less grooved in *A. salvifolium* ssp. *hexapetalum, A. longiflorum* and *A. hirsutum,* and smooth in all other species, but aberrations from this rule are of no taxonomical

value. The number of grooves, if present, is once or twice that of the calyx teeth.

The endosperm is slightly superficially grooved in *A. salvifolium* ssp. *hexapetalum*, *A. longiflorum* and *A. hirsutum*, smooth in all other species.

In this paper there have been distinguished, in the genus *Alangium*, 4 sections, 15 species, and in one species 2 subspecies, in 3 others a number of varieties.

It would have been possible to elevate the sections to the rank of genera. In that case we would have got, instead of one sharply limited genus, a number of much less sharply limited smaller ones, of which some even would appear somewhat artificial, and all of them would comprise rather few species. This practice appeared undesirable.

In delimiting the species, the large European (Linnean) species were taken as an example, not the small species of the Austrian botanists (KERNER, WETTSTEIN, and followers). The large Linnean species appear to coincide more or less with the intercrossing communities of which all members may give fertile hybrids (commiscua of DANSER). The small species of the Austrian botanists often are natural subdivisions of the large species. In those cases in which they appear to be distinct geographical variations, they might be distinguished as subspecies. This is certainly the case in *Alangium salvifolium* ssp. *decapetalum* and ssp. *hexapetalum*, perhaps also in the forms united under *Alangium villosum*. Such subspecies seem to be species on first sight, but they are connected by intermediary forms.

Under the name of varieties are taken together all variations of a species. Also the subspecies distinguished are varieties, but not all varieties are subspecies. In *Alangium villosum* there have been distinguished varieties that very probably deserve the rank of subspecies. In other cases, as in *A. nobile* and *A. javanicum* the systematic value of the varieties distinguished could not be stated, but they looked too important to be passed by in silence. They may as well appear to be new species as subspecies or only local forms of little taxonomical importance.

First key to the species, for flower-bearing materials.

1 Stigma broader than long, or sometimes as broad as long, capitate or semiglobose, 4-lobed, with crenate lobes 2
Stigma longer than broad, obtuse-conical, with 4 longitudinal stigmatose stripes 11
Stigma deeply split into 2 long and narrow lobes 9

2 Stamens 2—6 × as many as petals 3
Stamens as many as petals 5
3 Flowers 14—23 mm long. Anthers longer than the filaments. Inflorescences 7—17-flowered. Malay Peninsula and whole Malay Archipelago except Borneo **1. A. salvifolium ssp. hexapetalum**, p. 250
Flowers 25—50 mm long. Anthers shorter than the filaments. Inflorescences 1—5-flowered 4
4 Flowers 35—50 mm long. Young twigs and inflorescences and nerves of the leaves below tomentose. Borneo **2. A. longiflorum**, p. 253
Flowers nearly 25 mm long. Young twigs, inflorescences and nerves of the leaves below hirsute-tomentose or hirsute. Borneo, Sumatra? **3. A. hirsutum**, p. 254
5 Leaves palminervous at the base. Connective glabrous or hairy . . 6
Leaves entirely penninervous. Connective hairy. Sumatra, Borneo . . **7. A. scandens**, p. 264
6 Both style and connective glabrous. Pedicels 0—2 mm long. Inflorescences 6—60-flowered. Sumatra to Moluccas and Malay Peninsula **8. A. Griffithii**, p. 266
Either style or connective hairy. Pedicels 5—21 mm long. Inflorescences 3—25-flowered 7
7 Style hairy, connective glabrous. Java, Lesser Sunda Islands . . . **4. A. chinense**, p. 255
Style glabrous, connective hairy 8
8 Lamina roundish to ovate or triangular-ovate, often lobate or with few large teeth, glabrous below or shortly hirsute-tomentose on the nerves, never entirely tomentose. Flowers 7.5—24 mm long. Malay Peninsula, Sumatra, Borneo, Java, Bali **5. A. rotundifolium**, p. 258
Lamina usually triangular-ovate, rarely more roundish or more oblong, never lobate nor dentate, entirely soft-tomentose below. Flowers 19—31 mm long. Malay Peninsula, Sumatra, Java . . . . . **6. A. Kurzii**, p. 262
9 Calyx teeth lingulate, more than 1 mm long. Batjan Islands . . . **11. A. Warburgianum**, p. 273
Calyx teeth short-triangular, less than 1 mm long 10
10 Flowers at most 12 mm long. Java, Flores . . **9. A. villosum**, p. 269
Flowers 15—16 (—22?) mm long. New Guinea . . . . . **10. A. ferrugineum**, p. 272
11 Filament composed of a dilate lower and a narrower upper portion. Leaves either entirely penninervous or palminervous at the base . 12
Filament not composed of two different portions. Leaves entirely penninervous 13
12 Leaves palminervous at the base. Calyx teeth 1—3.5 mm long. Indumentum hirsute-tomentose. Malay Peninsula, Sumatra, Borneo **12. A. nobile**, p. 275
Leaves entirely penninervous. Calyx teeth nearly 0.75 mm long. Indumentum very densely thin-tomentose. Borneo . . . . . **13. A. Havilandii**, p. 277
13 Twigs between the adult leaves 3—9 mm thick. Flowers 18—27 mm

long. Corolla in bud 4—7 mm thick, in herbarium specimens angular. Malay Peninsula, Sumatra . . . . . **14. A. Ridleyi**, p. 278

Twigs between the adult leaves 1.5—6.5 mm thick. Flowers 8—25 mm long. Corolla in bud 1.75—5 mm thick, nearly terete in herbarium specimens . . . . . **15. A. javanicum**, p. 281

The last 2 species can only be distinguished with certainty when fruits are present. Cfr. also *A. maliliense* added afterwards.

Second key to the species, for fruit-bearing materials.

A. Havilandii, the fruit of which is unknown, and *A. maliliense*, added afterwards, have not been inserted in this key.

1 Leaves palminervous or triplinervous at the base 2

Leaves entirely penninervous 9

2 Leaves triplinervous at the base, symmetrical or slightly asymmetrical 3

Leaves 3—11-plinervous at the base, usually strongly asymmetrical, if nearly symmetrical never triplinervous 5

3 Leaves glabrous or sparingly hairy on the nerves beneath near the base. Fruit nearly globose, rarely ovate, with rounded base and apex, 9—18.5 mm long incl. the calyx limb. Malay Peninsula, nearly whole Malay Archipelago with exception of Borneo . . . . . **1. A. salvifolium ssp. hexapetalum**, p. 250

Leaves hirsute or appressedly hairy on the petiole, the midrib above and the nerves and veins below. Fruit ellipsoid or ovate, 17—32.5 mm long 4

4 Leaves shortly appressedly hairy on the petiole, the midrib above and the nerves and veins below. Fruit rounded at the base and the apex, 17—20 mm long including the calyx. Borneo **2. A. longiflorum**, p. 253

Leaves more or less hirsute on the petiole, the midrib above, and the nerves and veins below. Fruit acute at the base and the apex, 28—32.5 mm long inclusive the calyx limb. Borneo, Sumatra? **3. A. hirsutum**, p. 254

5 Fruit 26—32 mm long incl. the calyx limb, thickly tomentose. Calyx lobes 2—3 mm long, connivent. Malay Peninsula, Sumatra, Borneo **12. A. nobile**, p. 275

Fruit 9—28 mm long incl. the calyx limb, glabrous or thin-tomentose. Calyx teeth hardly visible, not connivent 6

6 Leaves 3—5-plinervous at the base. Petiole 4—12 mm long. Lamina 2 or more times as long as broad. Fruit 12—18 mm long, incl. calyx limb, one-celled, compressed-oviformous. Disc as high as the calyx limb or only little higher. Sumatra to Moluccas incl. the Malay Peninsula . . . . . **8. A. Griffithii**, p. 266

Leaves 4—9-plinervous at the base. Petiole 8—65 mm long. Lamina less than twice as long as broad, usually nearly as long as broad. Fruit 9—28 mm long, incl. calyx limb, one- or 2-celled, very rarely 3-celled, ovate or ellipsoid, compressed or not so. Disc usually swollen and distinctly higher than the calyx limb. 7

7 Fruit 17—28 mm long incl. calyx limb, usually one-celled or more rarely 2-celled with one abortive cell, rarely completely 2-celled. Leaves glabrous, sparingly short-hairy, or more or less hirsute-tomentose on the nerves below, but never entirely soft-tomentose below. Malay Peninsula, Sumatra, Borneo, Java, Bali **5. A. rotundifolium**, p. 258

Fruit 9—14 mm long incl. the calyx limb, usually 2-celled. Leaves either nearly glabrous or entirely tomentose below 8

8 Leaves often dentate or lobate, wellnigh glabrous. Fruit 9—13 mm long incl. the calyx limb. Java, Lesser Sunda Islands . . . . . **4. A. chinense**, p. 255

Leaves never dentate nor lobate, entirely soft-tomentose below. Fruit 12—14 mm long incl. the calyx limb. Malay Peninsula, Sumatra, Java **6. A. Kurzii**, p. 262

9 Fruit 8—18 mm long incl. calyx limb. Leaves glabrous or tomentose below 10

Fruit 17—37 mm long. Leaves glabrous, sparingly hairy or thin-tomentose on the nerves below 12

Fruit 30—32 (—35?) mm long, leaves soft-hairy with ferrugineous indumentum below. New Guinea . . **10. A. ferrugineum**, p. 272

10 Disc higher than the calyx limb. Fruit ovate with rounded base, somewhat acuminate towards the apex, 11—13 mm long. Sumatra, Borneo **7. A. scandens**, p. 264

Disc not higher than the calyx limb. Fruit not like this 11

11 Calyx teeth oblong, nearly 1.5 mm long, connivent. Fruit 17—18 mm long incl. calyx limb, ovate-ellipsoid, somewhat acute at the base. Batjan Islands . . . . . **11. A. Warburgianum**, p. 273

Calyx teeth much shorter, not connivent. Fruit 10—17 mm long incl. calyx limb, nearly globose or ellipsoid, rounded at the base and the apex. Java . . . . . **9. A. villosum**, p. 269

12 Fruit 27—37 mm long incl. calyx limb, 18—22 mm broad, 12—14 mm thick, strongly grooved and ribbed in the dry state with 10—14 obtuse ribs. Twigs between the adult leaves 3—9 mm thick. Malay Peninsula, Sumatra . . . . . **14. A. Ridleyi**, p. 278

Fruit 17—35 mm long, 11—17.5 mm broad, 6—12 mm thick, usually not or only slightly ribbed. Twigs between the adult leaves 1.5—6.5 mm thick. Malay Peninsula, and from Sumatra to New Guinea with exception of the Lesser Sunda Islands **15. A. javanicum**, p. 281

Section I. *Stamens 2—5 × as many as petals and calyx teeth. Style cylindrical with capitate 4-lobed stigma. Endosperm shallow-grooved. Radicle at least 1.5 × as long as the cotyledons.* Species 1—3. **Fig. 1.** — Stems monopodial, branching from the axils of the former vegetation period, in flowering specimens from the terminal buds of the inflorescences. Leaves symmetrical, usually obovate-oblong, palminervous at the base. Inflorescences sessile or shortly peduncled, with distinct branches, pedicels, and bracts as well at the base of the branches

as between these and the flowers. Style glabrous. Ovary one-celled. Fruit slightly, seed hardly flattened.

1. Alangium salvifolium (LINN.F.) WANGERIN **ssp. hexapetalum** (LAM.) WANGERIN — *Internodes* between the adult leaves 1.3—4.5 cm long, 1.5—5 mm thick, glabrescent. *Petiole* 5—15 mm long, glabrescent; lamina usually obovate-oblong to oblong, more rarely broader or narrower, symmetrical, 7.5—18.5 cm long, 3—9 cm broad, rounded to cuneate at the base, rather long- and abrupt-acuminate towards the usually obtuse apex, thin-coriaceous, glabrous or sparingly hairy on the

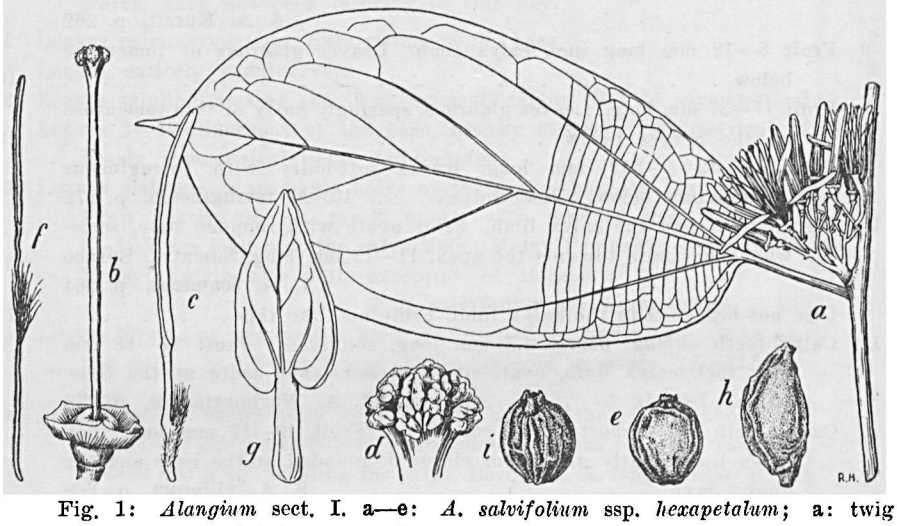

Fig. 1: *Alangium* sect. I. **a—e**: *A. salvifolium* ssp. *hexapetalum*; **a**: twig fragment with leaf and inflorescence, $^3/_5 \times$; **b**: calyx and pistill, $2^1/_2 \times$; **c**: stamen, $2^1/_2 \times$; **d**: stigma, $7^1/_2 \times$; **e**: fruit, $^3/_5 \times$; **f—h**: *A. hirsutum*; **f**: stamen, $2^1/_2 \times$; **g**: embryo, $2^1/_2 \times$; **h**: fruit, $^3/_5 \times$; **i**: *A. longiflorum*, fruit $^3/_5 \times$; **a**, **b**, **d**, after Bot. Gard. Buitenzorg XVII. C. 136, **c** after VAN STEENIS 909, **e** after TEYSMANN s.n. from P. Sebesi, **f**, **g**, **h** after HALLIER B. 3238, **i** after ELMER 16120.

nerves below, triplinervous at the base, moreover with 3—6 lateral nerves at each side of the midrib. *Inflorescence* shortly and densely hirsute-tomentose, sessile or nearly sessile, 2—3 × branched, 3—17-flowered, 12—23 mm long (flowers excluded); peduncle 2—4 mm long, pedicels 2—8 mm long; bracts triangular 0.5—3 mm long, 0.5—0.75 mm broad. *Flowers* 14.5—23 mm long; calyx shortly and densely hirsute-tomentose, the tube 0.75—1.75 mm long, the limb cupuliformous or spreading, 0.75—1.75 mm long, 2.5—4.25 mm wide, with teeth 0.25—0.5 mm long; corolla 5—7-, usually 5-merous, in the bud state nearly cylindrical 1.75—2.75 mm thick, swollen up to 4.5 mm thick in the

basal part, slightly swollen in the apical portion, obtuse at the apex; petals 14—21 mm long, short-tomentose outside, shortly hairy inside above the dilate basal portion; stamens 10—18 in number, 12—18 mm long; filament 5—6 mm long, the basal part 4—5 mm long, 1—2.5 mm broad, thickened prolongated and bearded at the apex inside, pilose along the margin and outside, the upper portion 1—2.5 mm long, 0.75 mm broad, glabrous; anther 8—13 mm long, 0.75 mm broad, with glabrous connective; style glabrous, 11—18 mm long, 0.5—0.75 mm thick; stigma capitate, 1 mm long, 2.25 mm in diameter; disc 5—7-angular, 1.5 mm high, 4 mm in diameter; ovary one-celled. *Fruit* in the dry state globose to oviformous-globose, rounded at the base and the apex, 9—18.5 mm long (inclusive calyx and disc), 6.5—16 mm diam., short-tomentose to glabrous, sometimes with 10—14 obtuse ribs, crowned by the calyx limb 1 mm high, 4 mm wide and the disc as high as the calyx or little higher. (Description after the herbarium materials mentioned). **Cfr. fig. 1, a—e.**

According to the notes on herbarium labels *A. salvifolium* ssp. *hexapetalum* is mostly a climbing shrub up to 26 m high with a stem up to 10 cm thick, more rarely an erect shrub or a small tree up to 12 m high with a bole up to 30 cm thick; its leaves are glossy green, not deciduous in the dry season; its corolla is white or greenish-white, or green inside, rarely red, the stamens white, the fruit red when ripe. It occurs at an elevation of 10—1400 m above sea level.

Alangium hexapetalum LAMARCK, Enc. méth., bot., 1, p. 175 (1783); D. C., Prodr., 3, p. 203 (1828); MIQ., Fl. Ind. Bat., I, 1, p. 774 (1856); TEYSM. & BINN., Cat. Pl. Hort. Bot. Bogor., p. 238 (1866); GRESH., Meded. 's Lands Plantent., 25, p. 89 (1898); KOORDERS, Exkursionsfl. Java. 2, p. 731 (1912); *Alangium frutescens* ZOLLING., Syst. Verz. 1842—1848, fasc. 3, p. 63 (1855); in Nat. Tijdschr. Ned. Ind., 14, p. 156 (1857) nomen; *Alangium Mohillae* TUL., Ann. Sc. Nat. ser. 4, 6, p. 105 (1856); HARMS, in ENGL. & PR., Nat. Pflanzenfam., III, 8, p. 261 (1898); *Alangium glandulosum* THWAITES, Enum., p. 133 (1859); TRIMEN, Handb. Fl. Ceyl., 2, p. 286 (1894); *Alangium Lamarckii* THWAITES, Enum. Pl. Zeyl., p. 133 (1859) p. p.; CLARKE, in Hook.f., Fl. Br. Ind., 2, p. 741 (1879) p. p. incl. var. *glandulosum*; TRIMEN, Handb. Fl. Ceyl., 2, p. 285 (1894) p.p.; KING, Journ. As. Soc. Beng., 71, II, p. 76 (1902) cum var. *glandulosa*; WANGERIN, in ENGL., Jahrb., 38, Beibl. 86, p. 62—67 (1906) p.p.; RIDL., Fl. Mal. Pen., 1, p. 892 (1922); *Alangium sundanum* MIQ., Fl. Ind. Bat., I, 1, p. 774 (1856); suppl. Sum., p. 136, 341 (1860) cum var. β; TEYSM. & BINN., Cat. Pl. Hort. Bot. Bogor., p. 238 (1866); KURZ, For. Fl. Burma, 1, p. 543 (1877); GRESIL., Meded. 's Lands Plantent., 25, p. 90 (1898) prob.; KOORD. & VALET., Bijdr. Booms. Java, 5, p. 68 (1900); JANSSON., in MOLL & JANSS., Mikrogr. 3, p. 695 (1918); *Karangolum Mohillae* KUNTZE, Revl. gen. pl., 1, p. 273 (1891); *Alangium salvifolium* KOORD.-SCHUM., Syst. Verz., 1, fam. 229, p. 103 (1912); BAKER, in Journ. Bot., 62, suppl. p. 45 (1924) p.p.; DAKKUS, in Bull. Jard. Bot. Buitenz., ser. 3, suppl. 1, p. 13 (1930); *Alangium salviifolium* ssp. *hexapetalum* WANGERIN, in

ENGL., Pflanzenr., IV, 220b, p. 9, ic. 2F (1910) p.p.; KOORD., Exkursionsfl. Java, 2, p. 732 (1912); MELCHIOR & MANSF., in ENGL., Jahrb., 60, p. 163 (1925); DOCT. v. LEEUWEN, Zoocec., p. 438 (1926); VAN STEENIS, in Bull. Jard. Bot. Buitenz., sér. 3, 12, p. 173 (1932).

As to the synonymy I will remark that I have not seen the originals of LAMARCK's species, but that I have followed the British-Indian florists in the interpretation of the name *A. hexapetalum*. Yet it was not possible to decide, in each separate case, what plant exactly these botanists meant by *A. hexapetalum* and *A. decapetalum*. The type of *A. salvifolium* (*Grewia salvifolia* LINN.F.) I saw in SMITH's herbarium at London.

MALAY PENINSULA. Perak: SCORTECHINI s.n. (L); Larut, 90—150 m el., KING's coll. 5590 (B, BD, BM, K); Singapore: Changi, RIDLEY 6020 coll. MAT (BM, S); Sungei Jurong, RIDLEY 6775 (S).

SIMEULOEË. ACHMAD 339 (B, K, L, S), v.n.: *sikilir silai*.

SUMATRA. Palembang, Soekaradja, R. Roepit, 240 m alt., FORBES 2984 (BM); G. Dempo, 1400 m alt., AJOEB (Exp. JACOBSON) 445 (B); Lampongs, cultivated in the Buitenzorg Botanic Garden, under XVII. C. 135 (B), probably from fruit of the following: Tjanti, TEYSMANN 4251 H.B. (B, K, L, U, originals of *Alangium sundanum* MIQ. var. β).

POELOE SEBESI. TEYSMANN 4473 H.B. (B, L, U, in the latter originals of *Alangium sundanum* MIQ.), v.n.: *wait sesatak*.

ANAMBAS ISLANDS. Siantan, near Terempa, 60—90 m alt., HENDERSON 20197 (B, S); east of Terempa, 250 m alt., VAN STEENIS 909 (B, S).

JAVA. Without exact locality: cultivated in the Buitenzorg Botanic Garden under XVII. C. 136 & 136a (B); TEYSMANN s.n. (L); TEYSMANN & DE VRIESE s.n. (L); DE VRIESE s.n. (L); „Bonserang", coll.? s.n. (L); Oedjong Genteng near Djampang Koelon, 1 m el., BACKER 17546 (B); between Weltevreden and Mr. Cornelis, Salemba, in a garden, 20 m alt., BACKER 32021 (B); Buitenzorg, Tjikeumeuh, 250 m alt., BUSSE 1489a (BD); south of Weleri, 300 m alt., BACKER 16604 (B); Ngarengan (Djapara), 50 m alt., KOORDERS 33654 β (B); for. no. 2456*, herb. no. 35114 β (B, L); for. no. 2456bis*, herb. no. 33587 β (B); Tjabak, Blora (Rembang), KOORDERS 40406 β (B); Soerabaja, HORSFIELD s.n. (U, from this locality probably also in BM, K, L, originals of *Alangium sundanum* MIQ.); Malang, HORSFIELD s.n. (K); Lamadjang Tenga, ZOLLINGER 2289 (B, BD, BM, K) type no. of *Alangium frutescens* ZOLL., „corolla flavescente-albida, odorifera, frutex subsarmentosa"; Djember, 100 m alt., BACKER 17764 (B); Poeger Watangan, 10 m alt., KOORDERS for. no. 1249*. herb. no. 21321 β (B, BD, L); Tjoeramanis, KOORDERS 38488 β (B, L); Ragadjampi Balak, Kedoenen (Banjoewangi), KOORDERS for. no. 1152*, herb. no. 29098 β (B), v.n.: *lantoro*; Bama (Bomo), near Kedoenen, KOORDERS for. no. 1409*, herb. no. 29125 β (B, BD, K, L), v.n.: *lantoro*; Bama, TEYSMANN s.n. (B, L, the former authentic specimen of „*Alangium frutescens* Z. & M.").

KANGEAN ISLANDS. Cultivated in the Buitenzorg Botanic Garden under III. G. 60 & 60a (B), and IX. A. 22a (B), from Kangean; Kangean, Doekoh, DOMMERS 82 (B), v.n. *topo topo boerih*, and DOMMERS 216 (B), v.n.: *kantjiloed*.

BALI. G. Goendoel, VAN DER PAARDT 66 (B), v.n.: *melati*.

SOEMBAWA. Between Boeër and Alas („Bner & Allas"), ZOLLINGER 3391 Z.M. (B, BM).

SOEMBA. TEYSMANN s.n. (B, L), v.n.: *kemali wateh*.

SELEBES. Paré-paré, Kp. Sapagaloeng, NOERKAS (Exp. VAN VUUREN) 287 (B,

L); Pangkadjéne, TEYSMANN 11849 (B, L), 11894 (B, L), 12117 (B, L), 12436 (B, L).

SALAJAR. TEYSMANN 13832 H.B. (B, L).

NEW GUINEA. Probably near the Triton Bay, ZIPPELIUS 197c (B, L).

Moreover cultivated in the Buitenzorg Botanic Garden, of unknown provenance, under XII. B. 207 & 207a (B, L, U), XII. B. 210a (B), and XVII. C. 133a (B).

Further distribution: Comores, W. & S. coast of India, Ceylon, Andamans, Philippines (?).

2. Alangium longiflorum MERRILL — *Internodes* between the adult leaves 1.8—5.2 cm long, 1—4 mm thick, tomentose. *Petiole* 8—12 mm long, tomentose; lamina obovate-oblong or somewhat broader or narrower, slightly asymmetrical, 5.5—18 cm long, 3—8.5 cm long, 3—8.5 cm broad, with the base rounded to cuneate at the broad side, usually cuneate at the narrow side, rather long-acuminate towards the obtuse apex, chartaceous, triplinervous at the base, moreover with 5—7 lateral nerves on each side of the midrib, on the upper side only the midrib and the strong lateral nerves shortly appressedly hairy, on the underside moreover all lateral nerves. *Inflorescence* tomentose, once or twice branched, 1—5-flowered, 3—7 mm long (the flowers excluded), sessile or nearly so, the peduncle 0—1.5 mm long, the pedicels 2—6 mm long; bracts triangular, 0.75—1 mm long, 1 mm broad. *Flower* 30—50 mm long; calyx tomentose, the tube campanulate-infundibuliformous, 1—2 mm long, the limb infundibuliformous to cupuliformous, 1—1.5 mm long, 2.5—3 mm wide, with teeth 0.25—0.5 mm long; corolla usually 5-merous, subcylindrical in the bud state, hardly swollen in the basal portion, somewhat swollen in the upper one-third part, up to 3—4 mm thick, often shortly abruptly acuminate towards the obtuse tip; petals 34—49 mm long, thin- but dense-tomentose outside, sparingly shortly appressedly pilose at the inside except in the basal 5 mm; stamens 2—6 × as many as petals, 33—48 mm long; filament filiformous, 27—40 mm long, 0.2—0.5 mm thick, from 6 to 11 m above the base long-pilose; anther 6—8 mm long, acute at the base and the tip, with glabrous connective; style glabrous, 31—46 mm long, 0.3—0.4 mm thick; stigma capitate, 1 mm long, 1.25—1.5 mm in diameter; disc 0.5 mm high, 1.25—1.5 mm in diameter; ovary one-celled. *Fruit* in the dry state ellipsoidal or oviformous, rounded at the base and the apex, 17—20 mm long (incl. the calyx), 14—16 mm broad, 10—12.5 mm thick, glabrous or thin-tomentose, sometimes sulcate and with 10—12 ribs, crowned by the calyx limb 1—1.5 mm long, 3.25—3.5 mm wide, and the somewhat shorter disc. (Description after the Borneo specimen and Philippine materials from Luzon, Negros, Samar, Mindanao and Tawi-tawi). **Cfr. fig. 1, i.**

Alangium longiflorum MERRILL, in Phil. Journ. Sc., bot., 7, p. 319 (1912); Enum. Phil. Fl. Pl., 3, p. 240 (1923); QUISUMBING, in Philipp. Agric., 13, p. 441, t. 1 (1925).

BORNEO. Mt. Kinabalu, Penibukan, 1200 m el., CLEMENS 30527 (B, NY), tree 15 m high, 25 cm diam.; Sarawak, Kuching, KALONG (HAVILAND) 1505 (K, Sa), small tree, petals white.

Distribution: Philippine Islands.

3. **Alangium hirsutum** BLOEMBERGEN, n. sp. — *Internodia* inter folia adulta 6—26 mm longa 2—4.5 mm crassa, statu juvenili hirsuto-tomentosa postea hirsuta, denique glabrescentia. *Petiolus* 4—9 mm longus, hirsuto-tomentosus; lamina plerumque obovato-oblonga, subsymmetrica, 3.6—13.5 cm longa, 1.5—5.75 cm lata, basi rotundata, apicem acutum vel obtusum versus subabrupte breviuscule acuminata, chartacea, facie superiore costa tantum hirsuta, facie inferiore etiam nervis venisque hirsutis, basi vix triplinervi, nervis lateralibus 7—10 utrinque. *Inflorescentia* hirsuto-tomentosa, 1—2-flora, sessilis, pedicellis c. 0.5 mm longis; bracteae triangulares, 0.75—1 mm longae 1 mm latae. *Flos* c. 25 mm longus; calyx dense hirsuto-tomentosus; tubus campanulatus 2 mm longus, limbus infundibuli-cupuliformis, 1.2 mm longus, 3.5 mm latus, dentibus 0.5 mm longis; corolla 5—7-meres, petalis c. 22.5 mm longis, facie exteriore parce breviterque pilosis, facie interiore a 6 mm usque ad 8 mm supra basin magis pilosis, ceterum parce breviterque pilosis; stamina c. 15, 20—21 mm longa; filamentum 12—13 mm longum, filiforme, 0.1—0.25 mm crassum, parte basali 6—10 mm longa excepta pilosum; anthera 8—9 mm longa, basi apiceque acuta, connectivo glabro; stylus glaber 22 mm longus, c. 0.3 mm crassus; stigma capitatum vel semiglobosum, 0.7 mm longum, 1 mm diametro; discus 0.5 mm altus 1 mm diametro; ovarium uniloculare. *Fructus* in herbario ellipsoides vel oviformis, basi apiceque acutus, 28—32.5 mm longus (calyce incluso), 13—15 mm latus, 12—13 mm crassus, tenuiter tomentosus vel glaber, nonnunquam sulcis c. 6 levibus vel profundioribus, limbo calycis c. 1.5 mm longo 2.5—3 mm lato et disco minus alto coronatus. (Description after the Borneo materials). **Cfr. fig. 1, f—h.**

A. hirsutum is closely allied to *A. longiflorum* and *A. brachyanthum* MERR., less closely to *A. salvifolium*. From *A. longiflorum* it differs by shorter flowers and more hirsute indumentum, from *A. brachyanthum* by longer flowers, whereas the leaves of the latter species are not known with certainty and the fruit quite unknown. From *A. salvifolium* our species differs by filaments without thickened basal portion.

The Sumatra specimen, not taken up in the description, is only fruit-bearing and differs from the Borneo plant by the less hirsute indumentum and the fruit only 22 mm long.

BORNEO. Western Part, Amai Ambit, HALLIER B. 3238 (B, type, L).
Perhaps also:
SUMATRA. Palembang, BOSCHPR. T. 52 (B, L).

Section II. *Stamens as many as petals and calyx teeth. Style cylindrical with capitate 4-lobed stigma. Endosperm smooth. Radicle shorter than half the length of the cotyledons.* Species 4—8. **Fig. 2.** — Stems either sympodial, branching from the axils of the former

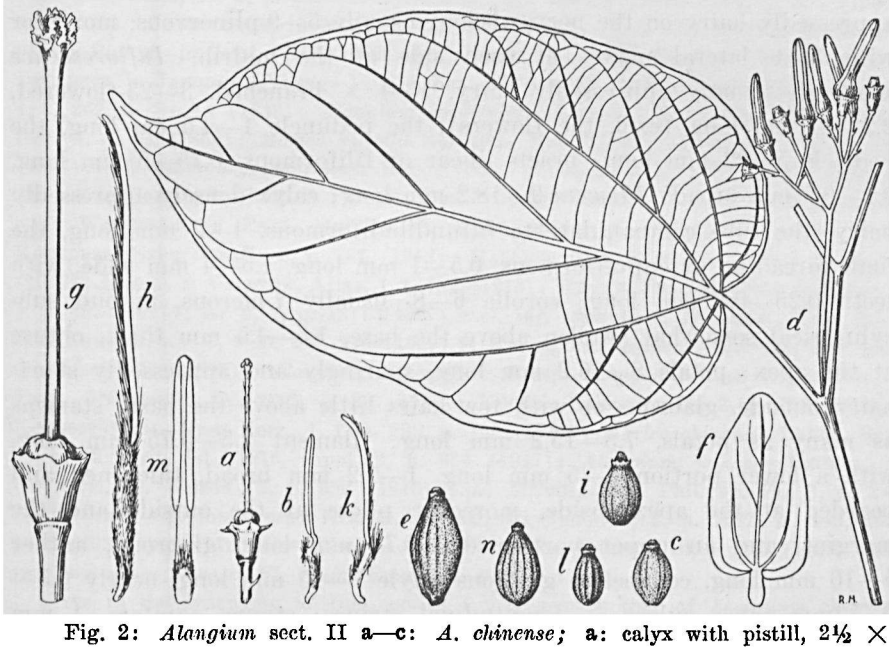

Fig. 2: *Alangium* sect. II **a—c**: *A. chinense;* **a**: calyx with pistill, 2½ ×; **b**: stamen, 2½ ×; **c**: fruit, ⅘ ×; **d—f**: *A. rotundifolium*; **d**: twig fragment with leaf and inflorescence, ⅖ ×; **e**: fruit, ⅘ ×; **f**: embryo, 2½ ×; **g—i**: *A. Kurzii*; **g**: calyx with pistill, 2½ ×; **h**: stamen, 2½ ×; **i**: fruit, ⅘ ×; **k—l**: *A. scandens*; **k**: stamen, 2½ ×; **l**: fruit, ⅘ ×; **m—n**: *A. Griffithii*; **m**: stamen, 2½ ×; **n**: fruit, ⅘ ×; **a, b**, after LÖRZING 640, **c** after KOORDERS 30232β, **d** after WINCKEL 1570β, **e, f**, after FOX 122, **g, h, i**, after LÖRZING 8960, **k** after ENDERT 4076, **l** after ENDERT 4052, **m** after LAMBACH 2720, **n** after FORBES 2739.

vegetation period (species 4—6), or monopodial and branching from the axils of the last vegetation period (species 7—8). Leaves usually asymmetrical, nearly ovate-cordate, usually palminervous at the base, rarely entirely penninervous (spec. 7). Inflorescences with distinct peduncle, branches and pedicels, but the bracts little developed. Style glabrous or hairy. Ovary 1—2-celled. Fruit and seed flattened.

4. Alangium chinense (LOUREIRO) REHDER — *Internodes* between

the adult leaves 2—8 cm long, 2—4.5 mm thick, glabrous or somewhat appressedly short-hairy, especially near the insertion of the leaves. *Petiole* 16—60 mm long, appressedly hairy or glabrescent; lamina roundly- or triangular-ovate in outline, 5—28 cm long, 3—27.5 cm broad, often with a number of large acuminate teeth or lobes, asymmetrical, more or less obliquely cordate, usually cuneate at the narrow side, rather long and abruptly acuminate towards the acute or subobtuse apex, chartaceous, nearly glabrous at both sides or more or less shortly appressedly hairy on the nerves below, usually 5—9-plinervous, moreover with 3—6 lateral nerves at each side of the midrib. *Inflorescence* sparingly shortly appressedly hairy, 1—4 × branched, 3—23-flowered, 2.2—8.5 cm long (excl. the flowers), the peduncle 1—4.5 cm long, the pedicels 5—22 mm long; bracts linear or filiformous, 0.75—5 mm long, 0.1—0.5 mm broad. *Flowers* 9—18.2 mm long; calyx densely appressedly hairy, the tube campanulate to infundibuliformous, 1—2 mm long, the limb spreading or cupuliformous, 0.5—1 mm long, 1.5—4 mm wide, with teeth 0.25—0.5 mm long; corolla 6—8- usually 7-merous, in bud subcylindrical somewhat swollen above the base, 1.5—4.5 mm thick, obtuse at the apex; petals 8—16.2 mm long, sparingly and appressedly short-hairy outside, glabrous or with few hairs little above the base; stamens as many as petals, 7.5—15.2 mm long; filament 2.5—5.75 mm long, with a lower portion 2—5 mm long, 1—1.2 mm broad, thickened and bearded at the apex inside, moreover pilose at the outside and the margins, and an upper portion 0.5—0.75 mm long, glabrous; anther 5—10 mm long, connective glabrous; style 7—15 mm long, nearly 0.5—0.75 mm thick, pilose on longitudinal stripes; stigma capitate, 1 mm long, 1.2—1.6 mm thick; disc semiglobose, slightly angular, 0.9—1.75 mm high, 2—2.25 mm in diameter; ovary 2-celled. *Fruit* 2-locular, 2-seeded, in the herbarium oviformous or ellipsoidal, rounded or somewhat acute at the base, more acute at the apex, 9—13 mm long (incl. the calyx limb), 6—7 mm broad and thick, sometimes sparingly short-hairy, sometimes superficially ribbed and grooved, crowned by the calyx limb 0.75 mm long 2.5 mm wide, and the exserted 1.5—2 mm high disc (Description after the materials mentioned below). **Cfr. fig. 2, a—c.**

According to notes on herbarium labels *A. chinense* is a shrub or tree, up to 12 m high or even higher, with a bole up to 8 cm thick or even thicker; the flowers are fragrant, the corolla, filaments and style white, the anthers yellow, the ripe fruit dark violet. It occurs from 20 to 1400 m above sea level and flowers in very different times of the year.

Stylidium chinense LOUREIRO, Fl. cochinchin., 1, p. 221 (1790); *Stelanthes solitarius* STOKES, Bot. Mat. Med., 2, p. 339 (1812); *Marlea begoniaefolia* ROXB., Hort. Beng., p. 28 (1814) nom. nud.; Pl. corom., 3, p. 80, t. 283 (1819); D.C., Prodr., 4, p. 267 (1830); ROXB., Fl. ind., ed. 2, 2, p. 261 (1832); GRIFFITH, Ic. pl. as., 1, t. 45, 2 (1847); 4,t. 639 (1854); MIQ., Fl. Ind. Bat., I, 1, p. 774 (1856); BENTH., Fl. hongk., p. 138 (1861) p.p.; KURZ, Journ. As. Soc. Beng., 40, II, p. 61 (1871); ROXB., Fl. ind., ed. 3, p. 326 (1874); BRANDIS, For. fl., p. 251 (1874); KURZ, For. fl. Burma, 1, p. 544 (1874); CLARKE, in HOOK.F., Fl. Br. Ind., 2, p. 743 (1879) p.p.; KOORD. & VALET., Bijdr. Booms. Java, 5, p. 82 (1900) cum var. *palmatidentata*; GAMBLE, Man. Ind. timb., ed. 2, p. 389 (1902) saltem p.p.; BRANDIS, Ind. trees, p. 355 (1906) saltem p.p.; JANSSONIUS, in MOLL & JANSS., Mikrogr., 3, p. 719 (1918); *Stylis chinensis* POIRET, in LAM., Enc. méth., bot., suppl. 5, p. 260 (1817); *Marlea affinis* DECAISNE, in JACQUEM., Voyage Ind., 4, bot., p. 74, t. 83 (1844); SCHNEIZL., Iconogr., 4, t. 262, ic. 1—14 (1849); *Alangium cordifolium* ZOLLING., Syst. Verz. 1842—1848, fasc. 3, p. 63 (1855); *Marlea virgata* ZOLLING., Nat. Tijdschr. Ned. Ind., 14, p. 157 (1857); *Alangium begoniaefolium* BAILL., Hist. pl., 6, p. 270 (1877) prob., excl. ic. 249—252; HARMS, in ENGL. & PRANTL, Nat. Pflanzenfam., III, 8, p. 261 (1898) saltem p.p.; WANGERIN, in ENGL., Jahrb., 38, Beibl. 86, p. 61—68 (1906) saltem p.p.; KOORDERS, Exkursionsfl., 2, p. 731 (1912); HALLIER, in ELBERT, Sunda-Exp., 2, p. 285 (1912); KOORD. & VALETON, Atlas, 1, t. 187 (1913); HEYNE, Nutt. Pl. Ned. Ind., ed. 1, 3, p. 402 (1917); ed. 2, 2, p. 1217 (1927) excl. var. *tomentoso*; BRUGGEM., Bull. Jard. Bot. Buitenz., ser. 3, 9, p. 204, 216 (1927) ?; *Karangolum chinense* KUNTZE, Rev. gen. pl., 1, p. 273 (1891); *Alangium begoniifolium* ssp. *eubegoniifolium* WANGERIN, in ENGL., Pflanzenr., IV, 220b, p. 20 (1910); KOORD., Exkursionsfl., 2, p. 733 (1912); KOORD.-SCHUM., Syst. Verz., 1, fam. 229, p. 100 (1912); *Marlea chinensis* DRUCE, Rep. Exch. Cl. Brit, Isl., 1916, suppl. 2, p. 634 (1917); *Alangium chinense* REHDER, in SARGENT., Pl. Wilson., 2, p. 552 (1916) p.p.; MERRILL, En. Phil. Fl. Pl., 3, p. 240 (1923) excl. ssp. *tomentoso*; EVRARD, in LEC., Fl. Indo-Ch., 2, p. 1187, ic. 142, 143, 1—2 (1923) p.p.; MELCHIOR. Notizbl. Bot. Gart. Berl.-Dahlem, 10, p. 825 (1929) excl. var. *tomentoso*; CRAIB, Fl. Siam. Enum., 1, p. 805 (1931).

As to the synonymy of this species I may remark that of *Stylidium chinense* LOUREIRO I saw an original in the Herbarium of the British Museum at London.

From *A. chinense* I keep *A. rotundifolium* and *A. Kurzii* apart as separate species, for the argumentation of which cfr. *A. rotundifolium*.

A. chinense, as accepted here, is rather uniformous in the area dealt with. Some youth forms (either young plants or suckers from old roots) are strikingly different by thicker twigs with longer internodes, more scarce indumentum soon falling off, larger leaf blades (up to 28 cm long and broad) that are more often toothed or lobed, less asymmetrical and with thinner texture, and longer petioles; forms comprised by KOORDERS & VALETON in their var. *palmatidentata*, with more deeply regularly and constantly lobate leaves, are not youth forms, but appear to be too little important to be distinguished as a variety.

JAVA. Without exact locality: BLUME (?) s.n. (L); JUNGHUHN s.n. (K); WARBURG 4671 (BD); G. Tjitjajoer near Pangentjongan, KOORDERS 1303β (B, L); Tjibodas, N 2 (B); Temanggoeng (Kedoe), 600 m el., LÖRZING 640 (B, BD), v.n.: *woeroe pas*; teak-forest Karangasem, north of Wirosari (Semarang), 200 m el., KOORDERS 868β (B, K, L), 869β (B); forestry Telawah (Semarang), tree no. Tl. 220, VINCENT 4671 (B, L), v.n.: *timangan*; G. Kidoel, between Djepitoe & Kala (Soerakarta), 200 m el., BACKER 2829 (B); Pandan (Madioen), 400—900 m el., ELBERT

478 (L); Prigi (Kediri), TEYSMANN s.n. (L, U); Wanasalim, „M. Brubu", 450 m el., ZOLLINGER 2292 (B, BD, BM, K), type number of *Alangium cordifolium* ZOLL.; G. Kawi, WARBURG 4672 (BD); Soerabaja, HORSFIELD s.n. (BM, K), v.n.: *gedreg, opas-opasan*; G. Tengger, Lawang, MOUSSET 264 (B), 1923 (B, L), shade tree in coffee plantations; Wanakerta, S.W. of Gondanglegi, 500 m el., BACKER 3529 (B); the collector asking the name to 10 Javanese passing by, got the following answers: *ègrèk* 1 ×, *kladjang* 1 ×, *mangar* 2 ×, *paron* 1 ×, *tètè* 1 ×, *tibò* 1 ×, *timò* 2 ×, whereas one did not know a name; forest Djenggolo near pasanggrahan Kaliparé, 300 m el., KOORDERS for. no. 2917*, herb. no. 23676β (B); G. Tengger, 1200 m, BUYSMAN s.n. (B, U); Djatirata, 20 m el., BACKER 7975 (B); Poeger, KOORDERS, for. no. 1837*, herb. no. 30232β (B, L), v.n.: *goprak*; Tjoeramanis near Simpolan (Besoeki), 500 m el., KOORDERS for. no. 2167*, herb. no. 20934β (B); Idjen-plateau, forest Simpol, 1150 m el., KOORDERS for. no. 26*, herb. no. 14384β (B, L), v.n.: *opas-opasan*; Idjen, Kendeng, kloof Katjèp, 1500 m el., CLASON 989 (B, G); G. Kemiri Sanga, near Djember, 150 m el., BACKER 30578 (B); G. Idjen, western slope, 1000 m el., BACKER 25396 (B); Idjen-plateau, near Belawan, 1000 m el., BACKER 25231 (B); Banjoewangi, BLUME s.n. (L), v.n.: *upas-upassan*.

BALI, between Boelèlèng and Gitgit, TEYSMANN 2745 H.B. (B, L, U), v.n.. *lengoeng*.

SOEMBAWA. Donggo Mts., K. Mange, 300 m el., WARBURG 17093 (BD), v.n.: *sanga*; with 2 labels: „Sumbawa, 4000′, WARBURG 17094 v.n.: *padati*, Strauch", and „Sumbawa, Donggo Geb., K. Kenante, 1200′, WARBURG s.n., v.n.: *sanga*, Baum" (BD); Bima, Mata, COLFS 180 (L), v.n.: *kailon gadong*; G. Poesoe, W. of Batoelantèh, 700—900 m el., ELBERT 4153 (L); G. Batoelantèh, N. slope, 800—1400 m el., ELBERT 4179 (L).

SOEMBA. Taboendoeng, TEYSMANN 8957 H.B. (B); G. Harara, 560 m el., BOSCHIPP.BB. 5414 (B), v.n.: *kambah*.

FLORES. Wai Sano (W. Flores), 650 m el., DE JONG 38 (B).

Further distribution: Tropical Africa, southeastern Asia from British India and China to the Philippines and southwards.

5. Alangium rotundifolium (HASSKARL) BLOEMBERGEN n. comb. — *Internodes* between the adult leaves 1.2—7 cm long, 2—6.5 mm thick, in the young state with traces of a woolly tomentum. *Petiole* 7—55 mm long, 1—2 mm thick, hairy like the twig; lamina roundish to ovate or triangular-ovate, sometimes with few large teeth or lobes at each side, asymmetrical, 5.5—22 cm long, 3.5—18 cm broad, rounded to cordate at the base, often cuneate at the narrow side, rather long and often abruptly acuminate towards the acute or obtuse apex, chartaceous to thin-coriaceous, sparingly short-hairy on the nerves, very sparingly between the nerves above, slightly woolly hairy to hirsute on and between the nerves below, rarely entirely glabrous or more woolly tomentose on the whole lower surface (but never soft-tomentose), 5—7-plinervous at the base, moreover with 4—7 lateral nerves on each side of the midrib. *Inflorescence* thin-tomentose or more glabrous, 3—4 × branched, 2—13-flowered, 12—52 mm long (flowers excluded); peduncle 6—35 mm long,

pedicels 6—15 mm long; bracts filiformous to triangular, 0.5—2.5 mm long, 0.5 mm broad, *Flowers* 7.5—24 mm long; calyx tomentose, tube infundibuliformous to cylindrical, 1—3 mm long, limb spreading, 1 mm long, 3.5—3.75 mm in diameter, with teeth 0.25—0.5 mm long; corolla 6—9- usually 7-merous, in bud subcylindrical 1.75—3 mm thick, swollen and up to 4 or 5 mm thick above the base, slightly swollen at three-quarters of the length, obtuse at the tip; petals 6.5—21 mm long, thin-tomentose to nearly glabrous outside, long-pilose at the inside in the lower dilate part, along the margins and at the apex; stamens as many as petals, 6—19.75 mm long, filament 0.75—7.5 mm long, with a lower part 0.75—5.5 mm long 0.5—3.5 mm broad broadest in the middle and not thickened at the apex, pilose outside and along the margins inside, and an upper part 0.4—1.5 mm long 0.3—0.5 mm broad, long-hairy at the inside; anther 5—12.25 mm long, 0.75—1 mm broad, with a connective long-pilose inside up to the tip; style glabrous, 6—15 mm long, nearly 0.3 mm—0.7 mm thick; stigma capitate, 1.25 mm long, 1.5 mm thick; disc truncate-conical, 0.5—2 mm high, 1.5—1.75 mm in diameter, with 6—9 longitudinal grooves; ovary usually one-celled, rarely 2-celled with unequal cells. *Fruit* usually one-celled and one-seeded, rarely with a second little-developed cell, ovate-oblong-ellipsoidal in the dry state, often flattened, cuneate or rounded at the base, acute at the apex, 16—28 mm long (incl. the calyx), 7—11 mm broad, 5—8 mm thick, glabrous or thin-tomentose, sometimes slightly grooved, crowned by the spreading calyx limb 1—1.5 mm long 3.5—4 mm in diameter, and the exserted disc 2 mm high. (Description after the materials enumerated). **Cfr. fig. 2, d—f.**

According to the notes on the herbarium labels *A. rotundifolium* is always a tree, usually 15—26 m high, with a bole 38—50 cm thick, with flowers fragrant, corolla white or cream-coloured or yellowish, filaments and style white, anthers yellow. It occurs from 400 to 1625 m above sea level.

Marlea tomentosa ZOLLINGER, Syst. Verz. 1842—1848, fasc. 3, p. 63 (1855); *Tetrameles rufinervis* MIQ., Pl. Junghuhn., p. 401 (1855) p.p.; Fl. Ind. Bat., I, 1, p. 726 (1856) p.p.; *Diacaecarpium rotundifolium* HASSKARL, Bonplandia, 7, p. 172 (1859); *Marlea rotundifolia* TEYSM. & BINNEND., Catal. Pl. Hort. Bot. Bogor., p. 238 (1866); GRESHOFF, Meded. 's Lands Plantent., 25, p. 91 (1898); *Alangium begoniifolium* HARMS, in ENGL. & PRANTL, Nat. Pflanzenfam., III, 8, p. 261 (1898) p.p.; *Marlea tomentosa* var. *rotundifolia* KOORD. & VALET., Bijdr. booms. Java, 5, p. 79 (1900); JANSSON., in MOLL & JANSSON., Mikrograph., 3, p. 695, 717 (1918); *Alangium tomentosum* (non LAMARCK 1783) WANGERIN, in ENGL., Jahrb., 38, Beibl. 86, p. 64 (1906) p.p.; KOORDERS, Exkursionsfl. Java, 2, p. 731 (1912) p.p.; *Alangium begoniifolium* ssp. *tomentosum* var. *vulgare* WANGERIN, in ENGL., Pflanzenr., IV, 220b,

p. 22 (1910); *Alangium begoniifolium* ssp. *tomentosum* var. *typicum* (non WANGERIN 1910) HALLIER, Meded. 's Rijks Herb., 1, p. 13 (1911) p.p.; *Alangium begoniifolium* ssp. *tomentosum* KOORD., Exkursionsfl. Java, 2, p. 733 (1912) p.p.; KOORD.-SCHUM., Syst. Verz., 1, fam. 229, p. 101 (1912) p.p.; KOORD., Fl. Tjib., 2, p. 237 (1923) p.p.; BRUGGEMAN, Bull. Jard. Bot. Buitenz., ser. III, 9, p. 203, 216 (1927) p.p.?; *Marlea begonifolia* RIDL., in Journ. Fed. Mal. St. Mus., VIII, 4, p. 44 (1917); *Alangium chinense* ssp. *tomentosum* var. *vulgare* MERRILL, En. Phil. Fl. Pl., 3, p. 240 (1923)?; *Alangium rotundatum* RIDLEY, ex BURKILL & HENDERS., Gard. Bull. Str. Settl., 3, p. 380 (1925); RIDLEY,, Fl. Mal. Pen., 5, p. 213 (1925); *Alangium Kurzii* (non CRAIB 1911) HERDERSON, Gard. Bull. Str. Settl., 7, p. 107 (1933).

About the synonymy of this species little has to be added. Only the invalidness of the name *Tetrameles rufinervis* must be elucidated with few words. HALLIER (in Meded. Rijks Herb. Leiden, 1, p. 13) mentions that he found this name to be a synonym of *Alangium begoniifolium* ssp. *tomentosum* var. *typicum*. Besides that this remark contains a small mistake (var. *vulgare* had been better), there is a circumstance that invalidates this name. The type in the Leiden Herbarium not only comprises a leafy twig clearly belonging to *A. rotundifolium*, but also a cover containing a fruit, that very probably belongs to the same species, and a number of catkin-like inflorescences belonging to quite a different genus. From MIQUEL's description it is evident, that the name *Tetrameles rufinervis* was based as well upon these inflorescences as upon the leafy twig. Therefore it is impossible to settle, to what genus MIQUEL's *Tetrameles rufinervis* has to be placed, and so this name has no nomenclatorial value at all.

Of the species *Alangium chinense*, *A. rotundifolium* and *A. Kurzii*, distinguished in this paper, KOORDERS and VALETON mention the first as *Marlea begoniaefolia*, the other ones as varieties of *Marlea tomentosa*. WANGERIN mentions them all, as subspecies and varieties, under one specific name, viz. *Alangium begoniifolium*. Having had the opportunity to examine much more materials of these forms than former authors, I endeavour to say, that there are good grounds for taking them apart as three good species. The impression that they are only varieties is taken away especially by a better knowledge of the fruit. The differences between the fruit once known, we can always distinguish the species also by means of differences in leaf-shape, and indumentum, except in some cases of very extreme varieties. Among the three species mentioned, *A. Kurzii* is very uniformous, whereas *A. rotundifolium*, on the contrary, is very polymorphic. Not knowing the characters of the fruit, one is, of course, inclined to unite with the many varieties of *A. rotundifolium* also *A. Kurzii*, as KOORDERS and VALETON did.

About the variability of *A. rotundifolium* the following remarks may be made. The specimens from the Malay Peninsula have leaves sparingly hairy, small flowers (8—18 mm long), large fruit (20—28 mm long); the specimens from Pulo Tioman are also sparingly hairy, but are aberrant by shorter petioles (7—15 mm), strongly asymmetrical leaves with cuneate base, short calyx tube (1 mm), corolla buds not swollen in the basal portion, short filaments (0.75—1 mm), connectives very strongly hairy, disci only 0.5—0.75 mm high. These differences are not important each for themselves, but give a rather uncommon appearance to the plants. The lack of fruit, the occurring of these specimens at an elevation of 60—240 m only, and the existence of glabrous varieties of *A. Kurzii* in Siam, China and Indo-China, justify some doubt, whether these specimens from P. Tioman must not be reckoned to *A. Kurzii*.

The specimen from P. Tinggi is, to a certain degree, intermediate between those from P. Tioman and those from the Malay Peninsula, but by large flowers reminds to forms from Sumatra and Java. For the rest the latter have no special appearance, but are very different in all respects, and also in Java there occur forms that, by the more abundant indumentum, come nearer to *A. Kurzii*, though the fruit of these specimens, if present, is that of pure *A. rotundifolium*; moreover the indumentum is never so dense as in *A. Kurzii* and is of a different nature, viz. more hirsute and never soft-tomentose.

The specimens from Mt. Kinabalu agree with those from the Malay Peninsula as to the leaves. They are, however, remarkable by nearly always 2-celled ovaries and fruit, and connectives sparingly hairy for the species and even glabrous in the upper one-half.

Among the specimens enumerated below, there occur, as among those of *A. chinense*, a number of youth forms, either young plants, or suckers from old roots. They are different by thicker twigs (2—7.5 mm), longer internodes (3—12 cm) and petioles (2.5—20 cm), larger leaf-blades (11.5—27 by 10—26 cm), that are less asymmetrical and more distinctly dentate or lobate. By lack of flowers it is not always certain, whether these forms belong to *A. rotundifolium* or perhaps partly to *A. Kurzii* or *A. chinense*.

MALAY PENINSULA. Perak: below Sea Gardens, 300 m el., CURTIS 2689 (S); Maxwell's Hill, 1200 m el., FOX 122 = RIDLEY 10675 (S); 1140 m el., BURKILL & HANIFF 12851 (B, K, S), type number of *Alangium rotundatum* RIDL.; Gunong Hijau, 1260 m el., HENDERSON 11833 (S); Pahang: Pulau Tioman, Bukit Sukak, 60 m el., HENDERSON & NUR 18554 (S); P. Tioman, Sedagong, 240 m el., HENDERSON & NUR 21750 (K, NY, S); Johore: Pulau Tinggi, BURKILL 907 (S).

SUMATRA. Karo-regions, Laut Kawar, Doesoen Sigaranggarang, 1500 m el., BOSCHPR.BB. 8632 (B), v.n.: *pialee boenga*; Kp. Tongkoh, 1500 m el., BOSCHPR.BB. 6818 (B), v.n.: *sikan-ikan*, and 7202 (B), v.n.: *panggang-panggang*; G. Singgalang (near Padang), BECCARI P.S. 68 & 226 (BM, K, L); Airmantjoer (near Padang), 360 m el., BECCARI P.S. 611 (L); G. Kerintji, „Sungei Penoh", 810 m el., ROBINSON & KLOSS 19 (BM, K); Lebong (Bengkoeloe), alt. 700 m, BOSCHPR.BB. 15, 729 (B), v.n.: *moesang*; Rimbo Pengadang (Bengkoeloe), 1000 m el., AJOEB (Exp. JACOBSON) 180 (B); Karanganjar (Redjang, Bengkoeloe), 950 m el., BOSCHPR.BB. 7289 (B), v.n.: *moesang*.

BORNEO. Mt. Kinabalu, Tenompok, 1500 m, CLEMENS 26705 (B, NY), 29650 (B, NY).

JAVA. Without exact locality: „Tikooet", VAN HASSELT s.n. (L); KORTHALS s.n. (L); FORBES 1899 (L); 900—1800 m el., JUNGHUHN s.n. (KOORDERS' Plantae Junghuhnianae ineditae 58 & 59) (K, L), v.n.: *ki-bungulang, ki-hantap*; „Tjipannas" (where ?), 900 m el., ZOLLINGER 803 (B); Tjianten, south of Leuwiliang, near Buitenzorg, 900 m el., BACKER 25721 (B); Nangèla near Poerwasèda, S.W. of Leuwiliang, 450 m, BAKHUIZEN VAN DEN BRINK 7718 (B), v.n.: *mara bangkoeg*; G. Salak, REINWARDT s.n. (L), v.n.: *kilutong*; KOORDERS 24161 β (B), v.n.: *binong*; G. Gedé, 900—1500 m el., JUNGHUHN s.n. (L); G. Gedé, Tjibodas, SAPHN 163 (B); 1400 m el., KOORDERS, tree no. 3180a, of which herb. no. 1300 β (B, L), 1301 β (B, L), 12492 β (B), 22215 β (B), 25821 β (B, L), v.n.: *kitjaruh, kitjareuh*; G. Boerangrang, N. slope, 1500 m el., BACKER 14187 (B); G. Semboeng, 1300 m el., BACKER 12214 & 12324 (B); Sanggrawa (Djampangkoelon), 400 m el., KOORDERS 1302 β (B, BD, L); Tjadasmalang S. of Tjibeber, 900—1000 m el., BACKER 22538 (B, L); BAKHUIZEN VAN DEN BRINK 1561 (B, BD, L), v.n.: *kitjareuh*; WINCKEL 78 β (B, L, U), 750 β (B),

v.n.: *kitjareuh*; 800 m el., WINCKEL 1570β (B, L, S, U), v.n.: *kitjareuh*; Takokak (Djampangwètan), 1050 m el., KOORDERS 1306 β (B, L); Takokak, way to Soekanagara, 1100 m el., KOORDERS 1307β (B, L), v.n.: *kitjarug*?; G. Wajang, Taloeng, 1625 m el., BOSSCHA s.n. (B), n.v.: *kerteuw*; Pengalengan, 1300 m el., JUNGHUHN s.n. (L, original of *Tetrameles rufinervis* MIQ.), v.n.: *hantap*; G. Telagabodas, forest Pangentjongan, 1300 m el., KOORDERS 13876β (B), 1400 m el., KOORDERS 13982β (B, BD, K, L), v.n.: *kitjaruh*; Pangentjongan, near the pasanggrahan, KOORDERS for. no. 309*, herb. no. 26569β (B, K, L); Garoet, estate Pamegatan, coll. administrator of the estate s.n. (B, L, S); Noesa Gedé, in the Pendjaloe Lake, 700 m el., KOORDERS 47884β (B), v.n.: *kitjareuh*; Pringamba, Bandjarnegara, 800 m el., KOORDERS for no. 214*, herb. no. 33904β (B); G. Slamet, 1400 m el., KOORDERS 1308β (B), v.n.: *tjipir*; G. Prahoe Dièng, N.W. slope, 1400 m el., KOORDERS 1309β (B), v.n.: *ketjipir*; KOORDERS for. no. 14*, herb. no. 11249β (B), v.n.: *lembajoengan*; G. Andong (Kedoe), KOORDERS for. no. 919*, herb. no. 27703β (B, BD, L), v.n.: *woeroe bagoran*; G. Oengaran, near Medini, 900—1200 m, JUNGHUHN s.n. (L, U), v.n.: *tanen* or *kapen*; Kp. Pawangredjo near Malang, 1400 m el., BOSCHPR.JA. 1728 (B), v.n.: *gedrèk*.

BALI. Karangasem, Kp. Poekat Seming, 900 m el., BOSCHPR.BB. 12220 (B), v.n.: *kombang*.

Cultivated in the Buitenzorg Botanic Garden, probably at Tjibodas, s.n., of unknown provenance (B, L), probably the type specimen of *Diacaecarpium rotundifolium* Hasskarl.

6. Alangium Kurzii CRAIB — *Internodes* between the adult leaves 3—9 cm long, 1.5—6 mm thick, tomentose. *Petiole* 13—40 mm long, 1.75—2.5 mm thick, tomentose; lamina mostly triangular-ovate, rarely more roundish or more oblong, not lobate nor dentate, 4—20 cm long, 4—15 cm broad, asymmetrical, the largest half with a rounded basal lobe, the narrow half cuneate at the base, more or less acuminate towards the acute or obtuse apex, thin-coriaceous to chartaceous, short-tomentose on the nerves above, nearly glabrous between them, entirely soft-tomentose below, 5—7-plinervous at the base, moreover with 4—7 lateral nerves at each side of the midrib. *Inflorescence* tomentose, 3—4 × branched, 5—18-flowered, 4.5—5.5 cm long (flowers excluded); peduncle 0.7—4.2 cm long, 1—2 mm thick, pedicels 3—15 mm long, 0.75—1 mm thick, often curvate; bracts filiformous to triangular, 1—3 mm long, 0.5—0.75 mm broad. *Flowers* 18.75—30.5 mm long; calyx tomentose, tube infundibuliformous, campanulate or cylindrical, 1.25—2 mm long, limb spreading, 1—1.5 mm long, 3—3.5 mm wide, with teeth 0.25—0.5 mm long; corolla 7—10- usually 9-merous, in the bud state strongly swollen and 2.75—7 mm wide above the base, nearly cylindrical 2—3 mm wide for the rest, obtuse at the apex; petals 17.5—28.5 mm long, tomentose outside, inside only hairy in the lower dilate portion from 1.5 mm up to 5 mm above the base; stamens as many as petals, 15.5—24.5 mm long, filament 4.5—8 mm long, with a lower portion 4—7 mm long, 0.75—1 mm broad, not thickened inside at the apex, long-pilose outside

and inside, and an upper portion 0.25—1 mm long, 0.5 mm broad, glabrous outside, pilose inside; anther 11—17 mm long, 1 mm broad, the connective long-pilose inside up to the apex; style glabrous, 14.5—23 mm long, nearly 0.5—1 mm thick; stigma capitate 1—1.5 mm long, 1.5—2 mm broad; disc semi-globose, 2.25 mm high, 3 mm in diameter; ovary 2-celled, one of the cells often smaller. *Fruit* usually 2-celled and 2-seeded, with one of the cells and of the seeds often smaller but rarely strongly reduced, in the dry state ellipsoidal, little compressed, nearly rounded at the base, slightly acute towards the apex, 12—14 mm long (calyx included), 6—8 mm broad, 4—7 mm thick, glabrous to thin-tomentose, sometimes superficially grooved, crowned by a calyx limb 1—1.5 mm long, 4—4.5 mm wide, and a disc 2—3 mm high distinctly exserted. (Description after the materials enumerated below). **Cfr. fig. 2, g—i.**

Alangium Kurzii is, according to notes on the herbarium labels, always a tree, up to 28 m high and with a bole up to 57 cm in diameter, in general with larger dimensions than *A. rotundifolium*. The flowers are yellow, more rarely yellowish white, more often dark-yellow or even orange or brick-red, strongly fragrant. The ripe fruit is dark-violet to almost black. The species occurs from 50—1300 m above sea level.

Diacicarpium tomentosum BLUME, Bijdr., 13, p. 657 (1825); MEISN., Genera, 2, p. 111 (1838); (*Diacca.*) HASSK., Cat. Pl. Hort. Bot. Bog., p. 169 (1844); (*Diaccae.*) HASSK., Bonplandia, 7, p. 173 (1859); *Marlea tomentosa* HASSK., Flora, 27, p. 605 (1844); DECAISNE, in JACQUEM., Voyage Ind., 4, bot., p. 75 (1844); MIQ., Fl. Ind. Bat., I, 1, p. 775 (1856); TEYSM. & BINN., Cat. Pl. Hort. Bot. Bog., p. 238 (1866); KURZ, For. Fl. Burma, 1, p. 545 (1877) saltem p.p.; SERTOR., Bull. Herb. Boiss., 1, p. 570 (1893) prob.; GRESHOFF, Meded. Lands Plantent., 25, p. 91 (1898) prob.; *Marlea begoniaefolia* BENTH., Fl. hongkong., p. 138 (1861) p.p.; *Alangium begoniaefolium* RIDL., Fl. Mal. Pen., 1, p. 894 (1922); *Marlea tomentosa* var. *genuina* KOORD. & VALET., Bijdr. Booms. Java, 5, p. 79 (1900); *Alangium tomentosum* (non LAM., 1783) WANGERIN, in ENGL., Jahrb., 38, Beibl. 86, p. 64 (1906) p.p.; KOORD., Exkursionsfl. Java, 2, p. 731 (1912) p.p.; ENDERT, Tectona, 18, p. 91 (1924) prob.; HANDEL-MAZZ., Symb. sin., 7, p. 684 (1933); CHUN, in Sunyatsenia, 2, p. 77 (1934); *Alangium begoniifolium* ssp. *tomentosum* KOORD., Exkursionsfl. Java, 2, p. 733 (1912) p.p.; KOORD.-SCHUM., Syst. Verz., 1, fam. 229, p. 101 (1912) p.p.; KOORD., Fl. Tjibod., 2, p. 237 (1923) p.p.; BAKER, in Journ. Bot., 62, suppl., p. 45 (1924); BRUGGEM., Bull. Jard. Bot. Buitenz., ser. III, 9, p. 203, 216 (1927) p.p.?; *Alangium begoniifolium* ssp. *tomentosum* var. *typicum* WANGERIN, in ENGL., Pflanzenr., 4, 220b, p. 21 (1910); *Alangium begoniifolium* var. *tomentosum* PALM, Meded. Deli-Proefst., 42, p. 19 (1925); KUYPER, Meded. Deli-Proefst., 45, p. 16 (1926); 53, p. 44 (1927); HEYNE, Nutt. Pl. Ned. Ind., ed. 2, 2, p. 1217 (1927); *Alangium Kurzii* CRAIB, in Kew Bull., 1911, p. 60 (1911); Fl. siam. enum., 1, p. 806 (1931); *Alangium chinense* var. *tomentosum* MELCHIOR, Notizbl. Bot. Gart. Berl.-Dahl., 10, p. 827 (1929);

Alangium chinense EVRARD, in LECOMTE, Fl. Indo-Ch., 2, p. 1187 (1923) p.p.; *Alangium Handelii* SCHNARF, in Akad. Anzeiger, Akad. Wiss., Wien, n. 12, p. 107 (1922); MELCHIOR, Notizbl. Bot. Gart. Berl.-Dahl., 10, p. 827 (1929); CHUN, in Sunyatsenia, 1, p. 278 (1934).

For the distinction of this species from *A. chinense* and *A. rotundifolium* cfr. the discussion of *A. rotundifolium*. The oldest species name in the genus *Alangium*, viz. *A. tomentosum* (BLUME) WANGERIN, is preoccupied by *A. tomentosum* LAMARCK; therefore the following name must be chosen, viz. *A. Kurzii*, of which I shaw the type (KERR 1172) in the Kew Herbarium. Though the average fruit dimensions of the Siamese specimens, to which the type belongs, are somewhat smaller (7.5—12 mm long), this seems insufficient to have any doubt about the specific identity of the Siamese and the Malaysian specimens.

MALAY PENINSULA. Penang: Pulu Bootong Reserve, 150 m el., CURTIS 940 (K, S); Selangor: Kepong Plantations, SOW & TACHIOU 16857 (S).

SUMATRA. Bintangmeriah, W.S.W. of the Sinaboeng, 750 m el., LÖRZING 8960 (B, L), wild in ravines and planted in the kampongs, v.n.: *kalimbangbang*; Sibolangit, forest reserve, 500 m el., LÖRZING 5131 (B, L, S); Berastagi, SYMINGTON 24688 (S); Karo-regions, Katjariboe, W. of Kabandjahé, 1100 m el., GALOENGI 325 (B, L), v.n.: *kalibambang*; near Sembaikan, 190 m el., BOSCHPR.BB. 9737 (B), v.n.: *kalibangbang*; Sigorang-gorang, 1300 m el., BOSCHPR.BB. 9730 (B, L), v.n.: *kalibamban*; Masihat (afd. Simeloengoen), 150 m el., BOSCHPR.BB. 5340 (B, L), v.n.: *mohoe*; Bandarpoelau (afd. Simeloengoen), 50 m el., BOSCHPR.BB. 4922 (B, L), v.n.: *mahoe*; Porsea, 950 m el., planted in fences, LÖRZING 10058 (B), v.n.: *haoe hombo* (?); Sajoer Matinggi (afd. Angkola & Sipirok), 310 m el., BOSCHPR.BB. 4006 (B), v.n.: *hajoe misang*, Kp. Simatarkis, 450 m el. (afd. Angkola & Sipirok), 450 m el., BOSCHPR.BB. 5646 (B, L), v.n.: *hale misang*; Asahan, Silo Maradja, BARTLETT 8703 (NY); Benantigo, near G. Malintang, 1150 m el., BÜNNEMEIJER 3754 (B, L); Fort de Cock, Harau-Kloof, 450 m el., YATES 2485 (B, NY); Fort de Cock, James Park, 920 m el., THEUNISSEN 8 (B, L), v.n.: *moesang*; Lematang Hoeloe (Palembang), 150 m el., LAMBACH 1232 (B, L, S), v.n.: *èndeloepang*; Lematang Hilir (Palembang), near Goenoeng Megang, alt. 75 m, BOSCHPR. E. 1218 (B), v.n.: *koendoer*; Tandjoeng Ning, R. Bliti (Palembang), 180 m el., FORBES 2785 (BM, L, S), v.n.: *kayoe doe-etteh*.

JAVA. Without exact locality: BLUME s.n. (B, BD, L, NY, U, originals of *Diacicarpium tomentosum* BL.); JELINEK (Exp. Novara) s.n. (B); Bandoeng, estate Rongga, DES AMORIE VAN DER HOEVEN s.n. (B), v.n.: *kitjareuh*; G. Salak, BLUME s.n. (BM, L, originals of *Diacicarpium tomentosum* BL.), v.n.: *kilulung*; Pengalengan, near estate Ardjasari, 1000 m (?) el., KOORDERS for. no. 3701*, herb. no. 22258β (B, BD, K, L) (in KOORD.-SCHUM., Syst. Verz., 1, fam. 229, p. 102, with incorrect locality); forest Soember Tangkil (G. Kidoel, Pasoeroean), 400—500 m el., KOORDERS for. no. 2971*, herb. no. 23986β (B, L).

Cultivated in the Botanic Garden at Sibolangit under no. 80 (S, NY).

Further distribution: China, Southern Burma, Siam, Indo-China, Philippines (?).

7. Alangium scandens BLOEMBERGEN, n. sp. — *Internodia* inter folia adulta 1.5—9 cm longa, 1.2—5 mm crassa, iuventute dense piloso-tomentosa, glabrescentia. *Petioli* 11—26 mm longi, breve appresseque piloso-tomentosi; lamina ovata vel ovato-oblonga, subsymmetrica, 6—17 cm longa, 5—10 cm lata, basi plerumque rotundata vel subcordata,

raro uno latere cuneata, longiuscule et abruptiuscule acuminata versus apicem obtusum, chartacea vel tenuiter coriacea, omnino penninervis lateralibus utrinque 7—9, facie superiore glaberrima, facie inferiore appresse piloso-tomentosa in nervis crassioribus. *Inflorescentia* piloso-tomentosa, glabrescens, 3—4 × ramosa, 17—31-flora, 3—6 cm longa (floribus exceptis); pedunculus 9—40 mm longus, pedicelli 0—9 mm longi, bracteae lineares vel filiformes, raro foliaceae, 2.25—20 mm longae, 0.5—4 mm latae. *Flores* 5—7-, plerumque 6-meres, 12—15 mm longi; calyx tomentosus, tubo infundibuliformi vel campanulato, 2 mm longo, limbo patente, 0.75 mm longo, 2.5 mm lato, dentibus 0.5 mm longis; corolla statu alabastri inflata, 2—3.5 mm crassa in parte basali, ceterum subcylindrica 1.5—2 mm lata, apice obtuso; petala 10—13 mm longa, facie exteriore appresse piloso-tomentosa, facie interiore parte basali marginibus pilosis; stamina tot quot petala, 8—11.25 mm longa; filamenta 3—4 mm longa, curva, apice incrassata et barbata, marginibus pilosa, dorso puberula praecipue in parte media; anthera 4.5—7.5 mm longa, 1 mm lata, connectivo longe sericeo piloso facie interiore usque ad apicem; stylus glaber, 7—10 mm longus, 0.6—1 mm crassus; stigma capitatum, 0.75 mm altum, 1.25 mm latum; discus semiglobosus, 5—7-angularis, 1.5 mm altus, 2 mm diametro; ovarium uniloculare. *Fructus* statu sicco oviformis, basi rotundatus, calycem versus subacuminatus, 11—13 mm longus (calyce incluso), 6—7 mm latus, 5.5—6 mm crassus, glabrescens, nonnunquam leviter 10—14-costatus, calycis limbo 0.25—1 mm alto 3.5—4 mm diametro et disco 1.5—2 mm alto distincte exserto coronatus. (Description after the materials under mentioned). **Cfr. Fig. 2, k—l.**

Alangium scandens belongs, as to the characters of the flowers, inflorescences and fruit, in the alliance of *A. chinense, A. rotundifolium, A. Kurzii* and *A. Griffithii.* By the pilose connective and the glabrous style it comes nearest to *A. rotundifolium* and *A. Kurzii,* but it is easily distinguished from all species mentioned by the ovate-oblong leaves not at all palminervous at the base. In the mode of ramification *A. scandens* agrees with *A. Griffithii,* and strongly differs from the other species mentioned.

SUMATRA. Between Arnhemia and Sibolangit, 250 m el., LÖRZING 6322 (B), somewhat climbing shrub, flower-buds yellow-green; N.N.W. of Bandarbaroe, 800 m el., LÖRZING 6387 (B, L), more or less climbing shrub about 5 m high, open flowers nearly white; border of Lau Betimoes, 375 m el., LÖRZING 5714 (B), crooked tree-like shrub, with overhanging crown, nearly 8 m high; Soebanajam (Bengkoeloe), 1200 m el., AJOEB (Exp. JACOBSON) 370 (B, L).

BORNEO. Sarawak, Mt. Buan, GARAI (HAVILAND) 2018 (K, Sa), rambling shrub,

flowers pale-yellow; E. Borneo, Long Petah, 400 m el., ENDERT 4076 (B, first type, with flowers), woody climber, flowers cream-coloured outside, nearly white inside; ENDERT 4052 (B, second type, with fruit), woody climber.

8. Alangium Griffithii (CLARKE) HARMS — *Internodes* between the adult leaves 1.7—5 cm long, 2—6 mm thick, tomentose or hirsute-tomentose, more sparingly hairy later. *Petiole* 4—12 mm long, tomentose or more sparingly short-hairy later; lamina ovate-oblong to ovate-lanceolate, rarely ovate or somewhat obovate, asymmetrical, 4.2—18.6 cm long, 2—7.5 cm broad, usually rounded at the base, the broader half usually with large rounded basal lobe, the narrower half usually cuneate, usually rather abruptly and long-acuminate towards the acute or obtuse apex, chartaceous, sparingly hairy on the nerves, usually glabrous between the nerves above, glabrous to densely hirsute-tomentose on the thicker nerves, less hairy on the finer nerves, rarely entirely hirsute-tomentose below, 3—5-plinervous at the base, moreover with 3—5 lateral nerves at each side of the midrib. *Inflorescence* tomentose, 3—4 × branched, 6—61-flowered, 1.5—4.5 cm long (flowers excluded); peduncle 0.65—2.5 cm long, pedicels 0—2 mm long, bracts filiformous, rarely linear or foliaceous, 0.25—14 mm long, 0.2—0.75 mm broad. *Flowers* 9—18 mm long; calyx tomentose or more sparingly hairy, tube campanulate 1—2.5 mm long, limb spreading, 0.25—0.5 mm long, 2.5—3 mm wide, with teeth 0.25—0.5 mm long; corolla 4—6- usually 5-merous, in bud subcylindrical somewhat swollen up to 3 mm thick in the basal portion, very slightly thickened in the upper one-half, obtuse; petals 8—15.5 mm long, finely short-hairy or more glabrous outside, with few hairs along the margins, at the top of the dilate part and on the midrib inside; stamens as many as petals, 7—14 mm long, filament 3—4.5 mm long, with a lower portion 1.5—2.75 mm long, 1 mm broad, hairy inside at the margins, thickened and bearded at the apex, glabrous outside, and an upper portion 1.5—2.25 mm long, 0.75 mm broad, glabrous; anther 4—9.5 mm long, 0.75 mm broad, sometimes sterile and narrower, the connective glabrous; style glabrous, 0.25—0.75 mm thick; stigma capitate, 0.25—0.5 mm long, 0.8—1 mm in diameter; disc 4—6-angular, 0.75—1 mm high, 1.25 mm in diameter; ovary one-celled. *Fruit* in the dry state oviformous, flattened, rounded at the base, acute or somewhat acuminate towards the apex, 12—18 mm long (incl. calyx limb), 9—12 mm broad, 5—8 mm thick, usually glabrous, rarely superficially grooved, crowned by a calyx limb 0.25—0.75 mm high, 1.25—2 mm wide, and a disc 1 mm high, as high as the calyx or slightly exserted. (Description after all materials under-mentioned). **Cfr. fig. 2, m—n.**

According to notes on herbarium labels *A. Griffithii* is a small or

moderate-sized tree, up to 18 m high, with a stem up to 30 cm in diameter, sometimes with buttresses up to 50 cm wide and spreading 50 cm, with leaves not falling off in the dry season and flowering from April to September (dry season) with flowers white to light-cream-coloured and sweet, sometimes strongly sweet scented, and with cobalt-blue ripe fruit to November. It occurs from 60—400 m above sea level.

It is remarkable that there are, among the herbarium materials, some specimens with sterile stamens in all flowers (FORBES 2813, KOORDERS 15691β, 28897β, and RUTTEN 1831); of these specimens the stamens are shorter than the style, the anthers are short, thin and obtuse, the pollen is little-developed, and the grains are shrivelled, the stigma is thicker. A similar phenomenon I observed in *A. salvifolium* ssp. *decapetalum*, especially in the Siamese specimens (e.g. HOSSEUS 440), but here the filaments were long, the anthers short and shrivelled, the stamens less in number than in fertile flowers, the stigma also strongly developed; but in this species I found also fertile stamens on the same plant and even in the same flower with sterile stamens.

For the systematic place of *A. Griffithii* among its nearest allies cfr. *A. scandens*; here I will, moreover, remark, that *A. Griffithii* also shows resemblance with *A. villosum* and other species with bifid style, by the form and indumentum of the leaves, and by the mode of ramification.

Marlea Griffithii CLARKE, in HOOK.F., Fl. Br. Ind., 2, p. 742 (1879); *Karangolum Griffithii* KUNTZE, Rev. gen. pl., 1, p. 273 (1891); *Alangium Griffithii* HARMS, in ENGL. & PR., Nat. Pflanzenfam., III, 8, p. 262 (1898); WANGERIN, in ENGL., Jahrb., 38, Beibl. 86, p. 61—65 (1906); *Marlea densiflora* KOORD. & VALET., Bull. Inst. Bot. Buitenz., 2, p. 2 (1899); Bijdr. Booms. Java, 5, p. 84 (1900); KOORD., Nat. Tijdschr. Ned. Ind., 60, p. 380 (1901); JANSSON., in MOLL & JANSS., Mikrogr., 3, p. 695, 716 (1918); *Alangium unilocular*e (non *Marlea unilocularis* GRIFFITH, 1854!) KING, Journ. As. Soc. Beng., 71, II, p. 77 (1902); WANGERIN, in ENGL., Pflanzenr., IV, 220b, p. 15 (1910); RIDL., Fl. Mal. Pen., 1, p. 894 (1922); BAKER, Journ. Bot., 62, suppl., p. 45 (1924); CRAIB, Fl. siam. enum., 1, p. 808 (1931); *Alangium myrianthum* WANGERIN, in ENGL., Jahrb., 38, Beih. 86, p. 62, 65, 67 (1906); in FEDDE, Repert., 4, p. 339 (1907); in ENGL., Pflanzenr., IV, 220b, p. 17 (1910); KOORD., Exkursionsfl., 2, p. 733 (1912); *Alangium densiflorum* WANGERIN, in ENGL., Pflanzenr., IV, 220b, p. 17, ic. 4, A—E (1910); KOORD., Exkursionsfl. Java, 2, p. 731, 733 (1912); KOORD.-SCHUM., Syst. Verz., 1, fam. 229, p. 102 (1912); KOORD. & VALET., Atlas, 1, t. 188 (1913); DOCT. v. L., Zoocec. Neth. Ind., p. 438 (1926).

As CLARKE did not elucidate, why he called this species *Marlea Griffithii* it is generally accepted, that the oldest name for it is *Marlea unilocularis* GRIFFITH. The latter name, however, is an obscure one. In GRIFFITH's Icones, 4, t. 639, there is a *Marlea begonifolia*, clearly representing *Alangium chinense*. There is a reference to Notulae 3, p. 679, but on this place we find no *Alangium* at all. In Notulae 4, however, on the same page, we find a *Marlea unilocularis*, with description. It is

not impossible, that this description really represents our species, but there are some objections, and for the rest the supposition cannot be proved. These objections are: 1°. that in the description the style is called pubescent, 2°. that the reference from the plate to the description possibly bears on the description of *M. unilocularis*, and in that case *M. unilocularis* would be synonymous with our *A. chinense*

MALAY PENINSULA. Perak: 90—150 m el., KING's coll. 8281 (BD); Upper Perak, 90 m el., WRAY 3486 (E, S); Assam Kumbong, plains, WRAY 2927 (S); Larut, 60—240 m el., KING's coll. 3329 (BM, L), 3593 (B, L), 5824 (K); Ulu Bubong, 120—180 m el., KING's coll. 10183 (K, L); Gopeng, KING's coll. 563 (BD, K); Pahang: 8 miles S. of Kuala Lipis, BURKILL & HANIFF 17069 (B, K, S); Tembeling, HENDERSON 24546 (B, S); Rumpin, LAMBAH 2720 (K, S) v.n.: *piane*; Selangor: Kuala Lumpur, Weld Hill Reserve, HASHIM 493 (S); CUBITT's coll. 889 (S), v.n.: *salang rusa*; BURN MURDOCH 14152 (BM, L); OMAR 8538 (K, S), v.n.: *salang rusa*; Sungei Buloh Forest Reserve, ABU 6505 (S), v.n.: *salang rusa*, ABU 2297 (K, S), v.n.: *tenyual lawat*; Kepong Selangor, SOW & TACHIOU 16446 (S), v.n.: *salang rusa*; SYMINGTON 21051 (S); Ampang Road, MAJID PEON 11622 (S), v.n.: *salang rusa*; Malacca: MAINGAY, Kew distr. 708 (K); GRIFFITH, Kew distr. 3387 (K); Johore: Bukit Patani, Batu Pahat, RIDLEY 11095 (S); Kluang, HOLTTUM 9310 (B, BM, K, S); Singapore: Bukit Timah, RIDLEY 4578 (BM, K, S); Sungei Buloh, RIDLEY s.n. (S).

SUMATRA. Asahan, forest reserve Masihi, KRUKOFF 4243 (NY); Palembang, Tandjong Ning, FORBES 2812 (L), 2813 (BD, L); Tandjong Ning, R. Bliti, 180 m el., FORBES 2739 (BM, L, S); Lampongs, G. Raté, Telanggoran, 400 m el., IBOET 39 (B, BD, K, L).

BORNEO. Sarawak, Upper Rejang River, Kapit, low el., CLEMENS 21049 (B, NY, Sa); E. Borneo, near the northern frontier, Tikoeng, AMDJAH 807 (B, L, UC).

JAVA. Palaboehanratoe, KOORDERS tree no. 1330a, herb. no. 33038β (B), 15691 β (B, BD, K, L) first type of *Marlea densiflora* KOORD. & VALET.; Ragadjampi, near Banjoewangi, forest Sebanen, KOORDERS tree no. 7922w, herb. no. 10073 β (B, L), 39303 β (B, L), 28897 β (B, K, L), 13191 β (B), second type of *Marlea densiflora* KOORD. & VALET., wrongly cited Kds. 31191β by KOORD. &. VAL. l. c.; forest near Genteng, for. no. 1706*, herb. no. 20998 β (B); near Kp. Kaligoeng, KOORDERS for. no. 1121*, herb. no. 28895 β (B, L); Blimbangan, ZOLLINGER 3907 (W, type of *Alangium myrianthum* WANGER.).

SELEBES. Subdiv. Malili, near Kampong Kawata, alt. 250 m, BOSCHPR. CEL. V, 128 (B), v.n.: *manata*.

HALMAHÉRA. Soa Tobaroe, 60 m el., BEGUIN 1977 (B), v.n.: *dodaara*.

SÉRAN. Wai Kawa (NW. Séran), 100—200 m el., RUTTEN 1831 (B, L, U).

Further distribution: Siam.

Section III. *Stamens as many as petals and calyx teeth. Style cylindrical, deeply divided into 2 long branches stigmatose at the inside. Endosperm smooth. Radicle shorter than half the length of the cotyledons.* Species 9—11. **Fig. 3.** — Twigs monopodial, branching from the axils of the last vegetation period. Leaves entirely penninervous. Inflorescences with distinct peduncle, branches and pedicels, but with little developed bracts. Style glabrous or hairy. Ovary one-celled. Fruit and seed slightly flattened.

9. Alangium villosum (BLUME) WANGERIN — *Internodes* between the adult leaves 0.8—6 cm long, 0.75—5.5 mm thick, thin-tomentose to hirsute-tomentose. *Petioles* 3—13 mm long, hairy like the twigs; lamina ovate-oblong to lanceolate, rarely somewhat obovate, asymmetrical, 4—19 cm

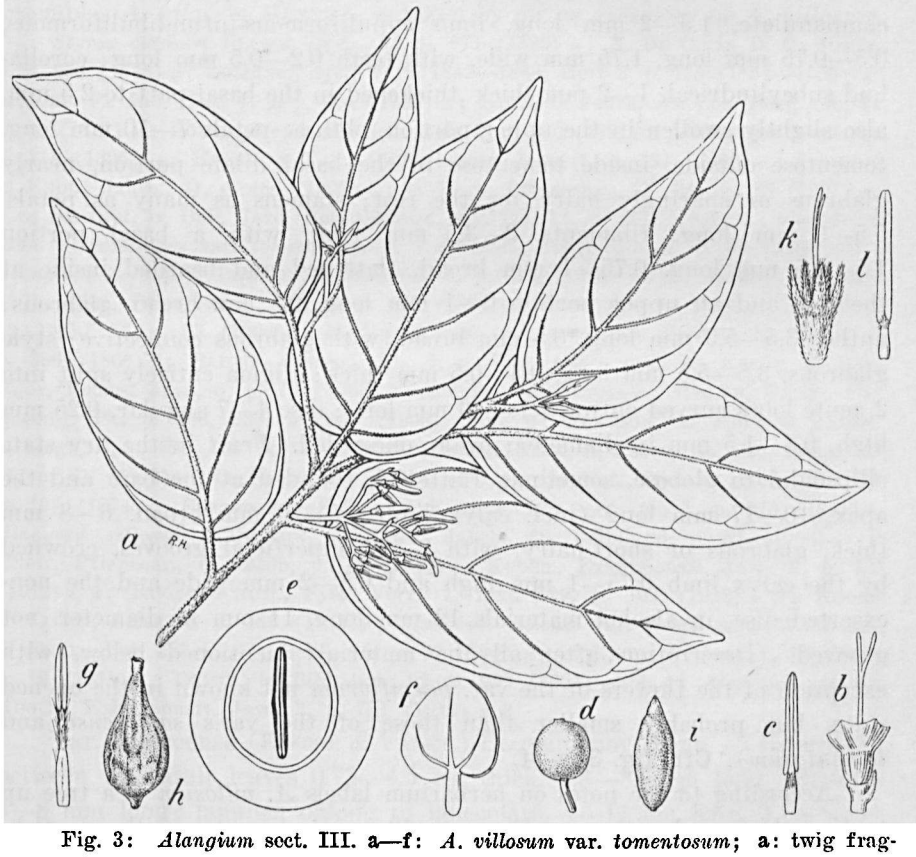

Fig. 3: *Alangium* sect. III. **a—f**: *A. villosum* var. *tomentosum*; **a**: twig fragment with leaves and inflorescences, $^3/_5 \times$; **b**: calyx with pistill, $2^1/_2 \times$; **c**: stamen, $2^1/_2 \times$; **d**: fruit, $^3/_5 \times$; **e**: transverse section of the fruit, $2^1/_2 \times$; **f**: embryo, $2^1/_2 \times$; **g—h**: *A. ferrugineum*; **g**: stamen, $2^1/_2 \times$; **h**: fruit, $^3/_5 \times$; **i—l**: *A. Warburgianum*; **i**: fruit, $^3/_5 \times$; **k**: calyx with pistill, $2^1/_2 \times$; **l**: stamen, $2^1/_2 \times$; **a** after KOORDERS 38191 β, **b**, **c**, after KOORDERS 38376 β, **d**, **e**, **f**, after KOORDERS 28896 β, **g**, **h**, after BRASS 1066, **i**, **k**, **l**, after WARBURG 18116.

long, 1.5—7.5 cm broad, usually cuneate at the base or the broader side rounded, more or less acuminate towards the acute or obtuse apex, chartaceous, penninervous, with 5—10 lateral nerves at each side of the midrib, glabrous or sparingly hairy on the upper side except on the midrib tomentose in the basal portion, hirsute-tomentose on the lower

surface, especially on the nerves and veins. — *Inflorescence* hirsute-tomentose, 2—4 × branched, 2—30-flowered, 6—55 mm long (flowers excluded), the peduncle 3—25 mm long, the pedicels 0—6 mm long; bracts oblong to filiformous, 0.25—3 mm long, 0.5—0.6 mm broad. *Flowers* 4—7-usually 5-merous, 8.5—12 mm long; calyx tube tomentose, campanulate, 1.5—2 mm long, limb cupuliformous-infundibuliformous, 0.5—0.75 mm long, 1.75 mm wide, with teeth 0.2—0.5 mm long; corolla-bud subcylindrical, 1—2 mm thick ,thickened in the basal part to 2.5 mm, also slightly swollen in the upper portion, obtuse; petals 7—10 mm long, tomentose outside, inside tomentose in the basal dilate portion, nearly glabrous or sparingly hairy for the rest; stamens as many as petals, 5.5—9 mm long, filaments 2—3.5 mm long, with a basal portion 1.5—2.5 mm long, 0.75—1 mm broad, flattened and bearded inside at the top, and an upper portion 0—1 mm long, 0.5 mm broad, glabrous; anther 3.5—5.5 mm long, 0.5 mm broad, with glabrous connective; style glabrous, 3.5—5.5 mm long, 0.3—0.5 mm thick; stigma entirely split into 2 acute lobes curved outward 1.5—3 mm long; disc 4—7-angular, 0.25 mm high, 0.8—1.5 mm in diameter; ovary one-celled. *Fruit* in the dry state ellipsoidal to globose, sometimes flattened, rounded at the base and the apex, 10—17 mm long (incl. calyx limb), 7—10 mm broad, 6—8 mm thick, glabrous or short-hairy, with 8—12 superficial grooves, crowned by the calyx limb 0.75—1 mm high and 0.5—2 mm wide and the non-exserted disc, in alcohol materials 12 mm long, 11 mm in diameter, not grooved. (Description after all the materials mentioned below, with exception of the flowers of the var. *parviflorum* not known in the opened state, but probably smaller than those of the var.s *salaccense* and *tomentosum*). **Cfr. fig. 3, a—f.**

According to the notes on herbarium labels *A. villosum* is a tree up to 17 m high and with a trunk up to 40 cm in diameter, with greenish- or yellowish-white corolla and style, white stamens and dark-red fruit. It occurs at an altitude of 5 to 1400 m, and flowers from August to November (end of the dry season).

A. villosum has been collected only in a few localities in western and eastern Java and in Flores. It is peculiar that the specimens from western Java are rather strongly different from those from eastern Java, and these again from those from Flores. I agree with KOORDERS en VALETON, who consider all the Java specimens to belong to one species, as the flowers are hardly different; the main differences are in the foliage and in the number of flowers in the inflorescences. The specimens from eastern Java are hardly different from the Australian *A. vitiense*

(GRAY) HARMS var. *tomentosum* BENTH., and I suppose that also *A. ferrugineum* C. T. WHITE, *A. vitiense* (GRAY) HARMS, *A. pilosum* MERRILL, and *A. Bussyanum* (BAILLON) HARMS, and perhaps even *A. Warburgianum* WANGERIN, are only varieties of the same species. It is therefore that also the Timor form, of which no open flowers are known, but that closely resembles *A. pilosum* MERRILL, is taken by me as a variety of *A. villosum*.

Styrax villosum BLUME, Bijdr., 13, p. 671 (1825) α; A. DE C., in D. C., Prodr., 8, p. 268 (1844) α; ZOLLING., Syst. Verz. 1842—1848, Heft 2, p. 135 (1854—1855) α; MIQUEL, Fl. Ind. Bat., I, 2, p. 464 (1859) α; KURZ, in Journ. As. Soc. Beng., 40, II, p. 61 (1871) α; BOERL., Hand. Fl. Ned. Ind., 2, p. 232 (1891) α; GRESHOFF, Schetsen, p. 118 (1896) α; KOORD. & VAL., Bijdr. booms. Java, 7, p. 131 (1900) α; PERKINS, in ENGL., Jahrb., 31, p. 484 (1902) α; in Engl., Pflanzenr., IV, 241, p. 85 (1907) α; VAN STEENIS, in Bull. Jard. Bot. Buitenz., ser. III, 12, p. 253 (1932) α; *Pseudalangium polyosmoides* var. *tomentosum* F. v. MUELL., Fragmenta, 2, p. 85 (1860—61); *Alangium Zollingeri* BAILLON, Adansonia, 5, p. 195 (1864—65) β; HARMS, in ENGL. & PR., Nat. Pflanzenfam., III, 8, p. 261 (1898) β; WANGERIN, in ENGL., Bot. Jahrb., 38, Beibl. 86, p. 63 (1906) β; *Marlea vitiensis* var. *tomentosa* BENTH., Fl. austr., 3, p. 386 (1866) β; BAILEY, Queensl. Fl., 2, p. 737 (1909) prob. β; KOORD. & VAL., Bijdr. Booms. Java, 5, p. 73 (1900) β, cum fm. *salacoensis*, α; BAILEY, Compr. Cat. Queensl. Pl., p. 236, 238, ic. 203 (1909) prob. β; JANSSON, in MOLL & JANSS., Mikrogr., 3, p. 695, 709 (1918) β; *Marlea villosa* KURZ, in Journ. As. Soc. Beng., 40, II, p. 61 (1871) α; in Flora, 54, p. 304 (1871) α; in Nat. Tijdschr. Ned. Ind., 34, p. 107 (1874) α; *Karangolum Zollingeri* KUNTZE, Rev. gen. pl., 1, p. 273 (1891) β; *Alangium villosum* WANGERIN, in ENGL., Jahrb., 38, Beibl. 86, p. 61 (1906) α; in ENGL., Pflanzenr., IV, 220b, p. 18 (1910) α; KOORD., Exkursionsfl. Java, 2, p. 733 (1912) α, β; KOORD.-SCHUM., Syst. Verz., 1, fam. 229, p. 103 (1912) α, β; KOORD. & VALET., Atlas, 1, p. 186 (1913) β; *Alangium vitiense* var. *tomentosum* WANGERIN, in ENGL., Bot. Jahrb., 38, Beibl. 86, p. 63 (1906) β; in ENGL., Pflanzenr., IV, 220b, p. 19 (1910) β; DOMIN, in Bibl. bot., 22, p. 999 (1921) prob. β; *Alangium vitiense* KOORD., Exkursionsfl. Java, 2, p. 731 (1912) α, β.

Var. **salaccense** (KOORD. & VALET.) BLOEMB., nov. comb. — Internodes between the adult leaves 0.75—4.5 cm thick, 0.8—8.5 cm long. Petioles 3—8 mm long; laminae oblong to lanceolate, 4—14 cm long, 1.5—6 cm broad, cuneate at the base or rounded at the broader side. Inflorescences once to twice branched, 2—5-flowered, 6—19 mm long, with peduncle 3—7 mm long and pedicels 1.5—4 mm long; bracts oblong to triangular, 1.5—3 mm long, 0.5—0.6 mm broad. Flowers 8.5—12 mm long.

For the synonyms cfr. those marked with α in the general list.

JAVA. Without exact locality, but very probably W. Java; coll. unknown, s.n. (B, BD, L, NY) v.n.: *kitamieang, kitamiang*; 900—1800 m alt., JUNGHUHN s.n. (L) v.n.: *anjereh*; ZOLLINGER 785 Z. (BD); Priangan, NAGEL 226 (BD); West-Java, 900—1800 m alt., JUNGHUHN s.n. (L) v.n.: *kilalayoe*; G. Gedé, „houtsoorten van den Gedeh 175" (L) v.n.: *kilalayoe*; G. Salak, or cultivated in the Buitenzorg Botanic Garden, BLUME s.n. (L, U, at least partly originals of *Styrax villosum* BLUME).

Var. **tomentosum** (F. v. MUELL.) BLOEMB., nov. comb. — Internodes between the adult leaves 2.5—5.5 mm thick, 2—6 cm long. Petioles 6—

13 mm long; laminae ovate-oblong to lanceolate, cuneate at the narrower side of the base, rounded at the broader side, 6.5—19 cm long, 2.8—7.5 cm broad. Inflorescences 3—4 × branched, 9—30-flowered, 14—55 mm long, the peduncle 8—25 mm long, the pedicels 0—6 mm long, the bracts triangular to obovate, 0.25—3 mm long, 0.5 mm broad. Flowers 8.5—12 mm long.

JAVA. Gerbo (Pasoerocan), 750 m alt., MOUSSET 1075 (B, L); G. Ardjoena, 1400 m alt., KOORDERS for. no. 2271*, herb. no. 38191β (B, L); forest Tjoeramanis (Simpolan near Djember), KOORDERS for. no. 4035w, herb. no. 10038β (B) v.n.: *tandjong goenoeng*, 38497β (B), 40054β (B); for.no. 4178w, herb. no. 10050β (B) v.n.: *roekdjeroekan*, 21103β (B), 38376β (B, L), 39954β (B); for. no. 4187w, herb. no. 10051β (B), v.n.: *gumbir*, 21100β (B), 28757β (B, L); for. no. 4217w, herb. no. 20747β (B), 30343β (B, L), 38429β (B), 40076β (B); for. no. 4229w, herb. no. 10057β (B), v.n.: *kodjoek*, 10059β (B), 20748β (B), 38425β (B), 40075β (B), for. no. 4271w, herb. no. 3766β (B) v.n.: *kasidjan*, 10061β (B), 21044β (B, L), 21101β (B), 30885β (B, L), for. no. 4297w, herb. no. 3767β (B), v.n.: *kosang*; forest Pantjoer Idjen (near Sitoebondo, Besoeki), 1000 m el., KOORDERS 14387β (B, L), for. no. 4191t, herb. no. 14388β (B, L), 28511β (B, L), for. no. 4206t, herb. no. 14385β (B, L), 14639β (B), for. no. 4219t, herb. no. 14640β (B, BD, L), 14902β (B, K, L); forest Noesabarong, near Djember, KOORDERS 10087β (B, BD, L); forest Ragadjampi Balak (near Banjoewangi), KOORDERS for. no. 7844w, herb. no. 8585β (B), v.n.: *koeniran*, 8586β (B) v.n.: *koeniran*, 8587β (B, L), 38896β (B, L), for. no. 7926*, herb. no. 8534β (B, L), v.n.: *koeniran*; forest Ragadjampi Balak, near Kp. Kaligoeng-gintongan, KOORDERS 8535β (B); for. no. 1120*, herb. no. 28896♂ (B, BD, K, L, U), v.n.: *koeniran*; Moentjar (S.E. Besoeki), alt. 5 m, BECKING 56 (B), v.n.: *koeniran*.

Further distribution: eastern Australia.

Var. **parviflorum** BLOEMB., n. var. — Internodia inter folia adulta 1—3 mm crassa, 6—45 mm longa. Petioli 5—8 mm longi; laminae ovato-oblongae, 6.5—10 cm longae, 2.8—3.2 cm latae, basi utrinque cuneatae sed latere latiore magis rotundatae. Inflorescentiae 2—3 × ramosae, 11—16-florae, 12—17 mm longae, pedunculo 3—7 mm longo, pedicellis 1.5—2.5 mm longis. Flores statu alabastri nondum adulti tantum noti, 3—3.5 mm longi.

FLORES. Kp. Boche Soge (Maoemere), alt. 250 m, BOSCHPR.BB. 11370 (B, type), v.n.: *lalimera*, tree, 22 m high, its bole 14 m high, 38 cm diam., 7 II 1927.

With this the following materials without flowers nor fruit look entirely identical: Flores, Manggarai, near Wailako, alt. 10 m, BOSCHPR.BB. 14,352 (B), v.n.: *woénis*.

10. Alangium ferrugineum C. T. WHITE — *Internodes* between the adult leaves 2—3.5 cm long, 2—3.5 mm thick, densely and shortly hirsute-tomentose, nearly velutinous. *Petiole* 8—10 mm long, hairy like the twigs; lamina ovate-oblong to oblong, asymmetrical, 10.5—17.5 cm long, 3.8—7 cm broad, cuneate on one side, rounded on the other side at the base, rather strongly acuminate towards the acute apex, chartaceous,

pennincrvous with 4—7 lateral nerves at each side of midrib, glabrous above with exception of the appressedly hairy basal part of the midrib, the nerves and veins beneath hairy like the petiole, but less densely and the hairs shorter. *Inflorescence* and calyces velutinous like the twigs, 2—3 × branched, 8—15-flowered, 20—25 mm long (flowers excluded), the peduncle 12—21 mm long, the pedicels 1—5 mm long; bracts triangular to lanceolate, 0.5—2.25 mm long, 0.5—0.75 mm broad. *Flowers* usually 5-merous, 15—16 mm long; calyx tube nearly cylindrical or somewhat infundibuliformous, 2.5 mm long, the limb nearly erect, slightly campanulate-infundibuliformous, 2 mm long, 2.25—2.5 mm wide, with teeth 0.4 mm long; adult corolla in bud subcylindrical, slightly clavate, obtuse, nearly 1.5 mm thick in the basal portion, 3 mm in the upper portion; petals nearly 14 mm long, densely sericeous-villose outside, glabrous inside; stamens as many as petals, 8—8.5 mm long; filaments nearly 5 mm long, flattened, with a basal portion 3 mm long, 0.5 mm broad, bearing few sericeous hairs inside at the apex, and an upper portion 2 mm long, 0.25—0.3 mm broad, entirely sericeous-pilose, but the hairs on the inside longer than on the outside; anther 3—3.5 mm long, 0.3—0.4 mm broad, with glabrous connective; style 7 mm long, 0.3—0.4 mm thick, sparingly sericeous-hairy, especially towards the apex; stigma entirely divided into 2 linear obtuse lobes 3—4 mm long and curled outward; disc forming a flat and narrow ring around the style base, 0.3 mm high, 0.75 mm in diameter; ovary one-celled. *Fruit* in the dry state oblong-ovate, slightly flattened, very shortly contracted at the base, long-conical towards the apex, 30—31.5 mm long, 12—14 mm broad, 8—10 mm thick, hirsute-tomentose, glabrescent, with about 10 superficial ribs, crowned by the persistent calyx limb 2.5 mm high and 3 mm wide, and the non-exserted disc. (Description after the materials mentioned below). **Cfr. ic. 3, g—h.**

Alangium ferrugineum C. T. WHITE, Journ. Arn. Arbor., 10, p. 248 (1929).

Closely allied to *Alangium villosum*, of which it perhaps is a variety. Cfr. also the determination key and the discussion of *Alangium villosum*.

NEW GUINEA. South-eastern Part (Papua), Vailala River, Aroara, 60 m el., in rain forest, BRASS 1066 (Br, type), handsome tree, 7.5 m high, leaves dark and glossy above, flowers white, fruit yellow, cylindrical.

11. Alangium Warburgianum WANGERIN — *Internodes* between the adult leaves 1—5 cm long, 1.5—3 mm thick, more or less densely appressedly pilose, glabrescent. *Petiole* 9—13 mm long, rather densely appressedly pilose; lamina usually obovate-lanceolate, more rarely oblong or lanceolate, nearly symmetrical, 6.5—17 cm long, 2.2—5.8 cm broad, cuneate at the base, rather abruptly acuminate towards the obtuse apex,

chartaceous, glabrous above, appressedly pilose on the thickest nerves below, penninervous with 6—8 lateral nerves at each side of the midrib. *Inflorescence* densely appressedly sericeous-pilose, almost tomentose, 1—2 × branched, 3—5-flowered, 12—18 mm long (flowers excluded); peduncle 3.5—9 mm long, pedicels 4—7 mm long; bracts triangular to filiformous, 0.25—1.5 mm long, 0.25—0.5 mm broad. *Flowers* 5-merous, 7.75—12 mm long; calyx densely appressedly pilose, the tube campanulate, 1.75—2 mm long, the limb cupuliformous, 1 mm long, 2 mm wide, with 5 lingulate teeth 1.5 mm long, obtuse; corolla in bud cylindrical 0.5—1.5 mm thick, obtuse; petals 6—10 mm long, appressedly sericeous-pilose outside, with few hairs on the midrib inside; stamens as many as petals, 5—9 mm long; filament 1.75—2.75 mm long, with a lower portion 1.5—2.25 mm long, 0.05 mm broad, pilose inside at the apex and along the margins, sparingly hairy outside, and an upper portion 0.25—0.5 mm long, glabrous; anther 3.75—6.75 mm long, 0.75 mm broad, with glabrous connective; style with few soft hairs in longitudinal stripes, 3—7 mm long, 0.25—0.5 mm thick; stigma 3.5 mm long, entirely split into 2 acute lobes curved outward, disc 0.25 mm high, 0.75 mm in diameter; ovary one-celled. *Fruit* in the dry state oviformous-ellipsoidal, acute at the base, more acute at the apex, 17—18 mm long (incl. the calyx limb), 6.5—7 mm broad, 6—6.5 mm thick, glabrous or hairy, with 10 very superficial ribs, crowned by the permanent and slightly enlarged calyx limb 1 mm long 1.75 mm wide, with lobes 1.5 mm long and connivate. (Description after the materials mentioned below). **Cfr. fig. 3, i—l.**

Though, by the bifid stigma, this species belongs to the allies of *A. villosum*, it is strikingly different from it by its large calyx lobes and appressed, almost setose indumentum.

Alangium Warburgianum WANGERIN, in ENGL., Pflanzenr., IV, 220b, p. 18 (1910). MOLUCCAS. Batjan, G. Sibéla, 750—1200 m alt., WARBURG 18116 (BD, type).

Section IV. *Stamens as many as petals and calyx teeth. Style subcylindrical or gradually thicker from the base to the apex, stigma obtuse-conical with 4 longitudinal stigmatose stripes. Endosperm smooth. Radicle much shorter than half the length of the cotyledons.* Species 12—15. **Fig. 4 & 5.** — Twigs monopodial, branching from the axils of the last (sp. 13—15) or the former (sp. 12) vegetation period. Leaves entirely penninervous (sp. 13—15) or palminervous at the base (sp. 12), nearly symmetrical, roundish (spec. 12) to obovate-lanceolate (sp. 13—15). Inflorescence either sessile, with few long primary branches and the further branches and pedicels very short, or with only one branch and in that case apparently long-peduncled. Bracts more (sp. 14—15) or

less (sp. 12—13) developed. Ovary one-celled. Fruit and seed strongly flattened.

12. Alangium nobile (CLARKE) HARMS — *Internodes* between the adult leaves 1—3.8 cm long, 4—8 mm thick, densely hirsute-tomentose. *Petiole* 14—50 mm long, densely hirsute-tomentose; lamina usually roundly-obovate to oblong-obovate, little asymmetrical, 5—30 cm long, 4—16.5 cm broad, rounded to cordate at the base, usually rounded to obtuse at the apex, more rarely acute or shortly acuminate, its upper

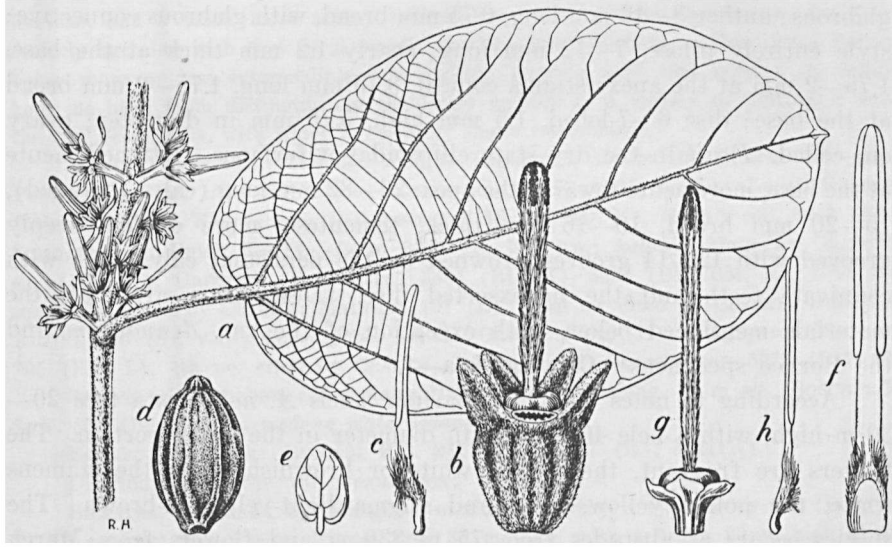

Fig. 4: *Alangium* sect. IV. **a—e**: *A. nobile*; **a**: twig fragment with leaf and inflorescence, $^3/_5 \times$; **b**: calyx with pistill, one calyx teeth cut away, $2^1/_2 \times$; **c**: stamen, $2^1/_2 \times$; **d**: fruit, $^3/_5 \times$; **e**: embryo, $^3/_5 \times$; **f**: *A. nobile* var. *denudatum*, stamen, $2^1/_2 \times$; **g—h**: *A. Havilandii*; **g**: calyx with pistill, $2^1/_2 \times$; **h**: stamen, $2^1/_2 \times$; **a, b, c, d, e**, after LONG 3047, **f** after BEGUIN 582, **g, h**, after HAVILAND 3019.

surface appressedly hirsute-tomentose on the midrib, glabrous for the rest, its lower surface hirsute-tomentose on the thicker nerves, with more scattered spreading hairs on the finer nerves and veins, coriaceous, 3—9-plinervous at the base, moreover with 7—11 lateral nerves at each side of the midrib. *Inflorescence* densely and thickly hirsute-tomentose, 1—2 × branched, 3—19-flowered, 1.6—4 cm long, with a common peduncle or, in absence of such, with primary branches 2—30 mm long; pedicels 0—2 mm long; bracts triangular, 0.75—5 mm long, 1.25—2 mm broad. *Flowers* 6—7- usually 7-merous, 15—22.5 mm long; calyx densely hirsute-tomentose, almost woolly; tube campanulate 2—2.5 mm long, limb cupuli-

formous 1.5—1.75 mm long and 4—6 mm wide, with teeth 1.5—3.25 mm long; corolla in bud subcylindrical 3—4 mm thick, swollen 4—6.5 mm thick in the basal portion, slightly swollen in the middle of the upper one-half; petals 13—20 mm long, rather densely hirsute-tomentose outside, also densely shortly hairy inside in the upper one-half of the dilate portion and on the midrib; stamens as many as petals, 12—19 mm long; filament 4—7 mm long, with a lower portion 2.5—5 mm long, 1—1.5 mm broad, thickened and bearded at the top inside, tomentose along the margins and on the back, and an upper portion 1.5—3.5 mm long, 0.75 mm broad, glabrous; anther 8—13 mm long, 0.75 mm broad, with glabrous connective; style entirely pilose, 7—12 mm long, nearly 1.2 mm thick at the base, 1.75—2 mm at the apex; stigma conical, 3.75 mm long, 1.75—2 mm broad at the base; disc 6—7-lobed, 1.5 mm high, 5.75 mm in diameter; ovary one-celled. *Fruit* in the dry state ellipsoidal-oviformous, flattened, acute at the base, more acute towards the apex, 26—32 mm long (calyx included), 15—20 mm broad, 10—16 mm thick, tomentose, more or less deeply grooved with 12—14 grooves, crowned by the persistent calyx limb with connivate teeth and the nonexserted disc. (Description after all the materials mentioned below, with exception of the var. *denudatum* and the Borneo specimens). **Cfr. fig. 4, a—f.**

According to notes on the herbarium labels *A. nobile* is a tree 20—30 m high, with a bole 40—90 cm in diameter in the lower portion. The flowers are fragrant, the corolla white or brownish-white, the stamens white, the pollen yellow, style and stigma light-yellowish-brown. The species occurs at altitudes from 75 to 330 m and flowers from March to May.

Marlea nobilis CLARKE, in HOOK.F., Fl. Br. Ind., 2, p. 743 (1879); SERTOR., in Bull. Herb. Boiss., 1, p. 474—615 (1893); RIDLEY, in Agr. Bull. Straits & Fed. Mal. St., 1, p. 181 (1902); in Bull. Kon. Mus. Haarlem, 27, p. 72 (1903); *Karangolum nobile* KUNTZE, Rev. gen. pl,. 1, p. 273 (1891); *Alangium nobile* HARMS, in ENGL. & PR., Nat. Pflanzenfam., III, 8, p. 262 (1898); KING, in Journ. As. Soc. Beng., 71, II, p. 79 (1902); WANGERIN, in ENGL., Jahrb., 38, Beibl. 86, p. 61—68 (1906); in ENGL., Pflanzenr., IV, 220b, p. 11 (1910); HEYNE, Nutt. pl. Ned. Ind., ed. 1, 3, p. 402 (1917); RIDLEY, Fl. Mal. Pen., 1, p. 892 (1922); HEYNE, Nutt. pl. Ned. Ind., ed. 2, 2, p. 1217 (1927).

Var. **denudatum** BLOEMB., nov.var. — *Ramuli,* petioli, nervorum facies inferior et inflorescentiae tenuiter breviterque tomentosi. Internodia inter folia adulta 2.5—6 mm crassa; petiolus 5—10 mm longus; lamina 4.2—14 cm longa, 2.2—6.2 cm lata, basi 5—7-plinervis, superea nervis lateralibus 9—11 utrinque. Flos 27 mm longus; calycis dentes c. 1 mm longi; stamen 21.75 mm longum, filamento 10.25 mm longo, parte inferiore 4.5—5 mm longa, 1.25—2.25 mm lata, latere interiore apice barbata,

latere exteriore dense pilosa, et parte superiore 5—6 mm longa, 1—1.5 mm lata, glabra. Fructus ignotus.

The var. *denudatum* is, on one hand, too little different from *A. nobile* to base a new species on it, the more as the fruit are unknown. On the other hand it is too much different to be taken up in the description of the species, as the latter is intended to express the characters of a rather rich and very uniformous material. These differences are a more scanty indumentum, longer flowers, and stronger developed filaments which show a larger difference between the lower and the upper portion than any other *Alangium*. For the same reason the characters of the Borneo specimens (BECCARI P.B. 2477, 2927, & 3611) are not taken up in the description. Especially the number BECCARI 2477 is aberrant by thinner twigs, more chartaceous laminae, and a much more scanty indumentum. The general appearance, the fruit entirely agreeing with that of *A. nobile*, and the other BECCARI numbers from Borneo being more or less intermediate between the number 2477 and normal *A. nobile*, kept me back from distinguishing the latter number as a variety or uniting it with the var. *denudatum*, with which it certainly shows resemblance.

MALAY PENINSULA. Penang: road to Highlands, 300 m alt., CURTIS 1505 (S); Perak: Ulu Kal, 150—210 m alt., KING's coll. 10892 (BM, K, L); Larut, Gopeng, 150—240 m alt., KING's coll. (KUNSTLER) 6116 (B, BD, K), KING's coll. 6047 (K); Selangor: Sg. Buloh Reserve, LONG 3047 (S, K), v.n.: *kalong*; Malacca: GRIFFITH s.n. (BM, K); GRIFFITH (Kew distr.) 3384 (BD, K), 3385 (BD, BM, K), first and second no. cited by CLARKE; MAINGAY 707 (L), third no. cited by CLARKE; Selandor, ALVINS 356 (S), v.n. *pokô sutubal*; Leman, GRIFFITH s.n. (K); Singapore: MAINGAY 705 (BD, L), 4th no. cited by CLARKE; Bukit Timah, GOODENOUGH 5077 (BM, S).

SUMATRA. Palembang: Lematang Hilir, near G. Megang, 75 m alt., BOSCHPR.T. 3. P. 864 (B, L), v.n.: *medang mata oedang*.

BORNEO. Sarawak: BECCARI P.B. 2477 (K), 2927 (K), 3611(K).

Distribution of the var. *denudatum*:

SUMATRA, Bengkalis, Sg. Misigit, 6 m alt., in marshy wood, BEGUIN 582 (B, type, L, U, cotypes), v.n.: *mara lepang*, tree 33 m high, with a trunk 22 m high about 40 cm thick, with stilt roots 2.20 m high, spreading 1.20 m, branches obliquely upward, and cream-white flowers with hyacinth odour, collected flowering in January.

13. Alangium Havilandii BLOEMBERGEN, n.sp. — *Internodia* inter folia adulta 0.6—3 cm longa, 1.2—3 mm crassa, tenuiter sed densissime tomentosa. *Petiolus* 5—12 mm longus, tenuiter sed densissime tomentosus; lamina elliptica vel oblonga vel nonnihil ovata, leviter asymmetrica, 5.5—15 cm longa, 3—7 cm lata, basi rotundata vel cuneata, longiuscule acuminata versus apicem obtusum vel acutum, glabra vel nervis facie inferiore tenuiter tomentosis, chartacea, nervis lateralibus utrinque 7—9. *Inflorescentia* tenuiter sed dessissime tomentosa, 1—2 × ramosa, 1—6-flora, pedunculo, vel eo absente, ramis primariis 6—14 mm longis, pedicellis 1.5—3 mm longis; bracteae triangulares 0.5—4 mm longae, 0.5—1 mm latae. *Flores* 4—5-meres, 18—22 mm longi; calyx tenuiter sed densissime tomentosus, tubo campanulato-infundibuliformi, 2 mm longo, limbo cupuliformi 1 mm longo 4 mm lato dentibus 0.75 mm longis;

corolla statu alabastri subcylindracea, 1.5—2.5 mm crassa, parte basali valde inflata ad 5.5 mm diametro; petala 16—20 mm longa, tenuiter sed densissime tomentosa latere exteriore, latere interiore tomentosa in parte basali dilatata (praecipue nervo mediano) et ceterum in nervis 3 parallelis prominentibus; stamina 14—17.5 mm longa, filamentis 6—8 mm longis parte basali 2.5—4.5 mm longa 0.5—1.75 mm lata intus apice barbata, dorso omnino vel marginibus pilosa, et parte superiore 2.5—4 mm longa 0.75 mm lata, glabra, anthera 8.7—9.7 mm longa, 1—1.2 mm lata, obtusa, connectivo glabro; stilus omnis pilosus, 11.5—13 mm longus, basi c. 0.5 mm, apice c. 1.5 mm crassa; stigma conicum, 2.5—3 mm longum, basi 1.5—2 mm diametro; discus 4—5-lobus, 1.2—1.25 mm altus, 2.75—3.5 mm diametro; ovarium uniloculare. *Fructus* ignotus. (Description after all the materials mentioned below). **Cfr. ic. 4, g—h.**

By the characters of the flowers this species is closely allied to *A. nobile,* but it is strongly different by leaves quite different-shaped and entirely penninervous, and the peculiar thin but very dense tomentum. Through the penninervous leaves it comes close to *A. Ridleyi* and *A. javanicum.*

BORNEO. Sarawak: G. Sedilu forest reserve (Sadong), OMAR 00054 (S, type), v.n.: *sisit;* Oya, HAVILAND 3019 (BM, K, S); Baram, HAVILAND & HOSE 3285 (K, Sa).

14. Alangium Ridleyi KING — *Internodes* between the adult leaves 1.8—7.5 cm long, 3—9 mm thick, glabrous. *Petiole* 15—40 mm long, glabrous; lamina obovate-oblong or oblong, rarely broader or more ovate, symmetrical, 8—42 cm long, 5—20 cm broad, rounded to cuneate at the base, more or less (never strongly) acuminate towards the obtuse or acute apex, glabrous, rather thickly coriaceous, penninervous with 10—18 lateral nerves at each side of the midrib. *Inflorescence* glabrous, 1—3 × branched, 6—15-flowered, 4.5—22 mm long (flowers excluded), with a common peduncle or, in absence of such, with primary branches 1.5—6 mm long, 3—4 mm thick, and pedicels 1.5—5 mm long; bracts triangular, 0.5—2 mm long, 0.25—0.5 mm broad. *Flowers* 5—7-, usually 6-merous, 18—27 mm long; calyx glabrous; tube infundibuliformous, 3—4 mm long, limb cupuliformous, 2 mm long, 7 mm wide, teeth 0.25 mm long; corolla in bud subcylindrical (in the herbarium 5—7-angular), 4—7 mm thick, obtuse, hardly swollen in the basal portion; petals 15—23 mm long, glabrous outside, inside from 5—6 mm above the base up to the apex appressedly pilose especially on the nerves; stamens 12—20 mm long, filament 3.5—5 mm long, 2—2.75 mm broad, flattened, glabrous outside, bearded at the apex and sparingly hairy along the margins inside; anther 9—14 mm long, 1.5—1.65 mm broad, with glabrous connective; style

pilose on longitudinal stripes, 7.5—12.5 mm long, nearly 1.25 mm thick at the base, 3.75 mm thick below the stigma; stigma conical, 4.5 mm long, 4 mm broad at the base; disc 5—7-lobed, 2.25 mm high, 4 mm in diameter; ovary one-celled. *Fruit* in the dry state ovate, flattened, rounded or slightly acute at the base, more acute towards the apex, 27—37 mm long (calyx included), 18—22 mm broad, 12—14 mm thick, usually glabrous, with 10—14 obtuse ribs and deep grooves between them, crowned by the 2—3.5 mm long calyx limb and the non-exserted disc, in alcohol materials ellipsoidal, not ovate nor flattened, rounded at the base and at the apex, 32—34 mm long, 18—23 mm in diameter, with more superficial grooves. (Description after all the materials mentioned, the alcohol materials being from tree VII. H. 14 cultivated in the Buitenzorg Botanic Garden). **Cfr. fig. 5, a—i.**

According to notes on herbarium labels *A. Ridleyi* is a tree 16—40 m high, with a bole 25—45 cm in diameter, often with flat and curved stilt-roots 50—160 m high, and with spreading branches. The flowers are very sweet scented, white- or cream-coloured, the filaments and style white, the anthers light-yellow, the stigma orange, the disc yellow, the ripe fruit dark-violet to black, red inside. It occurs from 50 to 200 m altitude, in forests, often in marshy forests, and flowers from April to September (dry season).

A. Ridleyi is closely related to *A. javanicum,* but it seems possible to distinguish it by the form and dimensions of the fruit, which in *A. Ridleyi* is 27—37 mm long, 18—22 mm broad, and 12—14 mm thick, strongly grooved with 10—14 deep grooves and obtuse ribs, in *A. javanicum* 17—35 mm long, 11—17.5 mm broad, 6—12 mm thick, usually not at all, sometimes superficially and irregularly, rarely more strongly grooved with 10—12 obtuse ribs. The fruit of *A. Ridleyi* is always less flattened as that of *A. javanicum.* Moreover there are slight differences in the dimensions of the twigs and the flowers. In *A. Ridleyi* the twigs between the adult leaves are 3—9 mm thick, the flowers are 18—27 mm long and 4—7 mm thick in bud; in *A. javanicum* the twigs between the adult leaves are 1.5—6.5 mm thick, the flowers are 8—25 mm long, and 1.75—5 mm thick in bud. These differences are, however, certainly insufficient for specific distinction. As, moreover, among the materials of *A. javanicum* examined, there are specimens with fruit approaching those of *A. Ridleyi* (ELMER 21750, 21116, BEGUIN 2262, JAHERI s.n.) it is doubtful whether *A. Ridleyi,* too, is not a form of the widely spread and polymorphic *A. javanicum.*

Alangium Ridleyi KING, in Journ. As. Soc. Beng., 71, II, p. 78 (1902);

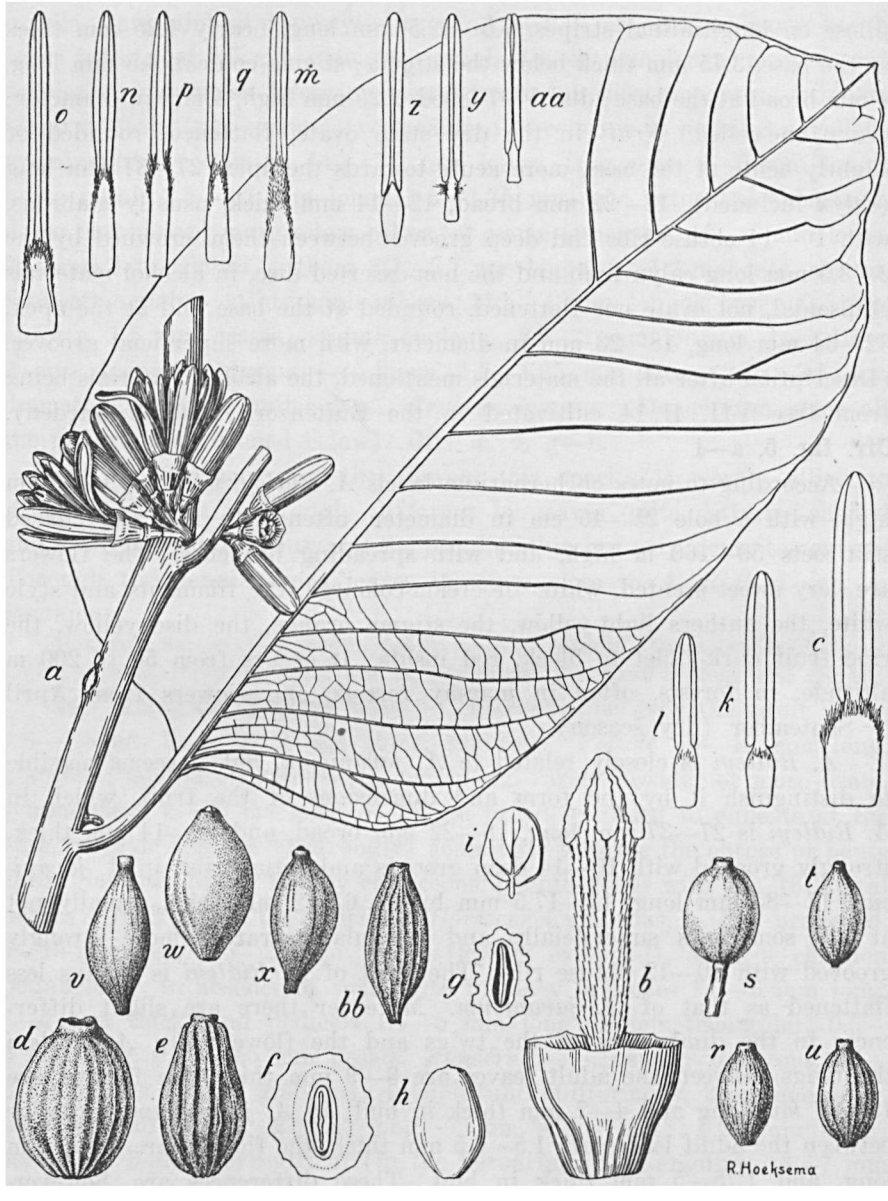

Fig. 5: *Alangium* sect. IV. **a—i**: *A. Ridleyi*; **a**: twig fragment with leaf and inflorescence, $^3/_5 \times$; **b**: calyx with pistill, $2^1/_2 \times$; **c**: stamen, $2^1/_2 \times$; **d**: fruit, alcohol material, $^3/_5 \times$; **e**: fruit, dry, $^3/_5 \times$; **f**: fruit, alcohol material, $^3/_5 \times$; **g**: fruit, dry, $^3/_5 \times$; **h**: stone, alcohol material, $^3/_5 \times$; **i**: embryo, alcohol material, $^3/_5 \times$; **k—v**: *A. javanicum*; **k—q**: stamens, $2^1/_2 \times$; **r—v**: fruit, $^3/_5 \times$, only **s** alcohol material; **w—x**: *A. javanicum* var. *minahassicum*; **w**: fruit, alcohol material, $^3/_5 \times$; **x**: fruit, dry, $^3/_5 \times$; **y—aa**: *A. javanicum* var. *papuanum*, stamens, $2^1/_2 \times$;

WANGER., in ENGL., Pflanzenr., IV, 220b, p. 12 (1910); RIDL., Fl. Mal. Pen., 1, p. 893, ic. 75 (1922); Dispers. of pl., p. 350, 376 (1930); *Marlea costata* (non BOERL., 1890), VALET., in Ic. bogor., 3, p. 267, t. 179 (1906); BOLDINGH, Cat. Herb. Hort. Bogor., p. 145 (1914); *Alangium costatum* WANGER., in ENGL., Pflanzenr., IV, 220b, p. 12, ic. 3, A—E (1910); EVRARD, in LEC., Fl. Indo-Ch., 2, p. 1186 (1923); THORENAAR, in Meded. Proefst. Boschw., 16, p. 102 (1926); DAKKUS, in Bull. Jard. Bot. Buitenz., ser. III, suppl. 1, p. 13 (1930).

MALAY PENINSULA. Wellesley: Tasek Gelugor, CURTIS 3736 (K, S); Perak: Upper Perak, WRAY 3632 (K); Pahang: Benus Valley, Bentong, 180 m alt., BURKILL & HANIFF 16450 (K, S); Tembeling, low el., HENDERSON 21889 (S); Selangor: Kepong, SOW & TACHOU 16425 (S); Malacca: Selandor, ALVINS s.n. (S), v.n.: *kayu lidah karbâu puteh*; Singapore: CANTLEY's coll. s.n.; Botanic Garden jungle, RIDLEY 4941 (BM, K, S) type of *Alangium Ridleyi* KING; *ibidem*, sine coll. nec no. (BD).

SIMEULOEË. ACHMAD 372 (B, L), v.n.: *medang sengeh*; 532 (B), v.n.: *teramajang silai*; 1271 (B, L), v.n.: *kengengit fatoeh*; 1297 (B, L, U), v.n.: *teramajang pajo*; 1428 (B, L, U), v.n.: *temarajang pajo*.

SUMATRA. Simpang Toba (Asahan), 30 m el., BOSCHPR.BB. 7178 (B), v.n.: *babi koeroes*; Masihi Reserve (Asahan), 40 m el., BOSCHPR.BB. 6342 (B), v.n.: *babi koeroes*; Bajoenglintjir (Banjoeasin- en Koeboestreken), 15 m el., BOSCHPR. 160 E. 1. P. 852 (B, L), BOSCHPR. T. 1159 (B, L), BOSCHPR. 1. P.T. 797 (B, L), BOSCHPR. 1. P.T. 789 (B), v.n.: *melepangan pajo*; G. Megang (Lematang Hilir), 75 m el., BOSCHPR. 131. T. 3. P. 369 (B, L), and 160. E. 3. P. T. 369 (B), v.n.: *medang mata oedang*.

BANGKA. Cultivated in the Buitenzorg Botanic Garden from Bangka under VIII. H. 14 & 14a (B, type of *Marlea costata* VALET. non BOERL.) v.n.: *kembel*; under VIII. H. 17 (B, K, L), v.n.: *parak laki*; and under IX. A. 20 & 20a (B).

Also under XI. C. 7a (B) from unknown provenance.

Distribution: Indo-China.

15. Alangium javanicum (BLUME) WANGERIN — *Internodes* between the adult leaves 0.5—6.5 cm long, 1.5—6.5 mm thick, glabrous or thin-tomentose or more rarely shortly hirsute-tomentose. *Petiole* 3.5—28 mm long, with indumentum like the twigs; lamina usually obovate-oblong to obovate-lanceolate, more rarely elliptic to oblong, usually symmetrical, rarely slightly asymmetrical, 2.8—32.5 cm long, 1.3—12.3 cm broad, with rounded to cuneate or somewhat contracted base, more or less acuminate towards the usually obtuse apex, rarely protracted into a long acumen, chartaceous to rather thickly coriaceous, usually entirely glabrous, more rarely shortly hirsute-tomentose or puberulous on the nerves below, or even sparingly hairy between the

bb: *A. javanicum* var. *Jaherii*, fruit, dry, $^3/_5 \times$; **a**, ACHMAD 372, **b**, **c**, BOSCHPR. T. 369, **d**, **e**, **f**, **g**, **h**, **i**, Bot. Gard. Buitenzorg VIII. H. 17, **k**, RIDLEY 13223, **l**, Bot. Gard. Buitenz. VIII. F. 25, **m**, Bot. Gard. Buitenzorg IX. D. 51, **n**, HALLIER B. 1231, **o**, RUTTEN 1832, **p**, HAVILAND 2886, **q**, AGAMA 1022, **r**, HAMID 7562, **s**, **t**, BOSCHPR. 31. T. 1. P. 35, **u**, HALLIER B. 1231, **v**, KLOSS 18963, **w**, **x**, Bot. Gard. Buitenz. IV. F. 99, **y**, LEDERMANN 9818, **z**, LEDERMANN 11534, **aa**, LEDERMANN 8137, **bb**, JAHERI s.n.

nerves, entirely penninervous, with 7—22 lateral nerves at each side of the midrib. *Inflorescence* 1—3 × branched, 1—34-flowered, 2—26 mm long (flowers excluded), with a common peduncle or, by lack of this, with primary branches 1—18 mm long, pedicels 0—7 mm long, bracts triangular 0.25—3 mm long, 0.5—2.25 mm broad. *Flowers* 4—7-merous, usually 6-merous, 10.25—19.5(25) mm long; calyx thin-tomentose to glabrous, the tube infundibuliformous or more campanulate, 1.75—3(5) mm long, the limb infundibuliformous or cupuliformous, rarely spreading, 0.9—3 mm long, 3—6 mm wide, with 0.1—0.75 mm long teeth; corolla in bud subcylindrical, 1.75—5 mm thick, usually somewhat swollen in the basal portion, also slightly in the middle of the upper one-half, obtuse or more rarely acute or shortly acuminate; petals 8.5—16.5(20) mm long, thin-tomentose or more rarely glabrous or hirsute-tomentose outside, sparingly hairy inside especially on the nerves, rarely thin-tomentose or quite glabrous; stamens as many as petals, 8—15.75(19) mm long, filament 2—6.75 mm long, 0.75—2 mm broad, bearded inside at the tip and hairy along the margins, glabrous or sparingly tomentose or pilose outside; anther 6—10(12.5) mm long, 0.7—1.25 mm broad, with glabrous connective; style pilose or tomentose on longitudinal stripes, often glabrous in the basal portion, 4—10(16.5) mm long, 0.6—1 mm thick at the base, 1.3—3.2 mm thick below the stigma; stigma conical with 4 longitudinal stigmatose ribs, 1.4—3.25 mm long, 1—2 mm thick at the base; disc semiglobose, 4—7-angular, or 4—7-lobed, rarely cylindrical, 0.8—2.25 mm high, 1.8—4 mm in diameter; ovary one-celled. *Fruit* ellipsoidal, ovate or slightly rhomboid in the dry state, rounded at the base, acute or rarely slightly acuminate towards the apex, 17—30(35) mm long, 11—15 mm broad, 6—12 mm thick, glabrous or thin-tomentose, usually superficially, more rarely deeper-grooved, crowned by the 1—3 mm long, 3—4.5 mm wide calyx limb and the disc that is exserted or not. (Description after the materials mentioned, with exception of the varieties distinguished, the dimensions between brackets being those of the specimens with unusually long flowers discussed below). **Cfr. fig. 5, k—bb.**

Alangium javanicum, as accepted here, is a widely spread and rather polymorphic species, especially varying in the eastern part of its area. Of the varieties only those have been named, that perhaps have a higher systematic value. Of the other variations may be mentioned, that a part of the North-Borneo and Java materials are more hirsute-tomentose with more brownish indumentum, whereas most other forms have a greyish, thin-tomentose indumentum. A number of North-Borneo

specimens, described as *A. mezianum* by WANGERIN (HAVILAND & HOSE 2885) and as *A. borneense* by MERRILL (AGAMA 1022, RAMOS 1451, KLOSS 18963) and those from Séran (RUTTEN 1832), have unusually long flowers. The fruit are rather large in the specimens described as *A. borneense* by MERRILL, being up to 35 mm long, and attenuate not only towards the apex but also towards the base. The specimen CLEMENS 29216 from Mt. Kinabalu is the only one, not only of the species, but also of the whole section, that has glabrous styles. As fruit are lacking the determination is somewhat doubtful.

Styrax javanicum BLUME, Bijdr., 13, p. 671 (1825); A. DE C., in D. C., Prodr., 8, p. 268 (1844); MIQUEL, Fl. Ind. Bat., I, 2, p. 464 (1859); KURZ, in Journ. As. Soc. Beng., 40, II, p. 61 (1871); in Flora, 54, p. 273 (1871); in Nat. Tijschr. Ned. Ind., 34, p. 107 (1874); BOERL., Handl. Fl. Ned. Ind., 2, p. 232 (1891); GRESHOFF, Schetsen, p. 118 (1896); KOORD. & VALET., Bijdr. booms. Java, 7, p. 13 (1900); PERKINS, in ENGL., Pflanzenr., IV, 241, p. 85 (1907); VAN STEENIS, in Bull. Jard. Bot. Buitenz., ser. 3, 12, p. 253 (1932); *Marlea ebenacea* CLARKE, in HOOK.F., Fl. Br. Ind., 2, p. 742 (1879); SERTOR., in Bull. Herb. Boiss., 1, p. 473—615 (1893); RIDLEY, in Agr. Bull. Straits & Fed. Mal. St., new ser., 1, p. 181 (1902); *Marlea costata* BOERL., Handl. Fl. Ned. Ind., I, 2, p. 654 (1890) non alior.; *Karangolum ebenaceum* KUNTZE, Rev. gen. pl., 1, p. 273 (1891); *Alangium ebenaceum* HARMS, in ENGL. & PR., Nat. Pflanzenfam., III, 8, p. 262 (1898); KING, in Journ. As. Soc. Beng., 71, II, p. 78 (1902); WANGER., in ENGL., Jahrb., 38, Beibl. 86, p. 63—68 (1906); in ENGL., Pflanzenr.., IV, 220b, p. 14 (1910); HEYNE, Nutt. pl. Ned. Ind., ed. 1, 3, p. 402 (1917); ed. 2, 2, p. 1217 (1927); RIDLEY, Fl. Mal. Pen., 1, p. 893 (1922); *Alangium arboreum* GRESHOFF. Meded. 's Lands Plantent., 25, p. 91 (1898) nomen; *Marlea javanica* KOORD. & VALET., Bull. Inst. Bot. Buitenz., 2, p. 2 (1899); Bijdr. booms. Java, 5, p. 76 (1900); KOORD., in Natuurk. Tijdschr. Ned. Ind., 60, p. 380 (1901); BOLDINGH, Cat. pl. Herb. Hort. Bogor., p. 145 (1914); JANSSON., in MOLL & JANSS., Mikrogr., 3, p. 721 (1918); *Nyssa Hollrungii* SCHUMANN, in SCHUM. & LAUTERB., Nachtr. Fl. deutsch. Schutzgeb. Südsee, p. 334 (1905); WANGER., in ENGL., Pflanzenr., IV, 220a, p. 15 (1910); *Alangium meyeri* MERRILL, in Publ. Governm. Labor., 35, p. 54 (1906); in Phil. Journ. Sc., 1, suppl. 1, p. 111 (1906); WANGER., in ENGL., Pflanzenr., IV, 220b, p. 15 (1910); MERRILL, in Phil. Journ. Sc., bot., 7, p. 321 (1912); 21, p. 531 (1922); Enum. Phil. Fl. Pl., 3, p. 241 (1923); MELCHIOR & MANSF., in ENGL., Jahrb., 60, p. 163 (1925); MERRILL, in Univ. Calif. Publ. Bot., 15, p. 232 (1929); *Alangium costatum* WANGER., in ENGL., Jahrb., 38, Beibl. 86, p. 61—83 (1906) nomen; *Alangium Mezianum* WANGER., in ENGL., Jahrb., 38, Beibl. 86, p. 61—65 (1906); in FEDDE, Repert., 4, p. 338 (1907); in ENGL., Pflanzenr., IV, 220b, p. 15, ic. 3, F—J (1910); MERRILL, Journ. Str. branch, Roy. As. Soc., spec. numb. 1921, p. 459 (1921); *Alangium bogoriense* WANGER., in FEDDE, Repert., 4, p. 338 (1907); in ENGL., Pflanzenr., IV, 220b, p. 11 (1910); DAKKUS, in Bull. Jard. Bot. Buitenz., ser. III, suppl. 1, p. 13 (1930); *Alangium javanicum* WANGERIN, in ENGL., Pflanzenr., IV, 220b, p. 14 (1910); KOORD., Exkursionsfl., Java, 2, p. 731, 733 (1912); KOORD.-SCHUM., Syst. Verz., 1, fam. 229, p. 102 (1912); DAKKUS, in Bull. Jard. Bot. Buitenz., ser. III, suppl. 1, p. 13 (1930); *Alangium tutela* RIDL., in Journ. Roy. As. Soc., Str. Br., 61, p. 10 (1912); Fl. Mal. Pen., 1, p. 894 (1922); *Alangium borneense*

MERRILL, in Journ. As. Soc., Str. Br., 86, p. 342 (1922); *Alangium salviifolium* BAKER, in Journ. of Bot., 62, suppl. p. 45 (1924) pro parte; *Alangium Hollrungii* & *A. papuanum* MELCH. & MANSF., in ENGL., Bot. Jahrb., 60, p. 163, 165 (1925); *Alangium sessiliflorum* MERRILL, in Univ. Calif. Publ. Bot., 15, p. 232 (1929); *Alangium oblongum* CRAIB, in Kew Bull. 1930, p. 426 (1930).

Var. **minahassicum** BLOEMB., nov. var. — Fructus statu sicco 30—34 mm longus, 16—17.5 mm latus, 9—12 mm crassus, in alcohole conservatus ad 35 mm longus, 19 mm latus, 14 mm crassus, disco 2—3 mm alto, calycem 1—1.5 mm altum distincte superans. Flores ignoti. **Cfr. fig. 5, w—x.**

Distribution: Selebes, Minahassa, and Halmahéra.

The fruits from both localities are strikingly similar.

Var. **papuanum** (MELCH. & MANSF.) BLOEMB., nov. var. — Filamenta 1.5—3.1 mm longa, 0.5—1.5 mm lata, omnino glabra vel pilis nonnullis in utroque latere apicis. Flores in statu alabastri tantum noti, 6—17.8 mm longi. **Cfr. ic. 5, y—aa.**

Nyssa Hollrungii SCHUMANN, in SCHUM. & LAUTERB., Nachtr. Fl. deutsch. Schutzgeb. Süds., p. 334 (1905); *Alangium Hollrungii*, *A. Meyeri*, & *A. papuanum* MELCH. & MANSF., in ENGL. Bot. Jahrb., 60, p. 163—165 (1925).

Distribution: New Guinea.

Except by the peculiar filaments the New Guinea specimens of *A. javanicum* are characterized by thin twigs with small leaves, but similar forms are found in most different parts of the area, especially in dry regions.

Var. **Jaherii** BLOEMB., nov. var. — Fructus 32—33 mm longi, 13—15 mm lati, 8—9 mm crassi, costis 10—12 crassis obtusis, et sulcis profundis. Flores ignoti. **Cfr. ic. 5, bb**

Distribution: Kai Islands.

The fruit are somewhat similar to those of *A. Ridleyi*, but they are shorter and especially narrower an more acute towards both ends.

Distribution of the species:

MALAY PENINSULA. Perak: SCORTECHINI 1963 (BD, L); Tupai, plains, WRAY 3302 (S); Larut, 90—240 m alt., KING's coll. 3252 (B, BD); 150—240 m alt., KING's coll. 5363 (BM, E, K); within 30 m alt., KING's coll. 6626 (K, L); Pahang: Temerloh, Kemansul forest reserve, HAMID 10887 (K, S); Belingor forest reserve AWANG-LELA 4511 (S), v.n.: *petong ka-kura*; Kuantan, BURN MURDOCH s.n. (S); Selangor: Weld's Hill forest reserve, BURN MURDOCH 27 (K); AHMAD 4748 (K, S), v.n.: *medang*; HAMID 562 (S), v.n.: *kelat*; Rantau Panjang, STRUGNELL 12487 (S); Sungei Buloh forest reserve, ABU 3311 (K, S), v.n.: *melidah*; Malacca: GRIFFITH s.n. (BM, K); GRIFFITH (Kew distr.) 3383 (BD, K), first no. cited by CLARKE of *Marlea ebenacea*; MAINGAY (Kew distr.) 706 (K, L), 2nd no. cited by CLARKE of *Marlea ebenacea*; ALVINS 1171 (S), v.n.: *pokô kulat kurantaû*; Tuniang, ALVINS 1695 (S), v.n. *pokô kaiu lida lida*; Merlimau, ALVINS 2161 (S), v.n.: *pokô pachat kuniang*; Selandau, GOODENOUGH 1809 (S), v.n.: *autoi* (*antoi*?); Johore: Sungei Tebrau, RIDLEY 13223 (K, S); Panti, BAIN (?), 6006 (K, S), v.n.: *kahwa kahwa*; Singapore: Ponggol, GOODENOUGH (RIDLEY) 5082 (BM, S), v.n.: *kayu tass*, anti-tiger-tree, type of *Alangium lutela* RIDLEY.

SIMEULOEË, ACHMAD 18 (B, L), v.n.: *taramajang*; 1266 (B, L, U), v.n.: *bidara oeding*; Dèfajan, Tapah, ACHMAD 1423 (B, L), v.n.: *taramajang oeding*; 1365 (B, L), v.n.: *bidara pajo*; 1509 (B, L), v.n.: *taramajang boeloh.*

SUMATRA. Without further locality: cultivated in the Buitenzorg Botanic Garden under V.. E. 35 & 35a (B) sub nom. „*Alangium arboreum* T. & B.''; Subdiv. Lower Langkat (Oostkust), near Aloer Goesta, alt. 50 m, BOSCHPR.BB. 16. 630 (B), v.n.: *patimah*; Painan (W. Kust), Kp. Baroeng-baroeng Balantai, BOSCHPR. S.W. K. I. 30 (B), v.n.: *kalek poetih ranting*; Oud-Agam, Sg. Dareh, Kp. Batastjoeli, 1200 m alt., BOSCHPR. S.W.K. II. 30 (B), v.n.: *kalek kopi*; Manindjang, Kp. Silajang, BOSCHPR.BB. 5221 (B, L), v.n.: *bantoenan*; Pariaman, Kp. Tandjoeng, 400 m alt., BOSCHPR.BB. 6722 (B), v.n.: *kali toelang*; Kroë (Bengkoeloe), Kota Bonglai, 900 m alt., BOSCHPR.BB. 10286 (B), v.n.: *giok koendjir*; Palembang, Kapar Litjin, R. Rawas, 450 m alt., FORBES 3173 (BM, K, L), according to BAKER in Journ. Bot., vol. 62, suppl., p. 45 from Moeara Mengkoelem, R. Rawas, 150 m alt.; Banjoe-Asin- & Koeboe-streken, 20 m alt., GRASHOFF 721 (B, L), v.n.: *kajoe nanau*; Bajoenglintjir, 15 m alt., BOSCHPR. 31. T. 1. P. 35 (B, L), v.n.: *kajoe manau*; Lematang Hilir, ENDERT 101 (B, L), v.n.: *kajoe manau*; Lampongs, TEYSMANN 6717 (B), v.n.: *karikoekoen*, and cultivated in the Buitenzorg Botanic Garden, labelled partly „*Alangium arboreum* T. & B." and partly „*Cyclostemon mucronatum* BL." (B, K, L, S), in (L) type of *Marlea costata* BOERL. = *Alangium bogoriense* WANGER.

LINGGA ARCHIPELAGO. P. Lingga, Sg. Dai, TEYSMANN 6664 H.B. (B), v.n.: *boewa tas.*

ANAMBAS & NATOENA ISLANDS. P. Boengoeran, G. Ranai, 200 m el., VAN STEENIS 1263 (B, L, S); 250 m el., VAN STEENIS 1221 (B, U), v.n.: *kajoe kenelan.*

BORNEO. British North Borneo, Mt. Kinabalu, Kundusang, 900 m el., CLEMENS 29216 (B, NY); near Sandakan, Suanlamba River, 10 m el., AGAMA 550 (M), v.n.: *lasit*; Batu Lima, low alt., AGAMA 1022 (B, BD, BM, L, M) type of *Alangium borneense* MERR.; RAMOS 1451 (B, BD, BM, L, M); Batu Lapan, WOOD 2252 (K, UC), type of *Alangium sessiliflorum* MERRILL; Bettottan, KLOSS 18963 (B, S); Tawao, ELMER 21116 (B, BD, K, NY, S, U), 21165, 21176, 21422, 21447, 21750 (B, BD, BM, K, NY, S, U), 21553 (B); Sarawak: Rejang, Kapit, and Rejang, Sitri, KALONG (HAVILAND) 2885 (B, L, S, Sa); West-Borneo: Soengai Sibau, HALLIER B. 1231 (B, L); Koeboe, Kp. Ombawang, 50 m alt., BOSCHPR. W. B. BB. 7141 (B), v.n.: *birong*; East-Borneo: Boengoelan, Kp. Kabiran, 100 m alt., BOSCHPR.BB. 11732 (B), BB. 11749 (B), v.n.: *enkenolan*; West-Koetai, near Keloempang, alt. 40 m, BOSCHPR.BB. 16.932 (B), v.n.: *beremkoelat.* East-Koetai Sankoelirang, Kp. Pendangan, Sg. Bai, 25 m el., BOSCHPR.BB. 12982 (B) v.n.: *ladjik*; Kp. Palawan, 50 m el., BOSCHPR.BB. 11945 (B), v.n.: *toebo*; South-Borneo: Midden-Doesoen, Kp. Penangin, 75 m el., BOSCHPR.BB. 12464 (B), v.n.: *trangolon.*

P. LAOET. Kp. S. Paring, 100 m alt., BOSCHPR.BB. 12381 & 12910 (B), v.n.: *marlapang.*

JAVA. Cultivated in the Buitenzorg Botanic Gardens, from Java, without exact locality, sub VIII. F. 25 & 25a (B), v.n.: *kiparang*; BLUME s.n. (B, NY), originals of *Styrax javanicum* BLUME; Tjiampèa near Buitenzorg, KOORDERS forest no. 402*, herb. no. 30124 β (B, L); for. no. 405*, herb. no. 30599 β (B, L); 200—300 m alt., KOORDERS for. no. 484*, herb. no. 30601 β (B), for. no. 485*, herb. no. 30600 β (B, L); Sanggrawa, Djampangkoelon near Soekaboemi, 400 m el., KOORDERS 6079 β (B, BD, K, L).

SELEBES. Subdivision Boalemo (= Tilamoeta), near Kampong Popaja, alt. 300 m, BOSCHPR.BB. 15.699 (B), v.n.: *tintibotoe*; subdiv. Donggala, near Kampong Bambamate, alt. 150 m, BOSCHPR.BB. 17.056 (B), v.n.: *lokoe*; subdiv. Malili, near Kampong Kawata, BOSCHPR. Cel. V. 199 (B), v.n.: *lansabonti poete*.

TALIABOE. Waekoejoe, ATJÈ (Exp. HULSTIJN) 255 (B, L).

MOLUCCAS. Without exact locality, cultivated in the Buitenzorg Botanic Garden under IX. D. 51 (B); island Kasiroeta (= Groot Tawali), near Dinga, alt. 10 m, BOSCHPR.BB. 16.440 (B), v.n.: *soa-soa maki;* island Batjan, near Geti, alt. 15 m, BOSCHPR.BB. 16.450 (B), v.n.: *koko & beo*; island Séran, Wai Kawa 100—200 m alt., RUTTEN 1832 (B, L); island Ambon, near Soeli, alt. 70 m, BOSCHPR.BB. 18.104 (B), v.n.: *samar*.

Further distribution of the species: Siam.

Distribution of the var. *minahassicum*:

SELEBES. In the Buitenzorg Botanic Garden under IV, F. 99 (B, L), coll. by BOERLAGE, VALETON & KOORDERS (20844β), cultivated from fruit collected by KOORDERS near Manado.

HALMAHERA. West Pitoe, 80 m el., BEGUIN 2262 (B, L).

Distribution of the var. *Jaherii:*

KAI ISLANDS. JAHERI s.n. (B).

Distribution of the var. *papuanum:*

NEW GUINEA. N. E. Part.: April River, Bivouac 18, 15—20 m el., LEDERMANN 9795 (BD); 200—400 m el., LEDERMANN 9818 (BD), 9829 (BD); Augusta River, 2nd station, HOLLRUNG 720 (BD); Augusta River, Malu, Ficus Ridge, 100—200 m el., LEDERMANN 10851 (BD), 20—30 el., LEDERMANN 11534 (BD); Bani-Schlucht, 50—100 m el., LEDERMANN 8137 (BD).

16. Alangium maliliense BLOEMBERGEN, n. sp. — *Internodia* inter folia adulta 1—3.5 cm longa, 1.5—5 mm crassa, pilis ramosis velutino-tomentosa. *Petiolus* 4—8 mm longus, velutino-tomentosus; lamina circuitu rotundato-elliptica ad oblonga, saepe paulum ovata, basi rotundata vel leviter cordata, subsymmetrica, 4.5—9.5 cm longa, 3—4.5 cm lata, apicem obtusum versus plerumque abrupte brevissime acuminata, facie superiore glabra, facie inferiore nervis pilis stellatis subhirsuto-velutinis, inter nervos pilis stellatis semitecta, omnino penninervis, chartacea vel tenuiter coriacea, nervis lateralibus 8—15 utrinque. *Inflorescentiae* omnino velutino- vel subhirsuto-tomentosae, 1—2 × ramosae, 1—5-florae, 5—14 mm longae (floribus exclusis), pedunculo vel eo absente ramis primariis 4—12 mm longis, pedicellis 2—8 mm longis; bracteae triangulares, 0.75—2 mm longae, 0.5—1.5 mm latae. *Flores* 6—7-meres, plerumque 7-meres, circiter 17—21 mm longi; calyx eodem indumento ac inflorescentia, subinfundibuliformis, 3 mm longus, limbo subcupuliformi 0.75 mm longo circiter 5 mm lato, dentibus triangularibus 0.5—1 mm longis; corolla statu alabastri adulti subcylindracea 4 mm lata, supra basin ad 5—5.5 mm inflata, apice obtusissima; petala 14—17.5 mm longa, facie exteriore pilis ramosis densissime hirsuto-velutina, facie interiore parte basali excepta adpresse pilosa; stamina aequo numero

ac petala, 13—17 mm longa; filamentum 4—5.5 mm longum, basi apiceque c. 1 mm, medio fere 2 mm latum, facie interiore apice valde incrassatum, dorso densiuscule puberulo, marginibus apicem versus et incrassatione pilis longiusculis densissime velutino-barbatis, anthera 9—11.5 mm longa, connectivo glabro; stylus subcylindraceus, stigma versus paulum attenuatus, 8—10.5 mm longus, medio 1.25—1.5 mm crassus, densissime adpresse pilosus; stigma obtuse conicum, 2 mm longum, basi 1—1.25 mm latum; discus 6—7-lobus, 0.5—0.75 mm altus, 2.75—3 mm diametro; ovarium uniloculare. *Fructus* statu sicco ellipsoides, leviter compressus, basi rotundatus vel breve conicus, apice rotundatus, 23—27 mm longus (calyce incluso), 12—14 mm latus, 9—11 mm crassus, pilis stellatis et ramosis densissime hirsuto-velutinus, costis numerosis obtusis passim reticulatis, apice calycis limbo persistente et disco non exserto coronatus.

By the form of the stigma and the structure of the inflorescence this new species certainly belongs to the 4th section. With *A. nobile* it agrees in the velvety-hirsute indumentum, the leaf-shape and the strongly reticulate nervation on the underside of the lamina. The lamina is, however, entirely penninervous, as in *A. Havilandii, A. Ridleyi* and *A. javanicum*. With *A. Ridleyi* and *A. javanicum* it agrees by the filaments not having a narrower upper portion, with *A. javanicum* by the mode of ramification of the twigs. The fruit reminds of that of *A. nobile* and *A. Ridleyi* as to the form. Besides by the combination of characters in general, *A. maliliense* is characterized by the ochraceous colour of its indumentum and the strongly developed thickening at the top of the filaments inside.

SELEBES. Subdivision Malili, near Kampong Kawata, alt. 300 m, BOSCHPR. Cel. V. 161 (B), tree 30 m, trunk 20 m tall, 64 cm diameter, flowers white, with aromatic odour, fruit yellowish brown or yellow-orange, without odour, sweet and sour; v.n.: *moroipo*; collected thrice from the same tree, Sept. 27, 1932, with flower (WATURANDANG 43), Nov. 19, 1932, with fruit (WATURANDANG 158), and Dec. 21, 1932, with fruit (WEISMANN 210).

The last species has been added afterwards when the manuscript had already been sent to the printer. This is the cause why it has not been taken up in the determination keys and in the general discussions.

Doubtful form.

Marlea tomentosa var. **dentata** KOORDERS & VALETON — Whereas the varieties *genuina* and *rotundifolia* of *Marlea tomentosa*, as given by KOORDERS and VALETON, are accepted as distinct species in this paper, the var. *dentata* of the same species has remained a doubtful form. It is hardly doubtful whether these form will later prove to be a form of one of the former varieties, distinguished here as *A. Kurzii* and *A. rotundifolium*, but the herbarium materials examined are scanty, and only one of the 3 numbers has few flowers and none has any fruit. Moreover

all seem to be youth forms, as is evident from the large laminae (8—26 by 5—24 cm) with 3 apices. The indumentum reminds of *A. rotundifolium* as to its nature; the long flowers (23—30.5 mm long, according to KOORDERS & VALETON even to 32 mm long) remind of *A. Kurzii*; for these long flowers the filaments are remarkably short, viz. 3—5 mm.

The specimens examined are:

West-Java, G. Tiloe near Pengalengan, 1580 m el., KOORDERS 1304β & 1305β (B), v.n.: *kitjaruh*, youth form, corolla, filaments & style white, anther yellow; forest Tjigenteng (Tjisondari), KOORDERS 1310β (B, L), v.n.: *kitjareh*, youth form.

Species wrongly recorded for the area.

Alangium decapetalum, recorded for the Malay Archipelago by MIQUEL (Fl. Ind. Bat., I, 1, p. 744) and by KURZ for Bangka (Nat. Tijdschr. Ned. Ind., 27, p. 169), and *A. salviifolium* ssp. *decapetalum*, recorded with doubt for Java by KOORDERS (Exkursionsfl. Java, 2, p. 773) do not occur in the area dealt with in this paper.

Species reiciendae.

Alangium celebicum KOORDERS, in Meded. 's Lands Plantent., 19, p. 623 (Versl. dienstr. Minahassa, p. 492) (1898); WANGERIN, in ENGL., Pflanzenr., IV, 220b, p. 24 (1910); KOORD.-SCHUM., Syst. Verz., 2, fam. 229, p. 100 (1914).

As is evident from originals in the Buitenzorg, Leiden and Kew herbaria, named by KOORDERS as *Alangium celebicum* [KOORDERS, forest number 2517* with herb. no. 19627β (B, L), and forest number 2455* with herb. no. 16873β (B, L), and RIEDEL s.n. (K)], this is not an *Alangium* at all, but I could not trace its right name.

Alangium kinabaluense W. W. SMITH, in Notes Bot. Gard. Edinb., 8, p. 315 (1915); MERRILL, in Journ. Str. Br. Roy. As. Soc., spec. numb. 1921, p. 459 (1921).

This species, based upon a specimen from Mt. Kinabalu, native coll. 49 (E, K), is **Polyosma Hookeri** STAPF, in HOOKER, Icon. plant., 23, t. 2296 (1894).

LIST OF COLLECTORS' NUMBERS,

with reference to the species by means of their number.

ABU 2297 = 8; 3311 = 15; 6505 = 8.

ACHMAD 18 = 15; 339 = 1; 372 = 14; 1271 = 14; 1266 = 15; 1297 = 14; 1365 = 15; 1423 = 15; 1428 = 14; 1509 = 15.

AGAMA 560 = 15; 1022 = 15.

AHMAD 4748 = 15.

AJOEB (Exp. JACOBSON) 180 = 5; 370 = 7; 445 = 1.

ALVINS s.n. = 14; 356 = 12; 1171 = 15; 1695 = 15; 2161 = 15.

AMDJAH 807 = 8.

ATJÈ (Exp. HULSTIJN) 255 = 15.

AWANG-LELA 4511 = 15.

BACKER 2829 = 4; 3529 = 4; 7975 = 4; 12214 = 5; 12324 = 5; 14187 = 5; 16604 = 1; 17546 = 1; 17764 = 1; 22538 = 5; 25231 = 4; 25396 = 4; 25721 = 5; 30578 = 4; 32021 = 1.

BAIN (?) 6006 = 15.

BAKHUIZEN VAN DEN BRINK 1561 = 5; 7718 = 5.

BARTLETT 8703 = 6.

BECCARI P. S. 68 = 5; P. S. 226 = 5; P. S. 611 = 5; P. B. 2477 = 12; P. B. 2927 = 12; P. B. 3611 = 12.

BECKING 56 = 9.

BEGUIN 582 = 12; 1977 = 8; 2262 = 15.

BLUME s.n. = 4 (2 ×), 6 (2 ×), 9, 15.

BOSCHPROEFSTATION (Forest Experiment Station)

BB-NUMBERS: 4006 = 6 4922 = 6; 5221 = 15; 5340 = 6; 5414 = 4; 5646 = 6; 6342 = 14; 6722 = 15; 6816 = 5; 7178 = 14; 7202 = 5; 7289 = 5; 8632 = 5; 9730 = 6; 9737 = 6; 10286 = 15; 11370 = 9; 11732 = 15; 11749 = 15; 11945 = 15; 12220 = 5; 12381 = 15; 12464 = 15; 12910 = 15; 12982 = 15; 14.352 = 9; 15.699 = 15; 15.729 = 5; 16.440 = 15; 16.450 = 15; 16.630 = 15; 16.932 = 15; 17.056 = 15; 18.104 = 15.

OTHER NUMBERS: Cel. V. 128 = 8; Cel. V. 161 = 16; Cel. V. 199 = 15; E. 1218 = 6; Ja. 1728 = 5; S. W. K. I. 30 = 15; S. W. K. II. 30 = 15; T. 52 = 3; T. 1159 = 14; T. 3. P. 864 = 12; W. B. bb. 7141 = 15; 1. P. T. 789 = 14; 1. P. T. 797 = 14; 31. T. 1. P. 35 = 15; 131. T. 3. P. 369 = 14; 160. E. 3. P. T. 369 = 14; 160. E. 1. P. 852 = 14.

BOSSCHA s.n. = 5.

BOTANIC GARDEN, BUITENZORG III. G. 60 & 60a = 1; IV. F. 99 = 15; VII. E. 35 & 35a = 15; VIII. F. 25 & 25a = 15; VIII. H. 14 & 14a = 14; VIII. H. 17 = 14; IX. A. 20 & 20a = 14; IX. A. 22a = 1; IX. D. 51 = 15; XI. C. 7a = 14; XII. B. 207 & 207a = 1; XII. B. 201a = 1; XVII. C. 133a = 1; XVII. C. 135 = 1; XVII. C. 136 & 136a = 1.

BOTANIC GARDEN, SIBOLANGIT 80 = 6.

BRASS 1066 = 10.

BÜNNEMEIJER 3754 = 6.

BURKILL 907 = 5.

BURKILL & HANIFF 12851 = 5; 16450 = 14; 17069 = 8.

BURN MURDOCH s.n. = 15; 27 = 15; 14152 = 8.

BUSSE 1489a = 1.

BUYSMAN s.n. = 4.

CANTLEY'S COLLECTOR s.n. = 14.

CLASON 989 = 4.

CLEMENS 21049 = 8; 26705 = 5; 29216 = 15; 30527 = 2.

COLFS 180 = 4.

CUBITT'S COLLECTOR 889 = 8.

CURTIS 940 = 6; 1505 = 12; 2689 = 5; 3736 = 14.

DE JONG 38 = 4.

DES AMORIE VAN DER HOEVEN s.n. = 6.

DE VRIESE s.n. = 1.

DOMMERS 82 = 1; 216 = 1.

ELBERT 478 = 4; 4153 = 4; 4179 = 4.

ELMER 21116 = 15; 21165 = 15; 21176 = 15; 21422 = 15; 21447 = 15; 21750 = 15; 21553 = 15.

ENDERT 101 = 15; 4052 = 7; 4076 = 7.

FORBES 1899 = 5; 2739 = 8; 2785 = 6; 2812 = 8; 2813 = 8; 2894 = 1; 3173 = 15.

Fox 122 = 5.
Galoengi 325 = 6.
Garai 2018 = 7.
Goodenough 1809 = 15; 5077 = 12; 5082 = 15.
Grashoff 721 = 15.
Griffith s.n. = 12 (2 ×), 15; 3383 = 15; 3384 = 12; 3385 = 12; 3387 = 8.
Hallier B. 1231 = 15; B. 3238 = 3.
Hamid 562 = 15; 10887 = 15.
Hashim 493 = 8.
Haviland 3019 = 13. Cfr. also Garai, Kalong.
Haviland & Hose 3285 = 13.
Henderson 11833 = 5; 20197 = 1; 21889 = 14; 24546 = 8.
Henderson & Nur 18554 = 5; 21750 = 5.
Hollrung 720 = 15.
Holttum 9310 = 8.
Horsfield s.n. = 1 (2 ×), 4.
Hosseus 440 = 8.
Houtsoorten van den Gedeh 175 = 9.
Iboet 39 = 8.
Jaheri s.n. = 15.
Jelinek (Exp. Novara) s.n. = 6.
Junghuhn s.n. = 4, 5 (4 ×), 9 (2 ×).
Kalong 1505 = 2; 2885 = 15.
Kerr 1172 = 6.
King's collector 563 = 8; 3252 = 15; 3329 = 8; 3593 = 8; 5363 = 15; 5590 = 1; 5824 = 8; 6047 = 12; 6116 = 12; 6626 = 15; 8281 = 8; 10183 = 8; 10523 = 8; 10892 = 12.
Kloss 18963 = 15.
Koorders
herbarium numbers, followed by a β: 868 = 4; 869 = 4; 1300 = 5; 1301 = 5; 1302 = 5; 1303 = 4; 1304 = cfr. p. 288; 1305 = cfr. p. 288; 1306 = 5; 1307 = 5; 1308 = 5; 1309 = 5; 1310 = cfr. p. 288; 3766 = 9; 3767 = 9; 6079 = 15; 8534 = 9; 8535 = 9; 8585 = 9; 8586 = 9; 8587 = 9; 10038 = 9; 10050 = 9; 10051 = 9; 10057 = 9; 10059 = 9; 10061 = 9; 10073 = 8; 10087 = 9; 11249 = 5; 12492 = 5; 13191 = 8; 13876 = 5; 13982 = 5; 14384 = 4; 14385 = 9; 14387 = 9; 14388 = 9; 14639 = 9; 14640 = 9; 14902 = 9; 15691 = 8; 16873 = cfr. p. 288; 19627 = cfr. p. 288; 20747 = 9; 20748 = 9; 20844 = 15; 20934 = 4; 20998 = 8; 21044 = 9; 21100 = 9; 21101 = 9; 21103 = 9; 21321 = 1; 22215 = 5; 22258 = 6; 23676 = 4; 23986 = 6; 24161 = 5; 25821 = 5; 26569 = 5; 27703 = 5; 28511 = 9; 28757 = 9; 28895 = 8; 28896 = 9; 28897 = 8; 29098 = 1; 29125 = 1; 30124 = 15; 30232 = 4; 30343 = 9; 30599 = 15; 30600 = 15; 30601 = 15; 30885 = 9; 31191 = 8; 33038 = 8; 33587 = 1; 33654 = 1; 33904 = 5; 35114 = 1; 38191 = 9; 38376 = 9; 38425 = 9; 38429 = 9; 38488 = 1; 38497 = 9; 38896 = 9; 39303 = 8; 39954 = 9; 40054 = 9; 40075 = 9; 40076 = 9; 40406 = 1; 47884 = 5.

forest or tree numbers, followed by an *: 14 = 5; 26 = 4; 214 = 5; 309 = 5; 402 = 15; 405 = 15; 484 = 15; 485 = 15; 919 = 5; 1120 = 9; 1121 = 8; 1152 = 1; 1249 = 1; 1409 = 1; 1706 = 8; 1837 = 4; 2167 = 4; 2271 = 9; 2455 = cfr.

p. 288; 2456 = 1; 2456 bis = 1; 2517 = cfr. p. 288; 2917 = 4; 2971 = 6; 3701 = 6; 7926 = 9.

FOREST OR TREE NUMBERS, FOLLOWED BY A LETTER a, t, OR w: 1330a = 8; 3180a = 5; 4035w = 9; 4178w = 9; 4187w = 9; 4191t = 9; 4206t = 9; 4217w = 9; 4219t = 9; 4229w = 9; 4271w = 9; 4297w = 9; 7844w = 9; 7922w = 8.

PLANTAE JUNGHUHNIANAE INEDITAE 58 = 5; 59 = 5.

KORTHALS s.n. = 5.

KUNSTLER 6116 = 12.

KRUKOFF 4243 = 8.

LAMBACH 1232 = 6.

LAMBAH 2720 = 8.

LEDERMANN 8137 = 15; 9795 = 15; 9818 = 15; 9829 = 15; 10851 = 15; 11534 = 15.

LONG 3047 = 12.

LÖRZING 640 = 4; 5131 = 6; 5714 = 7; 6322 = 7; 6387 = 7; 8960 = 6; 10058 = 6.

MAINGAY 705 = 12; 706 = 15; 707 = 12; 708 = 8.

MAJID PEON 11622 = 8.

MAT 6020 = 1.

MOUSSET 264 = 4; 1023 = 4; 1075 = 9.

NAGEL 226 = 9.

NATIVE COLLECTOR 49 = cfr. p. 288.

NOERKAS (Exp. VAN VUUREN) 287 = 1.

OMAR 00054 = 13; 8538 = 8.

RAMOS 1451 = 15.

REINWARDT s.n. = 5.

RIDLEY s.n. = 8; 4578 = 8; 4941 = 14; 5082 = 15; 6020 = 1; 6775 = 1; 10675 = 5; 11095 = 8; 13223 = 15.

RIEDEL s.n. = cfr. p. 288.

ROBINSON & KLOSS 19 = 5.

RUTTEN 1831 = 8; 1832 = 15.

SAPIIN 163 = 5.

SCORTECHINI s.n. = 1; 1963 = 15.

SOW & TACHIOU 16425 = 14; 16446 = 8; 16857 = 6.

STRUGNELL 12487 = 15.

SYMINGTON 21051 = 8; 24688 = 6.

TEYSMANN s.n. = 1 (3 ×), 4; 2745 H. B. = 4; 4251 H. B. = 1; 4473 H. B. = 1; 6664 = 15; 6717 = 15; 8957 = 4; 11849 = 1; 11894 = 1; 12117 = 1; 12436 = 1; 13832 = 1.

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VAN STEENIS 909 = 1; 1221 = 15; 1263 = 15.

VINCENT 4671 = 4.

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WOOD 2252 = 15.
WRAY 2927 = 8; 3302 = 15; 3486 = 8; 3632 = 14.
YATES 2485 = 6.
ZIPPELIUS 197c = 1.
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