ADDITIONAL NOTES ON DILLENIACEAE 1—9

by

R. D. HOOGLAND*)

(Issued May 1st, 1959)

Since the publication of the Revision of the Genus *Dillenia* (Blumea 7, 1952, pp. 1—145) a number of additional collections have come to my notice. As is to be expected, the most interesting ones are from Eastern Malaysia, where the genus has developed a high degree of diversity and where the number of collections is still relatively small.

1. **Dillenia pteropoda** (Miq.) Hoogl. and **D. papyracea** Merr. (l. c. p. 28) (fig. 1)

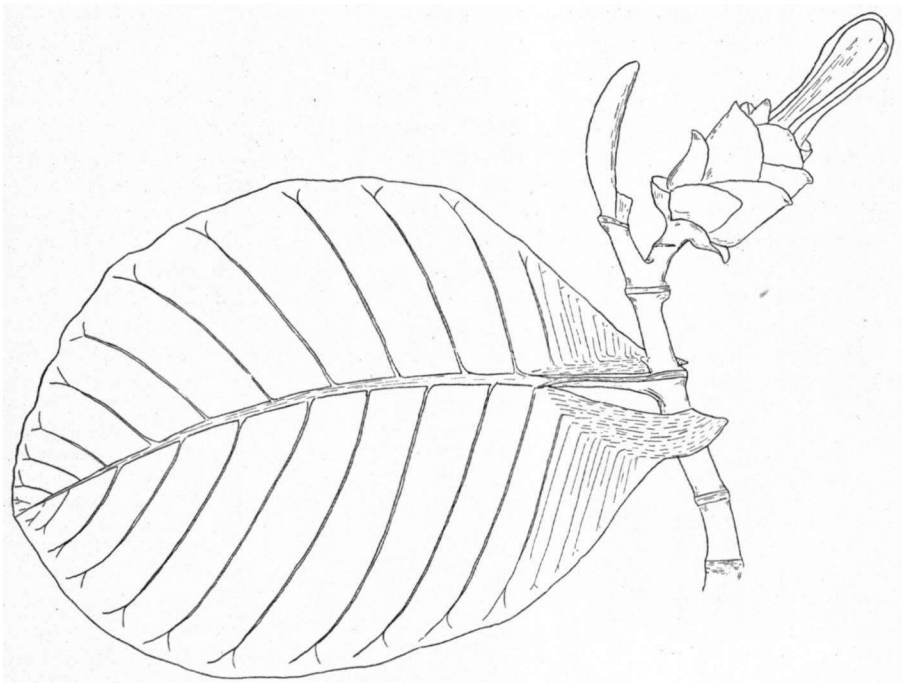

Fig. 1. *Dillenia pteropoda* (Miq.) Hoogl. After *Pleyte 260*. × $^{3}/_{5}$.

*) C.S.I.R.O., Division of Land Research and Regional Survey, Canberra, Australia.

Dillenia pteropoda and *D. papyracea* were considered identical on account of the striking similarity of the leaves. *D. pteropoda* (*Wormia pteropoda* Miq.) was described from Halmaheira on leaves only and though the species was collected in the Moluccas on some occasions since, the flowers were still unknown when I revised the genus. A recent collection with flowers (*Pleyte 260,* Mumar near River Mumar, track Tasoa—Gn. Sembilan, 300 m alt., 25. XI. 1951; L) has come to my notice and shows that two distinct species are involved. It appears reasonable to retain Miquel's name for the species occurring in the Moluccas, though the two species cannot be distinguished with certainty from sterile specimens. The correct name for the Philippine species then is *Dillenia papyracea* Merr. (Philip. J. Sci. Bot. 9, 1915, p. 520), with *D. megalophylla* Merr. (Philip. J. Sci. 14, 1919, p. 421) and *Wormia papyracea* (Merr.) Gilg & Werderm. (in Engl. & Prantl, Nat. Pfl. fam. 2. Aufl. 21, 1925, p. 35) as synonyms. The description I gave of *D. pteropoda* (Miq.) Hoogl. (l. c. p. 28) fits this species.

As the two species are very similar in their vegetative parts, I only give here the description of one flower of Pleyte 260 (cf. fig. 1).

Flowers solitary, terminal, probably never expanding, sepals only slightly diverging in anthesis, petals falling without spreading. Pedicel ca 15—20 mm long, 5 mm thick, thickened to 8 mm at the apex, without bracteoles. *Sepals* 18, increasing in size towards the centre of the flower, the outermost one about orbicular, ca 20 × 20 mm, the innermost one broad-elliptic, ca 50 × 43 mm, all glabrous outside and inside. *Petals* 7, red, narrowly obovate, cucullate, ca 100 × 40 mm, rounded at apex, narrowed towards base (lower 30 mm about 8 mm broad). *Stamens* ca 220, slightly curved in bud, all of approximately the same length, 45 mm long; filament 22—30 mm long, 0.6—0.8 mm broad; anthers 0.8—1.2 mm broad. *Carpels* 10, arranged around a narrow conical receptacle, slightly spirally twisted, lanceolate-oblong, ca 17 × 6 mm, glabrous, each with ca 15—20 ovules; styles parallel, 23 mm long, cylindric, 1.3 mm thick at the base, channelled above.

Both species will be identified with my key (l. c. p. 18) as *D. pteropoda.* They can be separated as follows:

Sepals ∞. Flowers not fully opening, the petals coherent in anthesis, cucullate, ca 10 cm long, red . . . . . **D. pteropoda**

Sepals 5. Flowers fully opening, the petals spreading, flat, ca 5 cm long, white **D. papyracea**

D. pteropoda is most distinctly characterised by the polymerous calyx (also found in *D. reifferscheidia* and *D. marsupialis* from the Philippines, which species have a different type of androecium) and possibly corolla (7 petals in the only flower examined). The latter character has not been found in any previously known species of *Dillenia* and it will be interesting to study more flowers as the one studied may have been incomplete. The corolla is not spreading in anthesis but falls off as a whole, a character previously not found West of New Guinea.

The species was recently also collected on one of the islands off the West coast of New Guinea: *Koster BW 1409,* Salawati (L).

2. Dillenia ovalifolia Hoogl. (l. c. p. 33)

Our knowledge of this species has been supplemented by three collections from Waigheo and Sorong, collected by Dr. P. van Royen (in L). *Van Royen 3409* from Mlasoen Hill E of Sorong is intermediate between var. *ovalifolia* and var. *sericea* Hoogl. in having the sericeous indumentum only on young branches, lower side of petiole and petiolar wings, basal part of midrib and lower nerves, and lower part of pedicel; the upper part of the pedicel and the sepals are practically glabrous. It does not appear possible to maintain the two varieties as sharply distinct taxa.

Van Royen 5240 and *5515* were both collected in Waigheo Island, NW of the Vogelkop peninsula. Herewith the occurrence of two species in Waigheo has been established, the other species being *D. alata* (DC.) Martelli described from Waigheo by Gaudichaud as *Wormia apetala.* The two species are quite similar in leaf-shape and particularly in the form and structure of the petiolar wing, but there is no doubt that Gaudichaud's specimen represents *D. alata* and not *D. ovalifolia. D. alata* was apparently not collected by Van Royen.

According to Van Royen, the petals are pink (*3409*), pinkish red (*5240*) or red (*5515*), whereas sofar only white petals were recorded. A similar variation is found in *D. reifferscheidia* where the rose-red form was distinguished as var. *rosea* Elm.

3. Dillenia montana Diels (l. c. p. 37)

This species, previously only known from two incomplete collections (*NGF 1026, 3380*) and the type (which I did not see) has recently been re-collected in some localities in the Central Highlands (Western Highlands Distr.) of New Guinea: *Hoogland & Pullen 6194 & 6265,* Komun-Pin Divide E of Korn, and *Robbins 516,* Kubor Ranges above Kuli. I studied six flowers and fruits of *H. & P. 6265,* preserved in alcohol, and found the following structure of the flower:

Sepals 5 (5 ×) or 7 (1 ×), in young flowers (buds) gradually diminishing in size from outer to inner; at time of flowering outer 3 about same size (33 mm high, 24 mm wide; = 45 mm long, 40 mm broad, measured on the outside along the curve), inner 2 smaller (29 by 21, resp. 39 by 41 mm); in fruit third sepal largest (38 by 32, resp. 54 by 51 mm), the outer (33 by 30, resp. 46 by 46 mm) and inner (35 by 27, resp. 50 by 55 mm) ones smaller. One nearly mature fruiting specimen had 7 sepals, of which no. 5 was distinctly the largest being 45 by 33 (resp. 62 by 58) mm.

There are 5 (2 ×) or 6 (2 ×) petals, ca 36 by 32 mm (measured along the curve), easily distinguished from the sepals by the much thinner (ca 2 mm thick) base (against 4—7 mm in the sepals). The petals appear to fall off at some stage of the flowering, though I could not find any petals under the trees as one can under similar species such as e. g. *D. papuana* and *D. schlechteri.*

The ca 110 stamens are ca 18 mm long, including 7 mm long filament, at the time of flowering; the anthers are ca 1.4 mm wide with the connective hardly exceeding the anthercells.

There are 9 (3 ×), 10 (2 ×) or 11 (1 ×) carpels, ca 14 mm long, 3 mm radially, and 2.5 mm wide at the time of flowering, glabrous, each with 2 rows of 6—7 ovules; the style is ca 11 mm long and recurved near the middle. In the fruiting stage the carpels are enlarged to 30 × 8 × 9 mm, with 1—3 seeds developed in each carpel, the styles are not only curved but also twisted. The seeds are ca 5 × 5 mm, enclosed by a 7 mm long fleshy aril with a split on one side and a slight opening at the apex.

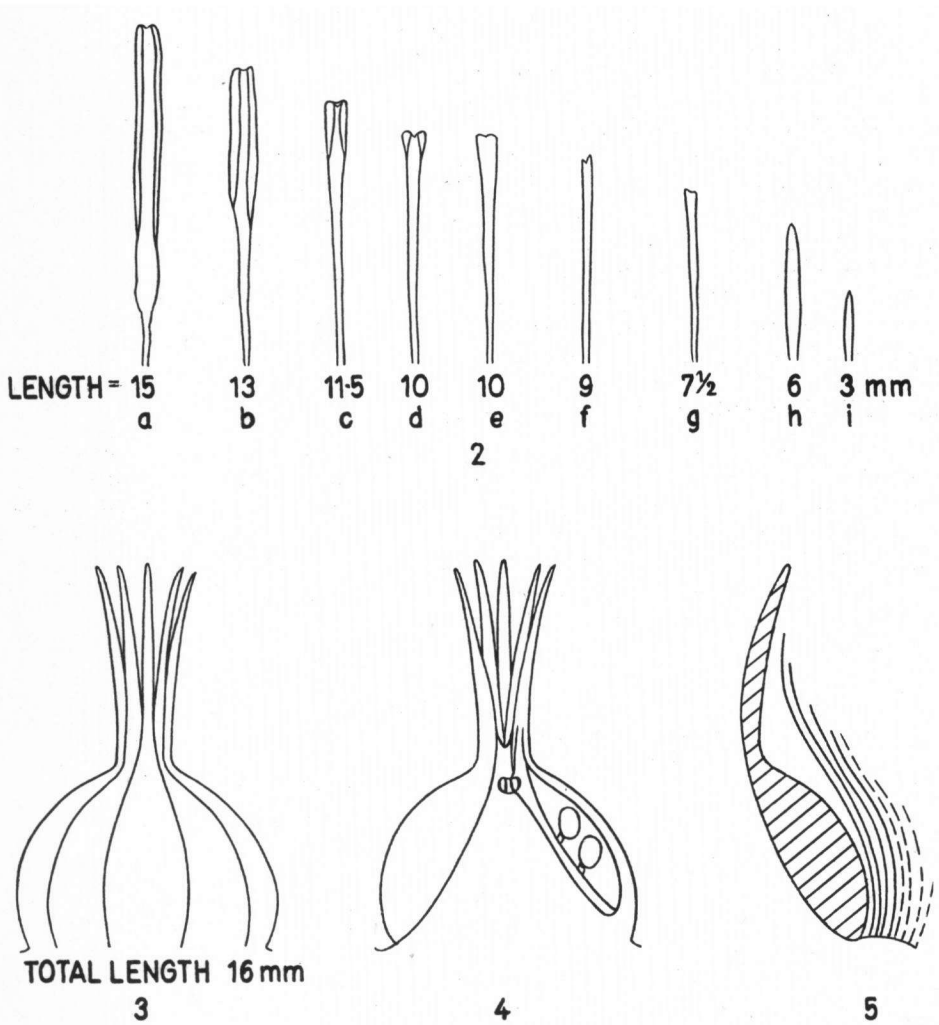

Fig. 2—5. *Dillenia nalagi* Hoogl. 2 a—d, stamens; e—i, staminodes; left to right = from centre of flower outward — 3. gynoecium, view from outside — 4. id., longitudinal medial section — 5. schematic representation of the structure and relation of gynoecium and androecium; shaded = gynoecium, full lines = stamens, broken lines = staminodes.

4. Dillenia nalagi Hoogl. *sp. nov.* (fig. 2—6)

Type: *Hoogland 3411*, near Devatutu, in regrowth; fairly common; alt. ca 15 m; fl. + fr. 22. VII. 1953 (holotype in CANB, isotypes in A, BM, BO, BRI, K, L, LAE, US). Paratypes: *Hoogland & Taylor 3438*, ca 1 km inland of Iwaia, Robinson Bay, dominant tree in juvenile rainforest on a ridge; very common; alt. ca 75 m; fl. + fr. 24. VII. 1953; *Hoogland & Womersley 3625*, along the Opi River near Patikiari, on river-bank and in rainforest on well-drained soil; common subcanopy tree; alt. ca 30 m; fl. + fr. 14. VIII. 1953.

Descriptio typi: *Rami* novelli dense sericeo-hirsuti; cicatrices amplexicaules. *Folia* ovata vel elliptico-oblonga, ca 24—80 × 15—30 cm, ca 18—32-nervata, apice rotundata vel retusa, basi obtusa, margine undulata; supra lucida, glabra, subtus breviter sericeo-hirsuta, glabrescentia. Petiolus ca 10—25 cm longus, alatus alis amplexicaulibus, caducis, lineari-oblongis, supra glabris, subtus sericeo-hirsutis. *Inflorescentiae* terminales, mox laterales et oppositifoliae, biflorae, usque ad 14 cm longae; flos terminalis bracteatus bractea spathulata, ca 35 × 17 mm, caduca, bracteolo uno lanceolato, ca 20 × 8 mm, caduco. *Pedicellus* ca 15—25 mm longus, dense sericeo-hirsutus. *Sepala* 5, ovata, 2 exteriora ca 45 × 35 mm, 2 interiora ca 35 × 28 mm, intus glabra, extus dense breviter sericeo-hirsuta, areis marginalibus in alabastro obtectis glabris, marginibus breviter ciliatis. *Petala* 5, obovata, cucullata, ca 35 × 18 mm, basi ca 7 mm lata, apice rotundata. *Staminodia* ca 365, exteriora ca 3 mm longa, apice acuta, interiora ca 10 mm longa, apice retusa vel bifurcata. *Stamina* ca 325, exteriora ca 10 mm longa, antheris ca 1 mm longis, interiora ca 15 mm longa, antheris usque ad 12 mm longis, apice bifurcata. *Carpella* 10—11, glabra, oblonga, ca 8 × 3½ mm, 6—8-ovulata, stylis subparallelibus ca 9 mm longis. *Fructus* dehiscens; sepala persistentia usque ad ca 65 × 40 mm; carpella ca 35 mm longa, 2 × 17 mm lata, 1—2-seminata. Semina ovata, applanata, ca 6 × 4½ × 3 mm, arillata arillo ca 7—8 mm longo.

Large evergreen *trees*, up to ca 30 m high, 60 cm diam., with short rather straight bole, often fluted, generally with fairly strong lower branches. Bark dull red-brown, papery-flaky; sapwood pale straw, heartwood reddish. *Branches* sympodial, younger ones ca 10 mm thick, rather densely sericeo-hirsute, glabrescent. Leafscars amplexicaul, for ca ¾ a rather broad single line, slightly bent downward on the leaf-opposed side, for ca ¼ a triangular scar with rounded, downward directed apex. *Leaves* ovate or obovate to elliptic-oblong, ca (18—)30—65(—80) × (10—)18—30 cm, with ca 15—23(—32) nerves on either side; rounded, often slightly retuse at apex, obtuse at base, sharply separated from petiolar wings; margin undulate to (in apical part of leaf) shallowly dentate, nerves curving upward near margin, finally parallel to margin or (in apical part of leaf) ending in apex of teeth, often 2 or 3 strong secondary nerves directed downward ca 1—2 cm from margin, curving upward towards margin, finally parallel to margin or (in upper part of leaf) ending in apex of smaller teeth; glabrous, rather glossy above, sparsely sericeo-hirsute on intervenium, densely so on midrib and nerves, glabrescent beneath. Petiole 10—18(—25) cm, glabrous above, densely sericeo-hirsute beneath, with amplexicaul wings; wings linear-lanceolate, up to ca 18 mm broad, obtuse at apex, glabrous above, densely sericeo-hirsute, subglabrescent beneath, wholly caducous. *Inflorescences* terminal, 2(—3)-flowered racemes, up to ca 15 cm long; axis usually curved backward, densely sericeo-hirsute, ca 7—5 mm thick, the upper flower with a bract; bract spathulate, up to ca 35 × 17 mm, caducous, glabrous above, densely sericeo-hirsute beneath. *Flowers* not expanding, sepals only slightly diverging in anthesis, petals falling off collectively without spreading. Pedicel ca 15—25 mm, ca 4—

6 mm thick, thickened at apex up to ca 8 mm, densely sericeo-hirsute, in upper flower with a single bracteole, in lower flower(s) without bracteole; bracteole linear-lanceolate, ca 20 × 8—30 × 4 mm. *Sepals* 5, ovate, yellow in flower, green in bud, pale orange-brown in fruit, the two outer ones ca 45 × 35 mm, the two inner ones ca 35 × 28 mm (all in fruit up to ca 65 × 40 mm), glabrous inside, densely sericeo-hirsute outside except for in bud covered margins which are glabrous for a width of ca 6 mm, short-ciliate at the margin. *Petals* 5, yellow, obovate, rather thick, cucullate

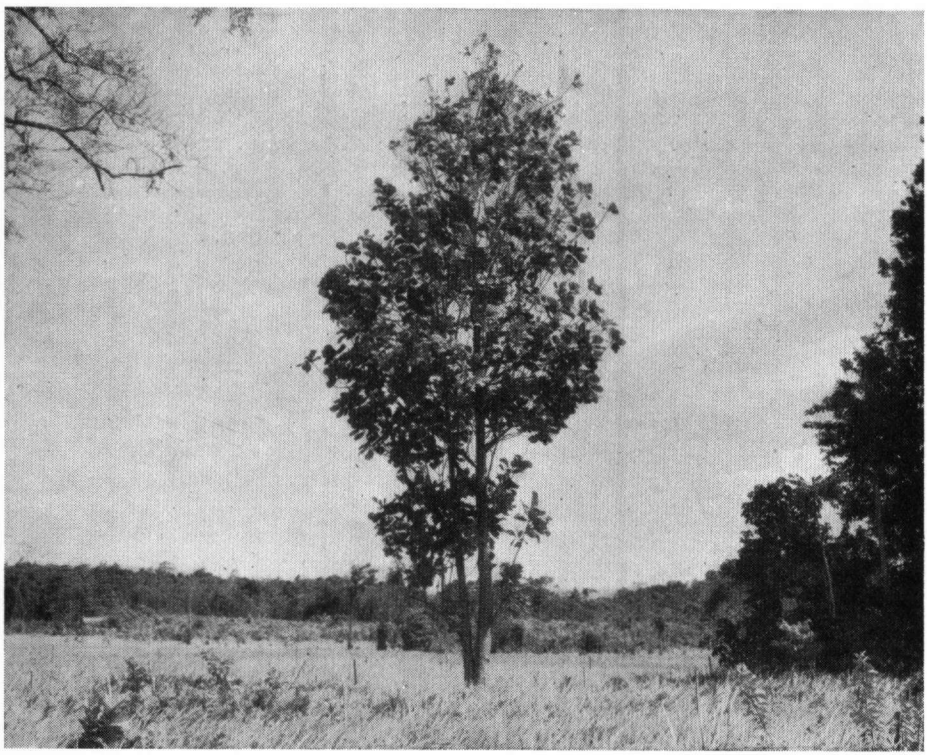

Fig. 6. A tree of *Dillenia nalagi* Hoogl. in grassland near Devatutu (near type locality).

when falling, ca 35—50 × 18—23 mm, rounded at apex, narrowed towards ca 7—10 mm broad base. *Androecium* consisting of staminodes on the outside and stamens on the inside, the length gradually increasing towards the centre; staminodes ca 365, ca 3—10 mm long, linear, the outer ones gradually narrowing into the acute apex, the inner ones broadening towards the retuse or shallowly bifurcate apex; stamens ca 325, ca 10—15 mm long, linear; filament in the outer ones ca 9 mm long, in the inner ones ca 3 mm; anthers ca 2 mm broad, retuse at apex; thecae linear, opening with apical pore. *Carpels* 10—11, arranged around broad conical receptacle, oblong,

ca 8 × 3½ mm, glabrous, each with ca 6—16 ovules; styles slightly spreading, ca 9 mm long, cylindric, ca 0.6 mm thick at base, channelled above. *Pseudocarps* dehiscent; carpels 30—35 mm long, 2 × 15—17 mm broad, each with 0—2 seeds. Seeds obovoid, ca 6 × 4½ × 3 mm, enclosed by rather thick fleshy white, ca 7—8 mm long, aril.

This new species was collected during the survey, carried out by the Land Research and Regional Survey Section (now Division) of C.S.I.R.O. in the Buna-Kokoda area, Northern District, Papua, in 1953. It is common to very common near the three localities cited. The only other lowland species of *Dillenia* found in this area, *D. quercifolia* (Lane-Poole) Hoogl. is more widespread, but less prominent in all its localities (*Hoogland & Womersley 3273* and *3286*, and *Hoogland 3842*). In the field the two species are easily distinguished, *D. nalagi* having a much paler bark (deep red-brown in *D. quercifolia*), larger leaves and flowers, and usually a different habit. *D. quercifolia* is a wellshaped tree (up to ca 40 m high) with long straight bole (up to ca 30 m long). The third species in the area, *D. schlechteri* Diels (*Hoogland 4011*) occurs only in the main mountain-range above ca 1200 m alt. and resembles *D. quercifolia* in its habit, barkcolour, leaves, and flowers.

The native name "nalagi", given to the species, was noted with the first two collections cited, given by local natives. For the third collection the name "dara" was noted, given by a native from Mumuni; in this village this is the common name for *D. quercifolia*, the only species of the genus represented in its vicinity.

The description of the floral parts was made after alcohol-material collected with the type.

The affinities of the new species are with *D. biflora* (A. Gray) Dur. & Jacks. from Fiji and the New Hebrides. It is distinguished from the latter by having its petiolar wings sharply separated from the blade, larger flowers, a larger number of carpels, and a much wider range in the length of the stamens and staminodes.

5. **Dillenia quercifolia** (Lane-Poole) Hoogl. **in the D'Entrecasteaux Islands**

The genus *Dillenia* was so far not recorded from the islands to the South-East of New Guinea. *D. quercifolia* (Lane-Poole) Hoogl., known from the Northern and Milne Bay Districts, was recently collected in Fergusson Island, a locality fitting well into its apparently limited distribution.

NEW GUINEA: D'Entrecasteaux Islands, Fergusson Island, between Niubuwo and Fagululu, *Brass 27307*, common and conspicuous in rain forest, 100 m alt., fl. 25. VI. 1956 (L).

Another species was found in the Louisiade Archipelago and appears to be new to science:

6. **Dillenia insularum** Hoogl. *sp. nov.* (fig. 7)

Type: *Brass 27730*, Sudest Isl., Joe Landing; common in relic primary rain forest of gullies; 100 m alt.; fr. 17. VIII. 1956 (holotype in L). Paratype: *Brass 27528*, Misima Isl., Mt. Sisa, north slopes; frequent in forest; 350 m alt.; fr. 27. VII. 1956 (L).

Descriptio typi: *Rami* novelli sparsim strigoso-villosi; cicatrices amplexicaules. *Folia* elliptico-oblonga, 10—25 × 5.5—15 cm, 9—12-nervata, apice rotundata, basi obtusa, margine subundulata. Petiolus 3—7 cm, alatus alis anguste lanceolatis, amplexicaulibus, caducis, apice minima parte persistenti. *Flores* solitarii, terminales. Alabastra subglobosa, ca 2 cm diam., pedicello 25—45 mm. Sepala 5, ovalia ad orbicularia, 25—30 × 20—30 mm, intus glabra, extus sericea, margine sparsim ciliata. Petala non visa. Staminodia ca 60, linearia, 2—5 mm longa, exteriora; stamina ca 260, subconformia, 6—10 mm longa, apice retusa, interiora. Carpella 7—9, elliptica, ca 10 × 6 mm, glabra, 6—8-ovulata, stylis subrecurvatis ca 7 mm longis. *Pseudocarpium* dehiscens, sepalis ad 40 × 22 mm, carpellis 20 × 16 mm, 1—2-seminatis, seminibus obovoideis 4.5 × 2.5 mm, arillo membranaceo 5.5 mm longo.

Evergreen *trees* up to ca 20 m high, 30 cm diam. Bark dark brown or mottled brownish-grey, somewhat scaly. Branches sympodial, younger ones 3—5 mm thick, sparsely short-hirsute, glabrescent, or glabrous. Leaf-scars amplexicaul, for about ½ a thin single line, for the other ½ triangular with rounded, downward directed apex and slightly emarginate upper margin, with ca 16 leaf-traces spread over scar except 1 mm broad marginal part. *Leaves* elliptic-oblong or elliptic, 10—25 × 5.5—15 cm, with 10—13 nerves on either side; rounded at apex, obtuse to rounded at base, sharply separated from petiolar wings; margin slightly undulate; sparsely appressed-villose on intervenium, sparsely villose on nerves and midrib, early glabrescent below; glabrous above. Petiole 3—7 cm, with amplexicaul wings; wings narrow-lanceolate to linear, 3—5 mm broad, glabrous above, sparsely villose, early glabrescent beneath, wholly caducous or (mostly) leaving a pair of small auricles at the base of the blade. *Flowers* solitary, terminal; just after flowering a globular bud, ca 2—2.5 cm diam. Pedicel 2.5—7.5 cm long, 2 mm thick, thickened to 4 mm at apex, glabrous or nearly so at base to densely shortly sericeous at apex; with a single linear-lanceolate bracteole 10—30 mm long, glabrous above, sparsely villose below. *Sepals* 5, 2 outermost ones suborbicular, ca 30 × 30 mm, 3 innermost ones elliptic, ca 25—30 × 20—23 mm, glabrous inside, densely shortly sericeous with in bud covered margins glabrous outside, very sparsely ciliate at margin. *Petals* unknown. *Stamens* and staminodes slightly curved in bud, the staminodes, ca 60, on the outside, from 2—5 mm long, the outer ones gradually narrowing into the acute apex, the inner ones broadening towards the obtuse to retuse apex; stamens ca 260, from 6—10 mm long, with 4—1 mm long filament and 1.0—1.5 mm broad anthers, retuse at apex; anthercells opening with apical pore continuing downward as a short slit. *Carpels* 7—9, arranged around a fairly broad conical receptacle, elliptical, ca 10 × 6 mm, glabrous, each with 6—8 ovules; styles spreading, filamentous, ca 7 mm long, 1.5 mm thick at base, 0.5 mm near apex, glabrous. *Pseudocarps* dehiscent, sepals enlarged to 3.2—4.0 × 1.8—2.2 mm; carpels ca 20 mm long, 2 × 8 mm broad, 1—2-seeded. Seeds obovoid, ca 4.5 × 2.5 mm, dark brown, enclosed by a 5.5 mm long, membranous aril.

This species, unfortunately available only with flowers past the flowering stage, is clearly related to *D. nalagi* Hoogl. It is at once distinguished by the smaller, solitary flowers and the much smaller number of staminodes.

NGF 2771 from Misima Island, a sterile collection previously referred by me to *D. auriculata* Martelli, probably represents the present species.

7. **Dillenia cyclopensis** Hoogl. *sp. nov.* (fig. 8)

Type: *Brouwer BW 2663*, Cyclops Mountains, common in secondary forest, 500 m alt.; fl. 9. XII. 1955 (holotype in L). Paratypes: *Schram BW 1983*, Cyclops Mountains, in primary forest, 220 m alt.; veg. 16. II. 1956 (L); *Schram BW 1897*, Cyclops Mountains, fairly common in secondary forest, 200 m alt.; fr. 16. II. 1956 (L); *Brouwer BW 2657*, Cyclops Mountains, fairly common in secondary forest, 500 m alt.; veg. 25. XI. 1955 (L);

Fig. 7. *Dillenia insularum* Hoogl. a. habitus, after *Brass 27528*, × ½; b. fruit, after *Brass 27730*, × ½.

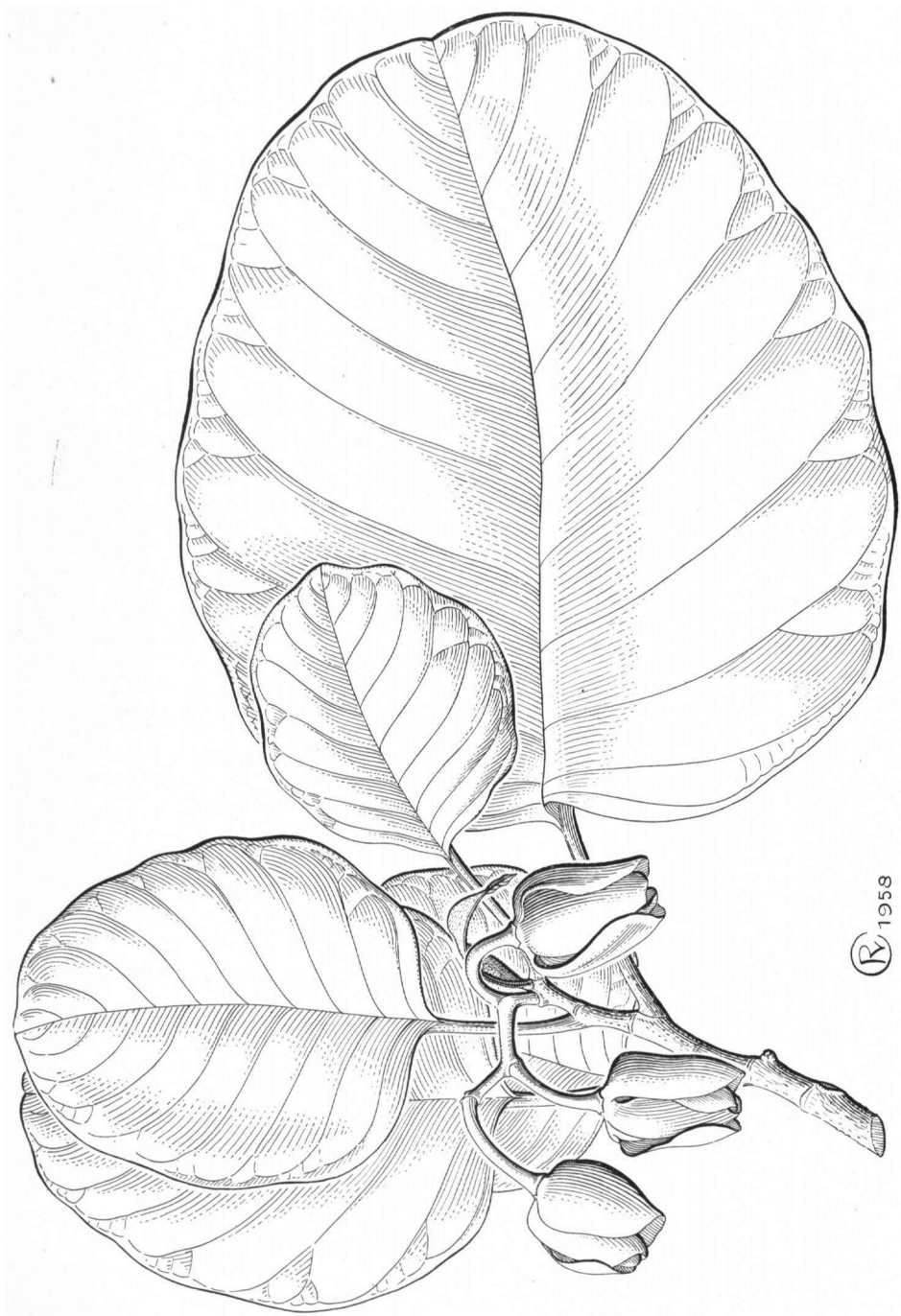

Fig. 8. *Dillenia cyclopensis* Hoogl. Habitus, after type specimen, × 1/3.

Kalkman BW 3626, Hollandia, fairly common in secondary (?) forest, 70 m alt.; fr. 28. XI. 1956 (L).

Descriptio typi: *Rami* novelli sparsim sericeo-hirsuti, glabrescentes, vetustiores dense lenticellati; cicatrices amplexicaules. *Folia* cordato-elliptica, 20—24 × 18—20 cm, 10—12-nervata, apice rotundata vel minime retusa, basi subcordata, margine undulata. Petiolus 5—6 cm, alatus alis lanceolatis, amplexicaulibus, caducis. *Inflorescentia* terminalis, brevis (pedunculus 1 cm, axis 3 cm longus), 3-flora. Alabastra elliptica, ca 4 cm longa, 2.5 cm lata, pedicello 27—35 mm. Sepala 5, 2 exteriora elliptico-oblonga, 55 × 35 mm, 3 interiora elliptica, 45 × 35 mm, intus glabra, extus sericea, margine sparsim ciliata. Petala 5, obovata, cucullata, ca 55 × 18 mm, basi ca 5 mm lata, apice rotundata. Staminodia perpauca (ca 10), subulata, 5—15 mm longa. Stamina ± 360, conformia, 18—20 mm longa, apice retusa, filamento 5—8 mm longo, antheris 1 mm latis. Carpella 11, glabra, lanceolata, ca 17 × 7 mm, ca 24-ovulata, stylis basi erectis, medio recurvatis, ca 20 mm longis.

Evergreen *trees*, up to ca 20 m high, 40 cm diam., with up to 10 m bole. Bark dark reddish brown, peeling off in thick to thin flakes. Branches sympodial, younger ones 3—8 mm thick, sparsely short-hirsute, glabrescent, older ones with numerous longitudinally stretched lenticels. Leaf-scars amplexicaul, for about $^2/_3$ a rather broad single line with on the leaf-opposed side a V-shaped downward bend, 2—3 mm deep, for the other $^1/_3$ triangular with rounded downward directed apex. *Leaves* cordate-elliptic or elliptic to ovate, 20—45 × 16—35 cm, with 10—15 nerves on either side; rounded to slightly retuse at apex, slightly cordiform or rounded to obtuse at base, sharply separated from the petiolar wings; margin undulate to slightly dentate, the nerves and 1—2 secondary nerves directed downward from the main nerves near the margin ending in the apex of the teeth or 2—3 mm from the undulate margin; glabrous on both sides. Petiole 5—10 cm, with amplexicaul wings; wings oblong, up to 25 mm broad, glabrous above, sparsely short-hirsute, glabrescent, or glabrous below; wholly caducous. *Inflorescences* terminal, 3-flowered racemes, up to 6 cm long, with tortuous axis; axis sparsely short-hirsute, ca 6—2 mm thick, without bracts. *Flowers* not expanding, sepals only slightly diverging in anthesis, petals falling off collectively without spreading. Pedicel ca 25—40 mm, ca 2—4 mm thick, thickened at apex up to ca 6 mm, short-hirsute, without bracteoles. *Sepals* 5, the 2 outer ones elliptic-oblong, ca 55 × 35 mm, the 3 inner ones elliptic, ca 45 × 35 mm (in fruit all ca 55 × 35 mm), glabrous inside, short-hirsute outside except for in bud covered margins which are glabrous for a width of ca 5 mm, sparsely short-ciliate at the margin. *Petals* 5, obovate, cucullate when falling, ca 55 × 18 mm, rounded at the apex, narrowed towards ca 5 mm broad base. *Stamens* ca 360, slightly curved, all of approximately the same length, 18—20 mm long; filament 5—8 mm long, 0.4—0.8 mm broad; anther ca 1 mm broad, retuse at apex; thecae linear, opening with apical pore; a few (ca 10) staminodes on the outside, subulate, 5—15 mm long. *Carpels* 8—11, arranged around a fairly narrow conical receptacle, lanceolate, ca 17 × 7 mm, glabrous, each with ca 24 ovules; styles erect, slightly spreading at the base, recurved at about the middle, ca 20 mm long, cylindric, 0.8 mm thick at base, channelled above. *Pseudocarps* dehiscent; carpels 28 × 16 mm; seeds not seen.

This new species is most closely related to *D. papuana* Martelli, *D. quercifolia* (Lane-Poole) Hoogl., and *D. schlechteri* Diels, having in common with these species the structure of the androecium, the non-spread-

ing petals, and the tortuous axis of the inflorescence. From *D. papuana* it is distinguished by the short-hirsute indumentum on the outside of the sepals (which are glabrous in *D. papuana*) and the absence of the acumen on the anthers. From *D. schlechteri* and *D. quercifolia* it is immediately distinguished by the much larger flowers; the leaves are generally also larger, the number of nerves is intermediate between the two species.

8. Delima sarmentosa L.

Dr. R. C. Bakhuizen van den Brink pointed out to me that the binomial *Delima sarmentosa* was validly published by Linné as early as 1754 in Genera Plantarum ed. V on an unnumbered page with the heading "SPECIEBUS PLANTARUM. Adde." immediately following the Index. This publication of the binomial, valid through its reference to "*DELIMA. Fl. zeyl.* 205. *Amoen. acad.* I. p. 403" where descriptions of the singhalese species are found, is not entered in the Index Kewensis and was therefore overlooked in my study of the asiatic species of *Tetracera* for Flora Malesiana (cf. Reinwardtia 2, 1953, pp. 185—224).

I accepted Systema ed. X, 1759, p. 1076 as the valid publication of the binomial and here Linné gave hardly any description and no references, thus leaving the way open to accept the specimen in the Linnean Herbarium as the type. However, this specimen is not the singhalese species but the mainly Malaysian *Tetracera scandens* (L.) Merr.

In view of this I cannot maintain for the species concerned the name I used, i. e. *Tetracera asiatica* (Lour.) Hoogl. The correct names for this species and its subspecies are as follows:

Tetracera sarmentosa (L.) Vahl, Symb. Bot. 3, 1794, p. 70.

Basonym: *Delima sarmentosa* L., Gen. Pl. ed. V, 1754, pag. ult. (*sphalm.* "*Sparmentosa*"); *non* L., Syst. ed. X, 1759, p. 1076, *interpr.* Hoogl. 1951, 1953.
Synonyms: *Tetracera asiatica* (Lour.) Hoogl., Fl. Mal. I, 4, 1951, p. 143; Hoogl., Reinwardtia 2, 1953, p. 194; and as cited *ll. cc.*

Tetracera sarmentosa (L.) Vahl ssp. **sarmentosa**

Synonyms: *Tetracera asiatica* (Lour.) Hoogl. ssp. *zeylanica* Hoogl., Reinwardtia 2, 1953, p. 196; and as cited *l. c.*

Tetracera sarmentosa (L.) Vahl ssp. **asiatica** (Lour.) Hoogl. *comb. nov.*

Basonym: *Seguieria asiatica* Lour., Fl. Cochinch., 1790, p. 341.
Synonyms: *Tetracera asiatica* (Lour.) Hoogl. ssp. *asiatica*; Hoogl., Reinwardtia 2, 1953, p. 195; and as cited *l. c.*

Tetracera sarmentosa (L.) Vahl ssp. **andamanica** (Hoogl.) Hoogl. *comb. nov.*

Basonym: *Tetracera asiatica* (Lour.) Hoogl. ssp. *andamanica* Hoogl., Fl. Mal. I, 4, 1951, p. 144, *cum descr. angl.*; Hoogl., Reinwardtia 2, 1953, p. 195.
Synonyms: as cited *l. c.* (1953).

Tetracera sarmentosa (L.) Vahl ssp. **sumatrana** (Hoogl.) Hoogl. *comb. nov.*

Basonym: *Tetracera asiatica* (Lour.) Hoogl. ssp. *sumatrana* Hoogl., Fl. Mal. I, 4, 1951, p. 144; Hoogl., Reinwardtia 2, 1953, p. 195.
Synonyms: as cited *ll. cc.*

Delima sarmentosa L. and *Tetracera sarmentosa* (L.) Vahl are to be delated from the synonymy of *Tetracera scandens* (L.) Merr.; the further references are to be read "*Auct., non L.*".

9. Some additional records in Tetracera

Tetracera indica (Christm. & Panz.) Merr., until recently only known from Burma, Siam, Indo-China, the Malay Peninsula, Sumatra, and Java (Hoogl., Fl. Mal. I, 4, 1951, p. 146; Reinwardtia 2, 1953, p. 205), has been collected in Borneo by Kostermans (*no 10329*): Belajan River near Long Bleh, Central Kutei.

Tetracera akara (Burm. f.) Merr., until recently only known from S. India, Ceylon, Indochina, the Malay Peninsula, Sumatra, W. Java, Borneo, and Celebes (*l. c.* 1951, p. 146; 1953, p. 208) has been collected in the Philippines by Santos (*no 4231* and *4289*): Distr. of Lamitan, Basilan (SW of Mindanao).