

REINWARDTIA

BEING A CONTINUATION OF THE
BULLETIN DU JARDIN BOTANIQUE DE BUITENZORG
(*BULLETIN OF THE BOTANIC GARDENS, BUITENZORG*)

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Published by
HERBARIUM BOGORIENSE
KEBUN RAYA INDONESIA

5. *Dehaasia titanophylla* (Airy Shaw) Kostermans, comb. nov.

Beilschmiedia titanophylla Airy Shaw (basonym) in Kew Bull. 1939: 534, was described after the specimen: *Native coll. 2438* from Borneo. A fragment of this, conserved in the Singapore herbarium, could be examined. Although the fruit are still unknown, the close relationship to *D. longipedicellata* (Ridley) Kosterm. makes it advisable to relegate this species to *Dehaasia*.

ROSACEAE

PARINARI Aubl.

Polyalthia? pulchrinervia Boerlage

This species was described by Boerlage (Catal. Hort. Bogor., fasc. 1: 20. 1899 and in Icones Bogor., fasc. 2: 106. 1899) after a sterile specimen, collected from a tree, numbered IV G. 42 in the Bogor Botanical Gardens.

In the Bogor Herbarium there is one sheet labelled: *Polyalthia? pulchrinervia* Boerlage (not in Boerlage's handwriting); no date of collecting is indicated; the specimen was from the tree IV G. 42.

I consider this the type specimen, as it fits with Boerlage's description. Duplicates of this have been sent to the Arnold Arboretum, the Kew, the Leiden and the Singapore herbaria.

In 1915 additional flowering and fruiting material was collected from the same numbered tree, which makes it clear that it represents *Parinari corymbosa* Miq. Of the 1915 collections duplicates have been forwarded to the Arnold Arboretum, the Kew and the Leiden herbaria.

STERCULIACEAE

STERCULIA

Sterculia perryae Kostermans, nom. nov.

Sterculia clemensiae Merrill & Perry in J. Arnold Arb. 30: 40. 1949 is, because of its earlier homonym *Sterculia clemensiae* Ridley (in Kew Bull. 1933: 488), renamed here: *Sterculia perryae* Kostermans.

NOTES ON MALAYSIAN MALVACEAE—I *

J. VAN BORSSUM WAALKES **

SUMMARY

Twelve new species of *Hibiscus* sect. *Azanza* DC. from the Malaysian region are described and illustrated. The genus *Wilhelminia* Hochr. is reduced to a synonym of this section, which requires the new combination *Hibiscus sciadiolepidns* (Hochr.) Borss. for *W. sciadiolepida* Hochr., the only species of the genus.

For some years past I have been engaged in studying the Malvaceae of the Malaysian area. It is intended to publish the new facts and conclusions in a series of papers under the title indicated above, and eventually a concise treatment of the family will be included in the "Flora Malesiana." The Malvaceae will be treated in a strict sense, i.e. the Bombacaceae, which is considered a separate family, will be excluded. The Bombacaceae are, it is true, very closely allied to the Malvaceae, but nevertheless it had better be kept apart, both from a theoretical and from a practical point of view. I hope to discuss the delimitation of the two families in a later publication.

A critical revision of the family in the Malaysian area has not so far been carried out, although numerous facts and conclusions have been recorded by various botanists, of whom the following may be mentioned here: Masters, who gave a concise but accurate elaboration of the Indian species in Hooker's "Flora of British India," Gagnepain on Malvaceae in French Indo-China, Merrill especially on Philippine Malvaceae, F. von Müller, Schumann, Lauterbach, and Ulbrich on New Guinea species, E. G. Baker, Garcke, Gierke, and last but not least Hochreutiner, who has an all-round knowledge of the Malvaceae.

For the present paper I have studied specimens from Herbarium Bogoriense (BO),¹ and the Forestry Research Institute at Bogor (BZF), as well as from the herbaria of Singapore (SING), Florence (FI), Lae (LAE), Brisbane (BRI), Arnold Arboretum (A) and the Gray Herbarium

* This article was issued separately in June 1956.

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¹ The abbreviations are according to Lanjouw [*in* Regn. veg. 2 (Ed. 2) : 131-144. 1954].

(GH). During European leave, collections in the Rijksherbarium at Leyden (L), the Kew Herbarium (K), the British Museum (Natural History) (BM) were consulted. I am very grateful to the Directors and Members of the staff of these Institutes for the opportunity to study the collections under their care.



FIG. 1. Map illustrating the localities of the species described; the numbers are those given to the species in the text.

NEW SPECIES OF HIBISCUS SECTION AZANZA DC.

In the following pages I give a key of all Malaysian species of *Hibiscus* section *Azanza* DC; the new species described are numbered. *Hibiscus papuamis* Schum. & Lauterb., *H. calodendron* Ulbr. and *H. schlechteri* Lauterb. are omitted: these amount to nomina dubia since the type specimens in Berlin were destroyed and apparently no duplicates exist in other herbaria.

KEY TO THE MALAYSIAN SPECIES OF HIBISCUS SECT. AZANZA DC.

1. Ovary and capsule 10-celled as a result of 5 true and 5 false dissepiments.
2. Epicalyx segments 8—11, connate with each other, much shorter than the calyx, forming a whorl of short, appressed to slightly patent dents. Pantropic species.
 - H. tiliaeeus* L. emend. Hochr.
2. Epicalyx segments 4—9, mostly free, sometimes shortly connate with each other, somewhat longer than the calyx or about as long as the calyx, rarely shorter than the calyx, in the latter case 4—6 in number. Species from New Guinea and surrounding islands.
 3. Epicalyx segments 9. 1. *H. aruensis*
 3. Epicalyx segments 4—6.
 4. Inside at base of corolla a cushion consisting- of long- woolly hairs; stigmas capitellate.

5. Indumentum consisting mainly of minute stellate hairs; flowers fairly large; epicalyx deeply 6-partite, spreading more or less stellately.
 - 2. *H. pleijtei*
5. Indumentum consisting mainly of scales; flowers small; epicalyx 5-fide, cupulate to campanulate. 3. *H. pulvinulifer*
4. Corolla without such a cushion. Stigmas as far as flowers present discoid.
6. Indumentum consisting mainly of stellate hairs.
 7. Epicalyx segments widely ovate or orbicular, at base cordate.
 8. Blade more or less orbicular, coarsely stellate hairy; epicalyx segments 4. 4. *H. leeuwenii*
 8. Blade ovate, with minute stellate hairs; epicalyx segments 5—6.
 9. Green parts with scattered stellate hairs to glabrous; calyx about as long as the epicalyx. *H. cfalbertisii* F. Müll.
 9. Green parts densely tomentose; calyx about twice as long as the epicalyx. 5. *H. fluminis-idenburgii*
 7. Epicalyx segments lanceolate, at base narrowing gradually, not cordate.
 10. Blade with coarse stellate hairs, not tomentose; epicalyx segments 6. 6. *H. ellipticifolius*
 10. Blade with minute stellate hairs, tomentose; epicalyx segments 5. *H. fluminis-aprilii* Ulbr.
6. Indumentum consisting mainly of scales (fimbriate or not fimbriate).
 11. Epicalyx more or less cupulate, 5-lobate to 5-fide.
 12. Twigs and leaves with scales only; midrib of the leaves without nectary. *H. sciadiolepidus* (Hochr.) Borss.²
 12. Twigs and leaves also with stellate hairs; midrib of the leaves with an elliptical nectary. 7. *H. carrii*
 11. Epicalyx segments free or at base very shortly connate.
 13. Blade ovate to elliptical; epicalyx segments 5, about 2 cm long. 8. *H. archboldianus*
 13. Blade orbicular to very widely ovate; epicalyx segments 4 or 6.
 - " 14. Epicalyx segments 6, 1.5—2 cm long. 9. *H. viomersleyanus*
 14. Epicalyx segments 4, 2—2.5 cm long. 10. *H. lepidottis*
1. Ovary and capsule 5-celled, without false dissepiments.
 15. Calyx without scales.
 16. Epicalyx segments 10—14; indumentum with very large stellate hairs. *H. macrophyllus* Roxb. ex Hornem.
 16. Epicalyx segments 7—9; indumentum with small stellate hairs.
 17. Stipules more or less reniform; epicalyx deeply 7—9-partite, much shorter than the calyx. *H. borneensis* Airy Shaw
 17. Stipules ovate to lanceolate; epicalyx 7-fide, a little shorter than the calyx. 11. *H. pseudotiliaceus*
 15. Calyx densely covered with scales.
 18. Epicalyx segments 6—7, free, linear to lanceolate to ovate, almost as long as the calyx. Seeds 2 per cell. *H. decaspermus* Koord. & Valet.

² *Hibiscus sciadiolepidus* (Hochreutiner) Borss., *nov. comb.*; basionym: *Wilhelminia sciadiolepida* Hochreutiner in *Nova Guinea* 14: 162 t. 18. 1914. This species must be classified under *Hibiscus* in my opinion. I hope to discuss this reduction of the genus *Wilhelminia* in a later paper.

18. Epicalyx consisting of a whorl of 7—8, at base connate, triangular dents, much shorter than the calyx.

19. Blade orbicular, angular to slightly lobed. Seeds 6—7 per cell.

H. floccosus Mast.

19. Blade ovate, not lobed. Seeds 2 per cell. 12. *H. teijsmannii*

1. *Hibiscus aruensis* Borss., nov. sp.—Fig. 2

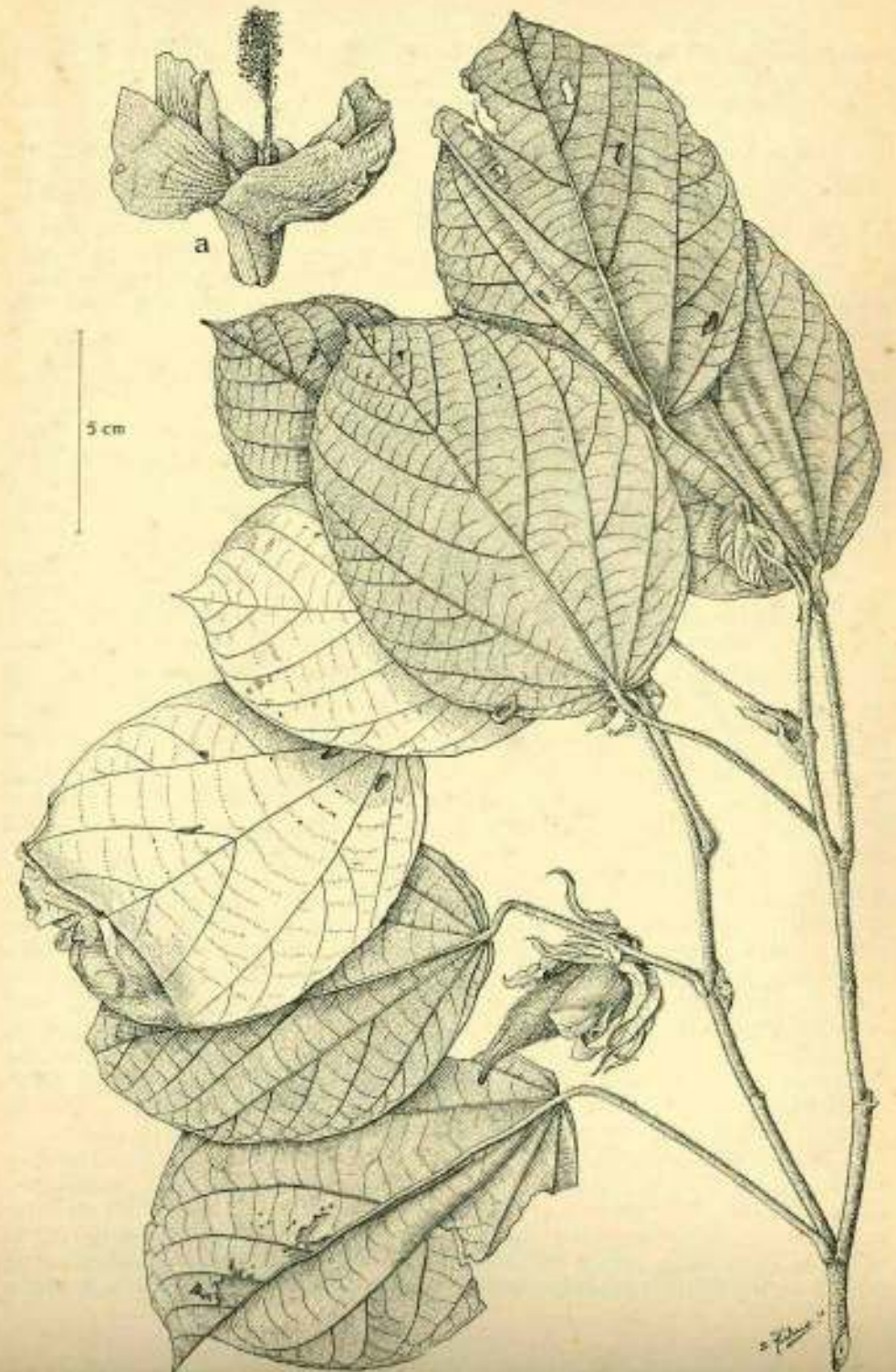
Arbor altior. Ramuli teretes, tomentosi pilis stellatis minutis, pilis quoque stellatis majoribus dispersis et pilis simplicibus longioribus patentibus, denique glabrescentes. Stipulae plerumque appressae, late annexae, ovatae vel triangulares, basi cordatae et auriculatae, apice obtusae vel acutae vel subacuminatae, velutinae pilis stellatis minutis. Petiolus lamina paulo brevior, teres, indumento sicut in ramulis. Lamina coriacea, late elliptica, basi plerumque subcordata, saepe rotundata vel truncata, apice acuta vel breviter cuspidata, margine integra, basi 5—9-nervata; costa validissima, in apicem percurrens, in pagina inferiore paulum supra basin nectario lineari ornata; nervi laterales utrimque 3—5, sicut nervo basales ceteri, erecto-patentes, recti sed prope marginem sursum curvati et in venis ramosi; lamina in pagina superiore pilis stellatis minutis dispersis praecipue in nervis, glabrescens, in pagina inferiore tomentosa pilis stellatis minutis et pilis simplicibus dispersis. Flores solitarii in axillis superioribus. Pedunculus brevis, teres, paulum supra basin articulatus, supra articulum paulo crassior quam infra articulum, indumento sicut in ramulis. Epicalicis segmenta 9, a calice et inter se separata, calice breviora, epicalicem cupulatum vel campanulatum componentia, lanceolata, basi subauriculata, apice acuminata, in sicco prima specie linearia reduplicatione marginis, extus intusque velutina pilis stellatis minutis. Calyx in statu alabastri 5-alatus; calyx per anthesin subcampanulatus, 5-partitus, segmentis lanceolatis vel longe triangularibus acutis vel breviter acuminatis, 5-nervis extus paulum prominentibus in apices segmentorum percurrentibus, extus velutinus pilis stellatis minutis, intus segmentis velutinus pilis stellatis minutis, ceterum glaber. Corolla magna; petala longe obovata, ad basin angustata, apice rotundata, extus praecipue ad basin pilis stellatis multibrachiatis densius vestita, intus ad marginem obtegentem pilis stellatis tenuibus dispersis, et basi pilis stellatis longibrachiatis dense ornata. Columna staminalis petalis circiter aequilonga, in parte superiore stamina gerens, praecipue in parte inferiore pilis stellatis majoribus dispersis. Ovarium conicum, acutum, hirsutum, 10-loculare, multiovulatum; stigma discoidea. Pedunculus post anthesin paulum elongatus et incrassatus; epicalyx non amplificatus; calyx paulum amplificatus. Capsula longe ovoidea, acuminata, 10-locularis, hirsuta pilis simplicibus erectopatentibus nitentibus, inter pilos hirsutos velutina pilis stellatis minutis. Semina numerosa, reniformia, pilis stellatis lanatis ferrugineis dense vestita.

TYPE.—Buwalda 5270 (BO 116805).

Twigs 2—4 mm thick. Stipules 10—12 mm long and 7—10 mm wide. Petiole 3—8 cm long and about 2 mm thick. Blade 6—17 cm long and 4.5—10.5 cm wide; nectary 1.5—2 cm long. Peduncle about 1.5—2.5 long

FIG. 2. *Hibiscus aruensis* Borss.: fruiting branch; a, corolla with staminal column. —

After Buwalda 5270 (BO 140251).



and about 2 mm thick. Epicalyx segments about 2 cm long and 0.5 cm wide. Calyx about 3 cm long and 1.5–2 cm wide; segments about 2 cm long and 7–8 mm wide. Petals 7–8 cm long and 2–2.5 cm wide. Staminal column 6–7 cm long; antheriferous part 1.5–2 cm long; filaments 5–7 mm long; anthers about 0.5 mm across. Ovary about 4 mm high and 3 mm across. Style about 7 cm long; branches about 5 mm long; stigmas about 1 mm across. Capsule 3–4 cm long and 1.5 cm in diameter. Seeds about 2.5 mm long.

SPECIMENS EXAMINED.—MOLUCCAS. Aru Is.: Pulau Wokam, Selibatabata, primary forest, sloping ground, 40 m alt., tree 21 m, trunk 13 m high and 30 cm thick breast high, flowers pink, local name Mala, June 18, 1938, *Buwalda 5270 = Buwalda For. Inst. 380 = 66. 25U1U* (BO 116805 holotype, 116806, 140251, 57106, BZF, GH, L 950.298-391, K, SING; duplicates will be sent to A, BRI, PNH). — NEW GUINEA. Western part: Idenburg R., Bernhard Camp, primary forest, on temporary inundated ground, 50 m alt., tree 20 m, trunk 15 m thick breast high, flowers violet, July 23, 1938, *Meijer Drees 336 = bb. 25688* (BO 58593, BZF, L 950.251-514), 4 km SW of Bernhard Camp, primary rain forest, 850 m alt., tree 22 m, trunk 45 cm in diameter, flowers violet, March 1939, *Brass & Versteegh 13126* (BO 58593, GH, L 950.51-763).

The type material was already recognised as belonging to a new species by S. Hatusima during his stay at Bogor. He named it (*in schedula*) *Hibiscus aruensis*. The species is closely related to *H. d'albertisii* F. Mull. It differs especially in the greater number of epicalyx segments and the nectaries on the midribs of the leaves. The specimens from New Guinea differ from the type material in a somewhat thinner indumentum and in somewhat smaller flowers and fruits.

2. *Hibiscus pleijtei* Borss., *nov. sp.*—Fig. 3

Arbor altior. Ramuli angulares, denique teretes, dense velutini pilis stellatis minutissimis, glabrescentes, denique lenticulis paucis instructi. Stipulae majores, appressae, late annexae, ovatae, apice obtusae vel acutae, pilis stellatis minutis vestitae vel subglabrae. Petiolus lamina multo brevior, teres, apice paulum incrassatus et ibi lenticulis transversis instructus, pilis stellatis minutis singulis, vel glaber. Lamina coriacea, ovata, basi rotundata et vulgo subcordata, apice obtuse cuspidata, margine integra, basi 5-nervata; costa validissima, in apicem percurrans, basi in pagina inferiore nectario lineari ornata; nervi laterales utrimque circa 6, sicut nervi basales ceteri erecto-patentes, ante marginem sursum curvati et in venis ramosi; lamina in utraque pagina subglabra sed nervi in pagina inferiore pilis stellatis minutis singulis. Flores solitarii in axillis superioribus vel parvitate vel abortu bractearum in racemis terminalibus paucifloris. Pedunculi sursum gradatim crassiores, sine articulo, velutini pilis stellatis minutissimis, glabrescentes. Epicalyx a calice separatus, substellaris, 6-partitus, segmentis ovatis vel lanceolatis acutis vel subacuminatis, extus pilis stellatis minutis singulis, intus densius stellate pilosus. Calyx in statu

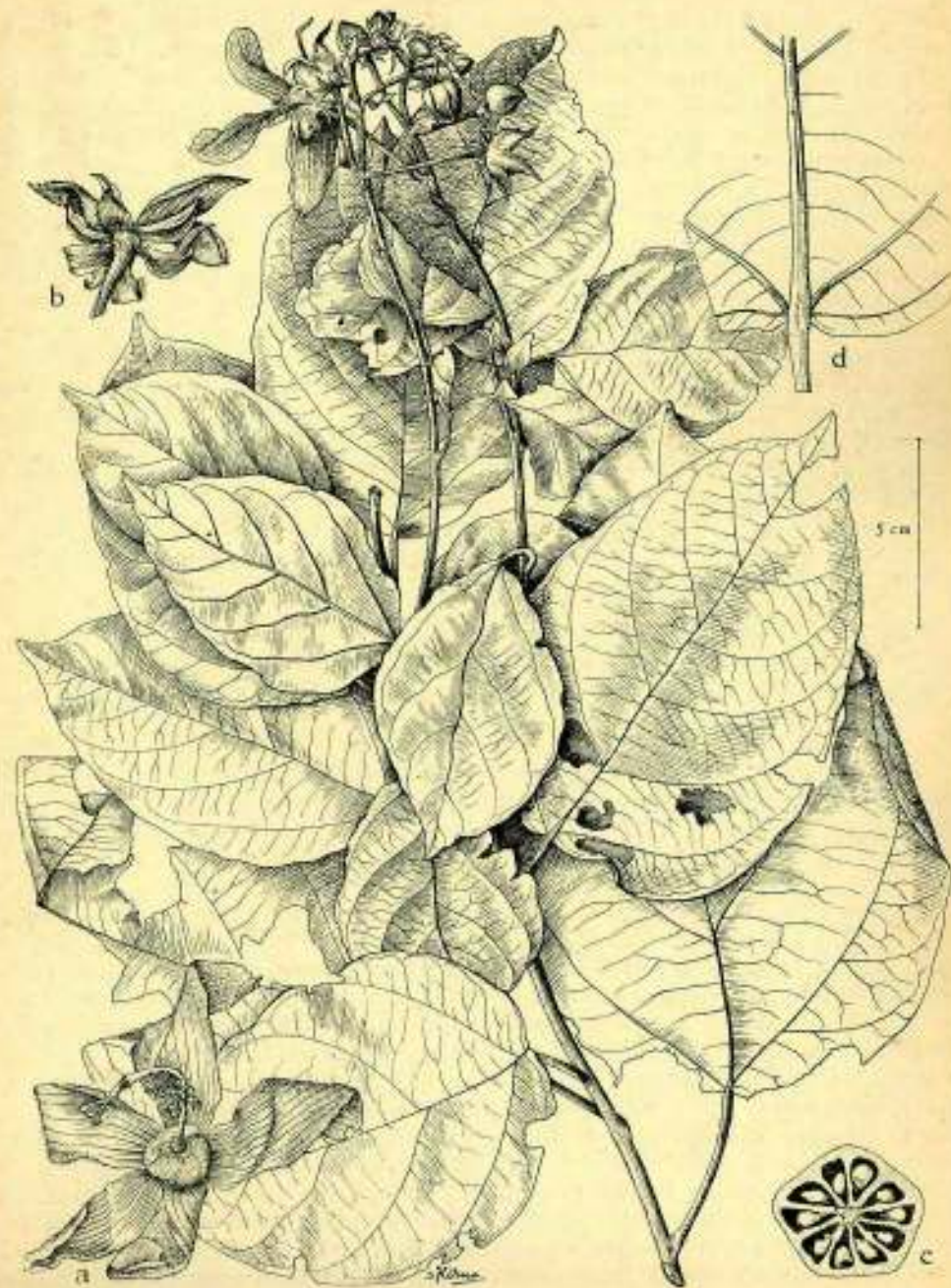


FIG. 3. *Hibiscus pleijtei* Borss.: flowering branch; a, corolla with staminal column (1 X); b, calyx and epicalyx from below (1 x); c, cross-section of ovary (5 x); d, base of blade from below. — After Pleijte 510 (BO 116999).

alabastris 5-alatus; calyx per anthesin campanulatus-stellaris, epicalice longior, 5-partitus, segmentis ovatis acutis reduplicativis, obsolete nervatus, extus squamis fimbriatis minutis densius vestitus, intus in segmentis velutinus pilis stellatis minutis et basi annulo pilis brevibus sericeis ornatus. Petala spathulata, apice rotundata, extus squamis fimbriatis minutis dense vestita, intus basi pulvinulo pilorum lanatorum ornata, ad apicem pilis stellatis minutis tenuibus dense vestita. Columna staminalis petalis brevior, basi pulvinulis petalorum anguste circumdata, subglabra, in parte superiore stamina gerens. Ovarium conicum, 5-angulare, acutum, 10-loculare, minute squamatum, multiovulatum; stigmata capitellata. Capsula ignota.

TYPE.—Pleijte 510 (BO 116999).

Twigs 2—5 mm thick. Stipules 10—12 mm long and 6—5 mm wide. Petiole 1—5 cm long and about 2 mm thick. Blade 7—20 cm long and 4.5—14 cm wide; nectary 5—10 mm above the base of the blade, 4—5 mm long. Peduncle about 2 cm long and 1.5 mm thick. Epicalyx about 1.5 cm in diameter, segments 8—9 mm long and about 4 mm wide. Calyx about 2 cm in diameter, segments 8—10 mm long and about 5 mm wide. Petals 2.5—3 cm long and 0.5—1 cm wide. Staminal column 1.5—2 cm long, antheriferous part 0.5—1 cm long. Ovary about 4 mm long and in diameter. Style about 2 cm long; branches about 3 mm long.

SPECIMENS EXAMINED.—NEW GUINEA. Western part: Kadamak (vicinity of Sorong), open place in forest, 50 m alt., tree 25 m, trunk 30 cm in diameter, flowers red, Aug. 11, 1948, *Pleijte 510* (BO 116999 holotype, 117000; duplicates will be sent to A, BRI, K, L, P, PNH, SING).

This species has the peculiar hair cushions on the petals and the capitellate stigmas in common with the next species, but the epicalyx and the indumentum point to relationship with *H. d'albertisii* F. Mull, and allies.

3. *Hibiscus pulvinulifer* Borss., *nov. sp.*—Fig. 4

Arbor altior. Ramuli angulares, denique teretes, paulum scabri, pilis stellatis et squamis fimbriatis minutis dense vestiti, denique glabrescentes et lenticulosi. Stipulae ignotae. Petiolus lamina multo brevior, teres, pilis stellatis et squamis fimbriatis minutis dense vestitus. Lamina coriacea, late elliptica, basi rotundata vel obtusa, apice obtusa vel acuta, margine integra, basi 3-nervatis; costa validissima, in apicem percurrens, sine nectario; nervi laterales utrimque 4—5, sicut nervi basales ceteri erecto-patentes, ante marginem sursum curvati et in venis ramosi; lamina squamis fimbriatis minutis in pagina superiore paulum, in pagina inferiore dense vestita, et ibi in angulis inter costam et nervos laterales stellate pilosa. Flores in panicula laxa, parvi; paniculae axes teretes, indumento sicut in ramulis; pedunculi in sicco sulcati, sine articulo, pilis stellatis et squamis fimbriatis minutis dense vestiti; bractae absentes. Epicalyx a calice separatus, coriaceus, stellaris, 5-fidus, segmentis triangularibus acutis, extus squamatus, intus glaber. Calyx in statu alabastris 5-costatus; calyx per anthesin



FIG. 4. *Hibiscus pulvinulifer* Borss.: flowering and fruiting branch: a, flower (2 x); b, calyx with ovary (2 x); c, calyx and epicalyx from below (2 X); d, longitudinal section of capsule (2 x); e, cross-section of capsule (2 x). — After Docters van Leeuwen 9280 (BO 117013).

epicalice longior, coriaceus, cupulatus-campanulatus, 5-fidus, segmentis patentibus, ovatis, acutis, obsolete nervatus, extus squamis majoribus integris dense obiectus, intus velutinus pilis stellatis minutis. Petala linearia vel lanceolata, apice acuta vel obtusa, extus squamis magnis fimbriatis dense vestita, intus in marginem et apicem versus pubescentia pilis stellatis longibrachiatis, intus basi pulvinulo pilorum lanatorum ornata. Columna staminalis petalis brevior, basi pulvinulis petalorum anguste circumdata, pro parte inferiore dense stellate pilosa, pro parte superiore stamina gerens. Ovarium conicum, obsolete 5-angulare, squamatum, 10-loculare; stigmata capitellata. Pedunculus post anthesin paulum elongatus; epicalyx et calyx paulum amplificati; calicis segmenta marginibus revoluta. Capsula calice circiter aequilonga, globosa vel obovoidea, breviter rostrata, 5-costata, squamis integris magnis dense obiecta, 10-locularis, loculis 1-seminiferis. Semina reniformia, pilis longis lanatis ferrugineis dense ornata.

TYPE.—Docters van Leeuwen 9280 (BO 117012)

Twigs 2—3.5 mm thick. Petiole 1—25 cm long and 1—1.5 mm thick. Blade 5—10 cm long and 4.5—7.5 cm wide. Peduncle 0.5—1 cm long and about 1 mm thick. Epicalyx 4—5 mm in diameter; segments 1.5—2 mm long and about 1.5 mm wide. Calyx about 8 mm high and 10 mm wide; segments 4—5 mm long and about 3 mm wide. Corolla about 2.5 cm in diameter; petals 1.5—2 cm long and 0.3—0.4 cm wide. Staminal tube about 1 cm long. Ovary 2.5—3 mm high and 2.5—3 mm in diameter. Capsule about 6 mm in diameter. Seeds 1.5—2 mm across.

SPECIMENS EXAMINED.—NEW GUINEA. Western part: Van Rees Mts., Van Gelderen R., primary forest, 100 m alt., tree 25 m, flowers pink, May 1926, *Docters van Leeuwen* 9280 (BO 117012 holotype, 117013, 117014; duplicates will be sent to A, K, L, PNH, SING).

The species attracts attention by its small flowers with hair cushions on the petals (hence the name). The form of the epicalyx and the scaly indumentum indicates a relationship with *H. sciadiolepidus* (Hochr.) Borss. which, however, has much larger flowers, discoid stigmas, and does not possess hair cushions on the petals.

4. *Hibiscus leeuwenii* Borss., *nov. sp.*—Fig. 5

Arbor altior. Ramuli teretes, tomentosi pilis stellatis, scabriusculi, glabrescentes, denique lenticulis minutis dispersis ornati. Stipulae erecto-patentes vel patentis, late annexae, ovatae, apice breviter acuminatae, in pagina superiore velutinae pilis stellatis minutis, in pagina inferiore tomentosae pilis stellatis. Petiolus lamina brevior, teres, densius tomentosus pilis stellatis, paulum scaber. Lamina chartacea, orbicularis, basi cordata, apice obtusa, acuta vel breviter acuminata, margine integra, basi 5—7-nervata; costa validissima, in apicem percurrens, basi in pagina inferiore nectario lineari ornata; nervi laterales utrimque 4—5, sicut nervi basales erecto-patentes, sursum curvati et ante marginem in venis ramosi; lamina

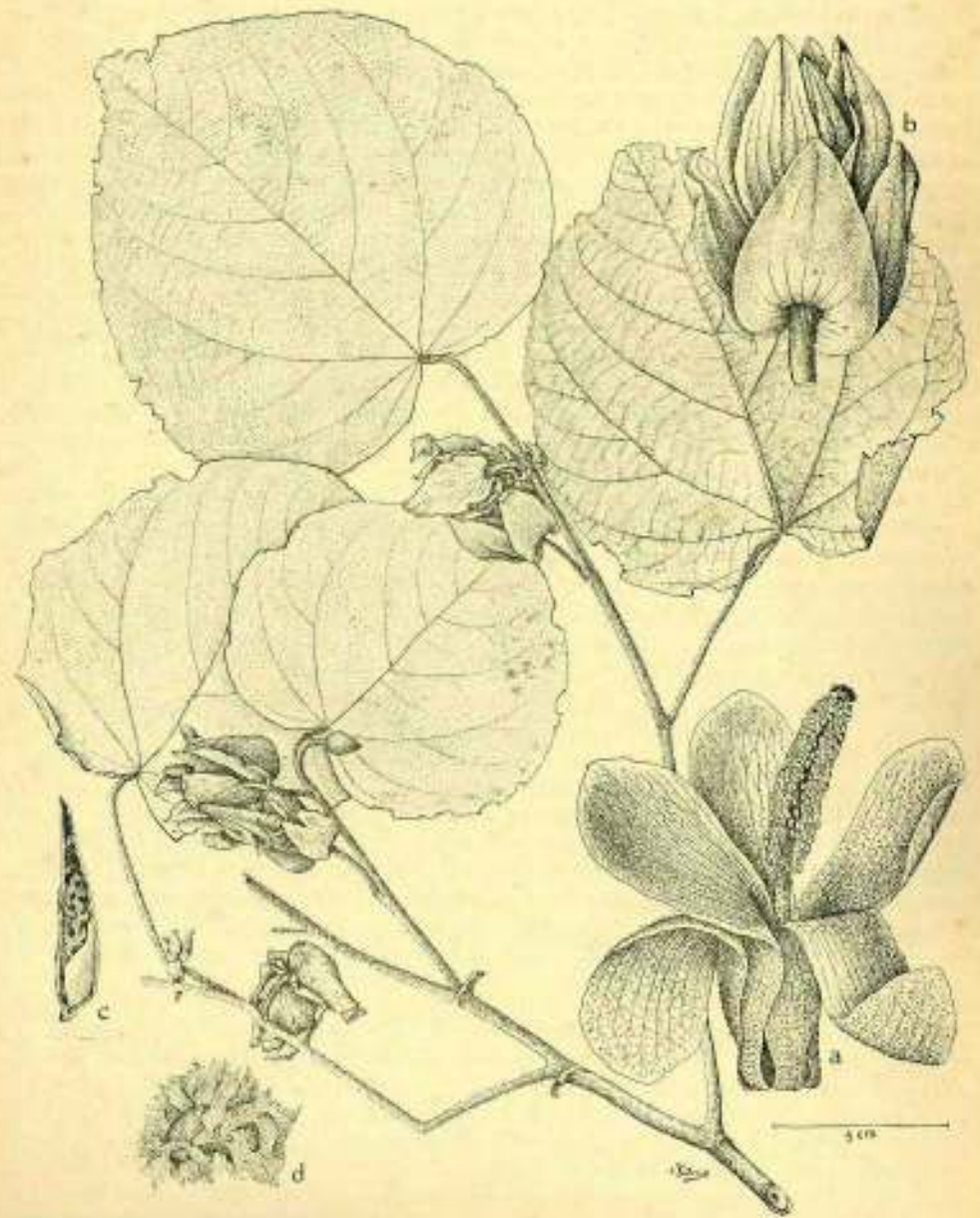


FIG. 5. *Hibiscus leeuwenii* (1 X); b, fruit (1 X); c, petal (1 X); d, seed (5 X). — Alter Docters van Leeuwen 9113 (BO 106686).

in pagina superiore scabriuscula pilis stellatis minutis, in pagina inferiore subtomentosa pilis stellatis. Flores solitarii in axillis superioribus. Pedunculus brevior, teres, sine articulo, in sicco sulcatus, tomentosus pilis stellatis. Epicalyx a calice separatus, subcampanulatus, 4-partitus, segmentis inter se brevissime connatis ovatis basi cordatis subauriculatis apice acutis, extus intusque scabriusculus pilis stellatis minutis, pilis quoque stellatis magnis tenuibus dispersis. Calyx campanulatus, plerumque epicalice paulo brevior, 5-fidus, segmentis ovatis obtusis vel acutis, 5 nervis extus prominentibus in apices segmentorum percurrentibus atque 5 nervis extus prominentibus ad sinum percurrentibus et paulum ante sinum furcatis, extus scabriusculus pilis stellatis minutis, pilis quoque stellatis magnis tenuibus dispersis, intus velutinus pilis stellatis minutis. Petala spathulata, ad basin gradatim angustata, apice rotundata, extus praecipue ad basin squamis fimbriatis minutis densius vestita, intus ad marginem obtegentem pilis stellatis minutis, basi fimbriata pilis stellatis longis sericeis. Columna staminalis petalis circiter aequilonga, basi pilis stellatis longis sericeis et squamis fimbriatis, in parte superiore stamina gerens. Ovarium ovoideum, obsolete 5-angulare, acutum, hirsutum, 10-loculare; stigmata discoidea. Pedunculus post anthesin paulum elongatus et incrassatus; epicalyx post anthesin non amplif icatus; calyx post anthesin amplificatus, epicalice longior. Capsula longe ovoidea, acuminata, distincte 5-angularis, extus hirsuta pilis simplicibus appressis nitentibus, pilis quoque stellatis minutis, 10-loeularis; valvis ligneis, intus minute breviter pilosis. Semina numerosa, reniformia, valde curvata, indumento denso pilorum stellatorum lanatorum ferrugineorum.

TYPE.—Docters van Leeuwen 9113 (BO 106686).

Twigs 3—6 mm thick. Stipules about 12 mm long and 7—8 mm wide. Petiole 4—10 cm long and about 1.5 mm thick. Blade 7—18 cm in diameter; nectary 4—10 mm long. Peduncle 0.5—1.5 cm long and about 1.5 mm thick. Epicalyx about 3 cm wide and high; segments 2.5—3.5 cm long and 1.5—2 cm wide. Calyx about 2.5 cm high and 2 cm wide; segments about 1.3 cm long and 0.8 cm wide. Petals about 5 cm long and 1.5 cm wide. Staminal column about 5 cm long; antheriferous part about 2 cm long; filaments about 4 mm long; anthers about 1 mm long. Ovary about 6 mm long and 3—4 mm in diameter; style about 5 cm long; branches about 3 mm long; stigmas about 1.5 mm across. Capsule about 3 cm long and 1 cm in diameter. Seeds about 3 mm long.

SPECIMENS EXAMINED.—NEW GUINEA. Western part: Mamberamo R., Albatros Bivouac, primary forest, 30 m alt., tree 15 m, flowers red, May 1926, *Docters van Leeuwen 9113* (BO 106686 holotype, 106687; duplicates will be sent to A, K, L), Pioneers Bivouac, primary forest, 30 m alt., tree 20 m, trunk 12 m high and 40—25 cm thick, flowers lilac, Oct. 18, 1939, *van Eechoud U = bb. 31108* (BO 57165, BZP, L 950.252-443).

The species is apparently closely allied to *H. d'albertisii* F. Müll., but differs by having four epicalyx segments, a coarser stellate indumentum, and leaf blades which are more or less orbicular instead of ovate.

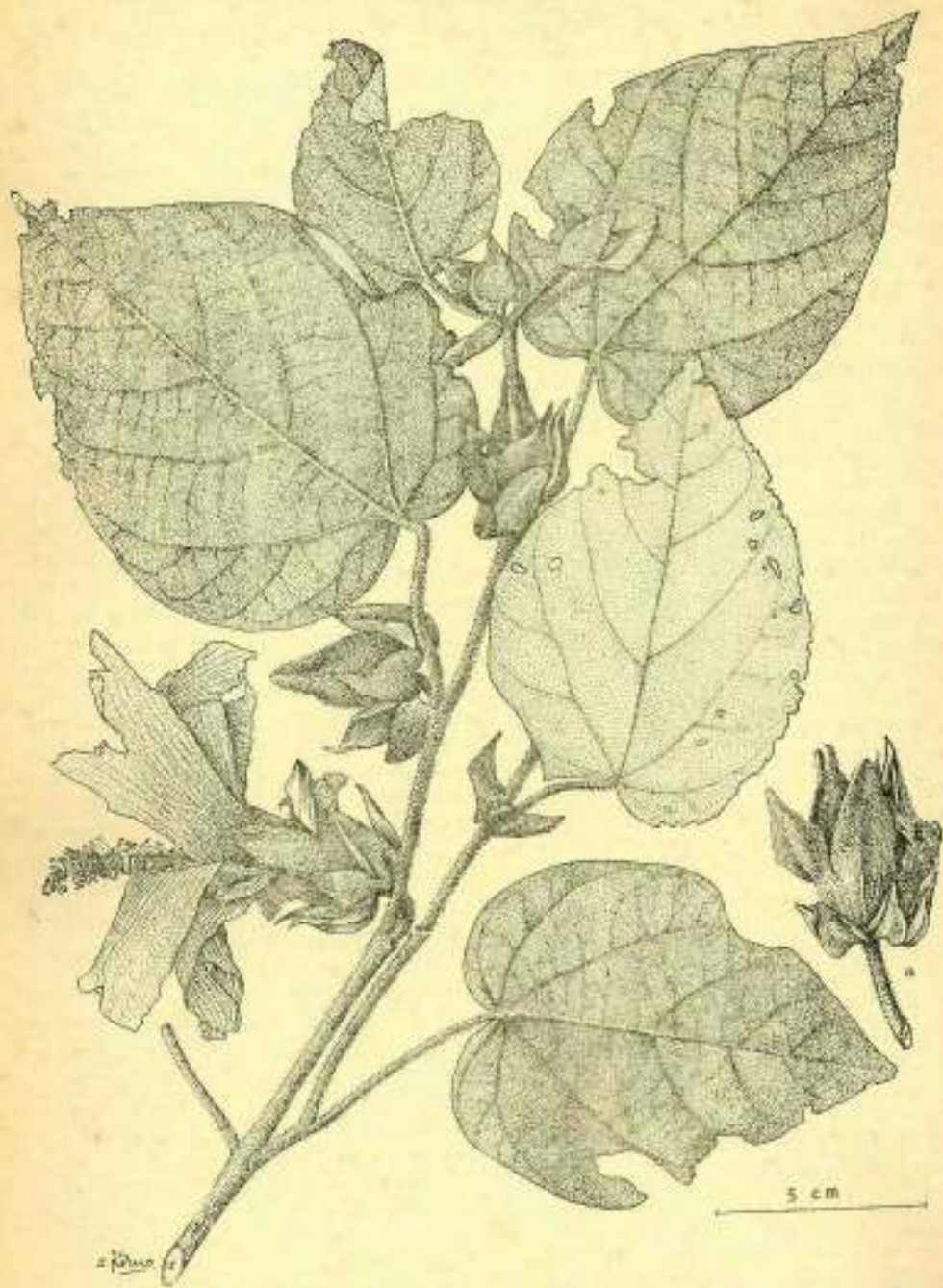
5. *Hibiscus fluminis-idenburgii* Borss., *nov. sp.*—Fig. 6

Arbor altior. Ramuli teretes, dense tomentosi pilis stellatis magnis et pilis stellatis minutis. Stipulae patentes vel appressae, latius annexae, ovatae, apice acutae, in pagina superiore velutinae pilis stellatis minutis, in pagina inferiore tomentosae vel velutinae pilis stellatis magnis et pilis stellatis minutis. Petiolus lamina brevior, teres, indumento sicut in ramulis. Lamina coriacea, late ovata, basi cordata, apice acuta vel acuminata, margine integra, basi 5—7-nervata; costa validissima, in apicem percurrentis, sine nectario; nervi laterales utrimque 3—4, sicut nervi basales ceteri erecto-patentes, sursum curvati et ante marginem in venis ramosi; laminae pagina superior pilis stellatis dispersis sed in nervis tomentosa pilis stellatis, pagina inferior dense tomentosa pilis stellatis magnis minutisque. Flores solitarii in axillis superioribus. Pedunculus brevis, non articulatus, teres, in sicco paulum sulcatus, dense tomentosus pilis stellatis magnis minutisque. Epicalyx a calice separatus, ample cupulatus; segmenta 5—6, inter se libera, erecto-patentes, ovata, basi subauriculata, apice acuta vel paulum acuminata, margine plerumque reduplicativa, extus tomentosus pilis stellatis magnis minutisque, intus velutinus pilis stellatis minutis. Calyx in statu alabastri 5-alatus; per anthesin ample tubiformis, paulum inflatus, epicalice circiter duplo longior, 5-fidus vel 5-partitus, segmentis ovatis (ligulatis) apice obtusis, extus nervis 5 paulum prominentibus in apicem segmentorum percurrentibus, extus densissime tomentosus pilis stellatis magnis minutisque, intus velutinus pilis stellatis minutis et ad basin pilis quoque stellatis magnis dispersis. Petala spathulata, apice rotundata, extus praecipue ad basin squamis fimbriatis dense vestita, intus ad marginem obtegentem pilis stellatis minutis, ceterum glabra. Columna staminalis petalis paulo brevior, praecipue ad basin stellate pilosa, in parte superiore stamina gerens. Ovarium ovoideum vel globosum, acutum, obsolete 5-angulare, dense hirsutum; stigmata discoidea. Pedunculus post anthesin elongatus et incrassatus; epicalyx non amplif icatus; calyx paulum amplificatus. Capsula longe ovoidea, acuta, extus hirsuta pilis simplicibus erecto-patentibus longis nitentibus, pilis quoque stellatis minutis, 10-loeularis, valvis ligneis. Semina numerosa, reniformia, corona densa pilorum stellatorum longorum lanatorum ferrugineorum ornata.

TYPE.—Brass 12978 (BO 116799).

Twigs 2—3 mm thick. Stipules 1.5—2 cm long and about 1 cm wide. Petiole 3—5 cm long. Blade 8—13 cm long and 7—11 cm wide. Peduncle 1—1.5 cm long and about 2 mm thick. Epicalyx 1.5—2 cm high and about 3 cm wide; segments about 2 cm long and 1 cm wide. Calyx 3—3.5 cm long and about 3 cm wide; segments about 2 cm long and 1 cm wide. Petals 8—9 cm long and 2.5—3 cm wide. Staminal column 6—7 cm long; antheriferous part about 2 cm long; filaments 3—4 mm long; anthers about 1.5 mm long. Ovary about 2.5 mm in diameter. Capsule about 4 cm long. Seeds about 2.5 mm long.

SPECIMENS EXAMINED.—NEW GUINEA. Western part: Idenburg R., 6 km SW of Bernhard Camp, rain forest, plentiful on the slopes of ridges and in ravines, 1200 m alt., tree up to 35 m, flowers deep pink, Feb. 1939, Brass 12978 (BO 116799)

Fig. 6. *Hibiscus*

ummuis-idenburgii Borss.: flowering branch; a, capsule. — After Brass 12978 (BO 116799).

holotype, BH, L 950.51-793), frequently in primary forest, on slope of ridge, 1100 m alt., tree 37 m, trunk 48 cm in diameter, wood white, flowers dark red, Feb. 1939, Brass & Versteegh 12525 (BO 116798, GH, L 950.51-794) = 66. 27343 (BZF), 15 km SW of Bernhard Camp, occasionally in primary forest, on slopes of ridges, 1750 m alt., tree 31 m, trunk 63 cm in diameter, sap-wood white, heart-wood dark brown, Jan. 1939, Brass & Versteegh 11959 (BO 116797, GH, L 950.51-795) = 66. 26U8 (BZF).

This species is without doubt most nearly related to *H. d'albertisii* F. Müll. It differs by the relatively short epicalyx segments and the extremely dense indumentum which determines the striking habitus. Brass & Versteegh 11959 — bb. 26948 has an indumentum which is somewhat less dense than the indumentum of the other numbers although still much denser than in *H. d'albertisii*.

6. *Hibiscus ellipticifolius* Borss., *nov. sp.*—Fig. 7

Arbor humilis. Ramuli teretes, scabriusculi pilis stellatis dispersis, glabrescentes, denique seriebus lenticulorum minorum ornati. Stipulae patentes, late annexae, lanceolatae vel ovatae, acutae vel paulum acuminatae. Petiolus lamina brevior, teres, apice paulum incrassatus, scabriusculus pilis stellatis. Lamina chartacea, elliptica, raro ovata, basi rotundata vel truncata vel paulum cordata, apice breviter cuspidata, margine integra, basi 5—7-nervata; costa validissima, in apicem percurrens, in pagina inferiore paulum supra basin nectario lineari ornata; nervi laterales utrimque circiter 4, sicut nervi basales ceteri erecto-patentes, paulum sursum curvati et ante marginem in venis ramosi; lamina superiore pilis stellatis brevibus dispersis praecipue in nervis, glabrescens, in pagina inferiore scabriuscula indumento densiore pilorum stellatorum praecipue in nervis. Flores solitarii in axillis superioribus. Pedunculus brevis, prope apicem articulatus vel non articulatus, teres, in sicco sulcatus, apice incrassatus, subtomentosus pilis stellatis minutis. Epicalicis segmenta 6, libera, stellate patentia, lanceolata, calice breviora, basi angustata, apice acuta vel acuminata, intus multo magis quam extus pilis stellatis minutis dispersis. Calyx in statu alabastris ad apicem anguste 5-alatus; calyx per anthesin campanulatus, 5-fidus, segmentis longe triangularibus, 5-nervis extus prominentibus ad sinum percurrentibus et paulum ante sinum furcatis, extus scabriusculus pilis stellatis minutis multis et pilis stellatis magnis paulis, intus velutinus pilis stellatis minutis. Petala longe obovata, basi gradatim angustata, apice rotundata, extus praecipue ad basin pilis stellatis densius vestita, margine fimbriata pilis stellatis longibrachiatis, intus praecipue ad marginem obtegentem pilis stellatis minutis tenuibus. Columna staminalis petalis brevior, in parte inferiore pubescens pilis stellatis longibrachiatis tenuibus, in parte superiore glabra et stamina gerens. Ovarium extus hirsutum, 10-loculare; stigmata discoidea. Pedunculus post anthesin paulum elongatus et incrassatus, glabrescens; epicalicis segmenta reflexa, paulum elongata; calyx elongatus et amplificatus. Capsula ovoidea, acuta, extus hirsuta pilis simplicibus longis erecto-patentibus nitentibus, pilis quoque stellatis minutis, 10-ocularis. Semina ignota.

TYPE.—N.G.F. 3689 (LAE).

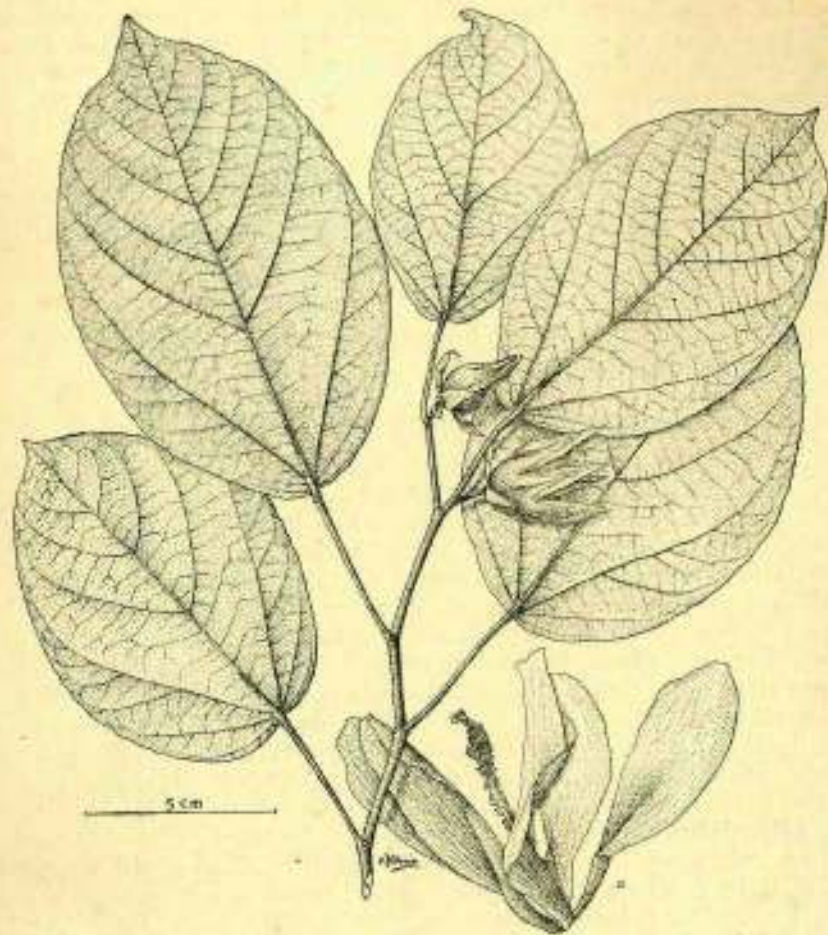


FIG. 7. *Hibiscus ellipticifolius* Borss.: flowering branch; a, corolla with staminal column. — After N.G.F. 3689 (LAE).

Twigs 2—3 mm thick. Stipules 7—9 mm long and about 4 mm wide. Petiole 2.5—5.5 cm long and about 1 mm thick. Blade 9—13 cm long and 5—9 cm wide; nectary 5—10 mm long. Peduncle 10—15 mm long and about 1.5 mm thick. Epicalyx segments 10—12 mm long and about 3 mm wide. Calyx about 2 cm long and 0.8 cm wide; segments 8—9 mm long and about 5 mm wide. Petals about 7 cm long and 2 cm wide. Staminal column about 6 cm long; antheriferous part about 5.5 cm long. Capsule about 2 cm long and 1.5 cm in diameter.

SPECIMENS EXAMINED.—NEW GUINEA. Eastern part: Sepik Distr., near edge of Karosomeri R., tree 7.5 m high, straight, flowers pink, wedges of white homogeneous tissue penetrating the bark, Aug. 10, 1949, *Womersley* N.G.F. 5689 (LAE holotype, BO 116807, BRI, GH, L 950.341-542, SING).

The species is without doubt closely allied to *H. fluminis-wprilii* Ulbr. The name was chosen on account of its perfectly elliptical leaf blades, these being rare within the genus.

7. *Hibiscus carrii* Borss., *nov. sp.*—Fig. 8

Arbor humilis. Ramuli teretes, subtomentosi pilis stellatis, squamis quoque fimbriatis minutis paucis, glabrescentes, denique lenticulis ornati. Stipulae ignotae. Petiolus lamina brevior, basi et apice paulum incrassatus, tomentosus pilis stellatis. Lamina coriacea, ovata, basi rotundata vel truncata, apice acuta vel acuminata, margine integra, basi 3-nervata; costa validissima, recta, in apicem percurrens, in pagina inferiore paulum supra basin nectario elliptico ornata; nervi laterales utrimque 4—5, sicut nervi basales ceteri, erecto-patentes, ante marginem sursum curvati et in venis ramosi; nervi omnes in pagina inferiore prominentes; lamina in pagina superiore squamis fimbriatis minutis paucis, in pagina inferiore tomentosa pilis stellatis, squamis quoque fimbriatis minutis. Flores ignoti. Capsulae in panicula paucibrachiata; bractae et stipulae absentes; axes teretes, subangulares, squamis minutis dense obtecti; pedunculus post anthesin teres, sensim crassior in apicem, sine articulo, squamis minutis dense obtectus. Epicalyx post anthesin a calice separatus, cupulatus, 5-fidus, segmentis appressis late triangularibus obtusis vel acutis, extus squamis minutis, intus glaber. Calyx post anthesin epicalice triplo longior, campanulatus, capsulam anguste involvens, 5-lobatus, segmentis revolutis vel reflexis longe triangularibus acutis, obsolete nervatus, extus dense minute squamatus, intus in segmentis velutinus pilis stellatis minutissimis. Capsula longe obovoidea, basi subacuta, apice conglobata sed centro cuspidate instructa, extus squamis majoribus dense oblecta, 10-locularis, valvis subligneis, intus levis; dissaepimenta vera per marginem intimam pilis appressis longis sericeis vestita. Semina numerosa, reniformia, corona densa pilorum longorum lanatorum ferrugineorum ornata.

TYPE.—Carr 13219 (L 936.295-22).

Twigs 3—4 mm, thick. Petiole 4—8 cm long and 1.5—2 mm thick. Blade 11—19 cm long and 3—12 cm wide; nectary 1—2 cm above the base, about 1 mm long. Peduncle when in fruit 2—2.5 cm long and from base to apex 2—4 mm thick. Epicalyx during fruiting 4—5 mm high and about 8 mm in diameter; segments about 2.5 mm long and 3.5 wide. Calyx during fruiting 13—15 mm high and about 12 mm wide; segments about 7 mm long and 4—5 mm wide. Capsule about 2.5 cm long and 1 cm in diameter. Seeds about 2 mm across.

SPECIMENS EXAMINED.—NEW GUINEA. Eastern part: Boridi, forest, 4200 ft. alt., tree of 40 ft., Sept. 13, 1935, *Carr* 13219 (L 936.295-22 holotype).

It is a pity that Carr 13219 has no flowers, but the indumentum and the epicalyx point to a very close relationship with *H. sciadolepidus* (Hochr.) Borss.

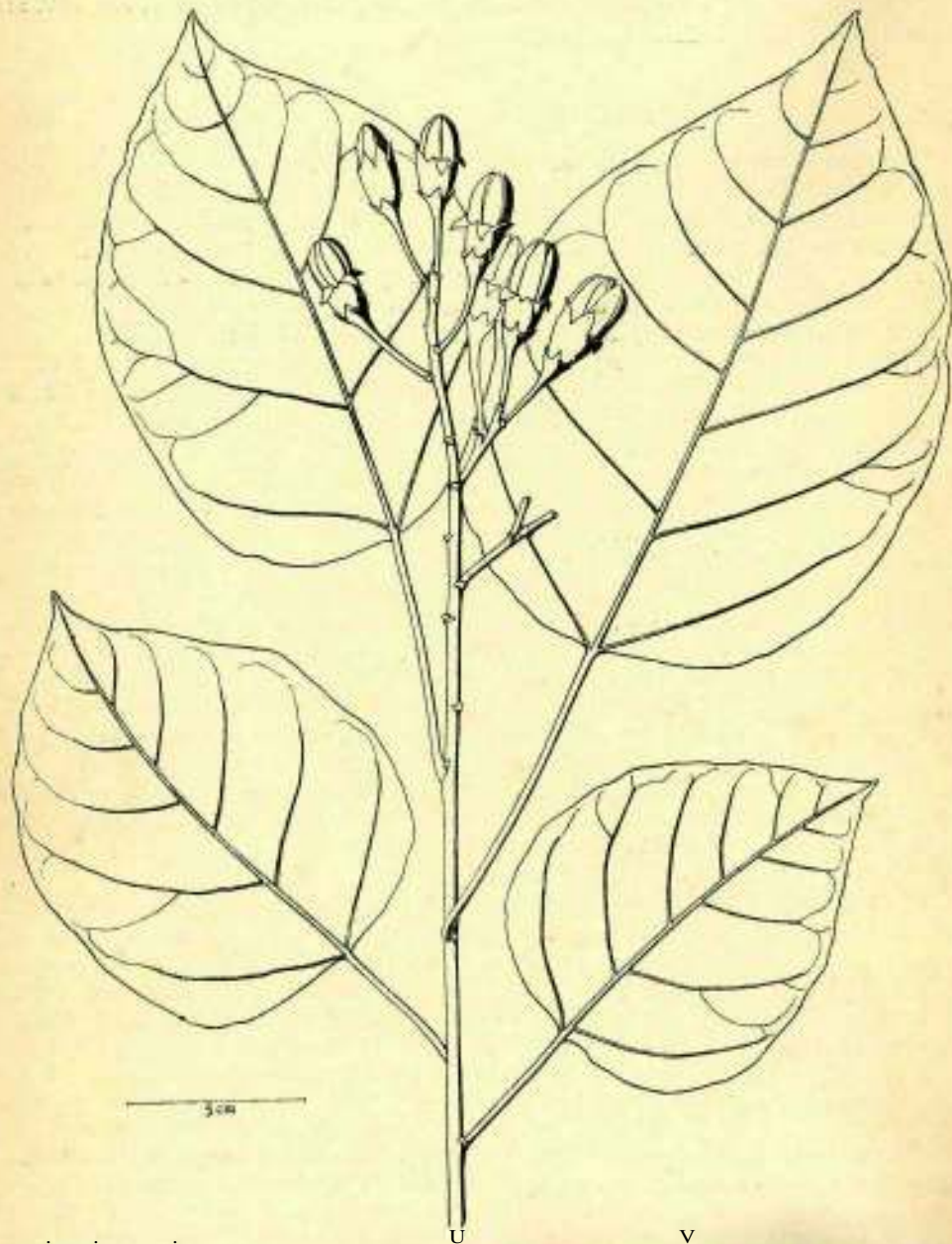


FIG. 8. *Hibiaws carrii* Borss.: fruiting branch. — After Carr 13219 (L 986.295-22).

8. *Hibiscus archboldianus* Borss., *nov. sp.*—Fig. 9

Arbor altior. Ramuli angulares vel paulum appianati, denique teretes, punctati squamis fimbriatis minutis dispersis, paulum scabri. Stipulae erecto-patentes, late annexae, rigide coriaceae, ovatae, apice acutae, in utrisque paginis squamis fimbriatis minutis dense vestitae. Petiolus lamina brevior, teres, rigidus, praecipue apice squamis fimbriatis minutis dense vestitus. Lamina rigide coriacea, ovata vel elliptica, basi rotundata vel paulum cordata, apice cuspidata, margine integra, basi 5—7-nervata; costa validissima, in apicem percurrens, sine nectario; nervi laterales utrimque 3—4, sicut nervi basales ceteri erecto-patentes, paulum sursum curvati et ante marginem in venis ramosi; lamina in pagina superiore in nervis squamis fimbriatis minutis, in pagina inferiore paulum scabra, praecipue in nervis squamis fimbriatis minutis. Flores solitarii in axillis superioribus. Pedunculus brevis, teres, in sicco sulcatus, apice incrassatus, sine articulo, scaber indumento squamorum fimbriatorum minorum. Epicalicis segmenta 5, a calice et inter se separata, calice breviora, erecto-patentia, coriacea, late ovata, basi abrupte angustata, apice acuminata, extus intusque squamis fimbriatis minutis densius vestita. Calyx in statu alabastri ad apicem 5-alatus; calyx per anthesin ample campanulatus, 5-fidus vel 5-partitus, segmentis ovatis acutis, 5 nervis extus prominentibus in apicem segmentorum percurrentibus, extus scaberrimus, squamis fimbriatis rigidis minutis dense vestitus, intus velutinis pilis stellatis minutis. Petala magna, obovata vel spatulata, ad basin gradatim angustata, apice rotundata, extus praecipue ad basin squamis fimbriatis rigidis densius vestita, scabra, margine ad basin pilis stellatis lanatis, intus ad basin squamis fimbriatis, basi pilis stellatis tenuibus, ceterum glabra. Columna staminalis petalis circiter aequilonga, basi pilis stellatis lanatis, praecipue ad basin squamis fimbriatis, in parte superiore stamina gerens. Styli brachii brevi-pubescentes; stigmata discoidea. Fructus ignoti.

TYPE.—Brass 7092 (BO 116774).

Twigs 2—4 mm thick. Stipules about 1.5 cm long and 0.8 cm wide. Petiole 3—8 cm long and about 1.5 mm thick. Blade 8.5—16 cm long and 4.5—12 cm wide. Peduncle 1—1.5 cm long and about 2 mm thick. Epicalyx segments about 2 cm long and 1—1.5 cm wide. Calyx about 3 cm high and 2.5 cm in diameter; segments 1.5—2 cm long and about 1 cm wide. Petals about 10 cm long and 4 cm wide. Staminal column about 8.5 cm long; antheriferous part about 4 cm long; filaments 3—5 mm long; anthers about 1 mm long. Style about 8.5 cm long; branches about 10 mm long; stigmas 2—2.5 mm across.

SPECIMENS EXAMINED.—NEW GUINEA. Eastern part: Palmer R., 2 miles below junction of Black R., common on low ridges along the river, 100 m alt., slender canopy tree 25 m high, flowers pink, June 1936, Brass 7092 (BO 116774 holotype, BM, GH, L 950.88-561).

This species and the two next ones are closely related to each other and together form a more or less natural group. As to the shape of the epicalyx, the three species are related to *H. d'albertisii* F. Mull. They

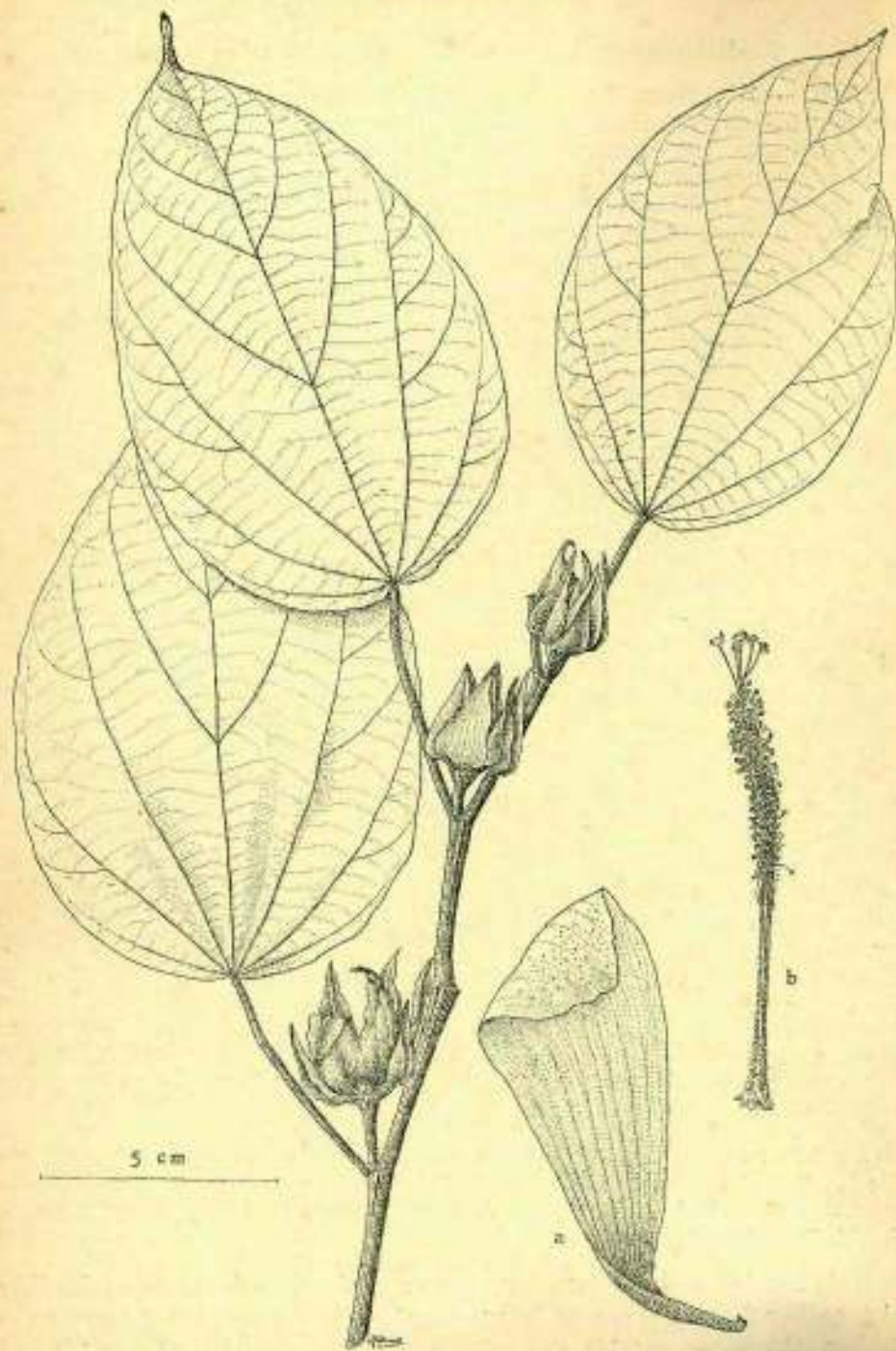


FIG. 9. *Hibiscus archboldianus* Borss.: flowering branch; a, petal; b, staminal tube with stigmas. — After Brass 7092 (BO 116774).

differ by their scaly indumentum. The name is given to commemorate R. Archbold, the organizer of the famous expeditions which Brass joined as botanist.

9. *Hibiscus womersleyanus* Borss., *nov. sp.*—Fig. 10

Arbor alta. Ramuli paulum angulares, denique teretes, squamis minutis densius vestiti, glabrescentes, denique lenticulis dispersis ornati, paulum scabri. Stipulae erecto-patentes vel subreflexae, late annexae, ovatae, apice obtusae, in pagina superiore squamis fimbriatis minutis et pilis stellatis minutis vestitae, in pagina inferiore squamis densius vestitae. Petiolus lamina brevior, teres, in sicco paulum sulcatus, squamis minutis densius vestitus. Lamina rigide coriacea, orbicularis vel latissime ovata, basi paulum cordata, apice rotundata, obtusa vel breviter cuspidata, margine integra, basi 7—5-nervata; costa validissima, recta, in apicem percurrens, sine nectario; nervi laterales utrimque 3—5, sicut nervi basales ceteri erecto-patentes, paulum sursum curvati et ante marginem in venis ramosi; nervi omnes in pagina inferiore valde prominentes; lamina in pagina superiore pilis stellatis minutis dispersis, glabrescens, in pagina inferiore squamis fimbriatis minutis dense vestita. Flores solitarii in axillis superioribus. Pedunculus teres, apice incrassatus, in sicco paulum sulcatus, sine articulo, squamis minutis densius vestitus. Epicalicis segmenta 6, coriacea, basi inter se breviter connata, a calice separata, calice breviora, patentia vel reflexa, ovata, apice obtusa, extus squamis minutis dispersis vestita, intus squamis fimbriatis minutis, glabrescentia. Calyx in statu alabastri ad apicem 5-alatus; calyx per anthesin campanulatus, paulum inflatus, coriaceus, 5-fidus vel 5-partitus, segmentis ovatis acutis, obsolete nervatus, extus squamis minutis dense vestitus, intus velutinus pilis stellatis minutis. Petala spathulata, apice rotundata, extus praecipue ad basin scabra, squamis rigidis, intus ad marginem obtegentem pilis stellatis tenuibus. Columna staminalis petalis brevior, praecipue ad basin pilis stellatis majoribus dense vestita, in parte superiore stamina gerens. U varium ovoideum-conicum, obtusum, obsolete 5-angulare, squamis fimbriatis dense vestitum, 10-loculare; stigma discoidea. Pedunculus post anthesin elongatus et incrassatus; epicalyx et calyx post anthesin paulum amplificati; calyx denique fissus et putescens. Capsula maxima, globosa, acuta, extus squamis fimbriatis majoribus obiecta, 10-locularis; valvis ligneis, intus levis, glaber. Semina numerosa, reniformia, indumento denso lanato pilorum stellatorum longorum.

TYPE.—N.G.F. 3386 (LAE).

Twigs 2.5—5 mm thick. Stipules about 1.5 cm long and 0.5—0.8 cm wide. Petiole 2—7.5 cm long and 1—2 mm thick. Blade 4—15 cm in diameter. Peduncle 2—2.5 cm long and 2—3 mm thick. Epicalyx segments 1.5—2 cm long and 0.7—1 cm wide. Calyx about 3 cm high and 2.5 cm wide; segments about 1.5 cm long and 0.8 cm wide. Petals about 7 cm long and 2 cm wide. Staminal tube about 5 cm long; antheriferous part about 2.5 cm long; filaments about 2 mm long; anthers about 1 mm long. Ovary about 5 mm high and 6 mm across; style about 5 cm long; branches about

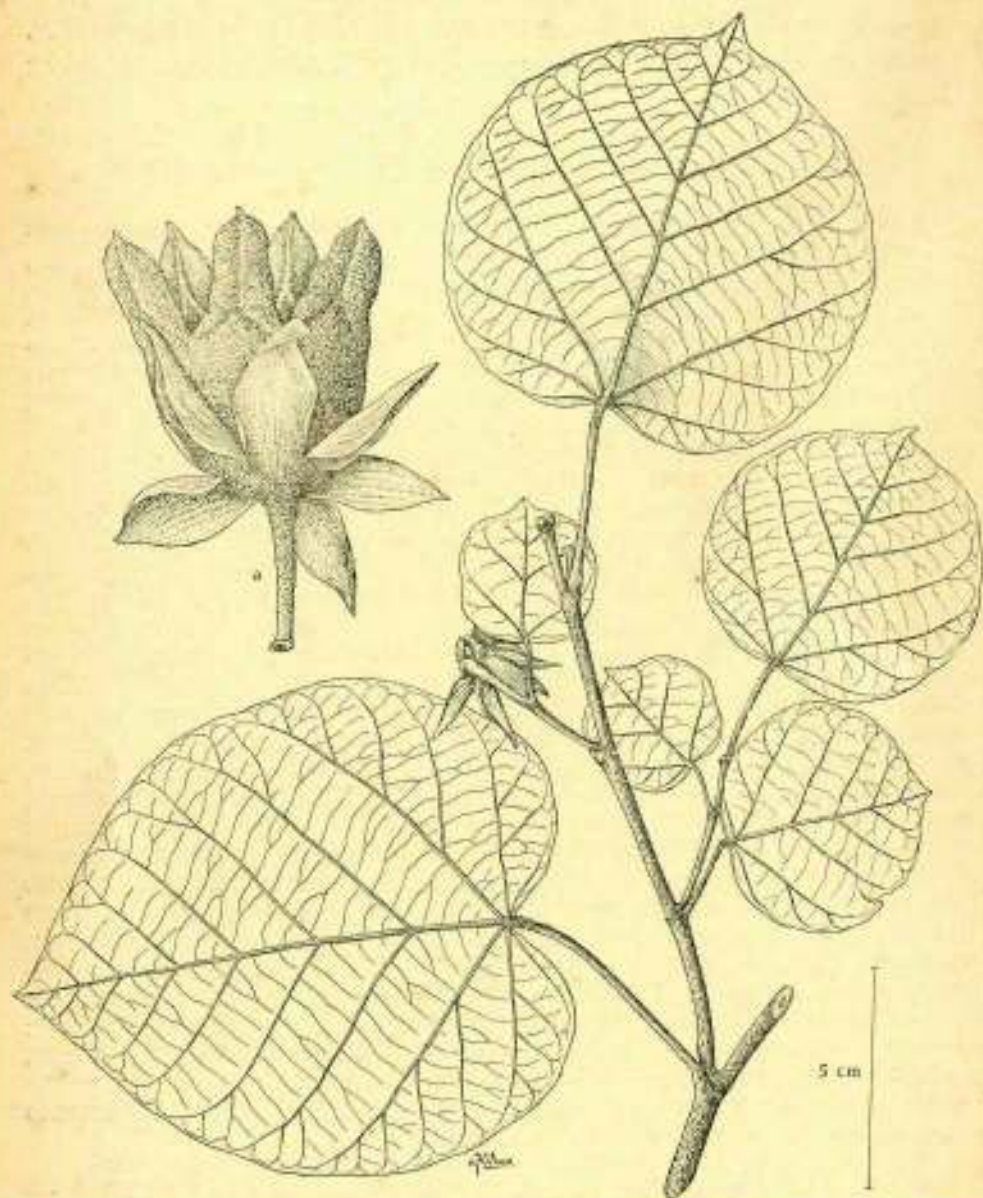


FIG. 10. *Hibiscus womersleyanus* Borss.: branch; a, calyx and epicalyx (2 X). — After N.G.F. 4425 (BO 116804).

3 mm long; stigmas about 1.5 mm across. Capsule 4—4.5 cm in diameter. Seeds 3—4 mm long:

SPECIMENS EXAMINED.—NEW GUINEA. Eastern part: Aiyura, Central Highlands, 1806 m alt., tree 24 m, trunk 15 m high and 76 cm thick breast high,

crown narrow, petals red, bark very fibrous and used by natives for making ropes, wood white and soft, local names Papum (Aiyura) and Bidafu (Kamanu), Nov. 25, 1950, *Womersley N.G.F.* 3388 (LAE holotype, BO 116802, 116803, BRI, L 951.99-348, SING), tree 30.5 m, crown very sparse, flowers orange-red, bark fibrous and used for string, local name Panpur (Aiyura), June 29, 1951, *Womersley N.G.F.* 4425 (BO 116804, BRI, GH, L 952.64-357, LAE, SING), tall tree 40 m, trunk 35.5 m high and 61 cm thick breast high, inner bark brown with paler inwardly pointing teeth, bark very fibrous, local name Tampo (Anona) and Pundenifa (Aiyura), Dec. 1, 1944, s. coll. N.G.F. 1047 (LAE).

It may be that this species is simply a form of the previous one. More material of this relationship should be collected.

10. *Hibiscus lepidotus* Borss., *nov. sp.*—Fig. 11

Arbor. Ramuli paulum appanati, denique teretes, punctati squamis minutis densius vestiti, paulum scabri. Stipulae late ovatae, apice obtusae, squamis minutis dense vestitae. Petiolus lamina brevior, teres, ad basin in sicco sulcatus, squamis minutis densius vestitus. Lamina rigide coriacea, orbicularis, basi paulum cordata, apice breviter acuminata, margine integra, basi 5-nervata; costa validissima, in apicem percurrens, sine nectario; nervi laterales utrimque 3, sicut nervi basales ceteri erecto-patentes, paulum sursum curvati et ante marginem in venis ramosi; lamina in pagina superiore scabriuscula indumento denso pilorum stellatorum minorum, in pagina inferiore indumento densissimo squamorum fimbriatorum minorum. Flores solitarii in axillis superioribus. Pedunculus teres, in sicco sulcatus, sine articulo, squamis fimbriatis minutis dense vestitus, glabrescens. Epicalicis segmenta 4, a calice et inter se separata, calice paulum breviora, coriacea, erecta, magna, late ovata vel suborbicularia, basi paulum cordata, apice obtusa vel rotundata, extus squamis densius vestita, intus squamis fimbriatis et pilis stellatis. Calyx in statu alabastris ad apicem 5-lobatus; calyx per anthesin coriaceus, campanulatus, 5-lobatus vel 5-fidus, segmentis ovatis acuminatis, obsolete nervatus, extus squamis minutis dense vestitus, intus velutinus pilis stellatis minutis. Petala spathulata, ad basin gradatim angustata, apice rotundata, extus praecipue ad basin squamis fimbriatis majoribus dense vestita, intus ad marginem obtegentem in parte inferiore pilis stellatis longibrachiatis, ceterum glabra. Columna staminalis petalis circiter aequilonga, praecipue ad basin pilis stellatis longibrachiatis, quoque squamis fimbriatis dispersis vestita, in parte superiore stamina gerens. Stigmata discoidea. Pedunculus post anthesin paulum elongatus et incrassatus. Epicalyx et calyx paulum vel non amplificati. Capsula ovoidea vel globosa, apice breviter acuminata, extus squamis majoribus dense obtecta, 10-locularis. Semina numerosa (misera evoluta), indumento pilorum lanatorum ferrugineorum circumdata.

TYPE.—Brass 4950 (BO 57181).

Twigs 3—5 mm thick. Stipules 1.5—2 cm long and about 1 cm wide. Petiole 3—6 cm long and about 1.5 mm thick. Blade 7—11.5 cm in diameter. Peduncle 1.5—2.5 cm long and 1.5 mm thick. Epicalyx segments 2—2.5 cm long and 1.2—2 cm wide. Calyx about 3.5 cm high and 2.5 cm

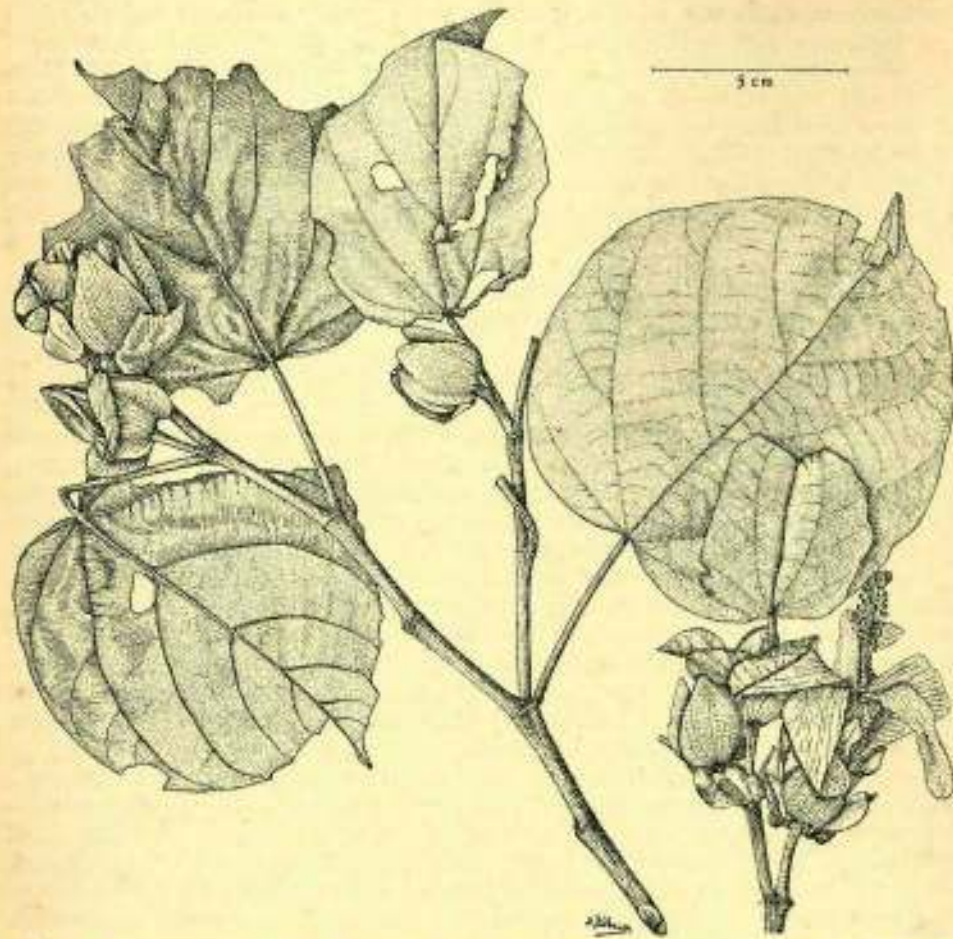


FIG. 11. *Hibiscus lepidotus* Borss.: flowering branches. — After Brass 4950 (BO 57181, BRI).

wide; segments about 1.5 cm long and 1 cm wide. Petals about 7 cm long and 2 cm wide. Staminal column about 5.5 cm long; antheriferous part about 2 cm long; filaments about 3 mm long, anthers about 1 mm long. Style branches 5–6 mm long; stigmas about 2 mm across. Capsula 2–2.5 cm in diameter.

SPECIMENS EXAMINED.—NEW GUINEA, Eastern part: Mt. Tafa, sheltered valley forests, alt. 2400 m, slender tree, open thinly foliated crown, trunk about 20 cm thick, bark thick and fibrous, wood soft and white, flowers red, April 1933, Brass A950 (BO 57181 holotype, BM BRI, GH).

The remarks under the previous species also hold good for this species.

11. *Hibiscus pseudotiliacus* Borss., *nov. sp.*—Fig. 12

Arbor altior. Ramuli paulum angulares, denique teretes, tomentosi pilis stellatis majoribus et pilis stellatis minutis, glabrescentes, denique lenticulis valde prominentibus ornati. Stipulae appressae vel paulum erecto-patentes, late annexae, semi-amplexicaules, magnae, ovatae vel lanceolatae, obtusae, in pagina superiore pubescentes pilis stellatis minutis et pilis simplicibus brevibus, in pagina inferiore tomentosae pilis stellatis. Petiolus lamina multo brevior, teres, apice paulum incrassatus, densius tomentosus pilis stellatis majoribus et pilis stellatis minutis praecipue apice. Lamina chartacea, orbicularis, basi penitus cordata, apice longe cuspidata, margine integra vel leviter dentata, basi 5–7-nervata; costa in apicem percurrens, sine nectario; nervi laterales utrimque 3–4, erecto-patentes, sursum curvatis et in venis ramosi; nervi basales ceteri quoque versum radiantes, sursum curvati et ante marginem in venis ramosi; lamina in pagina superiore pubescens pilis stellatis minutis praecipue in nervis, glabrescens, in pagina inferiore laxa tomentosa pilis stellatis majoribus praecipue in nervis. Flores in racemis compositis axillaribus paucifloris. Axes primarii et secundarii teretes, indumento sicut in ramulis; bractae absentes; stipulae plerumque presentes, sicut stipulae foliorum. Pedunculus brevis, teres, axe secundo tantum articulatus, densissime tomentosus pilis stellatis magnis, pilis quoque stellatis minutis. Epicalyx a calice separatus, magnus, calice paulum brevior, ample campanulatus vel cupulatus, 7-fidus, segmentis ovatis acutis vel breviter acuminatis, extus pilis stellatis majoribus et pilis stellatis minutis dense vestitus, paulum scaber, intus ad marginem segmentorum velutinus pilis stellatis minutis. Calyx campanulatus, 5-fidus, segmentis longe triangularibus acutis, 15-nervatus, autem 5 costis validioribus extus prominentibus in apicem segmentorum percurrentibus et 10 nervis tenuibus extus minus prominentibus ante apicem segmentorum terminantibus, extus pilis majoribus et pilis minutis, intus basi annulo pilorum simplicium appressorum instructus, ceterum glaber. Petala obovata, apice rotundata, extus inter nervos pilis stellatis longibrachiatis vestita praecipue ad basin, ad basin fimbriata, ceterum glabra. Pedunculus post anthesin paulum elongatus; epicalyx et calyx paulum amplificati. Capsula ovoidea, 5-angularis, apice breviter acuminata, extus pilis simplicibus rigidis et pilis stellatis minutis ornati, 5-locularis, valvis crassioribus, intus levis, glabra. Semina numerosa, reniformia, angularia, pilis stellatis lanatis brevibus ferrugineis dense vestita.

TYPE.—bb. 33899 (BO 116796).

Twigs 2–6 mm thick. Stipules 2.5–3 cm long and about 1 cm wide. Petiole 5.5–12 cm long and 1–2 mm thick. Blade 14–22 cm long and 12–20 cm wide. Peduncle 1–1.5 cm long and about 2 mm thick. Epicalyx about 2 cm high and 3 cm wide; segments 1–1.5 cm long and 0.6–0.8 cm wide. Calyx about 2.5 cm high and 2 cm wide; segments about 1.5 cm long and 0.5–1 cm wide. Petals 6–7 cm long. Capsule about 2 cm long and 1.7 cm in diameter. Seeds about 4 mm long.

SPECIMENS EXAMINED.—MOLUCCAS, Morotai: Northern Tjao, primary forest, 60 m alt., tree 22 m, trunk 15 m high and 50 cm thick, breast high, flowers yellow, July 2,

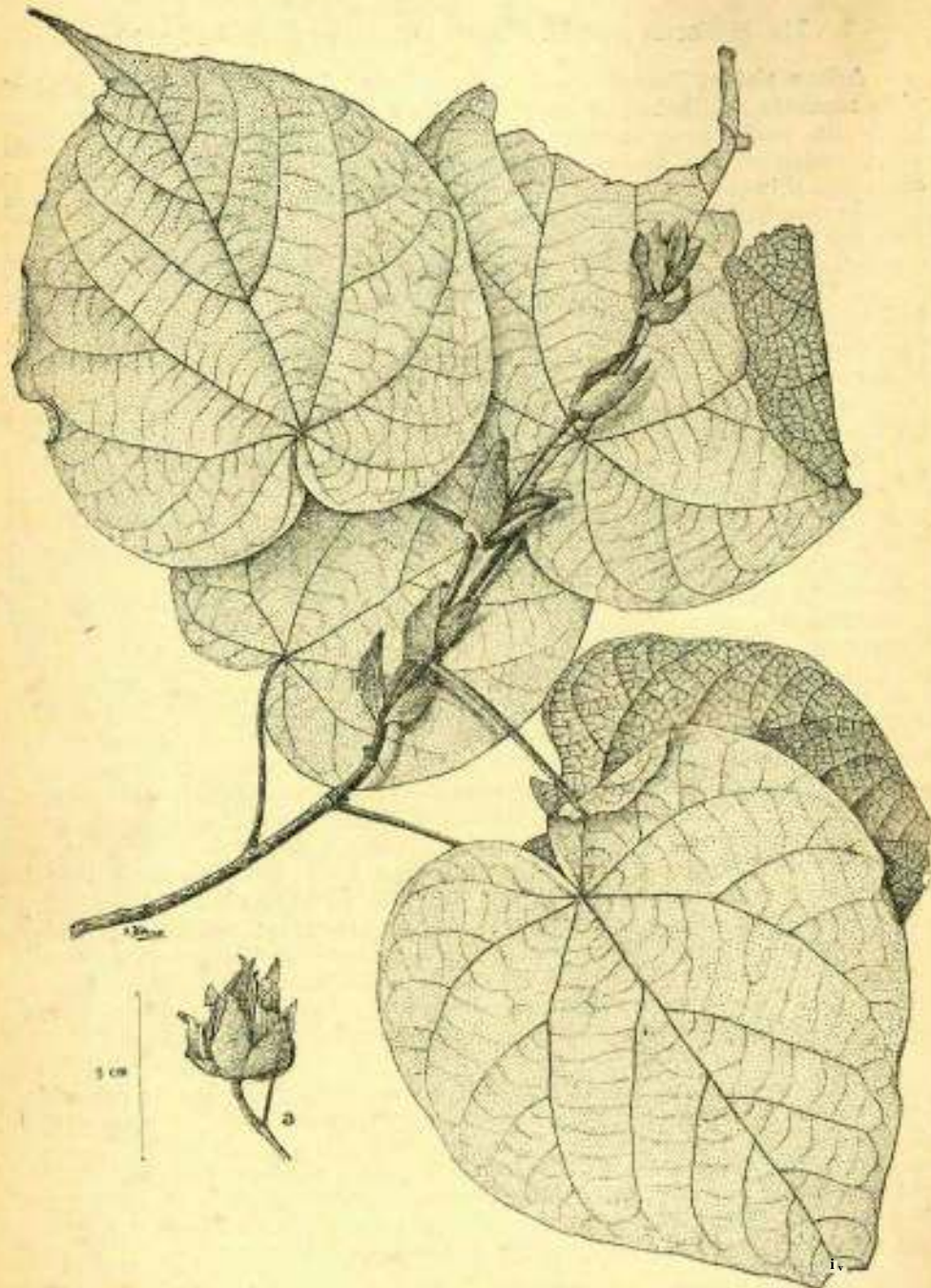


Fig. 12 *Hibiscus pseudotiliaceus* Borss.: branch: a. fruit with enveloping calyx and epicalyx. — After bb. 33899 (BO 116795).

1949, Tangkilisan (Exp. Kostermans) 229 = 66. 33899 (BO 116796 holotype, 116795, BZP, L 952. 265-325, K, SING).

This species is at the most related to *H. borneensis* Airy Shaw, but has nevertheless a more or less isolated position. At first sight the flowers are reminiscent of *H. d'albertisii* F. Müll, and relatives, but the capsule is 5-celled. The species is named on account of the form of the leaves and stipules which gives it the habitus of *H. tiliaceus* L.

12. *Hibiscus teijsmannii* Borss., *nov. sp.*—Fig. 13

Planta lignea (frutex an arbor?). Ramuli teretes, farinosi squamig fimbriatis minutissimis, glabrescentes, lenticulis circularibus dispersis.

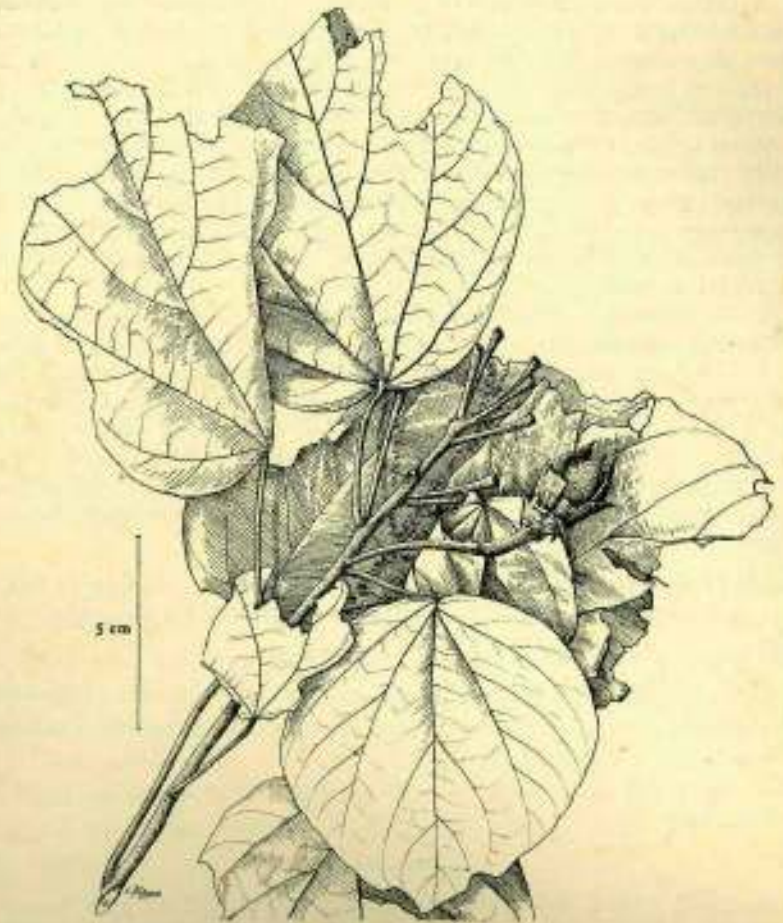


FIG. 18. *Hibiscus teijsmannii* Borss.: fruiting branch. — After Teijsmann 12897HB (BO 58063).

Stipulae ignotae. Petiolus lamina brevior, teres, basi et apice paulum in-crassatus, farinosus squamis fimbriatis minutissimis, glabrescens. Lamina coriacea, ovata, basi rotundata vel paulum cordata, apice gradatim acumi-nata, margine integra, basi 6—4-nervata; costa in apicem percurrens, basi in pagina inf eriore nectario lineari ornata; nervi laterales utrimque 2—3, sicut nervi basales ceteri erecto-patentes, paulum sursum curvati et ante marginem in venis ramosi; lamina in pagina superiore praecipue basi, squamis fimbriatis minutis dispersis, glabrescens, in pagina inferiore in angulis inter nervos basales, et inter costam et nervos laterales fasciculis pilorum simplicium brevium, glabrescens. Flores ignoti. Pedunculi soli-tarii in axillis superioribus, post anthesin teretes, parte superiore arti-culati, a basi ad articulum gradatim crassiores, supra articulum crassiores quam infra articulum et sulcati, squamis fimbriatis minutissimis densius vestiti. Epicalyx post anthesin cupulatus, a calice separatus, calice multo brevior, 8-fidus, segmentis erecto-patentibus triangularibus acutis, extus squamis fimbriatis minutis vestitus. Calyx post anthesin cupulatus-campanulatus, capsulam anguste involvens, 5-lobatus, segmentis late triangu-laribus (apices segmentorum in sicco destructi), 10-nervis extus paulum prominentibus, squamis integris majoribus dense obtectus. Capsula obo-voidea, apice acuta, extus dense sericeus pilis simplicibus, inter pilos sim-plices pilis stellatis minutis, 5-ocularis, valvis acutis, crassioribus, ligneis, intus levibus, glabris et paulum nitentibus; locus quisque plerumque in parte superiore seminibus 2 adultis, in parte inferiore seminibus 2 abor-tivis. Semina adulta magna, reniformia, corona densa pilorum appres-sorum longorum mollium.

TYPE.—Teijsmann 12597HB (BO 58063).

Twigs 2.5—5 mm thick. Petiole 2—7.5 cm long and 1—2 mm thick. Blade 7.5—15 long and 5.5—10 cm wide; nectary about 5 mm long. Pe-duncle during fruiting 3—4.5 cm long; joint 10—13 mm from the apex; peduncle below the joint about 2 mm thick, above the joint 4 mm thick. Epicalyx during fruiting about 8 mm high and 14 mm wide; segments about 0.5 cm long and 1 cm wide. Calyx about 2 cm wide; segments about 1 cm wide. Capsule about 2 cm long and 2.5 cm in diameter. Seeds about 5 mm long.

SPECIMENS EXAMINED.—CELEBES. Southwestern peninsula: Sehroh (Pangadjene Distr.), *Teijsmann 12597HB* (BO 58063 holotype, 58061, 58062, L 920.306-48).

The species is without doubt very closely allied to *H. floecosus* Mast. The most obvious differences are the ovate leaves and much smaller fruits.

THE GENUS CULLENIA Wight * (Bombacaceae)

A. J. G. H. KOSTERMANS **

The monotypic genus *Cullenia* was established by Wight (Icones PI. Ind. or. 5 (1) : pi. 1761—62 & text, 1851), who differentiated it from *Durio* Adans. mainly by the lack of a corolla and the position and shape of the anthers. The only species, originally described as *Durio ceylanicus* by Gardner, was cited by Wight as *Cullenia excelsa* Wight. K. Schumann corrected the specific epithet rather casually and attributed it (wrongly) to Wight. Bentham (in Benth. & Hook., Gen. pi. 1: 212. 1867); Baillon (Hist. pi. 4: 159. 1872), Masters (in Hook, f., Fl. Br. Ind. 1: 350. 1874) and Beccari (Malesia 3: 219. 1889) accepted the genus.

Bakhuizen van den Brink (in Bull. Jard. bot. Buitenzorg III, 6: 228. 1924) incorporated the genus in *Durio*.

In my opinion *Cullenia* represents a "good" genus by its lack of corolla. Alston, although accepting Bakhuizen's reduction, informed me personally, that he, too, is inclined to consider *Cullenia* different from *Durio*.

The pollen were described as being naked and pedicellate by Gardner; this wrong statement was corrected by Wight; the anthers are pedicellate and one-celled.

In this paper a new *Cullenia* species is described, which strengthens the position of the genus; both species are restricted to the rain forest region of Ceylon and the Southern Indian Peninsula.

Cullenia Wight

Trees; leaves alternate, lower surface covered with scales. Inflores-cence pseudo-umbellate on old wood. Flowers covered by scales, in bud covered by the epicalyx, which bursts at apex and drops before anthesis. Calyx tubular, 5-toothed. Corolla 0. Staminal tube exerted; upper part of filaments free, bearing along it the pedicellate, one-celled, glomerulate anthers. Ovary 5-celled; ovules 2 or more in each cell, superposed; style longer than staminal tube; stigma small, capitellate. Fruit globose, split-ting into 3—4 valves, densely covered by long spines. Seeds covered by a fleshy arill.

* Issued July 1956 as Communication no 51 of the Forest Research Institute, Bogor, Indonesia.

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