

NOTES ON ASIATIC, PACIFIC, AND AUSTRALIAN DIOSPYROS

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SUMMARY

In alphabetical order 56 species of *Diospyros* (*Ebenaceae*) are treated. Of these, 39 species are proposed as new, 7 specific names are new combinations, 3 specific names appear in a new status, and 1 as a new name; 6 species are listed in relation to miscellaneous notes or to synonymy.

A revision of the *Ebenaceae* for the new Flora of Ceylon gave me the opportunity in 1974 to hunt during three months for *Diospyros* in Ceylon.

The revisional work confronted me with Bakhuizen van den Brink Sr.'s monograph of *Diospyros* (Bull. Jard. Bot. Buitenzorg, III, 15, 1936—1941), as he had treated also extra-malesian species.

The greatest headache was Bakhuizen's treatment of *Diospyros ferrea*, in which he had lumped so many species, that nobody could make head or tail of it any more. Howard & Norlindh (J. Arn. Arb. 43, 1962: 100) called the monograph 'inconsistent and less than clear', certainly an understatement.

Fosberg (Occas. Papers B.P. Bishop Mus. 15, 1939: 121) started to extract again species from Bakhuizen's conglomerate, but followed him in so far, that he considered the Hawaiian *D. sandwicensis* a subspecies of *D. ferrea*. A. C. Smith (J. Arn. Arb. 52, 1971) and Green (Kew Bull. 23, 1969) cleared problems for Pacific species.

I believe that Bakhuizen, who disentangled fairly well a similar group of related species (*D. peregrina* group), had been misled by his predecessor Hiern, who had started the lumping in the *D. ferrea* group.

In order to get a better idea of the specific boundaries of *Diospyros*, I took the opportunity of being stationed at the Leiden herbarium, to go through all Malesian specimens, of which a considerable number had accumulated over the years. The result is presented below. The number of new species is far from exhausted, but lack of type material for comparison refrains me from treating more.

Bakhuizen recognized 4 subgenera. Their characters overlap for a great deal and it is doubtful whether they have any theoretical or practical value.

The circumscription of the sections of these subgenera is so confusing and based on such irrelevant characters, that they will probably be abolished altogether or for the greater part.

Diospyros adiensis Kosterm., *spec. nov.*

Arbor parva, ramulis gracilibus glabris, foliis alternantibus rigide chartaceis vel tenuiter coriaceis glabris ellipticis acuminatis basi acutis, supra bullatis et obscure minutissime dense prominule reticulatis nervo mediano costisque et nerviis secundariis impressis, subtus pallidioribus laevibus nervo mediano tenuibus prominentibus costis sat patentibus tenuibus prominulis marginem versus arcuatim conjunctis, petiolis brevibus tenuibus, fructibus axillaribus solitariis globosis laevibus sessilibus fere glabris, calycibus fructiferis

applanatis sat tenuibus, lobis tribus triangularibus acutis reflexis intus pilosis, *seminibus* 2 vel 3, convexo-applanatis laevibus; endospermium aequabile.

T y p u s: *Moll BW 9843* (L).

Treelet 3 m high; *branchlets* slender, glabrous; end bud rather sparsely yellowish brown strigose. *Leaves* spirally arranged, stiffly chartaceous to thinly stiffly coriaceous, glabrous, elliptic, rarely subobovate-elliptic, 9—12 × 3.5—5 cm, acuminate, base acute; upper surface bullate and obscurely, minutely, prominulously reticulate; midrib, nerves, and veins slender, deeply impressed; lower surface paler, rather smooth, midrib slender, prominent, nerves rather patent, slender, prominulous, arcuately anastomosing at some distance from margin, *c.* 8 pairs (shorter ones sometimes in between). Petiole slender, 3—5 mm long, slit-like channelled above. *Fruit* axillary, solitary, subsessile, globose, smooth, up to 1.5 cm diam., apiculate, with few minute, thin, adpressed hairs. *Fruiting calyx* almost flat, up to 6 mm diam., the tube part small, the 3 lobes triangular, acute, *c.* 4 mm long, completely reflexed, inside minutely appressed-pilose; pericarp thin, fruit 2 or 3-celled; *seeds* 2 or 3, flat-convex, smooth; endosperm equable.

NEW GUINEA. I r i a n J a y a. Adi Isl., Kaimana Dist., alt. 25 m, rain forest, rather scarce, fruit yellow, 1.5 cm diam. (fresh), Febr., *Moll BW 9843* (L).

Diospyros aifatensis Kosterm., *spec. nov.*

Arbor ramulis sat gracilibus dense adpresse ferrugineo strigosis, *foliis* alternantibus rigide coriaceis ellipticis breve acuminatis basi rotundatis, supra glabris sublaevibus nervo mediano gracilibus impressis, subtus dense minuteque laeve reticulatis et minutissime tomentellis nervo mediano prominulis costis erecto-patentibus gracilibus, *foliis* juvenilibus perdense adpresse rufo pilosis, *inflorescentiis* axillaribus unifloris multibracteatis, bracteis coriaceis sericeis, ovario hirsuto, staminodiis quattuor hypogynis.

T y p u s: *Moll BW 12892* (L).

Tree, 23—29 m high, bole 18 m, diam. 35—65 cm, not buttressed. *Bark* black with numerous deep fissures, not much peeling off, 1—3 mm thick; live bark 2—6 mm thick, light reddish brown, inside pink. *Wood* reddish brown to lighth red. *Branchlets* rather slender, densely (especially the flush) rusty adpressed-hirsute. *Leaves* spirally arranged, stiffly coriaceous, elliptic, 6—12 × 2.5—5.5 cm, shortly acuminate, base contracted into the petiole, rounded, or the centre slightly cuneate; above rather smooth, glossy, glabrous, except the slender impressed midrib, below tomentellous, glabrescent, minutely smoothly reticulate, midrib prominulous, nerves *c.* 12 pairs, erect-patent, hardly differentiated from the reticulation. Petioles 6—10 mm long, channeled above, glabrescent. *Inflorescences* (female?) axillary on the young shoots, a single flower on a very short peduncle with numerous fleshy, ovate, acute (the lowest 5 mm long), densely rufous-sericeous bracts. *Flower* sessile, calyx small, corolla fleshy; stamens (or staminodes) 4, hypogynous, ovary hirsute.

The species is imperfectly known, as no mature flowers are available. However, this large tree is easily recognizable by the leathery elliptic leaves and especially by the leaves of the flush which are covered by a very dense indumentum of rusty subsericeous hairs, and by the solitary flower, surrounded by large bracts.

In the tree *BW. 12892*, there was a central rot of 30 cm diam. in the bole; apparently no ebony is formed.

NEW GUINEA. Irian Jaya. N. slope of upper Aifat valley between Senopi and Aifatfekaan, W. of Kebar valley, alt. 850 m, rather scarce, Dec., buds, *Moll BW 12892* (L); *ibid.*, alt. 1050 m, Dec., buds, *Moll BW 12887* (L).

Diospyros alatella* Kosterm., *spec. nov.

Arbor, ramulis crassis dense minuteque brunneo tomentellis, foliis alternantibus chartaceis vel rigide chartaceis ellipticis vel obscure subobovato-ellipticis magnis obtusis basi breviter acutis, supra laevibus opacis nervo mediano impressis costis filiformibus prominulis, subtus ab initio minutissime sparse brunneo-tomentellis glabrescentibus nervo mediano prominentibus exceptis costis filiformibus erecto-patentibus prominulis, petiolis robustis; fructibus ramifloribus ovoideo-globosis, truncatis, apice excavatis, 5—6 sulcatis et costatis glabrescentibus, 9—10-locellatis; endospermium ruminatum.

T y p u s: *S 18083* (L).

Tree 10—37 m tall, 20—25 cm diam., without buttresses. *Bark* overall smooth, black, brittle with shallow surface fissures, mottled grey; live bark hard, yellow with orange mottling. *Wood* white, soft. *Branchlets* thick, dark brown tomentellous. *Leaves* spirally arranged, chartaceous to stiffly chartaceous, elliptic to slightly subobovate-elliptic, 25—32 × 9—13 cm, obtuse, base shortly acute; above dull, rather smooth, midrib slender, deeply impressed; nerves slender, prominulous; below smooth to very obscurely, very laxly reticulate, minutely sparsely dark brown adpressed-pilose, glabrescent, midrib prominent, minutely adpressed pilose, nerves up to 12—18 pairs, very slender, erect-patent, prominulous, towards margin arcuate. *Petiole* stout, 1.5—2 cm long, channeled above, glabrescent. *Fruit* on the branch, solitary, sessile on an obscure multibracteate peduncle, ovoid-globose, apex truncate and excavate, 11—13-ribbed, 4 cm diam. and high, ribs rather high, rounded, densely minutely brown pilose, glabrescent. *Pericarp* rather woody, up to 4 mm thick, septa thick, compartments 9 or 10, each with one large wedge-shaped seed with ruminant endosperm. *Fruiting calyx* of 5 or 6 leafy, thick, ovate, minutely brown pilose, acutish, 3 cm long, 2 cm wide, slightly concave lobes, appressed to the fruit base.

BORNEO. Sarawak. Semengoh Arboretum, mixed *Dipterocarp* forest, alt. 20 m, May, submature fruit, *S 13968* (L); Bintulu, Ulu Saran, Labang, primary mixed *Dipterocarp* forest on low undulating land, yellow sandy clay soil, March, mature fr., *S 18083* (L).

N o t e. Close to *D. palembanica* according to the description, but the fruit and especially the fruiting calyx are different.

Diospyros alpina* Kosterm., *spec. nov.

Arbor mediocris, ramulis rigidis gracilibus glabris, foliis alternantibus glabris rigide chartaceis vel subcoriaceis ellipticis caudato-acuminatis basi cuneatis, utrinque laevibus, supra nervo mediano impresso costis obscuris, subtus nervo mediano prominentibus costis erecto-patentibus vix prominulis arcuatis anastomantibus, petiolis gracilibus glabris, floribus femineis axillaribus solitariisque sessilibus, calycibus crassis campanulatis adpresse pilosis, lobis 4 triangularibus acutis, corollis dense adpresse pilosis calycem vix superantibus, fructibus submaturis ellipsoideis adpresse pilosis, calyce fructifero vix incrassatis.

T y p u s: *NGF 42851* (L).

Tree 7 m high, diam. 17 cm. *Branchlets* stiff, slender, glabrous. *Leaves* spirally arranged, distichous, stiffly chartaceous to thinly coriaceous, glabrous, elliptic, caudate-acuminate (acumen slender, c. 1 cm long), base cuneate, both sides smooth, above dull, midrib slender, impressed, nerves obscure, below midrib slender, prominent, nerves faint,

hardly raised, erect-patent, *c.* 9 pairs, arcuately anastomosing at some distance from the margin. Petioles slender, 5 mm long, flat above. *Female flowers* solitary, axillary, no pedicel, peduncle minute; *calyx* thick, campanulate, sparsely minutely adpressed-pilose, 5 mm long, the 4 triangular, acute, stiff lobes 1.5 mm long; corolla (in bud) conical, densely adpressed-pilose, slightly longer than the calyx. Immature *fruit* ellipsoid, densely adpressed-pilose; *fruiting calyx* not much enlarged.

NEW GUINEA. P a p u a — N e w G u i n e a. Western Dist.: Kiunga Subdist., Hongkong Hill, Ok Tedi headwaters, alt. 2300 m, Lat. 5 13 S, Long 141 8 E, hillsides with scattered *Podocarpus*, thickets of decumbent bamboo, peatsoil, Oct., fl., young fr., NGF 42851 (L).

N o t e. This is one of the few *Diospyros* species from very high altitudes.

Diospyros areolifolia Kosterm., *spec. nov.*

Arbor parva, ramulis tenuibus glabris, foliis alternantibus glabris rigide coriaceis oblongis obtusis basi acutis, utrinque dense minuteque prominulo-areolato-reticulatis, supra sublaevibus, nervo mediano tenui impresso costis obscuris, subtus nervo mediano prominulis costis perobscuris erecto-patentibus; petiolis gracilibus brevibus; *fructibus* solitariis axillaribus parvis subglobosis laevibus; *calyx fructifer* cupuliformis glaber tenuis, lobis tribus obscuris parvis.

T y p u s: *Brass* 8738 (L).

Treelet, 3—4 m high. *Branchlets* slender, glabrous. *Leaves* spirally arranged, glabrous, glossy, rigidly coriaceous, oblong, 4—8 × 1.5—3 cm, obtuse, base acute, slightly decurrent, both surfaces minutely prominulously areolate-reticulate, but above less clearly so, midrib slender, impressed, nerves faint, lower surface with prominent slender midrib, nerves hardly visible, erect-patent, *c.* 6—8 pairs. Petiole slender, 3—4 mm long. *Fruit* axillary, solitary, no pedicel, peduncle 1 mm long, subglobose, up to 6 mm diam., apiculate, near apex slightly minutely adpressed-pilose. *Fruiting calyx* cup-shaped, rather thin, *c.* 5—7 mm diam., 1—2 mm high, the margin entire or with three depressed-triangular, acute, hardly 0.5 mm high, erect lobes.

NEW GUINEA. P a p u a — N e w G u i n e a. Western Dist.: Fly R. area, Tarara, Wassi Kussa R., bushy rain forest, common, Jan., fr., *Brass* 8738 (L).

N o t e. A species belonging to the *D. littorea* group, but different because of the areolate reticulation and the very small fruit. This belongs to the smallest-fruited *Diospyros* species known.

Diospyros bantamensis Koord. & Val. *ex* Bakh.

D. malam Bakh. (Gard. Bull. Str. S. 7, 1933: 176; Bull. Jard. Bot. Buitenz. III, 15, 1938: 324) is conspecific with *D. bantamensis* Bakh. (Gard. Bull. Str. S. 7, 1933: 165; Bull. Jard. Bot. Buitenz. III, 15, 1938: 322, pl. 79).

Diospyros benstonei Kosterm., *spec. nov.*

Arbor ramulis glabris, foliis alternantibus glabris, rigide coriaceis subovato-ellipticis vel ellipticis obscure late breve acuminatis basi in petiolum contractis utrinque sublaevibus, nervo mediano supra subimpresso, subtus prominente, costis filiformibus, sat obscuris sat patentibus, petiolis supra subplanis, *fructibus* axillaribus solitariis ellipsoideo-globosis vel globosis, dense minutissime ferrugineo-sericeis, *calyce fructifero* patelliformi applanatis margine integris, intus minutissime sericeis.

T y p u s: *Gillison* NGF 25420 (L).

Tree with amorphous crown, 17 m high, bole 8 m, diam. 25 cm. *Bark* black, rough, scaly, inner bark red brown. *Wood* straw-coloured. *Branchlets* rather thick, glabrous (except the apex). *Leaves* spirally arranged, stiffly coriaceous, glabrous, subovate-elliptic to elliptic, 12—14 × 5—7 cm, obscurely shortly and broadly acuminate with blunt tip, base contracted into the petiole, the centre acutish, both surfaces rather smooth (under the lens minutely reticulate), upper surface dull, midrib slender, sub-impressed, nerves very thin, prominulous above, beneath obscure, ± patent, c. 8 pairs, at some distance from margin arcuately connected. *Petiole* 8—10 mm long, glabrous, flattish above. *Fruit* axillary, solitary, subglobose, up to 2 × 2.5 cm, densely very minutely rusty sericeous, *Pedice*l thick, 1—3 mm long. *Fruiting calyx* disk-shaped, flat, 1.5 cm diam. inside sericeous, margin entire. *Fruit* monolocular, but 3 septa at the base indicated, 3-seeded. *Seeds* wedge-shaped, 13 mm long, smooth, endosperm equable.

NEW GUINEA. Papua — New Guinea. Milne Bay Dist.: Misama I., Liah, alt. 30 m, Lat. 10 40 S, Long. 152 45 E, along running stream in rain forest in gorge, Oct., fr., Gillison NGF 25420 (L).

Note. The fruiting calyx does not show incisions, and hence the number of lobes can only be guessed, possibly three.

Diospyros bintulensis Kosterm., spec. nov.

Arbor, ramulis crassiusculis dense minutissime ferrugineo-pilosis, pilis erectis, *foliis* alternantibus coriaceis ellipticis vel ovato-ellipticis abrupte acuminatis basi rotundatis, supra glabris nitidis laevibus nervo mediano costisque filiformibus impressis, subtus opacis laevibus sparsis et minutissime patente pilosis nervo mediano prominentibus costis sat patentibus filiformibus prominulis, petiolis sat longis; *infructescentiis* ramulis defoliatis impositis brevibus, subadpresse minutissime dense pilosis fructibus sessilibus; *calyce* fructiferi late campanulati nec profundi, lobis tribus ovato-orbicularibus extus dense pilosis intus fere glabris, reflexis; *fructibus* ellipsoideis laevibus nitidis, pericarpio tenuibus, 3-locellatis; *seminibus* solitariis undulato-rimosis; endospermium aequabile.

Typus: S 15912 (L).

Tree, 30 m tall, diam. 30 cm. *Branchlets* thickish, densely very minutely rusty puberulous. *Leaves* spirally arranged, coriaceous, elliptic or ovate-elliptic, 14—20 × 5.5—8.5 cm, abruptly acuminate (acumen rather slender, 1—1.5 cm long), base rounded; upper surface glabrous, very glossy, smooth, the slender midrib and very thin nerves impressed; lower surface dull, very sparsely and very minutely puberulous, denser on veins, midrib prominent, nerves rather patent, very thin, prominulous, near margin arcuately connected. *Petioles* up to 2 cm long, same indumentum as branchlets. *Infructescences* on the branchlets below the leaves, minutely, densely, brown, somewhat adpressed pilose; peduncle very short, bearing 1—3 up to 2 cm long bracteate branches which in turn bear the few glomerulate fruits, each subtended by a tiny acute bracteole. *Calyx* widely campanulate, at apex up to 1 cm diam., c. 4 mm deep, densely minutely adpressed-pilose; lobes 3, ovate-orbicular, thick, up to 8 mm long, partly reflexed, inside almost glabrous. *Fruit* ellipsoid, smooth, glabrous, glossy, up to 20 × 13 mm, obtuse; pericarp thin, brittle; locules 3; *seed* one, wedge-shaped, with a fine, wavy, longitudinal fissure-like pattern; endosperm equable.

BORNEO. Sarawak. Bintulu, Nyabau F. R., low alt., Oct., fr., S 15912 (K, L).

Note. Possibly representing one of Bakhuizen's varieties of *D. hermaphroditica* and close to *D. rotundiflora* Hiern. Unluckily, Bakhuizen does not present under his varieties the adequate references and specimens.

Diospyros bundeyana Kosterm., *spec. nov.*

Arbor parva, ramulis dense minute brunneo-tomentellis, foliis alternantibus chartaceis ellipticis utrinque obtusis, supra laevibus glabris (nervo mediano exceptis), nervo mediano costisque impressis gracilibus, subtus sat dense minuteque brunneo-tomentellis nervo mediano prominulis costis paucis erecto-patentibus arcuatis prominulis, petiolis brevibus dense pilosis; fructibus solitariis pedicellatis, subglobosis (?) nitidis obscure laeve minute pustulatis; calyce fructifero lobis 4 rigidis sat longis reflexis, seminibus subrugosis, endospermio acquabili.

T y p u s: *Van Balgooy & Byrnes 1284* (L).

Treelet 4 m. *Branchlets* slender, stiff, divaricate, the young ones brown tomentellous; some bearing spines. *Leaves* spirally arranged, chartaceous, elliptic, 2.5—7 × 2—4 cm, obtuse at both ends or apex slightly tapering and obtuse; above smooth, glabrous (except midrib), midrib and nerves impressed, below densely covered with minute, thin, not straight hairs, midrib slender, prominent, nerves c. 4 pairs, slender, erect-patent, arcuate, prominulous. *Petioles* slender, tomentellous, 2—5 mm long. *Fruit* axillary, solitary, subglobose, c. 2 cm diam., finely, smoothly, minutely pustular, glossy; pericarp very thin. *Seeds* somewhat pustular, up to 13 mm long, acute at both ends, wedge-shaped to spindle-shaped. *Fruiting calyx* with flat small tubular part, the 4 stiff, reflexed (downwards pointing), rather narrow lobes up to 8 mm long, inside minutely finely adpressed-pilose. Endosperm equable. *Pedicele* 5 mm long, pilose.

AUSTRALIA. N. Territory. W. Arnhem land, Mt. Bunday, granite hills, alt. 50 m, mature fruit brown, scattered in open forest, July, *Van Balgooy & Byrnes 1284* (L).

N o t e. In the material available, the fruits were all completely crushed and it was not possible to ascertain their shape; the seeds are comparatively small.

This species resembles *D. cordifolia* from the arid zones of S. India; it has the same patent, stiff, grey branches and also thorns are found in our specimen. The fruiting calyx and pustular fruit are different.

Diospyros compacta (R. Br.) Kosterm., *comb. nov.*

Maba compacta R. Brown, Prodr. Fl. N. Holl. 1 (1810) 528. — Sub *Diospyros ferrea* var. *reticulata* (R. Br.) Bakhuizen, Bull. Jard. Bot. Buitenz., III, 15 (1936) 58.

Diospyros consanguinea Merr.

This species has been reduced by Bakhuizen (Bull. Jard. Bot. Buitenz. III, 15, 1938: 276) to a synonym of *D. lanceifolia* Roxb. However, it is quite different from the latter. The leaves have very pronounced looped nerves which are lacking in *D. lanceifolia*. Abundant material has been collected from Borneo, which is very homogeneous. It certainly merits specific rank.

The specimen *Forbes 1661* from Sumatra, quoted by Bakhuizen, represents *Glochidion* (*Euphorbiaceae*).

Diospyros cordato-oblonga Kosterm., *spec. nov.*

Arbor parva, ramulis sat crassis apicem versus dense ferrugineo-tomentellis, foliis alternantibus coriaceis subovato-oblongis acutis basi cordatis, supra glabris obscure dense minuteque reticulatis nervo mediano gracili impressis, subtus minutissime sparse graciliter tomentellis glabrescentibus laevibus vel obscure dense minuteque reticulatis, nervo mediano valde prominentibus costis filiformibus sat patentibus obscuris, petiolis brevibus dense ferrugineo-tomentellis, floribus axillaribus aggregatis sessilibus dense ferrugineo-

tomentellis, *calyce* cupuliformi, lobis 4 ovato-triangularibus parvis, *corollis* conicis dense adpresse ferrugineo-strigosis.

T y p u s: *Brass 21745* (L).

Small *tree*, often with several stems, 6—10 m tall and 4—8 cm diam. *Bark* blackish brown, peeling in small rectangular pieces; live bark pinkish. *Wood* straw, moderately hard and heavy. *Branchlets* thick, the apical part ferruginous-tomentellous. *Leaves* spirally arranged, coriaceous, subobovate-oblong to oblong, 12—21 × 4—7 cm, acute, base cordate; upper surface glabrous, obscurely, densely reticulate, midrib slender, impressed, nerves very slender, obscure; lower surface sparsely tomentellous (very slender hairs), glabrescent, midrib strongly prominent, nerves very slender, obscure, *c.* 8—12 pairs, rather patent, reticulation dense, very obscure. Petioles thickish, 5 mm long, densely rusty pubescent. *Flowers* axillary, aggregate, sessile, rusty tomentellous. *Calyx* (immature) cup-shaped, 3 mm high, the 4 lobes minute, ovate-triangular, acute. *Corolla* (in bud) conical, densely adpressed rusty strigose.

NEW GUINEA. Papua—New Guinea. Milne Bay Dist.: Cape Vogel Penins., rain forest, alt. 20—25 m, frequent in undergrowth, fl. purplish red or purple, March, *Brass 21614 & 21745* (L); — Centr. Dist.: Brown R. road, 18 miles Port Moresby, Lat. 9 10 S, Long. 147 15 E, rain forest patch in savanna, alt. 70 m, Aug., fr., fl., *NGF 30833* (L); — N. Dist.: Ui'aku R., south of Wanigela, alt. 250 m, open dry ridge top, Lat. 9 30 S, Long. 149 10 E, Aug., fr., *NGF 22291 & 22292* (L); — Port Moresby Dist.: Kanosia, sea level, April, young fr., *Carr 11803* (L); *ibid.*, buds, *Carr 11184* (BM); Rouna, alt. 500 m, May, fr., *Carr 12393* (BM, L).

N o t e. The specimen *NGF 12887* from Brown R. forest res., W. of Port Moresby, differs by the distinct lateral nerves and reticulation of the lower leaf surface, but is in all other respects conform; its fruits are sessile, globose, pilose, *c.* 7 mm diam., the fruiting calyx is cup-shaped, *c.* 9 mm in diam. at the almost entire rim and 5 mm high.

The specimen *NGF 22291* has, according to the information on the label, leaf tips with prominent green glands, later inconspicuous. Some leaves show rows of black dots which may be caused by insects; they may, however, represent glands.

The species is recognizable by its leaf shape. The specimen *Carr 12393* with somewhat bullate leaves has a fruit of 1 cm diam. with a shallow cup-shaped calyx, 12 mm in diam. and 5 mm high.

Diospyros crebripilis* Kosterm., *spec. nov.

Arbor parva, *ramulis* sat gracilibus dense ferrugineo-tomentellis, *foliis* alternantibus chartaceis subovato-ellipticis vel ellipticis attenuato-acuminatis vel acutis basi rotundatis, supra sublaevibus opacis glabris nervo mediano impressis exceptis, subtus pallidioribus sparse ferrugineo-pilosis nervo mediano prominentibus costis sat patentibus marginem versus arcuatim conjunctis; *floribus* glomerulatis, sessilibus axillaribus perdense tomentellis, *calycibus* cupuliformibus lobis tribus triangularibus acutis; *corollis* subtubuliformibus dense adpresse pilosis lobis parvis intus glabris; *fructibus* sessilibus 1—3 axillaribus globosis glabrescentibus; *calycibus fructiferis* cupuliformibus, sat tenuibus dense pilosis margine integris; *seminibus* tres plano-convexus laevibus, endospermio aequabile.

T y p u s: *Kanis 1231* (L).

Treelet, 1—5 m high, branches almost in whorls, 20—30 cm apart. *Bark* blackish brown. *Branchlets* rather slender, rusty tomentellous. *Leaves* spirally arranged, distichous, chartaceous, subovate-elliptic to elliptic, 8—15 × 3—5 cm, gradually acuminate or acute, base rounded; upper surface dull, smooth (or finely, obscurely reticulate) except the impressed slender midrib, glabrous; lower surface paler, sparsely rusty tomentellous (denser on the

veins), midrib prominent, nerves slender, prominulous, 7—9 pairs, rather patent, about half way abruptly arcuate and anastomosing. Petiole up to 5 mm long, densely pilose. *Flowers* axillary, aggregate, sessile; *calyx* cup-shaped, *c.* 6 mm high, covered with a dense indumentum of stiff, long, yellowish rusty hairs, the 3 lobes triangular acute, $1/2$ — $1/3$ the tube length; *corolla* subtubular, *c.* 1 cm long, densely adpressed-pilose; lobes 3, small, acute. *Fruit* axillary, 1—3 together, sessile, globose, up to 13 mm diam., densely adpressed-pilose, glabrescent, smooth, slightly apiculate. *Fruiting calyx* a shallow, densely pubescent, rather thin cup, 1 cm diam., 5 mm high, the margin entire or the 3 lobes vaguely indicated. *Seeds* 2 or 3, flat-convex, smooth. Endosperm equable.

NEW GUINEA. Papua — New Guinea. Milne Bay Dist.: Baniara Subdist., S. of Opanabu village, approx. Long. 149 42 E, Lat. 10 01 S, gully forest, alt. 650 m, July, fl., fr., *Kanis 1231* (L); E. of Mt. Simpson R., alt. 900 m, July, fr., *Schodde 3403* (L) and fl., fr., *Schodde 5415* (L).

Diospyros cylindrocarpa Kosterm., *spec. nov.*

Arbor, ramulis dense minutissime adpresse pilosis, *foliis* alternantibus tenuiter coriaceis oblongis acutis basi in petiolum contractis, supra nitidis nerviis impressis, subtus conspicue prominente reticulatis glabris, nervo mediano subcylindricis magnis adpresse pilosis exceptis, costis erecto-patentibus prominentibus arcuato-anastomosantibus, petiolis magnis dense minutissime adpresse pilosis; *fructibus* glomeratis ramifloribus dense minutissime ferrugineo adpresse pilosis subcylindricis conspicue sulcatis, *calycibus fructiferis* applanatis rigidis, segmentis 5 acutis patentibus margine partibus lateralibus reflexis.

Typus: *San 71194* (L).

Tree, 17—30 m high and 20—30 cm diam. *Bark* greyish black, narrowly fissured; live bark pale pink; sapwood white; no buttresses. *Branchlets* rather thick, densely very minutely adpressedly brown pilose. *Leaves* spirally arranged, oblong, 7—30 × 2.5—8 cm, obscurely acuminate, base contracted into the petiole, slightly acutish, upper surface very glossy, glabrous, midrib narrowly deeply impressed, nerves and veins impressed, lower surface somewhat glossy, midrib subcylindrical, strongly prominent, minutely adpressed-pilose, surface glabrous, conspicuously densely prominently reticulate; nerves 12—15 pairs, erect-patent, arcuate, near the margin conspicuously anastomosing, the lower pair often steeper; in between strong intercalated nerves which do not reach the margin. Petiole rather stout, 1—1.5 cm long, densely very minutely rusty adpressed-pilose. *Fruit* on the branches, clustered on burrs, subcylindrical, *c.* 3.5 cm high, up to 3 cm diam., very densely adpressedly rusty-brown pilose, the hairs easily rubbed off, with 8 or 10 smooth broad ribs; top depressed. *Fruiting calyx* stiff, thickish, flattened, consisting of a central quadrangular or rounded disc, 1.5 cm in diam., and 5 lobes, pilose on both surfaces, *c.* 6—7 mm long with laterally strongly reflexed margins. Pedicels stout, densely pilose, 7 mm long, slightly thickened upwards, on a 7 mm long, thick, pilose branch.

BORNEO. Sarawak. 3rd Division, Bukit Raya, Kapit Dist., hillslope, alt. 200 m, March, fr., *S 27602* (L). — Sabah. Sandakan Dist., 0.5 mile in on logging area trail from Mile 79.5 Labuk road, north of road, alt. 450 m, hillside, Dec., fr., *San 71194* (L).

Note. The leaves look very much like those of *D. consanguinea*, but they are much larger and have a different indumentum. The fruits on the branches are entirely different from the smooth glabrescent ones of *D. consanguinea*.

Diospyros densa Bakh.

This species (Bakhuizen, *Gardens Bull. Str. S.* 7, 1933: 169; *Bull. Jard. Bot. Buitenz.* III, 15, 1937: 120), based on the specimen *bb. 11018* (BO) is conspecific with *D. caudisepala*

Bakh. (Bull. Jard. Bot. Buitenz. III, 15, 1941: 396), based on the specimen *Krukoff 4054* (BO). The only difference is the length of the pedicel in fruit. In recently collected material this proves to be a rather variable character.

Diospyros egbert-walkeri Kosterm., *spec. nov.*

D. ferrea (Willd.) Bakh. var. *buxifolia* auct. non Bakh.: Walker, Important Trees Ryukyu Isl. (1954) 254, fig. 160; Kanehira, Formosan Trees, rev. Ed. (1936) 579, f. 536; Tang Shui Li, Illustr. nat. & intr. Lign. Pl. Taiwan 2 (1962) 1003, f. 831; Hui-Lin Li, Woody Pl. Taiwan (1963) 735, f. 299.

Arbor parva vel mediocris, *ramulis* glabris nitidis griseis *foliis* alternantibus glabris rigide coriaceis, obovato-ellipticis vel oblanceolatis vel sub-cuneatis, obtusis, raro obscure brevissime obtuseque acuminatis, basi sensim attenuatis in petiolum brevissimum sub-decurrentibus, utrinque nitidis, supra sub-laevibus vel prominule laxe reticulatis, nervo mediano vix impressis, costis prominulis, subtus laxe prominule reticulatis, nervo mediano prominentibus, costis obscuris tenuibus erecto-patentibus paucis. *Floribus* axillaribus aggregatis subsessilibus, *calyce* cupuliformi sparsissime adpresso piloso, usque ad dimidiam vel $1/3$ inciso, lobis tribus triangularibus acutis erectis, corollis dense sericeis, fructibus solitariis, sessilibus, ellipsoideis, laevibus, usque ad 8×11 cm; *calyx fructifer* cupuliformis, margine integer vel 3-lobatus, lobis acutis parvis.

T y p u s: *Fosberg 38158* (L).

Tree, 3—7 m high, compactly branched, with dense foliage. *Branchlets* stiff, slender, glabrous, glossy, grey. *Leaves* spirally arranged, glabrous, rigidly coriaceous, glossy, obovate-elliptic to oblanceolate to subcuneate, obtuse (very rarely very shortly obtusely acuminate), base gradually tapered and slightly decurrent into the glabrous 2—5 mm long petiole; upper surface with hardly impressed midrib, reticulation lax, smoothly prominulous, nerves prominulous, lower surface laxly reticulate, midrib prominent, nerves 5—7 pairs, rather obscure, thin, erect-patent. *Flowers* aggregate in leaf axils, sessile; *calyx* cup-shaped, sparsely adpressed-pilose, for $1/2$ — $1/3$ incised, lobes 3, triangular-ovate, acute; *corolla* in bud shortly conical, densely sericeous. *Fruit* yellow, later dark red, edible, solitary, ellipsoid, smooth, up to 11×8 mm, hardly apiculate, *fruiting calyx* cup-shaped, 4—8 mm diam., rather thin, 2—3 mm deep, margin usually 3-toothed, lobes depressed-triangular, acute, or emarginate.

OKINAWA. MCats Compound, 1 km S. of Hirara, alt. 40 m, Aug., buds, *Fosberg 38224* (L); Iriomote Isl., Hoshitake, Aug., fr., *Walker et al. 6607* (L); Sonai, common on limestone cliff, June, fr., *Fosberg 37755* (L); Okinawa, Kunigami near Nago, July, young fr., *Walker et al. 6072* (L); Taketomi Isl., E. of Hazama, alt. 20 m, June, fr., *Fosberg 37572* (L); Miyako, Sugama, low, Aug., fr., *Fosberg 38158* (L).

N o t e. Named in honour of Dr. Egbert Walker of the Smithsonian Institution, Washington, author of the Flora of the Ryukyu Isl. and famous as co-author with Merrill of the Bibliography of Botany of Asia.

Diospyros fusiformis Kosterm., *spec. nov.*

Arbor mediocris *ramulis* tenuibus glabris, *foliis* alternantibus chartaceis glabris opacis subobovato-ellipticis vel ellipticis conspicue acuminatis basi acutis, supra laevibus nervo mediano filiformibus vix impressis costis obscuris, subtus pallidioribus nervo mediano filiformi prominulis costis filiformibus erecto-patentibus vix prominulis rete obscuro perlaxis, petiolis gracilibus, *infructescentiis* axillaribus pergracilibus glabris, *fructus* anguste fusiformi utrinque acuto subglabro laevi; *calyce fructifero* subtubulato profundo, lobis 5 angustis parvis explanatis.

T y p u s: *San 21228* (L).

Tree, up to 8 m high and 10 cm diam. *Bark* black. *Leaves* spirally arranged, chartaceous, glabrous, subovate-elliptic or elliptic, 8—11 × 2.5—4 cm, conspicuously acuminate (acumen up to 1.5 cm long, obtuse), base acute; both surfaces rather dull and smooth; upper surface with very slender slightly impressed midrib, nerves obscure, lower surface paler, midrib slender, prominulous, lateral nerves very slender, erect-patent, 5—7 pairs, hardly prominulous; reticulation obscure, very lax. *Petiole* slender, glabrous, 3—8 mm long, sulcate above. *Male inflorescence* (of the paratype *San 16325*) on up to 2 cm long, branched, slender, axillary, glabrous peduncle. *Calyx* somewhat trumpet shaped, 1.5 mm long, glabrous, with 5 very small, triangular, acute, erect teeth. *Pedicele* up to 5 mm long, slender with a tiny bract at the base. *Corolla* slender, tubular, slightly swollen, 12 mm long, glabrous; lobes 4 or 5, narrowly oblong, acute, fleshy, 5 mm long; throat constricted (sometimes some extra narrower lobes within the outer whorl). *Stamens* 4 or 5, basal, 3—4 mm long, the pilose, narrow, acute anther as long as the glabrous filament. *Pistil* none. *Infructescence* axillary, very slender, glabrous, 2—4 cm long, hardly branched. *Fruit* red (fresh), narrowly spindle-shaped, completely 4-celled, acute at both ends, apiculate, up to 1 × 3.5 cm, smooth, almost with a few adpressed relatively long hairs (especially at the base). *Fruiting calyx* subtubular (slightly widened near the apex), glabrous, thin, 3 mm high, 1.5 mm diam.; lobes 5, narrow, acute, 1 mm long, patent. *Seed* very slender, 2.5 cm long, 3 mm diam., very sharp at both ends; endosperm equable.

BORNBO. Sabah. Sepilok F. R., 15 miles west of Sandakan, Jalan Hujung Tanjong, alt. 10 m, Aug., young fr., *San 21780* (L); Compartment 14, April, fl., *San 16325* (L); *ibid.*, April, ripe fr., *San 21228* (L).

Note. Near *D. graciliflora* Hiern, but the branchlets and leaves glabrous and the fruit spindle-shaped, whereas that in *D. graciliflora* is ellipsoid.

Diospyros gigantocarpa Kosterm., *spec. nov.*

D. polyalthioides auct. non Korth. ex Hiern: Bakh., Bull. Jard. Bot. Buitenz. III, 15 (1941) 409, *quoad spec. bb 28320*.

D. oblonga auct. non Wall.: Bakh. l.c. 412, *quoad spec. bb 27028*.

Arbor ramulis glabris nitidis, foliis alternantibus rigide coriaceis glabris nitidis laevibus oblongis usque ad subobovato-oblongis abrupte acuminatis basin versus attenuatis acutiusculisque, supra nervo mediano tenuibus impressis costis inconspicuis, subtus nervo mediano prominentibus costis sat patentibus tenuibus prominulis marginem versus arcuatim conjunctibus, petiolis crassis brevissimis, inflorescentiis axillaribus, pedunculis communibus brevissimis, ramulis nullis floribus subsessilibus dense minutissime sericeis, calyce anguste campanulato, lobis 5 triangularibus acutis brevibus, corollis tenuiter conicis, lobis 5 tubo aequilongis coriaceis; fructibus subovoideo-globosis magnis laevibus glabris, calyce fructiferi magno, lobis 5 magnis ovatis intus minute dense sericeis.

T y p u s: *bb 28320* (L).

Tree. *Branchlets* glabrous, smooth, glossy. *Leaves* spirally arranged, glabrous, rigidly coriaceous, oblong to subobovate-oblong, 13—18 × 4.5—6 cm, apex abruptly acuminate (acumen slender, up to 1 cm long), towards base gradually tapered, acutish, both sides glossy, smooth, above midrib slender, impressed, nerves invisible, below midrib prominent, nerves rather patent, slender, c. 8—10 pairs, near margin arcuately anastomosing. *Petiole* very short, cylindrical, thick, up to 3 mm long. *Inflorescence* axillary, dense, common peduncle none or very short, not branched; *flowers* subsessile, fleshy, minutely sericeous; *calyx* campanulate, 6—7 mm long, the 5 lobes triangular, acute, 1—1.5 mm long, inside densely minutely pilose; *corolla* in bud subcylindrical, 15 mm long, the 5 fleshy, rather narrow, acute lobes 8 mm long. *Fruit* ovoid-globose, up to 4.5 cm long, top somewhat flattened, glabrous, smooth. *Fruiting calyx* very large, rather flat, consisting

of 5, thick, folded ovate-suborbicular, up to 3 cm long lobes; in between the lobes large marsupial sacs; the tubular part flattened, 1.5—2 cm diam. with a basal ring, the lobes inside densely, minutely adpressed-pilose with a raised central beam. Pericarp woody, hard, 3 mm thick, locules 8, septa thin. *Seeds* wedge-shaped, rounded both ends, 3.5 cm long, smoothly pustular.

BORNEO. W. K a l i m a n t a n. Western Dist., Melawi, Tjatit (Catit), Bt. Gontuk, alt. 40 m, March fl., *bb 27028* (L); *ibid.*, June, fr., *bb 28320* (L).

Note. The two specimens available are from the same locality and resemble each other in all respects. Bakhuizen included them in two different species, to neither of which it belongs. The leaves dry very black, the underside red brown. The flowers were galled inside. The fruits are split at the apex into 5 parts, which is due to drying.

Diospyros gillespiei* (Fosb.) Kosterm., *stat. nov.

D. ferrea (Willd.) Bakh. var. *gillespiei* Fosberg, Bull. Torrey Bot. Cl. 65 (1938) 610. — *Typus: Gillespie 2146* (B).

Characterized by the large, elliptic, chartaceous, rather smooth leaves with obscure lax reticulation and the large fruit with a very small cup-like fruiting calyx.

Diospyros gillisonii* Kosterm., *spec. nov.

Arbor parva vel mediocris, *ramulis* sat gracilibus glabris nitidis griseis, *ramulis* hornotinis minutissime, *adpresse* ferrugineo-sericeis, *foliis* alternantibus rigide coriaceis glabrescentibus ellipticis utrinque obtusis vel raro obtuse acutis et basi acutiusculis, supra opacis laevibus vel nervo mediano, costis et rete laxe prominulis, subtus pallidioribus ab initio sparsissime adpressis minutissime pilosis ultimo glabris nervo mediano prominentibus costis paucis tenuibus erecto-patentibus prominulis, petiolis sat crassis cylindricis, *inflorescentiis* axillaribus vel extra-axillaribus dense minutissime adpresse ferrugineo-pilosis, *floribus* albis aggregatis pedunculis tenuibus impositis, *fructibus* subglobosis sericeis apiculatis, *calyce fructifero* cupulato sparsissime adpresse pilosis, lobis 3 late triangularis acutis erectis.

Typus: NGF 25291 (L).

Straggling *tree* of 3 m, but also growing to straight boled tree of 23 m by 35 cm diam. *Bark* black to dark grey, scaly, live bark red. *Wood* white, hard, with black heart. *Leaves* spirally arranged, usually dull green with red petioles (fresh), rigidly coriaceous, elliptic 5—11 × 3—7.5 cm, both ends obtuse, rarely acute with blunt tip and the base acutish; upper surface dull, either completely smooth or the midrib, the thin nerves, and the lax reticulation smoothly prominulous, midrib flat, its centre often narrowly channeled; lower surface pale, smooth or nearly so, initially with sparse, very minute, straight, appressed hairs, glabrescent, midrib prominent, laterals 5—6 pairs, erect-patent, slender, towards the margin arcuately anastomosing. Petioles thickish, 5—7 mm long, cylindrical, soon glabrous, only the apex near the leafblade narrowly channeled. *Inflorescence* axillary and extra axillary, densely, minutely, rusty adpressed-pilose, consisting of aggregate, bracteolate, rusty pilose, white (fresh) *flowers* on slender up to 1 cm long peduncles, or the pedunculate clusters on small, up to 2 cm long, pilose branchlets. *Fruit* almost sessile, subglobose (immature), adpressed pilose, apiculate; *fruiting calyx* cup-shaped, up to 1 cm diam., rather thin, sparsely minutely adpressed-pilose, the 3 lobes erect, depressed triangular, acute, *c.* 1 mm high; calyx tube up to 5 mm deep.

NEW GUINEA. Papua — New Guinea. Milne Bay Dist.: Iwa I., sea level, Lat. 8° 30' S, Long. 151° 05' E, Oct., buds, NGF 25315 (L), and fr., NGF 25314 (L); Nubiam I., south coast, Kiriwina Subdist., sea level, Lat. 8° 30' S, Long. 151° 05' E, limestone beach, Oct., fr., NGF 25287 (L), and fr., NGF 25291 (L), Panaete I., Duboyne group, Lat. 10° 40' S, Long. 152° 20' E, sea level, Oct., buds, NGF 25419 (K, L), leaves more oblong, and fl., NGF 25409 (K, L); Dugumene I., Lat. 8° 50' S, Long. 151° 55' E, beach forest on broken coral, dominant tree species with *Eugenia*, Oct., bud, NGF 25320 (L); Misima I., Oct., fr., NGF 25420 (K).

Note. Close to *D. villosiuscula*, but the indumentum different and the leaves rigidly coriaceous. Also near *D. littorea*, but different by its indumentum, the leaf size, and the fruit. It is a gregarious species on low coral limestone, growing mainly within 20 m of the shore. The trees are often crooked, but Gillison observed also specimens of 23 m height with straight bole. All collections were made by Gillison.

***Diospyros glabrata* (Warb.) Kosterm., comb. nov.**

Maba glabrata Warburg, Bot. Jahrb. 13 (1891) 454. — *D. ellipticifolia* (Stokes) Bakh. var. *glabrata* (Warb.) Bakh., Bull. Jard. Bot. Buitenz. III, 15 (1941) 430.

NEW GUINEA. Papua New Guinea. Morobe Dist., Wau, alt. 1300 m, Aug., fr., NGF 4446 (L); *ibid.*, Heldsbach, alt. 30 m, Sept., fl., *Clemens* 114 (L).

***Diospyros kinabaluensis* (Bakh.) Kosterm., stat. nov.**

D. elliptifolia Merr. forma *kinabaluensis* Bakh. [ex Fischer, Kew Bull. 6 (1932) 294, nomen] Bull. Jard. Bot. Buitenz. III, 15 (1938) 233. — [*D. elliptifolia* Merr. var. *kinabaluensis* Bakh., Bull. Jard. Bot. Buitenz. III, 15 (1955) plate 51, nom. inval.].

Note. Many specimens quoted by Bakhuizen under *D. elliptifolia* are referable to several other species.

***Diospyros lateriflora* (Hiern ex Baker) Bakh.**

Originally (Bull. Jard. Bot. Buitenz. III, 15, 1936: 8) considered a proper species by Bakhuizen, later (*ibid.* 1941: 435 & 442) included in *D. ferrea* with the remark: 'It should be considered an extreme form of *D. ferrea*'.

I consider it still a proper species, widely different from *D. ferrea* by the pateriform cup and very large fruit. The leaves show a strong resemblance to those of *D. gillespiei*.

***Diospyros leroyi* Kosterm., spec. nov.**

Arbor mediocris, ramulis glabris laevibus, foliis alternantibus distichis glabris nitidis rigide coriaceis subobovato-ellipticis vel ellipticis obtusis vel rotundatis basi cuneatis, utrinque dense prominulo-reticulatis, supra nervo mediano tenui impressis costis filiformibus prominulis, subtus nervo mediano prominente, costis paucis, erecto-patentibus (basalibus adscendentibus), prominulis marginem versus arcuatis, petiolis glabris; floribus axillaribus aggregatis glabris, calyce cupuliformi, 1/2—1/3 inciso, lobis acutis; corolla juvenilis glabra, sub-cylindrica, basi inflata; fructibus subglobosis, minute pustulatis, calyce fructifero lobis 4 subrotundatis coriaceis explanatis.

Types: *Bernardi* 9961 (L).

Tree, 8 m high. *Branchlets* smooth, glabrous. *Leaves* distichous, glabrous, glossy, rigidly coriaceous, subobovate-elliptic to elliptic, 6—11 × 3.5—6.5 cm, obtuse or rounded, base cuneate, both surfaces densely prominulously reticulate, above midrib slender, impressed, nerves slender, prominulous, below midrib prominent, nerves c. 5 pairs (with shorter ones in between), erect-patent, prominulous, slender, towards margin arcuate, the basal pair

much steeper, sometimes below this an accessory pair. Petiole 5—8 mm long. *Flowers* aggregate, sessile, glabrous; *calyx* (in bud) cup-shaped, incised for $1/2$ — $1/3$, the 4 lobes acute, erect; *corolla* in bud fleshy, subcylindrical with slightly swollen base, greenish yellow (fresh). *Fruit* subglobose, *c.* 2×1.5 cm, finely smoothly pustulate; *fruiting calyx* consisting of 4 fleshy, subrotundate, patent lobes, *c.* 6 cm diam.; tube none or very shallow. Pedicel 3—4 mm long.

NEW CALEDONIA. S. of Koinde, Lat. $21^{\circ} 36' - 21^{\circ} 38' S$, Long. $165^{\circ} 56' - 165^{\circ} 58' E$, alt. 900 m, Aug., fr. *Bernardi* 9961 (G, L); Exploitation Devillers, above la Nohea, near Ponerihouen, alt. 500 m, Jan., buds *McKee* 10031 (L); locality not indicated, *ster.*, *Lécard s.n.* (BM).

Note. The species is named in honour of Professor Jean-F. Leroy, Director of the Laboratoire de Phanérogamie in Paris, a staunch promotor of botanical science.

Diospyros littorea* (R. Br.) Kosterm., *comb. nov.

Maba littorea R. Br., Prodr. (1810) 527. — *M. buxifolia* Juss. var. *littorea* Hiern, Nov. Guinea 8, Bot. (1909) 199. — *D. ferrea* Bakh. var. *littorea* Bakh., Bull. Jard. Bot. Buitenz. III, 15 (1937) 57, 62 (*p.p.*, *excl. Ceylon*, etc.); (1941) 379, 434 (*excl. form.*).
M. cumingiana DC., Prodr. 8 (1844) 241. — *Typus: Cuming 1694.*

Note. A very constant, mostly littoral species, occurring from Thailand to New Guinea and Australia. It is different from the Ceylonese *D. ferrea*, which has spatulate leaves, contrarily to the elliptic ones of *D. littorea*.

Diospyros lolinopsis* Kosterm., *spec. nov.

Arbor, ramulis sat crassis dense pallide rufo adpresse hirsutis, foliis alternantibus coriaceis subovato-ellipticis acutis, basi cordatis, supra sublaevibus obscure dense reticulatis, nervo mediano graciliter impressis, subtus dense pallide rufo-hirsutis nervo mediano valde prominentibus costis gracilibus subpatentibus prominulis, reticulatione obscuris, petiolis crassis, fructibus axillaribus, solitariis magnis depresso globosis, dense rufo-tomentellis, calyce fructifero applanato 4-lobato, piloso, tubo nullo, pedicellis crassis.

Typus: *Henty NGF 28009* (L).

Tree, 28 m high, narrowly buttressed to 2 m; erect, cylindrical bole of 15 m and 50 cm diam., forked high up; small dense crown. *Bark* dark brown, hard, rough, vertically fissured; inner very light pinkish brown, rapidly darkening on exposure. *Wood* white, hard, with black streaks and patches. *Branchlets* rather stout, densely adpressedly pale-rusty hirsute. *Leaves* spirally arranged, coriaceous, subovate-elliptic to elliptic, 18—25 \times 7—10 cm, acute, base cordate; upper surface glabrous, smooth, dark green (fresh), finely obscurely reticulate, midrib slender, impressed; lower surface pale green (fresh), pale-rusty tomentellous, midrib stout, strongly prominent, nerves *c.* 12 pairs (with shorter intercalated ones), slender, rather patent, prominulous, towards margin arcuately evanescent. Petiole thick, 1.5—2 cm long, densely rusty pilose. *Fruit* green (fresh), axillary, solitary, depressed-globose, 4 \times 7.5 cm, densely rusty pilose, the indumentum easily rubbed off. Pedicel rather stout, cylindrical, 1.5 cm long, pilose. *Fruiting calyx* consisting of 4 triangular-ovate, acute, stiff, patent, 8 mm long lobes, no tube.

NEW GUINEA. Papua—New Guinea. Territory of New Guinea, Madang Dist., Usino, alt. 130 m, Lat. $5^{\circ} 30' S$, Long. $145^{\circ} 25' E$, hill side forest, Aug., fr., *NGF 28009* (L).

Note. Close to *D. lolin* Bakh. from which it differs by the much thicker, cordate, densely pilose leaves and the much larger fruit.

Diospyros longepedunculata Kosterm., *spec. nov.*

Arbor, ramulis gracilibus glabris, foliis alternantibus glabris chartaceis oblongis acuminatis basi acutis, supra laevibus nervo mediano gracilibus impressis costis filiformibus subimpressis, subtus pallidioribus nervo mediano gracilibus prominentibus costis erecto-patentibus prominulis nervis secundariis obscuris, petiolis sat brevibus, gracilibus, infructescentiis axillaribus glabris bifloris, pedicellis longis glabris, fructibus subglobois, laevibus, 6-locularibus, seminibus 6, endospermio ruminato.

T y p u s: *SAN 29807* (L).

Tree, 13 m high, diam. 30 cm. *Bark* smooth, black and grey, 2—3 mm thick, live bark fibrous, 5 mm thick, cambium golden yellow. *Branchlets* slender, glabrous. *Leaves* spirally arranged, chartaceous, oblong, 7—8.5 × 2.5—3.5 cm, acuminate (acumen up to 1 cm long, obtuse), base acute; above smooth, the slender midrib impressed, nerves very thin, slightly impressed; lower surface paler, smooth, the slender midrib prominent, nerves slender, prominulous, c. 10 pairs, erect-patent, near margin arcuate, veins faint, parallel. *Petiole* slender, 3—5 mm long, channeled above. *Infructescences* axillary or on special up to 10 cm long branchlets, usually two long-pedicelled flowers on an obscure main peduncle, glabrous; only one fruit develops, of the other flower the pedicel remains thin and persists after the flower has dropped. *Pedicel* glabrous, 1.5 cm long, apex slightly thickened. *Fruit* subglobose, smooth, 2 cm diam., apiculate; pericarp thin; 6 cells, each containing a wedge-shaped seed, surrounded by pulp; endosperm ruminant. *Fruiting calyx* consisting of 3 patent, rather thin, depressed-ovate, obtuse, 2 mm long, 3 mm wide lobes.

BORNEO. *S a b a h.* Lahad Datu, Chu Tok Koi Area, Segama Rd., mile 5, alt. 70 m, Sept., fr., *San 29807* (L).

N o t e. The very long pedicels make this an outstanding species.

Diospyros malacothrix Kosterm., *spec. nov.*

Arbor, ramulis gracilibus apice excepto glabris, foliis alternantibus rigide chartaceis glabris (nervo mediano subtus exceptis), subovato-ellipticis usque oblongis, conspicue acuminatis, basi in petiolum contractis obtusis vel acutiusculis, utrinque dense prominulo-reticulatis nervo mediano supra impressis subtus prominentibus costis filiformibus obscuris erecto-patentibus, fructibus solitariis axillaribus sessilibus depresso-globois dense sericeo-ferrugineo-pilosis; calyx fructifer tubo nullo, lobis 4 tenuibus, ovatis explanatus, seminibus 4, laevibus, endospermio aequabile.

T y p u s: *Schram BW 1985* (L).

Tree, 16 m high, bole 12 m, diam. 23 cm. *Branchlets* slender, the apex with few minute slender hairs. *Leaves* spirally arranged, stiff chartaceous, glabrous (except a few thin hairs on midrib below), subovate-elliptic to subovate-oblong to oblong, 7—10 × 2—4 cm, abruptly acuminate (acumen up to 1 cm long), base contracted into the petiole, obtuse or acutish, both surfaces densely prominulously reticulate, midrib impressed on upper, prominent on lower surface, nerves above obscure, below very thin, rather obscure, erect-patent, c. 10—13 pairs. *Petiole* slender, 5—10 mm long, channeled above. *Fruit* axillary, solitary, sessile, depressed-globose, up to 7 × 23 mm, rusty sericeous. *Fruiting calyx* flat, tube none; lobes 4, rather thin, patent, ovate, 3—5 mm long, adpressed pilose outside. *Seeds* 4 in 4 cells, smooth; endosperm equable.

NEW GUINEA. *I r i a n J a y a.* Cycloop Mts. near Jayapura (Hollandia), alt. 250 m, Febr., fr., *BW 1985* (L).

***Diospyros mollissima* Kosterm., spec. nov.**

Arbor, ramulis gracilibus dense minuteque brunneo tomentellis; foliis alternantibus chartaceis oblongis acuminatis basi acutis utrinque dense minuteque obscure reticulatis, supra opacis glabris nervo mediano impressis, subtus sparse minutissime tomentellis nervo mediano prominentibus costis erecto-patentibus arcuatis prominulis; petiolis gracilibus dense tomentellis; fructibus 1—3 ramulis impositis depresso globosis ab initio dense adpresse pilosis glabrescentibus, calyx fructiferus cupuliformis dense pilosus, lobis 4 depresso ovatis subacuminatis rigidis reflexis.

T y p u s: *Moll BW 9921* (L).

Tree 26 m, bole 20 m, diam. 40 cm, without buttresses. *Bark* black, 2 mm thick, with many narrow fissures, not scaly; live bark 6 mm, light brown. *Branchlets* slender, brown tomentellous. *Leaves* spirally arranged, chartaceous, oblong, 9—14 × 4—4.5 cm, acuminate, base acute; both surfaces densely obscurely reticulate; upper surface dull, glabrous, midrib impressed; below sparsely finely brown tomentellous (denser on veins), midrib prominent, nerves 8—10 pairs, erect-patent, slender, arcuate. Petiole rather slender, tomentellous, 7—10 mm long. *Fruit* 1—3 on the bare branchlets below the leaves on a 1—2 mm long densely pilose pedicel, depressed globose, up to 1.5 cm diam., finely pubescent, glabrescent, slightly apiculate. Pericarp thin, fruit 8-celled. *Seeds* abortive. *Fruiting calyx* with a shallowly widely cup-shaped tube, densely brown pubescent, c. 17 mm diam., 5 mm high; lobes 4, stiff, depressed ovate, subacuminate, 5 × 6 mm, reflexed, pointing downwards, inside densely pubescent; inner side of lobes with a small, upright rim.

NEW GUINEA. Irian Jaya. Kaimana Dist., Adi I., rain forest, alt. 15 m, rather scarce, March, fr., *BW 9921* (L).

***Diospyros monticola* Kosterm., spec. nov.**

Arbor (?), *ramulis gracilibus glabris, foliis alternantibus glabris rigide coriaceis parvis ellipticis obtusis vel obscure late obtuseque acuminatis, basi acutis, supra laevibus, sat opacis, nervo mediano filiformibus impressis, costis filiformibus obscuris; subtus sat laevibus, nervo mediano tenuibus impressis costis erecto-patentibus paucis filiformibus margine versus arcuatis nec anastomosantibus, reticulatione laxe subprominulis; petiolis gracilibus cylindricis; floribus femineis solitariis axillaribus sessilibus, tubo calycis subcupuliformibus, lobis 4 crassis erectis ovato-oblongis subobtusis marginis reflexis, exterioribus sparse minutissime pilosis intus glabris, corollis tubuliformibus, lobis 4, tubum aequilongis intus glabris, exterioribus sparse pilosis; staminodiis 7—8 glabris hypogynis, ovario glabro stylo longo stigmatem parvo.*

T y p u s: *J. & M.S. Clemens 32541* (L).

Tree (?); *branchlets* slender, glabrous. *Leaves* spirally arranged, glabrous, stiff-coriaceous, elliptic, 3—7 × 1.5—3 cm, obtuse or obscurely, very broadly, obtusely acuminate, base acutish; above smooth, rather dull, midrib very thin, impressed, nerves very thin, rather obscure; lower surface with slender prominent midrib, nerves erect-patent, filiform, c. 5—6 pairs, near margin arcuate but hardly anastomosing; reticulation lax, slightly prominulous. Petiole slender, c. 3 mm long, cylindrical. *Female flowers* axillary, solitary, sessile; main peduncle 1 mm long, slightly very minutely pubescent, not branched. *Calyx* tube shallowly cup-shaped, 4 mm diam. at margin, 1.5 mm deep; lobes 4, erect, fleshy, sparingly pubescent outside, elongate triangular, acutish, 4—5 mm long, margins reflexed, inside glabrous. *Corolla* tube as long as calyx lobes, subcylindrical, sparsely adpressed-pilose; throat narrowed; lobes lanceolate-oblong, fleshy, 4—5 mm long, outside at least along the midrib sparsely pilose, inside glabrous; *staminodes* hypogynous, glabrous, anthers slender, acute, longer than the filaments; *ovary* ovoid, glabrous; style 2—3 mm long with small stigma.

BORNEO. Sabah. Mt. Kinabalu, Marai Parai, alt. 1300 m, April, fl., J. & M.S. Clemens 32541 (L).

Diospyros nidus-avis Kosterm., *spec. nov.*

Arbor mediocris, ramulis apicem versus minutissime pilosis, foliis alternantibus coriaceis glabris ellipticis magnis brevissime acuminatis vel apiculatis basi in petiolum contractis, obtusis, perdense minutissime prominule reticulatis; supra nitidis nervo mediano et costis filiformibus impressis, subtus pallidioribus (in sicco brunneis) nervo mediano magno valde prominentibus costis patentibus gracilibus prominulis marginem versus arcuatis, reticulatione sat laxe prominulo; petiolis crassis glabrescentibus; fructibus axillaribus sessilibus subglobosis minutissime dense adpresse pilosis, calyce fructiferi tubo subnullo; lobis 4 foliaceis minutissime adpresse pilosis glabrescentibus plicatis fructibus aequilongis.

T y p u s: S 32181 (L).

Tree 13 m tall, 12 cm diam. *Branchlets* thick with a very minute adpressed tomentum. End bud rusty subsericeous. *Leaves* spirally arranged, coriaceous, glabrous, elliptic, 20—29 × 9—12 cm, very shortly acuminate or apiculate, base contracted into the petiole, rounded; upper surface somewhat glossy, very densely prominuloulsy reticulate, midrib narrow, deeply impressed, nerves very thin, impressed; lower surface brown (dried) with a rather lax prominulous reticulation, midrib stout, strongly prominent, nerves 13—15 pairs (in between usually strong shorter ones), slender, patent, prominent, towards margin arcuate. Petiole stout, initially very minutely pilose, 1.5 cm long, concave above. Immature *fruit* axillary near top of branchlets, sessile, subglobose, initially minutely sericeous; *fruiting calyx* tube flattish; lobes 4, green (fresh), leafy, rather fleshy, very minutely pilose, glabrescent, extremely folded, ovate, acutish, up to 2.5 cm long.

BORNEO. Sarawak. 4th Division, Bintulu Dist., outside Buan F. R., hillside of mixed *Dipterocarp* forest, Jan., fr., S 32181 (L).

Diospyros neocaledonica Kosterm., *nom. nov.*

Maba glauca Montrous., Mém. Acad. Lyon 10 (1860) 230 (base).

Included by Bakhuizen (Bull. Jard. Bot. Buitenz. III, 15, 1936: 54) in *D. ferrea*. The leaves are very similar, but the fruit is completely different.

Diospyros normanbyensis Kosterm., *spec. nov.*

Arbor mediocris ramulis dense ferrugineo-tomentellis sat crassis, foliis alternantibus rigide chartaceis vel subcoriaceis subovato-ellipticis vel ellipticis brevissime acuminatis vel obtusis basi subcordatis, supra glabris sublaevibus nervo mediano impressis puberulis subtus sparsissime pilosis (venis densius pilosis), glabrescentibus, nervo mediano prominentibus costis sat patentibus prominulis marginem versus arcuato-conjunctis, petiolis crassis dense pilosis, floribus femineis axillaribus, solitariis vel binis dense adpresse ferrugineo-pilosis, calycibus cupuliformibus non profundis lobis 3 rotundatis acutiusculis, corollis dense depresso pilosis late tubulosis lobis 3 anguste ovatis parvis intus glabris, staminodiis nullis, fructibus anguste ovoideis acutis dense ferrugineo-pilosis, calycibus auctis depresso urceolatis nec profundis lobis coriaceis latis reflexis, seminibus laevibus endospermio aequalibus.

T y p u s: Brass 25474 (L).

Tree, up to 13 m high with slender bole and horizontal branches; bark black. Wood white, hard. Flush leaves yellowish green with rusty pubescence below, old leaves dark green with midrib — at least at base — almost black. *Branchlets* rather thick, densely rusty tomentellous. Leaves alternate, rigidly chartaceous to subcoriaceous, subovate-elliptic to elliptic, 11—19 × 7—9 cm, very shortly obtusely acuminate or obtuse, base subcordate;

upper surface rather smooth, glossy, glabrous, midrib impressed, pilose, lower surface with very sparse erect hairs (denser on the veins), midrib prominent, nerves *c.* 9 pairs, rather patent, slender, prominulous, towards margin arcuately connected, reticulation very lax, obscure. Petiole thick, densely rusty pubescent. *Female flower* axillary on a very short bracteate, thick, pubescent peduncle, solitary or in pairs, almost sessile. *Calyx* cup-shaped, 8 mm diam., 3 mm deep, thick, fleshy; lobes 3, triangular-ovate, acutish, thick, 5 mm, erect or reflexed. *Corolla* externally pink, inside whitish, inflated-tubular, fleshy, densely adpressed-pilose, 1 cm long; lobes 3, triangular-ovate, acute, small, 1—2 mm long, inside glabrous, erect or reflexed. *Ovary* subglobose, densely pubescent; style thick, short, with crenulated stigma. *Staminodes* none. *Fruit* ovoid, gradually acute with sharp tip, 2 cm long, 1 cm wide at base (immature), densely rusty-pubescent. *Fruiting calyx* cup depressed urceolate, thick, 1.5 cm diam., 4 mm deep, the thick lobes 4 mm long, strongly reflexed. *Seeds* black, smooth, slender, wedge-shaped, endosperm equable.

NEW GUINEA. P a p u a — N e w G u i n e a. Normanby I., Waikaiuna Bay, about 0.5 mile inland, alt. 15 m, April, fl., fr., NGF 8609 and Brass 25474 (K, L), both specimens apparently from the same tree.

N o t e. Related to *D. fusicarpa* from which it is distinguished by the subcordate leaves.

Diospyros olen Hiern

D. olen Hiern, Trans. Cambridge Phil. Soc. 12 (1873) 246. — T y p u s: *Deplanche* 31 (K, L).

By Bakhuizen (Bull. Jard. Bot. Buitenz. III, 15, 1938: 222) tentatively (interrogation mark) included in *D. hebecarpa*. In the Addenda to his monograph (1941: 458) he treated this as a proper species, without citing his former remark, but (p. 460) he remarked: 'perhaps not specifically different from *D. hebecarpa*'.

Diospyros olivacea (King) Kosterm., *comb. nov.*

Maba olivacea King & Gamble *ex King*, Bull. Herb. Boiss. 5 (1905) 227; King & Gamble, J. Asiat. Soc. Bengal 74 (1906) 204. — *D. hermaphroditica* (Zoll.) Bakh. var. *olivacea* Bakh., Bull. Jard. Bot. Buitenz. III, 15 (1937) 88.

Diospyros oubatchensis Kosterm., *spec. nov.*

D. foliosa (A. Gray) Bakh. var. *neo-caledonica* Bakh., Bull. Jard. Bot. Buitenz. III, 15 (1941) 449. — *Maba nov.* sp. Schlechter, Bot. Jahrb. 39 (1906) 227; Bakh., l.c. 447. — T y p u s: *Schlechter* 15584 (P).

Diospyros pancheri Kosterm., *spec. nov.*

D. foliosa (A. Gray) Bakh. var. *reticulata* Bakh., Bull. Jard. Bot. Buitenz. III, 15 (1941) 449. — T y p u s: *Pancher* (P), Mus. Nat. 301, Bas du Congin (not Mt. Koghi as Bakhuizen cited).

N o t e. This resembles most the Fijian *D. foliosa*, but the indumentum is different.

Diospyros potamica Kosterm., *spec. nov.*

Arbor gracilis, ramulis pergracilibus glabris, foliis alternantibus, rigide chartaceis, glabris, anguste oblongis vel oblongis parvis sensim attenuato-acuminatis basi acutis utrinque dense conspicue minute prominulo-reticulatis, supra nervo mediano tenui impressis costis obscuris, subtus nervo mediano prominente gracili, costis erecto-patentibus paucis conspicue prominulis marginem versus arcuato-conjunctis, petiolis tenuibus; fructibus solitariis, axillaribus, sessilibus, subglobois, subapiculatis, glabrescentibus, calyce fructifero tubo parvo infundibuliforme, lobis 4 explanatis sat crassis, glabris, subhastato-ovatis acuminatis pro fructu magnis.

T y p u s: *Brass* 6600 (L).

Slender tree in forest substage. *Branchlets* very slender, glabrous or with a few minute adpressed hairs apically, terminal bud rather sparsely adpressed-pilose. *Leaves* spirally arranged, rather stiffly chartaceous, glabrous, narrowly oblong to oblong, glossy, 4—8.5 × 0.7—2.5 cm, attenuate-acuminate, base acutish; both surfaces conspicuously densely, prominulously reticulate, above midrib thin, impressed, nerves obscure, below midrib slender, prominent, nerves *c.* 7 pairs, erect-patent, towards the margin arcuately anastomosing, conspicuously prominulous. Petiole slender, 4—5 mm long. *Fruit* axillary, solitary, subglobose, *c.* 1 cm high, apiculate, sparsely very minutely adpressed-pilose, glabrescent; tube of *fruiting calyx* widely funnel-shaped, small, *c.* 5 mm diam. at apex, *c.* 3 mm high, the 4 patent, rather thick, glabrous, glossy lobes subhastate-ovate, acuminate, *c.* 7 mm long, longitudinally ribbed, at the inside with an upright 0.5 mm high rim. *Seeds* abortive.

NEW GUINEA. Papua — New Guinea. Fly R., 528 mile Camp, alt. 80 m, May, fr., *Brass 6600* (L), fr. green, 1.7—1.8 cm long and 1.1—1.2 cm diam. (fresh).

***Diospyros pulchrinervia* Kosterm., spec. nov.**

Arbor ramulis sat crassis dense minute ferrugineo-tomentellis, foliis magnis alternantibus subcoriaceis oblongis acutis basi obtusis supra subnitidis glabris, conspicue dense bullatis nervo mediano costis nervisque secundariis impressis, subtus conspicue reticulatis, nervatione pilosis nervo mediano valde prominentibus, costis numerosis erecto-patentibus prominentibus nervis secundariis parallelis prominentibus, petiolis crassis dense ferrugineo-tomentellis, fructibus subglobosis vel late ellipsoideis, dense minute ferrugineo-pilosis, calyce fructifero crasso dense piloso, lobis 4 ovatis, margine plicatis, endospermio aequalibus.

T y p u s: *Kostermans 21583* (L).

Tree, 25 m high and 20 cm diam. *Bark* dark, smooth. *Branchlets* thick, rusty tomentelous. *Leaves* spirally arranged, subcoriaceous or stiff-chartaceous, oblong, up to 10 × 30 cm, acute, base contracted into the petiole, obtusely truncate; upper surface somewhat glossy, conspicuously densely bullate, glabrous, midrib, nerves, and veins impressed; lower surface dark brown (dried) conspicuously veined, the veins minutely ferrugineously hirsute, the spaces in between almost glabrous; midrib stout, strongly prominent, nerves *c.* 20—25 pairs, erect-patent, prominent, at margin arcuately anastomosing; veins parallel, prominent, veinlets prominent, lax. Petiole stout, rusty tomentelous, 1.5—2 cm long. *Fruit* on the bare branches, single, on stout, densely rusty pilose, 1—2 cm long *infructescence* branches with persistent, ovate, acute, thick, densely pilose, 4 mm long bracts. Pedicel up to 1 cm long, densely pilose. *Fruit* broadly ellipsoid to subglobose, up to 2 cm long, rusty, 8-celled. *Fruiting calyx* green (fresh), very thick, consisting of a ring-like base of *c.* 6 mm diam., a very shallow, inconspicuous tube, and 4 very thick, broadly ovate, obtuse, erect, 1.5 cm long lobes; the basal part of their margins forming deep, marsupial, thick, sagging sacs. *Seeds* narrowly oblong, wedge-shaped, smooth; endosperm equable.

BORNEO. East Kalimantan (Indonesian Borneo). Berau, near Telok Bajur, hill forest, alt. 50 m, Nov., fr., *Kostermans 21583* (A, BO, CANB, G, K, L, P, SING, US).

Note. The fruit is similar to that of *D. wallichii*, but the leaves are entirely different.

***Diospyros rhododendroides* Kosterm., spec. nov.**

Frutex vel arbor parva, ramulis juvenilibus dense minutissime ferrugineo-tomentellis, foliis alternantibus rigide coriaceis vel coriaceis, ellipticis vel oblongis utrinque obtusis, rarius apice subacutis, supra laevibus vel obscure reticulatis nervo mediano impressis, subtus ab initio dense minuteque ferrugineo-hirtellis, gla-

bracentibus laevibus vel reticulatione costaque prominulis, costis sat patentibus; *fructibus* axillaribus solitariis vel binis, sessilibus subglobosis dense ferrugineo-hirtellis, *calycibus fructiferis* crassis planis lobis tribus apice reflexis.

T y p u s: *Brass 8511* (L).

Shrub or tree, up to 10 m high, with drooping branches. *Bark* brown with long shallow fissures; lenticels raised longitudinally; inner bark deep pink. *Wood* straw-coloured. *Branchlets* thickish, rusty tomentellous. *Leaves* spirally arranged, stiff-coriaceous to coriaceous, elliptic to oblong (very rarely subovate-oblong), 11.5—13 × 4—5.5 cm (in the paratypes less than 3.5 × 5 cm), obtuse at both ends (rarely apex acutish), upper surface glabrous, rather smooth or reticulate, midrib slender, impressed, lower surface rusty tomentellous, glabrescent (tardily on veins), midrib prominent, nerves obscure or prominulous, rather patent, *c.* 5—10 pairs. Petiole short, up to 5 mm, pubescent. *Fruit* axillary, solitary or in pairs, subglobose, *c.* 1 cm diam., densely rusty pubescent, yellow or red (fresh). *Fruiting calyx* thick, flat, up to 1.5 cm diam., the 3 thick, triangular-ovate, acutish lobes patent, up to 5 mm long, the apical part reflexed; tube very small and shallow, *c.* 4 mm diam. *Seeds* abortive.

NEW GUINEA. *P a p u a* — **N e w G u i n e a.** Monoba Dist.: Lake Wanum, Lat. 6 40 S, Long. 146 45 E, lake side, Febr., buds, *Sayers 193* (L); — *P a p u a*, Western Dist.: Fly R. Area, Wassi Kussa R., Tarara, common in rain forest substage, Dec., fr., *Brass 8511* (L); *ibid.*, Jan., fr., *Brass 8732* (L); Bootless Inlet, 6 miles E. of Port Moresby, Lat. 9 35 S, Long. 147 15 E, alt. 3 m, inner edge of mangrove swamp, hilly, stony, young leaves pink, Febr., buds, *NGF 19102* (L); Port Moresby, Idubada, sea level, Sept., buds, *NGF 10745* (L); Kanosia, sea level, Febr., young fr., *Carr 11184* (L).

N o t e. Whereas in the type specimen the nervation on the lower leaf surface is invisible, it is clearly marked in some paratypes. Also the upper surface may be either smooth or reticulate. The smallest leaves are found in *NGF 10745* (3—5 × 2—3.5 cm). The species is easily recognizable by its purely oblong leaves and the pubescence on the lower surface. The largest leaves are found in the specimen *Carr 11184* (20 × 8 cm).

Inflorescences (of the paratypes) are on short axillary bracteate branchlets, or almost sessile, densely adpressed-pilose. The immature calyx is barrel-shaped, laxly adpressed-pilose with very small acute lobes, the corolla is slender cone-shaped, densely adpressed-pilose. Information on the label says that the lobes are pink creamy, the sepals red.

Diospyros ridsdalei Kosterm., *spec. nov.*

Arbor mediocris, *ramulis* gracilibus glabris, *foliis* alternantibus rigide chartaceis glabris ellipticis breviter acuminatis basi in petiolum contractis obtusis vel acutiusculis, supra opacis laevibus nervo mediano gracili impressis costis filiformibus obscuris, subtus obscure reticulatis vel laevibus nervo mediano prominulis costis filiformibus obscuris paucis, sat patentibus, petiolis brevis gracilibus, *fructibus* axillaribus solitariis cylindricis dense minute adpresse ferrugineo-hirtellis, *calyce fructifero* patelliformi vix inciso, lobis 4 brevissimis latis, *semina* 4 elongata; endospermium aequabile.

T y p u s: *Ridsdale & Galore NGF 33414* (L).

Understorey tree of 10 m. *Bark* black, pustular. *Wood* white. *Branchlets* thin, glabrous, smooth. *Leaves* spirally arranged, stiffly chartaceous, glabrous, elliptic, 7—14 × 4—7 cm, shortly abruptly acuminate, base contracted into the petiole, obtuse or acutish; upper surface smooth, dull, the slender midrib impressed, nerves obscure; lower surface smooth or obscurely reticulate, midrib prominulous, nerves *c.* 7 pairs (with shorter ones in between), very thin, obscure, rather patent. Petioles slender, glabrous, 5—7 mm long.

Fruit axillary, solitary, ellipsoid, up to 2.5×2 cm, densely minutely rusty appressed-pilose. *Fruiting calyx* flat, disc-shaped, up to 12 mm diam., the 3 or 4 lobes obscure. *Seeds* 4, elongate, smooth, endosperm equable.

NEW GUINEA. Papua — New Guinea. Western Dist., Kiunga Subdist., Angarmaruk, alt. 70 m, Lat. 6 20 S, Long. 141 00 E, swamp forest, July, fr., NGF 33414 (L).

Diospyros savannarum Kosterm., *spec. nov.*

Arbor parva spinosula, ramulis glabris laevibus, foliis alternantibus coriaceis oblongis vel ellipticis acutis vel obtusis, basi truncatis vel subcordatis, untrunque laevibus, supra nervo mediano et nervis lateralibus impressis, subtus nervo mediano prominentibus, costis paucis suberectis prominentibus, petiolis bene evolutis; fructibus solitariis globosis nitidis, pericarpio tenuibus, seminibus minutissime undulato-lineatis, calycibus fructiferis applanatis, lobis 4, coriaceis glabris ovato-orbicularibus reflexis.

TYPUS: Van Beusekom & al. 4009 (L).

Treelet, 5 m tall, trunk spiny. *Branchlets* slender, glabrous, smooth. *Leaves* spirally arranged, coriaceous or stiffly-chartaceous, glabrous, elliptic or oblong, $6-12 \times 2-5$ cm, acutish or obtuse, base truncate or subcordate; above smooth, the midrib and slender nerves slightly impressed; below almost smooth, very finely wrinkled, midrib prominent, nerves 5-7 pairs, rather steep, prominent, evanescent towards the margin, some forked. *Petioles* cylindrical, up to 12 mm long, glabrous. *Fruit* axillary, solitary, globose, smooth, glossy, up to 3 cm diam., when ripe orange-yellow (fresh); pericarp thin; *seeds* 8, wedge-shaped, acute at both ends, 1-1.5 cm long, with a fine, wavy, fissured pattern, surrounded by a greenish mucous pulp. Endosperm equable. Pedicel up to 5 mm long, cylindrical, rather thick. *Fruiting calyx* consisting of a flat disk-like central part, 1 cm in diam., the 4 fleshy, ovate-orbicular, 1 cm long, 8 mm wide lobes completely reflexed, pointing downwards, the margins of the lobes slightly reflexed laterally.

THAILAND. W. P F O V. Kanchanaburi Dist., Lat. 14 09 N, Long. 99 12 E, alt. 100 m, open, savanna-like, dry deciduous forest on limestone, Nov., fr., Van Beusekom & al. 4009 (L).

N O T E. Close to *D. montana*, but the leaves much larger and thicker, the nerves impressed on the upper surface and strongly prominent on the lower one, the seeds not smooth.

Diospyros schmutzii Kosterm., *spec. nov.*

Arbor parva (?), ramulis hornotinis tenuibus dense minutissime adpresse pilosis, foliis alternantibus glabris rigide coriaceis ellipticis utrinque obtusis denseque minutissime prominule areolatis, supra sat laevibus nervo mediano subprominulo costis sat obscuris, subtus pallidioribus nervo mediano tenuis costis paucis prominulis erecto-patentibus obscuris, petiolis gracilibus; inflorescentiis axillaribus ramulis hornotinis impositis minutissime dense adpresse pallide brunneo-pilosis; floribus sessilibus aggregatis vel pedunculis tenuibus brevibus glomerulatis bracteolatis.

TYPUS: Schmutz 664 (L).

Small tree (?); *branchlets* slender, glabrous, those of the flush with dense, adpressed, light brown pubescence. *Leaves* spirally arranged, dense, elliptic, rigidly coriaceous, glabrous, $1.5-6 \times 1-4$ cm, obtuse at both ends or base slightly acutish, both surfaces densely prominulously areolate-reticulate, above less pronounced, midrib slender, prominulous, below paler, midrib very thin, prominulous, nerves obscure, very thin, c. 6 pairs, erect-patent. *Petioles* slender, 4-8 mm long. *Inflorescence* axillary on the young

shoots, densely minutely pale brown adpressed-pilose. *Flowers* sessile, either aggregate in the leaf axils or on slender, pilose, up to 2 mm long peduncles, the bracteolate flowers at the apex. Flower buds slightly shortly adpressed hairy, globose, covered by a concave, suborbicular, slightly adpressedly pilose and fimbriate bract.

INDONESIA. W. Flores. Nunang, alt. 800 m, Nov., fl., Schmutz 664 & 677 (L).

Note. The reticulation is similar to that of *D. sandwicensis*, *D. areolifolia*, etc. The species, although incompletely known, is easily recognizable by its elliptic leaves, the relatively long slender petioles, and the pilose inflorescence.

It is named in honour of the Reverend Erwin Schmutz S.J., a missionary stationed in Flores, who became interested in botany after joining my trips and who made extensive collections.

Diospyros seychellarum (Hiern) Kosterm., *comb. nov.*

Maba seychellarum Hiern, Trans. Cambridge Phil. Soc. 12 (1873) 130. — **T y p u s:** *Pervillé 36* (BM).

Diospyros siamensis Hochr.

D. siamensis Hochreutiner, Pl. Bogor. exsicc. 36 (1904) no. 73; Bakh., Bull. Jard. Bot. Buitenz. III, 15 (1938) 336. — *D. embryopteris* Pers. var. *siamensis* Lecomte, Fl. Gén. Indoch. 3 (1930) 958. — **T y p u s:** *Hochreutiner, Pl. Bogor. exsicc. no. 73* (BO, L, P).

THAILAND. P r o v. K a n c h a n a b u r i, Pompee village near Kwai Noi R., E. of Sangkhla, alt. 250 m, April, fl., fr., *Van Beusekom et al. 452* (L); Erawan Nat. Park, between Kwae Noi and Mae Khlong R., alt. 250 m, April, buds, *Van Beusekom et al. 490* (L).

Note. Bakhuizen noted that this species differed from the closely related *D. malabarica* (= *D. peregrina*) by the longer sepals and the smaller fruit. He omitted to mention the small calyx lobes of the fruiting calyx, cited by Hochreutiner, which are completely different from those of *D. peregrina*.

Furthermore Bakhuizen referred Lecomte's varietal name to *D. malabarica* with the remark: 'Perhaps the plant has better to be named *D. malabarica* var. *siamensis* (Hochr.) Bakh.'. The wording makes it clear that this is a so-called provisional name and hence not valid.

The shape of the leaves, the nervation, and the glabrous branchlets resemble strongly those of *D. peregrina* var. *javanica* Kosterm.

Diospyros sleumeri Kosterm., *spec. nov.*

Arbor parva, ramulis apicem versus minutissime sparse pilosis, foliis alternantibus coriaceis oblongis sensim acutis basi acutis vel anguste cuneatis, utrinque obscure dense reticulatis, supra nervo mediano impressis, subtus pilis sparsis tenuis adpressis nervo mediano prominentibus costis obscuris erecto-patentibus, petiolis brevibus; floribus axillaribus aggregatis subsessilibus dense adpresse ferrugineo-pilosis; calyx cupuliformis, lobis tribus triangularibus acutis, parvis, intus glabris, corollae inovationibus conicis dense adpresse pilosis.

T y p u s: *Van Royen & Sleumer 7123* (L).

Treelet, 2—3 m high. *Branchlets* glabrous, near the apex with sparse, minute, erect hairs. *Leaves* spirally arranged, coriaceous, oblong, 17—19 × 5—7 cm, tapered and gradually acute at apex, base acute or narrowly cuneate, both surfaces with a dense obscure reticulation, midrib impressed on the upper, prominent on the lower surface, which has a sparse indumentum of very slender, adpressed hairs, glabrescent. *Petioles* short, 4—7 mm

long, glabrous. *Flowers* clustered in the axils of leaves (or on a densely pilose, up to 3 cm long, branchlet), subsessile. *Calyx* cup-shaped, 5 mm long, with 3 small, triangular, acute lobes, inside glabrous. *Corolla* in bud conical, densely adpressed-pilose.

NEW GUINEA. Irian Jaya. Vogelkop Peninsula, Aifat R. valley, Tamrau Mts. East, path from Waumi R. camp to water divide, Wamsuf area, 950 m, calyx yellow, corolla cream, Nov., buds, *Van Royen & Sleumer 7123* (L).

Note. The species is characterized by the long, tapered, oblong leaves with obscure reticulation, the short petioles, and the flower characters. It is named in honour of Dr. H. Sleumer of the Rijksherbarium, Leiden.

***Diospyros squamaefolia* Kosterm., spec. nov.**

Arbor parva vel mediocris *ramulis* tenuibus longe subadpresse pallide puberulis, *foliis* alternantibus distichis confertis chartaceis glabris nervo mediano exceptis margine ciliatis trapeziiformibus vel squamiformibus conspicue longe acuminatis utrinque sublaevibus subtus pallidioribus costis filiformibus supra inconspicuis subtus obscuris filiformibus subprominulis, duabus basalibus sat erectis, petiolis gracillimis pilosis, *fructibus* subglobosis apiculatis laevibus pedicellis gracilibus *calycibus* parvis planis, tubo nullo, lobis 5 parvis patentibus ovato-triangularibus acutiusculis.

Type: *San 15475* (L).

Tree, 2—10 m high, 5—12 cm diam. *Wood* hard. *Branchlets* numerous, slender, apically with rather stiff, long, pale, subadpressed hairs. *Leaves* distichous in dense flat sprays, partly overlapping, thinly chartaceous, rather dull, trapezoid or fish scale-like, 1.5—3 × 1—1.8 cm, attenuate-acuminate, base gradually cuncate; both surfaces rather smooth, glabrous except the very thin midrib, margins ciliate, nerves very thin, above obscure, below very thin, 6—8 pairs, the lower two pairs rather steep. *Petiole* thin, 1—2 mm long, adpressed-pilose. *Female flowers* (of the paratype *BNBFD. 3118*) solitary, in the axils of the upper leaves, slender, 6—7 mm long, greenish white. *Pedicele* filiform, pilose, 1 mm long. *Calyx* campanulate, almost glabrous, 1—1.2 mm long; lobes ovate, acutish, 0.75 mm long. *Corolla* tubular, 6 mm long, glabrous, the 5 lobes 5 mm long, narrowly ovate, acutish. *Fruit* in the axils of the upper leaves, solitary, subglobose, apiculate, c. 12 mm diam., pericarp thin, brittle. *Fruiting calyx* flat, c. 2 mm diam., tube none, lobes 5, triangular-ovate, acutish, 1 mm long. *Pedicele* slender, 2 mm long.

BORNEO. Sabah. Kabili-Sepilok F.R., 15 miles west of Sandakan, level land, June, ster., *BNBFD. 7295* (K, L); *ibid.*, Febr., fr., *San 15475* (L); *ibid.*, Compartment 12, May, ster., *San 19156* (K, L); divide between Hulu Subaha and Hulu Bolu, alt. 500 m, Jan., fl., *BNBFD. 3118* (K, L). — Sarawak. G. Apeng, 2nd Div., ster., *Collenette 746* (K).

Notes. Much like *D. buxifolia*, but the leaves differently shaped. The vernacular name: *sikib-sikib*, means fish scales. The holo-type had only one fruit, which I did not dare to destroy to examine the seeds.

A striking species, resembling somewhat *Anisophyllea*.

***Diospyros subsessilis* Kosterm., spec. nov.**

Frutex, *ramulis* gracilibus glabris, *foliis* alternantibus chartaceis subglabris subobovato-oblongis brevissime acuminatis basin versus attenuatis basi acutis vel rotundatis, supra laevibus nervo mediano gracilibus impressis, subtus obscure perlaxe reticulatis et pilis minutis paucis obtectis nervo mediano prominentibus costis filiformibus erecto-patentibus; petiolis brevissimis; *fructibus* axillaribus, solitariis sessilibus subglobosis laevibus, *calycibus* *fructiferis* subplanis margine subintegris.

Type: *Floyd NGF 5753* (L).

Shrub, 5 m high. *Branchlets* slender, glabrous. *Leaves* spirally arranged, chartaceous, subobovate-oblong, 10—13 × 3—4.5 cm, shortly acuminate with sharp tip, towards the base gradually narrowed, base obtuse or acutish; above smooth, glabrous, the slender midrib impressed, below paler, very obscurely and very laxly reticulate with a few tiny adpressed hairs, midrib prominent, nerves erect-patent, *c.* 10—12 pairs, arcuate towards the margin. Petioles 1—2 mm long, hardly pilose. *Fruit* axillary, sessile, globose, smooth, up to 2 cm diam.; *fruiting calyx* almost flat, disc-shaped, 8 mm diam., margin hardly incised.

NEW GUINEA. Papua—New Guinea. Morobe Dist., Trans Busu Logging Timber Lease near Lae, June, fr., NGF 7553 (L).

Note. The description is based on a poor specimen with two detached fruits, of which one has a calyx. The pedicels, mentioned on the accompanying label, are not present; I suspect them to be the infructescence peduncle. The species is, however, easily recognizable by the chartaceous, almost sessile, almost glabrous leaves, an unusual combination.

Diospyros sulcata Kosterm., *spec. nov.*

Arbor, ramulis glabris laevibus, *foliis* alternantibus glabris rigide chartaceis laevibus ellipticis vel oblongis late acuminatis basi in petiolum contractis rotundatis, supra nervo mediano impressis costis nullis, subtus nervo mediano prominentibus costis obscuris erecto-patentibus, petiolis bene evolutis; *fructus* sessilibus axillaribus glabris laeviter costatis late conicis vel depresso-globosis, 8-locellatis, pericarpio crasso lignoso seminibus 8; endospermio aequabili; *calyce fructifero* tubo applanato crasso; lobis 4 ovatis obtusis crassis, plicatis prominentibus.

Typus: SAN 39320 (L).

Tree, 20—25 m tall, 20—30 cm diam.; crown *c.* 5 m. *Bark* black, scaly. Live bark brown. *Sapwood* pale yellowish to white. *Branchlets* glabrous, smooth, or at the utmost apex with a few tiny adpressed hairs. End bud minutely densely adpressed-pilose. *Leaves* spirally arranged, glabrous, chartaceous to stiffly chartaceous, smooth, elliptic to oblong, 13—20 × 4—7 cm, broadly rather shortly acuminate (tip obtuse), base obtuse, contracted into the petiole, the centre slightly cuneate because of the somewhat decurrent leaf margins; above midrib slender, impressed, nerves invisible, below midrib prominent, nerves very faint to invisible, erect-patent, *c.* 10 pairs. Petiole 1 cm long. *Fruit* axillary, solitary, sessile, conical to depressed-ovoid, 3—3.5 × 2—5 cm, apiculate or with a thicker mammilla, 10- or 11-ribbed, the ribs smooth, broad. Pericarp woody, 2—3 mm diam., fruit 8-celled; *seeds* wedge-shaped; endosperm equable. *Fruiting calyx:* central (tubular) part thick, flat, 1.5 cm diam. Lobes 4, thick, ovate to ovate-oblong, obtuse, up to 12 mm long, the margins folded outwards until they touch completely; the part in between the lobes sagging, the lobes similar to prows of ships, jutting out.

BORNEO. Sarawak. B. Naoung, Ulu Muput Kanank Anap, alt. 850 m, Oct., fr., S 19389 (L). — Sabah. Sandakan Dist., Tavai Plateau, Karamuah, open forest on flat ultrabasic, Sept., young fr., SAN 39320 (L); Tambunan Dist. between Camp 3 and 4, Trusmadi, alt. 2100 m, blackish sandstone soil, Nov., fr., San 41891 (L).

Note. Perhaps related to *D. cubica* Bakh.

Diospyros swingleri Kosterm., *spec. nov.*

Arbor, ramulis dense minutissime rubre-ferrugineo tomentellis, pilis minutissimis, *foliis* alternantibus coriaceis ellipticis vel oblongis magnis ab initio dense minutissime rubro-ferrugineo pulverulente tomentellis mox glabrescentibus conspicue anguste acuminatis basi acutis in petiolum subdecurrentibus, utrinque laevibus, supra nervo mediano gracilibus impressis costis perobscuris, subtus nervo mediano prominentibus costis erecto-patentibus gracilibus arcuatim conjunctis, petiolis crassis sat longis, *fructibus* ramifloribus globosis glabrescentibus, pedicellis crassis brevis, calycibus applanatis, crassis suborbicularis vel quadrangularis 4-acutis, *seminibus* 12 oblongis applanatis minutissime corrugatis, endospermi aequabili.

T y p u s : S 26969 (L).

Tree, 13—23 m high, 20—30 cm diam. *Bark* smooth, ringed, dark brown, minutely fissured, thin, soft; live bark 3 mm, red-brown. Sapwood pale pink. *Branchlets* red-rusty tomentellous (the hairs very thin and very small). *Leaves* spirally arranged, coriaceous, elliptic or oblong, 8—23 × 2.5—7 cm, acuminate (acumen slender, up to 2 cm long), base acute, slightly narrowly winglike decurrent along the stout, up to 2 cm long, glabrescent petiole; both surfaces initially densely pulverulently red-rusty pilose, soon glabrous, smooth, above the midrib slender, slightly impressed, nerves obscure, below midrib strongly prominent, nerves 7—11 pairs, slender, prominulous, erect-patent, the upper ones arcuately anastomosing near the margin, veins very obscure, in between the nerves short, very obscure collateral ones. *Inflorescences* on older branches, clustered on small burs, few, densely minutely rusty pilose; peduncle short, thick, up to 5 mm long; branches few, stiff, thick, up to 7 mm long. *Flower* buds acuminate, angular, densely minutely rusty pilose; *calyx* shallow with 5 thick, triangular, acute lobes with the margins slightly reflexed. *Fruits* in bunches on the thicker branches, globose, smooth, 3.5 cm diam., initially densely very minutely red-rusty pubescent, glabrescent (indumentum rubbed off), pericarp hard, brittle, 2 mm thick; seeds 12 in 4 groups, leaving in between a more or less star-shaped free room, dissepiments thin, hard; *seeds* oblong (one side straight), flat, 1 cm long, testa minutely densely wrinkled, glossy; endosperm equable. Pedicel thick, c. 5 mm long, densely red-rusty minutely pilose. *Fruiting calyx* flat, hard, quadrangular or suborbicular, with 4 short, sharp, sometimes slightly reflexed points, 1—1.5 cm diam.

BORNBO. S a r a w a k. B. Snibung, Sampadi F.R., mile 25 Bau-Lundu Road, 1st Div., hillside, alt. 400 m, yellow, sandy soil, June, fr. dirty green, calyx brown to brownish green, S 27760 (K, L); *ibid.*, yellow clayey soil, July, fr., S 26969 (K, L); *ibid.*, July, buds, S 26941 (L); Andulau F.R., deep yellow sandy soil over tertiary clays, hillside, alt. 50 m, July, buds, Brun 266 (L).

N o t e. The species is named in honour of Mr. Bryan E. Swingler, assistant-director of the British Council, London, who in his capacity of representative of the British Council in Jakarta, Indonesia, has been instrumental to assist several young Indonesian botanists to obtain scholarships.

Diospyros terminalis Kosterm., *spec. nov.*

Arbor mediocris, *ramulis* glabris, gracilibus, *foliis* alternantibus chartaceis vel rigide chartaceis glabris ellipticis vel oblongis acuminatis basi acutiusculis utrinque dense minuteque prominule reticulatis nervo mediano supra impressis subtus prominentibus costis filiformibus obscuris erecto-patentibus, petiolis sat gracilibus, *inflorescentiis* masculinis terminalibus (rarius floribus axillaribus solitariis), dense adpresse minuteque pilosis racemiformibus vel pseudo-racemiformibus, pedicellis brevibus, *calycibus* usque ad basin incis, lobis ovatis acutis dense sericeis, *corollis* tubuliformibus dense sericeis, lobis 4 anguste ovatis acutis, crassis intus glabris, staminibus basalibus antheris angustis acutis, filamentis brevibus glabris; pistillum nullum vel parvum.

T y p u s : BW 4083 (L).

Tree, up to 8 m high. *Branchlets* slender, glabrous. *Leaves* spirally arranged, chartaceous to stiffly chartaceous, glabrous, glossy, elliptic to oblong, 11—18 × 4—9 cm, acuminate, base acutish, both surfaces densely, prominulously but rather obscurely reticulate, midrib impressed above, prominent below, nerves very thin, faint, erect-patent, 9—12 pairs, hardly prominulous. *Petioles* slender, 1—2 cm long. *Male inflorescences* terminal (rarely flowers axillary, solitary), racemiform, densely minutely pilose, peduncle often quadrangular, up to 8 cm long, ending in a sericeous terminal bud. *Flowers* on 1—2.5 mm long pedicels or 2 or 3 flowers on a very short branchlet on the inflorescence branch, initially enveloped by a large, ovate, acute, silky bracteole. *Calyx* of 4 ovate, acute, sericeous lobes, 5—6 mm long, tube none. *Corolla* bud slender, conical, mature one up to 12 mm long, fleshy, sericeous, tube cylindrical, lobes contort, ovate-oblong, acute, 5—6 mm long, inside glabrous. *Stamens* 7—12, glabrous, basal, hypogynous, anthers slender, acute, 2—3 times as long as the filaments. *Pistil* none or small, hairy. *Fruit* unknown.

NEW GUINEA. Papua—New Guinea. Port Moresby Dist., Kanosia, alt. 15 m, Febr., fl., Carr 11217 (L). — Irian Jaya (W. Irian), Jayapura (Hollandia) near Polymac Rd., alt. 100 m, Sept., fl., BW 4083 (L).

***Diospyros transita* (Bakh.) Kosterm., stat. nov.**

D. maritima Bl. var. *transita* Bakh., Bull. Jard. Bot. Buitenz. III, 15 (1941) 416. — T y p u s: Elmer 12951; p a r a t y p e: Elmer 12939.

***Diospyros turfosa* Kosterm., spec. nov.**

Arbor, ramulis glabris sat crassis laevibus, *foliis* alternantibus glabris rigide coriaceis laevibus oblongis magnis acuminatis basi rotundatis; supra laevibus nervo mediano impressi costis sat obscuris subprominulis; subtus pallidioribus nervo mediano prominentibus costis erecto-patentibus vel subpatentibus tenuibus prominulis reticulatione perlaxis sat obscuris; petiolis crassis brevissimis; *fructibus* solitariis axillaribus sessilibus depresso-globosis, laeviter pustulosis, *calyce fructiferi* sat crasso plano, lobis 4 vel 5 ovato-oblongis magnis perdense minutissime ferrugineo-pilosis, patentibus.

T y p u s: *Kostermans* 13091 (L).

Tree, 10 m tall, diam. 5 cm. *Bark* black. *Wood* white. *Branchlets* rather thick, glabrous, smooth. *Leaves* spirally arranged, distichous, glabrous, smooth, stiffly coriaceous, oblong, c. 26 × 8 cm, acuminate (acumen broad, up to 2 cm long, tip sharp), base obtuse, contracted into the petiole; upper surface dull, midrib impressed; nerves rather obscure, rather erect-patent to rather patent, prominulous; lower surface paler, midrib prominent, strong, nerves c. 10—15 pairs, slender, prominulous; reticulation very lax, rather obscure. *Petiole* thick, up to 6 mm long. *Fruit* sessile, solitary, axillary, depressed globose, 4.5 cm diam., 2.5 cm high, glabrous, glossy, smoothly pustular. *Fruiting calyx* rather flat, thick; central (tubular) part 1.5 cm diam., the 4 or 5 lobes thick, patent, ovate-oblong, acutish, up to 1.5 cm long, densely minutely rusty pubescent.

BORNEO. E. K a l i m a n t a n. W. Kutei, Mt. Palimasan near Tabang on Belajan R., alt. 600 m, Sept., fr. yellow, *Kostermans* 13091 (L), growing on peaty soil, on white, acid sand in *Agathis* forest.

***Diospyros vieillardii* (Hiern) Kosterm., comb. nov.**

Maba vieillardii Hiern, Trans. Cambr. Phil. Soc. 12 (1873) 124; Bakh., Bull. Jard. Bot. Buitenz. III, 15 (1937) 55 (as a synonym of *Diospyros ferrea* var. *littorea*). — T y p u s: *Vieillard* 897 (BM).

Diospyros villosiuscula Kosterm., *spec. nov.*

D. ferrea Bakh. var. *crispa* Bakh., Bull. Jard. Bot. Buitenz. III, 15 (1936) 58, 64. — *D. ellipticifolia* Bakh. var. *glabrata* Bakh. f. *crispa* Bakh., l.c. (1941) 430. — T y p u s: Zippel 158 d (L).

Of this species plenty of material has been collected, which makes it certain that it is a proper species.

I suspect that *D. ferrea* var. *villosa* Bakh. (l.c. 1936: 57), later named by Bakhuizen *D. ferrea* var. *littorea* forma *villosa* (l.c. 434) is the same species.

Diospyros yaouhensis (Schl.) Kosterm., *comb. nov.*

Maba yaouhensis Schlechter, Bot. Jahrb. 39 (1906) 226; Guillaumin, Bull. Soc. Bot. France 69 Sér. 4, 22 (1922) 31, 33, 34 (*yaousensis*). — *D. foliosa* (A. Gray) Bakh. var. *yaouensis* Bakh., Bull. Jard. Bot. Buitenz. III, 15 (1941) 449 (also *yahauensis*). — T y p u s: Schlechter 15059 (P).