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A synopsis of *Alseodaphne* Nees (Lauraceae)

A. J. G. H. KOSTERMANS

RÉSUMÉ

Le genre *Alseodaphne* a une répartition essentiellement asiatique; des 64 espèces énumérées précédemment (Kostermans 1964), 24 seulement sont retenues ici, les autres en ayant été exclues. Le genre *Alseodaphne* comprend dès lors 50 espèces dont 21 sont décrites pour la première fois dans le présent travail. Trois nouvelles combinaisons sont en outre proposées. Trois espèces sont réduites en synonymie et deux espèces de genres différents sont ramenées au genre *Alseodaphne*.

SUMMARY

The genus *Alseodaphne* has an essentially asiatic distribution. Of the 64 species previously enumerated (Kostermans 1964) only 24 are retained here the others having been excluded from the genus. The genus *Alseodaphne* now has 50 species, 21 of them being described for the first time in the work. The new combinations are proposed moreover. Three species are reduced to synonymy and two other species have been placed in *Alseodaphne* from other genera.

ZUSAMMENFASSUNG

Die Gattung *Alseodaphne* hat ihr Hauptverbreitungsgebiet in Asien. Von den 64, kürzlich von Kostermans (1964) aufgeführten Arten werden hier nur 24 anerkannt, während die restlichen Arten aus der Gattung ausgeschlossen wurden. Infolgedessen umfasst die Gattung *Alseodaphne* 50 Arten, von denen 21 in dieser Arbeit zum ersten Mal beschrieben werden. Weiterhin werden 3 Neukombinationen vorgeschlagen. Drei Arten wurden in die Synonymie verwiesen und zwei Arten anderer Gattungen wurden in die Gattung *Alseodaphne* überführt.

Acknowledgements

The present paper was commenced a considerable time ago at Bogor, and its completion had to be postponed until such times, when there should be an opportunity to study the type material.

This opportunity was given to me by Prof. Dr. C. G. G. J. van Steenis, who was instrumental in obtaining for me a grant of the Netherlands W. (etenschappelijk) O. (onderzoek) T.R.O. (pen) to spend some time in his institute at Leiden. To him and to W.O.T.R.O. I extend my feelings of indebtedness and gratitude. The British Council provided funds for work at the Kew Herbarium and thanks are due to Mr. B. E. Swingle, up to 1972 Head of the Djakarta Office of the British Council for his continuous interest in my own work and in obtaining fellowships for several of my adopted Indonesian children. Furthermore I have to thank Dr. F. R. Fosberg, Smithsonian Institution, Washington for providing me the means for travelling to Europe within the scope of the Smithsonian Flora of Ceylon Project. The much appreciated cooperation of the Directors-Keepers of many herbaria, where I worked, is duly acknowledged here. Finally I express my feelings of deep gratitude to Dr. Mien A. Rifai, Director of the Herbarium Bogoriense and my fosterson who assisted me with everything in his power in my research work and in my daily life.

Introduction

The genus *Alseodaphne* was created by Nees in 1831 (Pl. Asiat. rar. 2: 7); he incorporated 4 species (two with an interrogation mark), of which *A. semecarpifolia* only stands, the 3 other species belong to *Phoebe* and *Litsea* and one is Fagaceous. Meissner followed Nees and moved *Haasia peduncularis* Nees to *Alseodaphne* (1864). Hooker f. (Fl. Brit. Ind. 5, 1886) included in *Alseodaphne* the genus *Nothaphoebe* Bl. as a section. He created 4 more species of which *A. decipiens* is conspecific with *A. bancana* Miq., *A. petiolaris* is a good *Alseodaphne*, and does not belong in the section *Nothaphoebe* and *A. crassipes* represents *Helicia* (*Proteaceae*). He enumerates *A. grandis* and *costalis* of Nees (which represent *Phoebe grandis* and *Litsea costalis* respectively), but suggested that *A. lucida* Nees might be not Lauraceous. Boerlage (Handl. Fl. Nederl. Ind., 1900) followed Hooker's example and moved all Malesian *Nothaphoebe* to *Alseodaphne*. Gamble (1910) on the other hand, kept the two genera *Nothaphoebe* and *Alseodaphne* separate and this was accepted by Ridley in his Flora of the Malay Peninsula.

When I started the revision of Asiatic *Lauraceae*, as laid down in the classification in 1957, I included *Alseodaphne* and *Nothaphoebe* in *Persea*, but with the proviso, that only after a complete revision of all species, a "final" conclusion could be made. I have reached that stage now and feel that *Alseodaphne* and *Nothaphoebe* may be considered proper genera, different from *Persea*, but I should not be amazed, if in the future the first two genera were fused again, as they extremely close to each other.

Discussion

Alseodaphne occurs from Yunnan to Borneo and the Philippines, but is not found E. of Borneo or Java, whereas *Nothaphoebe* reaches New Guinea, is represented in Java by 2 species, but none occurs in the Pacific area. Most species are small to middle-sized trees of the understorey of the non-seasonal, wet evergreen tropical forest. An exception is *A. semecarpifolia*, which occurs in Ceylon and Southern Peninsular India in areas with a pronounced dry season. This species is

moreover remarkable because of its thick, deeply fissured corky bark, which enables it to withstand grass fires, a feature exceptional in *Lauraceae*. Of most species the bark is like that of *Dehaasia*, smooth and white with large lenticels; the dead bark thin, easily detachable and of a peculiar blackish brown glossy colour underneath.

The wood—again as in *Dehaasia*—is usually yellowish with a more or less pronounced smell of cigarbox (cedar-)wood. The timber has a satiny lustre, is easily worked, excellent for carving and cabinet making and locally in high demand, it is moreover, sometimes available in sufficient and marketable quantities. (*A. oblanceolata* in SE. Borneo). It is, however, not durable in the open and some boles are already attacked by borers in the living tree (like *Albizia!*). A few species (*A. insignis*, *A. dura*) have very hard and durable timber and are used for piling in seawater constructions, as they are not or little attacked by marine borers. They are comparable to *Dehaasia caesia* and *subcaesia*. Many species have leaves, which dry black, like those in *Dehaasia*, which points to some chemical property. The growth is often flush wise and some have a distinct sympodial branching, resulting in the pagoda-shaped tree form. In many cases, although growing under everwet conditions, the trees are deciduous for a short period (often only a few days, observation in *A. oblanceolata*). The young leaves may be limp and pendulous (*A. pendulifolia*).

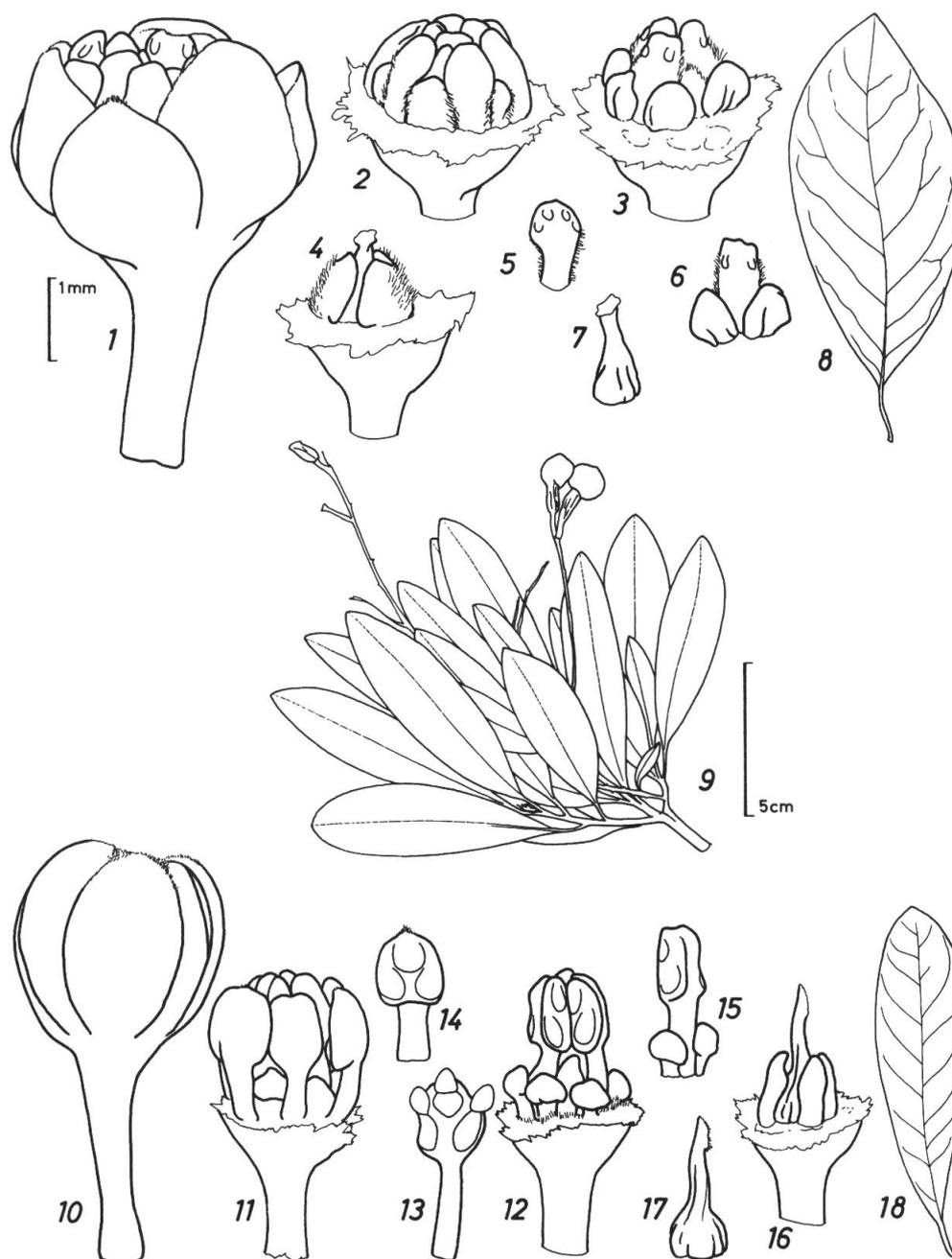
The leaf buds, also in the deciduous species, lack the protection of the tiered budseales of *Persea* and hence the typical closepacked areas of horizontal scars of *Persae*, are not found in *Alseodaphne*, but there are always one or two stiff, small, ovate, acute scales as a protection.

The inflorescences consist of panicles (sometimes reduced to racemes), usually few-flowered, contrary to the often many-flowered of *Nothaphoebe*. In some species the flowers are relatively large. The tepals are as a rule unequal in length, the outer ones being smaller, although to a lesser degree than in *Nothaphoebe*. The stamens have as a rule filaments, contrary to the sessile anthers of *Nothaphoebe*. The staminodes are very small.

The fruit are similar to those of *Dehaasia*: ellipsoid, glossy black with a thin, juicy mesocarp, but half woody fruit (*A. ridleyi*) occur too, they look like those of bornean ironwood (*Eusideroxylon zwageri*), but are of an entirely different structure. Exceptionally the fruit are ribbed or even more or less septate outwards (*A. sulcata*, *A. garciniaecarpa*). The fruit pedicel is like that in *Dehaasia*, strongly increased, fleshy and often highly coloured (red or yellow) and warty, but hardly enlarged, although still fleshy, pedicels occur too (*A. dura*). Sometimes the indurate perianth persists along the rim of the flat-topped swollen pedicel.

Sometimes *Nothaphoebe* and *Alseodaphne* may be separated by the colour of the petiole, which in the former might be white and corky.

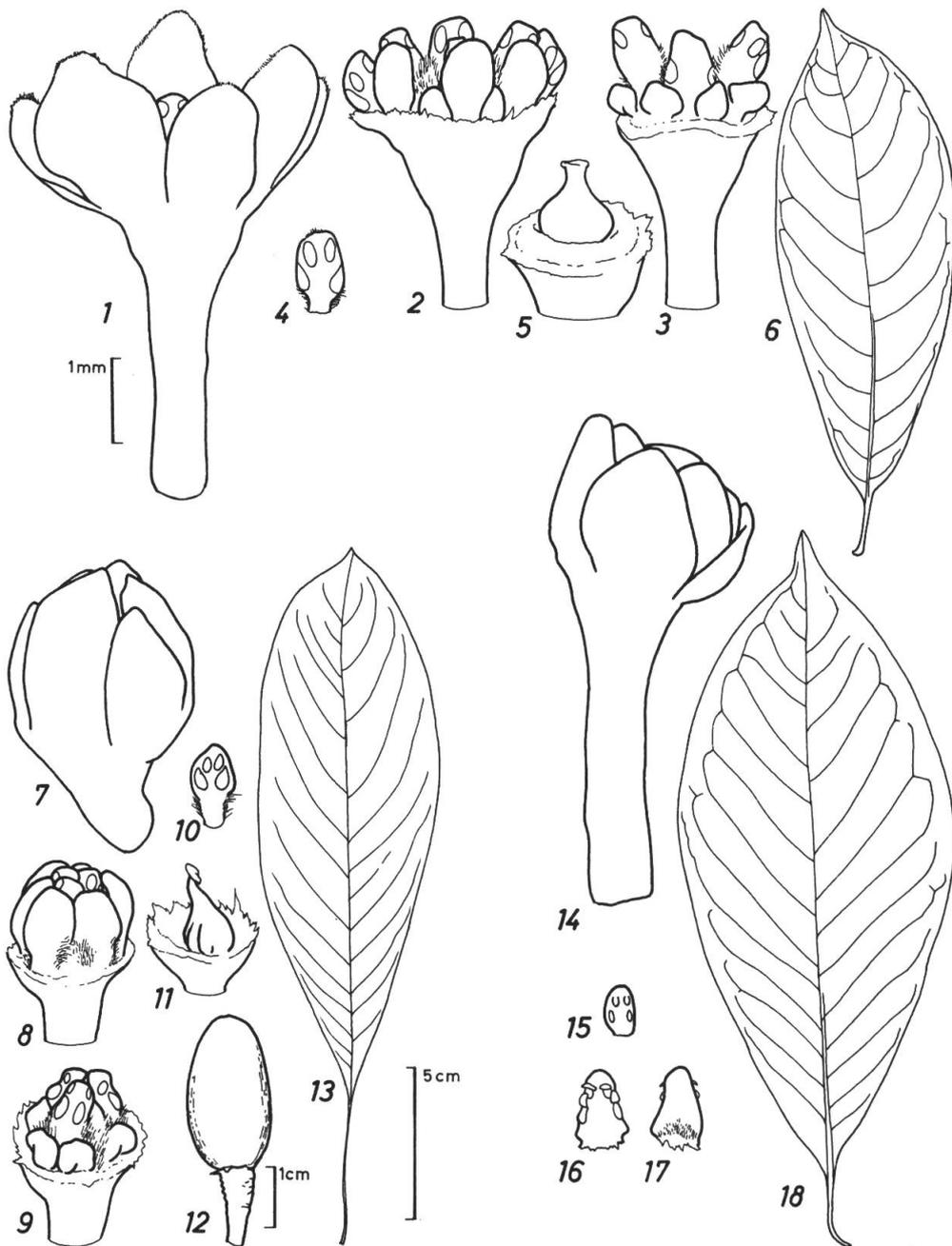
Alseodaphne Nees in Wallich, Pl. Asiat. rar. 2: 61, 71. 1831; Progr. gratul. 11. 1833; Syst. Laur. 20, 181. 1836 (p.p., quoad *A. semecarpifolia*); Meissner, Gen. 325 (328). 1841; in DC., Prodr. 15 (1): 4, 27. 1864; Hooker f., Fl. Brit. India 5: 143. 1886 (p.p.); Engler & Prantl, Nat. Pflanzenfam. 3 (2): 115. 1889; Gamble, Fl. Madras, Pt. 7: 1225. 1925 (reprint 2: 858. 1957); Ridley, Fl. Malay Pen. 3: 97. 1924; Liou Ho, Laur. Chine et Indoch. 42. 1932; Kostermans in Reinwardtia



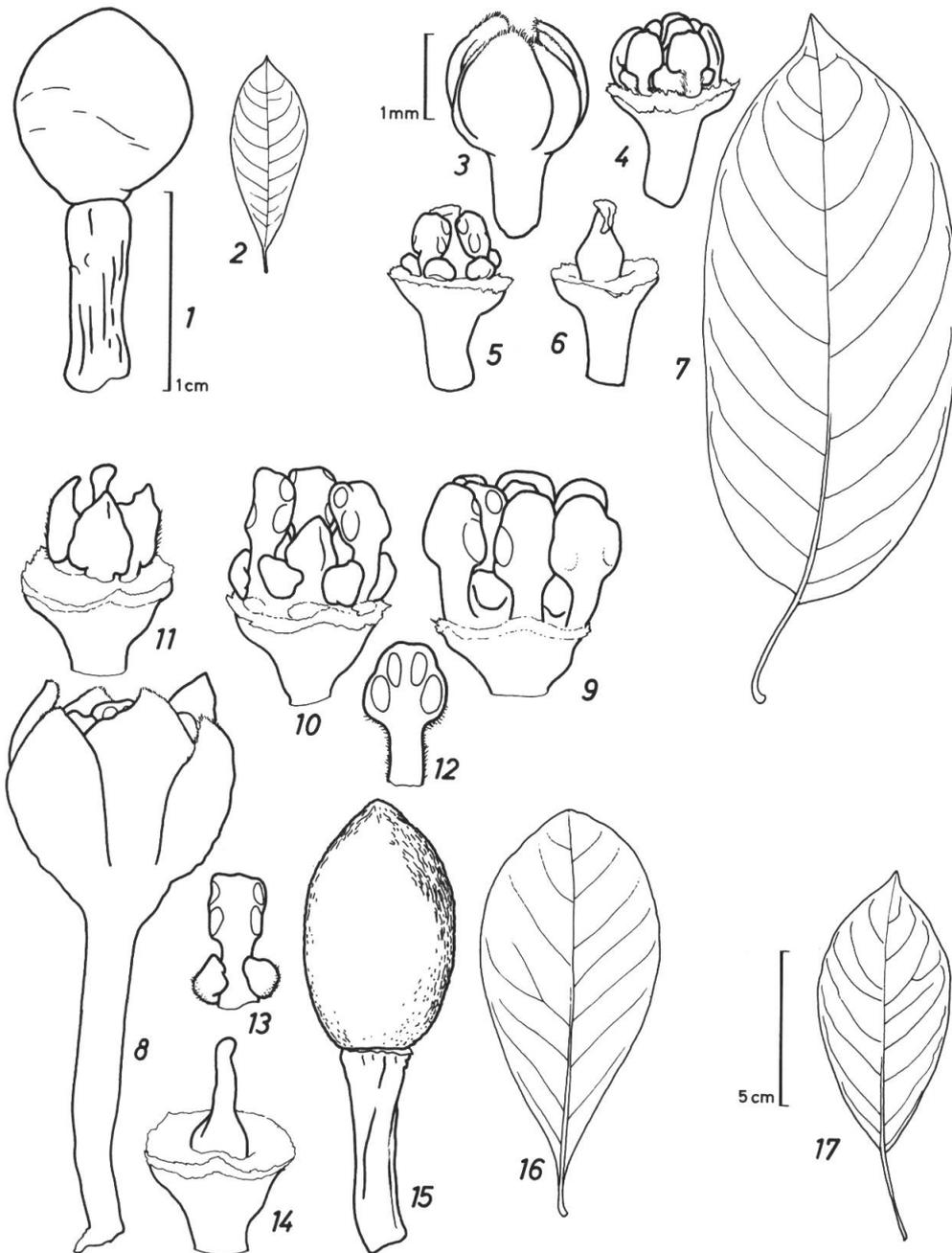
Tab. 1. — 1, *Alseodaphne birmanica* Kosterm.: flos integer; 2, idem, perianthio abducto; 3, idem et staminibus externis resectis; 4, idem, staminodia juxta pistillum; 5, stamen externum; 6, stamen interdum glanduliferum; 7, pistillum; 8, folium.

9, *Alseodaphne hainanensis* Merr.: ramulus fructifer.

10, *Alseodaphne cavaleriei* (Lév.) Kosterm.: flos integer; 11, idem, perianthio abducto; 12, idem et staminibus externis resectis; 13, 14, stamina externa anomala tribus valvis praedita; 15, stamen internum glanduliferum; 16, pistillum et staminodia; 17, pistillum stigmatibus lateralibus; 18, folium.



Tab. 2. — 1, *Alseodaphne khasyana* (Meissn.) Kosterm.: flos integer; 2, idem, perianthio abducto; 3, idem et staminibus externis resectis; 4, stamen externum; 5, pistillum; 6, folium. 7, *Alseodaphne oblanceolata* (Merr.) Kosterm.: flos clausus; 8, idem, perianthio deducto; 9, idem et staminibus externis resectis; 10, stamen externum; 11, pistillum; 12, bacca; 13, folium. 14, *Alseodaphne perakensis* (Gamble) Kosterm.: flos integer; 15, stamen externum; 16, stamen internum facie ventrali; 17, idem, facie dorsali; 18, folium.



Tab. 3. — 1, *Alseodaphne philippinensis* (Elm.) Kosterm.: bacca; 2, idem, folium.
 3, *Alseodaphne rubrolignea* Kosterm.: flos vix apertus; 4, idem, perianthio abducto; 5, idem
 et staminibus externis resectis; 6, pistillum; 7, folium.
 8, *Alseodaphne semecarpifolia* (Wall. ex Nees) Nees: flos; 9, idem, perianthio abducto; 10, idem
 et staminibus externis absicis; 11, staminodia juxta pistillum; 12, stamen externum; 13, stamen
 internum glanduliferum; 14, pistillum; 15, bacca; 16, folium.
 17, *Alseodaphne siamensis* Kosterm.
 (Adumbrationes a dominilla Lina Guibentif genavensi delineabantur; inscriptiones Lucianus
 Bernardi felsineus confecit.)

4: 225. 1957 (as a syn. of *Persea*); Bibl. Laur. 62-63. 1964. Subgenus *Alseodaphne* Kosterm. in Commun. Forest. Res. Inst. Bogor 57: 3, 4, 5, 7, 8, 9, 11, 18, 19, 20-25, 1957.

Type species: *A. semecarpifolia* Nees.

Trees. *Leaves* spirally arranged, often crowded at the end of the branchlets, penninerved, often drying black. End bud aperulate. *Inflorescences* axillary, paniculate (or racemes), bracts and bracteoles caducous. *Flowers* bi-sexual, trimerous; outer whorl of tepals usually smaller than the inner one. *Fertile stamens* 9 in 3 whorls, provided with filaments, anthers 4-celled, those of the outer stamens introrse, the inner 3 extrorse or the upper cells lateral, inner filaments with basal glands. *Staminodes* very small. *Ovary* partly in a rather shallow tube, merging into a style (usually as long as the ovary) with a small, discoid stigma. *Fruit* ellipsoid, black glossy, with a thin juicy mesocarp or more or less woody, grey. *Fruit pedicel* much enlarged, usually obconical, fleshy, juicy, red, green or yellow, usually warty; the perianth caducous or persistent, indurate and slightly enlarged, pedicel sometimes fleshy, thin, almost cylindrical.

Distribution: Number of species 50, distributed from Yunnan to Western Malesia, not in Java, not E. of Borneo.

Ecology: Dwellers of the everwet, tropical lowland rainforest, only one species (*A. semecarpifolia*) in deciduous forest.

1. *Alseodaphne albifrons* Kosterm., spec. nova.

Arbor ramulis apicem versus minutissime pilosis foliis alternantibus aggregatis coriaceis obovato-ellipticis acuminatis basi acutis supra laevia glabra nervo mediano prominulo costis obscuris subtus grisea sub lente minutissime adpresse pilosa nervo mediano prominentibus costis erecto-patentibus prominulis petiolis sat longis paniculis axillaris sub lente minute pilosis vix et brevissime ramosis foliis brevioribus tepalis inaequilongis filamentis pilosis stylo ovario aequilonga stigmatate perlata.

Typus: San 37684 (SAR).

Tree, up to 22 m high and 20 cm diam., branches usually smooth, lenticellate, greyish brown, branchlets at the apex and buds microscopically pilose. *Leaves* spirally arranged, aggregate, coriaceous, obovate-elliptic, 3.5 × 9-6 × 15 cm, acuminate, base acute, upper surface glabrous, smooth, midrib prominulous, lateral nerves obscure, lower surface pale grey (glaucous when fresh), microscopically, minutely appressed pilose, midrib prominent, lateral nerves c. 7-9 pairs, erect-patent, arcuate towards the margin, slender, prominulous, reticulation rather obscure. *Petiole* 1.5-2 cm long, rather slender. *Panicles* narrow, axillary, microscopically pilose, up to 8 cm long, consisting of a long bare peduncle with few, very short subapical, slender branches. *Pedicel* 1 mm long, slender. *Tepals* ovate, acutish, outer ones

elongate, 1 mm, inner ones broader, 1.5 mm long. *Anthers* oval, outer ones with introrse cells and a pilose filament as long as the anther, inner ones narrower with extrorse-lateral cells and a longer, broad, densely pilose filament. *Staminodes* minute, densely pilose. *Ovary* slender, glabrous, style as long with a small peltate stigma.

Much like *Nothaphoebe heterophylla*, but I believe it to represent *Alseodaphne*.

Specimens examined: Malay Pen., G. Tapis, Ulu Sg. Keliu, camp 3, alt. 700 m, tree 30 m, diam. 30 cm, bark redbrown, thick and brittle, living bark soft, laminate, wood yellow, Sept., buds, *F.R.I. 10898* (L); Sabah (N. Borneo), Kudat Distr., Fagaru For. Res., alt. 300 m, bark thick, sapwood yellow, Oct., fl., *San. 37684* (BO, SAR); Mt. Kinabalu, Bukit Tampurango, Ranau Distr., alt. 1000 m, July, fl., *San. 22092* (BO, K), leaves up to 8 x 18 cm; Sarawak, Bukit Raya, Kapit, 3d Div., Ridge, 200 m alt., sandy clay, fls. pale yellowish green, stamens yellow, underside of leaves glaucous, Oct., fl., *S. 24723* (A, BO, K, KEP, L, MEL, SAN, SAR, SING); Manop, March, buds, *Beccari 3135* (FI, G), leaves up to 7 x 17 cm, petiole up to 3 cm; E. Kalimantan, W. Kutei, Mt. Palimasan near Tabang on Belajan R., alt. 500 m, acid, waterlogged sandy soil, *Agathis* forest, common and characteristic, tree 15 m, diam. 15 cm, bark smooth, lower leaf surface white, ster., *Kostermans 12808* (BO, K, L, SING); *ibid.*, pole tree of 6 m, very common, *Kostermans 12788* (BO, CANB, K, L), leaves narrower, up to 5.5 x 15 cm.

2. *Alseodaphne andersonii* (King ex Hooker f.) Kosterm. in *Reinwardtia* 6: 159. 1962; *Bibl. Laur.* 63. 1964; *Cryptocarya andersonii* King ex Hooker f., cf. *Kostermans*, l.c.: 385. **Typus:** Assam, fl., *Jenkins s.n.* (BO, CAL, K); *Alseodaphne keenanii* Gamble, cf. *Kostermans*, l.c.: 68. **Typus:** Assam, Cachar, *Keenan s.n.* (CAL, K), young fr.

Specimens examined: China, Yunnan, Szemao, alt. 1500 m, tree 10 m, fl., *Henry 12152* (A, K, MO, NY); Meng-la, Yen-yeh-hsien, alt. 900 m, Nov., fr., *Wang 80720* (A); Fo-Hai, alt. 1320 m, July, buds, *Wang 76137* (A) and *77288* (A); Hei-lung-tarn, July, fl., *Wang 76299* (A); India. Assam, Lushai Hills, alt. 1300 m, Jan., fr., *Parry 541* (K); Assam, Jengale Bam Garden, Nov., fl., Prain's Coll. (*Hock*) *416* (BO, CAL) et fr., *418* (CAL); locality not indicated, fl., *Jenkins s.n.* (BO, K); ster., *Masters s.n.* (BO); fl., *Herb. Wight 2524* (BO); Manipur, alt. 1700 m, Febr., fr., *Meebold 10899* (K); Siam: Cho Sawn (Lampang prov.), alt. 1000 m, tree 20 m, Febr., fr., *Kerr 4766* (BO, K); Tonkin, Chapa, alt. 1500 m, Febr., fr., *Pételot 3386* (BO, MO, UG) and July, fl., *Pételot 3386bis* (BO); Laos, 8-10 km N. of Paksong, Prov. Bassac near village B. Thong Moi, tree 7-8 m, diam. 20 cm, buds, *Poilane 15704* (BO, P); Annam, Nhatrang, June, buds, tree 8 m, *Poilane 4215* (BO, L, P); S. Annam, Massif of Lang bian, between Xongom and Drau, Sept., buds, *Chevalier 38496* (BO, P); Prov. Kontum, Dak To, alt. 800 m, tree 20 m, diam. 40 cm, Sept., fls. greenish white, *Poilane 18325* (BO, P).

3. *Alseodaphne bancana* Miq., Fl. Ind. Bat. 1 (1): 915. 1858; Kostermans, Bibl. Laur. 64. 1964. *Typus*: *Horsfield s.n.*, fl. (K, U), Bangka; *Alseodaphne decipiens* Hook. f., Fl. Brit. India 5: 145. 1886; Kostermans, l.c.: 66. *Typus*: *Cantley s.n.* (K), Singapore.

The species grows on well-drained slopes, but also in the drier parts of fresh water swamp. In Sabah it is well known under the vernacular name medang sisek. It yields a very durable timber, much in demand for construction purposes.

Specimens examined: Malay Peninsula. Pahang, Rompin, Aug., fl., *F. D.* 15185 (K); Kemaman, Ulu Bendong, Kajang, Nov., buds, *S.F.N.* 30182 (BO, SING); Johore, 6th mile Kota Tinggi-Mawai Rd., April, fl., *S.F.N.* 30981 (BO, SING); Sg. Borassau, Mawai-Jemaluang Rd., Febr., fl., *S.F.N.* 28748 (BO, K, SING); 14th mile Mawai-Jemaluang Rd., Sept., fl., *S.F.N.* 29947 (BO, K, SING), swampy; *ibid.*, 17th mile, Febr., fl., *S.F.N.* 21326 (BO, K, SING); Singapore. Garden Jungle, fl., *Ridley* 4931 (K); 8076 (BM, BO, K, L); Singapore, 11³/₄ mile Mandai Rd. (eastside), tree 5 m, bark smooth, ster., *S.F.N.* 10900 (BO, E, K, L, SING); Bukit Timah, fr., *Ridley* 3369 (BM, K); Cameron Highlands, Mengtinggi For. Res., ster., *F. D.* 34138 (KEP); Sumatra. Prov. Palembang, Banjuasin & Kubu regions, alt. 25 m, fl., 16 E. 2 P. 661 (BO, L); *ibid.*, Aug., fl., 16 E. 2 P. 638 (BO, K, L, P); *ibid.*, March, fl., 73 E. 2 P. 731 (BO, L) and Aug., fl., 73 E. 2 P. 732 (BO, L); *ibid.*, April, fl., 16 E. 2 P. 710 (BO, L); *ibid.*, ster., *Grashoff* 729 (BO, L) and *Endert* 214 (BO); *ibid.*, fl., *Endert* 265 (BO, K, L); Central Sumatra fl., *Koorders* 10347 (BO); Island Bangka, Mt. Mangkol near Pangkalpinang, alt. 50 m, ster., *Kostermans & Anta* 742 (A, BO, K, L, PNH, SING); *ibid.*, Sept., fr., *Kostermans & Anta* 753 (A, BO, K, L, PNH, SING); Mt. Maras, Oct., fl., *Kostermans & Anta* 1238 (A, BO, K, L, LAE, P, PNH, SING); *ibid.*, alt. 100 m, ster., *bb.* 34210 (A, BO, K, L, PNH, SING); Djebus, fl., *Teijsmann* 3295 H. B. (BO, U), 35 (BO), 3485 (BO) and 3263 (BO); Muntok Distr., Majang, tree 22 m, diam. 45 cm, ster., *bb.* 7600 (BO); locality not indicated, buds, *Berkhout* 387 (BO); Java, cult. in Hort. Bot. Bogor. sub IX D 59, tree 15 m, diam. 25 cm, Sept., fl., *Rastini* 236 (A, BISH, BM, BO, CAL, K, KEP, L, LAE, NY, P, PNH, SING, SYD); *ibid.*, Sept., fr., *Kostermans s.n.* (BO, L); Borneo, Brunci, B. Ingei, seasonal swamp, tree 5 m, ster., *Brun* 136 (BO); Andulau For. Res., sapwood yellow, heartwood brown, tree 32 m, ster., *F. D.* 48472 (KEP); *ibid.*, alt. 40 m, tree 20 m, diam. 20 cm, buttresses 30 cm, 15 cm wide at the base, April, buds, *Brun.* 5823 (= 5923) (BO, K); mile 18 Labi Rd., alt. 200 m, tree 20 m, May, buds, *Brun.* 11 (BO, L); Ulu Sungei, alt. 30 m, June, fl., *S.* 0994 (L); Sabah, Bongawan For. Res., ster., BNBFD. A. 1395 (BO, K, KEP, SING); W. Coast For. Distr., Mandahan Estate, Kimanis, alt. 70 m, tree 27 m, diam. 20 cm, usefull timber, ster., BNBFD. A. 3003 (BO, KEP, L); Beaufort, mile 50, W. Coast For. Distr., edge of fresh water swamp, alt. 1 m, tree 32 m, diam. 35 cm, timber very durable, "medang sisek" ster., BNBFD. A. 497 (BO, KEP, SING); Sandakan, Papar, Mandahan For. Res., ster., *San.* 21122 (BO); Mt. Kinabalu, base Mt. Munkok, alt. 1000 m, April, fl., *J. & M. S. Clemens* 32701 (BM, BO, G, K, L, UC); Distr. Sipitang, April, fl., *San.* A 1708 (L); Sebulu R., Mengalong For. Res., alt. 5 m, June, fl., *San.* 15251 (K, KEP, L, SING); Beaufort, village Inumang working area, June, fl., *San.* 30181 (K, L); Sarawak: Bukit Iju, Ulu April, Balingian, 3rd. Div., alt. 250 m,

Aug., buds, *S.* 23688 (A, BO, K, KEP, L, MEL, SAN, SING); Baram, G. Mulu, alt. 400 m, July, buds, *Anderson & Kong K 6* (A, BO, K, L); near Kuching, Sarawak Club, Sept., fl., *F. D. A 0578* (BO, SAR); Kuching, May, fl., *Haviland & Hose 3086* (K); Kuching, Arboretum, alt. 100 m, Nov., fr., *S.* 13034 (L); *ibid.*, July, fl., *Sar. 12777* (K); near High Level Tank, tree 13 m, July, fl., *Igon F. D. 239* (SAR); Berakas For. Res., alt. 15 m, ster., *S.* 4890 (BO); Usum Apau Plateau, R. Julan, high kerangas, ster., *S.* 3895 (SING); S. Ukong, Miri, alt. 10 m, May fl., *S.* 21405 (BO); Lundu, G. Berumput, alt. 100 m, tree 30 m, Aug., fl., *S.* 13175 (BO, K, L); N. slope of Mt. Penrissen, S. of Kuching, alt. 1000 m, tree 30 m, diam. 30 cm, Aug., fl. white, *Jacobs 5053* (B, G, K, L, SAN, US) and *5059* (G, K, L, SAR, US); Ulu Melinau, near G. Benarat, alt. 130 m, tree 23 m, diam. 30 cm, July, fl., fr., *S.* 4608 (BO, K, L); Sg. Miri, 6.5 miles Bakam Rd., riverbank, tree 17 m, diam. 25 cm, April, buds, *S.* 24830 (A, BO, KEP, L, SAR, SING); Bukit Sejarah, Selampit, 25th mile Bau-Lundu Rd., 1^e Div., ridge 250 m, tree 17 m, diam. 25 cm, June, fls. greenish, *S.* 24941 (BO, E, K, SING); Bukit Snibong, 26th mile Bau-Lundu Rd., alt. 250 m, tree 25 m, diam. 20 cm, April, calyx green, tepals white, *S.* 27897 (BO, K, L, SING); *ibid.*, June, fl., *S.* 26908 (A, BO, E, K, L); *ibid.*, 25th mile, tree 23 m, diam. 20 cm, June, fls. pale green, *S.* 25293 (A, BO, K, L, SAN); *ibid.*, path to village Selampit, Sampadi For. Res., kerangas forest, tree 15 m, July, calyx yellowish, tepals white, *S.* 26990 (BO, E, K, L, SAN); *ibid.*, alt. 250 m, tree 13 m, diam. 20 cm, calyx green, tepals yellowish, June, *S.* 25277 (A, BO, E, K, L, SAR); Kalimantan, Melawi, B. Ulu, Barasepa, alt. 160 m, ster., *bb.* 29039 (A, BO, L, SING); Tjatit, B. Rassa, alt. 170 m, tree 22 m, diam. 40 cm, ster., *bb.* 26434 (A, BO, L); Landak Distr., Ngabang, alt. 13 m, tree 20 m, diam. 23 cm, ster., *bb.* 6400 (BO, L); E. Kalimantan, Isl. Nunukan, alt. 20 m, Nov., buds, *Kostermans 8668* (A, BO, K, L, NY, P, SING); Loa Djanan near Samarinda, pole tree, rare, *Kostermans s.n.* (BO, L); S. E. Kalimantan, Sampit, Kuling, alt. 10 m, tree 30 m, diam. 30 cm, ster., *bb.* 9855 (BO).

4. *Alseodaphne birmanica* Kosterm., *spec. nova* (tab. 1, 1-8).

Arbor ramulis gracilis glabris laevis innovationibus minutissime adpresse pilosis foliis alternantibus glabris chartaceis ellipticis late breve acuminatis basi breve acutis utrinque subopaca et gracile laxe prominule reticulata supra nervo mediano cum costis filiformis prominulis subtus nervo mediano prominentibus costis gracilis erecto patentibus prominulis petiolis gracilis paniculis axillaris vix ramosis foliis brevioribus sub lente minutissime laxe pilosis pedicellis brevis floribus sparse minutissime sericeis tepalibus subaequalibus staminibus tepalis aequilongis antheris late rectangulare-ovatis cellulis minutis filamentis latis margine fimbriatis ovario glabra in stylo breve crasse transeuntibus stigmatibus truncatis.

Typus: *Kerr 20393* (BM).

Tree c. 25 m tall. *Branchlets* slender, smooth, glabrous; end bud very minutely, shortly subsericeous. *Leaves* spirally arranged, chartaceous, glabrous, elliptic, 3.5 x 11-7 x 18 cm (in the syntype specimen up to 9 x 21 cm), obtusely, shortly

acuminate, base acute; both surfaces rather dull and finely, laxly, prominulously reticulate; upper surface with prominulous midrib and filiform lateral nerves, lower surface with prominent midrib, the very slender, erect-patent, towards the margin arcuate, c. 8-10 pairs of lateral nerves prominulous. *Petioles* rather slender, 10-15 mm long. *Panicles* axillary of the apical leaves, 3-6 cm long, unbranched or with a few, up to 1.5 cm long branches, few-flowered, under the high power lens minutely, sparsely pilose. *Pedicels* 2 mm long; tepals subequal in length, ovate, acutish, finely, sparsely sericeous outside, 2.5-3 mm long. *Stamens* c. 2 mm, anthers oval-rectangular with small cells, filament as broad as the anther, twice as long, fimbriate; basal glands conspicuous, flattish, sessile. *Ovary* ovoid, merging into the thick shorter conical style with truncate stigma; base of inside of tube slightly subericeous. *Fruit* ellipsoid, 17 x 40 mm, longitudinally slightly ribbed.

Specimens examined: Siam: Chondaen, Petchabun Prov., alt. c. 300 m, ever-green forest, March, fl., *Kerr 20393* (BM), local name: "Kaminton"; Birma, Pegu, Tonkyeghat, Palawa Zk., fr., *Kurz 982 (333)* (CAL), detached fruit.

5. *Alseodaphne borneensis* Gamble in Kew Bull. 1910: 223; Kostermans, Bibl. Laur. 64. 1964 (exclus. specim. Haviland & Hose d.k.r.t.). **Typus:** *Haviland & Hose 3087* (BM, BO, K, L, 2 sheets, SAR) Sarawak, Kuching, fl.

Closely related to *A. elongata* of Sumatra, but the panicles or racemes much shorter, the flowers much larger. The flush at a very early stage is covered by a sericeous tomentum, the mature parts are completely glabrous, except the inside of the flower; the fruit are wider than high. The tree seems to be much smaller than *A. elongata*.

Gamble cites as syntype: Haviland & Hose d.k.r.t.; this however, is *Alseodaphne oblanceolata*; there is a specimen Garai d.k.r.v., which is *A. borneensis*.

Specimens examined: Lingga Archipelago, Mt. Lingga, June, fr., *Heurck s.n.* (SAR); Sarawak, near Kuching, Oct., fl., *Haviland & Hose 824* (BM, K, L, SAR); *ibid.*, fr., *Beccari P. B. 918* (G, FI, K) and *1203* (FI), fruit pedicel up to 4 cm long; *ibid.*, May, fl., *Haviland 3088* (BM) and April, fl., *Haviland 3087* (BM, BO, K, SAR); Garai, Jan., fl., *Haviland d.k.r.v.* (CAL, K); *ibid.*, unknown collector, fl. May 1893 (BO, SAR); *ibid.*, native coll. *1696*, fr. (K) and fl., *2167* (K); R. Julan Dusun Apau plateau, high kerangas forest, alt. 1000 m, Dec., fr., *Pickles Sar. 3655* (BM, L), tree 4 m, diam. 7 cm, bark flaky, patchy grey-green and greeny brown, outer bark soft, papery, inner bark creamy brown, crumbly, wood greenish yellow; Bukit Taji Buloh, Hose Mountains, Ulu Mujong. Balleh, dacite hillside, mixed Dipterocarp forest, alt. 950 m, tree 10 m, diam. 12 cm, March, fr. green, 4.5 x 3 cm, pedicel 1.5 x 2 cm, inflorescence 11 cm, leaves up to 9 x 25 cm, *S. 14398* (K, SAR); Lundu, beside stream, small tree, Sept., fr., *Igon 241* (SAR); W. Kalimantan, G. Kenepai, fr., *Hallier 1753* (BO, G, K, L); E. Kalimantan, Balikpapan Distr., S. Wain, alt. 30 m, ster., *bb. 34406* (BO, L) = *Kostermans 4095*.

6. *Alseodaphne cavaleriei* (Lév.) Kosterm., comb. nova (tab. 1, 10-18).
 = *Machilus cavaleriei* Léveillé in Bull. Géogr. Bot. 24: 142. 1914; cf. Kostermans, Bibl. Laur.: 904. 1964 (exclus. basionym); *Persea cavaleriei* (Lév.) Kostermans in Reinwardtia 6: 185. 1962; Bibl. Laur. l.c.: 1211 (basionym sphalm. *Lindera cavaleriei*); *Nothaphoebe cavaleriei* (Lév.) Yang, cf. Kostermans, l.c.: 1055.

Typus: *Cavalerie 2131* (E), fl., Yunnan, Gan Chouen.

I had the opportunity to study the type specimen in the Edinburgh Herbarium. It consists of two flowering branches. These are rather thick with round large, conspicuous leaf scars. The typical collar of narrow bud scale scars of *Persea* is lacking, although a few, large budscale are present under the flush. This together with the fleshy leaves with their dense areolate reticulation compels me to refer this to *Alseodaphne*, although the decisive fruit pedicels are lacking and the flowers fit those of *Persea* very well. In leaf shape it resembles *A. rhododendropsis*.

Some mistakes crept in, in my Bibliography, where erroneously *Lindera cavaleriei* is cited as the basionym. *Lindera cavaleriei*, based on the specimen *Cavalerie 1222* represents *Phoebe nanmu*, the type is conserved in Edinburgh and consists of a sterile branchlet, showing the collar of budscale scars, found in *Phoebe nanmu*.

Small tree. *Branchlets* glabrous, glossy, thickish with large, round leaf scars; base of the flush with a few, large, narrow bud scale scars. Endbuds small, sericeous; very young leaves sparsely minutely sericeous underneath, adult ones glabrous, spirally arranged, rather crowded, rigidly coriaceous, oblong to sub-oblongate-oblong 1.5 x 5-3 x 10.5 cm, obtuse, base acutish, both surfaces densely, minutely areolate, upper one rather glossy with midrib channeled longitudinally, laterals filiform, prominulous, lower surface paler, rather dull, midrib prominulous, laterals filiform, 8-10 pairs, erect-patent, arcuately ascendent near the margin. *Petiole* 5-10 mm, deeply channeled above. *Panicles* few-flowered, axillary, developing with the flush, the rather slender glabrous peduncles 3-6 cm long, bearing at their apex few very short, sparsely pilose branchlets. *Pedicels* slender, slightly adpressed pilose, 3-4 mm long, towards the apex enlarging into an 0.5-1 mm high, broadly funnel-shaped tube. *Tepals* rather fleshy, narrowly elliptic, equal in length, acutish, outside sparsely, inside densely sericeous. *Stamens* 1.5-2 mm long, hardly microscopically pilose, the elliptic-rectangular, obtuse anthers as long as the filaments, cells of the outer stamens introrse of the inner the upper ones lateral, the lower extrorse, basal glands stipitate; staminodes conspicuous, sagittate and stipitate. *Ovary* ellipsoid, style slender, 1 mm; stigma inconspicuous.

Only known from the type locality: Yunnan, Gan Chouen, May (?) 1912, fls. green, *Cavalerie 2131* (E, G, L, fragment).

7. *Alseodaphne dura* Kosterm., spec. nova.

Arbor ramulis albis gracilis glabris laevis foliis alternantibus coriaceis adultis glabris ellipticis conspicue acuminatis basi acutis supra pernitida laxae prominule

reticulata nervo mediano prominulo costis filiformis prominulis subtus glauca opaca nervo mediano prominula costis filiformis prominulis petiolis brevis paniculis subglabris axillaris foliis brevioribus vix et brevissime ramosis tepalis subaequalis laxe adpresse pilosis antheris exterioribus ovatis acutis cellulis introrsis filamentis sat gracilis aequilongis antheris interioribus angustioribus filamentis aequilongis glandulis basalibus sat magnis ovario globosa glabra stylo breve stigmatate minute peltata.

Typus: *F(orest) D(epartment) 46558* (KEP).

Tree, up to 33 m high and 65 cm diam.; bark blackish brown; branchlets thin, white, smooth; end bud densely, minutely grey adpressed pilose. *Leaves* spirally arranged, glabrous, coriaceous, elliptic, 3 x 7-5 x 1.1 cm, conspicuously acuminate (acumen 10-15 mm long, obtuse), base acute; upper surface very glossy, conspicuously, laxly, prominulously reticulate, midrib and the filiform lateral nerves prominulous; lower surface glaucous, dull, reticulation lax, rather obscure, midrib prominent, lateral nerves 8-10 pairs, erect-patent, arcuate towards the margin, prominulous, *Petioles* slender, 5-10 mm, concave above. *Panicles* axillary, up to 5 cm long, very sparsely, microscopically pilose, hardly and very shortly branched. *Flowers* rather sparsely, minutely adpressed pilose. *Pedicels* 2-3 mm long. *Tepals* subequal, rather fleshy, ovate, acutish, 1.5-2 mm long; tube very short; outer anthers ovate, acute, 0.75 mm, cells large, introrse, filaments rather slender, slightly pilose, as long as the anthers; inner anthers much narrower, cells extrorse, filaments slender, basal glands rather large. *Ovary* globose, glabrous, style short, stigma small, peltate.

The local name is madang hitam (hitam = black), because of the very dark green foliage. The timber is very durable and used for seawater piles.

Specimens examined: Malay Peninsula. Trengganu, Ulu Nerus Kuala Trengganu, March, fl., *F. D. 46558* (KEP); Distr. Besut, Guntong, ster., *Kep. 68702* (KEP); Pahang, Kuatan, Batu Sawah, ster., *F. D. 31871* (KEP); mile 8, Kuantan-Jerantut Rd., ster., *F. D. 17213* (BO, KEP); Ulu Cheratung, Baloh For. Res., detached leaves, *F. D. 6631* (KEP).

8. *Alseodaphne elmeri* Merr. in Univ. Calif. Publ. Bot. 15: 82. 1929; Kostermans, Bibl. Laur. 66. 1964. **Typus:** *Elmer 21164* (BO, K, SING); **syntypus:** *Elmer 21171* (BO, K, SING).

Specimens examined: Sandakan, Mostyn Distr., mile 10, Mostyn, July, fl., *San. 46191* (BO); Sabah, Marotai, alt. 8 m, tree 13 m, diam. 20 cm, July, fr., *B.N.B.F.D. 3192* (BO, K, L); Tawau, Mt. Paton, New Lease N. of Table Estate, tree 18 m, diam. 15 cm, inflorescence branches red, Nov., fr., *San. 41009* (K); Kinabatangan, on hill at Sg. Kamarakud Kechil, May, fl., *San. 16878* (BO, L); Talang Road, mile 23, alt. 30 m, June, fl., *San. 18551* (K); Balung, Oct., fl., *San. 32495* (K); Tawau, tree 12 m, diam. 10 cm, bark smooth, whitish, inner bark yellowish, wood yellow, May, buds, *San. 65419* (K, L); mile 16¹/₂ Quoin Hill Road, Jan., fl., *San. 32912* (K); Kinabatangan Kechil, alt. 150 m, May, fl.,

San. 35053 (BO); Sarawak: Bukit Raya, Kapit, 3rd Div., alt. 200 m, tree 25 m, diam. 30 cm, Oct., fr., green, *S.* 23946 (A, BO, K, KEP, L, MEL, SAN, SING); W. Kalimantan, Sanggau, Sg. Labai, alt. 10 m, tree 14 m, diam. 32 cm, ster., *bb.* 7864 (BO, L); E. Kalimantan, E. Kutei, Sg. Kerajaan, N. of Sangkulirang, alt. 20 m, tree 12 m, bark brown, 5 mm, wood dark yellow with cigarbox wood smell, July, after anthesis, 5822 (A, BO, K, L, LAE, NY, P, PNH, SING, SYD); Samarinda area, Tandjong Bangko, mouth of Mahakam R., low sandy ridges, tree 10 m, bole 6 m, diam. 10 cm, bark smooth, hardly cracked, light brown, 0.5 mm, living bark 3 mm, yellow brown, wood clear yellow, fr. peduncles light red, immature fr. glossy green, ellipsoid, 13 x 19 mm, pedicel obconical, 1-1.5 cm long, 5 mm diam. at the apex which has a narrow thin flat rim, base 3 mm diam., wood smelling of cigarbox wood, rare, May, fr., *Kostermans* 7068 (A, BISH, BM, BO, BRI, CAL, CANB, K, L, LAE, NY, P, PNH, SING); *ibid.*, May, young fr., *Kostermans* 7067 (same herbaria); Sg. Tiram, alt. 30 m, tree 22 m, diam. 38 cm, April, fr., *Kostermans* 39 = *bb.* 35050 (A, BM, BO, K, L, LAE, P, PNH, SING); *ibid.*, July, fr., *Kostermans* 12519 (A, BO, CANB, K, L, NY, P, SING); Loa Djanan, alt. 40 m, tree 20 m, diam. 30 cm, bark white, pustular, 0.5 mm, cracked living bark 10 mm, yellowish brown, sapwood yellow, heartwood dark yellow, fr. pedicel red, April, *Kostermans* 6736 (A, BISH, BM, BO, CAL, CANB, K, L, LAE, NY, P, PNH, SING); *ibid.*, alt. 30 m, sandy ridges, tree 23 m, bole 15 m, diam. 40 cm, bark smooth, greyish, white, hoopringed, 0.5 mm, living bark 10 mm, brown, sapwood 10 cm, dark yellow, cigarbox wood smell, heartwood slightly darker, streaked with black, infructescence red, ripe fr. black, pedicels obconical, up to 2 cm long, 5 cm wide, at the apex, with a small, thin rim of subpersistent tepals, fr. 1.5 x 2.5 cm, ellipsoid, *Kostermans* 6633 (A, BISH, BM, BO, BRI, CAL, CANB, K, L, LAE, MEL, NY, P, PNH); W. Kutei, Telen R. near Long Puhus, alt. 100 m, tree 8 m, diam. 6 cm, Nov., buds, *Endert* 4989 (A, BO, K, L, LAE); Balikpapan Distr., Mentawir R. near village Mentawir, low, sandy ridge, tree 15 m, diam. 40 cm, bark pale brown, cracked, hard, strips 2 cm wide, 0.5 mm thick, living bark 15 mm, light orange brown, bitter pungent, outer layer green, wood yellow, cigarbox wood smell, lower leaf surface dull pale green, infructescence white in its lower part, reddish in its upper part, Febr., young fr., *Kostermans* 10069 (A, BM, CAL, CANB, K, L, P, SING); Sg. Wain area, N. of Balikpapan, alt. 70 m, sandy loamsoil, wood yellowish, ster., *Kostermans* 4352 (A, BO, K, L, SING); S. E. Kalimantan, Pleihari, Sg. Gangga, alt. 50 m, ster., *bb.* 9943 (BO, L); Puruktjahu, Kelapeh, alt. 200 m, tree 22 m, diam. 35 cm, ster., *bb.* 11093 (BO, L).

9. *Aiseodaphne elongata* (Bl.) Kosterm., cf. *Kostermans*, *Bibl. Laur.* 66. 1964; *Dehaasia elongata* Bl., cf. *Kostermans*, l.c.: 468 (excl. cit. Hooker f., Brandis, Gamble); *Haasia elongata* Bl. ex Nees, cf. *Kostermans*, l.c.: 534. **Typus:** *Praetorius s.n.*, *Kortals s.n.* Sumatra (BO, K, L, 3 sheets, U).
 = *Haasia elongata* var. *angustifolia* Miq., cf. *Kostermans*, l.c.: 534. **Typus:** *Diepenhorst s.n.* (1367 H. B.), Priaman Sumatra (BO, U); *Haasia cyrtopoda* Miq., cf. *Kostermans*, l.c.: 534. **Typus:** *Junghuhn s.n.*, Sumatra (U), fr.; *Cyanodaphne glabra* Miquel, Fl. Ind. Bat., Suppl. Sumatra 145. 1860 and 360. 1861; *Kostermans*, l.c.: 445. **Typus:** *Junghuhn s.n.*, fr., Hochankola (U).

The species is closely related to *A. borneensis* (cf. there), and to *A. longipes* of the Philippines.

Specimens examined: Sumatra's West Coast, Oud Agam, Sg. Daret, Batas Tjuli, alt. 1200 m, ster., *S.W.K. II/4* (L), leaves narrower; Distr. Kerintji, village Kerintji Tengah, alt. 1400 m, ster., *bb. 18606* (BO, L); South Sumatra, forest Talang-totong between Simpang and Sepatuhu, N. side Ranau lake, Palembang Prov., alt. 600 m, inflorescence ramifications pale greenish white, Oct., fl., *Van Steenis 3408* (BO, L); Sg. Pagu, fr., *Teijsmann H.B. 1025* (BO, U); Hochankola, fr., *Junghuhn 744* (CAL, L); id., fr., *Korthals s.n.* (BO, L, U); Priaman, fr., *Diepenhorst H. B. 1367* (BO, U); Lampong, young fr., *Forbes 1732* (BO, L).

10. *Alseodaphne foxiana* (Gamble) Kosterm., **comb. nova.**

- = *Beilschmiedia foxiana* Gamble (basionym) in Kew Bull. 1910: 150. **Typus:** *Fox 10705* (BO, SING); fr., Birch's Hill, Penang.
 = *Alseodaphne reticulata* (Gamble) Kosterm., cf. Kostermans, New & Crit. Mal. Pl. 4: 20. 1955; Bibl. Laur. 71. 1964; *Nothaphoebe reticulata* Gamble in Kew Bull. 1910: 224; Kostermans, l.c.: 128. **Typus:** *Scortechini s.n.*, G. Bubo (BO, CAL, SING); *Wray 3872*, at Cottage (BO); *Ridley 2967* (SING), *King's Collector 7002* (BO).

Beilschmiedia foxiana was published some months earlier than *Nothaphoebe reticulata*. The species is close to *A. rubrilignea*; it differs by its leaf shape and shorter petioles. It looks very much like *Nothaphoebe pahangensis*, which has, however, an impressed midrib.

Specimens examined: Penang, Birch's Hill, fr. ellipsoid, up to 23 x 38 mm, stalk almost cylindrical, 5-10 mm long, up to 3 mm diam., *Fox 10705* (BO, SING); *ibid.*, alt. 1400 m, Febr., fl., *Burkill & Haniff 12865* (BO); Perak, Maxwell's Hill, path to G. Hijau, alt. 1500 m, tree 10 m, Dec., fr. green, 22 x 45 mm, stalk obconical, 8-10 mm, 4 mm diam. at the apex, *M.S. 1080* (SAR); Taiping Hill, alt. 1300 m, Febr., fl., *Haniff & Nur 2320* (BO), distributed as *Endiandra praeclara*; Pahang, Cameron's Highlands, Renglet, April, fl., *S.F.N. 23631* (BM, BO); *ibid.*, alt. 1600 m, April, fl., *S.F.N. 23561* (BO, SING); Selangor, G. Mengkuang, alt. 1700 m, Jan., fl., *Robinson s.n.* (SING); Fraser's Hill, June, fl., *Strugnell 22383* (SING), identified as *Machilus scortechini* by Ridley; *ibid.*, Reservoir Ridge, alt. 1400 m, ster., *Burkill & Holttum 8678* (SING).

11. *Alseodaphne garciniaecarpa* Kosterm., **spec. nova.**

Arbor in omnibus partibus glabris foliis alternantibus et suboppositis tenuiter chartaceis oblongis vel subovato-vel subobovato-oblongis obscure acuminatis basi acutis vel obtusis utrinque subnitida et sat obscure laxè prominule reticulata supra

nervo mediano prominulo costis filiformis prominulis subtus nervo mediano prominente costis prominulis petiolis longis apicem versus subconcavis infructescentiis brevis vix vel non ramosis fructus subobovoideus truncatus profunde sulcatis pedicellis apicem versus incrassatis.

Typus: Kochummen, F.R.I. 2441 (L).

Tree, glabrous in all its parts, 20-23 m high, 25-30 cm diam., crown dense, bushy, bark cracking, scaly, pale grey brown, brittle or smooth, yellow, lenticellate, living bark yellow, soft, brittle; wood yellow. *Branchlets* rather slender, end bud perulate, acute. *Leaves* spirally arranged and sub-opposite, thinly chartaceous, oblong to subovate- or subobovate-oblong, 4 x 11-8 x 21 cm, obscurely acuminate, base acute or obtuse, both surfaces somewhat glossy and rather obscurely, rather laxly reticulate, midrib on the upper surface prominulous, on the lower prominent, the 10-12 pairs of very slender, erect-patent, slightly curved lateral nerves prominulous on both surfaces. *Petioles* 1.5-3 cm long, slender, slightly concave apically. *Infructescences* axillary, hardly or not branched, up to 7 cm long, bearing a single, sub-obovoid, truncate fruit, up to 2 cm high and 2 cm in diam. at the top, very deeply ridged (up to 14 ridged, mostly somewhat in pairs), pedicel slightly obconical, 7-10 mm long.

Manifestely related to *A. sulcata*, which has, however, coriaceous leaves with more lateral nerves. As in the latter species the definite status can only be ascertained, when flowers are available; the short, not very thick fruit pedicel, however, points to *Alseodaphne* and not to *Dehaasia*.

Specimens examined: Malay Peninsula, Perak, Piah Forest Res., July, fr., Kochummen, F.R.I. 2441 (K, L); ibid., K. Kiangsar, July, fr., Ismail Kep. 99786 (K, KEP), same collection.

12. *Alseodaphne glauciflora* Kosterm., spec. nova.

Arbor in omnibus partibus floribus interioribus exceptis glabris ramulis gracilis in sicco laevis atris nitidis foliis alternantibus subcoriaceis ellipticis breve acuminatis basi acutis utrinque subnitidis et sat obscure laxe prominule reticulatis supra nervo mediano plana vel prominula costis filiformis subtus nervo mediano prominentibus costis filiformis prominulis erecto-patentibus marginem versus arcuatis petiolis gracilis supra concavis paniculis glaucis foliis brevioribus multifloris tepalibus coriaceis subaequilongis antheris exterioribus ovatis cellulis 4 introrsis filamentis aequilongis vix pilosis antheris interioribus truncatis cellulis extrorsis filamentis longioribus glandulis basalis minutis sessilis ovario glabra in stylo breve crasse stigmatate transeuntibus.

Typus: 1 P. T. 743 (BO).

Tree up to 32 m tall and 45 cm diam., glabrous in all its parts, except for the inside of the flower. *Branchlets* slender, smooth, in sicco black. *Leaves* spirally

arranged, subcoriaceous, elliptic, 3 x 8-5 x 11 cm, shortly acuminate, base acute, both surfaces rather dull and obscurely, laxly, prominulously reticulate; upper surface with flat or prominulous midrib and filiform, hardly prominulous lateral nerves; lower surface with prominent midrib, the 5-7 pairs of erect-patent, filiform lateral nerves prominulous. *Petioles* slender, c. 1 cm long. *Panicles* axillary, up to 8 cm long, slender with a long bare peduncle, the few branches sub-erect, crowded near the apex, up to 2 cm long. Pedicels filiform, 3 mm long. *Flowers* grey-green, glaucous, fleshy, with a 0.25 mm long fleshy tube, the tepals ovate, acute, the outer ones slightly shorter than the inner ones, 1.5 mm; outer anthers ovate, the 4 large cells introrse, slantingly arranged (as in *Persea*), filament rather broad, inside shortly pilose; inner anthers truncate with extrorse cells (the upper ones hardly visible) the filaments longer, shortly pilose. *Ovary* ellipsoid, glabrous, merging into a short, thick style with a minute, truncate stigma.

Superficially the leaves resemble strongly those of *Dehaasia polyneura*, but for the shorter petioles, but the flowers are different. It is related to *Alseodaphne nigrescens*, but it has shorter petioles, the leaves have more lateral nerves, the flowers are glabrous and the pilosity of the stamens is shorter.

Specimens examined: Sumatra. Palembang Prov., Banjuasin and Kubu region, alt. 15 m, Oct., fls. fragrant, grey-green, 1 P. T. 743 (BO, L); ibid., tree 31 m, free bole 19 m, diam. 39 cm, ster., 1 P. T. 753 (BO, L); Djambi Prov., Muara Pidjuan, alt. 85 m, tree 32 m, diam. 45 cm, ster., *bb.* 13173 (BO, L). The following (all sterile) may also belong here; W. Kalimantan, Landak, Ngabang, *bb.* 6411 (BO); E. Kalimantan, W. Kutei, Mt. Palimasen near Tabang on Belajan R., alt., 100 m, tree 25 m, diam. 40 cm, bark smooth, grey, living bark 15 mm, pale, turning brown after exposure, wood yellow with cigarbox wood smell, *Kostermans* 12759 (A, BO, K, L, P, SING); E. Kutei, Sg. Kerajan, N. of Sangkulirang, alt. 20 m, tree 15 m, diam. 30 cm, bark grey, smooth, papery, living bark 8 mm, brown, wood dark yellow with cigarbox wood smell, *Kostermans* 5781 (A, BO, K, L, PNH, SING); Estuary of Mahakan R., Tandjong Bangko, low sandy ridge, alt. 20 m, tree up to 40 m tall and 50 cm diam., bark smooth, pale brown, 0.5 mm, living bark 10 mm, yellowish brown, sapwood 10 cm, yellow, heartwood yellowish brown, without smell, *Kostermans* 7082 (A, BO, K, L, PNH, SING).

13. *Alseodaphne gracilis* Kosterm., spec. nova.

Arbor ramulis gracilis glabris albis nitidis innovationibus glabris foliis alternantibus et subaggregatis tenuiter chartaceis obovato-ellipticis acuminatis basi cuneatis utrinque minute sat dense prominule reticulatis supra nitida nervo mediano et costis filiformis prominulis subtus opaca nervo mediano prominentibus costis gracilis erecto-patentibus prominulis petiolis gracilis sat longis supra concavis paniculis glabris axillaris paucifloris foliis multo brevioribus pedicellis perlongis tepalibus aequalibus intus villosulis staminibus vix pilosis antheris magnis filamentis sat gracilis sublongioribus glandulis basalibus parvis staminodiis gracilis ovario glabra ellipsoidea stylo breve stigmatate minute peltata.

Typus: Exped. Sino-Rossica 2716 (BO).

Tree (?) *Branchlets* long, slender, white, glossy, glabrous with a few lenticels; end bud with bud scales fimbriate at the margins. *Leaves* spirally arranged, subaggregate, thinly chartaceous, glabrous, obovate-elliptic, 4.5 x 11-7 x 18-7.5 x 15 cm, acuminate with sharp tip, base cuneate, both surfaces finely, rather densely, prominently reticulate, upper one glossy with prominent midrib and filiform lateral nerves, lower surface dull, midrib prominent, the 13-16 pairs of erect-patent, at margin arcuate, slender lateral nerves prominent. *Petioles* slender, 5-20 mm long, concave above. *Panicles* axillary, glabrous, few-flowered, up to 3 cm long with 0-2 branches, up to 1 cm long, flower pedicel very slender, up to 10 mm long; flower tube very short, tepals ovate, acutish, equal in length, c. 2 mm, inside finely grey villous. *Stamens* c. 1-1.25 mm long, hardly pilose, the anthers large, ovate-rectangular, slightly longer than the rather slender filaments, basal glands small. *Staminodes* slender on distinct filaments. *Ovary* ellipsoid, glabrous, style short, stigma minute, subpeltate.

By its thin leaves and the long pedicels this seems to be related to *A. perakensis*. China. Prov. of Yunnan, locality not indicated, fl., *Expedition Sino-Rossica 2716* (anno 1956) (BO, LE).

14. *Alseodaphne habrotricha* Kosterm., spec. nova.

= *Alseodaphne semecarpifolia* Nees, var. *rufa* Dalzell, cf. Kostermans, *Bibl. Laur.*: 72. 1964. *Typus: Dalzell s.n.* (CAL, K).

Arbor ramulis sat crassis griseis nitidis lenticellatis apicem versus minutissime dense pulverulente pilosis foliis alternantibus apicem ramulorum aggregatis coriaceis subobovato-ellipticis obtusis vel submarginatis basin versus sensim attenuatis supra glabra laevia nervo mediano plana vel basin versus subimpressa costis filiformis prominulis obscuris vel subimpressis subtus minutissime gracile dense pilosis nervo mediano prominentis costis sat erectis prominentis rete laxe prominulis vel deest petiolis supra concavis glabrescentis paniculis axillaribus foliis aequantibus vel longioribus sparse minutissime pilosis tepalis inaequalis pilosis filamentis pilosis glandulis basalibus parvis stipitatis staminodiis hastatis longe stipitatis ovario glabra gracile stylo aequilongo stigma subpeltata.

Typus: Sedgwick 5061 (BO).

Large tree; *branchlets* whitish grey, glossy, sulcate with large protruding lenticels, apical part densely, minutely pulverulently pilose. *Leaves* spirally arranged, aggregate, coriaceous, subobovate-elliptic, 3.5 x 7-7 x 15 cm, obtuse or emarginate, base gradually acute; upper surface glabrous, smooth, midrib prominent (near the base sub-impressed), lateral nerves filiform, prominent or obscure, rarely sub-impressed; lower surface densely, minutely, brown pilose (hairs very slender, curled), midrib prominent, lateral nerves c. 7 pairs, rather erect, slender, prominent, a few, obscure veinlets. *Petiole* rather slender, glabrescent, 3-12 mm long, concave

above. *Panicles* sparsely, minutely pilose, glabrescent, 12-18 cm long, consisting of a long, bare peduncle (often lenticellate) and a few, 1.5-4 cm long rather patent, slender branches. *Flowers* pedicelled, 3 mm diam., slightly, minutely silky. *Tepals* ovate, acutish, 2.5 mm, outer ones somewhat smaller and narrower; outer anthers oval, cells introrse, filaments as long, pilose; inner anthers narrower; cells lateral, basal glands small, attached slightly above the base of the pilose filaments; *staminodes* hastate, slender on rather long, pilose filaments. *Fruit* ellipsoid, up to 7 x 17 mm, apiculate or obtuse; *fruit pedicel* 5-10 mm, obconical, minutely pustular, at apex up to 4 mm in diam.

The species has been confused with *A. semecarpifolia*. Dalzell separated it as var. *rufa*, which was accepted by Hooker. Cooke (Flora Pres. Bombay 2: 537. 1906) thought that the rufous colour represented laterite dust. The species seems to be common in the coastal forest of Karwar.

Specimens examined: S. India, N. Kanara, Sirsi-Hulimani evergreen forest, stout tree, May, fr. shining black, peduncles red, Santapau, *Blatter Herb. 18691* (Bombay); *ibid.*, Devimone, May, fr., *Talbot 3682* (CAL), lateral nerves slightly impressed above; N. Karwar, Guddshalli, alt. 500 m, rainfall c. 300 cm, March, fr., *Bell 5765* (BO); *ibid.*, coastal forest, Dec., fl., *Sedgwick 5061* (BO, Blatter Herb); Bombay Presidency, locality not indicated, fr., *Herb. Dalzell s.n.* (CAL, K), leaves obovate, 4 x 6-6 x 9 cm; fr., *Heddle s.n.* (CAL); ster., *Gibbs s.n.* (BO), leaves up to 8.5 x 19 cm.

15. *Alseodaphne hainanensis* Merr. in Lingnan Sci. J. 13: 57. 1934; Kostermans, *Bibl. Laur.*: 68. 1964. **Typus:** *Tsang & Fung 766 = L. U. 18300* (A, BO, DD, K, L) Hainan, Hung Mo Shan, Aug., fr.; Chun, Chang & Chen, *Fl. Hainanica* 1: 265. 1964 (tab. 1, 9).

Specimens examined: Hainan, fl., *How 73314* (A, SING); July buds, *How 73137* (BO, SING); Po-ting, alt. 500 m, Sept., young fr., *How 73643* (BO, G, SING); Oct., fr., *Wang 34714* (BO, NY), tree 20 m, infructescence 6 cm long, fruit slightly depressed globose, 20 x 18 mm, pedicel 1-2 cm long, 8 mm diam., at the flat apex; Tonkin, Chapa, alt. 1700 m, Aug., fl., *Pételot 3809* (BO, NY, 2 sheets).

16. *Alseodaphne himalayana* Kosterm., spec. nova.

= *Machilus duthiei* King ex Hooker f., *Fl. Brit. India* 5: 861. 1890 (p.p. quoad specim. cum pedicelli incrassati).

Arbor ramulis glabris laevis nitidis apicem versus minutissime dense pallide sericeis foliis chartaceis alternantibus lanceolato-oblongis acutis vel subacuminatis basi in petiolum gracilium longum contractus utrinque dense gracile minute reticulatis supra nitida nervo mediano impressa costis filiformis prominulis subtus sub-

opaca laxe minutissime sericea nervo mediano gracile prominentibus costis erecto-patentibus arcuatis filiformis prominulis paniculis fructiferis longis sparse minutissime sericeis fructus globosus pedicellis incrassatis obconicis apice truncatis tepalibus subpersistentibus explanatis.

Typus: *Duhtie 4368* (BO).

Trees; *branchlets* rather slender, smooth, glossy, glabrous, towards the apex densely, minutely, pale sericeous; end bud densely appressed pilose. *Leaves* spirally arranged, chartaceous, lanceolate-oblong, 3 × 10-4.5 × 17 cm, acute or subacuminate, base contracted into the slender, channeled, 2-2.5 cm long petiole, both surfaces densely, finely reticulate, upper one glossy with impressed midrib, the lateral nerves filiform, prominulous, lower surface rather dull, midrib slender, prominent, lateral nerves filiform, erect-patent, arcuate, c. 9 pairs, prominulous. Fruiting panicles axillary, clustered below the flush, glabrescent, up to 13 cm long, rather slender with few, up to 3 cm long, patent branches. *Fruit* globose, c. 1 cm diam., pedicels obconical, fleshy, 6-10 mm long with flat top and subpersistent, narrow, sericeous, up to 3 mm long tepals.

The fleshy fruit pedicels and the reticulation place this species in *Alseodaphne* and not in *Persea*. Hooker mentioned specimens with thickened fruit pedicels under *Machilus duthiei* (= *Persea duthiei*); he did not enumerate the specimen, but might have had our specimens before him. Fruiting specimens of *Persea duthiei* have not thickened and fleshy pedicels.

Specimens examined: Nepal, communicavit Fernandez, fr., (DD); Kumaon near Bhini Jal, alt. 4-5000 ft., 11.1837, fl., *Duthie 4368* (BO).

17. ***Alseodaphne insignis*** Gamble in Kew Bull. 1910: 221; Kostermans, Bibl. Laur.: 68. 1964. **Typus:** *King's Coll. 8451* (BO, K, L, TI), **syntypus:** *King's Coll. 6608* (BO, K, L, SING), 6958 (BO, K, L, SING), 7273 (CAL, K, L, SING).

The species grows in kerangas forest and in seasonally inundated areas.

Specimens examined: Malay Peninsula. Pahang, 8th mile Kuantan-Jerantai Rd., wood used for piling in seawater, tree 30 m, ster., *F. D. 17214* (KEP); Perak, Taiping, Jan., fr., *King's Coll. 8451* (BO, K, L, TI); Febr., fr., id. 7273 (CAL, K, L, SING); Larut, Dec., fr., id. 6958 (BO, CAL, K, L, SING); Sept., fl., id. 6608 (BO, CAL, K, L, SING); Johore, Kluang, Rimba Liring, alt. 50 m, tree 33 m, ster., *F.D. 69916* (KEP); N. E. Sumatra, Indragiri Distr., Kuala Belilas, alt. 60 m, tree 26 m, diam. 45 cm, ster., *bb. 27653* and *23610* (A, BO, L); *ibid.*, Belimbing, alt. 6 m, seasonally inundated, tree 25 m, diam. 40 cm, ster., *bb. 28528* (A, BO, L); *ibid.*, Muara Serangge, alt. 50 m, tree 30 cm, diam. 120 cm, few, 70 cm high buttresses, out 70 cm, ster., *bb. 30012* (BO, L, SING); and *30133* (A, BO, L); *ibid.*, Pagarumbei, Tjenaka Rd., alt. 8 m, ster., *bb. 25778* (A, BO, L, SING); P. Gelang, alt. 4 m, seasonally inundated, ster., *bb. 29132* (A, BO, L, SING) and *29165* (BO,

L); Isl. Bengkalis, Sg. Missigit, alt. 6 m, Jan., fr., *Béguin 587* (BO, K, L); Kuantan Distr., Djahe, alt. 75 m, seasonally inundated, tree 30 m, diam. 60 cm, ster., *bb. 26483* (A, BO, L); *ibid.*, Sg. Rambai, alt. 70 m, tree 30 m, diam. 50 cm, ster., *bb. 23483* (BO, L); Sg. Besar, alt. 120 m, tree 20 m, diam. 45 cm, ster., *bb. 24059* (A, BO, L); Djambi, village Simpang, seasonally inundated, alt. 45 m, tree 28 m, diam. 40 cm, ster., *bb. 13146* (BO) and *13158* (BO, L); Borneo, Brunei, Lamunin, mile 8¹/₂ Kuala Abang Rd., alt. 50 m, tree 40 m, diam. 100 cm, buttresses 100 cm high, 30 cm thick at the base, ster., *Brun. 81* (BO, K, L, SAR, SING); Andulau For. Res., alt. 50 m, tree 16 m, diam. 40 cm, ster., *Brun. 601* (BO, K, L, SING); Berakas For. Res., ster., *S. 41856* (SING) and Dec., fr., *Brun. 5185* (BO, L); Bukit Pasir Puteh, heath forest, Dec., fr., *Brun. 5012* (BO, L) and Jan., fr., *Brun. 5109* (BO, L); Sabah (N. Borneo), Tawau, Apas Rd., mile 8, tree 10 m, diam. 20 cm, Oct., fr., *B.N.B.F.D. 8808* (K, L); *ibid.*, tree 13 m, April, fl., *San. 29562* (K, L); Baradaya For. Res., tree 16 m, diam. 60 cm, bark scaly, greyish brown, living bark laminated, May, fr., *San. 30047* (K, L); Kalabakan For. Res., alt. 150 m, tree 35 cm diam., Sept. young fr., *San. 58931* (L); Penampang, Sungei Suran trail, alt. 300 m, tree 62 m, diam. 100 cm, bark greyish, living bark yellowish, changing to pinkish, sapwood yellowish, Dec., fr. green and brown, *San. 37774* (K, L); Sandakan, Leila Forest Res., below Trigon. Point, May, fr., *San. 48186* (K); Sepilok For. Res., alt. 100 m, tree 20 m, ster., *San. 20881* (L); *ibid.*, tree 40 m, diam. 80 cm, Dec., fr., *F.D. 8822* (K, L, SING); Batu Sepi Rd., alt. 10 m, tree 10 m, diam. 50 cm, sapwood yellow, April, ripe fr. light yellow, *San. 20636* (K, L); Sarawak, Badas For. Res., Bindang Terrace, Sept., fr., *S. 1089* (BO, L, SAR); Baram, fr., *Hewitt s.n.* (BM, K); Marudi, June, fl., *Hose 251* (BM, K); *ibid.*, Maindi F.R., tree 12 m, May, fl., *Sar. 8446* (BO, K, L, SING); Sibul, Loba Kalang For. Res., ster., *S. 3694* (SING), *50559* (SING), *0476* (KEP, SING), *2694* (KEP), *0889* (KEP, SAR, SING); Bukit Snibong, Sampadi For. Res., 25th mile Bau-Lundu Rd., kerangas forest, alt. 300 m, June, fls. greenish, *S. 25280* (BO, E, K, L, SAR), tree 30 m, diam. 30 cm; Kuching, Semengoh Arbor., tree no. 50, July, buds, *S. 12770* (A, BO, K, L); *id.*, June, buds, *S. 12575* (A, BO, K, L, SAN, SAR, SING); Aug., fr., *S. 14765* (BO, K, L, SAR); 1.75 miles N.W. of village Siol, N. side of Sarawak R., nearly opposite of Kuching, tree 7 m, diam. 20 cm, kerangas forest, July, fl., *Salleh Anak Tak 12089* (K, L); Sibul, ster., sine coll. *1408* and *1423* (SING); Along Sg. Kakus, Bintulu Distr., 4th Div., alt. 50 m, ster., *Hotta 15807* (L); N. slope of Mt. Penrissen, alt. 100 m, Aug., young fr., *Jacobs 5093* (B, G, K, L, SAR, SING, US); locality not indicated, May, fr., *Moultons Coll. 47* (BM, BO); W. Kalimantan, Melawi Distr., Ng. Betung, alt. 275 m, Jan., fr., *bb. 31624* (A, BO, L, NY, SING); Bukit Badak, alt. 350 m, ster., *bb. 28337* (A, BO, K, L, SING); Bukit Melaban, alt. 475 m, ster., *bb. 28327* (A, BO, L); E. Kalimantan, W. Kutei, Mt. Palimasan near Tabang on Belajan R., alt. 100 m, Sept., fr., *Kostermans 12718* (A, BM, BO, CANB, L, P, PNH, SING).

18. *Alseodaphne intermedia* Kosterm., spec. nova.

Arbor ramulis glabris innovationibus dense minutissime adpresse pilosis foliis alternantibus subaggregatis glabris coriaceis plerumque anguste ellipticis vel oblan-

ceolato-ellipticis obscure acutis interdum obtusis basin versus sensim attenuatis utrinque laevia supra nitida nervo mediano vix prominulo subtus glauca nervo mediano et costis sat erectis prominulis petiolis longis paniculis multifloris longe pedunculatis floribus pilosis ut in *A. oblancoolata* paniculis fructiferus saepe monocarpis fructus ellipsoideus magnis pedicello magna incrassata tuberculata apice plana impositus.

Typus: *F.R.I. 7751* (L).

Tree up to 33 m high and 90 cm in diam., crown dense, broadly domed; bark grey or grey-brown, papery, flakey with lines of long lenticels; living bark yellow pink to orange brown, granular, soft, thick, spicy, wood yellow. *Branches* glabrous with large leaf scars; end bud densely, minutely pale appressed pilose. *Leaves* spirally arranged, coriaceous, glabrous, usually rather narrowly oblanceolate, up to 5 x 20 cm, top shortly acute, sometimes obtuse, base gradually narrowed into the slender, up to 4 cm long petiole, both surfaces smooth, upper one glossy, midrib prominulous, lateral nerves hardly visible, lower surface glaucous, midrib and the 7-10 pairs of rather erect, thin lateral nerves prominulous. *Infructescences* often monocarpic, up to 15 cm long, stout; mature fruit ellipsoid, 18 x 40 mm; pedicel warty, obconical, up to 14 mm long, at apex 10 mm diam. with wavy, flat margin. *Panicles* (specimen *F.R.I. 3661*), up to 17 cm long, many-flowered, the flowers densely, minutely appressed pilose, 2.5 mm long with the same structure as those of *A. oblancoolata*.

The species is close to *A. oblancoolata*, differs by the coriaceous, stiff leaves and the much larger fruit and pedicel.

Specimens examined: Malay Peninsula. Kemaman, Bukit Kajang, ster., *Corner, s.n.* (SING); S. E. Perak, Slim Hills For. Res., alt. 800 m, tree 20 m, diam. 30 cm, bark grey, smooth, living bark yellow, closely flecked orange, soft, aromatic smell, Sept., fr. and cup green with brown warts, *F.R.I. 0800* (K, L, KEP); Negri Sembilan, Nilai Jindaram Estate, alt. 100 m, tree 20 m, Sept., fr., *Moh. Shah 131* (A, BO, BRI, K, L, SING); S.E. Kelantan, S. Lebir near Betong, ridge top, tree 33 m, diam. 90 cm, bark fawn grey with big, thin loose scales, living bark thick, soft, yellow fawn with close brown dots, slightly spicy smell, wood yellow-brown, Sept., fr. green, warty, pedicel green, *F.R.I. 4373* (K, KEP, L); S.E. Pahang Aur For. Res. at Sg. Aur riverbank, tree 23 m, diam. 70 cm, bark orange brown, spicy, May, fl., *F.R.I. 3661* (K, KEP, L); Johore, Bukit Paloh Estate, alt. 60 m, tree 8 m, June, young fr., *Shah & Kadim 434* (A, BO, K, L, SING); G. Panti For. Res., alt. 300 m, tree 21 m, diam. 30 cm, bark grey-brown, papery, flakey, with lines of long lenticels, living bark thick, yellow-pink, granular, wood light yellow, March, fr. green, *F.R.I. 7751* (K, KEP, L); N.W. G. Belumut, ridge crest, alt. 600 m, tree 10 m, bark smooth, living bark yellow, May, fr. glossy green stalk glaucous, *F.R.I. 8822* (K, KEP, L); Kuala Sedili New Road, low, tree 23 m, June, fl., *Kadim & Noor 191* (A, BISH, BO, K, L, SING); Sg. Kayu, swampy, tree 20 m, ster., *S.F.N. 32372* (BO, SAR, SING); 6th mile Kota Tinggi-Mawai Rd., drier part of swampy forest, April, fl., *S.F.N. 30982* (BO, K, SAR, SING); Singapore, MacRitchie Reservoir, April, fl., *S.F.N. 37269* (BO, K, L, SING); Sumatra. Isl. Bengkalis, Sindang Bliti, ster., *bb. 3013* (BO); Riau, P. Singkep, ster., *bb. 3862* (BO); Tapanuli, Sibolga,

Lapian, swampy, ster., *bb.* 3813 (BO); Sibolga, Barus, Aek Raso, alt. 15 m, tree 19 m, ster., *bb.* 31566 (A, BO, L); Kuantan, Djahe, alt. 75 m, tree 27 m, ster., *bb.* 26489 (A, BO, L); Benkulu, Redjang, ster., *bb.* 2301 (BO).

19. *Alseodaphne khasyana* (Meissn.) Kosterm. in Reinwardtia 7: 292. 1968; *Machilus khasyana* Meissner in DC., Prodr. 15(1): 42. 1864; Kostermans, Bibl. Laur. 911.: 1964. **Typus:** E. Bengal, Khasya Hills, fl., *Griffith 125* (= *Kew Distrib. 4264*) (BM, BO, DD, K, 3 sheets, L, LE) (tab. 2, 1-6).

Resembling *Nothaphoebe pahangensis*, but many more lateral nerves.

Additional specimen: Assam, Khasya and Jaunsar Hills, Lylingkot forest, Oct., fl., *Sri Ram Sharna 9489* (DD).

20. *Alseodaphne kochummenii* Kosterm., spec. nova.

Arbor mediocris in omnibus partibus glabris foliis coriaceis ellipticis vel oblanceolato-ellipticis longe tenuiter acuminatis basi acutis utrinque minutissime dense subareolato-reticulatis supra subnitida nervo mediano prominulo costis filiformis subimpressis subtus opaca nervo mediano prominens costis prominulis petiolis gracilis longis infructescentiis vix vel non ramosis foliis brevioribus monocarpis fructus globosis pedicellis parte basali obconicus incrassatus magnis apice explanatis.

Typus: *Kochummen F.R.I. 2649* (L).

Tree, glabrous in all its parts, 7-13 m high, slender. *Branchlets* rather slender, smooth, grey with a reddish tinge; end bud with long, pointed bud scales. *Leaves* spirally arranged, coriaceous or thinly coriaceous, oblong to oblanceolate-oblong, 3 x 9-6 x 22 cm with a slender, acute, 1-2 cm long acumen, base acute, both surfaces densely, rather obscurely, minutely subareolate-reticulate, upper surface somewhat glossy, midrib prominulous, near the apex slightly impressed, lateral nerves filiform, often somewhat impressed, lower surface dull, midrib prominent, the up to 14 pairs of lateral nerves thin, erect patent, prominulous, slightly curved. *Petioles* 1-2.5 cm long, slender. *Infructescences* hardly or not branched with a single fruit, up to 8 cm long. *Fruit* globose, dark green with white spots, up to 17 mm diam., pedicel consisting of an obconical, fleshy, light red or yellow basal part, 2-4 cm long, at apex up to 6 mm in diam. and then flaring out into a shallow cup, 1.5-2 cm in diam.

The pedicels resemble those of *A. insignis*, but are more slender and longer. I have therefore included this in *Alseodaphne*, although it might also belong to *Dehaasia*. It is named in honour of Mr. K. M. Kochummen of the Botanical Dept. of the Forest Research Institute in Selangor, Malaysia.

Specimens examined: Malay Peninsula, Pahang, Fraser's Hill, Big Tree plots, hillside, Febr., fr., *Kochummen F.R.I. 2649* (K, KEP, L); *ibid.*, alt. 1200 m, Aug., fr., *Stone 6482* (L).

21. *Alseodaphne lanuginosa* Kosterm., spec. nova.

Arbor ramulis crassis sulcatis apicem versus dense minutissime rubro sublanuginosis foliis subaggregatis coriaceis ellipticis breve acuminatis basi acutis supra nitida glabra minutissime dense subareolato-reticulata nervo mediano gracile prominula basin versus subimpressa costis subimpressis, subtus dense pallide minute sublanuginosa nervo mediano prominente costis erecto-patentibus prominentibus, petiolis longis; paniculis axillaris multifloris dense minutissime pallide sublanuginosis foliis subaequilongis pedicellis brevis tepalibus interioribus exterioribus latioribus, staminibus crassis pilosis glandulis basalibus magnis staminodiis minimis subulatis stylo breve crassa stigmatate peltata triangularibus.

Typus: *Pételot 3565* (P).

Tree, up to 25 m high and 50 cm in diam. *Branchlets* thick, sulcate, towards the apex minutely rusty sublanuginose; end bud with similar pilosity. *Leaves* subaggregate, spirally arranged, coriaceous, elliptic, 8 x 18-14 x 25 cm, shortly acuminate, base acute; upper surface glossy, glabrous, very finely pitted, midrib slender, prominulous, near its base subimpressed, laterals subimpressed, slender; lower surface densely, minutely, grey or rusty sublanuginose, midrib prominent, laterals 7-10 pairs, erect-patent, arcuate towards the margin, prominent, secondary nerves prominulous, lax, parallel. *Petiole* 3.5-4 cm, slightly channeled above. *Panicles* axillary, many-flowered, up to 20 cm long, densely, minutely sublanuginose, peduncles stout. *Pedicels* 2-3 mm. *Tepals* 2-3 mm, ovate, acutish, fleshy, the inner ones twice as broad as the outer ones and slightly shorter. *Stamens* thickish, slightly shorter than the tepals, anthers ovate (inner ones truncate), slightly longer than the thick, pilose filaments, outer anthers introrse, inner ones lateral; basal glands large, as long as the filaments. *Staminodes* minute, awl-shaped. *Ovary* ellipsoid, style shorter, thick; stigma peltate, sub-triangular. *Fruit* ellipsoid-ovoid, 2.5 x 4 cm, pedicel c. 1 cm, slightly obconical.

Related to *A. andersonii*, but the much finer areolation, a densely pilose lower leaf surface, larger flowers with unequal tepals. The nerves on the upper leaf surface are accompanied by rectangular areoles (typical for *Persea*). Poilane succeeded in grafting the avocado on this species about 20 years ago.

Specimens examined: Tonkin: Chapa, alt. 1500 m, Aug., fl., *Pételot 3565* (BO, P); Prov. Caobang, Khaosan, massif of Piahouao, alt. 1200 m, Febr., fr., *Poilane 18974* (BO, L, P).

22. *Alseodaphne longipes* Quis. & Merr. in Philipp. J. Sci. 37: 146. 1928; Kostermans, Bibl. Laur.: 68. 1964. **Typus:** young fr., *Elmer 13962* (BISH, BO, LEN, MO, U), **syntypus:** young fr., *Elmer 13400* (BO, MO, U), *Ramos & Edano B. Sc. 47317* (NY), *45630*, *Clemens 16900*, *Loher 13756*, fl., *Lizardo B. Sc. 29387* (K, NY). = *Persea philippinensis* Auct. (non Elmer) ex Quis. & Merr. in Philipp. J. Sci. 37: 148. 1928, quoad spec. *Elmer 13962* (K) and *13400* (K).

Additional specimens: Luzon, Isabella Prov., Sierra Madre Mts., Sangead Palanan, April-May, fr., *Gutierrez, P.N.H. 78254* (BO, K, PNH, SING), fr. ellipsoid; Subprov. Ifugas, Febr., young fr., *McGregor, B. Sc. 19660* (BO, P); Prov. Nueva Vizcaya, Mt. Alzapan, May-June, fr., *Ramos & Edanos, B. Sc. 45630* (BO, NY, SING); Cagayan Prov., Abulug R., Jan., fr., *Weber 1565* (C); Samar, March-April, fr., *Ramos, B. Sc. 17479* (K, L, MO, NY); Mindanao, Surigao Prov., Mt. Kabatuan, March, fr., *Mendoza & Convocar, P.N.H. 10553* (L); Bukidnon Prov., Mt. Katanglad, alt. 1800 m, Febr., fr., *Sulit, P.N.H. 9935* (L), tree 10-12 m, diam. 25 cm, fr. black, good construction timber.

23. *Alseodaphne macrantha* Kosterm., spec. nova.

Arbor ramulis et innovationibus glabris in sicco atris ramis griseis foliis alternantibus glabris subcoriaceis ellipticis subacuminatis basi acutis utrinque sat obscure gracile reticulatis supra nervo mediano basin versus subimpressis costis filiformis prominulis subtus glaucis nervo mediano prominentibus costis gracilis erecto-patentibus prominulis petiolis sat longis paniculis axillaris glabris foliis subaequilongis paucifloris pauca et brevis ramosis pedicellis longis floribus pro genere magnis tubus bene evolutis tepalibus inaequalibus staminibus pilosis antheris ovalis-subrectangularis vel truncato-ovatis glandulis basalibus filamentis aequilongis staminodiis subcordatis brevis stipitatis ovario glabra.

Typus: Perak, Taiping Hills, *Curtis s.n.* (BO).

Tree. *Branchlets* glabrous, smooth, in sicco black, end bud glabrous. *Leaves* spirally arranged, subcoriaceous, glabrous, elliptic, 2.5 x 8-5.5 x 16-6.5 x 13 cm, obscurely acuminate, base acute, both surfaces finely, prominulously, rather laxly reticulate, upper surface with midrib towards the base flat or subimpressed, lateral nerves filiform, prominulous, lower surface glaucous, midrib prominent, lateral nerves 10-13 pairs, slender, erect-patent, arcuate at the margin. *Petioles* 15-25 mm long, channeled above. *Panicles* axillary, glabrous, up to 11 cm long, with long peduncle and a few, up to 1 cm long, patent branches. *Pedicels* 5-6 mm long. *Flowers* few, glabrous, tepals broadly ovate, acute, outer ones 1.5, inner ones 2 mm long, tube well developed. *Anthers* ovate, 0.5 mm long, filaments as long, pilose; basal glands large, sessile. *Staminodes* minute ovoid, stipitate. *Ovary* glabrous.

The species looks like *Dehaasia polyneura*; most of the flowers are abnormally swollen.

Specimens examined: Malay Peninsula: Perak, Taiping Hills, Oct., fl., *Curtis s.n.* (BO); Trengganu, 23rd mile Trengganu-Besut Rd., large tree, bark and wood very hard, bark greyish outside, yellowish inside, ster., *S.F.N. 40483* (SING); perhaps also: Perak, Ulu Bing, Lenggang ster., *F.D. 10390* (KEP).

24. *Alseodaphne micrantha* Kosterm., spec. nova.

Arbor ramulis sat crassis angulatis albis nitidis innovationibus pilosis foliis alternantibus subaggregatis rigide chartaceis glabris subobovato-ellipticis obscure acuminatis basi cuneatis supra nervo mediano plana costis filiformis prominulis nerviis secundariis filiformis subparallelis subtus glauca nervo mediano prominentibus costis gracilis erecto-patentibus venis secundariis filiformis connectis petiolis longis supra planis paniculis axillaris brevissimis dense minutissime adpresse pilosis tepalibus subaequalis staminibus subpilosis ovario glabra stigmatibus inconspicua.

Typus: *Abdullah F.D. 48653* (KEP).

Tree. *Branchlets* thick, white, smooth, glossy, at the apex angular; end bud densely, minutely, appressed pilose. *Leaves* spirally arranged, subaggregate, glabrous, subobovate-elliptic to elliptic, 4 x 10-6 x 14 cm, obscurely acuminate, base acute, cuneately subdecurrent into the 15-20 mm long petiole which is flat above, upper surface smooth or with very fine parallel secondary veins, midrib flattish or prominulous, lateral nerves filiform, prominulous or so in a groove, lower surface glaucous, midrib prominent, lateral nerves 11-15 pairs, slender, prominulous, erect-patent, arcuate near the margin, sometimes connected by fine secondary nerves. *Panicles* axillary, (submature) 10 mm long, densely, minutely appressed pilose. *Flowers* 1 mm diam., *tepals* subequal. *Stamens* pilose, filaments distinct. *Ovary* glabrous style short, stigma inconspicuous.

The flowers are too young to ascertain the number of anther cells, although there seem to be 4. The species show as remarkable likeness to *Beilschmiedia penangiana*, but the inflorescence is different. Apparently all material was collected from the same tree.

Specimens examined: Malay Peninsula, Johore, mile 33³/₄-33¹/₂ Mersing-Kota Tinggi Rd., Febr., young fls., *F.D. 49653* (KEP); *ibid.*, March, ster., *F.D. 49657* (KEP); *ibid.*, Nov., ster., *F.D. 49651* (KEP); *ibid.*, Febr., ster., *F.D. 49652* (BO), *ibid.*, Febr., bud, *F.D. 49654* (L).

25. *Alseodaphne montana* Kosterm. in *Reinwardtia* 5: 343, fig. 2a-b. 1960; *Bibl. Laur.*: 69. 1964. **Typus:** *J. & M. S. Clemens 28915* (BO, G, K, L, SING), **syntypus:** *Clemens 27890* (BM, BO, G, L, SING, UC), *28709* (BO, BM),

28795 (BM, BO), 29426 (BM, BO, G, L), 29452 (BM, BO, G, K, L, SING, UC), 39352 (BO).

Additional specimens: N. Borneo, Kinabalu, Tenompok, Febr., young fr., *J. & M. S. Clemens* 28352 (BM); Upper Kulapis valley, 1500 m, tree 33 m, July, fr., *Carr S.F.N.* 27856 (SING).

26. *Alseodaphne nigrescens* (Gamble) Kosterm., comb. nova.

= *Dehaasia nigrescens* Gamble (basionym) in Kew Bull. 1910: 150; Kostermans, Bibl. Laur.: 470. 1964. *Typus:* Penang, *Curtis* 1183 (BO, CAL, SING), *syn-typus:* *Ridley* 13017 excluded.

The Curtis' specimens have diseased flowers; a specimen, *Haniff* 9133 (SING), from Penang has the same diseased flowers, but a few normal ones were found, which have 4-celled anthers. Gamble described the flowers of this species after the specimen *Ridley* 13017 from Singapore, which I have not seen, but apparently this represents a species of *Dehaasia* with very unequal tepals. I have excluded it here. The material from the island of Belitung (Biliton) conforms very well with this and has 4-celled anthers (the 2 outer whorls of stamens), whereas the apical cells of the inner row of anthers are so much reduced, that they become 2-celled. The Bornean material has a more densely pilose inflorescence.

Specimens examined: Peninsular Siam, Nakawn Srithamarat, Huay Rumpon, alt. 500 m, common in evergreen forest, bark yellowish grey, Sept., fl., *Bunnak Sangkhachand* 695 (BO); Yala, Banang Sata, tree 10-15 m, alt. 200 m, April, buds, *Kruatachoo s.n.* (C); Malay Peninsula, Penang, Western Hill, alt. 700 m, tree 7-8 m, April, diseased fls. and fr., *Curtis* 1183 (BO, CAL, SING); fr., pedicel 1.5-2 cm long; *ibid.*, April, diseased fls., *Haniff* 9133 (SING); Perak, Larut, P. Tanjong Res., tree 25 m, ster., *Kep.* 63459 (KEP); Pahang, Cameron Highlands, Boh Plantation, alt. 1300 m, April, fr., *S.F.N.* 32627 (BO, KEP, L, SING), fr. pedicel obconical, 1 cm long; Sumatra's W. Coast, Sidjundjung, Tanah Bedantung, alt. 170 m, tree 24 m, diam. 40 cm, Nov., fr., *bb.* 9041 (BO); Toba region, Karo Lands, Sibutan For. Reserve, alt. 1400 m, tree 27 m, diam. 40 cm, ster., *bb.* 2769 (BO); *ibid.*, Biangtal, alt. 1000 m, tree 20-25 m, ster., *Lörzing* 14462 (BO); Palembang Prov., Lematang Ilir, alt. 50 m, ster., *bb.* 35189 (A, BO, K, L); identification uncertain; Isl. Bangka, Lobok Besar, alt. 60 m, tree 31 m, bole 21 m, diam. 61 cm, bark yellowish grey, 1 mm, peeling off a little in 1-2 cm wide strips, living bark 20 mm, pale brown, inside yellowish, bitter, sapwood 10 cm, heartwood greyish dark yellow, Oct., fl., *Kostermans* 254 = *bb.* 34188 (A, BO, CANB, K, L, SING); *ibid.*, tree 28 m, diam. 37 cm, ster., *bb.* 34143 (A, BO, K, L, PNH, SING); *ibid.*, Oct., fl., *Kostermans & Anta* 1182 (A, BM, BO, BRI, CANB, K, KEP, L, LAE, NY, P, PNH, SING, SYD); *ibid.*, Oct., tree 25 m, diam. 35 cm, bark yellowish brown, smooth, heartwood dark greyish yellow, Oct., fls. yellowish green, *Kostermans & Anta* 1158 (A, BM, BO, BRI, CANB, K, KEP, L, LAE, NY, P, PNH, SING); S. Bangka, Rindik, alt. 10 m, ster., *bb.* 11813 and 11309 (BO); Isl. Belitung (Biliton), fl., *Van Rossum* 22a (BO, G, K, L); Borneo. Sarawak, 3d Div., Kapit

Distr., bank of Rejang R., 10 km below Belaga, alt. 500 m, Aug., fl., *Jacobs 5240* and *5354* (A, B, CANB, G, K, L, SAR, SING, US) (identification uncertain).

27. ***Alseodaphne oblanceolata*** (Merr.) Kosterm. in *Reinwardtia* 7: 292. 1968; *Beilschmiedia oblanceolata* Merrill, in *Univ. Calif. Publ. Bot.* 15: 84. 1929; Kostermans, *Bibl. Laur.*: 140. 1964; *Dehaasia oblanceolata* (Merr.) Kosterm., *New & Crit. Mal. Pl.* 4: 37. 1955; l.c.: 470. **Typus:** Tawao, fl., *Elmer 20931* (BISH, BO, C, L, NY, P, SING); **syntypus:** *Elmer 20894* (NY); *Beilschmiedia elmeri* Merrill in *Univ. Calif. Publ. Bot.* 15: 84. 1929; Kostermans, l.c.: 125. **Typus:** *Elmer 20953* (BO) (tab. 2, 7-13).

The species is related to *A. insignis*, the small, obconical fruit pedicels have sometimes a patent persistent corolla. The upper cells of the anthers are very small and were overlooked by Merrill, who, accordingly relegated the species to *Beilschmiedia*. The cells of the outer anthers are located in a narrowed part of the top of the anther; the cells are sometimes reduced to a single cell. The tree is rather common in E. Kalimantan, but occurs scattered, it grows either in swampy (periodically inundated) places or on well-drained soil; it is never gregarious. The tree is completely leafless for a week, after which the flush and flowers appear. In S. Kalimantan it is called marsihung and highly valued as a timber, it has the drawback (common also to other *Lauraceae*), that wood borers attack the living tree. The fruit es remarkable because it is yellow, when ripe (the fruit pedicel pale greenish or yellowish green with brown warts) and the seed coat is jelly-like and sweet, the seed itself is black.

Specimens examined: Borneo, Brunei, Lamumin, mile 8¹/₂ Kuala Abang Rd., June, fls. more pilose than usual, *Brun.* 82 (BO, L); Sabah (N. Borneo), Lahad Datu, Kalumpang-Tawau Rd., mile 17, Sept., fr., *San.* 29809 (BO, L, SAR); Lahad Datu, mile 3¹/₂ Kennedy Bay, tree 25 m, July, fl., *San.* 17296 (A, BO, BRI, K, KEP, L, SING); 10 miles from Sandakan, April, fl., *Agullana* 3885 (BO, SING, UC); Sandakan, R. P. 19, Djl. Hujung tanjong, Sepilok, April, fr., *San.* 21259 (BO, K, L, SAR); *ibid.*, April, fl., *San.* 20188 (BO); Sandakan, Sepilok For. Res., 15 miles W. of Sandakan, alt. 10 m, April, fl., *San.* 16211 (BO, L); Sepilok For. Res., Compt. 7, April, fl., *Wood San. A.* 1988 (BO, L, SING); Kalibi-Sepilok For. Res., July, young fr., *Keith* 7124 (SING); *ibid.*, March, buds, *B.N.B.F.D.* 10198 (BO, K, L); *ibid.*, alt. 15 m, Aug. young fr., *B.N.B.F.D.* 10552 (K, L); *ibid.*, alt. 30 m, May, fr., *B.N.B.F.D.* 7124 (BO, K, L); Tawau, fl., *Elmer* 20953 (BO, SING); mile 82 Labuk Rd., May, buds, *San.* 36221 (BO, L); Tawau, alt. 160 m, tree 35 cm diam., sapwood yellow, Sept., fr., *San.* 5893 (K, L); Menbalun For. Res., fr., *San.* 22817 (BO); Tanjong For. Res. near Hot Spring, alt. 15 m, tree 25 m, diam. 15 cm, bark grey, inner yellowish, cambium whitish, no buttresses, May, fl., *San.* 41650 (K, L); Distr. Mostyn, Tengkeyu Waterfall, alt. 30 m, tree 10 m, bark finely fissured, whitish inner greyish, sapwood pale greenish, May, fls. greenish yellow, *San.* 47180 (L); Samporna, Mt. Pock For. Res., alt. 100 m, tree 25 m, diam. 35 cm, bark grey, living bark yellowish, sapwood yellowish, Aug., fr., *San.* 46051 (K, L); Beaufort,

mile 8.5 Sepitang Rd., tree 23 m, diam. 20 cm, bark fissured, lenticellate, outside grey, living bark brownish, sapwood light yellow, May, fls. yellowish green, *San.* 35191 (L); Mt. Kinabalu, Ranau Distr., Uniport, mile 38.5 Kundasang, alt. 1450 m, tree 20 m, diam. 30 cm, bark grey, brown, brown, living bark brownish, 12 mm thick, inside yellowish, sapwood pale yellowish, Oct., young fr., *San.* 26703 (L); 22817 (BO); Mt. Kinabalu, Penibukan, ridge E. of Dahobong R., alt. 1300 m, Nov., fl., *J. & M. S. Clemens* 50072 (BM, L); Sarawak, Kuching, Semengoh Arbor., tree 13 m, March, buds, *S.* 12830 (BO, K, L, SAN); Kuching, Garai, young fr., fls., *Haviland d.k.r.t.* (= 484/820) (BM, BO, K, SING); Kuching, fr., *Beccari* 631 (BO, C, FI, G, NY); E. Kalimantan, Tidung Distr., Melinau, alt. 20 m, ster., *bb.* 17893 (BO, L, SING); and June, fr., *bb.* 17892 (BO, L, SING); Bulungan, Mara, alt. 100 m, ster., *bb.* 10852 (BO); Berau, Inaran, ster., *bb.* 12077 (BO) and 12101 (BO); *ibid.*, Domaring, alt. 250 m, tree 19 m, ster., *bb.* 18881, 18905 and 18860 (BO, L); *ibid.*, Betemuan aer, alt. 25 m, ster., *bb.* 19084 (BO, L); *ibid.*, Mt. Ilas Bungaan, alt. 700 m, tree 20 m, diam. 30 cm, bark smooth, yellowish, lenticellate, Sept., fr., *Kostermans* 13839 (A, BM, BO, CANB, K, KEP, L, NY, P, SING); Nunukan Isl., alt. 25 m, March, fl., *bb.* 34556, 34557 and 34558 (BO, L); *ibid.*, alt. 3 m, ster., *bb.* 26179 (A, BO, L); E. Kutei, Sangkulirang Distr., Mt. Medadem, alt. 100 m, buttresses 1 m, out 60 cm, wood yellowish, Aug., fl., *Kostermans* 13275 (A, BM, BO, CANB, K, KEP, L, LAE, NY, P, PNH, SING); Muara Karangan, Remendai Forest, alt. 25 m, Dec., fr., *bb.* 7961 (BO, K, L); Kerangan R., N.W. of Sangkulirang, common, Aug., fr. yellowish, seed coat jelly-like, seed black, *Kostermans* 13563 (A, BM, BO, CANB, K, L, LAE, NY, PNH, SING); Central Kutei, Belajan R. near Tabang, alt. 60 m, tree 25 m, diam. 60 cm, buttresses concave, 1-1.5 m high, rather thin, out 5 m, heart wood with strong cigarbox wood smell, fallen leaves black with glaucous underside, April, fls. greenish white, *Kostermans* 10658 (A, BISH, CANB, K, L, MEL, NY, P, PNH, SING); flatland near Tabang, Aug., fr., *Kostermans* 12658 (A, BISH, BM, BO, BRI, CAL, CANB, K, KEP, NY, P, PNH, SING, SYD); W. Kutei, Kelumpang, alt. 40 m, ster., *bb.* 16944 (BO, L); S.E. Kalimantan, Muara Tewe, alt. 30 m, ster., *bb.* 10072 (BO); Pleihari, Kintap, Aug., buds, *bb.* 2048 (BO, K, L); *ibid.*, Oct., fr., *bb.* 2667 (BO); *ibid.*, Sept., fl., *bb.* 12889 (BO, K, L); *ibid.*, ster., *bb.* 7747 (BO, L); *ibid.*, Sg. Kapu, alt. 50 m, ster., *bb.* 7773 (BO, L).

28. *Alseodaphne obovata* Kosterm., *New & Crit. Mal. Pl.* 4: 17, fig. 11, 12. 1955; *Bibl. Laur.*: 69. 1964. *Typus*: *Corner S.F.N.* 29370 (BO, K, SING).

This may be easily mistaken for *Alseodaphne bancana*.

Specimens examined: Borneo, Brunei, Andulau Hills at Pangkalan Ran, alt. 70 m, ster., *Brun.* 915 (BO); Andulau, For. Res., alt. 40 m, sandy clay, tree 20 m, diam. 20 cm, thick, 30 cm high buttresses, at base 15 cm thick, at top 3 cm; small, thick crown, bark chocolate brown, slightly fissured, irregularly flaked in places, thin outer bark, soft, 8 mm thick orange brown inner bark, sapwood soft, lemon yellow, April, fl., *Brun.* S. 5823 (L); Sarawak, Kuching, summit of G. Bungoh, ster., *S.* 9507 (BO, SAR, SING); W. Kalimantan, G. Damus, fl., *Hallier* 558 (A, BO, K, L).

29. *Alseodaphne owdeni* Parker in Indian Forester 50: 365, t. 16. 1924; Kostermans, Bibl. Laur.: 70. 1964. *Typus*: *Owden 46205* (K, fragm. BO), Assam, Cachar, Loharband, July, fl.

Tree. *Branchlets* slender, glossy, glabrous, pale brownish grey, lenticellate. *Leaves* subaggregate at the swollen ends of the branchlets, glabrous, coriaceous, oblanceolate, 1.5 x 4-2.5 x 8.5 cm, rather obscurely, gradually acuminate, base acute, both surfaces smooth (under the high power lens laxly reticulate); upper surface glossy, midrib flat, subimpressed near its base, lateral nerves filiform, prominulous; lower surface dull, grey, midrib prominent, lateral nerves 6-9 pairs, erect-patent, arcuate, slender, prominulous. *Petioles* rather slender, 5-15 mm long, slightly concave above. *Infructescences* axillary, unbranched, 6-12 cm long, bearing one apical, ellipsoid fruit, up to 18 x 35 mm, seated on a fleshy, obconical, warty pedicel, up to 15 mm long and up to 8 mm diam. at the apex.

Characterized by the small, oblanceolate leaves with a grey lower surface and the long unbranched infructescences.

Specimen examined: Sikkim, Jeray, fr., unknown collector (BO).

30. *Alseodaphne paludosa* Gamble in Kew Bull. 1910: 221; Kostermans, Bibl. Laur.: 70. 1964. *Typus*: *King's Coll. 5378* (CAL, 2 sheets, K, SING), Perak, in dense jungle on low, wet ground.
= *Alseodaphne corneri* Kostermans in Reinwardtia 5: 342, f. 1a-b. 1960; Bibl. Laur.: 65. 1964. *Typus*: *Corner S.F.N. 28444* (SING); *syntypus*: *Corner S.F.N. 28991* (SING).

The leaf size varies enormously (8 x 21 cm in the type specimen to 15 x 40 cm in the specimen *Corner 29444*), the leaf tip is either shortly, pointedly acuminate or rounded or emarginate, the number of lateral nerves varies between 14 and 25 pairs.

Additional specimens: Malay Peninsula, Perak, Larut, wet ground, Dec., fr., *King's Coll. 5378* (CAL, 2 sheets, K, SING); S.E. Kelantan, Sg. Lebir near Betong, tree 33 m, diam. 90 cm, bark fawn grey with big, thin, loose scales, slash inner bark thick soft, yellow fawn with close brown dots, slightly spicy, smell, wood yellow brown, Sept., fr., green, warty on a green pedicel, *F.R.I. 4373* (K, KEP, L); Mersing, Arong Forest Res., Compt. 26, swamp, low alt., tree 10 m, crown conical, inner bark soft, fibrous, yellow, wood yellow, fruit hard, oblong, 4 x 5 cm with sharp minute point, greenish yellow, ripening glossy black, pedicel obconical, 15 mm diam. at the apex with narrowly triangular, acute, hardly hardened persistent, spreading tepals, pedicel 15 mm long, warty, at base 8 mm diam., April, *F.R.I. 15261* (KEP, L); Kemaman, Bukit Kajang, alt. 150 m, Nov., buds, *S.F.N. 30501* (SING), fewer and more spaced lateral nerves; Perak, Pondok Tanjong Res., Febr., fr.,

Fortan C.F. 18 (SING); Johore 13¹/₂ mile Mawai-Jemaluang Rd., low, May, fr., *S.F.N. 23444* (BO, SING); Sumatra, Atjeh, Langsa, ster., *bb. 2568* (BO): Upper Riau, Pakanbaru, Tenajan R., alt. 30 m, hill slope, sandy, tree 10 m, diam. 15 cm, bark smooth, dark chocolate brown, 1 mm, living bark light brown, 5 mm, wood yellow, Aug., buds bluish green, like calyx and corolla, filaments, ovary and style pale green, anthers yellow, stigma white, *Soepadmo 218* (BO, L).

- 31. *Alseodaphne peduncularis*** (Wall. ex Nees) Meissn., Gen. 2: 238. 1841; Hooker f., Fl. Brit. India 5: 144. 1886; Kostermans, Bibl. Laur.: 70. 1964; *Laurus peduncularis* Wallich ex Nees in Wallich, Pl. As. rar. 2: 70. 1831; Kostermans, l.c.: 683; *Haasia peduncularis* (Wall. ex Nees) Nees, Syst. Laur.: 376. 1836; Kostermans, l.c.: 536; *Machilus peduncularis* (Wall. ex Nees) Nees in Wall., l.c.: 70; Kostermans l.c.: 922; *Persea peduncularis* (Wall. ex Nees) Nees, l.c.: 125, 376; Kosterman, l.c.: 1246. **Typus:** Wallich 2596 (BO, K), Penang.
= *Nothaphoebe fruticosa* Gamble in Kew Bull. 1910: 223; Kostermans, l.c.: 1056. 1964. **Typus:** Wray 182 (CAL), Tapa, Perak, fl., **syntypus:** Goodenough s.n., fl. (SING); King's Coll. 5448 (BO, SING); 11029 (CAL).

I can find no differences between the two species and Gamble's description of the two are also similar. The Sumatra material has more hairy flowers.

Specimens examined: Malay Peninsula: Perak, July, fl., *King's Coll. 7916* (K); Perak, Trolak F.R., tree 4 m, fls. white, fr. green, *Kep 104626* (KEP, L); fl., *Scortechini 536* (K); Pahang, Kuantan, Balah For. Res., March, fl., *C.F. 3142* (SING); Temerloh, June, fr., *Burn Murdoch 166* (K, SING), fr. pedicel 4.5 cm, diam 1 cm, leaves up to 6 x 14 cm; Temerloh, Kemasul For. Res., tree 15 m, ster., *F.D. 10688* (KEP); Perak, Ulu Bubong, bamboo jungle, alt. 150 m, Sept., fl., *King's Coll. 11029* (CAL) and *10618* (K); Upper Perak, Ulu Kendorong, Grik, ster., *C.F. 11619* (SING); Upper Perak, July, fr., *Wray 3729* (K); Sg. Gepai, Bedor, Aug., fr., *S.F.N. 31688* (K, SING); Larut, Ulu Selangor, dense bamboo jungle, March, fl., *King's Coll. 8632* (BO, K, L, SING), some leaves with only 3 pairs of lateral nerves; ibid., open jungle, alt. 100 m, shrub 2.3 m, Jan., fl., *King's Coll. 5448* (BO, SING); State Land, Ulu Piul, ster., *F.D. 45114* (KEP); Kedah, K. Muda Sangkop For. Res., alt. 100 m, tree 20 m, diam. 20 cm, dark grey bark, wood yellow, ster., *F.D. 59623* (KEP); Kokmoi For. Res., ster., *F.D. 47871* (KEP); Perangin For. Res., ster., *F.D. 47834* (KEP); Klang, Bukit Raya, shrub 2-2.5 m, Dec., fr., *Burkill 11853* (BO, SING); Petaling, fr., *Ridley 8492* (SING); Garewang, Kuala Lumpur, pedicels red, fruit black, native coll. s.n. (BO); Kepong, Sept., fl., fr., *Symington F.D. 17541* (K, SING); Klang Water Catchment Area, treelet 2.5 m, leaves up to 7 x 16 cm with up to 9 pairs of lateral nerves, March, buds, *Burkill 7637* (BO); Larut, alt. 200 m, tree 3-5 m, diam. 5-7.5 cm, July, fls. pale greenish yellow, *Kunstler 7916* (K, L, SING); Klang Gates, Aug., fl., *Ridley 13415* (BM, K, SING), leaves narrow, up to 2.5 x 12 cm; Taiping Hill, alt. 700 m, tree 3-5 m, Febr., fl., *Haniff & Nur 2839* (BO, CAL, SING); Selangor, mile 20 Ginting-Simpah, Nov., fr., *Strugnell 12142* (SING); Rantau Panjang, July, fl., *Boden Kloss 84* (K, SING); ibid., Jan., fl., *Symington F.D. 22136* (K, SING); Sg. Buloh, tree 3 m, March, fr. pedicel red,

fr., black, *Ridley s.n.* (BM, K); Sg. Buloh Res., fr., *C.F. 492* (SING), fr. up to 2 x 2.5 cm, pedicel 1.5-3.5 cm, diam. 6-8 mm at apex; *ibid.*, tree 5 m, Febr., fl., *Kep 29729* (K, KEP); Bukit Kulu, Oct., fr., *Goodenough s.n.* (SING); leaves up to 6 x 18 cm, fr. pedicel 3 cm, at apex 1 cm diam.; Lobu, May, fr., *Ridley 7622* (SING); Public Gardens, Kuala Lumpur, April, fl., *C.F. 3879* (K, SING); *ibid.*, *Native Coll. 1908*, fl. (SING); Kepong, Bukit Lagong For. Res., shrub 1.5 m, March, fls. creamy white, *F.R.I. 10884* (KEP, L); April, fl., *Kep. 79113* (K, KEP); Kepong, Plantation, Jan., fl., *F.D. 37595* (BO); Negri Sembilan, G. Angi, alt. 250 m, Nov., fl., *Nur 11511* (SING); G. Beramban, tree 15 m, wood soft, June, fl., *Alvins 1990* (SING); Johor, Pulau Tinggi, ster., *Burkill 906* (SING); P. Jarak, Straits of Malacca, April, buds, *Seimund 91* (SING) and *1188* (BO); Anambas Isl., E. of Terempa, alt. 300 m, *Van Steenis 893* (BO); E. Sumatra, Atjeh, Takengon, Lampahan, alt. 900 m, tree 25 m, ster., *bb. 11465* (BO); Asahan, Damuli, Kuala, Sept., fl., *Rahmat Si Toroos 1374* (BO, NY, SING); near Lumban Ria, Asahan, Febr., fl., *Rahmat Si Boeea 7787* (L, SING); Aek Munte (Matto), N.E. of Taman Dolok and W. of Selabat, alt. 500 m, ster., *Rahmat Si Boeea 9141* (L) and *9167* (L); G. Si Papan, Concession Kalubi, April, fl., *Rahmat Si Toroos 3831* (L, NY); Rantau Parapat, Sigmata, Bila, June, fr., *Rahmat Si Toroos 2980* (NY, SING); E. Coast, Labuhan Batu, Distr., Kota Pinang, Si Mandi Angin (on the Sg. Kanan), April, fl., fr., *Rahmat Si Toroos 3969 et 3970* (NY); Langga Pajung on Sg. Kanan, March, fl., *Rahmat Si Toroos 3489* (NY); Aek Sordang, Lundut Concession, Kuala, April, fl., *Bartlett 7281* (NY); Hitean Haloban, S. of Concession Rantau Parapat B, May, fl., *Rahmat Si Toroos 4240* (NY); Isl. Bangka, Jebus, ster., *Teijsmann 3171* H. B. (BO).

32. *Alseodaphne pendulifolia* Gamble in Kew Bull. 1910: 222; Kostermans, *Bibl. Laur.*:70. 1964. *Typus*: *King's Coll. 8785* (CAL, K), *10623* (K), Perak, bamboo jungle near Ulu Bubong and Ulu Kerling.

Specimens examined: Gerak, Kledang, Saiong, For. Res., Batu Gajah, alt. 170 m, tree 20 m, diam. 35 cm, bark smooth, living bark soft, fibrous, leaves dangling vertically, April, fl., *F.R.I. 6070* (KEP, L); Ulu Kerling, alt. 200 m, April, fl., *King's Coll. 8785* (CAL, K); Bukit Bau For. Res., Bukit Besi, 10th mile Dungun, road Compt., secondary forest, tree 20 m, diam. 30 cm, pagoda like crown, bark shallowly fissured, inner bark yellow, laminated, wood pale yellow, June, buds *F.R.I. 2372* (K, L); Pahang, Rompin, April, young fr., *F.D. 3201* (BO, K, SING); Sg. Brok, 1 mile S. of Kuala Mersing, alt. 200 m, tree 10 m, diam. 25 cm, spreading, open crown, very distinctly sympodial, bark closely lenticellate, living bark semi-granular, yellow, wood yellow, faintly fragrant, under surface of leaves glaucous as well as peduncles and pedicels, June, fr. obovoid, green, glaucous, inflorescences restricted to just below terminal crown of leaves in each twig, *F.R.I. 5494* (K, KEP, L); Sg. Tahan, July, fl., *S.F.N. 31735* (K, SAR, SING); inflorescence up to 40 cm long; Selangor, July, fl., *Burn-Murdoch s.n.* (BO, SING); Kayan, Bangi Reserve, May, fr. subglobose, 16 mm diam., pedicel 1.5 cm long, at apex 4 mm diam., sometimes with a flat rim, *C.F. 3536* (K, SING); *ibid.*, young fr., *Ismail C.F. 0538* (BO, K, SING); North Borneo, Sandakan, Distr. Lemag, rail mile 7 Sg. Pin, Kinabatangan,

tree 13 m, grey white scaly bark, inner bark yellowish white, Nov., fls. yellowish white, *San.* 66053 (L).

33. *Alseodaphne perakensis* (Gamble) Kosterm. in J. Sci. Res. Indon. 1: 147. 1952; Bibl. Laur.: 70. 1964; *Stemmatodaphne perakensis* Gamble in Kew Bull. 1910: 227; Kostermans l.c.: 1355. **Typus:** *Scortechini* 1793 (BO, K, SING); *King's Coll.* 3153 (BO, K), 6703 (BM, K), 10541 (BO), *Derry* 203 (SING), 1157 (SING), *Wray* 2658 (tab. 2, 14-18)

In sterile condition this is very similar to *Dehaasia membranacea* Kosterm., but the latter has differently shaped, 2-celled anthers.

Specimens examined: Malay Peninsula, Bahang, Sg. Telom, alt. 170 m, Aug., fl., *S.F.N.* 24010 (BO, SING); Kedah, Aug., fr. Mohamad, *S.F.N.* 17576 (SING); Selangor, Sg. Lalang Kajang, March, fl., *Symington* 24089 (BO); Kuala Lumpur, Ampang Res., March, fl. (diseased), *Strugnell* 12708 (SING); Selangor, Ulu Pangat, K. Pansom, G. Inung, Jan., fl., *Phytochem. Survey* 1235 (L); Malacca, locality not indicated, March, fl., *Alvins* 865 (BO, SING); Batang Malacca, fl., *Ridley* 1157 (BM, K, SING); Singapore, without collector, ster., (BM); Johore, Bukit Kendok, Ulu Endau, alt. 100 m, tree 8 m, diam. 8 cm, bark lenticellate, grey, sapwood whitish yellow, heartwood yellow, March, fl., *K.E.P.* 110337 (KEP, L); N. W. G. Belulut, banks of rocky stream, alt. 450 m, treelet 4 m with few branches, wood yellow, May, fls. dull red on dull red pedicel, fr. green, pedicel magenta, *F.R.I.* 8761 (KEP, L).

34. *Alseodaphne petiolaris* (Meissn.) Hooker f., Fl. Brit. India 5: 123, 145. 1886; Kostermans, Bibl. Laur.: 71. 1964; *Nothaphoebe? petiolaris* Meissner in DC. Prodr. 15(1): 59. 1864; Kostermans, l.c.: 1058; *Persea petiolaris* (Meissn.) Debarman in Bull. bot. Survey India 33: 257. 1962. **Typus:** Assam, Nuku Hills, *Simons s.n.* (BO, CAL, K).

Specimens examined: India, Manipur, Takhama, alt. 1300 m, Febr., fl., *Meebold* 9141 (BO); Naga Hills, ster., *sine coll.* 485 (CAL), leaves up to 21 x 45 cm, petiole up to 9 cm long; Assam, ster., *Masters s.n.* (BO) and buds (L); S. Lushai Hills, near Fort Sungleh, alt. 1000 m, April, fr., 1.5 x 2.5 cm, pedicel short, tree 20 m, *Gage* 75 (BO, CAL); Cachar, May, fr., *Keenan's Coll.* (K); Upper Burma, Cachin Hills, buds, *Shaik Mokim s.n.* (CAL); Burma, woods towards Camain, fl., *Griffith* 1155 bis (K); Myitkyina Disz., Indawgyi valley, Febr., fl., *Buchanan s.n.* (K); China, Yunnan, Meng-la, Jenn-yeh-Hsien, alt. 900 m, tree 12 m, diam. 30 cm, Nov., buds, *Wang* 80792 (A); Yunan, fl., *Forrest* 9553 (K).

35. *Alseodaphne philippinensis* (Elmer) Kosterm. in Reinwardtia 5: 344, t. 3. 1960; Bibl. Laur. 66. 1964: *Itaedaphne philippinensis* Elmer, Leaflets Phil. Bot. 2: 713. 1910; Kostermans, l.c.: 553. *Typus*: Mindanao, Todaya, Mt. Apo, Aug., young fr., *Elmer 11493* (A, BISH, BO, CAL, G, K, MO) (tab. 3, 1-2).

Specimens examined: Only known from the type collection.

36. *Alseodaphne ramosii* Kosterm. in Reinwardtia 8: 21, fig. 1. 1970. *Typus*: *Ramos B. Sc. 80426* (BO, NY, SING).

Specimens examined: Palawan, Mt. Victoria, S.E. slope, Panacan, low alt., May., fr., *Sulit 3923* (= *P.N.H. 12440*) (L).

37. *Alseodaphne rhododendropsis* Kosterm., *spec. nova*.

Arbuscula in omnibus partibus glabris foliis rigide coriaceis oblongis vel suboblanceolato-oblongis obtusis vel brevissime obtusis acutis basi in petiolum sensim decurrentis supra nitida obscure areolata nervo mediano impressa costis vix conspicuis subtus pallidiora laeve minute reticulata nervo mediano prominula costis vix conspicuis paniculis axillaris pseudo-terminalisque foliis aequantibus pedunculis longis ramulis apicalis paucis brevis tepalis aequalis ovatis acutis staminibus subbrevioribus antheris anguste ellipticis filamentis longis gracilis exterioribus introrsis interioribus extrorsis staminodiis hastato-cordatis acutis breve stipulatis glandulis deest ovario glabra stylo gracile aequilonga truncata.

Typus: *Poilane 3669* (BO).

Slender shrub of 2.5 m, 3 cm diam., glabrous in all its parts. *Branches* thick, grey, spongy (fresh) with large protruding leafscars. *Leaves* aggregate, erect, stiffly coriaceous, spirally arranged, narrowly oblong to suboblanceolate-oblong, (2.5 x 7) 3 x 12-4.5 x 16 cm, obtuse or obtusely acute, base gradually merging into the 1-2 cm long petiole; upper surface glossy, minutely pitted, midrib impressed, lateral nerves obscure, lower surface paler, densely smoothly reticulate, midrib prominent in its lower part, lateral nerves c. 10 pairs, obscure. *Panicles* axillary, pseudoterminal, up to 13 cm long, consisting of a long, bare peduncle and a few subapical ramifications. *Pedicels* 4-6 mm long. *Flowers* greenish (fresh). *Tepals* equal, ovate, acutish, 2.5 mm. *Stamens* somewhat shorter, consisting of slender, narrowly oblong anthers and slightly longer, slender filaments, outer anthers introrse, inner ones extrorse, basal glands absent. *Staminodes* 1 mm, ovate-hastate, acute on a short filament. *Ovary* elliptic, glabrous, style as long, slender, stigma truncate.

The affinities of this species are with *A. hainanensis*, the leaves are, however, different and strongly resemble those of *Dehaasia lancifolia*.

Specimen examined: Annam, W. of Nhatrang, waterfall, c. 1700 m alt., leaves thick and erect, dark green above, paler underneath, May, fl., *Poilane 3669* (BO, K, L).

38. *Alseodaphne ridleyi* Gamble in Kew Bull. 1910: 222; Kostermans, Bibl. Laur.: 71; 1964. **Typus:** *Ridley 8592* (K, 2 sheets, SING), Selangor, 15th mile Rahang Road.

Additional specimens: Trengganu, 36 mile Trengganu-Besut Rd., July, fl., fr., *S.F.N. 39936* (BO, K, L, SING), tree 10 m, bark medium brown, covered with small pustules, leaves dark glossy green above whitish green midrib, glaucous below with yellowish midrib and veins, fls. greenish purple, ovary yellow green, fr. corky brown outside, seed darker brown, fr. ellipsoid, slightly enlarged towards the obtuse top, up to 5 + 10 cm, pedicel 2-2.5 cm, apex truncate, 12 mm diam., base 8 mm diam., infructescence 13 cm long; Belara For. Res., Kuala Trengganu, low alt., tree 23 m, diam. 30 cm, March, fr. light green, warty, *Kep. 76069* (K, KEP, L); W. Trengganu, S. Loh near K. Datok, granite hill slope, 100 m alt., tree 20 m, diam. 15 cm, bark grey-brown, corky, slightly fissured and flakey, lenticellate, living bark granular, wood lemon yellow, July, fr. club-shaped, rugose, *F.R.I. 10708* (K, L); Kuantan, July, fl., *C.F. 3739* (K, SING).

39. *Alseodaphne rubriflora* Kosterm., spec. nova.

Arbor ramulis et innovationibus glabris foliis aggregatis glabris chartaceis suboblanceolato-elliptic acuminatis basi acutis in petiolum brevem canaliculatum transeuntibus utrinque dense minutissime areolato-reticulatis supra nitida nervo mediano impressa costis filiformis vix prominulis subtus pallida glauca nervo mediano prominentibus costis gracilis erecto-patentibus marginem versus arcuatis prominulis paniculis glabris laxis gracilis foliis brevioribus pedicellis perlongis gracilis subobconicus tepalibus aequalibus antheris glabris filamentis pilosis ovario glabra stylo aequilonga stigmatate minute subpeltata.

Typus: *Sukoe 2285* (BO).

Tree. *Branches* glabrous, smooth, end bud small, glabrous. *Leaves* aggregate, chartaceous, glabrous, suboblanceolate-elliptic, 3.5 x 12-6.5 x 23 cm, acuminate, base acute, merging into the rather slender, 1-1.5 cm long, above channeled petiole; both surfaces densely, minutely, sharply reticulate, upper one glossy, midrib impressed, lateral nerves filiform, hardly prominulous, lower surface pale, subglaucous, midrib prominent, lateral nerves 9-13 pairs, erect-patent, arcuate near the margin, slender,

prominulous. *Panicles* glabrous, slender, lax, 6-14 cm long with widely spaced, slender, up to 2.5 cm long branches, bearing a few flowers each. *Pedicel* slender, subconical, c. 10 mm long, merging into the 1-1.5 mm high flower tube. *Tepals* equal, ovate, acutish, c. 2 mm. Outer anthers ovate, acute, 0.75 mm, cells small, introrse, filaments slender, as long as the anther, almost glabrous, inner anthers ovate, truncate, upper cells small, lateral, lower ones larger, extrorse, filaments densely pilose, basal, glands sessile. *Ovary* glabrous, style slender, as long as the ovary, with a small, subpeltate stigma.

Although the leaf reticulation points to *Persea*, I have described this in *Alseodaphne* because of the long subobconical pedicels, which are unusual in *Persea*.

Specimen examined: Burma. Distr. Myitkyina, Kachin Hill tract, alt. 1200 m, Febr., fls. red, *Sukoe* 2285 (BO, DD).

40. *Alseodaphne rubrolignea* Kosterm., New & Crit. Mal. Pl. 3: 10, fig. 5. 1955; Bibl. Laur.: 71. 1964. **Typus:** *Kostermans* 7665 (A, BO, BRI, K, L, P, PNH, SING); *Alseodaphne petiolaris* Auct. (non Hooker f.) Gamble, Materials 91. **Typus:** Telom, *Ridley* 13782 (tab. 3, 3-7).

Additional specimens: N. Borneo (Sabah), Tambunan, foot of Mt. Trusmadi For. Res., above Sg. Kidukeruk, alt. 2000 m, tree 8 m, diam. 15 cm, bark smooth, living bark outside green, middle yellowish, soft, sapwood white, Nov., diseased fr., *San.* 41834 (K, L); slope of Mt. Kinabalu, alt. 900 m, tree 17 m, ster., *Foster* 92 = 3543 (K, Yale); Mesilau R., Kinabalu, alt. 1300 m, tree 15 m, diam. 20 cm, upper side of petiole reddish, Febr., fl. peduncles yellowish green, ovary green, *Chew & Corner R.S.N.B.* 4244 (K, L); *ibid.*, Jan., buds, *Chew & Corner R.S.N.B.* 4065 (K, L); *ibid.*, tree 15 m, diam. 20 cm, outer bark slash reddish, soft, sticky, inner bark light reddish, soft sapwood white, inner wood reddish, June, diseased fr., *San.* 57467 (K, L); Bambang R., alt. 1700 m, tree 16 m, Febr., petioles dark red, peduncles red at basal half, *Chew & Corner R.S.N.B.* 4531 (K, L); Ranau, Sg. Pinansaganan, Poring-Malumad Path, alt. 1200 m, Nov., buds, *San.* 26743 (BO); Dalas, alt. 1000 m, Oct., fl., *Clemens* 26868 and 30371 (K, L); E. Kalimantan, Peak of Balikpapan (G. Beratus), alt. 800 m, July, young fr., *Kostermans* 7551 (A, BO, K, L); *ibid.*, July, fl., *Kostermans* 7453, 7430 and 7490 (L); Malay Peninsula, Pahang, Fraser Hill, alt. 1300 m, Sept., fl., *Henderson* 11550 (BO, SING); *ibid.*, Sept., fl., *S.F.N.* 11253 (BM, BO, SING, UC); mile 47 Telom Rd., alt. 1600 m, May, buds, small tree, *S.F.N.* 31247 (BO, SING).

41. *Alseodaphne rugosa* Merr. & Chun in Sunyatsenia 2: 232, f. 44. 1953; *Kostermans* Bibl. Laur. 71.: 1964. **Typus:** *Chun & Tso* 44254 (A), Hainan.

Closely related to *A. elongata*, but the petioles and fruit pedicels are much shorter.

Specimens examined: Hainan, Po-ting, July-Aug., young fr., *How 73452* (BO, G); locality not indicated, alt. 1300 m, Dec., fr., *Wang 35424* (BO, NY), leaves 3 × 12-8 × 36 cm, oblanceolate, acuminate, the base merging into the 5-10 mm long petiole, racemes up to 15 cm long, fruit depressed-subglobose, 3 × 2.5 cm, pedicel warty, 1 cm long, 5 mm diam. at the flat top.

42. *Alseodaphne semecarpifolia* (Wall. ex Nees) Nees in Wallich, Pl. As. rar. 2: 72. 1831; Kostermans, Bibl. Laur.: 72. 1964 (exclus. var. *rufa* Dalz.); Anon., Wealth of India 2: 63. 1948; *Laurus semecarpifolia* Wallich ex Nees, l.c.: 72; Kostermans, l.c.: 704; *Persea semecarpifolia* (Nees) Trimen, Syst. cat. 75. 1885; Kostermans, l.c.: 1256. **Typus:** *Wallich 2586 A* (K, LE) (*2586 B = Cocculus, Menispermaceae*); *A. semecarpifolia*, var. *semecarpifolia* Hooker f., Fl. Brit. India 5: 144. 1886; Kostermans, l.c.: 72; var. *angustifolia* Meissn. in DC., Prodr. 15 (1): 28. 1864; Kostermans, l.c. **Typus:** *Thwaites C.P. 2269* (BO, BR, P) and *2272*; var. *macrocarpa* Thw., Enum. 254. 1861; Kostermans, l.c. **Typus:** *Thwaites C.P. 2269* (BO, BR, P); var. *parvifolia* Wight, Icon. 12.1852; Kostermans, l.c. **Typus:** *Wight s.n.*, Courtallam (K) (tab. 3, 8-16).

There are all intermediate stages between small-leaved forms (apparently from poor dry sites) to very large-leaved ones, the largest from a cultivated specimen in the Bogor Botanic gardens under everwet conditions.

Specimens examined: Ceylon, dry zone, Galewela (Kalawewa), July, fr., *Worthington 4820* (BO); Tharmiyothu, dry evergreen forest, May, fl., *Pomia 574* (BO); Anuradhapura, March, fl., *Meebold 4879 bis* (CAL, K); Central Prov., fr., *Thwaites 2269* (BO, BR, K, P) and *2272* (K); culta in Peradeniya bot. Gard., young fr., *Kostermans 23340* (BO, US), tree 10 m, bole 6 m, very rough, deeply fissured, 5 mm thick, pedicels red, fruit black; S. India: Concan, fl., *Stocks s.n.* (K, LE); Mangalore, fr., Pl. *Hohenacker 716* (K, LE); Anamallay Hills, fl., *Beddome 6749* (BM); Malabar, fl., *Belanger s.n.* (P); Taliparamba farm, Febr., fl., *Barber 8693* (K); ibid., May, fr., *Barber 7747* (K); Madras, Pulney Distr., Sirumalais, July, fl., *Bourne 249 R* (CAL), leaves obovate-elliptic, 2.5 × 6-4 × 10 cm, obtuse, panicles up to 14 cm; ibid., Tandiqudi, ster., *Bourne 1392* (K); Madras, High Wavy Mts, alt. 1300-1800 m, May, fr., *Blatter & Hallberg 138* (CAL), leaves spatulate, 2 × 5-3.5 × 7 cm, fr. ellipsoid, 2 × 2.5 cm, pedicel 1 cm, diam. 3 mm, panicle 3 cm long; S. Coimbatore, Thaliyi, alt. 850 m, May, fl., *Fischer 3445* (CAL); Bombay, fl., *Dalzell s.n.* (CAL, K), panicles up to 19 cm long, branches up to 6 cm, leaves obovate-elliptic, 4 × 9-4.5 × 11 cm, obtuse; Hosur, Dr. Salem, July, fl., *Yishoda s.n.* (NY); culta in Hort. Bogor. sub 1 × D 62 (BO, K, L), leaves up to 5.5 × 13-8 × 16 cm, acutish or obtuse, petioles up to 2-3 cm; fr. ellipsoid, 1.5 × 3 cm, pedicel 1.5 cm, at apex 6 mm diam., at base 3 mm diam.

43. *Alseodaphne siamensis* Kosterm., spec. nova (tab. 3, 17).

Arbor ramulis juvenilis ferrugineo-lanuginosis foliis alternantibus aggregatis subcoriaceis adultis glabris obovato-ellipticis acuminatis basi acutis utrinque dense

prominule reticulatis supra nervo mediano gracile parte basalibus impressis costis vix prominulis subtus nervo mediano prominentis costis erecto-patentibus marginem versus arcuatis prominentibus petiolis perlongis supra canaliculatis paniculis axillaris brevis minutissime dense ferrugineo pilosis, tepalibus subaequalibus ovario glabra style crassa truncata.

Typus: Kerr 16783 (BO).

Tree, 15 m tall. *Branches* grey, lenticellate, branchlets and leaves of the flush densely, minutely rusty lanuginose. *Leaves* spirally arranged, aggregate at the top of the branches, coriaceous, glabrous, (adult ones), obovate-elliptic, 4.5 x 9-5.5 x 12 cm, acuminate (acumen c. 1 cm long), base acute, both surfaces densely, prominulously reticulate; upper surface somewhat glossy, midrib slender, its lower parts impressed, lateral nerves slender, hardly prominulous, lower surface darker, midrib prominent, lateral nerves c. 7 pairs, erect-patent, slender, prominent, arcuate towards the margin. *Petiole* slender, 3-4.5 cm long, narrowly channeled above. *Panicles* axillary, densely, minutely rusty pilose, 5-16 cm long with a few short branches. *Pedicel* up to 2 mm long, subtended by a small bract. *Tepals* broadly ovate, acutish, 2 mm long, the inner ones slightly longer, densely pilose. *Anthers* oval, 0.75 mm, the outer ones with introrse cells, the filaments rather broad, as long, pilose; inner anthers narrower with extrorse-lateral cells and broad pilose filaments; basal glands rather large, almost sessile. *Ovary* globose-ellipsoid, merging into a thick short style with a truncate stigma.

The reticulation resembles that of *A. khasyana*, the very long, slender petioles and the subobovate-elliptic leaves with short acumen are very characteristic.

Specimen examined: Thailand, prov. Ranawng, Kao Panto Cheng dong, alt. 900 m, Jan., fl., Kerr 16783 (BM, BO, K).

44. *Alseodaphne suboppositifolia* Kosterm., spec. nova.

Arbor ramulis glabris crassioribus lenticellatis innovationibus minutissime sericeis foliis pro parte oppositis coriaceis glabris oblongis obscure acuminatis basi breve acutis supra nitida laevia nervo mediano sulcata costis filiformis prominulis et subimpressis subtus opaca minutissime reticulata nervo mediano valde prominentibus costis gracilis erecto-patentibus petiolis gracilis longis paniculis axillaribus glabris floribus longe pedicellatis glabris.

Typus: Poilane 32063 (P).

Tree, 10-12 m high, 20 cm diam. *Branchlets* glabrous, rather thick, smooth, lenticellate. End bud densely, minutely sericeous. *Leaves* spirally arranged, partly subopposite, coriaceous, glabrous, oblong, 4 x 9-7 x 19 cm, obscurely acuminate, base shortly acute; upper surface glossy, smooth (in younger leaves microscopically reticulate), midrib slender, deeply impressed, laterals faint, slightly prominulous

or impressed; lower surface dull, densely, minutely reticulate, midrib stout; prominent, laterals slender, erect-patent, towards the margin arcuate, prominulous, 8-13 pairs. *Petioles* rather slender, 2-3.5 cm long, channeled above. *Panicles* (immature) axillary, just below the apical bud, glabrous, narrow, 10 cm long, the base peduncle 7 cm, apically a few short branches, bearing at their end each 3 long pedicelled glabrous buds.

Specimen examined: N. Annam. Prov. of Kontum near the Moi village Fu-Inh, alt. 12-1500 m, somewhat marshy, rich soil, March, buds, *Poilane 32063* (L, P).

45. *Alseodaphne sulcata* Kosterm., spec. nova.

Arbor ramulis percrassis flavido-albis nitidis foliis alternantibus glabris coriaceis aggregatis ellipticis magnis brevissime acuminatis basi longe acutis utrinque sat laxe prominule reticulatis supra nitida nervo mediano prominula costis gracilis prominulis subtus subnitida nervo mediano robusta valde prominentibus costis erecto-patentibus prominentibus margine versus arcuatis petiolis robustis longis supra planis infructescentiis robustis vix vel non ramosis glabris foliis brevioribus griseis fructus subovoideo-ellipsoideus profunde sulcatis pedicellis subobconicis brevis truncatis.

Typus: *San. 42914* (BO).

Tree 17 m high with 12 m clear bole, 40 cm diam.; outer bark whitish, inner bark ochre, sapwood yellow. *Branches* stout; yellowish grey, furrowed. End bud glabrous. *Leaves* spirally arranged, aggregate, elliptic, glabrous, 11 x 28-19 x 48 cm, shortly acuminate, base acute, both surfaces rather laxly, prominulously reticulate; upper surface glossy, midrib prominulous, lateral nerves slender, prominulous, lower surface slightly glossy, midrib robust, prominent, lateral nerves c. 20-23 pairs, erect-patent, arcuate towards the margin, prominent. *Petioles* robust, c. 4 cm long, flat above. *Infructescence* below the leaves, stiff, robust, not or hardly branched, greyish, 15 cm long. *Fruit* subovoid-ellipsoid, 3 x 5 cm, sulcate with many longitudinal ribs. *Pedicel* slightly obconical, c. 10 mm long, 7 mm diam. at the truncate apex.

Although the fruit pedicel is only slightly thickened, the fleshy, non-white petioles point to *Alseodaphne* and not to *Nothaphoebe*.

Specimen examined: Borneo. Sabah, Labah Datu, Silabukan, Forest. Reserve Sapagaya. Temanggong S.S., rentis 67, chain 37, alt. 100 m, March, fr., *San. 42914* (BO).

46. *Alseodaphne tomentosa* Kosterm., spec. nova.

Arbor ramulis crassis foliis aggregatis coriaceis obovato-ellipticis obtusis et apiculatis basi in petiolum longum sensim decurrentis supra glabra subnitida nervo mediano prominulo costis impressis subtus sparse minute ferrugineo-brunneo pilosis nervo mediano prominentibus costis erecto-patentibus marginem versus arcuatim conjunctus nerviis secundariis subparallelis prominulis paniculis axillaribus foliis brevioris pauce et brevis ramosis floribus immaturis pilosis antheris exterioribus ovalis cellulis introrsis filamentis sat latis subpilosis antheris interioribus angustioribus filamentis dense pilosis glandulis basalis magnis globosis.

Typus: S. 24084 (BO).

Tree 20 m, diam. 25 cm. *Branchlets* thick with large protruding leafscars, end bud densely rusty villous. *Leaves* aggregate, spirally arranged, coriaceous, obovate-elliptic, 8 x 15-9.5 x 21 cm, rounded and apiculate, tapered towards the c. 1.5 cm long petiole; upper surface glabrous, rather dull, midrib prominulous, lateral nerves impressed, lower surface with sparse, minute, brown hairs, midrib prominent, lateral nerves c. 8 pairs, erect-patent, arcuate and looped at the margin, secondary nerves somewhat parallel, prominulous. *Panicles* finely pilose, up to 11 cm long with a long, bare peduncle and few very short apical branches. *Flowers* pilose (immature); outer anthers broadly oval with 4 introrse cells on an as long, slightly pilose, rather broad filament, inner anthers narrower, filaments densely pilose, basal glands large, globose.

Characterized by the hairy under surface of the leaves and the long petioles.

Specimen examined: Borneo, Sarawak, Lambir proposed National Park, Miri, river bank, bark green, sapwood yellow, low buttresses, March, buds, S. 24804 (A, BO, K, KEP, L, MEL, SAN, SAR, SING).

47. *Alseodaphne tonkinensis* Liou Ho, Laur. Chine et Indoch. 43. 1932; Kostermans, Bibl. Laur.: 73. 1964. *Typus*: Service forest., sine num., 7 Oct. 1924, "Re-vang".

I have not seen the type material, but the specimens mentioned below match the description very well. The fruit pedicels are cylindrical, but fleshy. A similar case is found in *Dehaasia firma*.

Specimens examined: Tonkin, Ho Yung Shan, Tien-yen, Oct., Nov., fr., *Tsang* 30723 (A, BO, K); Kau Nga Shan, Tien-yen, Sept.-Oct., fr., *Tsang* 30614 (A, BO, K); locality not indicated, buds, *Poilane* 1425 (BO).

48. *Alseodaphne utilis* Kosterm., spec. nova.

Arbor ramulis inovationibusque glabris foliis subaggregatis rigide coriaceis glabris ellipticis breve acuminatis basi breve acutis untrunque nitida supra obscure minute reticulata nervo mediano prominulo basin versus impressa costis filiformis prominulis subtus conspicue minute dense reticulata nervo mediano prominentibus costis numerosis filiformis prominulis petiolis perlongis supra subcanaliculatis infructescentiis foliis multo brevioribus fructus magnus pedicello crasso subobconico.

Typus: Poilane 18933 (P).

Tree, 20 m high and 70 cm diam., glabrous in all its parts. *Branchlets* stout with small, round lenticels; end bud short, thick. *Leaves* spirally arranged, sub-aggregate, rigidly coriaceous, elliptic, 5 × 15-8 × 80 cm, shortly acuminate, base acutish, both surfaces glossy, upper one with obscure fine reticulation, midrib prominulous, lower part impressed, laterals filiform, prominulous; lower surface conspicuously, densely, minutely reticulate, midrib prominent, laterals filiform, erect-patent, prominulous, 15-17 pairs. *Petiole* rather slender, 3-5 cm, slightly channeled above. *Infructescence* 4-7 cm long, unbranched. *Fruit* ellipsoid, up to 3 × 4.5 cm, acutish, pedicel 1 cm, slightly obconical, at apex up to 7 mm diam.

Characterized by its complete glabrousness, the conspicuous reticulation of the lower leaf surface, the many lateral nerves, the short panicle and large fruit.

Specimen examined: Annam: Lung Van, Prov. Than-hoa, forest edge, alt. 1000 m, Jan., fl., *Poilane 18933* (AAU, BO, L, P).

49. *Alseodaphne wrayi* Gamble, cf. Kostermans, Bibl. Laur. 73. 1964. *Typus:* *Wray 2543* (CAL), *syntypus:* *King's Coll. 5493* (BO, CAL, K), *5917* (BO, K).

Specimens examined: Siam, Chen Dao, Petchabun, alt. 300 m, tree 25 m, fl., *Kerr 20393* (BO); Malay Peninsula, Perak, Larut near Kota, alt. 30 m, Jan., fl., *King's Coll. 5493* (BO, CAL, K); *ibid.*, fl., July, *Wray 2543* (K); Taiping, May, fl., *Burn-Murdoch 331* (K, SING); Goping, April, fr. 7 × 17 mm, fr. pedicel 2.5 cm long, 7 mm wide at the truncate apex, *King's Coll. 5917* (BO, CAL, K); Singapore, Botan. Gard., Lawn M, April, fl., *S.F.N. 28329* (BO, CAL, KEP, P, SING).

50. *Alseodaphne yunnanensis* Kosterm., spec. nova.

Arbor? ramis albis lenticellatis nitidis ramulis lenticellatis foliis aggregatis chartaceis glabris ellipticis obscure longe acuminatis basi in petiolum contractis

utrinque subnitidis et minute dense prominule reticulatis supra nervo mediano impressa subtus prominente costis supra obscuris subtus filiformis sat patentis prominulis petiolis sat longis gracilis supra anguste canaliculatis paniculis brevis axillaris pilosis vix ramosis gracilis floribus extus glabris.

Typus: *Expedition Sino-Rossica 581*, anno 1956 (BO).

Tree (?). *Branches* stout, whitish grey, glossy, striate with many darker lenticels. *Branchlets* rather slender, whitish-grey mottled, lenticellate. *Leaves* aggregate, the apical ones opposite, chartaceous, glabrous, elliptic, 4.5 x 11.5 x 16.6 x 19 cm, gradually acuminate, base contracted into the petiole; both surfaces rather glossy and minutely, densely, prominulously reticulate, midrib impressed on the upper, prominent on the lower surface, lateral nerves c. 9 pairs, obscure above, erect-patent, slender and prominulous underneath, sometimes forked. *Petiole* rather slender, 1.5-2 cm long, narrowly channeled above. *Panicles* axillary, up to 2.5 cm long, pilose, slender, hardly and shortly branched, few-flowered. *Pedicel* slender 5-8 mm long, glabrous. *Flowers* glabrous, 5 mm diam.; inner tepals broadly ovate, acutish, 3 mm long, outer ones much narrower, shorter, inside of tepals pilose. Outer anthers oval, $\frac{3}{4}$ mm long, cells introrse, filaments glabrous, rather broad, as long as the anther; inner anthers narrower, truncate, cells lateral, basal glands large. *Ovary* subglobose, glabrous, style short with an inconspicuous stigma.

Belongs to the *A. hainanensis*, *A. longipes* group, but the inflorescences pilose and very short, the leaf shape different.

Specimen examined: Yunnan, locality not indicated, *Expedition Sino-Rossica 581*, anno 1956 (BO, LE).

Excluded species

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| 1. <i>Alseodaphne amara</i> (Mart.) Kostel. | = <i>Ocotea amara</i> Mart. |
| 2. <i>A. archboldiana</i> (Allen) Kosterm. | = <i>Nothaphoebe archboldiana</i> Allen |
| 3. <i>A. breviflora</i> Benth. | = <i>Persea breviflora</i> Pax |
| 4. <i>A. camphorata</i> (Lév.) Allen | = <i>Cinnamomum caudifer</i> Kosterm. |
| 5. <i>A. canescens</i> (Bl.) Boerl. | = <i>Nothaphoebe canescens</i> Bl. |
| 6. <i>A. caudata</i> Lec. | = <i>Cinnamomum caudifer</i> Kosterm. |
| 7. <i>A. chartacea</i> (Bl.) Boerl. | = <i>Nothaphoebe chartacea</i> Bl. |
| 8. <i>A. chinensis</i> Champ. ex Benth. | = <i>Persea chinensis</i> Pax |
| 9. <i>A. coriacea</i> Kosterm. | = <i>Nothaphoebe coriacea</i> Kosterm. |
| 10. <i>A. costalis</i> Nees | = <i>Litsea costalis</i> (Nees) Kosterm. |
| 11. <i>A. crassipes</i> Hooker f. | = <i>Helicia excelsa</i> Bl. (<i>Proteaceae</i>) |
| 12. <i>A. cujumary</i> (Mart.) Kostel. | = <i>Ocotea cujumary</i> Mart. |
| 13. <i>A. cuneata</i> (Bl.) Boerl. | = <i>Phoebe cuneata</i> (Bl.) Bl. |
| 14. <i>A. cymbarum</i> (Nees) Kostel. | = <i>Ocotea cymbarum</i> H.B.K. |
| 15. <i>A. dumicola</i> W. W. Smith | = <i>Persea bonii</i> (Lec.) Kosterm. |

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| 16. <i>A. elata</i> Kosterm. | = <i>Nothaphoebe elata</i> Kosterm. |
| 17. <i>A. excelsa</i> (Bl.) Bl. | = <i>Persea excelsa</i> (Bl.) Kosterm. |
| 18. <i>A. falcata</i> (Bl.) Boerl. | = <i>Nothaphoebe falcata</i> Bl. |
| 19. <i>A. foetida</i> Kosterm. | = <i>Nothaphoebe foetida</i> Kosterm. |
| 20. <i>A. gigaphylla</i> Kosterm. | = <i>Nothaphoebe gigaphylla</i> Kosterm. |
| 21. <i>A. grandis</i> Kurz | = <i>Dehaasia candolleana</i> (Meissn.)
Kosterm. |
| 22. <i>A. grandis</i> (Wall. ex Nees) Nees | = <i>Phoebe grandis</i> (Nees) Merr. |
| 23. <i>A. helophila</i> Kosterm. | = <i>Nothaphoebe helophila</i> Kosterm. |
| 24. <i>A. lucida</i> (Wall. ex Nees) Nees | = <i>Castanopsis lucida</i> (Wall. ex Nees)
Soepadmo (<i>Fagaceae</i>) |
| 25. <i>A. leytenis</i> Elmer | = <i>Nothaphoebe leytenis</i> (Elmer)
Merr. |
| 26. <i>A. macrocarpa</i> (Bl.) Kosterm.
ex Backer & Bakh. | = <i>Nothaphoebe macrocarpa</i> (Bl.)
Meissn. |
| 27. <i>A. macrophylla</i> (Bl.) Boerl. | = <i>Nothaphoebe macrophylla</i> Bl. |
| 28. <i>A. magnifica</i> Kosterm. | = <i>Nothaphoebe magnifica</i> Kosterm. |
| 29. <i>A. malabonga</i> (Blanco) Kosterm. | = <i>Nothaphoebe malabonga</i> (Blanco)
Merr. |
| 30. <i>A. merguiensis</i> Park. | = <i>Nothaphoebe condensata</i> Ridley |
| 31. <i>A. mollis</i> W. W. Smith | = <i>Cinnamomum glaucescens</i> (Nees)
Drury |
| 32. <i>A. obovata</i> Kosterm. | = <i>Nothaphoebe obovata</i> Kosterm. |
| 33. <i>A. oleifolia</i> Gamble ex Ridley. | = <i>Litsea oleoides</i> Hooker f. |
| 34. <i>A. opifera</i> (Mart.) Kostel. | = <i>Ocotea opifera</i> Mart. |
| 35. <i>A. panduriformis</i> Hooker f. | = <i>Nothaphoebe panduriformis</i>
(Hooker f.) Gamble |
| 36. <i>A. polyneura</i> Miq. | = <i>Dehaasia polyneura</i> (Miq.) Kosterm. |
| 37. <i>A. spathulata</i> (Bl.) Boerl. | = <i>Nothaphoebe macrocarpa</i> (Bl.)
Meissn. |
| 38. <i>A. superba</i> (Bl.) Boerl. | = <i>Nothaphoebe superba</i> Bl. |
| 39. <i>A. titanophylla</i> Airy Shaw | = <i>Dehaasia titanophylla</i> (A. S.)
Kosterm. |
| 40. <i>A. umbelliflora</i> (Bl.) Hooker f. | = <i>Nothaphoebe umbelliflora</i> Bl. |

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