

A JOURNAL ON TAXONOMIC BOTANY,
PLANT -SOCIOLOGY AND ECOLOGY

REINWARDTIA

Editors

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¹ Published by

HERBARIUM BOGORIENSE
LEMBAGA BIO-LOGI NASIONAL — LIPI
BO.SOR, INDONESIA

Einwardtia Vol. 9, Part 1, 1—182 31 December 1974

10- ISSN 0(f34-365X

A MONOGRAPH OF THE GENUS *NEOCINNAMOMUM* LIOU HO

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ABSTRACT

The Asiatic gratis *Neocinnamomum* comprises 6 species, of which *N. atjehense* is described here for the first time. *Citmoninjuftin f&Yff&sn* Lee. is moved to *Neocinnamomum*. *N. westfoniai* Allen is considered to be conspecific with it. *N. delavayi* var. *mekongense* Hand. Mazz. is raised to specific rank. *N. haifaniana* Allen is reduced to *N. lecomtei*. Excluded from the genus is *N. cavafronense*, which is moved to *Litsea*.

ABSTRAK

Marga *Neocinnamomum* yang tersebar di Asia mencakup 6 jenis, termasuk *Neocinnamomum atjehense* yang dipertemukan untuk pertama kali sebagai jenis baru. *Cinnamomum fargesii* dipindahkan ke *Neocinnamomum* dan *N. wilsonii* dianggap sebagai sinonimnya. *N. delavayi* var. *mekongense* dinaikkan tingkatannya menjadi jenis, sedangkan *N. hainanense* disatukan dengan *N. lecomtei*. *N. cavafronense* dikeluarkan dari *Neocinnamomum* dan dipindahkan ke marga *Litsea*.

INTRODUCTION

Liou Ho, who established the genus *Neocinnamomum* in 1932, treated 5 species (*N. delavayi*, *lecomtei*, *parvifolium*, *poilanei* and *yunnanense*) of which I chose *N. delavayi* as the lecto-type species.

Liou Ho differentiated the genus mainly by the position of the 4 cells of the anthers, which in *Cinnamomum* are placed in pairs above each other, in *Neocinnamomum* at the same level, one pair being introrse or extrorse, the other lateral. This character, however, is found only in *N. delavayi* and to a lesser extent in *N. caudatum*, in the other species the pairs of cells are in pairs above each other and this induced me (in Reinwardtia 4, 1957) to include the genus in *Cinnamomum*.

Although the position of the anther cells cannot be used as a generic characteristic (which is also true for all other genera of Lauraceae), I have reinstated the genus, because of the peculiar inflorescence, the thick, fleshy, obconical, shallow fruit cup with persistent, enlarged tepals and the distichous leaves. However, the genus remains very near to *Cinnamomum*.

Of the 5 species recognized by Liou Ho, I have reduced 3 to synonymy (*N. parvifoliwm* and *poilanei* to *N. delavayi* and *N. yunnanense* to *N. caudatum*).

N. wilsonii Allen, based on a specimen from Szechuan, is not different from *Cinnamomum fargesii* from the same Province. Lecomte described the fruit of the latter (which Allen overlooked!) which conforms with those of the other *Neocinnamomum* species. In leaf and inflorescence characters this is a true *Neocinnamomum*.

The position of the enigmatic *N. meko-ngeve* is problematic. The typo material could not be examined, but the description conforms very well with the specimens enumerated here. The glabrous branchlets places it near *N. fargesii* but it has sericeous flowers, hence it might be a hybrid between *N. delavayi* and *N. fargeaii*, although this is not very likely.

I have excluded *N. confertiflorum* from the genus, as the fruit cup are different from those of *Neocinnamomum*. The species belongs to the genus *Litsea* and should be renamed: *Litsea confertiflora* (Meissn.) Kosterm., *comb. nov.* (basionym: *Actinodaphne confertiflora* Meissn. in DC., Prodr. 15(1): 219. 1864).

DISCUSSION ON MORPHOLOGICAL CHARACTERS

Stem. All species are shrubs or small trees with slender, cylindrical branchlets. The end buds are small and provided with one or two tiny bud scales, which distinguish them from subgenus *Camphora* of *Cinnamomum*, which has spirally arranged leaves but very large perulate end buds.

Leaves. At first sight the leaves and their phyllotaxy remind one strongly of *Liidiera*. The leaves are very uniform in shape and texture with conspicuous acumen and a rounded base with a small cuneate centre and leaves which tend to become very broad. The leaves are always trinerved, only in *N. caudatum* the basal nerves reach the acumen. *N. caudatum* can be recognized even from the leaves alone by the numerous parallel secondary veinlets, which produce elongated areoles. The leaves are as a rule distichous, the apical ones may be sub-opposite. At the junction of the basal laterals and the midrib often deep, partly covered domatia are present, sometimes produced as a slight swelling on the upper leaf surface. The petiole is always slender and channeled above.

Inflorescence. The common inflorescence is a peculiar kind of panicle, the main peduncle stiff and well-developed, but the lateral

branches strongly reduced, the flowers forming pseudo-glomerules, actually a very short, bracteate branch, bearing 1—*i* spirally arranged flowers on long, slender pedicels. This I consider the primitive kind of inflorescence and is only found in *N. caudata*. Occasionally such panicles are found in other Lauraceous genera (*Akeodaphne petiolaris*, many species of *Caryodaphnopsis*). Sometimes the apical part of the branches has no leaves and the axilar panicles form a compound, large, terminal panicle (*N. caudata*, a specimen with terminal panicles was described as *iv. yunnanense*).

In most species, the main peduncle is strongly reduced or more or less lacking, and the pseudo-glomerules of flowers become more or less sessile (a remnant of the bracteate peduncle is, however, always present).

Flower. In all species the flowers are more or less identical differing only in their pubescence and the position of the anther cells. The tepals are almost equal in length, although the inner ones arc somewhat narrower, they are rather fleshy. The stamens are included, have well-developed filaments and are arranged in 3 whorls, the fourth is staminodial.

Liou Ho was struck by the position of the 2 pairs of cells in *N. delavayi*, where the lateral pair is almost in one level with the outer or introrse pair. Actually they are not exactly in one plane and intermediate stages between this and the normal superposed pairs occur in other species (*N. fargesii*). As usual in Lauraceae, the position of the anther cells cannot be used as a generic character, as it varies within the species of one genus. The small, but conspicuous staminodes are similar to those in *Cinnamomum* and so is the peltate, small stigma.

Fruit. A distinctive feature of the fruit is the fleshy, swollen, obconical, large, but at the top very shallow cup with persistent, enlarged fleshy, erect or patent tepals. The fleshy cup merges into a slightly obconical, slender and long pedicel. The fruit itself is of the common type in Lauraceae.

NEOCINNAMOMUM Liou Ho

Liou Ho, Laur. Chme et Indnchine B28G. 1933 and 1934; Kostermans TO J. s⁴i. Kes. Indon. 1: 149. 1952; in Reinwardtia 4: 233. 1957; **Bib.**, Laur. 1033. 1964.

Small trees or shrubs. Leaves entire, distichous. Flowers disposed in axillary, stiff panicles, consisting of a main peduncle and much reduced side branches (flowers pseudo-glomerulate) or the main peduncle strongly reduced and the flowers almost sessile in the leaf axils. Flowers trimerous. Tepals almost equal. Stamens in three whorls of 3, all provided with filaments, the fourth whorl staminodial. Anthers 4-celled,

the upper pair of cells introrse (two outer whorls) or introrse (third whorl) or all lateral, the lower larger cells lateral. Sometimes the cells almost in one plane. Staminodes relatively large, stipitate. Flower tube rather shallow. Ovary merging into a slightly shorter style with small peltate stigma. Pedicels long, slender. Fruit ellipsoid or globose, seated on the shallow, fleshy, thickened, club-shaped large cup, which merges into a slender pedicel, the tepals enlarged, persistent, erect or patent.

DISTRIBUTION : China from Yunnan to Hainan, and Tonkin.

KEY TO THE SPECIES

1. Leaves with numerous, very slender, parallel, sub-horizontal veins (forming elongate areoles). Main peduncle of panicle well-developed, inflorescence a panicle. 1. *N. caudatum*
1. Leaves with a regular reticulate, very minute reticulation. Flowers in pseudoglomerules or single in the leaf axils
2. Branchlets glabrous
 3. Flowers glabrous 3. *N. fargesii*
 3. Flowers densely pilose 5. *N. mekvingense*
2. Branchlets pilose, at infld. *irihMjij*
 4. Branchlets densely rufous pilose. Lower leaf surface rufous pilose 4. *N. fecowitei*
 4. Branchlets hardly pilose. Leaves glabrous 2. *ff. atjehense*
 4. Branchlets silvery sericeous, lower leaf surface sparsely silvery sericeous 6. *N. delavayi*

1. NEOCINNAMOMUN CAUDATUM (Nees) Merrill

Merrill in Contr. Arnold Arb. 8: 64. 1934; Kostermans, Bihl. Laur. 1034. 1964; *ill Bot. bot. Survey India 10: 287. 1968* (escl. cit. Van Steenis) - *Cinnamomum amdatum* Nees in *Wallich, Pl. Asiatic. rar.* 2: 76. 1831; Kostermans, *l.e.* 280 — *Laurus caudate* Wallich ex Nees, *l.e.* 76; Kostermans, *l.e.* 595. — *Typus: Walliak Cat. 2603*, fl. (BM, BO, K).

Neotiknamomv-m poilanei Liou Ho (sphalm. *Cinnamomvrm.*), *Laur. Chine et Indoch. 92*, fig. 9 (*poilanns*). 1932 (and 1934); Merrill in Contr. Arnold Arb. 8: 64. 1932; Petelot, *Pl. med. Cambodge* 3: 53. 1954; Kostermans, *Bibl. Laur.* 1035. 1964; *Records bot. Survey India 10: 287. 1968.* — *Typus: Poilane 2i29* (K, P).

Tree or shrub. Branchlets slender, minutely sericeous. Leaves alternate, chartaceous, broadly ovate to ovate-elliptic to orbicular ovate, 1.5 x 5.6—2 x 5—6.5 x 11.5 (—7 x 9—9 x 15) cm with a long (1—2 cm) sharp-tipped, rather gradually tapered acumen, base obtuse to cuneate; upper surface rather dull, the main 3 filiform nerves prominulous, connected by numerous filiform parallel secondary nerves, lower surface paler and more glossy, midrib prominent, the 2 basal laterals reaching the base of the acumen, artuate, prominulous, numerous, parallel, very slender secondary nerves with a very lax reticulation in between. Petiole slender, up to X cm long, channelled above. Panicles pubescent, axillary and terminal, up to 7 cm long, stiff, unbranched or with few, stiff, slender

branches, up to 5 cm long; the flowers in groups of 1—4 on very much reduced (0.5—1 mm long), bracteate, widely spaced branches, pseudo-glomerulate. Pedicel filiform, sericeous, up to 6 mm long. Flowers densely sericeous. Tepals subequal (inner ones narrower), sub-ovate, 1.5 mm long, inside pilose. Stamens 0.75—1 mm long, the subquadrate anthers slightly longer than the filaments. Of the outer G anthers the lower large cells introrse or introrse-lateral, the upper smaller ones introrse; inner anthers slightly narrower, the lower cells extrorse, the upper ones (almost at the same level) lateral; basal glands large, sessile. Staminodes almost sessile. Ovary ellipse id-ovoid with an as long style with small peltate stigma. Fruit ellipsoid, up to 8 x 12 mm, obtuse, the shallow, fleshy, obconical cup 6—8 mm long, up to 8 mm diam. at the apex; the persistent, semi-erect, fleshy lobes 3—5 mm long. Pedicel obconical, 1—2 cm long.

The size of the leaves is extremely variable, even in the same specimen (5—15 cm long), they vary in shape from narrowly ovate to broadly suborbicular. The anthers have the cells in pairs above each other. Characteristic are the numerous parallel secondary veinlets.

CHINA. Yunnan, Poneshee, March, young fr., Anderson «.» (K); fr., *Forrest 950A* (K); Szechuan, Nachuan Hsien, fr., *W.T. Fang SSti* (KJ BHUTAN. Rinchu Runakha, alt. 1700 m, Aug., fl., *Cooper 3i2* (BM). INDIA. Sikkim, Mongpoo, alt. 1000 m, Aug., fl. *King's Coll. s.n.* (BO, CAL, K, L); Lepcha, Singing Moon, fr., *King s.»,* large-leaved (BO, K); fr., *Thomson s.n.* (BO, K, LE); Hee, alt. 1000 m, Oct., fl., *Clarke IS125* (BM); Singing Pot, alt. 700 m, fr. IE X 25 mm, pedicel 25 mm, at apex 10 mm diam., *J.D. Hooker s.n.* (K, 3 sheets), leaves 7 X 11—B X 13 cm; Bungiet, alt. 250 m, Nov., fr., *Clarke 28SSO* (BM, K, LE, E), deciduous tepals; *ibid.*, Nov., fr., *Clarke 9.6SS7* (BM); Lepcha, Singing King, alt. 1300 m, Aug., fl. *Gamble fSS* (K); Gangtok, alt. 1700 m, Sept., fl. *Eibu & Rhomoe 5632* (K); Sikkim, alt. 700 m; fr., *J.D. Hooker s.n.* (K, marked: *Haasin ? mudata* Hk. f. & Th.); Assam, Naga Hills, Phekrokdzumji, alt. 1700 m, March, fr. bright red, *Bar 2U7* (DD, K, 2 sheets); Garo Hills, Tura, alt. 400 m, cup 5 mm diam, Febr., fr. *Parry ISIS* (K), cup and pedicel 10 mm, cup 5 mm diam.; Sanitarium Hill, alt. 1000 m, tree 20 m, diam. 50 cm, bark dark brown, exfoliating in thin, round flakes, inside red, turning reddish brown, 6 mm thick, aromatic, leaves distichous, March, fr., shining bright scarlet, globose, 17—19 mm long, seated on a much thickened whitish cup, very aromatic, but tasteless, seed testa black, old leaves yellow, branchlets zig-zag. *Kaniilal ZS36* (DD), some fruit diseased and turned into a hard ball of up to 6 cm diam.; Orissa, Yeopore State, Koraput Distr., under heavy shade in damp glen at 1200 m alt. in Bhalopodar valley, ster., leaves orbicular, very large (DD); Sambalpur, Koraput Distr., Pottangi, alt. 1300 m, heavy shade near stream on moist site, *Money .1375* (K); Bengal, fr., *Griffith U250* (K); Bastar State, alt. 1200 nj, aromatic shrub of 2—5 m, ster., *Baladilla .194* (K); Madras State, Ganjam Distr., alt. 1500 m, *Mahendragaa*, str.; *Gamble U121* (K); Vizagapatam distr., Gudum, fr., *Lushington e.».* (K); *ibid.*, Vantala, alt. 1500 m, ster., *Luehlygiston n.n.* (K); WEST CENTRAL BURMA. Eanank, Mt. Victoria, alt. 1800 m, June, fl., *Kingdon Ward 22J,UI* (BM); *ibid.*, Sept., fl., *Kingdon Ward ZSSiB* (EM); *ibid.*, March, fr. red, dangling like cherries, *Kingdon*

Ward 21*87 (EM); Maymyo Plateau, alt. 1200 m, July, fl. *Lace 55H* (K), inflorescence up to 5 cm long; *ibid.*, June, fl., *Lace 5528* (K). SIAH, Chiengmai, Mekums; alt. 970 m, evergreen shrub or small tree, April, fr. red black when ripe, *Wirdt 1300* (BKF, BO), Doi Tung, alt. 1300 m, tree 20–25 m, diam. 50 cm, leaves and bark aromatic, sler, *Komlcra s.n.* (BO), very large leaves; Doi Chieng Dao, alt. 1000 m, tree 15–30 m, bole crooked, bark dark brown scaly, cut pinkish brown, spicv smell, 10 mm thick, Dec, buds & fr., *Smitinand 7208* (SAR).

2. *Neocinnamomum atjehense* Kosterm., *spec. nov.*

Neocinnamomum eaudatum. Auct. (non Merr.), Merrill in Contr. Arnold Arb. S: 64. 1943, quoad specimens of *Bangliam* from Atjeh, Sumatra.

Arbor parva ramulis gracilibus laevis glabris, foliis alternantibus rigidis chartaceis glabris ovatis vel ovato-oblongis conspicue acuminatis basi breve acuminatis utrinque sat obscure reticulatis, supra mox glabra nervis principalibus vix coispiuis, subtus minutissime laxe sericeis glabrescentibus nervo mediano et costis basilibus filiformibus prominulis, petioli gracilibus sericeis, floribus minute adpresse griseo pilosis longe pedicellatis singulis axillaribus.

TYPUS: *Van Steenis 6268* (BO).

Small tree, branchlets very slender, glabrous, smooth, at the apex minutely pale sericeous. Leaves spirally arranged, chartaceous, ovate or oblong-ovate, 3.5 x 8–5 x 10 cm, caudate acuminate, base shortly cuneate, both surfaces rather obscurely reticulate, lower surface minutely laxly sericeous, glabrescent, the midrib and the 2 basal lateral nerves filiform, prominulous. Petioles very slender, sericeous, 5–8 mm long. Flowers densely, minutely grey sericeous, solitary on an extremely reduced, axilar branchlet. Fruit (specimen *Bangkam. S15*), ellipsoid, 7 x 12 mm; cup almost flat-topped, fleshy, obconical, 1 cm long, at apex 6 mm diam., persistent tepals 4 mm long, reflexed; pedicel 2 cm, slender, towards the apex obconical.

Merrill was right when he referred *Cinnamomum eaudatum* Nees to *Neocinnamomum*, but included wrongly the Sumatra material, which shows the reticulation and shape of inflorescence of *N. delavayi*, not that of *C. eaudatum*. The fact, however, that the mesh of the reticulation is wider than that in *C. delavayi* and that the inflorescence is reduced to a single flower, compels me to accept this as a different and undescribed species.

SUMATRA. Gajolmls, Cumpang to Kon'ke, alt. 700 m, recently cut forest near Alias R., March, fl., *Vaa Steens' 1>1k6* (BO, L.); Takengen ACOBI BURDI Lintong, valley of tile Isaq, Atjeh, alt. 1200 m, Sept., fl., *Van Steens essa* (BO, K, L), leaves glaucous below; along road from Takigum to Bireuen, km. 90, edge of jungle, alt. 1300 m, tree 6 m, leaves with pungent, spicy odor, dried bark used as spice; along road from Takigeuro to Bireuen, km. 06, edge of jungle, alt. 1300 m, tree 5 m, Jan., fr., *BarwkaTM. S15* (A, BO).

3. *Neocinnamomum fargesii* (Lee.) Kosterm., *comb. nov.*

Citawumcum fargenii Lecomte (basinonym) in Nouv. Arch. Mus. Paris, 5: 56r. 5: 78, fig. 3. 1913; Liou Ho, Laur. Chine et Indochine 40. 1932; Kostermans, Bibl. Laur. 294. 1964 - Typus: *Farges IOSI* (BO, P).

Neocinnamomum leilaonii Allen in J. Arnold Arb. 20: 63. 1939; Kostermans, Le. 1035. — Typus: *WifeTM 4E87* (A, BM, K), syntypes: *Fang 5666 <P>*, *Ckow60¹>* (A). Liteo *fruticosa* (Hemstey) Gamble (in Sargent, PL Wilson. 2: 77. 1914, p.p. (quoad specim. *Wilson 4587*); Kostermans, Le. 819.

Shrub or small tree, 2–7 m high. Branchlets slender, glabrous, cylindrical, finely striate. End bud very small, glabrous. Leaves chartaceous to thinly chartaceous, glabrous, ovate to ovate-lanceolate to ovate-rhomboid, 2 x 4–4 x 7 cm, caudate-acuminate, the acumen broad, sharp-tipped, base cuneate; both surfaces densely, minutely prominulously reticulate, upper surface dull, main nerves filiform, slightly prominulous; lower surface somewhat paler, more glossy, midrib slender, prominulous, the two basal, filiform arcuate laterals prominulous, reaching $V-i$ —% of the blade length. Petiole slender, glabrous, ca 1 cm long, channelled above. Inflorescences axillary, strongly reduced, up to 1 mm long, minutely braetate, bearing 1–3 glabrous flowers. Pedicel filiform up to 12 mm long. Tube shallow, broad. Tepals equal, fleshy, narrowly ovate, 2 mm long, glabrous, glaucous outside. Stamens glabrous, 15 mm long; outer anthers oval, as long as the filaments, lower cells introrse, the upper ones lateral, inner anthers narrower, the lower large cells extrorse, upper ones very small, lateral. Stamines small. Ovary ellipsoid-ovoid with an as long style and small peltate stigma. Fruit ellipsoid, ca 1 cm long, apiculate, seated on a very shallow fleshy, massive, obconical cup up to 7 mm long and 5 mm diam. at the apex. Pedicel up to 17 mm long, slightly obconical towards the cup. Tepals persistent, patent-erect, narrowly ovate, acute, 4 mm long.

The fruit described here, is perhaps immature. Lecomte described immature fruit as ovoid, ca 1 cm long and the pedicel plus calyx 2.5–3 cm long.

Allen stated of *Cinnamomum fargesii* that the fruit was unknown. Apparently she overlooked the alinea in Lecomte's description of the fruit.

CHINA. W. Su-tchuen (Sichuan), Distr. of Taken-keou-Tin, fl., *Farges IOCJ*, (RO, P); Nonchuan Hsien, fr., *W.P. Fang SWS* (A, K).

4. *NEOCINNAMOMUM LECOMTEI* Liou Ho, — Fig. 1

Liou Ho, Laur. Chine Indochine 63. 1932 (and 1934); *Wu Chen Y. List Spermaph.* Yunnan 1: 26. 1959 (nomen, Chinese); Kostermans, Bibl. Laur. 1034. 1064. - Typus: *Bon SUB* (P).

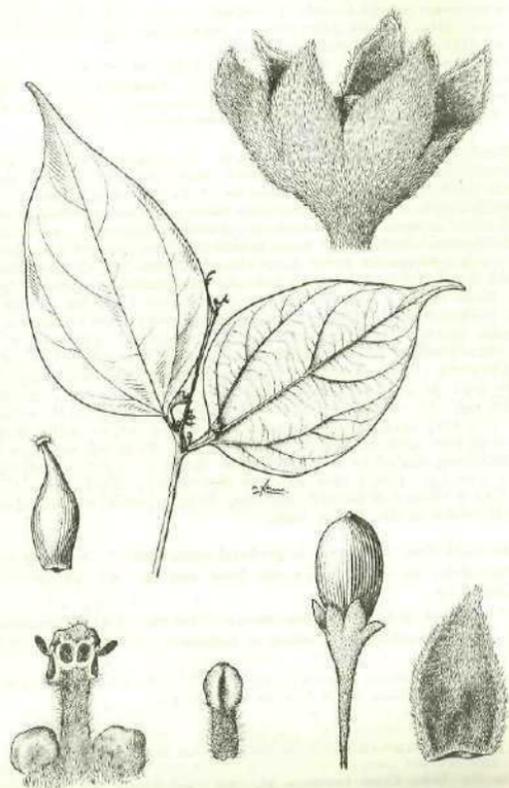


Fig. 1. *Neocinnamomum lecontei* Li[†] Ho - After Kbertordt «*» (BO).

Neocinnamomum hainamanum C.K. Allen in J. Arnold Arb. 20: 62. 1939; Merrill & Chun in Sunyatsenia 5: 66. 1940; Chow & Wang, Catal. Pl. Kwangsi 24. 1955 (nomwi, Chinese); Lee Shqiang in Acta phytotax. Sinica S<3>: J81. 1963; Kostermans, Bihl. Laur. 1034. 1964; Chun, Chang & Chen, Fl. Hainanica 1: 274, fig. 187. 1864. — *Typus*: *Luu IHTS* (A, non vidi); *Lav. S67SI*, iso-typus (A, BO).

Shrub or tree, 3—10 m high, 3—15 cm diam. Branchlets rather slender, densely, minutely rusty strigose in their upper part, glabrescent. Leaves alternate and sub-opposite, distichous, thinly chartaceous to chartaceous, broadly ovate, 4 x 8—7 x 13 cm, with a conspicuous, slender acumens, up to 1.5 cm long (tip blunt or acute), base abruptly contracted into the petiole, the centre part shortly cuneate; upper surface glossy, glabrous (initially sparsely pilose), except the filiform, slightly prominent main nerves, veins only visible under the lens, reticulate; lower surface paler, sparsely, minutely puberulous (denser on the veins), midrib slender, prominent, the basal lateral nerves arcuately ascendent to $y.$ >—% the leaf blade length, prominent, other laterals 1—3 pairs, arcuately ascendent, secondary nerves patent, very slender. The basal nerves possess also arcuate laterals at the outside. Petiole 6—15 mm long, densely appressed pilose, sub-glabrescent, flat or concave above. Inflorescences axillary, densely rusty or aureous appressed pilose, consisting of a hardly developed main peduncle, bearing 1—4 flowers in the axils of tiny bracts. Pedicel slender, densely pilose, 1 cm long. Flowers densely fleshy narrowly ovate-elliptic, acute, 3—3.5 mm long; the outer ones slightly shorter and narrower, inside pubescent. Stamens 2 mm long, anthers subquadrangular or broadly oval, truncate, as long as the filaments; outer anthers with large lateral lower cells and tiny apical introrse-lateral ones; inner ones same shape; staminodes club-shaped, 1.5 mm long, pilose; ovary slender, merging into a shorter style with small, peltate stigma. Fruit red or deep orange, ellipsoid, up to 10 x 15 mm, smooth, dull, cup pubescent, trumpet-shaped, fleshy, 5—10 mm long, at apex 5—9 mm diam., with a shallow cavity, the enlarged, sub-erect, 3—6 mm long, at base 3—6 mm wide, thickened tepals persistent; the solid base of the cup merging into the slender, pilose, 5—15 mm long pedicel.

CHINA. Hainan, Loktung, May, fr., La« 267&1 (A, BO); Chin Fung Mts., near Fong Ngau Po village, Kan-en Distr., Febr., fr. red, bin *SSU* (BO); Tonkin, Trov. Langon, Thaumoi, fls. brown, *Eberhardt SUS* (BO, P); Bang Mae, sparsely wooded limestone rocks, Febr., fr., *Petelot G7SI* (BO, P); Mts. Chua-hac, fr., *Bon S11S* (P, non vidi).

5. *Neocinnamomum mekongense* (Hand.-Mazz.) Kosterm.,
tomb. & stat. nov.

Cinnamomum delavayi var. *mekongense* Hand.-Mazz. in Sitzganz. Akad. W. Wien 1925:218; Symbolae Sinicae 7: 251. 1931; Kostermans, Bib. Laur. 290. 1964. — *Neocinnamomum delavayi* var. *mekongense* (Hand.-Mazz.) Allen ex Wu Chen Y., List

Spermat. Yunnan 1: 25. 1959 (Chinese, nomen, sphalm.); Kostermans, Lc. 1034; *Cinnamomum delavayi* var. *aromatica* (sphalm.: *aromatica*) Lecomte ex Lec, For. Bot. China 591. 1935; Kostermans, Lc. 290.

Shrub 5 m or tree 10 m high. Branchlets slender, glabrous. End bud with a few, microscopic hairs. Leaves distichous, glabrous, stiffly chartaceous, broadly ovate to ovate-elliptic, $15 \times 4-5 \times 9.5$ cm, caudate-acuminate, acumen slender, up to 15 mm long, base cuneate, both surfaces minutely reticulate, upper one with filiform, prominulous main three nerves, lower one paler, midrib slender, prominulous, the two basal laterals slender, reaching $\frac{3}{4}$ the blade length (almost to the acumen), secondary nerves not conspicuous. Petiole slender, 1-1.5 cm long, glabrous. Pseudo-glomerules of flowers axillary, minutely sericeous. Pedicels slender, up to 10 mm long, sericeous. Tepals narrowly ovate, acute, 2.5 mm long, sericeous both sides. Stamens 1.5 mm, filaments broad, as long as the oval-quadrangular, truncate anthers; cells of all anthers lateral, the apical ones very small. Glands dub-shaped, flat-topped. Staminodes as long the filament with small triangular head; style short; stigma peltate.

The species is very near to *N. delavayi*, but has larger leaves and completely glabrous branchlets. The anthers and staminodes are different.

YUNNAN. Wei-Se Hsien, in ravine, alt. 2300 m, Nov., abnormal fruit, *Tsai SS005* (A, BO); *ibid.*, f.j., *Tsai 57257* (A, BO); *ibid.*, str., *Tsai 57076* (A, BO); *ibid.*, fl., *Tsai 57522* (A, BO); *ibid.*, buds, *Tsai 58359* (A, BO); Lung-ling Hsien, alt. 1500 m, March, buds, *Tsai 55578* (A, BO); Lu-ehue, by river, alt. 1400 m, ater., *Tsai SiSiS* (A, BO); Len-ping Hsien, alt. 2300 m, ster., *Teai 56253* (A, BO).

6. NEOCINNAMOMUM DELAVAYI (Lec.) Liou Ho. — Fig. 2

Liou Ho, Laur. Chine et Indoch. 80. 1032 and 1934; Kostermans, Bibl. Laur. 1034. 1964 (exclus. var. *mekongense* (H.-Maza.) Allen); *Cinnamomum delavayi* Lecomte in Nouv. Arch. Mus. Paris, 5^e Ser. 5: 77. 1913; Kostermans, Lc. 289 and 290 (exclus. var. *mekongense* H.-Mazz.). — Typus: *Delavay 035* (P), syntypus: *Delavay 4338* (P) and SM (Pse cha ho) <BO, K, P>.

N. delavayi var. *patkiflorum* Yang in J.W. China Border Ees. Soc. 15, Ser. B: 1945; Kostermans, U. 1034. — Type material: *Chen MS6* and *1931*, (non vidi).

N. parviflorum (Lec.) Liou Ho, Lc. 88, fig. 4, 6, 6, 7. 1932 and 1934; Kostermans, Lc. 1034; *Cinnamomum panifio* Tum Lecomte (non Eidley), Lc. 80; Kostermans, Lc. E34. — Typus: *Dueloua 7115* (K, P), isotypus: *Dveloux 5292* (K, P).

Small tree, up to 5 m high. Branchlets slender, densely, minutely sericeous. Leaves alternate, sub-coriaceous, ovate-elliptic, $1 \times 2-2 \times 5.5$ cm, rarely broadly ovate, 4.5×7 cm, caudate acuminate, acumen up to 1 cm long, obtuse, base shortly cuneate; upper surface glabrous, minutely, densely reticulate (under the lens), main nerves slightly prominulous, slender; lower surface paler, laxly, minutely, finely sericeous, midrib slender, prominulous, the two basal laterals arcuately ascendent to

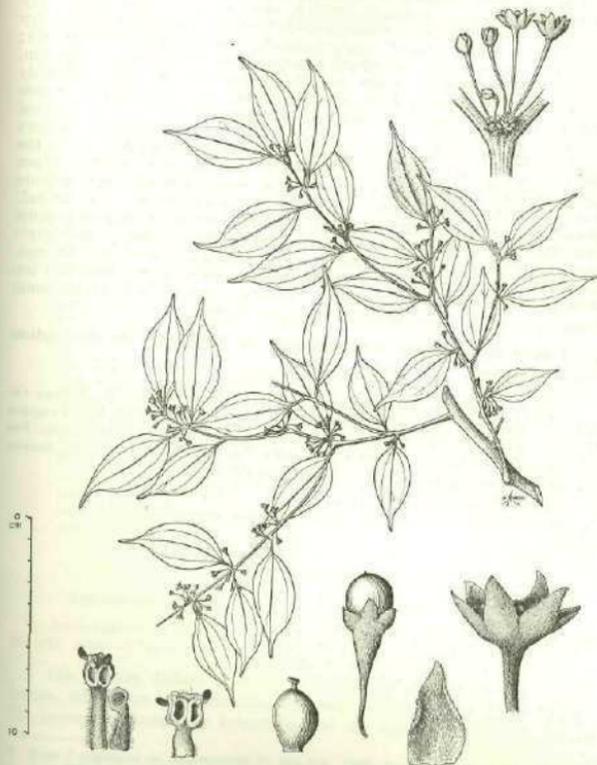


Fig. 2. *Neocinnamomum delavayi* (Lec.) Liou Ho. — After: Forrest 11669 (BO), *sp.* (BO).

1/2-3/4 the leaf length, filiform, prominulous, reticulation regular, dense, very minute; sometimes between-midrib and basals deep donatia (slightly hulate on the upper surface). Petiole slender, 6—10 mm long, laxly sericeous, concave above. Inflorescences axillary, consisting of a very short (1—2 mm) reduced main peduncle, bearing up to 5 flowers; sometimes the flowers practically sessile. Pedicel filiform, 5—8 mm, densely pilose. Tube broadly funnel shaped, 0.5 m, inside densely sericeous. Tepals erect-patent, narrowly ovate, acute, stiff, 1.5—2 mm long, densely sub-sericeous on both sides. Stamens 1.25 mm long, inserted slightly below the tepals on the rim of the 0.5 mm broad tube; anthers quadrangular or ovate-quadrangular, obtuse, slightly shorter than the almost glabrous, thickish filaments; outer anthers with introrse upper and lateral lower, large, slanting cells, almost in one plane, inner anthers smaller, the lower large cells extrorse, the upper smaller ones lateral; glands large, long-stalked. Staminodes sub-spathulate or oval on a thick long filament. Ovary ellipsoid-ovoid, merging into a short, thick style with small stigma. Fruit ellipsoid to sub-globose, up to 6 x 10 mm, apiculate. Cup fleshy, broadly funnel shaped, up to 6 mm long, the top shallowly excavated, the persistent, sericeous tepals erect, 3 mm long, 2 mm wide at the base; pedicel 1 cm long, slender.

I have not seen the material, cited by Yang, but the description fits *N. delayayi*.

CHINA. Yunnan, fl., Forrest *lieea* (BO, E); Pcc-cha-ho, April, fl., *Dda-ony s.n.* (BO, P); Tenggueh, alt. 1800 m, March, buds, fr., *Farret 9f* (BO, E); Yung-jen Hsien, in ravine, alt. 1700 m, May, fl., *Tsai 62891* (A, BO); Pa-ta-ouan, near Pee tchouan, July, fl., *Jean Py (Dueloux 8292)* (BO, P); forest of Thou Ty, fl., *Simeon Ten* (BO, P); locality not indicated, fr., McLaren's *Coll. Usc* (BO, K).

MATERIALS FOR A REVISION OF LAURACEAE IV*

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ABSTRACT

In the genus *Actinodaphne* Nees one new combination and one new species are presented; in *Lindera* Thunb. one new combination, 4 new species and one new form; in *Itsea* Lam. one species has been reduced to synonymy, one nomen novum is presented, 5 new species are described and of 6 species new records are given; one species has been reinstated. The obscure *Machilus sericea* Bl. is assumed to be conspecific with *Persea bombyeina* (King ex Hook, f.) Kosterm. In the genus *Persea* Mill. one nomen novum, two new combinations and one new species are created and proposed. In the genus *Phoebe* Nees one new combination and two new species are presented.

ABSTRAK

DJISJIJI uJINTE *Actinodaphne* Nees satu korabiniasi baru dan ssttu jenis bum diusulkan; dalam *Lindera* Thunb. satu kabinasi baru, empat jenis baru dan satu forma baru; dalam *Itsea* Lam. satu jenis dimasukkkan dalam jenis lain, satu nama baru dan lima jenis baru diusulkan, satu jenis diakur kembali dan daerah penyebaran enam jenis diperluas oleh terkumpulnya spesimen-speamen baru. *Machilus sericea* Bl. dianggap sama dengan *Persea bombyeina* (King ex Hoof.f.) Kosterm.; dalam marga *Persea* Mill. satu nama baru, dua kombinasi baru dan satu jenis baru diciptakan. Dalam marga *Phoebe* Nees satti kombinasi baru dadi duj jenis baru diuulkan.

ACTINODAPHNE Nees

Actinodaphne forrestii (Allen) Kosterm., *comb. & stxtt. nov.*

Actinodaphne reticulata vac. *forrestii* Allen in *Annals Missouri Bot. Gard.* 25: 412. ISSB. - Typus: *Forrest 18827* (AA, K).

The species differs from *A. retioulata*, by the larger and thicker leaves, which are not reticulate, but only show some "fielded" pattern, the brown sublanuginose tomentum and the much shorter fruit pedicel-

* Part I appear in *Reinwardtia* 7: 201-356. 196E; part II in *ibid.* 451-635. 1969; part III in *ibid.* 8: 21-106. 1070.

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