

STUDIES IN THE LAURACEAE. II¹
SOME CRITICAL AND NEW SPECIES OF CINNAMOMUM
AND NEOCINNAMOMUM

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Cinnamomum Camphora (L.) Nees & Eberm. Handb. Med. Pharm.
Bot. **2**: 430. 1831; Meissner in DC. Prodr. **15**¹: 24. 1864.

Laurus Camphora Linn. Sp. Pl. 369. 1753.

Camphora officinarum Nees in Wallich, Pl. As. Rar. **2**: 72. 1831.

DISTRIBUTION: tropical Asia and Malaya.

Since the species is so wide-spread and well known, it is unnecessary to include here a citation of specimens.

Cinnamomum Camphora Nees & Eberm. var. **glaucescens** (Braun)
Meissner in DC. Prodr. **15**¹: 24. 1864; Nakai, Bot. Mag. Tokyo **41**:
519. 1927, excl. synonym.; Kamikoti, Ann. Rep. Taihoku Bot. Gard.
3: 79. 1933, "comb. nov."; Ouchi, Sylvia **3**: 125. 1932.²

Camphora officinarum var.? *glaucescens* Braun, Verh. Preuss. Gartenb.
Ver. **21**: 77. 1852.

DISTRIBUTION: Japan and southeastern China.

CHINA. F u k i e n : L. Y. Tai 11473; H. H. Chung 4550; S. T. Dunn 1164 (H. H. 3485). C h e k i a n g : O. Warburg 1887, 6647; Y. Y. Ho 972; S. Chen 197, 2971; R. C. Ching 4790, 5153; H. C. Cheo 14586; Y. L. Keng 402; T. M. Tsui 302. K w a n g t u n g : C. O. Levine 399, 661, 3289, 3256, 1269; Y. Tsiang 200; W. Y. Chun 7300. H u n a n : H. Handel-Mazzetti 591 (11748); W. T. Tsang 23678.

A portion of Wallich's no. 2604, cited by Meissner in De Candolle's Prodr. as *Cinnamomum Camphora*, from the Meissner herbarium, and now in the New York Botanical Garden, is a fragmentary specimen which apparently at one time had a flower cluster. The odor of this, however, is not strictly a camphor odor, but rather more turpentine-like, which is the description Braun gives for *Camphora officinarum* var.?

¹Ann. Missouri Bot. Gard. **25**: 361-434. 1938.

²Ouchi made *C. camphoroides* Hayata a synonym of var. *glaucescens*. Hayata states that except for its densely flowered terminal branches, *C. camphoroides* resembles *C. Camphora*. Presumably the former yields camphor. Braun says nothing concerning the camphor-yielding quality of the variety *glaucescens*, but comments upon the turpentine-like odor of the leaves. The inflorescence of *C. glaucescens* was not examined, but no specimens at hand having the terebinth odor show a strictly terminal inflorescence. For the present, then, Hayata's species must stand.

glaucescens. Braun states that he has not examined the flowers of the specimen, and is not sure of its value as a species or a variety.

Zollinger no. 2141 from the Meissner herbarium also (fragment at New York), and cited in De Candolle's *Prodromus* as *C. Camphora glaucescens*, has a distinct camphor odor. Since, as far as can be determined no author has commented on a discrepancy between the publication and the specimens in De Candolle's herbarium, the natural conclusion is that there has been a confusion of labels on the New York specimens. There is another possibility. On the same sheet with Wallich 2604 is a specimen with the label marked "Hort. Bot. Berolin. *C. officinarum* var.? *glaucescens* in Herb. Kunth." The specimen has the unmistakable odor of camphor. It is possible that these two labels were reversed in mounting. That, however, does not explain the mislabeling of the specimen called Zollinger 2141. It remains only to await complete examination of the material in the De Candolle herbarium, before a definite conclusion may be reached. As is the case with several species, when in the dried state, the odor seems of doubtful value. It is probable that the odor of the bark is not constant within the species. It has been discovered that some strains of *C. Camphora* do not yield true camphor.¹

The numbers cited above under the variety *glaucescens*, have the odor which is supposed to be characteristic of the variety, and the leaves are more or less glaucescent on the lower surface.

Cinnamomum nominale Hayata² also has been placed under *Cinnamomum Camphora* var. *glaucescens*, but should probably be kept separate, judging from the description. *Cinnamomum nominale* is a shrub, and does not yield camphor. The inflorescence in contrast to that of *C. camphoroides* is loose, few-flowered and axillary. There are other less striking differences revealed upon detailed examination.

Cinnamomum Simondii Lecomte in *Nouv. Arch. Mus. Hist. Nat. Paris* ser. V, **5**: 73. 1913; *Fl. Gén. Indoch.* **5**: 111. 1914; Liou, *Laurac. Chine Indoch.* 26. 1932.

DISTRIBUTION: French Indo-China and western China.

FRENCH INDO-CHINA. T o n k i n : *D. Simond* 190 (holotype Paris; photo. and fragm. AA). C H I N A. S z e c h u a n : *E. H. Wilson* 5778. K w a n g s i : *W. T. Tsang* 21986. Y u n n a n : *A. Henry* 11960 B.

¹Burkill, *Dict. Econ.* 1: 548. 1935.

²*Cinnamomum nominale* Hayata, *Ic. Pl. Formosa* **3**: 160. 1913.

Cinnamomum Camphora nominale Hayata in Matsumura & Hayata, *Enum. Pl. Formosa* 349. 1906; *Jour. Coll. Sci. Tokyo* **22**: 349. 1906; Hayata, *Ic. Pl. Formosa* 6, suppl.: 62. 1917; Kamikoti, *Ann. Rep. Taihoku Bot. Gard.* **3**: 78. 1933, "comb. nov."

A species known only from Tonkin and western China. Wilson no. 5778 cited by Gamble¹ as *C. inunctum* does not seem to belong to the latter, but to *C. Simondii*. The leaves are more or less membranous, uniformly ovate, long-acuminate and often falcate, and the inflorescence densely flowered, slender and graceful.

***Cinnamomum platyphyllum* (Diels), comb. nov.**

Machilus platyphylla Diels, Bot. Jahrb. **29**: 348. 1901; Liou, Laurac. Chine Indoch. **50**. 1932.

DISTRIBUTION: known only from western China.

CHINA. Szechuan: *C. Bock & A. v. Rosthorn* 1981 (holotype of *Machilus platyphylla*, Berlin; isotype, AA); *F. T. Wang* 22673.

This species, as far as the herbarium material which I have examined is concerned, is represented by the type collection and one other specimen. The isotype of *Machilus platyphylla*, so described, is a flowering specimen on which are a few very young fruits. The calyx-lobes are completely caducous, leaving the tube which enlarges to form the small cupule characteristic of the genus *Cinnamomum*, rather than *Machilus*. Wang no. 22673 in fruit is the only specimen which approaches the Bock and Rosthorn specimen, and Wang's plant is without a doubt a *Cinnamomum*. There are a few differences in the leaves of the two specimens. Diel's type has more spreading lateral veins on the whole; is more glaucous on the under surface of the leaves; and the bases of the latter are less auriculate. In every other respect, the two are alike. Since a great deal of leaf variation occurs throughout the family, it seems permissible to consider the two conspecific. The infrutescence² is, like the inflorescence, very slender and fragile, the calyx enlarging only slightly to form a small somewhat flaring cupule 2.5–4.0 cm. broad. The fruit is globose, 1 cm., more or less, in diameter.

The species belongs near *C. Bodinieri*, and resembles it in having dense pubescence on the lower surface.

***Cinnamomum glanduliferum* (Wall.) Nees in Wallich, Pl. As. Rar.**

2: 72. 1831; Meissner in DC. Prodr. **15**¹: 25. 1864; Hooker f., Fl. Brit. Ind. **5**: 135. 1886.

Laurus glandulifera Wallich, Trans. Soc. Med. Phys. Calcutta **1**: 45, 51, t. 1. 1825.

Cinnamomum Cavaleriei Lév., Fedde, Rep. Spec. Nov. **10**: 370. 1912.

Machilus Dominii Lév., Fedde, Rep. Spec. Nov. **13**: 174. 1914.

¹Gamble in Sargent, Pl. Wilson. **2**: 68. 1914.

²Fructus globosus, 7–9 mm. longus, 1 cm. diam., calyce leviter dilatato discoideo, margine integro.

DISTRIBUTION: southeastern Asia.

INDIA. N e p a l : *N. Wallich* 2601 (holotype of *Laurus glandulifera*, Kew; photo. and fragm. AA). B u r m a : *F. G. Dickason* 5957. CHINA. Y u n n a n : *Delavay* 4105; *G. Forrest* 7506, 7787, 10630, 16517, 17723; *H. Handel-Mazzetti* 53 (10233); *J. F. Rock* 8816, 3009; *E. E. Maire s.n.* (holotype of *Machilus Dominii*, Edinb.; photo. and fragm. AA); *C. Schneider* 2426. S z e c h u a n : *C. Schneider* 606; *F. T. Wang* 23648. K w e i c h o w : *J. Cavalerie in Herb. Bodinier* 2630; *J. Cavalerie* 1084 (holotype of *Cinnamomum Cavaleriei*, Edinb.; photo. and fragm. AA). E. T i b e t & s o u t h - w e s t e r n C h i n a : *G. Forrest* 26388. H a i n a n : *H. Fung* 20161.

For discussion see *C. Parthenoxylon* below.

Cinnamomum Parthenoxylon (Jack) Nees in Wallich, Pl. As. Rar.

2: 72. 1831; Meissner in DC. Prodr. 15¹: 26. 1864; Hooker f., Fl. Brit. Ind. 5: 135. 1886.

Laurus glandulifera sensu Jenkins ex Meissner in DC. Prodr. 15¹: 26. 1864. Non Wallich.

Laurus Parthenoxylon Jack, Malay. Misc. 1⁵: 28. 1820; Bot. Misc. 2: 76. 1830.

Phoebe latifolia Champion, Hooker's Jour. Bot. 5: 197. 1853.

DISTRIBUTION: southeastern Asia and Malaya.

MALAY PENINSULA. P e n a n g : *N. Wallich* 2602 (holotype of *Laurus Parthenoxylon* Kew; photo. and fragm. AA; isotype Gray). INDIA. Hort. Bot. Calcutta, Herb. Jenkins, (specimen in Kew). CHINA. S z e c h u a n : *T. T. Yü* 1107. K w a n g s i : *A. N. Steward & H. C. Cheo* 591, 781. K w e i c h o w : *H. Handel-Mazzetti* 332 (10970). H u n a n : *H. Handel-Mazzetti* 346 (11059). K w a n g t u n g : *C.C.C.* 12646; *S. K. Lau* 2181; *Y. Tsiang* 2337. H a i n a n : *W. Y. Chun* 5919, 5957; *F. C. How* 71851; *H. Y. Liang* 63486, 64146, 64328, 64830; *C. Wang* 35093. H o n g k o n g : *Champion* 496 (holotype of *Phoebe latifolia*, Kew; photo. and fragm. AA); *W. Y. Chun* 5075, 5078, 6623, 6625; *Y. Tsiang* 271; *Wilford s.n.*; *C. Wright s.n.*

Cinnamomum Parthenoxylon (Jack) Nees and *C. glanduliferum* (Wall.) Nees have been misinterpreted and interchanged for so many years that it is logical that they should be discussed together. Wallich's List no. 2601 (type of *Laurus glanduliferum*) and 2602 (type of *Laurus Parthenoxylon*) have been photographed and hence are available. From the photographs, however, it is difficult to detect much difference be-

tween the two. The descriptions given by Nees show a difference in inflorescence, that of *C. Parthenoxylon* being terminal and corymbose and foliolate before anthesis; that of *C. glanduliferum* being axillary and paniculate, with the lobes pubescent on the outer surface. The leaves of the former are subtriplinerved, dull on the upper surface, eglandular; of the latter subtrinerved, shining above, bluish grey glaucous below, with glands in the axils of the veins.

The subsequent description by Meissner mentions glands or swollen portions in the axil being sometimes present.

From the descriptions, photos and leaf fragments available, I have made a separation of the two species, with the result that, *C. Parthenoxylon* appears largely in Kwangtung and Hainan, and Malayan islands, while *C. glanduliferum* is confined to India and the Malay Peninsula. The former is more variable in leaf shape, size and venation. The latter seems to be more uniform in all three leaf characters. The fruit of the specimens which I have called *C. Parthenoxylon* is globose, 6–8 mm. in diam., subtended by an enlarged narrowly elongated conical calyx tube 1 cm. or less in length, 1 mm. wide at base to 4 mm. at summit, rugose and longitudinally striate.

The inflorescence of *C. glanduliferum* is less compact than that of *C. Parthenoxylon*; the pedicel is frequently recurved; the fruit globose, about 1 cm. in diam., subtended by an enlarged, elongated calyx-tube, conical in shape, usually less than 1 cm. long, 1 mm. wide at base, flaring at summit to 5 mm. forming a shallow undulating disc.

Cinnamomum Pseudosassafras Meissner has been referred to *C. Parthenoxylon*. I have at hand the type quoted by Hooker¹, Griffith 623, from Mergui, which does not seem to belong with *C. Parthenoxylon*, or with any variation of it or with *C. glanduliferum*. Some material from Almora, India matches this very well. More representatives, however, are necessary in order to re-establish *C. Pseudosassafras* as a legitimate species.

Cinnamomum japonicum Sieb. ex Nees, Syst. Laurin. 79. 1836, pro syn.; Nakai, Bot. Mag. Tokyo 41: 517. 1927; Ouchi, Sylvia 3: 125. 1932, excl. syn.

Cinnamomum pedunculatum Nees, l. c., pro parte.

Laurus Camphora, in herb. Zuccarini, non Linn.

DISTRIBUTION: Japan, Formosa, Corea, Liukiu Islands.

JAPAN: Siebold, in 1842 (possibly isotype of *Laurus Camphora*, Gray Herb.?)

¹Hooker f., Fl. Brit. Ind. 5: 135. 1886.

For years, the name *Cinnamomum pedunculatum* has been attached to a variety of specimens from all over southeastern Asia. It has not been clear exactly what did comprise the true species. Nakai first established the identity of *Laurus pedunculata* Thunberg, upon which Nees, apparently, without having seen the specimen, based *C. pedunculatum*. The specimen, however, as Nakai states, is *Hedyotis pedunculata* (Thbg.) Nakai. Nees cites *C. japonicum*, a specimen he has seen in Siebold's herbarium, and which he considers conspecific with *Laurus pedunculata*. Meissner, in De Candolle's Prodrum, adds a short description of the flower. The resulting confusion has persisted for almost a century. The following will be an attempt to delineate the species heretofore passing as *C. pedunculatum*. *Cinnamomum pedunculatum* of Nees, now known as *C. japonicum*, occurs only in Japan, Formosa, Corea and the Liukiu Islands. There are records of misnamed *C. pedunculatum* from China, but these specimens are found to be *C. Burmanni*. The leaves of *C. japonicum* are long-petiolate, and reticulate. The prominence of the reticulations depending on the coriaceous quality of the leaves, or perhaps on the amount of oil present. It is not a stable character, in this species at least. The flowers are arranged in long-pedunculate umbels. The twigs give off a distinct odor of camphor when the bark is scraped. The branches bearing mature fruit are heavier, the leaves larger and more coriaceous, enough so that at first glance they might be thought to be a different species. The Liukiu Island specimens are heavier and larger than the Japanese, but show the same type of fruit. All have some kind of camphor odor, except two specimens; one collected for L. Boehmer in 1904, and the other by E. H. Wilson, no. 8115. These two have a sweetish odor. Again this may be due to circumstance of growth, or it may be that this is indeed another strain with the fragrant essential oil predominant. Since there are only two of this type at hand, no further disposition of them is made, than the mention of the difference in odor. There is a group of plants collected in Corea, which show differences from the Japanese *C. japonicum*. They are coarser, heavier plants, even in the flowering stage, the leaves vary in shape and have a tendency to become acuminate. Perhaps this group belongs near *C. osmophloeum* Kanehira, but it is difficult to say definitely without more material of the latter. The leaves are smaller than in the latter species; are usually less coriaceous and are reticulate in the manner of *C. japonicum*. The twigs have a mixed camphor and spice odor, and are shining red-brown. These have been placed for the time being under *C. japonicum*.

Another species belonging in the *C. japonicum* group is *C. Sieboldii*

Meissner. The leaves are not reticulate; they are ovate to lanceolate-oblong, coriaceous and glaucous on the lower surface. The inflorescence, which is strikingly different from that of the former, is composed of numerous slender, axillary, subumbellate racemes, with large glabrous flowers on very slender, long pedicels. This species occurs in Japan only.

Cinnamomum Burmanni (Nees) Blume, Bijdr. 569. 1825; Hooker f., Fl. Brit. Ind. **5**: 136. 1886; Chun, Contr. Biol. Lab. Sci. Soc. China **1**⁵: 13. 1925; Liou, Laurac. Chine Indoch. 33. 1932.

Laurus dulcis Roxburgh, Hort. Bengal. 30. 1814, nom. nud.; Wallich, List No. 2581B. 1830, nom. nud.; Roxburgh, Fl. Ind. **2**: 303. 1832.

Laurus Burmanni C. G. & T. F. L. Nees, Disput. Cinn. 57, t. 4. 1823.

Cinnamomum dulce Nees in Wallich, Pl. As. Rar. **2**: 75. 1831.

Cinnamomum chinense Blume, l. c.

DISTRIBUTION: southeastern Asia and Malaya.

CHINA: H a i n a n : W. Y. Chun 5865, 5943; N. K. Chun & C. L. Tso 44280, 44323, 44338; H. Fung 20173, 20381; F. C. How 71377, 71876; H. Y. Liang 64447, 64448, 64513, 65124; W. T. Tsang 82, 498; C. Wang 34284, 34584, 35013, 36164. K w a n g t u n g : C. O. Levine & G. W. Groff 136; T. K. Ping 10974; Y. Tsiang 1786; C. L. Tso 21466; C. L. Tso & Y. Tsiang 2042; T. M. Tsui 40. K w a n g s i : A. N. Steward & H. C. Cheo 281. FRENCH INDO-CHINA. A n n a m : A. Chevalier 41220. INDIA: N. Wallich 2581B (syntype of *Laurus dulcis* Roxb., isotype Kew; photo. and fragm. AA).

Numerous specimens from Hainan and Kwangtung as well as other provinces of China have been placed under *Cinnamomum pedunculatum* Nees, which is now known as *C. japonicum* Sieb. These are not *C. japonicum* but belong under *C. Burmanni* Bl. The odor of the young stems is that of a very sweet sandal-wood. That of the bark is distinctly cinnamon-like. It has been known for centuries that different portions of the tree, as Loureiro mentions in a discussion of *Laurus Cinnamomum*¹ yield oil of different qualities.

The specimens cited below are similar in every respect to *C. Burmanni*, but the odor is not that of cinnamon or camphor, but a mixture of both. Here is a problem which may be one of those brought up when hybrids are formed naturally or through cultivation; or the group of plants under discussion may be a different strain of the same species. It is an interesting fact that these specimens, when the bark of the twigs is first scraped, give a disagreeable camphor-spice odor, which, after

¹Loureiro, Fl. Cochinch. **1**: 249. 1790; ed. 2. 309. 1793.

several minutes, becomes delicately spicy. This would indicate definitely the presence of two elements in the bark; one the oil of camphor, which is extremely volatile; the other, the oil of cinnamon, which is more inert. For the present, these specimens are not separated even as variety, but attention is called to this point. The majority of these plants occur in Kwangtung. It is interesting to note from field labels, that the colloquial name given to this plant in Kwangtung is "False Cinnamon Tree".¹

CHINA. H a i n a n : W. Y. Chun 118, 7327, 30427, 30524; C. Ford, s.n.; S. K. Lau 788, 2706; S. P. Ko 52121; C. O. Levine 173, 343, 400, 449, 969; F. A. McClure 7956; K. P. To & Y. Tsiang 12961; W. T. Tsang 32; C. L. Tso 21479; C. Wang 407. F u k i e n : H. H. Chung 1329, 1658, 8427. H u p e h : H. C. Chow 48.

That a great variation occurs in this species can be ascertained by glancing through the specimens represented under the species. Liou, from the Indochinese material alone has separated four varieties, α , β , γ and δ , on leaf texture and pedicel length, for the most part. Since the species occurs in such profusion, not only in Indochina but in other parts of tropical Asia and Malaya as well, and is widely cultivated, it is not unreasonable to suppose that hybridization has produced many variants. Only the one variety following is recognized by the author.

Cinnamomum Burmanni Blume var. **angustifolium** (Hemsl.), comb. nov.

Cinnamomum pedunculatum Nees var. *angustifolium* Hemsley, Jour. Linn. Soc. Bot. **26**: 373. 1891; Chun, Contr. Biol. Lab. Sci. Soc. China **15**: 14. 1925; Liou, Laurac. Chine Indoch. **37**. 1932; Allen, Jour. Arnold Arb. **17**: 325. 1936.

Cinnamomum linearifolium Lecomte, Nouv. Arch. Mus. Hist. Nat. Paris, sér. V, **5**: 79. 1913; Liou, Laurac. Chine Indoch. **32**. 1932.

?*Laurus Heyneana* Wallich, List No. 2576. 1930, nom. nud.

?*Cinnamomum Heyneanum* Nees in Wallich, Pl. As. Rar. **2**: 76. 1831; Hooker f., Fl. Brit. Ind. **5**: 136. 1886.

DISTRIBUTION: southern Asia.

CHINA. K w e i c h o w : J. Cavalerie 3082 (holotype of *C. linearifolium*, Paris; isotype, NY; photo. AA). S z e c h u a n : E. Faber 575 (syntype of *C. pedunculatum* var. *angustifolium*, Kew; isotype, NY; photo. AA). H u p e h : A. Henry 1193, 1353 (syntypes of *C. pedunculatum* var. *angustifolium*, Kew; isotypes, Gray); A. Henry 1293, 2759, 3466, 3881 (syntypes of *C. pedunculatum* var. *angustifolium* not seen, Kew). INDIA: N. Wallich 2576 (iso-holotype of *Laurus Heyneana*, Kew; photo. AA).

¹Burkill, Dict. Econ. **1**: 546. 1935.

The variety does not in any way resemble what has been known as *C. pedunculatum* now known as *C. japonicum*. Although a photograph only of a sterile branch of *Laurus Heyneana* Wall. is available, it seems probable that this is the same as *C. Burmanni angustifolium*.

Cinnamomum Loureirii Nees, Syst. Laurin. 65. 1836 (based on *Laurus Cinnamomum*); Meissner in DC. Prodr. 15¹: 16. 1864; Lecomte, Not. Syst. 2: 336. 1913; Nouv. Arch. Mus. Hist. Nat. Paris sér. V, 5: 80. 1913; Merrill, Trans. Am. Phil. Soc. 14²: 164. (Comm. Loureiro Fl. Cochinch.) 1935.

Laurus Cinnamomum sensu Loureiro, Fl. Cochinch. 249. 1790; ed. 2. 309. 1793, non Linn.

Cinnamomum obtusifolium Nees var. *Loureirii* Perr. & Eberh., Bull. Sci. Pharm. 16: 574, t. 3. 1909; Burkill, Dict. Econ. 1: 553. 1935.

DISTRIBUTION: French Indo-China.

FRENCH INDO-CHINA. Annam: J. & M. S. Clemens 3523. Tonkin: A. Petelot 1949.

This is a much disputed species, since there is no extant type. The material which seems to answer the description given by Loureiro, comes from near the type locality in Indochina. It has a sweet sandal-wood odor. Loureiro mentions the fact that it is fairly rare, which is certainly true, if one can judge from the scarcity of herbarium specimens. The *Cinnamomum Loureirii* from Japan cited by Nees, bears no resemblance to the Indochinese specimens that conform to Loureiro's original description. The Japanese specimens have a sweet spicy odor. It would seem that Nees has merged under one name two distinct entities, and that the true *C. Loureirii* as Merrill¹ suggests should refer to Loureiro's specimen and not to the Japanese plant. Thus the Japanese plant should have another name.

At this point it seems pertinent to discuss the so-called Saigon cinnamon used commercially, and described by O. A. Farwell from the bark alone as *Camphorina saigonensis*.² As Merrill³ commented in his discussion on the subject, the commercial cinnamon must necessarily be a wide-spread species, hence it cannot have escaped the notice of collectors and taxonomists for all of these years. Chevalier believes that it is either purchased from Chinese or Annamese merchants and thus brought into the port of Saigon, or else it is furnished by *C. Loureirii*. This latter belief would indicate that *C. Loureirii* is a wide-spread species, a fact belied by the scarcity of herbarium specimens. Dr. Heber W.

¹Merrill in Trans. Am. Phil. Soc. 14²: 164 (Comm. Loureiro Fl. Cochinch.), 1935.

²O. A. Farwell, Druggists Circular 62: 535. 1918.

³Merrill, Bot. Gaz. 70: 84. 1920.

Youngken of the Massachusetts College of Pharmacy, of Boston, very kindly examined a specimen of bark sent by Park, Davis Co., the so-called Saigon cinnamon of commerce. This he announced to be different microscopically from the *Cinnamomum Loureirii* bark with which he is familiar. At the same time, he examined the bark of *C. Burmanni* which has been mislabeled *C. pedunculatum*. The latter species is wide-spread, with a definite cinnamon odor. It was thought that this might be the Saigon cinnamon. Dr. Youngken, however, stated that it in no way resembled the latter microscopically. It is possible that since there has been such a demand for the product, and the tree has been cultivated for so many years, that there is a great deal of hybridization between the various strains. This fact might account very reasonably for the difference in structure of the bark as shown on microscopic examination. Thus *Cinnamomum Burmanni* seems to be the most logical species to assume as being the one which Farwell used in his description. Unless we accept this, we are no nearer the solution of its identity than we were at the outset. Farwell most curiously based his new binomial strictly on a bark specimen from commercial sources.

Cinnamomum Tamala Nees & Eberm. Handb. Med. Pharm. Bot. **2**: 426. 1831; Nees in Wallich, Pl. As. Rar. **2**: 75. 1831; Meissner in DC. Prodr. **15**¹: 17. 1864; Hooker f., Fl. Brit. Ind. **5**: 128. 1886; Hemsley, Jour. Linn. Soc. Bot. **26**: 373. 1891; Chun, Contr. Biol. Lab. Sci. Soc. China **1**⁵: 14. 1925; Liou, Laurac. Chine Indoch. 34. 1932.

Laurus Cassia Wallich, List No. 2580B. 1830, nom. nud.

Laurus albiflora Wallich, List No. 2569A. 1830, nom. nud.

Cinnamomum albiflorum Nees in Wallich, Pl. As. Rar. **2**: 75. 1831; **3**: 36. 1832; Syst. Laurin. 58. 1836; Lecomte, Nouv. Arch. Mus. Hist. Nat. Paris, sér. V, **5**: 75. 1913; Fl. Gén. Indoch. **5**: 113. 1914; Liou, Laurac. Chine Indoch. 34. 1932.

Cinnamomum Tamala Nees var. *albiflorum* Meissner in DC. Prodr. **15**¹: 18. 1864; Liou, Laurac. Chine Indoch. 34. 1932, pro syn.

DISTRIBUTION: southeastern Asia.

INDIA. Silhet: *N. Wallich 2580B* (iso-holotype of *Laurus Cassia*, Kew; photo. AA). Nepal: *N. Wallich 2569 A* (iso syntype of *Laurus albiflora*, Kew; photo. AA).

Since Nees' time *Cinnamomum Tamala* and *C. albiflorum* have been confused. Meissner in 1864 made *C. albiflorum* a variety of *C. Tamala*. Hooker in 1886 reduced *C. albiflorum* to synonymy under *C. Tamala*. Lecomte re-established the former as a species. The reasons he gave, however, are the differences in the inflorescences of the two and in the leaves. These differences, in view of considering the species a wide-

spread entity instead of a localized one, become not specific in their importance but rather fall into place as local variations of a single species. Lecomte has mentioned the fact that the lobes of the corolla are completely caducous in *C. Tamala* and incompletely so, forming the truncate margin of the fruit cupule in *C. albiflorum*. The specimens at hand do not show this.

Near *C. Tamala* is, according to Parker¹, *C. cacharensis* from India, the difference being that the latter species has more slender panicles, smaller flowers with relatively broader perianth lobes, which are completely deciduous in fruit, leaving the cup with an entire margin. The margin in *C. Tamala* is truncated at the base from the cupule.

Cinnamomum Wilsonii Gamble in Sargent, Pl. Wilson. 2: 66. 1914; Chun, Contr. Biol. Lab. Sci. Soc. China 1⁵: 15. 1925; Liou, Laurac. Chine Indoch. 30. 1932.

Cinnamomum Wilsonii var. *multiflorum* Gamble in Sargent, Pl. Wilson. 2: 67. 1914; Liou, Laurac. Chine Indoch. 30. 1932.

DISTRIBUTION: central China.

CHINA. H u p e h : *E. H. Wilson* 2003, 2098, 2227, 5183 (syn-types of *Cinnamomum Wilsonii*, AA); *E. H. Wilson* 3712 (holotype of *Cinnamomum Wilsonii* var. *multiflorum*, AA).

Regarding *C. Wilsonii* and its variety it might be well to mention a difficulty which arose while they were being studied. The distinctions which Gamble noted as separating the variety from the species do not prove to be constant for the numbers mentioned. Wilson no. 2227, for example, is certainly nearer the variety than the species. It is possible, however, that the labels for the two numbers were interchanged in handling.

Cinnamomum Jensenianum Handel-Mazzetti, Anz. Akad. Wiss. Wien Math.-Nat. 1921: 63 (Pl. Nov. Sin. Forts. 10: 1); Symb. Sin. 7¹: 249. 1931; Liou, Laurac. Chine Indoch. 39. 1932.

DISTRIBUTION: central China.

CHINA. H u n a n : *H. Handel-Mazzetti* 12287 (holotype of *Cinnamomum Jensenianum*, Vienna; isotype, AA).

Cinnamomum Lioui, spec. nov.

Cinnamomum albiflorum Nees var. *kwangtungensis* Liou, Laurac. Chine Indoch. 35. 1932.

Arbor 13 m. alta, ramis fuscis teretibus, odore camphorae, glabrescentibus vel glabris, ramulis subangulatis pubescentia brevi adpressa pallide fusca tectis. Folia elliptica, 4–6 cm. longa, 1.5–2.3 cm. lata,

¹Parker in Fedde, Rep. Spec. Nov. 31: 126. 1932.

supra opaca, subtus pallida, subcoriacea, acutissime acuminata, cuneata, subtus nervis sparse pubescentibus exceptis glabra, 3-pli-nervia, nervis supra inconspicuis subtus prominentibus, circa 4 mm. supra basin laminae divergentibus, lamina plerumque sensim in petiolum attenuata, petiolo circa 1 cm. longo, tenui pubescente. Inflorescentia axillaris et subterminalis, paniculato-cymosa, foliis longior, 6–10 cm. longa, subflavo-cana, pubescens, axi primario paniculata ramulorum paribus 2–3, axibus II-III ordinis cymosis, ultimis cymulis 3-vel rarius 2-floris; pedunculo ad 5.5 cm. longo, pedunculis 2ndi ordinis apicem versus decrescentibus, infimis circa 12 mm. longis; pedicellis 2–3 mm. longis. Flores subviridi-cani, 3–4 mm. longi, lobis 6 ad 3 mm. longis ovatis obtusis, 3 exterioribus quam interiora brevioribus, staminibus 9, 2 mm. longis, antheris oblongis filamenta aequantibus, filamentis in facie posteriore sparse pubescentibus, 6 introrsis, 3 interioribus biglandulosis extrorsis, staminodiis 3 cordatis stipitatis, stipite in facie posteriore pubescente; stylo quam ovarium ovoideum triente longiore; stigmate orbiculari in apice styli lateraliter posito. Fructus ignotus.

DISTRIBUTION: Kwangtung.

CHINA. K w a n g t u n g : Lok Chong, *C. L. Tso* 20807, May 28, 1929, tree 13 m. high, diam. 50 cm. (holotype of *C. albiflorum* var. *kwangtungensis*, NY).

Liou described this specimen as a variety of *C. albiflorum*.¹ It does not seem to be very closely related to the latter, but to be worthy of specific rank. Since there is already a *C. kwantungense* it is named after Liou, author of the variety and a monographer of the family. *Cinnamomum Lioui* has a slender graceful flowering branch as compared with the rather stiff inflorescence of *C. albiflorum*. The leaves of the latter are 10–11 cm. in length and the flowers measure 5–6 mm. long, in contrast to the leaves of *C. Lioui*, which are 6 cm. long at most, and to the flowers which are never more than 3.5 mm. long. The inflorescence of *C. Lioui* projects several centimeters beyond the leaves, whereas that of *C. albiflorum* is rarely even with the leaves. *Cinnamomum Lioui* has a camphor-like odor whereas *C. albiflorum* has a faint delicate perfume.

Cinnamomum tonkinense (Lecomte) A. Chevalier, Bull. Econ. Indoch. **21**: 856. 1918.

Cinnamomum albiflorum Nees var. *tonkinensis* Lecomte, Fl. Gén. Indoch. **5**: 115. 1914.

DISTRIBUTION: known only from type locality.

¹*Cinnamomum albiflorum* Nees is now a synonym of *C. Tamala* Nees & Eberm.

FRENCH INDO-CHINA. T o n k i n : *Balansa s.n.* (holotype of *C. albiflorum* var. *tonkinensis*, Paris; photo. AA).

This species has smaller leaves, more definitely lanceolate and short panicles not exceeding 4 cm., axillary only, and not borne near the summit of the branches. In respect to the position of the inflorescence, the species is similar to those specimens of *C. Wilsonii* which occur in central China. It is doubtful whether *C. tonkinensis*, in view of the previous discussion, is worthy of specific rank. More abundant material from Indochina will aid in this decision.

Cinnamomum Cassia (Nees) Nees & Eberm. ex Blume, Bijdr. 570. 1825; Handb. Med. Pharm. Bot. **2**: 424. 1831; Meissner in DC. Prodr. **15**¹: 12. 1864; Hooker f., Fl. Brit. Ind. **5**: 130. 1886; Lecomte, Fl. Gén. Indoch. **5**: 116, fig. 11. 1914; Chun, Contr. Biol. Lab. Sci. Soc. China **1**⁵: 13. 1925; Liou, Laurac. Chine Indoch. 28. 1932.

Laurus Cassia C. G. & T. F. L. Nees, Cinn. Disput. 53. t. 3. 1823, excl. syn. pl.

Cinnamomum aromaticum Nees in Wallich, Pl. As. Rar. **2**: 74. 1831.

DISTRIBUTION: China? Cultivated in all tropical Asia and Malaya.

BRITISH INDIA. M a l a b a r : ?*Rheede s. n.* (syntype of *Laurus Cassia*, Leiden? not seen.) CHINA. K w a n g t u n g : W. T. Tsang 1201. K w a n g s i : R. C. Ching 8289.

This species also, has been confused with the so-called *C. pedunculatum*, or *C. Burmanni*. *Cinnamomum Cassia* is easily distinguished. First, by the very strong odor of pure spice, unadulterated by any other element; second, by the extremely large leaves, shining above, with veins very prominent below; the large spreading inflorescence, and finally the calyx enlarging to form a deep cupule with a scalloped margin. There are very few specimens known thus far from China.

I have at hand a photograph of *Cinnamomum Cassia* agreeing with the illustration of Nees' publication of 1823. Apparently the photograph is of an authentic specimen from Blume's herbarium. Blume presumably had access to the *Laurus Cassia* of Nees, but Nees mentions three specimens, Rheede's from British India, Loureiro's from Cochinchina which refers to *C. Loureirii*, and Viery's from Sumatra. Which of these is represented by the photograph is impossible to determine, without consulting Blume's herbarium.

Cinnamomum ovatum, spec. nov.

Arbor 22 m. alta, ramis glabris teretibus striatis, odore diluto-aromatico, ramulis glabris subangulatis. Folia ovata, 4–8 cm. longa,

2.5–4.5 cm. lata, viridia, supra nitida, obtusa vel acuta, glabra, 3-pinnaria, nervis supra basim laminae varie divergentibus, inconspicue reticulata, petiolo 1–2 cm. longo, glabro. Inflorescentia subterminalis vel axillaris cymosa subumbellata, 4–6 cm. longa, pubescentia sparse adpressa, 3-ramis, ramo centrali unifloro, ramis 2 lateralibus 2–3-floris, pedicellis 6–10 mm. Flores ignoti. Calyx dilatatus margine integro vel undulato, fructum immaturum includens.

DISTRIBUTION: Hainan.

CHINA. H a i n a n : Dung Ka to Wen Fa, alt. 1700 ft. 1932–33, tree 22 m. high, diam. 50 cm., *N. K. Chun & C. L. Tso 43739* (AA).

This species is similar in habit to *C. Burmanni*, the difference being in the ovate leaves and the fruit cupule which is entire. In leaf shape it resembles *C. Caryophyllus* (Lour.) Moore. Until flowering material is collected, no further comparison can be made. The characters exhibited by the fruiting specimen place it without doubt in the genus *Cinnamomum*. Such striking characters as the above mentioned warrant a description on the fruiting specimen alone.

Cinnamomum Tsoi, spec. nov.

Arbor 12 m. alta, ramis teretibus glabris, odore aromatico terebinthino, ramulis teretibus, maturitate tomento fusco adpresso brevi crispo sparse tectis. Folia elliptico-lanceolata, 7–11 cm. longa, 1.5–3.5 cm. lata, fusco-viridia, coriacea, acuminata, basi cuneata, supra glabra, subtus pubescentia crispa sparsa, 3-pinnaria, subtus nervis valde prominentibus, nervis lateralibus ad marginem ramosis, petiolo 6–10 mm. longo maturitate glabro. Inflorescentia subterminalis vel axillaris paniculata, fere adpresse tomentosa. Flores ignoti; Fructus ellipsoideus, apiculatus, 1.5 cm. longus, minus quam 1 cm. in diam., glaber, cupula lignea circa 0.5 cm. longa margine integro subtentus.

DISTRIBUTION: Hainan.

CHINA. H a i n a n : Fan Yah, alt. 2400 ft., *N. K. Chun & C. L. Tso 44128*, 1932–33, tree 12 m. high, diam. 45 cm. (AA).

Superficially the species is similar to the following species, but differs in the type of inflorescence and pubescence, and the odor of the bark.

Cinnamomum Merrillianum, spec. nov.

Frutex 1 m. altus, ramis glabrescentibus vel glabris teretibus, odore acri aromatico, ramulis teretibus, pubescentia densa argenteo-sericea mox fuscescente et evanida tectis. Folia oblongo-lanceolata, 6–10 cm. longa, 1.5–2.3 cm. lata fusco-viridia, coriacea, attenuato-acuminata, basi rotundata ad cuneata, folia nova supra argenteo-sericea, matura

glabra, subtus pallide fusco-sericea, mox glabra, 3-ply-nervia nervis subtus valde prominentibus pubescentia primo argentea, mox subrufo-fusca, venis transversis obscuris, petiolo 5–12 cm. longo primo pubescente mox glabrescente vel glabro. Inflorescentia axillaris cymosa 1–3-flora, argenteo-sericea; pedunculis 0.5–2.5 cm. longis, pedicellis 3.5–5 mm. longis. Flores viridi-cani 3–4 mm. longi, lobis 6 ovatis 2 mm. longis intus strigosis; staminibus 9 circa 1 cm. longis, in facie posteriore pubescentibus, 3 interioribus biglandulosis extrorsis, glandulis stipitatis; staminodiis 3 triangularibus; ovario oblongo-ovoideo glabro 1 mm. longo, stylo gracili 1.5 mm. longo, stigmate obscure trilobato. Fructus ignotus.

DISTRIBUTION: Hainan.

CHINA. H a i n a n : *H. Y. Liang* 63752, Oct. 23, 1933, shrub 1 m., on mountain top, (AA).

A striking species, with silvery pubescence completely covering the young branchlets and inflorescence. *Cinnamomum Merrillianum* in leaf shape and pubescence resembles *C. Chingii*, but the inflorescence is few flowered, much shorter, never exceeding 2 cm. in length, and the leaves are smaller and narrower.

Cinnamomum Liangii, spec. nov.

Arbor plus quam 19 m. alta, ramis glabris teretibus striatis, odore suavi-aromatico, ramulis glabris angulatis. Folia elliptico-lanceolata, 6–13 cm. longa, 2.4–4 cm. lata, fusco-viridia, membranacea, acuminata, acuta vel fere rotundata, glabrata, 3-ply-nervia, nervis fulvis, supra basim laminae varie divergentibus, petiolo 5–7 mm. longo glabro. Inflorescentia subterminalis vel in ramulis brevibus lateralibus, simpliciter racemosa, 3–7 cm. longa, pedicellis 3–5 mm. longis. Flores ignoti. Fructus ellipsoideus, apiculatus, ad 1.3 cm. longus, 7–8 cm. diam., glaber, cupula brevi ad 3 cm. longa irregulariter crenulata glabra subtentus.

DISTRIBUTION: Hainan.

CHINA. H a i n a n : Seven Finger Mt., *H. Y. Liang* 61708, April 30, 1932, tree 19 m. high, diam. 4 m. (AA).

A species resembling *C. graciliflorum* Gamble from India as nearly as can be told from the photographs of the latter. The cupule of *C. Liangii*, however, is more shallow and the leaves less long-acuminate.

Cinnamomum curvifolium (Lour.) Nees, Syst. Laurin. 80. 1836; Meissner in DC. Prodr. 15¹: 23. 1864; Merrill, Trans. Am. Phil. Soc. 24²: 163 (Comment. Loureiro Fl. Cochinch.) 1935, pro parte.

Laurus curvifolia Lour. Fl. Cochinch. 252. 1790, ed. 2. 309. 1793.

Laurus pauciflora Wallich, List No. 2579. 1830, nom. nud.

Cinnamomum pauciflorum Nees in Wallich, Pl. As. Rar. 2: 75. 1831;
Hooker f., Fl. Brit. Ind. 5: 129. 1886.

Laurus recurvata Roxburgh, Hort. Bengal. 30. 1814, nom. nud.; Fl. Ind.
2: 301. 1832.

Cinnamomum recurvatum Wight, Ic. t. 133. 1839.

DISTRIBUTION: southeastern Asia.

INDIA. Silhet: *N. Wallich* 2579 (iso-holotype of *Laurus pauciflorum*, Kew; Gray). CHINA. ? (type of *Laurus recurvata* mentioned by Roxburgh without number or locality.)

Point for point, in his description of *Laurus curvifolia*, Loureiro has described a *Cinnamomum*, until two lines from the last: "ibique illorum quodlibet e 4 foraminibus emittens 4 filamenta tenuissima antherulis totidem, oblongis, 2-locularibus." The only discrepancy appears to be the "2-locularibus." Since it has been shown by Merrill in his Commentary on Loureiro's Flora, that Loureiro's descriptions are not always accurate, and since in every other respect the plant is a *Cinnamomum*, it may without hesitation be placed under that genus. Merrill has reduced *C. albiflorum* to *C. curvifolium*. The leaves of the former are not reflexed or incurved; nor are they obsoletely 3-nerved. The racemes are large rather than small. On the other hand, the leaves of *C. pauciflorum* or *C. recurvatum* are not obsoletely 3-nerved and they are opposite or nearly so. The description of *L. curvifolia*, however, seems to point toward the last two mentioned species.

Cinnamomum Appelianum Schewe in Handel-Mazzetti in Anz. Akad.

Wiss. Wien. Math.-Nat. 1924: 20 (Pl. Nov. Sin. Forts. 24: 1);

Symb. Sin. 7¹: 250. 1931; Liou, Laurac. Chine Indoch. 30. 1932.

DISTRIBUTION: central and western China.

CHINA. Hunan: *T. H. Wang* (*Handel-Mazzetti* 75) (holotype, Vienna; isotype, AA). Kwangsi: *W. T. Tsang* 28283; *T. S. Tsoong* 81565.

Handel-Mazzetti notes a similarity to *C. Bonii* Lecomte from Tonkin, in the indument, but comments on the difference in length of panicles and the inflorescence.

Cinnamomum Tsangii Merrill, Lingnan Jour. Sci. 13: 26. 1934.

DISTRIBUTION: known only from type locality.

CHINA. Kwangtung: *W. T. Tsang* 20439 (holotype, NY; photo. and fragm. AA).

The similarity between this species and the preceding one is so

marked that I feel sure they are the same. I am keeping them distinct for the reason that the material is scant and the localities rather far apart. That, however, will be remedied with more abundant material, I feel sure. The only difference which I can discover is the presence in *C. Appelianum* of numerous well-defined lateral veinlets extending from the two main laterals upward towards the midrib. The venation is scarcely noticeable on the upper surface, but very prominent below. These lateral veinlets are lacking in *C. Tsangii*, except in one case where there is a suggestion of one lateral veinlet towards the base of the leaf. In the latter, the laterals join the midrib nearer the base than in *C. Appelianum*. The fact that *C. Tsangii* is represented by fruiting specimen only and the type of *C. Appelianum* is in flower, does not obscure the fact that the two are close. In fact, the type inflorescence of both species is unique in the genus, since it is short, axillary and rather stiff. The only other species which approaches it in this respect is *C. curvifolium*.

Cinnamomum pittosporoides Handel-Mazzetti, Anz. Akad. Wiss. Wien. Math.-Nat. 1924: 19 (Pl. Nov. Sin. Forts. **24**:1); Symb. Sin. **7**¹: 248. 1931; Liou, Laurac. Chine Indoch. 32. 1932.

DISTRIBUTION: known only from Yunnan.

CHINA. Y u n n a n : *Handel-Mazzetti* 6245 (holotype, Vienna; isotype, AA); *Simeon Ten* 402.

Handel-Mazzetti has drawn attention in the *Symbolae Sinicae* to the unusual characteristics of the above species. The fact that the inner cycle of stamens has the two top locules in a lateral position as compared with the two lower locules, is not a very strong character, he points out, since other members of the genus have this also. Many times a freak twisting of the anther causes one or the other pair of anthers to appear lateral, but they are still in two planes, which is not the case of the truly lateral locules found only in *Neocinnamomum*. The flower structure of Handel-Mazzetti's species except for the unusual anthers of the third cycle of stamens is typically that of *Cinnamomum*. The fruit, however, which hitherto has been undescribed, is larger than that of any known *Cinnamomum*, being 2.5–3 cm. long by 2 cm. broad, ellipsoid-ovoid, falcate, the surface coarsely rugose, apiculate, attenuate at the base and subtended by an enlarged ligneous coriaceous calyx, somewhat fluted and slightly reflexed. The pericarp of the fruit is woody, several millimeters in thickness, at base and apex, and of varying thickness elsewhere. The fruit is not typical *Cinnamomum*, but since the floral parts are, the species is left in that genus.

Cinnamomum iners Reinwardt ex Blume, Bijdr. 570. 1825; Nees in Wallich, Pl. As. Rar. **2**: 73. 1831; Meissner in DC. Prodr. **15**¹: 19. 1864; Hooker f., Fl. Brit. Ind. **5**: 130. 1886; Lecomte, Fl. Gén. Indoch. **5**: 116. 1914; Liou, Laurac. Chine Indoch. 30. 1932.

Laurus Malabathrum Wallich, List No. 2583A. 1830, ex parte, nom. nud.

Laurus iners Reinwardt ex Nees in Wallich, Pl. As. Rar. **2**: 73. 1831, pro synon. praecedentis.

DISTRIBUTION: Malaysia, Ceylon and the Malay Peninsula.

JAVA: *Blume?* (holotype? of *Laurus iners*, Leiden; photo. AA), *N. Wallich* no. 2583A, ex parte (isotype of *Laurus Malabathrum*, Kew; photo. AA).

Cinnamomum obtusifolium Nees in Wallich, Pl. As. Rar. **2**: 73. 1831; Syst. Laurin. 33. 1836; Meissner in DC. Prodr. **15**¹: 12. 1864; Hooker f., Fl. Brit. Ind. **5**: 128. 1886; Lecomte, Fl. Gén. Indoch. **5**: 115. 1914.

Laurus obtusifolia Roxburgh, Hort. Bengal. 30. 1814, nom. nud.

Laurus obtusifolia Wallich, List No. 2574A, C. 1830, nom. nud.

DISTRIBUTION: India and China.

INDIA. Silhet: *N. Wallich* 2574A (iso-syntype, Kew; AA); *N. Wallich* 2574C (iso-syntype not seen, Kew). CHINA. Yunnan: *A. Henry* 10440, 12819; *C. Wang* 75287, 77253, 77370. Hainan: *F. C. How* 72078; *S. K. Lau* 3573; *H. Y. Liang* 64620, 64951, 65328; *C. Wang* 36576, 36175.

The two last mentioned species should be considered together, since there has been a great deal of confusion between them. *Cinnamomum iners* is found in Malaysia in great abundance, in Ceylon and the Malay Peninsula, whereas *Cinnamomum obtusifolium* thus far is reported only from India and China.

The leaves of *C. iners* are frequently pubescent on the lower surface. In *C. obtusifolium* they are glabrous or glabrescent, and are larger and much coarser in texture than those of the former. The greatest difference, however, occurs in the inflorescence. *Cinnamomum iners* has axillary and subterminal panicles, for the most part not exceeding the leaves, while in *C. obtusifolium* the very numerous panicles are usually subterminal, and usually exceed the leaves. The flowers of *C. iners* are small, the lobes are triangularly ovate, nearly as broad as long, with dense sericeous pubescence, completely covering the outer surface. The flowers of *C. obtusifolium* are much larger, the lobes ovate, longer than broad, with sparse short grayish pubescence, the tips of the lobes nearly glabrous. The peduncles of the inflorescence of

C. obtusifolium are heavier and coarser than those of *C. iners*. The fruit of *C. iners* is up to 8 cm. long, ellipsoid, acutish at apex, apiculate. The calyx-lobes are slightly enlarged, persistent and spreading. The fruit of *C. obtusifolium* measures about 1 cm. in length, is oblong-ellipsoid, rounded at apex and apiculate. The calyx-lobes are considerably enlarged, caducous at the midpoint, the remainder forming a shallow cupule with deeply scalloped margin.

Cinnamomum Fargesii Lecomte in Nouv. Arch. Mus. Hist. Nat. Paris, sér. V, 5: 78. 1913; Liou, Laurac. Chine Indoch. 40. 1932.

DISTRIBUTION: known only from type locality.

CHINA. Szechuan: *P. Farges 1064* (holotype, Paris; photo. and fragm. AA).

A species apparently transitional between *Cinnamomum* and *Neocinnamomum*. The flowers definitely show the structure of the former, while the leaves recall those of the latter genus. The fruit, as yet, is unknown (see discussion below under *Neocinnamomum*).

Neocinnamomum Liou, Laurac. Chine Indoch. 82. 1932.

The question has arisen recently of whether or not Liou's generic segregate from *Cinnamomum* should stand. With the exception of one little-known species, i.e. *C. Fargesii*, the line of demarcation is clear cut.

The members of *Neocinnamomum* have leaves that are tri- or triplinerved; the inflorescences are pedunculate or consisting of sessile glomerules crowded into leaf axils; the flowers are unisexual, with nine fertile stamens with anthers having four cells, all in the same plane. Other differences mentioned by Liou, and apparent on examination, mark the genus. The most important, however, is the plane of the cells. Some species of the genus have heretofore been confused with *Cinnamomum Fargesii* and with *Lindera*.

Neocinnamomum hainanianum, spec. nov.

Frutex 3 m. altus, ramulis brunneo-pubescentibus teretibus striatis. Folia alterna, membranacea, late ovata, 8–10 cm. longa, 4–7 cm. lata, acuminata, basi cuneata subtruncatave, supra venis exceptis glabriuscula, subtus brunneo-pubescentia, subtripplinervia, petiolis 1–1.5 cm. longis brunneo-pubescentibus. Inflorescentia axillaris solitaria brevipedunculata. Flores ignoti. Fructus ovoideus, usque ad 2 cm. longus, 1.5 cm. in diam., calyce crasso hypocrateriforme 12 mm. lato, pedicello incrassato usque ad 1 cm. longo, lobis persistentibus incrassatis carnis marcidis.

DISTRIBUTION: Hainan.

CHINA. H a i n a n : Loktung, S. K. Lau 26781, May 17, 1936, shrub 3 m. high, diam. 3 cm. (AA).

The first time this genus has been reported from Hainan. The species is similar to *Neocinnamomum Lecomtei* Liou from Tonkin. It is easily distinguished, however, by the pubescence on the leaves and branches.

***Neocinnamomum Wilsonii*, spec. nov.**

Litsea fruticosa Gamble in Sargent, Pl. Wilson. 2: 77. 1914, p.p.

Arbor parva vel frutex 2–7 m. altus, ramulis glabris teretibus striatis brunneis maculosis. Folia alterna, membranacea, late ovata rhomboideave, 4–6 cm. longa, 3–4 cm. lata, acuminata a basi varie cuneata, supra conspicue reticulata, glabra, margine supra medium, leviter undulato, trinervia, petiolo gracili, 0.5–0.7 cm. longo, glabro. Inflorescentia axillaris solitaria, subsessilis, subumbellata, pauciflora. Flores 1–3, circa 2 mm. longi, pedicello gracili usque ad 4 mm. longo, lobis 6, 3 interioribus extus pubescentibus, antherae loculis 4, in uno plano, 2 lateralibus, 2 extrorsis introrsisve. Fructus globosus usque ad 11 mm. in diam., calyce crasso hypocrateriformi, 5 mm. lato, pedicello leviter incrassato usque ad 1 cm. longo, lobis persistentibus marcidis.

DISTRIBUTION: western and central China.

CHINA. S z e c h u a n : W. P. Fang 5664; Taining Hsien, alt. 2–3000 ft., E. H. Wilson 4587, 1910, bush 12 ft., (holotype, AA). H u p e h : H. C. Chow 509.

There is no species of *Cinnamomum* with which this species may be confused. It is unique also in *Neocinnamomum*. However, it has been determined and treated variously as *Lindera*¹, *Litsea*, and finally by Liou as *Cinnamomum Fargesii*.

HERBARIUM, ARNOLD ARBORETUM,
HARVARD UNIVERSITY.

¹Allen, Ann. Missouri Bot. Gard. 25: 399. 1938.



Allen, Caroline K. 1939. "Studies in the Lauraceae. II. Some Critical and New Species of *Cinnamomum* and *Neocinnamomum*." *Journal of the Arnold Arboretum* 20(1), 44–63. <https://doi.org/10.5962/p.324598>.

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