NOTES ON THE FLORA OF CHINA IV

SHIU-YING HU[1]

INTRODUCTION

In February 1953, the representatives of the Continental Development Foundation, the China International Foundation, and the Arnold Arboretum, Harvard University met in the library of the Arboretum at Jamaica Plain, Massachusetts, and made plans for a cooperative project for preparing a descriptive flora of China. As scheduled, in July of the same year, work commenced for the Flora of China Project. The material presented in this article is primarily a result of that project. It is an enumeration of some Chinese Gymnospermae deposited in the herbaria of the Arnold Arboretum and the Gray Herbarium. It contains one new species, *Podocarpus chingianus*, one new variety, *Cephalotaxus fortunei* var. *globosa*, and four new combinations, *Taxus cuspidata* var. *microcarpa* (Trautv.) S. Y. Hu, *Podocarpus macrophyllus* f. *argenteus* (Gordon), S. Y. Hu, *P. macrophyllus* f. *aureus* (Gordon) S. Y. Hu, and *Cunninghamia lanceolata* f. *glauca* (Dall. & Jacks.).

The Chinese names are taken from Y. Chen's *Illustrated Manual of* Chinese Trees and Shrubs (1937), H. H. Hu *et al.* [*Keys to the Families and Genera of the Vascular plants of China*] (1954), K. C. Hou *et al.* [*Flora of Canton*] (1956), and T. S. Liu's *Illustrations of Native and Introduced Ligneous Plants of Taiwan* (1960). New translations and proposals are marked by an asterisk (*).

After the manuscript on *Podocarpus* was typed, I sent a carbon copy to the world's specialist of the genus, Dr. Netta E. Gray, Emory University, Georgia, U. S. A. I am deeply indebted to her for many helpful suggestions. I am also thankful to Dr. Robert C. Foster of Gray Herbarium of Harversity for checking the Latin descriptions of the new species and variety.

CYCADACEAE Lindl. 蘇鐵科

1. CYCAS Linn. 蘇鐵屬

Cycas Linn., Gen. Pl. ed. 5. 495. 1754.—Miq., Monogr. Cycad. 21. t. 1-2. 1842.—Benth. & Hook. f., Gen. Pl. **3**: 444. 1880.—Engler & Prantl, Pflanzenf. II. **1**: 21. 1887. —Schuster in Engler, Pflanzenr. 99(**IV. 1**): 64. 1932.

Todda panna Adanson, Fam. **2**: 25. 611. 1763.

Type species: *C. circinnalis* Linn.

1. **Cycas circinnalis** Linn., Sp. Pl. 1188. 1753 (circinalis).—Hooker in Bot. Mag. **55**: t. 2826-2827. 1828.—Groff in Lingn. Sci. Jour. **9**: 272. 1930—Schuster, op. cit. 66.—Metcalf, Fl. Fuk. **1**: 18. 1942.

---

[1] Botanist, Arnold Arboretum, Harvard University

Chinese name: 大蘇鐵*

Native of the Old World tropics, from India and Madagascar eastward to the East Indian and Polynesian islands; occurring in southern China as an ornamental plant: distinguished by large glabrous leaflets 30–50 cm. long, 5–18 mm. wide, rhomboid, acuminate, denticulate or denticulate-cristate carpophylls, and large seeds 5–6 cm long, 2.5–5.5 cm. wide.

2. **Cycas inermis** Lour., Fl. Cochinch· 632. 1790, ed. Willd. 776. 1793.—Oudemans in Vers. Med. Akad. Amsterdam II. **2**: 245. t. 1-3. 1868.—Chev. & Poilane in Jour. Bot. Appl. **4**: 472. 1924.—Tandy in Jour. Bot. **65**: 281. 1927.—Merr. in Trans. Am. Phil, Soc. n. s. **24**: 64. 1935—Metcalf, Fl. Fuk. **1**: 18. 1942.
Cycas siamensis Miquel ssp. *inermis* (Lour.) Schuster in Engler, Pflanzenr. **99(IV. 1)**: 80. 1932.

Chinese name: 鳳尾蕉

KWANGTUNG: *S.K. Lau 2653.*

This species was established on plants cultivated in China and Cochinchina. Unfortunately the type is a leafy specimen. It is closely related and may be conspecific with *C. siamensis* Miq. The apical leaflets of the above cited specimens are completely glabrous, 35 cm. long, 1 cm. wide.

3. **Cycas media** R. Br. Prodr. **1**: 348. 1810.—Hsia in Contr. Inst. Bot. Nat. Acad. Peiping **1**: 40. 1931.

A native of Australia, said to be cultivated in the Prince Garden in Peking; distinguished by the pubescent lower surface of the leaflets, 25 cm. long, and the dentate carpophylls.

Chinese name: 奧蘇鐵*

4. **Cycas micholitzii** Thiselton-Dyer in Gard. Chron. III. **38**: 142 fig. 48-49. 1905; in Repert. Sp. Nov. Fedde **1**: 171. 1907; et in Bot. Mag. **135**: t. 8242. 1909.—Bean in Kew Bull **1910**: 163. 1910.—Schuster in Engler, Pflanzenr. **99(IV. 1)**: 81. 1932.—Metcalf, Fl. Fuk **1**: 19. 1942.
Cycas rumphii var. *bifida* Dyer ex Forbes & Hemsl. in Jour. Linn. Soc. Bot. **26**: 560 (Ind. Fl. Sin. II). 1899.—Chung in Mem. Sci. Soc. China **1(1)**: 1 (Cat. Trees Shrubs China). 1924.—Lee, For. Bot. China 3. 1935.

Chinese name: 叉葉蘇鐵*

KWANGSI: Lung-chow, *H. B. Morse 232.*

A native of southeastern Asia from southwestern Kwangsi to Annam; the stem 20–60 cm. high, leaves 2.5–3.5 m. long, the lower third beset with flat yellow spines, elsewhere bearing 2 rows of subdichotomously twice divided leaflets, 20 cm. long, 2–2.5 cm. wide, carpophylls comb-like; introduced to England in 1904.

5. **Cycas pectinata** Griff., Notul. **4**: 10. t. 360. fig 3. 1854.
Cycas circinnalis Linn ssp. *vera* Schuster var. *pectinata* (Griff.) Schuster in Engler, Pflanzenr. **99(IV. 1)**: 68. 1932.

Chinese names: 梳蘇鐵*

YUNNAN: *Rock 2654.*

A native of the tropical eastern Himalayan regions from Manipur to Yunnan, Burma and Indochina; occurring in Yunnan on grassy slopes; distinguished by small trunks, glossy glabrous subfalcate leaflets 16–35 cm. long, 8–11 mm. wide, cordate-triangular subulate-pectinate carpophylls and large yellow seeds 4–6 cm. long,

3–4.5 cm. in diameter.

6. **Cycas revoluta** Thunb. in Nova. Act. Soc. Sci. Upsal. **4**: 40. 1783; et Fl. Jap. 229. 1784.—Hooker in Bot Mag **57**: t. 2963, 2964. 1830.—Hance in Notes Quer. China Jap. **3**: 95. 1869.—Dyer in Forbes and Hemsl. in Jour. Linn. Soc. Bot. **26**: 559 (Ind. Fl. Sin. II). 1899.—Gilg in Bot. Jahrb. Engl. **34**(**Beibl. 75**): 15. 1904.—Dunn and Tutch. in Kew Bull. add. ser. **10**: 256 (Fl. Kwangt. Hongk.). 1912.—Loes. in Beih. Bot. Centralbl. **37**(**2**): 83. 1919.—Groff in Lingn. Sci. Jour. **9**: 271. 1930.—Cheng in Sinensia **2**: 103. 1931.—Hsia in Contr. Inst. Bot. Nat. Acad. Peiping **1**: 40. 1931.—Schuster in Engl., Pflanzenf. **99**(**IV. 1**): 81. 1932.—Chow, Fam. Trees Hopei 12. fig. 1. 1934.—Ogura in Nat. Sci Mus. **6**(**7**): 7. fig. 1–8, **6**(**8**): 6. fig. 9–17. 1935.—Lee, For. Bot. China 2. pl. 1. 1935.—Chen, Ill. Man. Chin. Trees Shrubs 1. fig. 1. 1937.—Kia, Pl. Sin. Ill. 1239. fig. 2158. 1937.—Yamamoto in Trans. Nat. Hist. Soc. Formosa **28**: 327. 1938.—Metcalf, Fl. Fuk. **1**: 18. 1942.—S. Y. Hu in Jour. West China Bord. Res. Soc. **15**(**B**): 107. 1945.

Cycas revoluta Thunb. var. *inermis* Miq., Anal. Bot. Ind. **2**: 28. t. 3–4. 1851; et Prodr. Cycad. 16. 1861.

Chinese name: 蘇鐵

FUKIEN: *R. C. Ching 2260: H. H. Chung 2045.* KWANGTUNG: *Levine* (CCC *949*). SZECHUAN: *W. P. Fang 1975.*

Cultivated all over China as ornamental plants, spontaneous colonies covering large areas on the foot hills of Chiu-fenge, Pung-hsien, Szechuan discovered in 1943; introduced from Japan to Europe under the name *Palma prunifera japonica* about 1680; distinguished by its glossy revolute leaflets 9–18 cm. long, 5–6 mm. wide, glabrous above, tomentose beneath, by its wooly palmatiparted carpophylls and by its smaller seeds 1.5–3.5 cm. long, 3 cm. in diameter. The pills made from the ashes of the leaf cemented with cooked rice are taken internally for curing skin ailments. The powder of the ground carpophyll is applied to wounds to stop bleeding.

7. **Cycas rumphii** Miq. in Bull. Sci. Phys. Nat. Néerl. 45. 1839; Monogr. Cycad. 29, 32. 1842; in Linnaea **25**: 589. t. 2. 1852; et Prodr. Cycad. 7, 17. 1861.—Dyer in Forbes & Hemsl. in Jour. Linn. Soc. Bot. **26**: 559 (Ind. Fl. Sin.). 1899.—Dunn & Tutch. in Kew Bull. add. ser. **10**: 256 (Fl. Kwangt. Hongk.). 1912.—Chung in Mem. Sci. Soc. China **1**(**1**): 1 (Cat. Trees Shrubs China). 1924.—Groff in Lingn. Sci. Jour. **9**: 272. 1930.—Schuster in Engler, Pflanzenr. **99**(**IV. 1**): 74. 1932.—Lee, For. Bot. China 2. 1935.—Chen, Ill. Man. Chin. Trees Shrubs 2. 1937.—Metcalf, Fl. Fuk. **1**: 19. 1942.

Osmunda arborescens Rumphius, Herb. Amb. **1**: 86. 1750.—Merr. in Bur. Sci. Publ. Manila **9**: 74 (Int. Rhumph. Herb. Amb.). 1917.

Cycas macrocarpa Griff., Notul. **4**: 11, 13. t. 360. 1854.

Cycas speciosa D. Don in Proc. Linn. Soc. London **1**: 54. 1840.

Chinese name: 刺葉蘇鐵

KWANGTUNG: *Phillips.* YUNNAN: *C. W. Wang 75868, 766864, 78922.*

A native of the Old World tropics, from Ceylon to Australia; occurring in southern China from Yunnan to Kwangtung, frequent in well-shaded valleys at altitudes of 800–1800 meters; distinguished by slender tall trunk, 3 meters in height and 3 cm. in diameter, glabrous lanceolate leaflets 20–30 cm. long, 1–2 cm. wide, lanceolate dentate carpophylls and large seeds 5–7.5 cm. long, 3.5–4.5 cm. in diameter.

8. **Cycas siamensis** Miq. in Bot. Zeit. **21**: 334. 1863.—DC., Prodr. **16**(**2**): 528. 1868.—Dyer in Forbes & Hemsl. in Jour. Linn. Soc. Bot. **26**: 560 (Ind. Fl. Sin. II). 1899.—Chung in Mem. Sci. Soc. China **1**(**1**): 1 (Cat. Trees Shrubs China). 1924.—Schuster in Engler, Pflanzenr.

99(IV. 1) 80. 1932.—Lee, For. Bot. China 3. 1935.—Chen, Ill. Man. Chin. Trees Shrubs 2. 1937.

Cycas intermedia hort. ex Williams, Gen. Pl. Catal. 42. 1878.

Cycas immersa Craib in Kew Bull. **1912**: 434. 1912.

Cycas aurea hort. ex Schuster, l. c., in syn.

Chinese name: 野蘇鐵*

YUNNAN: *Henry 13637; Rock 2680.*

Endemic to southeastern Asia, Asia, its range extending from southern Yunnan to Burma, Siam and Indochina; occurring in Yunnan in forest at altitude of 1200 meters; distinguished by glossy glabrous rigid leaflets 10–15 cm. long, 6–7 mm. wide, spinose at the apex, sparsely pilose beneath, by the rhomboid-ovate pectinate-pinnatifid carpophylls and by the subglobose seeds 3.5 cm. long, 3.5 cm. wide.

9. **Cycas taiwaniana** Carruthers in Jour. Bot. **31**: 2. t. 331. 1893.—Dyer in Forbes & Hemsl. in Jour. Linn. Soc. Bot. **26**: 560 (Ind. Fl. Sin. II). 1899.—Matsum. & Hayata in Jour. Coll. Sci. Univ. Tokyo **22**: 404. 1906.—Dunn & Tutch. in Kew Bull. add. ser. **10**: 256 (Fl. Kwangt. Hongk.). 1912.—Chung in Mem. Sci. Soc. China **1(1)**: 1 (Cat. Trees Shrubs China). 1924.—Yamamoto in Jour. Jap. Bot. **5**: 330. fig. 1-4. 1928, 7: 118. fig. 1-7. 1931; Suppl. Ic. Pl. Formos. **4**: 3. fig. 2. t. 1-4. 1928; et in Trans. Nat. Hist. Soc. Formos. **28**: 327. 1938.—Groff in Lingn. Sci. Jour. **9**: 272. 1930.—Lee, For. Bot. China 4. 1935.—Kanehira, Formos Trees rev. ed. 30. pl. 9. 1936; et in Trans. Nat. Hist. Soc. Formosa **27**: 27, 1937. —Metcalf, Fl. Fuk. **1**: 18. 1942.—Li & Keng in Taiwania **5**: 27. pl. 1. 1954.—Liu, Ill. Lign. Pl. Taiwan 1: 11. fig. 8. 1960.

Cycas miqueli Warburg, Monsunia **1**: 179. 1900.

Cycas revoluta Thunb. var. *taiwaniana* (Carr.) Schuster in Engler, Pflanzenr. **99(IV. 1)** 84. 1932.

Chinese name: 臺灣蘇鐵

TAIWAN: *Warburg* s. n.; *Swinhoe* in 1867 (type); Dept. Forest. Herb. no. *2558, 2562.* FUKIEN: Amoy, *Swinhoe.* KWANGTUNG: Laufaushan, *Ford* s. n.

Resembling *C. revoluta* Thunb. but with larger leaves, flat leaflets 2.5–6 cm. long, 4–8 mm. wide, and suborbicular pectinate carpophylls. May be specifically indistinct from *C. siamensis* Miq.

GINKGOACEAE Engler 銀杏科

1. GINKGO Linn. 銀杏屬

Ginkgo Linn., Mant. **2:** 313. 1771.—Jacquin, Ginkgo 1. t. 1. 1819.—Koch in Verh. Ver. Gartenb. Preuss. Staat. n. s. **2:** 8 (Gesch. Verbr. Ginkgo). 1854.—Heer in Gartenfl. **23:** 260. t. 807. 1874.—Henry in Rev. Hort. Paris **1911:** 80. fig. 22–24. 1911.—Pilger in Pflanzenf. ed. 2. **13:** 109. 1926.—Koidzumi in Act. Phytotax. Geob. **5:** 263. 1936.—Rehder, Man. 1. 1927, ed. 2. 1. 1940; et Bibl. 1. 1949.—Seward in Sci. Progr. **32:** 420. fig. 1–2. 1938.—Cahen in Jour. Roy. Hort. Soc. London **68:** 99. fig. 30–33. 1943.—Barclay ibid. **69:** 68. fig. 18. 1944.

Salisburia Smith in Trans. Linn. Soc. London **3:** 330. 1797.—Link, Enum. Pl Hort. Berol **2:** 402. (Salisburya).

Pterophyllus [Nelson], Pinac. 163. 1866.

Ginkyo Mayr, Fremdl. Wald—& Parkbäume 286. 1906.

Monotypic.

Ginkgo biloba Linn., Mant. **2**: 313. 1771.—Thunb., Fl. Jap. 358. 1784.—Gouan, Descr. Ginkgo 1. t. 1. 1812.—Morren in Belg. Hort. **3**: 293. t. 44. 1853. **6**: 148. t. 27. 1856.—Parlatore in DC., Prodr. **16(2)**: 507. 1868.—Sargent in Gard. & Forest **6**: 473. 1893.—Rettig in Mitt. Deutsch. Dendr. Ges. **1894(3)**: 52. 1894.—Debeaux in Act. Soc. Linn. Bordeaux **33**: 66 (Fl. Tien-tsin 43). 1879.—Zabel in Gartenwelt **3**: 541. fig. 1. 1899.—Masters in Forbes & Hemsl. in Jour. Linn. Soc. Bot. **26**: 546 (Ind. Fl. Sin. II). 1899.—Diels in Bot. Jahrb. Engler **29**: 213. 1900.—Seward in Ann. Bot. **14**: 109. t. 8-10. 1900.—Gilg. in Bot. Jahrb. Engl. **34(Beibl. 75)**: 15. 1904.—Sprecher, Ginkgo 1. t. 1-2. fig. 1-225. 1907.—Meyer in U. S. Dept. Agr. Bur. Pl. Ind. Inv. Seeds **13**: 25. 1908.—Pampanini in Nuov. Giorn. Bot. Ital. n. s. **18**: 15. 1911.—Rehder & Wilson in Sarg,, Pl. Wils. **2**: 1. 1914.—Loes. in Beih. Bot. Centralbl. **37(2)**: 83. 1919.—Dallimore in Kew Bull. **1922**: 262. t. 1. 1922.—Chun, Chin. Econ. Trees 1. pl. 2. 1922.—Hers in Jour. N. China Branch. Roy. As. Soc. **53**: 111. 1922: et Liste Ess. Lign. Honan 14. 1922.—Rehder in Jour. Arnold Arb. **4**: 117. 1923, 9: 5. 1928; et 11. cc.—Williams in Addisonia **11**: 19. t. 362. 1926.—Orr in Notes Bot. Gard. Edinb. **18**: 121. 1933.—Chien, Ic. Chin. For. Trees **1**: pl. 1. 1937.—Liu in Bull. Peking Soc. Nat. Hist. **2(3)**: 57. 1928.—Hand.-Mazz., Symb. Sin. **7**: 1. 1929.—Groff in Lingn. Sci. Jour. **9**: 273. 1930.—Cheng in Sinensia **2**: 103. 1931.—Hsia in Contr. Inst. Bot. Nat. Acad. Peiping **1**: 40. 1931.—Cheng in P'ei in Contr. Biol. Lab. Sci. Soc. China Bot. Ser. **8**: 82. 1932, 298. 1933.—Chow, Fam. Trees Hopei 14. fig. 2. 1934.—Lee, For. Bot. China 5. pl. 2. 1935.—Tsoong in Contr. Inst. Bot. Nat. Acad. Peiping **4**: 158. 1936.—Chen, Ill. Man. Chin. Trees Shrubs 3. fig. 2. 1937.—Kia, Pl. Sin. Ill. 1237. fig. 2157. 1937.—Satô, Ill. Manch. Mong. Trees 1. 1943.—S. Y. Hu in Jour. West China Bord. Res. Soc. **15(B)**: 107. 1945.—Fang, Ic. Pl. Omei. **2**: t. 149. 1945.—Law in Bot. Bull. Acad. Sin. **1(2)**: 141. 1947.—Florin in Act. Hort. Berg. **14**: 345. 1948.—Liu, Ill. Lign. Pl. Taiwan **1**: 13. fig. 9. 1960.

Salisburia adiantifolia Smith in Trans. Linn. Soc. London **3**: 330. 1797.

Salisburya biloba Hoffmannsegg, Verz. Pflanzenkult. 109. 1824.

Pterophyllus salisburiensis [Nelson], Pinac. 163. 1866.

Gingkyo biloba Mayr, Fremdl. Wald & Parkbäume 280. 1906.

Chinese name: 白果、銀杏、鴨脚子、公孫樹

FUKIEN: *H. H. Chung 2502, 6991.* CHEKIANG: *S. Chen 115, 1062; W. C. Cheng 2323, 2327; K. Ling* (Univ. Nank. Herb. no. *12417*). KIANGSU *Ching & Tso 689; C. L. Tso 260, 910, 1501; L. F. Tsu* (Univ. Nank. Herb. no. *36*). ANHWEI: *R. C. Ching 3058.* KIANGSI: *Chung & Sun 557; S. K. Lau 4361; A. N. Stewar* (Univ. Nank. Herb. no. *4717*); *S. C. Sun 1441; Wilson 1743.* HUPEI: *H. C. Chow 317, 781; Wilson 2109.* HUNAN: *Fan & Li 302; Handel-Mazzetti 510.* KWEICHOW: *Steward, Chiao & Cheo 720; Y. Tsiang 5140. 6300.* YUNNAN: *Forrest 10462; C. W. Wang 62989.* SZECHUAN: *Chiao & Fan 547; S. S. Chien 5175; H. C. Chow 7546, 9476, 9508, 9511; W. P. Fang 3265, 7907, 13421; T. C. Lee 3037, 4569; C. L. Sun 2037.* SIKANG: *K. L. Chu 2379.* SHANTUNG *Cheo & Yen 394; E. Licent* in 1963. HOPEI: *T. N. Liou 7431; T. F. King 9, 576.* SHANSI: *H. Smith 5538; Rock 12088.*

Cultivated all over China, spontaneous specimen not known; distinguished by its tree habit, fan-shaped deciduous leaves, fleshy yellow mature "fruits" and white ellipsoid seeds. A concoction of the root is used as an internal medicine for the cure of leucorrhoea. The green "fruit" soaked in rapeseed oil is used to cure tuberculosis. The kernels of mature seed are regarded as a delicacy. Many horticultural varieties have been recorded. The principal ones:

a. **Ginkgo biloba** f. **aurea** [Nels.] Beissner, Handb. Conif.-Ben. 47. 1887.—Rehder, Man. 1. 1927, ed. 2. 1. 1940; et Bibl. 1. 1949.—Chen, Ill. Man. Chin. Trees Shrubs 4. 1937.
Pterophyllus salisburiensis aurea [Nelson], Pinac. 164. 1866.
Ginkgo biloba var. *aurea* Henry in Elwes & Henry, Trees Brit. Irel. **1**: 58. 1906.

Chinese name: 黃葉白果

A garden form with bright yellow leaves.

b. **Ginkgo biloba** f. **fastigiata** (Henry) Rehder, Bibl. 1. 1949.
Ginkgo biloba var. *fastigiata* [Masters] in Kew Hand-list Conif. 19. 1896, *nomen nudum*.—Henry in Elwes & Henry, Trees Brit. Irel. **1**: 58. 1906.—Rehder, Man. 1. 1927, ed. 2. 1. 1940.—Chen, Ill. Man. Chin. Trees Shrubs 4. 1937.

Chinese name: 塔型白果

A horticultural variety with ascending branches forming a narrow-pyramidal or columnar crown.

c. **Ginkgo biloba** f. **laciniata** (Carr.) Beissner, Syst. Eintheil. Conif. 24. 1887.—Rehder, Bibl. 1. 1949.
Salisburia adiantifolia laciniata Carr. in Rev. Hort. **1854**: 412. 1854.
Ginkgo biloba laciniata Carr., Traité Conif. ed. 2. 712. 1867.—Mouillefert, Arb. Arbriss. **2**: 1368. 1898.—Rehder, Man. 1. 1927, ed. 2. 1. 1940.—Chen, Ill. Man. Chin. Trees Shrubs 4. 1937 (*lacinia*), "var.".
Ginkgo biloba var. *dissecta* Hochstetter, Conif. 101. 1882.—Pilger in Engler, Pflanzenf. ed. 2. 2. **13**: 109. 1926, "f".

Chinese name: 裂葉白果*

A form with large leaves deeply incised and divided.

d. **Ginkgo biloba** f. **pendula** [Van Geert] Beissner, Syst. Eintheil. Conif. 24. 1887.—Rehder, Bibl. 1. 1949.
Salisburia adiantifolia pendula Van Geert, Cat. **1862**: 62. 1862.
Ginkgo biloba pendula Carr., Traité Conif. ed. 2. 713. 1867.—Henry in Elwes & Henry, Trees Brit. Irel. **1**: 58. 1906.—Rehder, Man. 1. 1927, ed. 2. 1. 1940.—Chen, Ill. Man. Chin. Trees Shrubs 4. 1947, "var."

Chinese name: 垂絲白果*

A garden form with pendulous branches.

e. **Ginkgo biloba** f. **variegata** (Carr.) Beissner, Syst. Eintheil. Conif. 25. 1887.—Rehder, Man. 1. 1927, ed. 2. 1. 1940; et Bibl. 1. 1949.
Salisburia adiantifolia variegata Carr. in Rev. Hort. 1854: 412. 1854; et Traité Conif. 504. 1855.
Ginkgo biloba variegata Carr., Traité Conif. ed. 2. 712. 1867.—Henry in Elwes & Henry, Trees Brit. Irel. 1: 58. 1906.—Chen, Ill. Man. Chin. Trees Shrubs 4. 1937.

Chinese name: 斑葉白果

A garden form with yellowish-variegated leaves.

TAXACEAE Lindl. 紫杉科

1. AMENTOTAXUS Pilger 穗花杉屬

Amentotaxus Pilger in Bot. Jahrb. Engler **54**: 41. 1916; et in Engler, Pflanzenf. ed. 2. **13**: 271. 1926.—Groff in Lingn. Sci. Jour. **9**: 280. 1930.—Kudo in Jour. Soc. Trop. Agr. Formos. **3**: 110. 1931.—Yamamoto, Supp. Ic. Pl. Formos. **5**: 7. 1932.—Chen, Ill. Man. Chin. Trees Shrubs 12. 1937.—Koidzumi in Act. Phytotax. Geob. **11**: 135. 1942.—Hao, Gymnosp. Sin. 36. 1945.—Li in Jour. Arnold Arb. **33**: 192. 1952.

Type species: *A. argotaenia* (Hance) Pilger

1 **Amentotaxus argotaenia** (Hance) Pilger, l. c.—Lee, For. Bot. China 26. t. 11. 1935.—Metcalf in Lingn. Sci. Jour. **14**: 687. 1935; et Fl. Fuk. 23. 1942.—Kia, Pl. Sin. Ill. 1233. fig. 2151. 1937.—Hao, Gymnosp. Sin. 36. 1945.—Dallimore & Jackson, Handb. Conif. 1923, ed. 3. 38. 1948.—Li, op. cit. 194.

Podocarpus argotaenia Hance in Jour. Bot. Brit. For. **21**: 357. 1883.—Masters in Jour. Linn. Soc. Bot. **26**: 547 (Ind. Fl. Sin. II). 1899; in Jour. Bot. **41**: 269. 1903; et in Jour. Linn. Soc. Bot. **37**: 414. 1906.—Dunn & Tutch. in Kew Bull. add. ser. **10**: 256 (Fl. Kwangt. Hongk.). 1912.

Podocarpus insignis Hemsl. in Jour. Bot. **23**: 287, 312. 1885.

Cephalotaxus argotaenia (Hance) Pilger in Engler, Pflanzenr. **18**(**IV. 5**): 104. 1903.—Rehder & Wilson in Sargent, Pl. Wils. **2**: 6. 1914.—Patschke in Bot. Jahrb. Engler **48**: 629. 1913.—Chung in Mem. Sci. Soc. China **1**(**1**): 2 (Cat. Trees Shrubs China). 1924.

Amentotaxus cathayensis Li, op. cit. 195.

Chinese name: 穗花杉

KWANGTUNG: *E. Faber*, Sept. 1882 (type); *Levine* (CCC *1502*, topotype). LANTOA ISLAND: Herb. Hongkong *2068*. HUPEI: *Wilson 2107* (type of *A. cathayensis*), *3005*.

Warmer regions of China and Tonkin of Indochina; occurring on steep slopes of deep ravines at altitudes of 600–1050 meters as a small tree up to 5 meters high. The leaves are 3–7.5 cm. long, 6–8 mm. wide, acute or obtuse at the apex and the grayish stomatal bands are as broad as or slightly narrower than the green marginal bands. The type specimens of *A. cathayensis* Li do not possess appreciable specific characters, for long and acute, short and obtuse, straight or falcate leaves occur on the same plant.

2. **Amentotaxus formosana** Li in Jour. Arnold Arb. **33**: 196. 1952.—Li & Keng in Taiwania **5**: 31. t. 3. 1954.

Podocarpus argotaenia sensu Henry in Trans. Asiat. Soc. Jap. **24** (**Suppl. 6**): 91 (List Pl. Formos.) 1896.—sensu Masters & Hayata in Jour. Coll. Sci. Univ. Tokyo **22**: 399 (Enum. Pl. Formosa). 1906, non Hance.

Amentotaxus argentaenia sensu Yamamoto in Bot. Mag. **40**: 453. 1926; et Suppl. Ic. Pl. Formos. **3**: 1. t. 1. 1927, **5**: 7. fig. 1–2. 1932.—sensu Kanehira in Trans. Nat. Hist. Soc. Formos. **16**: 80. 1926; et Formos. Trees rev. ed. 33. fig. 2. t. 10. 1936.—sensu Kudo in Jour. Soc. Trop. Agric. **3**: 110. 1931.—sensu Chen, Ill. Man. Chin. Trees Shrubs 13. fig. 2. 1937, non Pilger.

Chinese name: 臺灣穗花杉

TAIWAN: Koshun, *R. Kanehira* in 1934; Taito, *R. Kanehira*, May 11, 1924, Dec. 27, 1925; *Kanehira & Sasaki*, Feb. 19, 1925.

Endemic to southeastern Taiwan, occurring in broad-leaved forests at altitudes of 700–1300 meters; distinguished by broad stomatal bands which are broader than the green marginal ones. The leaves are 7–9.5 mm. wide.

3. **Amentotaxus yunnanensis** Li in Jour. Arnold Arb. **33**: 197. 1952.

Amentotaxus argataenia sensu Hu in Bull. Chin. Bull. Chin. Bot. Soc. **1**(**1**): 8. 1935, non Pilger.

Chinese name: 滇穗花杉*

YUNNAN: Ma-li-po, *K. M. Feng 12792;* Ma-kwan, *H. T. Tsai 51887* (type).

Endemic to southeastern Yunnan, common in mixed forests at altitudes of 1600–1800 meters; distinguished by its large leaves which are 10–15 mm. wide, up to

10.5 cm. long and with stomatal bands 3 or 4 times broader than the marginal ones. The mature fruits are red.

2. **PSEUDOTAXUS** Cheng 白豆杉屬

Pseudotaxus Cheng in Res. Notes For. Inst. Centr. Univ. Nanking Dender. Ser. **1**: 1. 1947.

Nothotaxus Florin in Act. Hort. Berg. **14**: 385. t. 1–3. 1948; et in Bot. Notis. **1948**: 270. 1948.

Monotypic

1. **Pseudotaxus chienii** (Cheng) Cheng, l. c.

Taxus chienii Cheng in Contr. Biol. Lab. Sci. Soc. China Bot. Ser. **9**: 240. fig. 23. 1934.—Metcalf in Lingn' Sci. Jour. **14**: 687. 1935.—Chen, Ill. Man. Chin. Trees Shrubs 7. fig. 4. 1937.—Kia, Pl. Sin. Ill. 1231. fig. 2148. 1937.—Hao, Gymnosp. Sin. 20. 1945.

Nothotaxus chienii (Chienii (Cheng) Florin, op. cit. 394.

Chinese name: 白豆杉

CHEKIANG: *S. Chen 1384* (♂ type), *3010*, *3024* (♀ type).

3. **TAXUS** Linn. 紫杉屬

Taxus Linn., Sp. Pl. 1040. 1753; et Gen. Pl. ed. 5. 462. 1754.—Carr., Traité Conif. 516. 1855, n. ed. 729. 1867.—Parl. in DC., Prodr. **16**(**2**): 499. 1868.—Benth. & Hook. f., Gen. Pl. **3**: 431. 1880.—Enchl. in Engler & Prantl, Pflanzenf. II. **1**: 112. 1889.—Pilger in Engler. Pflanzenr. **18** (**IV. 5**): 110. 1903; et Engler, Pflanzenf. ed. 2. **13**: 208. 1926.—Dallimore & Jackson, Handb. Conif. 62. 1923, ed. 3. 87. 1948.—Rehder, Man. 5. 1927, ed. 2. 2. 1940; et Bibl, 1. 1949.—Chen, Ill. Man. Chin. Trees Shrubs 5. 1937.—Hao, Gymnosp. Sin. 18. 1945.

Lectotype: *T. baccata* Linn.

1. **Taxus chinensis** (Pilger) Rehder in Jour. Arnold Arb. **1**: 51. 1919; Man. ed. 2. 3. 1940; et Bibl. 3. 1949.—Wilson in Jour. Arnold Arb. **8**: 88. 1927.—Chung in Mem. Sci. Soc. China **1**(**1**): 2 (Cat. Trees Shrubs China). 1924.—Chun in Ic. Pl. Sin. **2**: t. 53. 1929.—Hand.-Mazz., Symb. Sin. **7**: 2. 1929.—Lee, For. Bot. China 11. pl. 3, 4. 1935.—Chien, Ic. Chin. For. Trees **1**: pl. 3. 1937.—Chen, Ill. Man. Chin. Trees Shrubs 7. 1937.—Kia, Pl. Sin. Ill. 1232. fig. 2148. 1937.—Hao, Gymnosp. Sin. 20. 1945.—Fang, Ic. Pl. Omei **2**: t. 190. 1946.—Law in Bot Bull. Acad. Sin. **1**(**2**): 143. t. 5. 1947.

Taxus baccata sensu Franch. in Nouv. Arch. Mus. Hist. Nat. Paris II. **7**: 103 (Pl. David. **1**: 293). 1884; et in Jour. de Bot. **13**: 264. 1899.—sensu Pritzel in Bot. Jahrb. Engler **29**: 214. 1900.—sensu Masters in Forbes & Hemsl. in Jour. Linn. Soc. Bot. **26**: 546 (Ind. Fl. Sin. II). 1899; et in Jour. Bot. Brit. For. **41**: 269. 1903.—sensu Diels in Bot. Jahrb. Engler **29**: 214. 1900, **36** (**Beibl. 82**) 3. 1905, non Linn.

Taxus baccata ssp. *cuspidata* var. *chinensis* Pilger in Engler, Pflanzenr. **18** (**IV. 5**): 112. 1903.—Patschke in Bot. Jahrb. **48**: 630. 1913.

Taxus baccata var. *sinensis* Henry in Elwes & Henry, Trees Brit. Irel. **1**: 100. 1906.

Taxus cuspidata var. *chinensis* (Pilger) Schneider ex Silva Tarouca, Uns. Freil.-Nadelh. 276. 1913.—Rehder & Wils. in Sarg., Pl. Wils. **2**: 8. 1914.

Taxus wallichiana var. *chinensis* (Pilger) Florin in Act. Hort. Berg. **14**: 355. fig. 356, 378. 1948.

Chinese name: 紅豆杉

CHEKIANG: *R. C. Ching 1676*, ANHWEI: *R. C. Ching 2622*, HUPEI: *Henry*

6913; Sun & Chang 1354; L. Y. Tai 1117. SZECHUAN: *W. C. Cheng 2890; Chiao & Fan 645; H. C. Chow 9792; W. P. Fang 3943, 15083, 15128, 15940, 16082; Henry 7097, 7155* (type); *W. K. Hu 8177, 8243, 8497, 8786; Y. S. Liu 1136, 1196; T. C. Lee 3237, 4445, 4450, 4465; F. T. Wang 22602; Wilson 624; T. T. Yu 482, 492, 667.* YUNNAN: *K. M. Feng 630, 3235.*

Endemic to China, originally described from western Szechuan, its range extending from southeastern Chekiang through Anhwei, Hupei, Szechuan to Yunnan, a tree, occurring under rocky cliffs or in woodlands, often among bamboos at altitudes of 150–2400 meters; distinguished by linear-oblong leaves with obtuse and mucronate apex, papillose midrib beneath, inconspicuous stomatic aparatus and partially falling bud scales.

2. **Taxus cuspidata** Sieb. & Zucc. in Abh. Math.—Phys. Akad. Wiss. Münch IV. **3**: 232 (Fl. Jap. Fam. Nat. **2**: 108). 1846.—Parlatore in DC., Prodr. **16(2)**: 502. 1868.—Komarov in Act. Hort. Petrop. **20**: 210 (Fl. Manch. I). 1901.—Nakai in Bot. Mag. Tokyo **22**: 51. 1908.—Dunn in Jour. Linn. Soc. Bot. **39**: 499. 1911.—Chun. Chin. Econ. Trees 43. t. 13 1922—Chen, Ill. Man. Chin. Trees Shrubs 6. fig. 3. 1937.—Rehder, Man. ed. 2. 3. 1940; Bibl. 3. 1949.—Satô, Ill. Manch. Mong. Trees 1. 1943.—Hao, Gymnosp. Sin. 21. 1945.—Dallimore & Jackson, Handb. Conif. 71. fig. 8. 1923, ed 3. 98. fig. 9. 1948.

Taxus baccata sensu Rupr. & Maxim. in Bull. Phys.—Math. Acad. Sci. St.—Pétersb. **15**: 142. 1856, non Linn.

Taxus baccata cuspidata Carr., Traité Conif. ed. 2. 733. 1867.

Toxus baccata ssp. *cuspidata* (Sieb. & Zucc.) Pilger in Engler, Pflanzenr. **18(IV. 5)**: 112. 1903.

Taxus sieboldii hort ex Chen, l. c., in syn.

Chinese name: 紫杉

SHENSI: *G. Fenzel* in 1936. KIRIN: *F. H. Cheng 539.* HEILUGKIANG: *Ovchinnikov & Schukhobodsky 2; B. V. Skvortzov.* Sept. 20, 1931

Originally described from Japan, occurring also in Korea and the Amur Provinces, the range extending north of the Tsingling Range; distinguished by linear oblong leaves, obtuse and mucronate at the apex and not papillose on the midrib beneath, and by its keeled persistent scales.

2a. **Taxus cuspidata** var. **microcarpa** (Trautv.) comb. nov.

Taxus baccata var. *microcarpa* Trautv. ex Maxim. in Mém. Acad. Sci. St. Pétersb. Sav. Etrang. **9**: 259 (Prim. Fl. Amur.) 1859.

Taxus baccata ssp. *cuspidata* var. *latifolia* Pilger, l. c.

Taxus cuspidata var. *latifolia* (Pilger) Nakai in Tyôsen Sanrin **19** (**158**): 39. 1938.—Kitagawa in Rep. Inst. Sci. Res. Manch. **5(5)**: 136. 1941.

HEILUNGKIANG: *R. Maack* in 1855.

A variety with larger leaves cuspidate at the apex.

3. **Taxus mairei** (Lemée & Lévl.) S. Y. Hu ex Liu, Ill. Lign. Pl. Taiwan 16. fig. 11. 1960.

Cephalotaxus mannii sensu Pritzel in Diels in Bot. Jahrb. Engler **29**: 214. 1900, non Hook. f.

Taxus chinensis sensu Cheng in Sinensia **2**: 104. 1931; et in Contr. Biol. Lab. Sci Soc. China Bot. ser. **8**: 302. 1933.—sensu Kanehira, Formosa Trees rev. ed. 31. 1936.—sensu Merr. in Lingn. Sci. Jour. **15**: 415. 1936.—sensu Metcalf, Fl. Fuk. **1**: 23. 1942, non Rehder.

Taxus cnspidata sensu Kanehira, Formosa Trees 616. 1917, non Sieb. & Zucc.

Tsuga mairei Lemée & Lévl. in Monde Pl. II. **16**: 20. 1914.

Taxus speciosa Florin in Act. Hort. Berg. **14**: 382. t. 6. 1948.—Li & Keng in Taiwania **5**: 29. t. 6. 1954.

Taxus celebica (Warb.) Li, Woody Fl. Taiw. 34. 1963, p. p.

Chinese name: 華紫杉*

TAIWAN: *Wilson 9738, 11154.* FUKIEN: *H. H. Chung 2865, 3581, 3866.* KWANG-TUNG: *W. Y. Chung 5851; Y. Tsiang 1425.* KWANGSI: *R. C. Ching 5976.* CHEKIANG: *S. Chen 1044, 1063; R. C. Ching 1676, 2489; C. Y. Chiao* ex Herb. Univ. Nak. no. 14510, 14618; *H. H. Hu 97, 342, 550, 1628; Y. L. Keng 317; F N. Meyer 433.* ANHWEI: *R. C. Ching 3168, 3264.* KIANGSI: *Y. K. Hsiung 6443; T. H. Wang 445.* HUNAN: *Fan & Li 296, 644.* KWEICHOW: *Handel-Mazzetti 283; Steward, Chiao & Cheo 154, 328; Y. Tsiang 7525* (isotype of *T. speciosa*), *8987.* YUNNAN: *Forrest 9462; E. E. Maire,* May 1912 (type of *Tsuga mairei* Lemée & Lévl.). SZECHUAN: *Fan & Class 91; W. P. Fang 3461, 5811, 12205; H. Smith 10402; F. T. Wang 20600; Wilson 1265.* SIKANG: *W. P. Fang 3442; H. Stevens,* Aug. 1929.

Warmer regions of China, occurring on open slopes or in shady woods at altitudes of 300–1700 meters; distinguished by its broader leaves with the midrib beneath non-papillose. The types of *Tsuga mairei* Lemeé & Lévl. and *Taxus speciosa* Florin are identical in the shape and size of their leaves and in all the other essential characters which Florin used to distinguish his species. The earlier specific name has to be adopted.

In 1963 Dr. H. L. Li treated this distinct Chinese species as conspecific with *Taxus celebica.* Warburg's species was based on a collection from southern Celebes. The only material from that island in the Harvard Hniversity Herbarium (*Neth. Ind. For. Service bb 24961*) has conspicuously papillose midrib beneath. It is definitely different from the Chinese specimens here identified as *T. mairei.* Since I have no opportunity to examine Warburg's type under a microscope, I have decided to keep the Chinese species distinct.

4. **Taxus wallichiana** Zucc. in Abh. Math.-Phys. Bayr. Akad. Wiss. Münch **3**: 803. t. 5. 1843.—Marq. in Jour. Linn. Soc. Bot. **48**: 224. 1929.—Hand.-Mazz., Symb. Sin. **7**: 2. 1929.—Orr in Notes Bot. Gard. Edinb. **18**: 125. 1933.—Chen, Ill. Man. Chin. Trees Shrubs 7. 1937.—Merr. in Britt. **4**: 25. 1941.—Hao, Gymnosp. Sin. 20. 1945.

Taxus baccata ssp. *wallichiana* Pilger in Engler, Pflanzenr. **18** (**IV. 5**): 112. 1903.

Chinese name: 西南紅豆杉

YUNNAN: *R. C. Ching 21505, 21980; K. M. Feng 1809; Forrest 12087; Handel-Mazzetti 6408; Rock 11573, 18502; Schneider 2918; H. T. Tsai 58464, 59874; C. W. Wang 64255, 67412, 67414, 67735, 71749, 72417; T. T. Yu 11076, 21036.* SZECHUAN: *Chiao & Fan 464; H. C. Chow 8304, 8335; T. C. Peng 502; F. T. Wang 20993, 21114, 23656; Wilson 4053.* SIKANG: *C. Schneider 1429; H. Smith 10398; C. W. Wang 65475; T. S. Wen 525.* NEPAL: *Wallich* (isotype).

Originally described from Nepal, the range extending to southwestern China, Burma, the Philippines and Malaya; occurring as a tree in northwestern Yunnan, southeastern Sikang and Szechuan in mixed forests at altitudes 1000–3200 meters; distinguished by falcate leaves with alternate apex and papillose midribs beneath, presistent bud scales and conspicuous stomatic apparatus.

4. **TORREYA** Arnott 榧屬

Torreya Arnott in Ann. Mag. Nat. Hist. **1**: 130. 1838.—Benth. & Hook. f., Gen. Pl. **3**: 431. 1880.—Pilger in Engler, Pflanzenr. **18** (**IV. 5**): 105. 1903; et in Engler, Pflanzenf. ed. 2. **13**: 211. 1926.—Hu in Contr. Biol. Lab. Sci. Soc. China **3**(**5**): 1. 1927.—Lee, For. Bot. China 13. 1935.—Chen, Ill. Man. Chin. Trees Shrubs 8. 1937.—Rehder, Man. ed. 2. 4. 1940; et Bibl. 4. 1949.—Metcalf, Fl. Fuk. **1**: 22. 1942.—Hao, Gymnosp. Sin. 15. 1945.—Dallimore & Jackson, Handb. Conif. ed. 3. 100. 1948, nom. conserv, non Refinesque, nec Sprengel, nec Eaton.

Tumion Rafinesque, Good Book Amen. Nat. 63. 1840.

Caryotaxus Henkel & Hochstetter, Syn. Nadelh. 365. 1865.

Foetolaxus [Nelson], Pinac. 167. 1866.

Type species: *T. taxifolia* Arnott.

1. **Torreya fargesii** Franch. in Jour. de Bot. **13**: 264. 1899.—Pritzel in Diels in Engler. Bot. Jahrb. **29**: 214. 1900.—Pilger in Enger, Pflanzenr. **18**(**IV. 5**): 108. 1903.—Pampanini in Nouv. Giorn. Bot. Ital. n. ser. **17**: 231. 1910.—Patschke in Engler Bot. Jahrb. **48**: 630. 1913.—Wilson in Jour. Arnold Arnold Arb. **7**: 40. 1926.—Hu in Contr. Biol. Lab. Sci. Soc. China **3**(**5**): 4. 1927.—Hand.-Mazz., Sin. **7**: 1. 1929.—Orr in Notes Bot. Gard. Edinb. **18**: 123. 1933.—Chen, Ill. Man. Chin. Trees Shrubs 9. 1937.—Hao, Gymnosp. Sin. 16. 1945.—Dallimore & Jackson, Handb. Conif. ed. 3. 102. 1948.—Rehder, Man. ed. 2. 5. 1940; et Bibl. 4. 1949.

Torreya grandis sensu Rehder & Wils. in Jour. Arnold Arb. **2**: 7. 1914, non Fortune.
Tumion fargesii (Franch.) Skeels in Proc. Biol. Soc. Washington **38**: 88. 1925.

Chinese name: 篦子杉

KIANGSI: *Y. K. Hsiung 6400.* HUPEI: *Henry 6346, 6478; Silvestri 3983; Wilson 2108, 4650.* YUNNAN: *Handel-Mazzetti 7848, 8302; Rock 8114, 8692, 9396, 10374, 22656, 23391; H. T. Tsai 57187, 57582; C. W. Wang 64122, 64123, 67708; T. T. Yu 11271, 21041.* SZECHUAN: *Farges 100* (fruit, type), *128* bis (young fruit), *945* (♂ flower); *W. K. Hu 8944.*

Originally described from northeastern Szechuan, its range extending from nor-northwestern Hupei southward to Kiangsi and Yunnan; a common tree occurring in mixed forests at altitudes of 1000–2800 meters; distinguished by its stiff linear-lanceolate acuminate leaves, obovoid-subglobose fruits and deeply ruminate albumen.

2. **Torreya grandis** Fortune in Gard. Chron. **1857**: 788. 1857, **1858**: 588. fig. 1-3. 1858.—Parlatore in DC., Prodr. **16**(**2**): 505. 1868.—Franch. in Nouv. Arch. Mus. Paris II. 8: 102. (Pl. Dav. 1: 292). 1884.—Masters in Forbes & Hemsl. in Jour. Linn. Soc. Bot. **26**: 546 (Ind. Fl. Sin. II). 1899.—Henry in Elwes & Henry, Trees Gr. Brit. Irel. **6**: 1464. 1912.—Rehder & Wilson in Sarg., Pl. Wils. **2**: 7. 1914.—Pilger in Mitt. Deutsch. Dendr. Ges. **1916**(**25**): 18. 1916.—Chun, Chin. Econ. Trees 47. 1922.—Chung in Mem. Sci. Soc. China **1**(**1**): 2 (Cat. Trees Shrubs China). 1924.—Hu in Contr. Biol. Lab. Sci. Soc. China **3**(**5**): 5. t. 3. 1927.—Merr. in Lingn. Sci. Jour. **7**: 298. 1931.—Cheng in Contr. Biol. Lab. Sci. Soc. China Bot. Ser. **8**: 301. 1933.—Lee, For. Bot. China 14. t. 5-6. 1935.—Tsoong in Contr. Inst. Bot. Nat. Acad. Peiping **4**: 157. 1936.—Chen, Ill. Man. Chin. Trees Shrubs 8. fig. 5. 1937.—Kia, Pl. Sin. Ill. 1233. fig. 2150. 1937.—Metcalf, Fl. Fuk. **1**: 22. 1942.—Hao, Gymnsp. Sin. 17. 1945.—Dallimore & Jackson, Handb. Conif. 75. fig. 9. 1923, ed. 3. 102. fig. 10. 1948.—Rehder, Man. ed. 2. 4. 1940; et Bibl. 4. 1949.

Caryotaxus grandis Henkel & Hochstetter, Syn. Nadelh. 367. 1865.

Tumion grande Greene in Pittonia **2**: 194. 1891.

Torreya nucifera sensu Masters in Forbes & Hemsl. in Jour. Linn. Soc. Bot. **26**: 546 (Ind. Fl. Sin. II). 1899.—sensu Pritzel in Diels in Bot. Jahrb. Engler **29**: 214. 1900.—Diels in Bot. Jahrb. Engler **36** (**Beibl. 82**): 3. 1905.—Pax in Limpricht in Repert. Sp. Nov. Fedde Beih. **12**: 303. 1922, non Sieb. & Zucc.

Torreya nucifera var. *grandis* (Fortune) Pilger in Engler, Pflanzenr. **18**(**IV. 5**): 107. 1903.

Chinese name: 榧樹

FUKIEN: *Y. L. Keng 345.* CHEKIANG: *S. Chen 326, 1128; R. C. Ching 2346, 4981; H. H. Hu 435; Y. L. Keng 808, 1188; Tang & Hsia 97.* ANHWEI: *R. C. Ching 2883, 3036; A. N. Steward* ex Herb. Univ. Nank. no. 7143. KIANGSI: *Y. K. Hsiung 6121.*

Endemic to Chekiang and its adjacent provinces, occurring as a tree in open valleys, often near streams at altitudes of 250–1300 meters. Distinguished by its short leaves obtuse and cuspidate at the apex and slightly ruminate seeds.

2a. **Torreya grandis** var. **chingii** Hu in Contr. Biol. Lab. Sci. Soc. China **3**(**5**): 8. t. 8, 11. fig. 4. 1927.—Metcalf, Fl. Fuk. 1: 22. 1942.

Chinese name: 長籽榧*

CHEKIANG: *R. C. Ching 3680* (type).

A rare cultivated variety distinguished by its obovoid fruit with cylindric seed up to 4 cm. long.

2b. **Torreya grandis** var. **dielsii** Hu in Contr. Biol. Lab. Sci. Soc. China **3**(**5**): 7. t. 4, 11. fig. 1. 1927.—Chen, Ill. Man. Chin. Trees Shrubs 9. 1937.—Metcalf, Fl. Fuk. 1: 23. 1942.—Hao, Gymnosp. Sin. 18. 1945.

Torreya grandis var. *dickii* Hu ex Lee, For. Bot. China 15. 1935.

Chinese name: 圓榧

CHEKIANG: *Y. L. Keng 1190* (type).

A rare variety with obovoid to subglobose fruit and short plump seed; known only from type collection.

2c. **Torreya grandis** f. **majus** Hu op. cit. 6, t. 9. 1927.—Metcalf, l. c.

Chinese name: 大榧*

CHEKIANG: *R. C. Ching 3678* (type).

A cultivated form with large obovoid fruit up to 5 cm. long; known only from the type collection. The nuts are of inferior quality.

2d. **Torreya grandis** var. **merrillii** Hu, op. 9. t. 6, 11. fig. 2. 1927.—Lee, For. Bot. China 15. 1935.—Chen, Ill. Man. Chin Trees Shrubs 9. 1937.—Metcalf, l. c.—Hao, l. c.

Chinese name: 羊角榧

CHEKIANG: *R. C. Ching 3683; Y. L. Keng 917, 1191* (type).

A cultivated variety with cylindric-oblong fruit and thin-shelled seeds up to 3.5 cm. long, known only by the type collection.

2e. **Torreya grandis** f. **non-apiculata** Hu, op. cit. 6. t. 10. 1927.—Lee, For. Bot. China 15. 1935.—Chen, l. c.—Metcalf, l. c.—Hao, l. c.

Chinese name: 鈍頭榧

CHEKIANG: *Y. L. Keng 1189* (type).

A more frequently cultivated variety distinguished by its broad oblong non apiculate fruit; botanically known only from the type collection.

2f. **Torreya grandis** var. **sargentii** Hu, op. cit. 7. t. 7. 1927.—Lee, l. c.—Chen, l. c.—Metcalf, l. c.—Hao, l. c.

Chinese name: 寸金榧

ANHWEI: *R. C. Ching 3214a* (type).

A highly praised variety distinguished by its large fruit, attaining 5 cm. in length. Its nut is of superior quality and is reputed for its medicinal value.

3. **Torreya jackii** Chun in Jour. Arnold Arb. **6**: 164. 1925.—Chun in Ic. Pl. Sin. **1**: 14. 1927.—Hu in Contr. Biol. Lab. Soc. China **3(5)**: 5. t. 1. 1927.—Cheng in Contr. Biol Lab. Soc. China Bot. Ser. **8**: 302. 1933.—Lee, For. Bot. China 15. fig. 7. 1935.—Chen, Ill. Man. Chin. Trees Shrubs 9. fig. 6. 1937.—Kia, Pl. Sin. Ill. 1232. fig. 2149. 1937.—Metcalf, Fl. Fuk. **1**: 23. 1942.—Hao, Gymnsp. Sin. 16. 1945.—Dallimore & Jackson, Handb. Conif. ed. 3. 104. 1948.

Chinese name: 長葉榧

CHEKIANG: *R. C. Ching 1779* (type); *Y. L. Keng 478.*

Endemic to southeastern Chekiang, occurring in woods at altitudes of 400–1000 meters. known only from the type locality; distinguished by its elongated often falcate leaves up to 9 cm. long, and small obovoid fruits, and deeply ruminated albumen.

CEPHALOTAXACEAE F. W. Neger 粗榧科

1. CEPHALOTAXUS Sieb. & Zucc. 粗榧屬

Cephalotaxus Sieb. & Zucc. ex Endl., Gen. Suppl. **2**: 27. 1842; et in Abh. Math.—Phys. Bayr. Akad. Wiss. Münch IV. **3**: 234 (Fl. Jap. Fam. Nat. **2**: 108). 1846.—Parlatore in DC., Prodr. **16(2)**: 502. 1868.—Benth. & Hook. f., Gen. Pl. **3**: 430. 1880.—Tieghem in Bull. Soc. Bot. France **38**: 184. 1891.—Pilger in Engler, Pflanzenr. **18** (**IV. 5**): 99. 1903; et in Engler, Pflanzenf. ed. 2. **13**: 268. 1926.—Dallimore & Jackson, Handb. Conif. 20. 1923, ed. 3. 38. 1948.—Chow, Ill. Man. Chin. Trees Shrubs 10. 1937.—Rehder, Man. 3. 1927, ed. 2. 5. 1940; et Bibl. 4. 1949.

Lectotye: *C. drupacea* Sieb. & Zucc.

1. **Cephalotaxus drupacea** Sieb. & Zucc. in Abh. Math.—Phys. Bayr. Akad. Wiss. Münch IV. **3**: 234 (Fl. Jap. Fam. Nat. **2**: 108). 1846; et Fl. Jap. **2**: 66. t. 130-131. 1870.—Endlicher, Syn. Conif. 239. 1847.—Masters in Forbes & Hemsl. in Jour. Linn. Soc. Bot. **26**: 544 (Ind. Fl. Sin. II). 1899; Gard. Chron. III. **33**: 228. fig. 94. 1903; et in Jour. Bot. Brit. For **41**: 269. 1903.—Hemsl. in Bot. Mag. **135**: t. 8285. 1909—Matsuda in Bot. Mag. Tokyo **27**: 120. 1913.—Patschke in Bot. Jahrb. Engler **48**: 629. 1913.—Rehder & Wilson in Sarg., Pl. Wils. **2**: 3. 1914.—Pilger in Engler, Pflanzenr. **18(IV. 5)**: 100. fig. 19. 1903; et in Mitt. Deutsch. Dendr. Ges. **1916** (**25**): 21. pl. pl. 6. 1916.—Chun, Chin. Econ. Trees 45. 1922.—Pax in Limpricht in Repert. Sp. Nov. Fedde Beih. **12**: 303. 1922.—Chen, Ill. Man. Chin. Trees Shrubs 11. 1937.—Kia, Pl. Sin. Ill. 1234. fig. 2152. 1937.—Lee, For. Bot. China 24. pl. 10. 1935.—Pai in Contr. Inst. Bot. Nat. Acad. Peiping **3**: 244. 1935.—Rehder, Man. 3. 1927, ed. 2. 5. 1940.—Metcalf, Fl. Fuk. **1**: 21. 1942.—Hao, Gymnosp. Sin. 34. 1945.—Dallimore & Jackson. Handb. Conif. 21. fig. 2. 1923, ed. 3. 40. fig. 3. 1948.—Iwata & Kusaka, Conif. Jap. 95. fig. 30. 1952.

Taxus baccata sensu Thunb., Fl. Jap. 275. 1784, non Linn.

Taxus coriacaa Hort. ex Knight & Perry, Syn. Conif. 51. 1850, in syn.

Cephalotaxus coriacea Hort. ex Knight & Perry, l. c., in syn.
Podocarpus drupacea Hort. ex Knight & Perry, l. c., in syn.
Podocarpus coriacea Hort. ex Knight & Perry, l. c., in syn.
Cephalotaxus fortunei foemina Hort. ex Carr., Traité Conif. 509. 1855.
Taxus japonica Hooker ex Gordon, Pinet. Suppl. 21. 1862, in syn.
Cephalotaxus griffithii sensu Oliver in Hooker, Ic. Pl. **20**: t. 1933. 1890, non Hook. f.—Dunn in Jour. Linn. Soc. Bot. **39**: 432. 1911.
Cephalotaxus foemina Hort. ex Carr., Traité Conif. ed. 2. 720. 1867, in syn.
Cephalotaxus harringtonia var. *drupacea* (Sieb. & Zucc.) Koidzumi in Bot. Mag. Tokyo **44**: 98. 1930.—Rehder in Jour. Arnold Arb. **22**: 570. 1941; et in Bibl. 5. 1949.

Chinese name: 粗榧

CHEKIANG: *S. Chen 900, 2638, 3951; R. C. Ching 1546.* KIANGSU: *R. C. Ching 4873.* HUPEI: *Henry 5030.* KWEICHOW: *Steward, Chiao & Cheo 535.* SZECHUAN: *W. P. Fang 947, 1015.*

Originally described from Japan; common in the warmer regions of China, occurring as small trees in mixed forests in ravines from southern Kiangsu westward up the Yangtze to southeastern Szechuan; distinguished by short leaves 1.5–3.5 cm. long, 2–3.5 mm. wide, roundish or obtuse at the base, obtuse and cuspidate at the apex and by shortly pedunculate staminate flowers.

2. **Cephalotaxus fortunei** Hooker in Bot. Mag. **76**: t. 4499. 1850 (fortuni).—Lemaire in Jard. Fleur. **1**: t. 6. 1850.—Planch. in Fl. Serr. Jard. **6**: 51. t. 555. 1850.—Franch. in Nouv. Arch. Mus. Paris II. **7**: 107 (Pl. David. **1**: 292). 1884; et in Jour. de Bot. **13**: 265. 1899.—Beissner in Nouv. Giorn. Bot. Ital. n. ser. **4**: 186. 1897; et Bull. Soc. Bot. Ital. **1901**: 358. 1901.—Masters in Forbes Hemsl. in Jour. Linn. Soc. Bot. **26**: 545 (Ind. Fl. Sin. II). 1899.—Diels in Wiss. Ergebn. Exp. Filchner China Tibet **10**: 247. 1908.—Dunn & Tutch. in Kew Bull. Add. Ser. 10: 256 (Fl. Kwangt. Hongk.). 1912.—Patschke in Bot. Jahrb. Engler **48**: 629. 1913.—Rehder & Wilson in Sarg., Pl. Wils. **2**: 4. 1914; et in Jour. Arnold Arb. **8**: 87. 1927, **9**: 5 1928.—Pilger in Mitt. Deutsch. Dendr. Ges. **1916**(**25**): 23. 1916.—Pax in Limpricht in Repert. Sp. Nov. Fedde Beih. **12**: 303. 1922.—Chun, Chin. Econ. Trees 45. 1922.—Chung in Mem. Sci. Soc. China **1**(**1**): 2 (Cat. Trees Shrubs China). 1924.—Rehder, Man. 4. 1927, ed. 2. 6. 1940; et Bibl. 5 1949 (forturi).—Hand.-Mazz., Symb. Sin. **7**: 1. 1929; et in Beih. Bot. Centralbl. **48**(**2**): 293. 1931.—Cheng in Sinensia **2**: 103. 1931; et in Contr. Biol. Lab. Sci. Soc. China Bot. ser. **8**: 300. 1933.—Orr in Notes Bot. Gard. Edinb. **18**: 122. 1933.—Lee, For. Bot. China 21. pl. 8, 9. 1935.—Tsoong in Contr. Inst. Bot. Nat. Acad. Peiping **4**: 157. 1936.—Chien, Ic. Chin. For. Trees **1**: pl. 2. 1937.—Chen, Ill. Man. Chin. Trees Shrubs 10. fig. 7. 1937.—Kia, Pl. Sin. Ill. 1234. fig. 2153. 1937.—Metcalf, Fl. Fuk. **1**: 21. 1942.—Hao, Gymnosp. Sin. 33. 1945.—Fang, Ic. Pl. Omei **2**(**2**): t. 188. 1946.—Dallimore & Jackson, Handb. Conif. 23. fig. 3. 1923, ed. 3. 42. fig. 4. 1948.
Cephalotaxus kaempferi Anon. in Garten-Nachr. **1858**: 41. 1858.
Cephalotaxus filiformis Knight & Perry ex Gordon, Pinetum **46**: 1858, in syn.
Cephalotaxus drupacea sensu Koch, Dendr. **2**(**2**): 104. 1873, non Sieb. & Zucc.
Cephalotaxus mannii sensu Masters in Jour. Linn. Soc. Bot. **26**: 545 (Ind. Fl. Sin. II). 1899, non Hook. f.
Cephalotaxus lanceolata hort. ex Pilger in Mitt. Deutsch. Dendr. Ges. **1916**(**25**): 23. 1916, in syn.
Cephalotaxus fortunei var. *longifolia* hort. ex Dallimore & Jackson, Handb. Conif. ed. 3. 42. 1948.

Chinese name: 三尖杉

FUKIEN: *H. H. Chung 1000, 3345, 3867.* KWANGTUNG: *W. Y. Chun 5666; Y. Tsiang 1304, 1351.* KWANGSI: *R. C. Ching 5889; Steward & Cheo 980.* CHEKIANG: *R. C. Ching 1440, 1663, 2169, 2451, 4573, 4763, 5106; S. Chen 219, 1330, 3871; W. C.*

Cheng, 2277; C. Y. Chiao ex Herb. Univ. Nank. no. *14561, 14600; Y. Y. Ho 949, 1572; H. H. Hu 1525; Y. L. Keng 327; F. N. Meyer 432* (Ningpo, topotype); *Tang & Hsia 370.* ANHWEI: *R. C. Ching 2592; A. N. Steward* ex Herb. Univ. Nank. no *5253.* KIANGSI: *W. Y. Chun 4285; A. N. Steward* ex Herb. Univ. Nank. no. *2487; Wilson 1741a.* HUPEI: *H. C. Chow 774; W. Y. Chun 3548; Henry 7186; P. C. Silvestri 3986, 3988; Wilson 100, 1386, 2110.* HUNAN: *Fan & Li 194.* KWEICHOW: *Handel-Mazzetti 327; Y. Tsiang 5125.* YUNNAN: *R. C. Ching 21587; K. M. Feng 690; Henry 9100; Rock 25420.* SZECHUAN: *H. C. Chow 9027, 9166; W. P. Fang 13426, 15874, 16187, 18187, W. K. Hu 9127, 9130; C. L. Sun 1434; F. T. Wang 22540, 22549, 22552; Wilson 1386* (Wa-shan). SIKANG: *C. Y. Chiao 1172, 1603; K. L. Chu 2253, 2381, 4039.* HONAN: *A. N. Steward* ex Herb. Univ. Nank. no. *9843.*

Originally described from material collected by Fortune from Chekiang, (probably Ningpo), its range extending to northern Fukien, northern Kwangtung, Kwangsi, Yunnan, northward to the Yangtze Provinces, occurring in woods at altitudes of 330–1300 meters, often used in grave yards; distinguished by its linear leaves, 5–9 cm. long, 4–6 mm. wide, acuminate at the apex, with glaucose stomatic bands beneath, the stomatas in 17–24 longitudinal rolls, and its oblong or ellipsoid fruits, 2–2.9 cm. long, 1.5 cm. in diameter.

2a. **Cephalotaxus fortunei** var. **alpina** Li in Lloydia **16**: 164. 1954.

Cephalotaxus mannii sensu Franch. in Jour. de Bot. **13**: 265. 1899.—sensu Masters in Forbes & Hemsl. in Jour. Linn. Soc. Bot. **26**: 545 (Ind. Fl. Sin. II). 1899.—sensu Chen, Ill. Man. Chin. Trees Shrubs 11. 1937.—sensu Hao, Gymnosp. Sin. 35. 1945, non Hook. f.

Chinese name: 崖頭杉

YUNNAN: *Handel-Mazzetti 10022; Forrest 11114; Rock 8150, 8691, 10370, 11572, 11575, 18478, 23289, 25305; Siméon Ten 460; Tsiang & Wang 16022; C. W. Wang 67723.* SZECHUAN: *W. P. Fang 436, 5530; Rock 12053; Schneider 1290.* SHENSI: *J. Hers 2931, 3041.* KANSU: *Rock 12086.*

A geographical race of western China with the center of distribution in Yunnan, hence northward to western Szechuan and southwestern corner of Kansu, occurring in spruce forests in gulches at altitudes of 1800–3300 meters; a tree, 7–13 meters high, distinguished by its narrow long leaves with the margins recurved, the stomatic band white and glaucose, and the stomatas in 10–15 longitudinal rolls. The leaves of *C. mannii* Hook. f. resemble those of *C. sinensis,* acuminated and 2–4.5 cm. long, and the peduncles of its staminate flowers are like those of *C. drupacea,* long and very scaly. This species does not occur in China. The Chinese specimens that Franchet interpreted as *C. mannii* should belong here. Masters quoted Franchet, and he saw no specimen. Likewise, Chen and Hao accepted these authors without any material proof.

2b. **Cephalotaxus fortunei** var. **brevifolia** hort. ex Dallimore & Jackson, Handb. Conif. ed. 3. 42. 1948.

Chinese name: 桃杉

CHEKIANG: *S. Chen 419; K. Ling* ex Herb. Univ. Nank. no. *12424; Meyer 1561.*

HUPEI: *C. Silvestri 94.* YUNNAN: *Forrest 1683; Rock 8298* (lectotype), *12002; Siméon Ten 315.* SZECHUAN: *Henry 7018; Schneider 1290, 3573; H. Smith 2181; Wilson 4054.* HONAN: *J. Hers 39.* SHENSI: *Fenzel 926.*

A short-leaved form, geographically sharing the same range as the typical *C. fortunei;* distinguished by its shorter leaves 2–5 cm. long, 2–3 mm. wide obtuse at the base, acuminate at the apex and by its oblong fruits. This variety differs from *C. mannii* only in its glaucose stomatic bands. The length of the leaves approaches *C. harringtonia* but the base of the leaves of the latter species are obliquely cordate. A specimen collected by S. Sakurai from Tokyo on March 3, 1912 apparently belongs here.

2c. **Cephalotaxus fortunei** var. **concolor** Franch. in Jour. de Bot. **13**: 265. 1899.—Diels in Bot. Jahrb. Engler **29**: 214. 1900.—Pampanini in Nuov. Giorn. Bot. Ital. n. ser. **17**: 231. 1910.—Rehder & Wilson in Sarg., Pl. Wils. **2**: 6. 1914.—Pilger in Mitt. Deutsch. Dendr. Ges. **1916(25)**: 23. 1916.—Chung in Mem. Sci. Soc. China **1(1)**: 2 (Cat. Trees Shrubs China). 1924.—Lee, For. Bot. China 23. 1935.—Chen, Ill. Man. Chin. Trees Shrubs 11. 1937.—Dallimore & Jackson, Handb. Conif. 23. 1923, ed. 3. 42. 1948.

Chinese name: 狗尾松

FUKIEN: *H. H. Chung 2262, 2733, 2868, 6720, 8561.* CHEKIANG: *S. Chen 2829, 3071. R. C. Ching 1658; Y. Y. Ho 1368; Y. L. Keng 809.* ANHWEI: *S. C. Sun 1222.* KIANGSI: *Chung & Sun 179; A. N. Steward 2487; Wilson 1741.* HUNAN: *Fan & Li 652; W. T. Tsang 23569.* HUPEI: *H. C. Chow 1550.* KWEICHOW: *Steward, Chiao & Cheo 411; Y. Tsiang 5883.* YUNNAN: *C. W. Wang 64281.* SZECHUAN: *W. P. Fang 1953, 3412; F. T. Wang 20391, 20739; T. T. Yu 1041.*

A broad-leaved form sharing the same geographical range as the typical *C. fortunei* and differing from it only in having epruinose stomatic bands.

2d. **Cephalotaxus fortunei** var. **globosa,** var. nov.

Arbor 5–8 m. altus; foliis linearibus, 5–8.5 cm. longis, 3–4 mm. latis, basi obtusis, apice acuminatis cuspidatisque, subtus pruinosis, fructibus subgolosis, 1.5 cm. longis, 1.3 cm. latis.

Chinese name: 圓桃杉*

YUNNAN: *K. M. Feng 690A; Rock 9397, 25076; Siméon Ten 161* (type). SZECHUAN: *W. P. Fang 3404.* ANHWEI: *R. C. Ching 2769.* HONAN: *A. N. Steward* ex Herb. Univ. Nank. no. *9843.*

A tall tree up to 27 meters high, occurring in mixed forests at altitudes of 3500 meters; distinguished by its globose fruits and long linear leaves.

3. **Cephalotaxus harringtonii** (Forbes) Koch, Dendr. **2(2)**: 102. 1873.—Ascherson & Graebner, Syn. Mitteleur. Fl. **1**: 181. 1897.—Schneider in Silva Tarouca, Uns. Freil.-Nadelh. 162. fig. 159. 1913.—Koidzumi in Bot. Mag. Tokyo **44**: 97. 1930.—Rehder in Jour. Arnold Arb. **44**: 97. 1941; et Bibl. 4. 1949.

Taxus harringtonia Knight ex Forbes, Pinet, Woburn. 217. t. 66. 1839.

Cephalotaxus pedunculata Sieb. & Zucc. in Abh. Phys.—Math. Bayr. Akad. Wiss. Münch IV. **3**: 234 (Fl. Jap. Fam. Nat. **2**: 108. 1846.—Masters in Forbes & Hemsl. in Jour. Linn. Soc. Bot. **26**: 545 (Ind. Fl. Sin. II). 1899.—Diels in Bot. Jahrb. Engler **29**: 214. 1900.—Henry in Elwes & Henry, Trees Brit. Irel. **6**: 1471. 1919.

Taxus sinensis Knight ex Gordon, Pinet. Suppl. 21. 1862.

Cephalotaxus drupacea var. *pedunculata* (Sieb. & Zucc.) Miq. in Ann. Mus. Bot. Lugd.—Bat. **3**: 169 (Prol. Fl. Jap. 333.) 1867.—Wilson, Conif. Taxads Jap. 8. 1916.—Dallimore & Jackson, Handb. Conif. 21. 1923, ed. 3. 41. 1948.

Cephalotaxus griffithii Hook. f., Fl. Brit. Ind. **5**: 648. 1888.

Cephalotaxus drupacea var. *harringtonia* (Forbes) Pilger in Engler, Pflanzenr. **18 (IV. 5)**: 102. 1903.—Hao, Gymnosp. Sin. 34. 1945.

Cephalotaxus drupacea var. *sinensis* sensu Merrill in Lingn. Sci. Jour. **5**: 22. 1928.—sensu Masam., Fl. Kain. 38. 1943.—Metcalf, Fl. Fuk. **1**: 21. 1942, p. p., non Rehder & Wilson.

Cephalotaxus hainanensis Li in Lloydia **16**: 164. 1954.

Chinese name: 無柄粗榧*

HAINAN: *Chen & Tso 44183;* (type of *C. hainanensis*) *H. Y. Liang 65025; McClure* (CCC *9361*); *C. Wang 35818.* INDOCHINA: *Poilane 13622, 17286.* SIAM: *H. R. G. Guwett 876.* BURMA: *F. G. Dickason 8521; J. W. Oliver 165/12.* INDIA: Manipur, *G. Watt* in 1881–82.

Originally described from cultivated material introduced to England from Penang Hill; a tropical species with a range from Manipur of India eastward to Burma, Penang, Siam, Indochina and Hainan Island; in Hainan occurring in wooded ravines at altitudes of 600 meters; distinguished by the squamose peduncles, falcate subsessile leaves, truncate or obliquely subcordate at the base. An isotype of *C. griffithii* matches Forbes plate very well. *Cephalotaxus hainanensis* was described on the basis of two sterile specimens. The type (*Chun* and *Tso 44183*) matches the Indian-Burmese-Siamese-Indochinese collections of *C. harringtonii* in all essential characters of the species.

4. **Cephalotaxus oliveri** Masters in Bull. Herb. Boiss. **6**: 270. 1898; in Jour. Linn. Soc. Bot. **26**: 545. 1899, **37**: 413. 1906; in Gard. Chron. III. **33**: 227. fig. 93. 1903; et in Jour. Bot. Brit. For. **41**: 269. 1903.—Pritzel in Diels in Bot. Jahrb. Engler **29**: 214. 1900.—Pilger in Engler, Pflanzenr. **18(IV. 5)**: 104. 1903.—Rehder & Wilson in Sarg., Pl. Wils. **2**: 6. 1914.—Chung in Mem. Sci. Soc. China **1(1)**: 2 (Cat. Trees Shrubs China). 1924.—Chen, Ill. Man. Chin. Trees Shrubs 12. 1937.—Lee, For. Bot. China 25. 1935.—Dallimore & Jackson, Handb. Conif. 25. 1923, ed. 3. 44: 1948.—Hao, Gymnosp. Sin. 32. 1945.—Rehder, Man. 4. 1927, ed. 2. 6. 1940; et Bibl. 5. 1949.—Fang, Ic. Pl. Omei **2(2)**: t. 189. 1946.

Chines name: 阿里杉

HUPEI: *Henry 7479, 7823A; Wilson 72, 418* (fruit), *418* (♂ fl.). SZECHUAN: Mt. Omei (type locality), *Chiao & Fan 602; H. C. Chow 4714, 8263, 8668; W. P. Fang 2456, 7566, 13838, 15786, 15886, 17905, 18192; W. K. Hu 8789, 8899, 9071; T. C. Lee 3367, 4486; Y. S. Liu 1646; L. Y. Tai 1156.* YUNNAN: *H. T. Tsai 62795.*

Endemic to western China with Mt. Omei being the center of concentration for the species, hence eastward to western Hupei and southward to Yunnan; distinguished by its closely oriented short leaves 2–2.5 cm. long, 2–3.5 mm. wide, obliquely cordate at the base, obtuse and cuspidate at the apex, by its squamose peduncles of the staminate flowers and by its ellipsoid fruits.

5. **Cephalotaxus sinensis** (Rehder & Wils.) Li in Lloydia **16**: 162. 1954.

Cephalotaxus drupacea var. *sinensis* Rehder & Wilson in Sarg., Pl. Wils. **2**: 3. 1914.—Pilger in Mitt. Deutsch. Dendr. Gess **1916(25)**: 22. pl. 7. 1916; et in Bot. Jahrb. Engler **54**: 41. 1916.—Meyer in U. S. Dept. Agr. Bur. Pl. Ind. Invent. Seeds Pl. Imp. **42**: 52. 1918.—Hers

in Jour. N. China Branch As. Soc. **53**: 108. 1922; et Liste Ess. Lign. Honan 7. 1922.—Rehder in Jour. Arnold Arb. **4**: 118. 1923.—Chung in Mem. Sci. Soc. China **1(1)**: 2 (Cat. Trees Shrubs China). 1924.—Hand.-Mazz. in Beih. Bot. Centralbl. **48(2)**: 293. 1931.—Cheng in Contr. Biol. Lab. Sci. Soc. China Bot. Ser. **8**: 301. 1933.—Orr in Notes Bot. Gard. Edinb. **18**: 123. 1933.—Pai in Contr. Inst. Bot. Nat. Acad. Peiping **3**: 244. 1935.—Lee, For. Bot. China 25. 1935.—Chen, Ill. Man. Chin. Trees Shrubs 12. 1937.—Hao, Gymnosp. Sin. 35. 1945.—Dallimore & Jackson, Handb. Conif. 23. 1948.

Cephalotaxus fortunei sensu Franch. in Nouv. Arch. Mus. Paris II. **7**: 102 (Pl. David. **1**: 292). 1884.—sensu Beissner in Nouv. Giorn. Bot. Ital. n. ser. **4**: 186. 1897; et in Bull. Soc. Bot. Ital. **1901**: 358. 1901.—sensu Pritzel in Bot. Jahrb. Engler **29**: 213. 1900, non Hooker.

Cephalotaxus pedunculata sensu Franch., l. c.—Pritzel, l. c., non Sieb. & Zucc.

Cephalotaxus griffiithii sensu Beissner in Bull. Soc. Bot. Ital. 1901: 358. 1901, non Hook. f.

Cephalotaxus harringtonia var. *sinensis* (Rehder & Wilson) Rehder in Jour. Arnold Arb. 22: 571. 1941; et Bibl. 5. 1949.—Florin in Act. Hort. Berg. 14: 354, 378. 1948.

Chinese name: 華粗榧*

CHEKIANG: *S. Chen 4113; R.C. Ching 1546.* KIANGSU: *Ching & Tso 493.* HUPEI: *Henry 7831; Wilson 167, 167a, 267.* SZECHUAN: *W.P. Fang 9042; H. Smith 10397; Wilson 1115* (Chiu-ting shan fl., type); *F.T. Wang 21015, 22096, 22125; T.T. Yu 780.* SIKANG: (*1115*, Mupin fruit type). HONAN: *J. Hers 550.* SHENSI: *Giraldi,* July 16, 1897; *J. Hers 2378; F.N. Meyer 40017; Wm. Purdom* in 1910.

The type specimens were collected from Chiu-ting shan of northwestern Szechuan and Mupin of northeastern Sikang. Additional collections extend its range to Tsingling Range and eastward Kiangsu and Chekiang. It is a bush or small tree up to 4 meters high, occurring in woodlands at altitudes of 1000–2000 meters. Rehder and Wilson interpreted it as a variety of *C. drupacea.* They overlooked the short peduncle of its staminate flower which is naked, not covered by scales. In this respect is differs from all other known Chinese Cephalotaxus as well as *C. drupacea.* Its relationship with *C. drupacea* is comparable to that of *C. fortunei.* It should not be treated as a variety of either of them.

5a. **Cephalotaxus sinensis** var. **globosus** (Rehder & Wilson) Li in Lloydia **16**: 163. 1954.

Cephalotaxus drupacea var. *sinensis* f. *globosa* Rehder & Wilson in Sarg., Pl. Wils. **2**: 4. 1914.—Pilger in Bot. Jahrb. Engler **54**: 41. 1916.—Lee, For. Bot. China 25. 1935.

Chinese name: 圓華粗榧*

HUPEI: *Wilson 163* (Hsing-shan Hsien, type)

Endemic to western Hupei, known only from the type collection; distinguished by its short leaves 1.5–2.5 cm. long, 2 mm. wide, acuminate at the apex, and by its subglobose fruit 18 mm. long, 15 mm. in diameter. The fruit of the typical *C. sinensis* is oblong-ellipsoid, 2.5 cm. long.

6. **Cephalotaxus wilsoniana** Hayata, Ic. Pl. Formos. **4**: 22. 1914.—Kanehira, Formos. Trees 595. 1917, rev. ed. 31. fig. 1. 1936.—Suzuki in Ann. Rep. Taihoku Bot. Gard. **1**: 114. 1931.—Li & Keng in Taiwania **5**: 33. pl. 4. 1954.—Liu, Ill. Lign. Pl Taiwan **1**: 30. 1960.—Li, Woody Fl. Taiwan 38. fig. 4. 1963.

Chinese Name: 臺灣粗榧

TAIWAN: *H.H. Bartlett 6310; Kanehira & Sasaki 2578; S. Suzuki,* Nov. 1, 1933; *Wilson 9832, 10874.*

Endemic to Taiwan, localized in Mt. Arisan, occurring in mixed forests at altitudes of 1400–2955 meters; leaves resemble *C. sinensis* in appearance and size; material with staminate flower not available for comparison.

PODOCARPACEAE 羅漢松科

1. DACRYDIUM Soland. 臥子松屬

Dacrydium Soland. ex Forster f., Pl. Escul. 80. 1786.—Benth. & Hook. f., Gen. Pl. **3**: 433. 1880.—Pilger in Engler, Pflanzenr. **18** (**IV. 5**): 51. 1903; et in Engler & Prantl, Pflanzenf. ed. 2. **13**: 239. 1926.

Lepidothamnus Philippi in Linnaea **30**: 730. fig. a—g. 1860.

Type species: *D. cupressinum* Soland. ex Forst. f.

1. **Dacrydium pierrei** Hickel in Bull. Soc. Dendr. France 75: 74. 1930.—Lecomte, Fl. Gén. Indo-Chine **5**: 1070. fig. 123, 2-4. 1931.—Merr. in Lingn. Sci. Jour. **13**: 54. 1934.—Chen, Ill. Man. Chin. Trees Shrubs 16. 1937.—Masam., Fl. Kain. 37. 1943.—Metcalf, Fl. Fuk. **1**: 21. 1942.
Dacrydium elatum senst Merr. in Jour. Arnold Arb. **6**: 130. 1925; et in Lingn. Sci. Jour. **5**: 21. 1928.—sensu Groff in Lingn. Sci. Jour. **9**: 278. 1930.—sensu Hao, Gymnosp. Sin. 23. fig. 1-4. 1945, non Wall.

Chinese name: 臥子松

HAINAN: *N. K. Chun & C. L. Tso 43870; W. Y. Chun 1367, 2089; F. C. How 72869; How & Chun 70144; H. Y. Liang 63214, 65094; Tsang & Fung 566, 618; C. Wang 33651, 36532.*

A native of Indochina and Hainan, in Hainan occurring in forests at altitudes of 700–780 meters as a tree 6–26 meters high; fruits bright red in June; resembling *Cryptomeria* in vegatative characters; distinguished by terminal solitary seeds subtended by oblique non-fleshy scales.

2. PODOCARPUS L'Héritier 羅漢松屬

Podocarpus L'Héritier Persoon, Syn. Pl. **2**: 580. 1807.—Parlatore in DC., Prodr. **16**(**2**): 507. 1868.—Benth. & Hook. f., Gen. Pl. **3**: 434. 1880.—Eichl. in Engler & Prantl, Pflanzenf. II. **1**: 104. 1889.—Pilager in Engler, Pflanzenr. **18**(**IV. 5**): 54. 1903.—Foxworthy in Philip. Jour. Sci. Bot. **6**: 155. 1911.—Rehder, Man. 2. 1927, ed. 2. 6. 1940; et Bibl. 5. 1949.—Buchholz & Gray in Jour. Arnold Arb. **29**: 49. 1948, non L'Héritier ex Labillardière 1806. *nom. conserv.*

Nageia Gaertner, Fruct. **1**: 191. t. 39. fig. 8. 1788, p. p.—Kuntze, Rev. Gen. Pl. **2**: 798. 1891.

Type species: *Taxus elongata* Ait.=*P. elongata* (Ait.) L'Héritier.

1. **Podocarpus brevifolius** (Stapf) Foxw. in Philip. Jour. Sci. **6** (**Bot.**): 160. t. 29. fig. 2. 1911.—Merr. & Chun in Sunyats. **5**: 13. 1940.—Chun in Sunyats. **4**: 170. 1940.—Metcalf, Fl. Fuk. **1**: 21. 1942.
Podocarpus neriifolius var. *brevifolia* Stapf in Trans. Linn. Soc. Bot. **4**: 249. 1894.—Pilger in Engler, Pflanzenr. **18**(**IV. 5**): 93. 1903.—Dallimore & Jackson, Handb. Conif. 53. 1923, ed. 3. 77. 1948.
Podocarpus wangii Chang in Sunyats. **6**: 26. t. 6. 1941.

Chinese name: 短葉羅漢松*

HAINAN: *C. Wang 36533.* KWANGSI: *C. Wang 39578* (♂ flower, type of *C. wangii*), 41016 (fruit, type of *C. wangii*). KWANGSI: *C. Wang 40106.* YUNNAN: *K. M. Feng 13094.*

High mountains of tropical Asia from Bornea northeastward to the Philippines, Hainan and Kwangsi; distinguished by its short linear-elliptic leaves and solitary or 2–3–fasciculate staminate flowers.

2. **Podocarpus chingianus,** sp. nov.

Chinese names: 秦氏羅漢松

Arbor parvus, columnaris, 8 m. altus, ramis rugosis; foliis confertis, oblongo-oblanceolatis, basi cuneatis, apice obtusis vel rotundatis, 1.3–3.5 cm. longis, 1–3 mm. latis, supra olivaceis, subtus glaucis, costa utrinque elevata; floribus masculinis 3-fasciculatis, sessilibus, 2–2.5 cm. longis, basi squamis deltoideis, carinatis; antheris sessilibus, imbricatis, loculis 2, 0.75 mm. longis, apiculatis, apiculis ovatis, 0.5–0.75 mm. longis, apice obtusis vel erosis; floribus femineis et fructibus ignotis.

CHEKIANG: *R. C. Ching 2477* (type). KIANGSU: *C. L. Tso 1477.* SZECHUAN: *W. P. Fang 14261.*

Occurring in woods or open thickets as a small tree 4 to 8 meters high, at sea level or up to 1000 meters altitude, rare; distinguished by its columnar habit, small oblanceolate leaves rarely up to 3 cm. long, and by its relatively large apiculum of the anthers.

Dr. N. E. Gray has seen *Ching 2422* and *Tso 1477.* In 1946 she named these as a variety of *P. macrophyllus.* After seeing my manuscript in 1955 she wrote: "I believe them to be *P. brevifolius*....The columnar habit of the Chinese specimens is worthy of mention. Clemens described them as beautiful trees in Borneo." Besides the fact that *P. chingianus* is out of the range of *P. brevifolius*, there are morphological differences between the two. I compared all our Borneo collections of *P. brevifolius* with the specimens which I interpreted to be *P. chingianus* and found that at first sight one notices the Chinese specimens lack the stiff texture of the Malaysian ones. Under the microscope one finds that the leaves of *P. brevifolius* have much wider (two or three times wider) non-stomatal marginal bands than those of the Chinese species.

3. **Podocarpus costalis** Presl, Epimel. Bot. 236. 1849.—Pilger in Engler, Pflanzenr. **18(IV. 5)**: 78. 1903.—Yamamoto, Suppl. Ic. Pl. Formos. **2**: 1. 1926.—Kanehira, Formos. Trees rev. ed. 35. fig. 3. 1936.

Podocarpus polystachyus sensu Sasaki in Trans. Nat. Hist. Soc. Formosa **26**: 130. 1936.—sensu Li in Taiwania **1**: 291. 1950.—sensu Li & Keng in Taiwania **5**: 35. pl. 5. 1954.—Liu, Ill. Lign. Pl. Taiwan **1**: 24. fig. 18. 1960.—Li, Woody Pl. Taiwan 42. fig. 5. 1963, non R. Br.

Chinese name: 蘭嶼羅漢松

TAIWAN: Botel Tobago, *U. Mori 315* (as determined by Buchholz & E. Gray).

Endemic to the Philippines, occurring also on Botel Tobago, a dwarf tree; distinguished by its oblanceolate leaves rounded at the apex.

4. **Podocarpus forrestii** Craib & W. W. Sm. in Notes Bot. Gard. Edinb. **12**: 219. 1920.—Orr in Notes Bot. Gard. Edinb. **18**: 126. 1933.—Wilson in Jour. Arnold Arb. **7**: 42. 1926.—Chen, Ill. Man. Chin. Trees Shrubs 15. 1937.—Dallimore & Jackson, Handb. Conif. ed. 3. 69. 1948.

Podocarpus macrophyllus sensu Diels in Notes Bot. Gard. Edinb. **7**: 258 1912, non D. Don.

Chinese name: 大理羅漢松

YUNNAN: *Forrest 4665* (type), *6852, 15527.*

Endemic to the Tali Range of Western Yunnan; closely akin to *Podocarpus macrophyllus* var. *maki* Sieb.; distinguished by lower habit, shorter and broader leaves 5–8 cm. long, 9–13 mm. wide, obtuse or rotundate at the apex.

5. **Podocarpus formosensis** Dümmer in Gard. Chron. III. **52**: 295. 1912.—Sasaki, List Pl. Formos. 49. 1928.—Makino & Nemoto, Fl. Jap. ed. 2. 133. 1931.—Yamamoto in Jour. Soc. Trop. Agr. **7**: 146. 1935.—Kanehira, Formos. Trees rev. ed. 707. 1936.—Metcalf, Fl. Fuk. 1: 21. 1942.—Dallimore & Jackson, Handb. Conif. ed. 3. 69. 1948.—Li in Taiwaia **1**: 289. 1950, et Woody Fl. Taiwan 40. 1963.—Li & Keng in Taiwania **5**: 43. t. 9. 1954.

Podocarpus nageia sensu Henry in Trans. Asiat. Soc. Jap. **24(Suppl.)**: 91 (List Pl. Formos.). 1896, p. 9.—sensu Matsum. & Hayata in Jour. Coll. Sci. Univ. Tokyo **22**: 399 (Enum. Pl. Formosa). 1906.—sensu Kanehira, Formos. Trees 612. fig. 1917, non R. Br.

Podocarpus nagi sensu Sasaki, List Pl. Formos. 49. 1928; et Cat. Formos. Gov. Herb. 53. 1930, non Makino nec Pilger.

Podocarpus nagi var. *angustifolia* sensu Sasaki, List Pl. Formos. 49. 1928; et Cat. Formos. Gov. Herb. 53. 1930, non Makino.

Podocarpus nagi var. *koshunensis* Kanehira in Trans. Nat. Hist. Soc. Formos. **21**: 145. 1931.

Podocarpus formosensis var. *koshunensis* Merr. & Yamamoto ex Yamamoto in Jour. Soc. Trop. Agr. **7**: 146. 1935.

Podocarpus koshunensis Kanehira, Formos. rev. ed. 36. fig. 4. 1936.

Chinese name: 臺灣竹柏

TAIWAN: *U. Faurie 1840, 1841; Henry 1446; Kanehira 28, 29.*

Endemic to Taiwan, distribution restricted to the southern end of the island.

6. **Podocarpus imbricatus** Blume, Enum. Pl. Jav. 89. 1827.—Pilger in Engler, Pflanzenr. **18(IV. 5)**: 56. 1903.—Chun in Hu & Chun, Ic. Pl. Sin. **2**: 4. 1929.—Hickel in Lecomte, Fl. Gén. Indo-Chine **5**: 1068. 1931.—Metcalf, Fl. Fuk. **1**: 21. 1942.—Hao, Gymnosp. Sin. 25. 1945.

Podocarpus cupressinus R. Br. ex Mirb. in Mém. Mus. Hist. Nat. Paris **13**: 75. 1825, nomen nudum.—Bennett in R. Br., Pl. Jav. Rar. **1**: 35. t. 10. 1838.—Endl., Synop. Con. 222. 1847.—Carr., Traité Conif. **2**: 677. 1867.—Parl. in DC., Prodr. 16(2): 521. 1868.—Dunn in Jour. Linn. Soc. Bot. **39**: 477. 1911.

Podocarpus horsfieldii Wall., Num. List no. 6049. 1828.—Endl., Synop. Conif. 222. 1847.

Taxodium horsfieldii Knight, Synop. Conif. 21. 1850.

Podocarpus javanicus Merr. in Philip. Jour. Sci. Bot. **19**: 338. 1921; et in Lingn. Sci. Jour. **5**: 21. 1928.—Hu & Chun, Ic. Pl. Sin. **2**: t. 54. 1929.—Chun in Sunyats. **1**: 210. 1934.—Chen, Ill. Man. Chin. Trees Shrubs 15. 1937.—Masam., Fl. Kain. 38. 1943.

Podocarpus kawae Hayata in Bull. Econ. Indochine **19**: 439. 1917.—Hao, Gymnosp. Sin. 29. 1945.

Chinese name: 篦葉竹柏*

FUKIEN: *B. Hayata* (isotype of *P. kawae*). HAINAN: *W. Y. Chun 1390; Chun & Tso 43955, 44250; H. Y. Liang 61783, 15187, 65257; McClure* (CCC *8705*). KWANGSI: *R. C. Ching 7034; C. Wang 39608.* YUNNAN: *K. M. Feng*

Old World tropics, a big tree with a trunk 1.5 m. in diameter, occurring in forested ravines in Hainan, Kwangtung, Kwangsi and southern Yunnan, at altitudes of 700–1350 meters; fruit bright red; distinguished by its dimorphic leaves, some

scaly and imbricate and others flat and distichous.

7. **Podocarpus macrophyllus** (Thunb.) D. Don in Lamb., Gen. Pin. **2**: 22. 1824, (macropylla). Masters in Forbes & Hemsl. in Jour. Linn. Soc. Bot. **26**: 548 (Ind. Fl. Sin. II). 1899—Diels in Bot. Jahrb. Engler **29**: 213. 1900.—Matsum. in Bot. Mag. Tokyo **15**: 139. 1901.—Pilger in Engler, Pflanzenr. **18(IV. 5)**: 79. 1903; et in Bot. Jahrb. Engler **54**: 38. 1916.—Pax in Limpricht in Rep. Sp. Nov. Fedde **12**: 303. 1922.—Rehder, Man. 2. 1927, ed. 2. 6. 1940; et Bibl. 5. 1949.—Groff in Lingn. Sci. Jour. **9**: 276. 1930—Hsia in Contr. Inst. Bot. Nat. Acad. Peiping **1**: 40. 1931.—Cheng in Contr. Biol. Lab. Sci. Soc. China **8**: 300. 1933.—Lee, For. Bot. China 19. 1935.—Tsoong in Contr. Inst. Bot. Nat. Acad. Peiping **4**: 157. 1936.—Chen, Ill. Man. Chin. Trees Shrubs 14. fig. 10. 1937.—Kia, Pl. Sin. Ill. 1235. fig. 2155. 1937.—Metcalf, Fl. Fuk. **1**: 20. 1942.—Dallimore & Jackson, Handb. Conif. ed. 3. 73. 1948.—Li & Keng in Taiwania **5**: 39. t. 7. 1954.

Taxus macrophylla Thunb., Fl. Jap. 276. 1784.

Podocarpus longifolius Hort. ex Sieb. in Jaarb. Nederl. Maatsch. Aanmoed. Tuinb. **1844**: 35. 1844, in syn.

Nageia macrophylla (Thunb.) Kuntze, Rev. Gen. Pl. **2**: 800. 1891.

Podocarpus nakoya Hort. ex Endl., Synop. Conif. 217. 1847.

Podocarpus nakoyae Hort. ex Carr., Traité Conif. 457. 1855.

Podocarpus miquelia Hort. ex Parlatore in DC., Prodr. **16(2)**: 516. 1868.

Chinese name: 羅漢松

FUKIEN: *H. H. Chung 3865, 5775.* CHEKIANG: *C. Y. Chiao* ex Univ. Nank. Herb. no. *14737; R. C. Ching 1892; H. H. Hu 191.* KIANGSU: *Ching & Tso 785.* ANHWEI: *R. C. Ching 3124.* KIANGSI: *H. H. Chung 2.* KWEICHOW: *Y. Tsiang 5317.* YUNNAN: *Rock 2495.* SZECHUAN: *W. P. Fang 1963; F. T. Wang 22281.*

Originally described from Japan, widely distributed in China, occurring along streams or on open moist slopes at altitudes of 200–1150 meters, often cultivated in temples; distinguished by oblong-linear or lanceolate leaves 5.5–9 cm. long, 7–12mm. wide, attenuate at both ends.

7a. **Podocarpus macrophyllus** var. **angustifolius** Blume in Rumphia **3**: 215. 1847.—Dallimore & Jackson, Handb. Conif. ed. 3. 73. 1948.

Podocarpus macrophyllus f. *angustifolius* (Blume) Pilger in Engler, Pflanzenr. **18(IV. 5)**: 80. 1903.

Podocarpus chinensis var. *angustifolius* (Blume) Hao, Gymnosp. Sin. 29. 1945.

Podocarpus macrophyllus var. *acutifolius* Hao, l. c., in syn.

KIANGSU: *Ching & Tso 730.*

A narrow-leafed form cultivated in temples, leaves 5–9 cm. long, 4–5 mm. wide, cuneate at the base, acute at the apex.

7b. **Podocarpus macrophyllus** f. **argenteus** (Gordon), comb. nov.

Podocarpus chinensis var. *argentea* Gordon, Pinet. Suppl. 88. 1862.

Podocarpus maki var. *albo-variegata* Regel in Gartenfl. **13**: 88. 1864.—Dallimore & Jackson, Handb. Conif. ed. 3. 73. 1948.

A cultivated form with white variegated leaves, introduced to the Royal Nursery of England by Fortune in 1861.

7c. **Podocarpus macrophyllus** f. **aureus** (Gordon), comb. nov.

Podocarpus chinensis var. *aurea* Gordon, Pinet. Suppl. 88. 1862.

Podocarpus macrophyllus fol. *luteo-variegati* Regel in Gartenfl. **13**: 38. 1864.

Podocarpus macrophyllus var. *luteo-variegatus* Hort. ex Dallimore & Jackson, Handb. Conif. ed. 3. 73. 1948.

A cultivated form with golden yellow variegated leaves; introduced to England by Fortune in 1861.

7d. **Podocarpus macrophyllus** f. **grandifolius** Pilger in Engler, Pflanzenr. **18(IV. 5)**: 80. 1903. *Podocarpus macrophylla* var. *liukiuensis* Warb., Monsunia **1**: 192. 1900.

HAINAN: *C. Wang 35031.*

A large-leaved form, the leaves 10–15 cm. long, 10–14 mm. wide, cuneate at the base, obtuse or rounded at the apex; originally published from Liukiu, occurring in Hainan as a tree 8 m. high.

7e. **Podocarpus macrophyllus** var. **maki** Sieb., Naamlyst. 235. 1844, *nomen nudum.*—Sieb. & Zucc. in Abh. Math.-Phys. Akad. Wiss. München IV. **3**: 232 (Fl. Jap. Fam. Nat. **2**: 108). 1846.—Endl., Synop. Conif. 216. 1847.—Neum. in Rev. Hort. **1848**: 41. t. 5. 1848.—Sieb. & Zucc., Fl. Jap. **2**: 71. t. 134. 1870.—Rehder, Man. 2. 1927, ed. 2. 6. 1940; et Bibl. 6. 1949.—Hsia in Contr. Inst. Bot. Nat. Acad. Peiping **1**: 40. 1931.—P'ei in Contr. Biol. Lab. Sci. Soc. China Bot. ser. 8: 82. 1932.—Lee, For. Bot. China 20. 1935.—Chen, Ill. Man. Chin. Trees Shrubs 15. 1937.—Metcalf, Fl. Fuk. **1**: 20. 1942—Dallimore & Jackson, Handb. Conif. ed. 3. 74. 1948.

Taxus chinensis Roxb., Cat. Hort. Beng. 73. 1814, *nomen nudum.*

Juniperus chinensis Roxb., l. c., *nomen nudum;* et Flor. Ind. ed. 2. **3**: 840. 1832.

Podocarpaus chinensis Sweet, Hort. Brit. **1**: 371. 1827, *nomen nudum.*—Wall,. Num. List no. 6051. 1832, *nomen nudum.*—Endl., Synop. Conif. 215. 1847.—Carr., Traité Conif. 457. 1855.—Parlatore in DC., Prodr. **16(2)**: 516. 1868.—Lemaire in Jard. Fleur. **4(misc.)**: 48. 1854.—Masters in Forbes & Hemsl. in Jour. Linn. Soc. Bot. **26**: 547 (Ind. Fl. Sin. II). 1899.—Diels in Bot. Jahrb. Engler **29**: 213. 1900, **36(Beibl. 82)**: 3. 1905.—Dunn & Tutch. in Kew Bull. add. ser. **10**: 256 (Fl. Kwangt. Hongk.). 1912.—Chung in Mem. Sci. Soc. China **1(1)**: 1 (Cat. Trees Shrubs China). 1924.—Kia, Pl. Sin. Ill. 1236. fig. 2156. 1937.—Hao, Gymnosp. Sin. 27. 1945.

Podocarpus japonicus Hort. ex Sieb. in Jaarb. Nederl. Maatsch. Aanmoed. Tuinb. **1844**: 35. 1844, *nomen nudum.*

Podocarpus macrophyllus ssp. *maki* Pilger in Engler, Pflanzenr. **18(IV. 5)**: 80. 1903.

Nageia macrophylla var. *maki* Voss in Mitt. Deutsch. Dendr. Ges. **1907(16)**: 90. 1907.

Podocarpus chinensis var. *maki* (Sieb.) Hao, Gymnosp. Sin. 29. 1945.

FUKIEN: *H. H. Chung 1304, 2700, 7517.* KWANGTUNG: *Y. Tsiang 1750.* CHEKIANG: *R. C. Ching 2168; Y. L. Keng 438.* KIANGSU: *Ching & Tso 731; C. L. Tso 1634.* HUPEI: *H. C. Chow 1972.* SZECHUAN: *W. P. Fang 1693a, 12403, 20443.* SIKANG: *C. Y. Chiao 1222.*

Originally described from Japan, common in China, occurring in woods of bamboo and juniper as a tree, 18 m. high; often cultivate in temples; distinguished by smaller leaves 5–6 cm. long, 3–5 mm. wide.

8. **Podocarpus nagi** (Thunb.) Zoll. & Moritzi in Zoll., Syst. Verz. Ind. Arch. **2**: 82. 1854—Pilger in Engler, Pflanzenr. **18(IV. 5)**: 60. 1903.—Makino in Bot. Mag. Tokyo **17**: 113. 1903.—Kanehira, Formosa Trees 612. 1917, rev. ed. 35. 1936.—Cheng in Contr. Biol. Lab. Sci. Soc. China Bot. ser. **8**: 299. 1933.—Chun in Sunyats. 1: 210. 1934.—Metcalf in Lingn. Sci. Jour. 14: 687. 1935; et Fl. Fuk. 1: 19. 1942.—Chen, Ill. Man. Chin. Trees Shrubs 13. fig. 9. 1937.—Kia, Pl. Sin. Ill. 1235. fig. 2154. 1937. Dallimore & Jackson, Handb. Conif. 52. 1923, ed. 3. 76. 1948.

Myrica nagi Thunb., Fl. Jap. 76. 1786.

Nageia japonica Gärtn., Fruct. 191. t. 39. 1788.—Gordon, Pinet. 137. 1858.

Podocarpus nageia R. Br. ex Mirbel in Mém. Mus. Nat. Hist. Paris **13**: 75. 1825.—Endl., Synop. Conif. 207. 1847.—Parlatore in DC., Prodr. **16(2)**: 508. 1868.—Matsum. & Hayata in Jour.

Coll. Sci. Univ. Tokyo **22**: 399 (Enum. Pl. Formosa). 1906.—Dunn in Jour. Linn. Soc. Bot. **39**: 477. 1911.

Podocarpus japonica Senilis, Pinac. 155. 1866.

Chinese name: 竹柏

CHEKIANG: *S. Chen 4091; C. Y. Chiao* ex Univ. Nank. Herb. no. *14685; R. C. Ching 1832; Y. Y. Ho 1554; H. H. Hu 241; Y. L. Keng 99.* FUKIEN: *H. H. Chung 924, 1638, 2481, 2979, 3570; Dunn* ex HK Herb. no. *3523.* HAINAN: *F. C. How 73876; McClure* (CCC *8131*) *W. T. Tsang 681.* KWANGSI: *Steward & Cheo 728.* KIANGSI: *S. K. Lau 3964.*

Originally published from Japan, widely distributed in the warmer part of China, occurring in woods along streams at altitudes of 250-450 meters, generally found in cultivation for ornamental purposes; distinguished by its opposite elliptic or ovate-elliptic leaves with many parallel veins and no midrib, and by its woody receptacles.

9. **Podocarpus nakaii** Hayata, Ic. Pl. Formos. **9**: 66. 1916; et Gen. Ind. Fl. Formos. 74. 1916.—Kanehira, Formos. Trees 613. 1917, rev. ed. 36. fig. 5. 1936.—Sasaki, List Pl. Formos. 49. 1928; et in Trans. Nat. Hist. Soc. Formosa **20**: 167. 1930.—Masamune, Short Fl. Formos. 34. 1936.—Li in Taiwania **1**: 290. 1950.

Podocarpus macrophyllus sensu Matsum. & Hayata in Jour. Coll. Sci. Univ. Tokyo **22**: 398 (Enum. Pl. Formos.). 1906.—Masamune, Short. Fl. Formos. 34. 1936, non D. Don.

Podocarpus macrophyllus var. *nakai* (Hayata) Li & Keng in Taiwania **5**: 39. 1954.

Chinese name: 土杉

TAIWAN: *T. Hayashi* ex Herb. Gov. Formosa no. *21208; R. Kanehira 316,* Aug. 18, 1927, Oct. 15, 1927; *S. Sasaki 2596; Wilson 9935, 9937, 9984, 10023.*

Endemic to Taiwan, occurring in forests at altitudes of 830 meters; distinguished by its large linear-lanceolate leaves attenuated at both ends and by its ovoid seeds acute at the apex.

10. **Podocarpus nankoensis** Hayata, Ic. Pl. Formos. **7**: 39. 1918.—Merr. in Lingn. Sci. Jour. **5**: 21. 1928.—Sasaki, List Pl. Formos. 49. 1928.—Yamamoto, in Jour. Soc. Trop. Agr. Formos. **7**: 147. 1935.—Kanehira, Formos. Trees rev. ed. 707. fig. 50. 1936.—Masam., Fl. Kain. 38. 1943.—Li in Taiwania **1**: 290. 1950.—Li & Keng in Taiwania **5**: 41. t. 8. 1954.

Podocarpus nagi sensu Kanehira, Formos. Trees 612. 1919, rev. ed. 35. 1936.—Masam., Short. Fl. Formos. 34. 1936, non Zoll. & Moritzi.

Chinese name: 山杉

TAIWAN: *B. Hayata,* May 1916 (isotype); *R. Kanehira 14; Wilson 10242, 10279, 11109.*

Endemic to the northern part of Taiwan, occurring in forests as a tree; distinguished by its ovate-lanceolate leaves with parallel veins, short staminate 5-7 mm. long and small globose seeds 1 cm. in diameter.

11. **Podocarpus neriifolius** D. Don in Lamb., Pinus **2**: 21. 1824.—Hook. in Bot. Mag. **38**: t. 4655. 1852.—Pilger in Engler, Pflanzenr. **18(IV. 5)**: 80. 1903.—Masters in Forbes & Hemsl. in Jour. Linn Soc. Bot. **26**: 548. (Ind. Fl. Sin. II). 1899.—Hayata in Jour. Coll. Sci. Univ. Tokyo **30(1)**: 307 (Mat. Fl. Formos.). 1911.—Dunn & Tutch. in Kew Bull. add. ser. **10**: 256 (Fl. Kwangt. Hongk.). 1912.—Patschke in Bot. Jahrb. Engler **48**: 629. 1913.—Rehder & Wilson in Sarg., Pl. Wils. **2**: 9. 1914.—Hayata in Bot. Mag. Tokyo **31**: 119. 1917.—Chun, Chin. Econ. Trees 46. 1922.—Pax in Limpricht in Rep. Sp. Nov. Fedde **12**: 303. 1922.—Chung in Mem. Sci. Soc. China **1(1)**: 1 (Cat. Trees Shrubs China). 1924.—Rehder in Jour.

Arnold Arb. **10**: 108. 1929, **17**: 54. 1936.—Cheng in Sinensia **2**: 103. 1931.—Chen in Contr. Biol. Lab. Sci. Soc. China Bot. ser. **8**: 299. 1933.—Metcalf in Lingn. Sci. Jour. **14**: 687. 1935.—Lee, For. Bot. China 19. 1935.—Masamune, Short Fl. Formos. 34. 1936; et Fl. Kain. 28. 1943.—Chen, Ill. Man. Chin. Trees Shrubs 15. 1937.—Merr. & Chun in Sunyats. **5**: 13. 1940.—Hao, Gymnosp. Sin. 26. 1945.—Fang, Ic. Pl. Omei **2**(**2**): t. 191. 1946.—Dallimore & Jackson, Handb. Conif. 52. 1923, ed. 3, 77. 1948.

Podocarpus macrophyllus sensu Wall., Tent. Fl. Nepal 56. t. 43. 1824.—sensu Franch. in Jour.

Podocarpus bracteata Blume, Enum. Pl. Jav. 88. 1928; et in Rumphia **3**: 214. 1947.

Podocarpus neglecta Blume in Rumphia **3**: 214. 1847.

Podocarpus discolor Blume, l. c.

Podocarpus leptostachya Blume, op. cit. 214.

Podocarpus macrophylla var. *acummatissima* Pritzer ex Diels in Bot. Jahrb. Engler **29**: 313. 1900; **36**(**Beibl. 82**); 3. 1905.

Myrica esquirolii Lévl. in Rep. Sp. Nov. Fedde **12**: 537. 1913.

Alyxia schlechteri Lévl., Fl. Kouy-Tchéou 30. 1914, non Lévl. 1911.

Chinese name: 百日青

TAIWAN: *Wilson 10319.* HAINAN: *F. C. How 73776; H. Y. Liang 63510, 65091.* KWANGSI: *R. C. Ching 8417.* CHEKIANG: *R. C. Ching 1982.* KWEICHOW: *J. Cavalerie 3463* (cited as *Alyxia schlechteri* in Fl. Kouy-Tchéou); *E. Esquirol 3223* (type of *Myrica esquirolii*). YUNNAN: *Henry 12919; C. W. Wang 77087.* SZECHUAN: *Chiao & Fan 580; S. S. Chien 5936; W. P. Fang 2346, 12305, 18664; Y. S. Liu 1643; Wilson 3007.*

Old World tropics, occurring in the warmer part of China, in woods at altitudes of 175-1400 meters, a tree 12 meters high; distinguished by its linear-lanceolate leaves attenuated at both ends, fasciculate staminate flowers and subglobose fruit on fleshy red or purple receptacles. Dr. Gray considers *How 73776* and *Liang* 63510, 65091 *P. annamiensis.*

12. **Podocarpus wallichianus** Presl, Bot. Bemerk. 110. 1844.—Pilger in Engler, Pflanzenr. **18**(**IV. 5**): 59. 1903.—Merr. in Lingn. Sci. Jour. **13**: 16. 1934.—Metcalf in Lingn. Sci. Jour, **14**: 687. 1935.—Yamamoto in Jour. Soc. Trop. Agr. **7**: 147. 1935.—Kanehira, Formos. Trees rev. ed. 707. 1936.—Chen, Ill. Man. Chin. Trees Shrubs 14. 1937.—Metcalf, Fl. Fuk. **1**: 21 1942.—Hao, Gymnosp. Sin. 26. 1945.—Li in Taiwania **1**: 290. 1950.

Podocarpus latifolia Wall., Pl. As. Rar. 26. t. 30. 1830.—Forbes & Hemsl. in Jour. Linn. Soc. Bot. **26**: 547 (Ind. Fl. Sin. II). 1902, non R. Br.

Nageia latifolia Gordon, Pinet. 138. 1858.—Carr., Traité Conif. ed. 2. 638. 1867.

Nageia wallichiana O. Kuntze, Rev. Gen. **2**: 800. 1891.

Chinese name: 對葉竹柏*

TAIWAN: *Henry 1446.* KWANGTUNG: *W. T. Tsang 20123, 25273.*

Tropical Asia from the Himalayan region to Taiwan, rare in China; distinguished by its opposite large ovate-lanceolate leaves, branched staminate flowers and well-developed fleshy receptacles.

Doubtful and excluded species

1. *Podocarpus argotaenia* Hance in Jour. Bot. **21**: 357. 1883=**Amentotaxus argotaenia** (Hance) Pilger.
2. *Podocarpus drupacea* Hort. ex Knight & Perry, Syn. Conif. 51. 1850=**Cephalotaxus drupacea** Sieb. & Zucc.
3. *Podocarpus mairei* Lemée & Lévl. in Mondes Pl. II. **16**: 20. 1916.—Wilson in Jour. Arnold Arb. **7**: 42. 1926=**Keteleeria evelyniana** Masters in Gard. Chron. III. **33**: 194. fig. 82. 1903.

4. *Podocarpus insignis* Hemsl. in Jour. Bot. Brit. For. **23**: 287. 1855=**Amentotaxus argotaenius** (Hance) Pilger.

5. *Podocarpus neriifolius* var. *brevipes* Blume, Rumphia **3**: 213. 1847.—Pilger in Engler, Pflanzenr. **18(IV. 5)**: 81. 1903.—Hao, Gymnosp. Sin. 27. 1945.

This variety is characterized by narrower leaves and short peduncles of the female flowers which equal the receptacles in length. Hao was apparently mislead by Pilger's citation of Bock & Rosthorn's 405 from Szechuan and Henry 12919 from Yunnan and credited this variety to China. Both the above citations are typical *P. neriifolius*. So far as I know, *P. neriifolius* var. *brevipes* does not occur in China.

6. *Podocarpus philippinensis* Foxw. in Philip. Jour. Sci. **6(Bot.)**: 163. 1911.—Sasaki, List Pl. Formos. Trees rev. ed. 39. fig. 6. 1936.—Masam., Short Fl. Formos. 35. 1936.—Li in Taiwania **1**: 291. 1950.—Li & Keng in Taiwania **5**: 37. pl. 6. 1954.

Botanists dealing with the flora of Taiwan recorded this species from the southern end of that island. No specimen from Taiwan or the Philippines are filed under this name in the Harvard University Herbarium.

7. *Podocarpus sutchuenensis* Franch. in Jour. de Bot. **13**: 265. 1899.—Masters in Forbes & Hemsl. in Jour. Linn. Soc. Bot. **26**: 548 (Ind. Fl. Sin. II). 1899.—Pilger in Diels in Bot. Jahrb. Engler **29**: 213. 1900; et **36(Beibl. 82)**: 3. 1905.=**Keteleeria davidiana** Beissn., Handb. Nadelholzk. 424. fig. 117. 1891.

ARAUCARIACEAE 南洋杉科

1. AGATHIS Salisb. 貝殼杉屬

Agathis Salisb. in Trans. Linn. Soc. **8**: 311. t. 15. 1807.—Benth. & Hook. f., Gen. Pl. **3**: 436. 1880—Warburg, Monsunia **1**: 182. 1900—Seward & Ford in Phil. Trans. Roy. Soc. London ser. B. **198**: 309. 1906.—Foxw. in Philip. Jour. Sci. **5(A)**: 173. 1910, **6(Bot.)**: 167. 1912.—Chen, Ill. Man. Chin. Trees Shrubs 55. 1937.—Dallimore & Jackson, Handb. Conif. ed. 3. 176. 1948.—*nom. conserv.*

Dammara [Rumphius] Lam., Encycl. **2**: 259. 1786.

Type species: *A. alba* (Lam.) Foxw.=*A. loranthifolia* Salisb.

1. **Agathis alba** (Lam.) Foxw. in Philip. Jour. Sci. **5(A)**: 137. 1910.—Merr. in Bur. Sci. Publ. Manila **9**: 76 (Int. Rumph. Herb.) 1917.—Burk. & Holt. in Gard. Bull. Straits Settlem. **3**: 76. 1923.

Dammara alba Lam., Encycl. **2**: 259. 1786.

Pinus abies Lour., Fl. Cochinch. 579. 1790.

Agathis laranthifolia Salisb. in Trans. Linn. Soc. **8**: 311. 1807.—Hook. f., Fl. Brit. Ind. **5**. 650. 1888.—Seward & Ford in Phil. Trans. Roy. Soc. London ser. B. **198**: 314. 1906.—Camp & al. in Brittonia **6**: 48 (Int. Rules Bot. Nom. adopt. 1935). 1947.

Agathis dammara (Lamb.) L. C. Rich., Comm. Conif. Cyc. 93. t. 19. 1826.—Warburg, Monsunia **1** 183. t. 9. fig. 1. 1900.—Chen, Ill. Man. Chin. Trees Shrubs 55. 1937.

Pinus dammara Lamb., Pin. **1**: 61. t. 38. 1803.

Chinese name: 貝殼杉

From Malaya and the Philippines eastward to Fiji, New Zealand, and New Caledonia, possibly cultivated in South China, material not available to me; distinguished by its subopposite lanceolate-elliptic leaves resembling *Podocarpus nagi*, by its solitary axillary male cones 2–3 cm. long, and by its solitary terminal female

cones with each scale bearing a single obliquely winged seed. The semi-fossilized or recent resin from the tree, known as dammar or copal, is an important commercial product.

2. **ARAUCARIA** Jussieu 南洋杉屬

Araucaria Jussieu, Gen. Pl. 413. 1789.—Benth. & Hook. f., Gen. Pl. **3**: 437. 1880.—Warburg, Monsunia **1**: 187. 1900.—Seward & Ford in Phil. Trans. Roy. Soc. London ser. B. **198**: 319. 1906.—Rehder, Man. 27. 1927, ed. 2. 7. 1940; et Bibl. 6. 1949.—Chen, Ill. Man. Chin. Trees Shrubs 55. 1937.—Metcalf, Fl. Fuk. **1**: 24. 1940.—Dallimore & Jackson, Handb. Conif. ed. 3. 190. 1948.—Li in Taiwania **1**: 292. 1950.

Dombeya Lam., Encycl. 2: 302. 1786, non L'Heritier, nec Cavan.

Eutassa Salisb. in Trans. Linn. Soc. London 8: 316. 1807.—Link in Linnaea 15: 543. 1841.

Columbea Salisb. op. cit. 317. 1807.

Type species: *A. imbricata* Pavon=*A. araucana* (Mol.) Koch.

1. **Araucaria araucana** (Molina) K. Loch, Dendr. 2(2): 206. 1873.—Rehder, Man. 27. 1927; ed. 2. 7. 1940; Bibl. 6. 1949—[Sauer], List Pl. Lingn. 7. 1949.—Dallimore & Jackson, Handb. Conif. ed. 3. 192. 1948.

Pinus araucana Molina, Saggio Stor. Nat. Chile 182. 1782.
Dombeya chilensis Lam., Encycl. **2**: 301. 1786.
Araucaria imbricata Pavon in Mem. Acad. Madrid **1**: 199. 1797.
Columbea quadrifaria Salisb. in Trans. Linn. Soc. London **8**: 317. 1807.

Chinese name: 猴子杉

A native of Chile, introduced to Europe by Archibald Menzies about 1795, cultivated in Canton for ornamental purposes; distinguished by its spirally arranged, stiff, rigid ovate-lanceolate leaves, fasciculate terminal male cones, and by its solitary globose-ovoid cones with scales each bearing 1 wingless seed adherent to the scale.

2. **Araucaria bidwillii** Hook. in Lond. Jour. Bot. **2**: 503. t. 18. 1843.—Metcalf., Fl. Fuk. **1**: 24. 1942.—Dallimore & Jackson, Handb. Conif. ed. 3. 196. fig. 31 d. 1948.

Chinese name: 奧杉*

FUKIEN: *H. H. Chung 1673, 6331.*

A native of Australia, cultivated in the tropical and subtropical countries for ornamental purpose, recorded from C. Y. Wang's garden in Amoy; distinguished by its less rigid ovate-lanceolate leaves, slender long male cones, large cones up to 30 cm. long, 22 cm. in diameter and by its large pear-shaped seeds with rudimentary wings.

3. **Araucaria excelsa** R. Br. in Ait. Hort. Kew. ed. 2. **5**: 412. 1813.—Chen, Ill. Man. Chin. Trees Shrubs 55. fig. 42. 1937.—Metcalf., Fl. Fuk. **1**: 24. 1942.—Dallimore & Jackson, Handb. Conif. ed. 3. 201. 1948.

Eutacta excelsa (R. Br.) Link in Linnaea **51**: 543. 1841.

Chinese name: 南洋杉

A native of the Norfolk Island of New Caledonia, being a very popular ornamental tree in the Mediterranean region, recorded from Foochow (ex Metcalf), and

the Botanical Gard. Sun. Tomb, Nanking; distinguished by its awl-shaped leaves on young branches and ovate-deltoid imbricate leaves on older and fruiting branches, by its smaller globose cones up to 10 cm. in diameter.

PINACEAE 松柏科

1. ABIES Miller 冷杉屬

Abies Miller, Gard. Dict. Abridg. ed. 1. AB. 1754; et Gard. Dict. ed. 8. AB1. 1768, p. p. typ.—Duhamel, Traité Arb. Arbust. **1**: 1. 1755.—Poiret, Encycl. Méth. Bot. **6**: 509. 1804.—A. Dietrich, Fl. Berlin 793. 1824.—Link in Abh. Akad. Wiss. Berlin **1827**: 181 (Fam. Pinus 25. 1827). 1830.—Rehder, Man. 28. 1927, ed. 2. 9. 1940; et Bibl. 7. 1949.—Viguié in Bull. Soc. Hist. Nat. Toulouse **58**: 245 (Rév. Abies 67). 1929.—Franco, Abetos 1. 1950.—*Nom. Conserv.* cf. Little in Madroño **7**: 244. 1944.

Pinus Linn., Sp. Pl. 1000. 1753, p. p.

Peuce L. C. Richard in Ann. Mus. Hist. Nat. Paris **16**: 298. 1810, p. p.

Picea D. Don ex Loudon, Arb. Brit. **4**: 2399. 1838, non A. Dietrich.

Pinus sect. *Abies* (Link) Koch, Syn. Germ. Helv. ed. 2. **2**: 769. 1844.—Endl., Syn. Conif. 112. 1847.—Parlatore in DC., Prodr. **16(2)**: 418. 1868.

Lectotype: *Pinus picea* Linn.=*A. alba* Mill.

1. **Abies balsamea** (Linn.) Miller, Gard. Dict. ed. 8. AB. 1768.—Kia, Pl. Sin. Ill. 1217. fig. 2120. 1937.—Rehder, Man. 35. 1927, ed. 2. 16. 1940; et Bibl. 12. 1949.

   Pinus balsamea Linn., Sp. Pl. 1002. 1753.

   Chinese name: 北美冷杉

   A native of eastern North America, introduced to Europe in 1698. Its cultivation in China has been recorded by Kia in his compilation "Plantae Sinicae cum Illustrationibus". It may have been introduced to China, but I have seen no specimen of it.

2. **Abies chensiensis** Van Tieghem in Bull. Soc. Bot. France **38**: 413. 1891.—Franch. in Jour. de Bot. **13**: 265. 1899.—Pritzel in Diels in Bot. Jahrb. Engler 29: 218. 1900.—Rehder & Wils. **2**: 44. 1914; et in Jour. Arnold Arb. **9**: 16. 1928.—Chun, Chin. Econ. Trees 30. 1922.—Rehder in Jour. Arnold Arb. **4**: 124. 1923; Man. 32. 1927, ed. 2. 12. 1940; et Bibl. 8. 1949.—Hand.-Mazz., Symb. Sin. **7**: 9. 1929.—Orr in Notes Bot. Gard. Edinb. **18**: 140. 1933.—Pai in Contr. Inst. Bot. Nat. Acad. Peiping 3: 244. 1935.—Lee, For. Bot. China 31. 1935.—Chen, Ill. Man. Chin. Trees Shrubs 34. 1937.—Hao, Gymnosp. Sin. 54. 1945.—Dallimore & Jackson, Handb. Conif. 93. 1923, ed. 3. 124. 1948.

   Abies firma sensu Masters in Jour. Linn. Soc. Bot. **26**: 557 (Jnd. Fl. Sin. II). 1902, quoad spec, e Shensi non Sieb. & Zucc.

   Chinese name: 秦嶺冷杉

   HUPEI: *Wilson 647.* YUNNAN: *R. C. Ching 30606; K. M. Feng 307; Handel-Mazzetti 7913; Rock 8141, 11518; C. W. Wang 70901; T. T. Yu 7952, 7957, 11184, 15050.* SZECHUAN: *T. T. Yu 876.* SIKANG: *W. C. Cheng 1031* (typical). SHENSI: *David,* Dec. 1872 (fragment of type); *F. N. Meyer 1832* (typical). KANSU: *Rock 14831.*

   Originally described fron Tsingling, its range extending southeastward to Fang Hsien of Hupei and westward to southeastern Kansu, hence southward along the

Szechuan-Sikang border to northwestern Yunnan; a tall tree 30 to 50 meters high, forming forests at altitudes of 2300-3150 meters; distinguished by its glabrous branchlets, nonresinous buds, emarginate leaves with inconspicuous stomatic bands beneath.

3. **Abies delavayi** (Van Tiegh) Franch. in Jour. de Bot. **13**: 255. 1899.—Masters in Forbes & Hemsl. in Jour. Linn. Soc. Bot. **26**: 557 (Ind. Fl. Sin. II). 1899; in Gard. Chron. III. **39**: 212. fig. 82. 1906; et in Jour. Linn. Soc. Bot. **37**: 422. 1906.—Beissner, Handb. Nadelholzk. ed. 2. 194. 1909.—Craib in Notes Bot. Gard. Edinb. **11**: 278. pl. 163. 1919.—Chun, Chin. Econ. Trees 27. pl. 10. 1922.—Pax in Limpricht in Repert. Sp. Nov. Fedde Beih. **12**: 304. 1922.--Chung in Mem. Sci. Soc. China **1**(**1**): 5 (Cat. Trees Shrubs China). 1924.—Hand.-Mazz., Symb. Sin. **7**: 8. 1929.—Orr in Notes Bot. Gard. Edinb. **18**: 142. 1933.—Lee, For. Bot. China 31. pl. 12, 13. 1935.—Chen, Ill. Man. Chin. Trees Shrubs 31. fig. 20. 1937.—Kia, Pl.. Sin. Ill. 1216. fig. 2118. 1937.—Hao, Gymmosp. Sin. 55. 1945.—Dallimore & Jackson, Handb. Conif. 97. 1923, ed. 3. 129. fig. 16. 1948.—Rehder, Man. 1927, ed. 2. 12. 1940; et Bibl. 8. 1949.

Keteleeria delavayi Van Tieghem in Bull. Soc. Bot. France **38**: 412. 1891.

Chinese name: 冷杉

YUNNAN: *Delavay 1210* (type ♂ fl.); April 19, 1887 (fruit); *Forrest 11898; Rock 3148, 7652, 8068, 18486; H. T. Tsai 53955; C. W. Wang 63288, 63289, 71702.* SIKANG: *Rock 22134.*

Endemic to northwestern Yunnan and the adjacent Sikang and Burma; occurring in forests at altitudes of 2700–3500 meters; often the dominant species; distinguished by its red-brown glabrous branchlets, short and extremely recurved leaves, 8–16 mm. long, with emarginate apex and white stomatic bands beneath, by its catkin-like glaucous cylindric cones with exserted bracts and the scales rounded at the lower angles.

4. **Abies ernestii** Rehder in Jour. Arnold Arb. **20**: 85. 1939; Man. ed. 2. 12. 1940; et Bibl. 8. 1949.—Cheng in Trav. Lab. Forest. Toulouse V. **1**(**2**): 95. 1939.—Florin in Act. Hort. Berg. **14**: 357. 1948.

Abies beisseriana Rehder & Wils. in Sarg., Pl. Wils. **2**: 46. 1914.—Chun, Chin. Econ. Trees 30. 1922.—Dallimore & Jackson, Handb. Conif. 87. 1923, ed. 2. 87. 1931.—Rehder in Bailey, Cult. Everg. 254. 1923; et Man. 32. 1927.—Chung in Mem. Sci. Soc. China **1**(**1**): 4 (Cat. Trees Shrubs China). 1924.—Wils. in Jour. Arnold Arnold Arb. **7**: 54. 1926.—Viguié & Gaussen in Bull. Soc. Hist. Nat. Toulouse **58**: 272 (Rév. Gen. Abies 94). 1929.—Fitschen in Beissner, Nadelholzk. ed. 3. 1930.—Lee, For. Bot. China 30. 1935.—Hao, Gymnosp. Sin. 55. 1945, non Mottet.

Chinese name: 康冷杉*

SZECHUAN: *Wilson 2095.* SIKANG: *Rock 16911; H. Smith 12698; Wilson 2090* (type), *2091.*

Endemic to western Szechuan and the adjacent Sikang, occurring in forests at altitudes 2700–3300 meters, closely related to *A. chensiensis* Van Tiegh; distinguished by resinous buds, non-recurved leaves with acute, rarely emarginate leaves, and very inconspicuously glaucose stomatic bands and by its completely concealed bracts.

5. **Abies faberi** (Masters) Craib in Notes Bot. Gard. Edinb. **11**: 278. 1919.—Stapf in Bot. Mag. 153. t. 9201. 1930.—Orr in Notes Bot. Gard. Edinb. **18**: 143. 1933.—Cheng in Trav. Lab.

Forest. Toulouse V. **1**(**2**): 96. 1939.—Rehder, Man. 2. 12 1940; et Bibl. 8. 1949, (fabri).—Dallimore & Jackson, Handb. Conif. ed. 3. 130. 1948, (fabri).

Keteleeria fabri Masters in Jour. Linn. Soc. Bot. **26**: 555. 1902, **27**: 421, 1906; et in Gard. Chron. III. **33**: 194. 1903.—Mottet in Rev. Hort. **1904**: 130. 1904.—Patschke in Bot. Jahrb. Engler **47**: 649. 1913.

Abies delavayi sensu Masters op. cit. **37**: 422. 1906.—sensu Patschke in Bot. Jahrb. Engler **48**: 642. fig. 3. 1913.—sensu Rehder & Wils. in Sarg., Pl. Wils **2**: 41. 1914, **3**: 446. 1917.—sensu Wilson in Jour. Arnold Arb. **7**: 55. 1926.—sensu Viguié & Gaussen in Bull. Soc. Hist. Nat. Toulouse **58**: 328. 1929.—sensu Fang, Ic. Pl. Omei **2**(**2**): t. 174. 1946, non Franch.

Pinus fabri (Masters) Voss in Putlitz & Meyer, Landlexikon **4**: 773. 1913.

Chinese name: 西川冷杉*

SZECHUAN: *Chiao & Fan 297, 1863; E. Faber 984* (fragment of type); *W. P. Fang 2970; F. T. Wang 20902, 21000; Wilson 2098* (Wa-shan), *4049, 4069, 4086, 3022; T. T. Yu 459, 483a, 666.* SIKANG: *Y. S. Liu 2330; H. Smith 13659; Wilson 2093, 4078.*

Endemic to western Szechuan and the adjacent area of Sikang, occurring in evergreen forests of high mountains, closely related to *A. delavayi* Franch., apparently a northern form distinguished by its glabrous branchlets, broader leaves with obtuse-mucronate or emarginate apex, white stomatic bands beneath and recurved margins, and by its large ovate-cylindric cones with included bracts and the lower angles of the cone-scales auriculate.

6. **Abies fargesii** Franch. in Jour. de Bot. **13**: 256. 1899.—Pritzel in Bot. Jahrb. Engler **29**: 218. 1900.—Masters in Jour, Linn. Soc. Bot. **26**: 557 (Ind. Fl. Sin. II). 1902.—Beissner, Handb. Nadelholzk. ed. 2. 194. 1909.—Patschke in Bot. Jahrb. Engler **48**: 642. 1913.—Rehder & Wils. in Sarg., Pl. Wils. **2**: 48. 1914.—Pax in Limpricht in Repert. Sp. Nov. Fedde Beih. **12**: 304. 1922.—Rehder in Jour. Arnold Arb. **4**: 124. 1923.—Chung in Mem. Sci. Soc. China **1**(**1**): 5 (Cat. Trees Shrubs China). 1924; Man. 31. 1927, ed. 2. 12. 1940; et Bibl. 8. 1949.—Lee, For. Bot. China 34. pl. 14. 1935. Pai in Contr. Inst. Nat. Acad. Peiping **3**: 244. 1935. Chen, Ill. Man, Chin. Trees Shrubs 34. 1937.—Merr. in Brittonia **4**: 25. 1941.—Hao, Gymnosp. Sin. 58. 1945.—Dallimore & Jackson, Handb. Conif. 97. 1923, ed. 3. 132. 1948.

Abies veitchii sensu Beissner in Nouv. Giorn. Bot. Ital. n. ser. **4**: 184. 1897.—sensu Pritzel in Diels in Bot. Jahrb. Engler **29**: 218. 1900.—sensu Masters in Forbes & Hemsl. in Jour. Linn. Soc. Bot **26**: 557 (Ind. Fl. Sin. II). 1902, non Lindl.

Abies fargesii var. *sutchuenensis* Franch. in Jour. de Bot. **13**: 256. 1899.

Abies sutchuensis (Franch.) Rehder & Wils. in Sarg., Pl. Wils. **2**: 48. 1914; et in Jour. Arnold Arb. **4**: 124. 1923, **9**: 15. 1928.—Dallimore & Jackson, Handb. Conif. 132. 1923, ed. 3. 170. 1948.—Rehder, Man. 31. 1927, ed. 2. 12. 1940; et Bibl. 8. 1948.—Viguié & Gaussen in Bull. Soc. Hist. Nat. Toulouse **58**: 537. fig. 1. (Rév. Abies 359). 1929.—Pai in Contr. Inst. Bot. Nat. Acad. Peiping **3**: 244. 1935.—Chen, Ill. Man. Chin. Trees Shrubs 32. 1937.—Walker in Contr. U. S. Nat. Herb. **28**: 593. 1941.—Hao, Gymnosp. Sin. 57. 1945.—Franco, Abetos 17. 1950.

Abies kansouensis Bordères-Rey & Gaussen in Trav. Lab. Forest. Toulouse I. **4**(**5**): 6. 1944.—Florin in Act. Hort. Berg. **14**: 346. 1948.

Chinese name: 鄂西冷杉

HUPEI: *W. Y. Chun 4201; Henry 6881; Wilson 1895, 2088, 3021.* YUNNAN: *K. M. Feng 3031; Rock 10886, 10887, 17361, 18572; C. W. Wang 70901.* SZECHUAN: *Farges*, s. n. (fragment & photos of types, with young cone and male strobiles), another collection also without number (photo and fragment of type of *A. fargesii* var. *sutchuenensis*=type of *A. sutchuenensis* Rehd. & Wilson, with old fruit). SIKANG:

W. C. Cheng 806; T. T. Yu 1316. SHENSI: *Y. Y. Pai 1540; W. Purdom 805, 823.* KANSU: *Rock 12145, 12541, 12542, 12547, 12658, 12678, 12692, 12939, 12940, 12961, 12970, 12972, 12976, 12977, 12978, 12981. 12983, 12988, 13435, 13436, 12437, 13448, 13454, 13456, 13467, 13450, 13451, 14635, 14648, 14837, 14865, 14904, 14930, 14932, 15020, 15079.*

Originally described from northeastern Szechuan, recent botanical explorations discovered it being the dominant species of the Abies forest in the Tsingling Range, hence its distribution extending southward to Sikang and Yunnan; occurring at altitudes of 3200–3330 meters; distinguished by its glabrous reddish-brown branchlets, resinous buds, bifid or emarginate leaves with lateral resin-canals and conspicuous stomatic bands beneath, and by its medium-sized cones with exserted ovate-cuneate bracts. Rehder & Wilson were misled by the old cones of Purdom's collections when they raised the variety *A. fargesii* var. *sutchuenensis* Franch. into species rank. The exerted portions of the bracts of these cones were rubbed off. Some unmounted material of Purdom 805 has distinctly exerted bracts. So are the cones of all Rock's collections.

7. **Abies faxoniana** Rehder & Wils. in Sarg., Pl. Wils. **2**: 42. 1914, **3**: 446. 1917; et in Jour. Arnold Arb. **9**: 13. 1928.—Pax in Limpricht in Repert. Sp. Nov. Fedde Beih. **12**: 304. 1922.—Chung in Mem. Sci. Soc. China **1**(**1**): 5 (Cat. Trees Shrubs China). 1924.—Rehder, Man. 31. 1927, ed. 2. 12. 1940; et Bibl. 8. 1949.—Viguié & Gaussen in Bull. Soc. Hist. Nat. Toulouse **58**: 340. fig. (Rev. Abies 162). 1926.—Orr in Notes Bot. Gard. Edinb. **18**: 147. 1933.—Lee, For. Bot. China 35. pl. 15. 1935.—Cheng in Trav. Lab. Forest. Toulouse V. **1**(**2**): 97. 1939.—Hillier in Jour. Hort. Soc. London 66: 410. 1941.—Hao, Gymnosp. Sin. 56. 1945.—Dallimore & Jackson, Handb. Conif. 98. fig. 16. 1923, ed. 3. 132. 1948.—Florin in Act. Hort. Berg. **14**: 346, 358. 1948.

Abies delavayi Franch. var. *faxoniana* Jackson in Conif. Cult. 246. fig. 77. 1932; et in Clinton-Baker & Jackson, Ill. New Conif. 4. 1935.—Franco, Abetos 14. 1950.

Abies sutchuenensis sensu Walker in Contr. U. S. Nat. Herb. **28**: 593. 1941, non Rehd. & Wils.

Chinese name: 麥吊杉

SZECHUAN: *W. C. Cheng 3199, 3200, 3406, 3469, 3482; W. P. Fang 4114, 4441; F. T. Wang 21158; Wilson 2092, 4052, 4052A, 4060* (type), *4070.* SIKANG: *W. C. Cheng 3550; H. Smith 13656; C. W. Wang 65256.* KANSU: *R. C. Ching 803, 806, 984; F. N. Meyer 1813; Rock 12539, 12661, 12965, 12970, 12973, 12979, 12981, 12984, 12987, 12989, 12990, 12994, 13422, 13423, 13425, 13429, 13436, 13437, 13444, 13448, 13466, 14636, 14646, 14768, 14809, 14929, 14931, 14989, 15009, 15044, 15081, 15082, 15084.*

Originally described from Sungpan of northwestern Szechuan, hence its range extends northward to southwestern Kansu and southward to Sikang; occurring in evergreen forests at altitudes of 3000–3300 meters; distinguished by its brown pubescent branchlets; leaves with no stomatas above and by its medium-sized violet-purple cones with exerted bracts. Ching's collections, interpreted as *A. sutchuenensis* by Walker all have pubescent lateral branchlets and exsected bracts. They should belong to this species.

8. **Abies firma** Sieb. & Zucc., Fl. Jap. **2**: 15. t. 107. 1842.—Viguié & Gaussen in Bull. Soc. Hist. Nat. Toulouse **58**: 344. t. (Rév. Abies 166). 1929.—Rehder, Man. ed. 2. 13. 1940; et Bibl. 8. 1949.

Abies bifida Sieb. & Zucc., Fl. Iap. **2**: 18. t. 109. 1842.
Pinus firma (Sieb. & Zucc.) Antoine, Conif. 70. t. 27. 1846.
Picea firma Gordon, Pinet. 147. 1858.
Abies firma var. *bifida* (Sieb. & Zucc.) Masters in Jour. Linn. Soc. Bot. **18**: 514. 1881.

Chinese name: 日本冷杉*

KIANGSI: Lushan, *H. H. Chung & S. C. Sun 703.*

A native of Japan, introduced into European gardens since 1861, cultivated in Lushan; distinguished by its slightly grooved branchlets, pilose in the grooves, by its rigid sharply 2-pointed leaves, and by its yellowish green cones with straight exserted bracts.

9. **Abies forrestii** C. C. Rogers in Gard. Chron. III. **65**: 150. 1919 (March); **80**: 427. fig. 191. 1926.—Craib in Notes Bot. Gard. Edinb. **11**: 279. t. 162. 1919 (Nov.).—Wilson in Jour. Arnold Arb. **7**: 56. 1926.—Stapf in Bot. Mag. **153**: t. 9021. fig. 8. 1930—Viguié & Gaussen in Bull. Soc. Hist. Nat. Toulouse **58**: 351. fig. 1-12 (Rev. Abies 173). 1929.—Hand.-Mazz., Symb. Sin. **7**: 8. 1929.—Orr in Notes Bot. Gard. Edinb. **18**: 145. 1933.—Lee, For. Bot. China 36. 1935.—Hao, Gymnosp. Sin. 57. 1945.—Dallimore & Jackson, Handb. Conif. 101. 1923, ed. 3. 135. 1948.

Abies delavayi sensu Forrest in Jour. Hort. Soc. London **41**: 206. 1915, **42**: 42. 1916.
Abies delavayi var. *forrestii* (C. C. Rogers) Jackson in Chittenden, Conif. Cult. 245. fig. 76. 1932.—Chen, Ill. Man. Chin. Trees Shrubs 32. 1937.—Franco, Abetos 14. 1950.

Chinese name: 滇冷杉*

YUNNAN: *R. C. Ching 30552; K. M. Feng 3031; Forrest 6744* (type); *Rock 8159, 10886, 24987, 10887, 17361, 18527; C. Schneider 1533, 3563, 3574; C. W. Wang 64420, 70901.*

Endemic to northwestern Yunnan, as dominant species in forests at altitudes of 3000-4000 meters of the Likiang Range; resembling *A. fargesii* Franch. in its glabrous reddish-brown branchlets and exserted bracts: distinguished by its leaves with epsilonoid cross sections and marginal resin-canals.

10. **Abies georgei** Orr ex Hand-Mazz., Symb. Sin. **7**: 8. 1929; et in Notes Bot. Gard. Edinb. **18**: 1. t. 236, 146, 276. 1933.—Chen, Ill. Man. Chin. Trees Shrubs 32. 1937.—Rehder, Man. ed. 2. 12. 1940; et Bibl. 8. 1949.—Hillier in Jour. Hort. Soc. Lond. **66**: 408. fig. 129. 1941.—Dallimore & Jackson, Handb. Conif. ed. 3. 136. 1948.

Abies forrestii C. C. Rogers var. *smithii* Viguié & Gaussen in Bull. Soc. Hist. Nat. Toulouse **58**: 355. fig. 1'-6' (Rev. Abies 177). 1929.

Chinese name: 毛冷杉*

YUNNAN: *K. M. Feng 2529, 2987, 3032; Forrest 10152, 10206, 10225, 20132; Rock 3792, 8611, 9543, 10673, 17340, 17847, 18494, 25371; H. T. Tsai 59293; C. W. Weng 64828, 65333, 65338, 67850, 68397, 68575, 68640, 70766, 71769; T. T. Yu 5040, 8008, 8682, 10628, 11496, 11769, 12070, 12326, 13807.* SZECHUAN: *T. T. Yu 1720.* SIKANG: *W. C. Cheng 1825; C. Schneider 913; H. Smith 13657; Wilson 4082.*

Endemic to northwestern Yunnan and the adjacent areas of Szechuan and Sikang, occurring in forests at altitudes of 3200-4000 meters; distinguished by its ferrugenously and densely pubescent branchlets, and by its unusually large cones the axis of which measures 15 cm. long, 1.5 cm. wide, and by its much exserted oblong-cuneate bracts; closely related to *A. forrestii* C. C. Rogers and *A. faxoniana* Rehder & Wils., the former has glabrous or glabrescent branchlets and the latter has smaller cones.

11. **Abies holophylla** Maxim. in Bull. Acad. Sci. St. Pétersb. III. **10**: 487. 1866; et in Mél. Biol. **6**: 22. 1866, **11**: 349. 1883.—Koehne, Deutsche Dendr. 18. 1893.—Komarov in Act. Hort. Petrop. **20**: 204 (Fl. Mansh. I). 1901; et [Fl. Mansh.] **1**: 192. 1949.—Juss. in Siuzev in Trav. Mus. Bot. Acad. Sci. St. Pétersb. **9**: 74. 1912.—Chung in Mem. Sci. Soc. China **1**(**1**): 5 (Cat. Trees Shrubs China). 1924.—Rehder, Man. 32. 1927, ed. 2. 13. 1940; et Bibl. 8. 1949.—Kung in Contr. Inst. Bot. Nat. Acad. Peiping **2**: 109. 1934.—Lee, For. Bot. China 36. 1935.—Chen, Ill. Man. Chin. Trees Shrubs 33. 1937.—Kitagawa in Rep. Ins. Sci. Res. Manch. **5**(**5**): 1941.—Satô, Ill. Manch. Mong. Trees 2. fig. 1. 1943.—Dallimore & Jackson, Handb. Conif. 104. 1923, ed. 3. 139. 1948.

Picea holophylla (Maxim.) Gordon, Pinet. ed. 2. 206. 1876.

Pinus holophylla (Maxim.) Parlatore in DC., Prodr. 16(2): 424. 1868.

Abies firma sensu Masters in Jour. Linn. Soc. Bot. 18: 514. 1881, 26: 557. 1902, 37: 422. 1906, pro parte, non Sieb. & Zucc.

Abies yoneyamae Satô, Ill. Manch. Mong. Trees 5. fig. 3. 1943.

Chinese name: 遼東冷杉

KIRIN: *F. H. Chen 540; H. W. Kung 1571.* YALU RIVER: *Komarov 87; Maximowicz* in 1860 (isotype).

Endemic to northeastern Asia, occurring in Kirin, Liao-ning and also Korea; distinguished by its glabrous branchlets, acute or obtuse leaves and cylindric cones about 12 cm. long with broad brown pubescent scales and very small concealed bracts.

12. **Abies kawakamii** (Hayata) Oto in Encycl. Jap. **2**: 167. 1909.—Kanehira, Formos. Trees 594. 1917; rev. ed. 39. fig. 7. pl. 11. 1936.—Hayata, Ic. Pl. Formos. **9**: 108. 1920.—T. Ito, [Ill. Fl. Formosa] 93. fig. 91. 1928.—Viguié & Gaussen in Bull. Soc. Hist. Nat. Toulouse **58**: 390. fig. 1-16 (Rév. Abies 288). 1929.—Masam., Short Fl. Formos. **35**: 1936.—Rehder, Man. ed. 2. 11. 1940; et Bibl. 8. 1949.—Li in Taiwania **1**: 294. 1950. et Woody Fl. Taiwan 43. fig. 6. 1963.—Li & Keng in Taiwania 5: 47. pl. 11. 1954.—Liu, Ill. Lign. Pl. Taiwan 1: 32. fig. 23. 1960.

Abies mariesii sensu Matsumura & Hayata in Jour. Coll. Sci. Tokyo **22**: 400 (Enum. Pl. Formos.). 1906.—sensu Dunn in Jour. Linn. Soc. Bot. **39**: 413. 1911, non Masters.

Abies mariesii Masters var. *kawakamii* Hayata in Jour. Coll. Sci. Tokyo **25**(**19**): 223. fig. 14 (Fl. Mont. Formos.). 1908.

Abies sachalinensis sensu Matsum. in Bot. Mag. Tokyo **15**: 141. 1901.—sensu Dunn in Jour. Linn. Soc. Bot. **39**: 413. 1911, non Masters.

Chinese name: 臺灣冷杉

TAIWAN: *H. H. Bartlett 6250; Kanehira & Sasaki 2622, 21794; H. Keng*, Nov. 5, 1950; *Wilson 9913, 11153.*

Endemic to the high mountains of central Taiwan, occurring at altitudes of 2800–3000 meters, forming pure forests; a very distinct species with pubescent or glabrescent branchlets, small narrow leaves 7–22 mm. long, 1.25–1.5 mm. wide, stomatiferous on both surfaces, small cones, and completely included bracts; introduced to the United States through the Arnold Arboretum in 1925.

13. **Abies mayriana** (Miyabe & Kudo) Miyabe & Kudo, Ic. Ess. For. Trees Hakkaido 1: 9. t. 3-4. fig. 1-19. 1920.—Viguié & Gaussen in Bull. Soc. His. Nat. Toulouse **58**: 419. fig. 1-14 (Rév. Abies 241). 1929.—Hara in Bot. Mag. Tokyo **48**: 793. 1934.—Satô, Ill. Manch. Mong. Trees 3. 1943.

Abies sachalinensis Masters f. *typica* Mayr, Monog. Abies Jap. 42. t. 3. fig. 6 [top]. 1890.

Abies sachalinensis Fr. Schm. var. *mayriana* Miyabe & Kudo in Trans. Sapp. Nat. Hist. Soc. **7**: 131. 1919.—Rehder, Man. ed. 2. 11. 1940; et Bibl. 7. 1949.

Chinese name: 北海冷杉*

Endemic to northern Japan, according to Satô cultivated in Liao-ning; Chinese material not avialable for my examination; distinguished by dark-brown pubescent branchlets, narrow emarginate leaves 5–10 cm. long, 2.5–3.9 mm. wide, cylindric cones, exserted and reflexed bracts.

14. **Abies nephrolepis** (Trautv.) Maxim. in Bull. Acad. Sci. St. Pétersb. Ill. **10**: 486. 1866; et in Mél. Biol. **6**: 22. 1866.—Komarov in Act. Hort. Petrop. **20**: 200 (Fl. Mansh. I). 1901.—Nakai in Bot. Mag. Tokyo **26**: 10. 1912.—Rehder in Jour. Arnold Arb. **4**: 124. 1923; Man. 30. 1927, ed. 2. 10. 1940; et Bibl. 7. 1949.—Viguié & Gaussen in Bull. Soc. Hist. Nat. Toulouse **58**: 431 (Rév. Abies 253). 1929.—Kung in Contr. Inst. Bot. Nat. Acad. Peiping **2**: 109. 1934.—Chow, Fam. Trees Hopei 27. fig. 6. 1934.—Lee, For. Bot. China 37. 1935.—Chen, Ill. Man. Chin. Trees Shrubs 33. fig. 21. 1937.—Kia, Pl. Sin. Ill. 1217. fig. 2119. 1937.—Kitagawa in Rep. Ins. Sci. Res. Manch. **5**(**5**): 137. 1941.—Satô, Ill. Manch. Mong. Trees 4. fig. 2. 1943.—Hao, Gymnosp. Sin. 59. 1945.

Abies sibirica Ledeb. var. *nephrolepis* Trautv. ex Maxim. in Mém. Div. Sav. Acad. Sci. St. Pétersb. **9**: 260 (Prim. Fl. Amur.). 1859.—Patschke in Bot. Jahrb. Engler **48**: 643. fig. 3 12. 1913.—Rehder & Wils. in Sarg., Pl. Wils. **2**: 49. 1914.—Chung in Mem. Sci. Soc. China **1**(**1**): 5 (Cat. Trees Shrubs China). 1924.

Abies veitchii sensu Masters in Jour. Linn. Soc. Bot. **18**: 516. 1880, non Lindl.

Abies sibirica sensu Korshinsky in Act. Hort. Petrop. **12**: 424. 1890, non Ledeb.

Abies gracilis Komarov in Act. Hort. Petrop. **20**: 203 (Fl. Mansh. I). 1901.—Viguié & Gaussen in Bull. Soc. Hist. Nat. Toulouse **58**: 364. fig. 1-19 (Rév. Abies 186). 1929.

Abies sibirica var. *gracilis* (Komarov) Patschke in Bot. Jahrb. Engler **48** 643. 1913.

Pinus nephrolepis (Trautv.). Voss. in Mitteil. Deutsch. Dendr. Ges. **1907**(**16**): 94.]1908].

Chinese name: 白果樅

HOPEI: *J. Hers 1537, 1546, 1563; F. N. Meyer 1373; C. W. Wang 62415.* SHANSI: *W, Purdom 143.* LIAO-NING: *K. Hatta* in 1911. KIRIN: *B. W. Skwortzow*, July 16, 1927, Dec. 10, 1928. LOCALITY NOT CLEAR: *A. D. Gozhev & E. A. Ovchinnikav*, July 12, 1931; *B. V. Skvortzov*, July 20, 1925, Dec. 25, 1927; *S. Korshinsky*, May 27, 1891.

Endemic to north and northeast China; distinguished by its pubescent gray or light brown branchlets, small leaves 10–20 mm. long, 1.5–1.75 mm. wide, white beneath, with few stomatas near the apex above, by its medium-sized cones with concealed bracts; the vegetative characters very similar to *A. kawakamii* of Taiwan, the bracts of the latter species are shorter.

15. **Abies recurvata** Masters in Jour. Linn. Soc. Bot. **37**: 423. 1906; et in Repert. Sp. Nov. Fedde **4**: 111. 1907.—Dunn in Jour. Linn. Soc. Bot. **39**: 413. 1911.—Patschke in Bot. Jahrb. Engler **48**: 642. fig. 3, 3. 1913.—Chun, Chin. Econ. Trees 29. 1922.—Rehder, Man. 32. 1927, ed. 2. 12. 1940; et Bibl. 8. 1949.—Rehder & Wils. in Jour. Arnold Arb. **9**: 16. 1928.—Viguié & Gaussen in Bull. Soc. Hist. Nat. Toulouse **58**: 498. fig. (Rév. Abies 320). 1929.—Lee, For. Bot. China 37. 1935.—Chen, Ill. Man. Chin. Trees Shrubs 34. 1937.—Hao, Gymnosp. Sin. 54. 1945.—Dallimore & Jackson, Handb. Conif. 129. 1923, ed. 3. 1949.

Chinese name: 岷江冷杉

SZECHUAN: *Wilson 3021* (type), *4051, 4057.* KANSU: *Rock 15087, 15088.*

Endemic to northwestern Szechuan, distribution limited to the Min River Valley between Wen-chuan and Sung-pan districts, Rock's collections extending the range northwestward to southwestern Kansu, occurring at altitudes of 2300–3600 meters, forming extensive forests; distinguished by its glabrous ochraceous branchlets, its acute leaves 1.5–2 cm. long, 2.75 mm. wide, often recurved, and by its medium-sized cones with included bracts.

16. **Abies sibirica** Ledeb., Fl. Alt. **4**: 202. 1833.—Simpson in Jour. Linn. Soc. Bot. **41**: 445. 1913.—Rehder, Man. 30. 1927, ed 2. 10. 1940; et Bibl. 7. 1949.—Viguié & Gaussen in Bull. Soc. Hist. Nat. Toulouse **58**: 520 (Rév. Abies 342). 1929.—Chen, Ill. Man. Chin. Trees Shrubs 34. 1937.—Dallimore & Jackson, Handb. Conif. 131. 1923, ed. 3. 166. 1948.
Pinus pichta Loddiges, Cat. 50. 1836, nom. nudum.—Loudon, Arb. Brit. **4**: 2338. 1838.
Pinus sibirica (Ledeb.) Turcz. in Bull. Soc. Nat. Moscou **1838**(**11**): 101. 1838.
Abies pichta Forbes, Pinet. Woburn. 113. 1839.
Abies semenovii Fedtschenko in Bot. Centralbl. **73**: 210. 1898.

Chinese name: 西伯利亚冷杉

KIRIN: Harbin, *C. S. Sargent*, Aug. 31, 1903. SINKIANG: Altai Mountains, *Prtce 270a.*

Endemic to the Altai Mountains, its range extending eastward to western Kirin and southward to Tibet and Turkestan; distinguished by its pubescent branchlets, narrow leaves 2–3.4 cm. long, 1.5 mm. wide, stomatiferous on both surfaces, and by its medium-sized cylindric cones with obovate short bracts.

17. **Abies spectabilis** (D. Don) Spach, Hist. Nat. Vég. Phan. **11**: 422. 1842.—Rehder, Man. 33. 1927, ed. 2. 13. 1940; et Bibl. 9. 1949.—Dallimore & Jackson, Handb. Conif. ed. 3. 167. 1948.
Pinus spectabilis D. Don ex Lamb., Descr. Pinus **2**: 3. t. 2. 1824; et Prodr. Fl. Nepal. 55. 1825.
Pinus webbiana Wall. ex Lamb., Descr. Pinus ed. 8. **2**: 77. t. 44. 1832.
Abies webbiana Lindl. in Penny Cycl. **1**: 30. 1833.—Hook. f., Fl. Brit. Ind. **5**: 674. 1888.—Viguié & Gaussen in Bull. Soc. Hist. Nat. Toulouse **58**: 553 (Rév. Abies 375). 1929.—Marq. in Jour. Linn. Soc. Bot. **48**: 225. 1929.—Chen, Ill. Man. Chin. Trees Shrubs 33. 1937.—Hao, Gymnosp. Sin. 53. 1945.

Chinese name: 藏冷杉*

TIBET: *Ward 6332* (ex Marquand).

A native of the Himalayan Region, attaining a height of 70 meters and a girth of 10 meters; distinguished by its deeply grooved reddish brown pubescent branchlets, its long leaves and its large cones 14–18 cm. long with hidden bracts.

18. **Abies squamata** Masters in Gard. Chron. III. **39**: 299. fig. 121. 1906; et in Jour. Linn. Soc. Bot. **37**: 423. 1906.—Dunn in Jour. Linn. Soc. Bot. **39**: 413. 1911.—Patschke in Bot. Jahrb. Engler **48**: 643. fig. 3, 6. 1913.—Rehder & Wilson in Sarg., Pl. Wils. **2**: 48. 1914.—Chun, Chin. Econ. Trees 29. 1922.—Chung in Mem. Sci. Soc. China **1**(**1**): 5 (Cat. Trees Shrubs China). 1924.—Viguié & Gaussen in Trav. Lab. Forest. Toulouse II. **2**(**1**): 349. 1928.—Jackson in Clinton-Baker & Jackson, Ill. New Conif. 14. 1935.—Lee, For. Bot. China 37. 1935.—Chen, Ill. Man. Chin. Trees Shrubs 32. 1937.—Cheng in Trav. Lab. Forest. Toulouse V. **1**(**2**): 99. 1939.—Hiller in Jour. Hort. Soc. London **66**: 442. 1941.—Hao, Gymnosp. Sin. 58. 1945.—Dallimore & Jackson, Handb. Conif. 131. 1923, ed. 3. 170. 1949.—Florin in Act. Hort. Berg. **14**: 360. 1948.

Chinese name: 鳞皮冷杉

YUNNAN: *T. T. Yu 7886, 23261.* SIKANG: *W. F. Fang 3585; H. Smith 12407, 13661, 13663, 13664; Wilson 3019* (type), *4079* (topotype). KANSU: *Rock 13440.*

Originally described from high mountains northwest of Kangting (Ta-chien-lu), capital of Sikang, hence its range extending northward to southwestern Kansu and southward to northwestern Yunnan, forming forests at altitudes of 3200–3800 meters; distinguished by the pubescent branchlets, by the presence of stomatas on the upper surfaces of the leaves and by its medium-sized cones with exserted bract scales and with the cone axis 3–6 cm. long.

Doubtful and Excluded Species

1. *Abies brachytyla* Franch. in Jour. ed Bot. **13**: 258. 1899, excl. spec. delavayano=**Picea brachytyla** (Franch.) Pritzel in Bot. Jahrb. Engler **29**: 216. 1900.
2. *Abies chinensis* Franch. in Jour. de Bot. **13**: 259. 1899=**Tsuga chinensis** (Franch.) Pritzel in op. cit. 217.
3. *Abies davidiana* Franch. in Nouv. Arch. Mus. Hist. Nat. Paris II. **7**: 98. t. 13 (Pl. David. **1**: 228). 1884.—Masters in Gard. Chron. IV. **1**: 481. 1887.=**Keteleeria davidiana** [Bertrand] Beissner, Handb. Nadelh. 424. 1891.
4. *Abies dumosa* var. *chinensis* Franch. in Jour. de Bot. **13**: 258. 1999=**Tsuga chinensis** (Franch.) Pritzel.
5. *Abies fortunei* Hance in Jour. Bot. **20**: 39. 1882.—Masters in Gard. Chron n. ser. **21**: 348. fig. 64-67. 1884, **25**: 428. fig. 82-83. 1886.—anonym. in Gard. Chron. n. ser. **25**: 428. fig. 82-83. 1886; et in Garden **29**: 151. fig. [1]. 1886.—Pirotta in Bull. Soc. Tosc. Ort. **12**: 269. 1887 =**Keteleeria fortunei** (Murr.) Carr. in Rev. Hort. **1866**: 449. 1866.
6. *Abies kaempferi* Lindl. in Gard. Chron. **1854**: 255. 1854.—Fauvel in Mém. Soc. Sci. Nat. Cherbourg **23**: 200. 1880. recorded from Ningpo as "Chin-sung,' (golden pine)=**Pseudolarix amabilis** (Nels.) Rehder in Jour. Arnold Arb. 1: 53. 1919.
7. *Abies lanceolata* Poiret in Lamarck, Encycl. Méth. **6**: 523. 1804=**Cunninghamia lanceolata** Hooker in Bot. Mag. **54**: t. 2743. 1827.
8. *Abies likiangensis* Franch. in Jour. de Bot. **13**: 257. 1899=**Picea likiangensis** (Franch.) Pritzel in Bot. Jahrb. Engler **29**: 217. 1900.
9. *Abies pindrow* Royle, Ill. Bot. Himal. t. 86. 1836, 350. 1839.—Spach, Hist. Nat. Vég. Phan. **11**: 423. 1842.—Hao, Gymnosp. Sin. 53. 1945.

A native of northwestern India; its occurrence in China never recorded. Hao merely suggests the possibility of its cultivation in Sikang.

10. *Abies schrenkiana* Lindl. & Gord. in Jour. Hort. Soc. London **5**: 212. 1850=**Picea schrenkiana** Fischer & Meyer in Bull. Acad. Sci. St. Pétersb. **10**: 253 (Enum. Pl. Schrenk Lect. **2**: 12). 1842.
11. *Abies thei-sha* David, Jour. de Trois Voy. **1**: 343. 1875, nom. nud.=**Tsuga chinensis** (Franch.) Pritzel.
12. *Abies tsuga* sensu Franch. in Nouv. Arch. Mus. Paris. II. **7**: 97 (Pl. David. **1**: 287). 1884, non Sieb. & Zucc.=**Tsuga chinensis** (Franch.) Pritzel.
13. *Abies yunnanensis* Franch. in Jour. de Bot. **13**: 258. 1799=**Tsuga yunnanensis** (Franch.) Pritzel in Bot. Jahrb. Engler **29**: 217. 1900.

2. **CEDRUS** Trew 雪松屬

Cedrus Trew, Cedrorum Libani Hist. 4. 1757.—Loudon, Arb. Brit. **4**: 2402. 1838.—Benth. & Hook. f., Gen. Pl. **3**: 439. 1880.—Rehder, Man. 52. 1927, ed. 2. 33. 1940; Bibl. 31. 1949.—Chen, Ill. Man. Chin. Trees Shrubs 29. 1937.—Hao, Gymnosp. Sin. 63. 1945.—Dallimore & Jackson, Handb. Conif. ed. 3. 218. 1948, nom. conserv, non Duhamel.

Pinus Linn., Sp. Pl. 1000. 1753, p. p.; et Gen. Pl. ed. 5. 434. 1754, p. p.

Larix Miller, Gard. Dict. abridg. ed. 4. **2**: LAR. 1754, p. p.; et Gard. Dict. ed. 8. LAR. 1768, p. p.

Abies Poiret, Encycl. **6**: 510. 1804, p. p.

Peuce L. C. Richard in Ann. Mus. Hist. Nat. Paris **16**: 298. 1810, p. p.

Type species: *Pinus cedrus* Linn.=*C. libani* Loud.

1. **Cedrus deodara** (Roxb.) Loudon, Hort. Brit, 388. 1830; et Arb. Brit. **4**: 2428. 1838.—Rehder, Man. 53. 1927, ed. 2. 34. 1940; et Bibl. 32. 1949.—Hsia in Contr. Inst. Bot. Nat. Acad. Peiping **1**: 40. 1931.—Chen, Ill. Man. Chin. Trees Shrubs 29. fig. 19. 1937.—Satô, Ill. Manch. Mong. Trees 6. 1943.—Hao, Gymnosp. Sin. 63. 1945.—Dallimore & Jackson, Handb. Conif. ed. 3. 221. 1948.

Pinus deodara Roxb., Hort. Bengal. 69. 1814, nom. nudum; et Fl. Ind. ed. 2. **3**: 651. 1832, (devdara).

Cedrus libani var. *deodara* Hook. f. in Himal. Jour. **1**: 257. 1854; in Nat. Hist. Rev. **2**: 11. t. 1-3. 1862; et Fl. Brit. Ind. **5**: 653. 1888.

Chinese name: 香柏

A native of the Western Himalayan Region, being the most important conifer at altitudes of 1300–3300 meters; introduced into European gardens in 1922, cultivated in large cities like Nanking, Peking and Mukden; distinguished by its pendulous and pubescent branchlets, glaucous green leaves up to 4.5 cm. long and large barrel-shaped cones, 7–10 cm. long, round at the apex.

1a. **Cedrus deodara** f. **argentea** (Nels.) Beissner, Syst. Eintheil Conif. 32. 1887.—Rehder, Man. ed. 2. 34. 1940; et Bibl. 32. 1949.

Cedrus deodara argentea [Nelson], Pinac. 56. 1866.—Carr., Traité Conif. ed. 2. 368. 1867.

Cedrus deodara var. *argentea* Hort. ex Rehd. in Bailey, Cycl. Am. Hort. [**1**]: 267. 1900.—Chen, Ill. Man. Chin. Trees 30. 1937.—Hao, Gymnosp. Sin. 64. 1945.

A cultivated form with bluish or silvery white leaves.

1b. **Cedrus deodara** f. **aurea** (Nels.) Rehder, Bibl. 32. 1949.

Cedrus deodara aurea [Nelson], Pinac. 56. 1866.—Beissner, Handb. Nadelh. 308. 1801.

Cedrus deobara var. *aurea* Tutenberg in Gartenwelt **11**: 88. fig. [1]. 1906.—Chen, Ill. Man. Chin. Trees Shrubs 30. 1937.—Hao, Gymnosp. Sin. 64. 1945.

A cultivated form with yellow leaves.

1c. **Cerdus deodara** f. **pendula** Beissner, Syst. Einthelf. 32. 1887.

Cedrus deodara var. *pendula* Dallimore & Jackson, Handb. Conif. ed. 3. 222. 1948.—Chen, Ill. Man. Trees Shrubs 30. 1937.—Hao, Gymnosp. Sin. 64. 1945.

A garden form with the leading shoot and branchlets so pendent that to induce vertical growth the leading shoot must be staked.

1d. **Cedrus deodara** f. **robusta** (Laws.) Beissner, Syst. Eintheil. Conif. 32. 1887.—Rehder, Bibl. 32. 1949.

Cedrus deodara var. *robusta* Rehder in Bailey, Cycl. Am. Hort. [**1**]: 267. 1900.—Chen, Ill. Man. Chin. Trees Shrubs 30. 1937.—Hao, Gymnosp. Sin. 63. 1945.

A garden form with stouter branchlets and more rigid leaves about 5 cm. long.

3. **CHAMAECYPARIS** Spach 花柏屬

Chamaecyparis Spach, Hist. Nat. Vég. Phan. **11**: 329. 1842.—Parlatore in DC., Prodr. **16**(2): 463. 1868.—Rehder, Man. 17. 1927, 57. 1940; et Bibl. 50. 1949.—Chen, Ill. Man. Chin. Trees Shrubs 58. 1937.—Dallimore & Jackson, Handb. Conif. ed. 3. 226. 1948.

Chamaepeuce Zucc. ex Endl., Enchirid. Bot. 139. 1841, nom. nudum, non DC. 1837.

Retinispora Sieb. & Zucc., Fl. Jap. **2**: 36. 1842.

Thuya sec. 5. *Chamaecyparis* (Spach) Benth. & Hook. f., Gen. Pl. **3**: 427. 1880.

Cupressus subgen. *Chamaecyparis* (Spach) Masters in Jour. Linn. Soc. Bot. **31**: 351. 1896.

Lectotype: *Cupressus thyoides* Linn.=*Chamaecyparis thyoides* (Linn.) Britton, Stern & Pogg.

1. **Chamaecyparis formosensis** Matsum. in Bot. Mag. Tokyo **15**: 137. 1901.—Smith in Forbes & Hemsl. in Jour. Linn. Soc. Bot. **36**: 465 (Ind. Fl. Sin. III). 1904.—Matsum. & Hayata in Jour. Coll. Sci. Univ. Tokyo **22**: 402 (Enum. Pl. Formos.). 1906.—Hayata in ibid. **25(19)**: 208 (Fl. Mont. Formos.). 1908.—T. Soma in Trans. Nat. Hist. Formos. **5**: [**20**]. t. 1. 1915. Kanehira, Formos. Trees 597. 1917, rev. ed. 56. fig. 19. t. 16, 21. 1936.—Mottet in Rev. Hort. Paris **1918-19**: 342. fig. 105. 1919.—T. Ito, [Ill. Fl. Formos.] 39. fig. 37. 1928.—Suzuki in Ann. Rep. Taihoku Bot. Gard. **1**: 115. 1931.—Dallimore & Jackson. Handb. Conif. ed. 3. 227. fig. 36. 1948.—Li in Taiwania 1: 305. 1950; et Woody Fl. Taiwan 59. fig. 14. 1963. —Li & Keng in Taiwania 5: 73. pl. 24. 1954.—Tsou in Jour. Agr. Forest. Taiwan **3**: 97. 1954.—Liu, Ill. Lign. Pl. Taiwan **1**: 59. fig. 48. 1960.

Cupressus formosensis (Matsum.) Henry in Elwes & Henry, Trees Brit. Irel. **5**: 1187. 1910; et in Gard. Chron. III. **51**: 132. figs. 53-54. 1912.—Bean in Gard. Chron. III. **57**: 64. 1915.—Dallimore & Jackson, Handb. Conif. 195. fig. 37. 1923.

Chinese name: 紅檜

TAIWAN: *T. Inamura*, April 1910; *S. Suzuki*, Aug. 3, 1934; *I. Shimizu 3605; S. Sasaki 2641* (photo); *Wilson 9764, 9782, 10180, 10875, 10893, 11155; Yamamoto & Mori*, Aug. 8, 1937.

Endemic to Taiwan, often forming pure stands at altitudes of 1000–2900 meters, being the largest conifer in eastern Asia, attaining 53 meters in height, 22 meters in diameter, constituting one of the most important timber trees in Taiwan; distinguished by its oblong cones 10–12 mm. long, 6–7 mm. in diameter, with 10–13 peltate scales, each with 2 winged seeds.

2. **Chamaecyparis obtusa** (Sieb. & Zucc.) Endl., Syn. Conif. 63. 1847.—Wils., Conif. Taxads. Jap. 76. t. 54-55. 1916.—Rehder, Man. 18. 1927, ed. 2. 58. 1940; et Bibl. 53. 1949.—Chen, Ill. Man. Chin. Trees Shrubs 58. fig. 45. 1937.—Dallimore & Jackson. Handb. Conif. ed. 3. 240. 1948.—Liu, Ill. Lign. Pl. Taiwan **1**: 60. fig. 49. 1960.

Retinispora obtusa Sieb. & Zucc., Fl. Jap. **2**: 38. t. 121. 1844.—Gordon, Pinet. ed. 2. 367. 1875 (Retinospora).

Cupressus obtusa (Sieb. & Zucc.) Koch, Dendr. **2(2)**: 168. 1873.

Thuya obtusa (Sieb. & Zucc.) Masters in Jour. Linn. Soc. Bot. **18**: 491. fig. 4. 1881, non Moench 1794.

Chinese name: 日本扁柏

A native of Japan, introduced into European gardens in 1861, doing well in Tsingtao, Shantung for reforestration; distinguished by its obtuse leaves with distinct white markings below and by its globose cones 8–10 mm. in diameter, with 8 scales.

2a. **Chamaecyparis obtusa** var. **formosa** (Hayata) Rehder in Bailey. Stand. Cycl. Hort. **2**: 731. 1914; Man. 19. 1927, ed. 2. 59. 1940; et Bibl. 53. 1949.—Dallimore & Jackson, Handb. Conif. ed. 3. 243. 1948.—Li & Keng in Taiwania **5**: 75. pl. 25. 1954.

Chamaecyparis obtusa f. *formosana* Hayata in Gard. Chron. III. **43**: 194. 1908; et in Jour. Coll. Sci. Tokyo **25(19)**: 208. fig. 5 (Fl. Mont. Formos.). 1908.—Suzuki in Ann. Rep. Taihoku Bot. Gard. **1**: 115. 1931.

Cupressus obtusa (Sieb. & Zucc.) Koch var. *formosana* (Hayata) Dallimore & Jackson, Handb. Conif. 215. 1923.

Chamaecyparis taiwanensis Masam. & Suzuki Sylvia **4**: 57. 1933.—Masamune, Short Fl. Formos. 37. 1936.—Tsou in Jour. Agr. Forest. Taiwan **3**: 98. 1954.

Chamaecyparis obtusa sensu Kanehira, Formosa Trees 596, 1917, rev. ed. 58. fig. 20. 1936, non Sieb. & Zucc.

Chamaecyparis obtusa Sieb. & Zucc. ssp. *formosana* (Hayata) Li in Taiwania **1**: 305. 1950.

Chinese name: 臺灣扁柏

TAIWAN: *U. Faurie 1622, 1792; Kanehira & Sasaki 2658; H. Keng 1203; S. Sasaki 202; S. Suzuki*, March 31, 1930; *T. Suzuki*, July 9, 1934; *Wilson 9765, 9785, 9786, 10179, 10323.*

Endemic to Taiwan, occurring in the northern and central parts of the island, mostly at altitudes of 1300–2800 meters; one of the most valuable timber trees; distinguished from *C. formosensis* by its larger globose cones, 10–11 mm. in diameter, with 8–10 scales.

3. **Chamaecyparis pisifera** (Sieb. & Zucc.) Endl., Syn. Conif. 64. 1847.—Wils., Conif. Taxads. Jap. 78. t. 56-57. 1916.—Rehder, Man. 19. 1927, ed. 2. 59. 1940; et Bibl. 55. 1949.—Cheng in P'ei in Contr. Biol. Lab. Sci. Soc. China **8**: 83. 1932.—Chen, Ill. Man. Chin. Trees Shrubs 59. fig. 46. 1937.—Dallimore & Jackson, Handb. Conif. ed. 3. 245. 1948.

Retinispora pisifera Sieb. & Zucc., Fl. Jap. **2**: 39. t. 122. 1844.

Cupressus pisifera (Sieb. & Zucc.) Koch, Dendr. **2**(**2**): 170. 1873.

Chinese name: 五彩松

KIANGSU: *C. N. Chun 2552* (ex Cheng).

A native of Japan, occurring at altitudes of 660–1660 meters, introduced to European gardens in 1861, cultivated in eastern China; distinguished by its acuminate leaves and small globose cones, 6 mm. in diameter, with 10 scales, each with 1 or 2 winged seeds.

4. CRYPTOMERIA D. Don 柳杉屬

Cryptomeria D. Don in Trans. Linn. Soc. London **18**: 166. 1841.—Benth. & Hook. f., Gen. Pl. **3**: 428. 1880.—Rehder, Man. 26. 1927, ed. 2. 50. 1940; et Bibl. 43. 1949.—Chen, Ill. Man. Chin. Trees Shrubs 48. 1937.—Hao, Gymnosp. Sin. 96. 1945.

Ablea Salisb. in Jour. Sci. Arts **2** 312. 1817, nom. nudum.

Type species: *Cupressus japonica* Linn. f.=*Cryptomeria japonica* (Linn. f.) D. Don.

1. **Cryptomeria japonica** (Linn. f.) D. Don, op. cit. 167.—Hooker, Ic. Pl. **7**: t. 668. 1844.—Fortune in Gard. Chron. **1848**: 471. 1848; et in Allg. Gartenz. **16**: 301. 1848.—Parlatore in DC., Prodr. **16**(**2**): 438. 1868.—Debeaux in Act. Soc. Linn. Bordeaux **30**: 109 (Fl. Shangh. 57). 1875.—Masters in Jour. Linn. Soc. Bot. **18**: 497. 1881, **26**: 544. 1902; et **37**: 413. 1906.—Franch. in Nouv. Arch. Mus. Hist. Nat. Paris II. **7**: 101 (Pl. David. 1: 291). 1884.—Pritzel in Diels in Bot. Jahrb. Engler **29**: 218. 1900.—Pamp. in Nuov. Giorn. Bot. Ital. n. s. **17**: 231. 1910, **18**: 105. 1911.—Patschke in Bot. Jahrb. Engler **48**: 672. 1913; et in Beih. Bot. Centralbl. **37**(**2**): 84. 1919.—Rehder & Wils, in Sarg., Pl. Wils. **2**: 52. 1914.—Gilg in Bot. Jahrb. Engler **34**(**Beibl. 75**): 16. 1904.—Chun, Chin. Econ. Trees 33. 1922.—Pax in Limpricht in Repert. Sp. Nov. Fedde Beih· **12**: 305. 1922.—Rehder in Jour. Arnold Arb. **4**: 125. 1923, **17**: 55. 1936; Man. 29. 1927, ed. 2. 50. 1940; et Bibl. 43. 1949.—Rehder & Wils. in Jour. Arnold Arb. **8**: 90. 1927, **9**: 17. 1928.—Cheng in Sinensia **2**: 105. 1931; in P'ei in Contr. Biol. Lab. Sci. Soc. China **8**: 82. 1932; et in Contr. Biol. Lab. Sci. Soc. China **8**: 305. 1933.—Hsia in Contr. Inst. Bot. Nat. Acad. Peiping **1**: 40. 1931.—Masamune & al. in Trans. Nat. Hist. Soc. Formosa **22**: 27. 1932.—Orr in Notes Bot. Gard. Edinb. **18**: 150. 1933.—Lee, For. Bot. China 79. pl. 33. 1935.—Chen, Ill. Man. Chin. Trees Shrubs 48. fig. 35. 1937.—Kia, Pl. Sin. Ill. 1226. fig. 2137. 1937.—Metcalf, Fl. Fuk. **1**: 29. 1942.—Hao, Gymnosp. Sin. 97. 1945.—Fang, Ic. Pl. Omei **2**(**2**): t. 183. 1949,—Dallimore & Jackson, Handb. Conif. 180.

fig. 35. 1923, ed. 3. 252. fig. 42. 1948.—Li & Keng in Taiwania **5**: 69. pl. 22. 1954.—Liu, Ill. Lign. Pl. Taiwan **1**: 51. fig. 41. 1960.

Cupressus japonicus Linn. f., Suppl. 421. 1781.—Thunb., Fl. Jap. 295. 1784.

Taxodium japonicum Brongniart in Ann. Sci. Nat. **30**: 183. 1833.

Cupressus cheusanesis Plukenet, Amalth. 69. 1705.—Endl., Syn. Conif. 72. 1847.—Carr., Traité Conif. 154. 1855, in syn.

Cryptomeria japonica var. *japonica* Henry in Elwes & Henry, Trees Brit. Irel. **1**: 129. 1906.—Dallimore & Jackson, Handb. Conif. ed. 3. 253. 1948.

Chinese name: 柳杉

FUKIEN: *H. H. Chung 1313, 1316, 2688, 2696, 2934, 3387; C. C. Tang 4185, 4264.* KWANGSI: *T. S. Tsoong 81880.* CHEKIANG: *C. Y. Chiao* ex Herb. Nank. no. *14489; F. N. Meyer 1597; Tang & Hsia 24.* KIANGSU: *R. C. Ching 5007; Ching & Tso 790; C. L. Tso 1233, 1495, 1615;* Univ. Herb. no. *41.* KIANGSI: *Chung & Sun 715; Wilson 1746.* HUPEI: *Silvestri 105, 106; S. C. Sun 1081.* HUNAN: *Fan & Li 601.* YUNNAN: *K. M. Feng 495, 11067; Henry 9667, 9667a; H. T. Tsai 59815A.* WESTERN CHINA: without precise locality, *Wilson 3008.* SHANTUNG: *C. Y. Chiao 2575.*

A native of China and Japan, occurring in mixed forests at altitudes of 100–1330 meters, in western Chekiang attaining 50 meters in height, with a trunk of 1–2.5 meters in diameter, often cultivated; distinguished by its awl-shaped leaves; globose terminal cones, each scale with acuminate apical teeth 2–3 mm. long; first discovered from Chou-san Island, off the coast of Chekiang, introduced into European gardens from Japan in 1861.

1a. **Cryptomeria japonica** f. **albo-variegata** Dallimore & Jackson, Handb. Conif. ed. 3. 259. 1948, "var."

A garden form with white leaves occurring here and there among normal green leaves.

1b. **Cryptomeria japonica** f. **araucarioides** [Henk. & Hochst.] Beissner, Syst. Eintheil. Conif. 20. 1887.—Rehder, Man. ed. 2. 50. 1940; et Bibl. 43. 1949.

Cryptomeria araucaroides Henk. & Hochst., Syst. Nadelh. 269. 1865.

Cryptomeria japonica var. *araucarioides* Carr., Traité Conif. ed. 2. 193. 1867. Sieb. & Zucc., Fl. Jap. **2**: 52. 1870.--Rehder, Man. 26. 1927.—Chen, Ill. Man. Chin. Trees Shrubs 49. 1937.—Hao, Gymnosp. Sin. 98. 1945.—Dallimore & Jackson, Handb. Conif. ed. 3. 253. 1948.

A garden form with long pendulous branchlets, short, stout, stiff green leaves, incurved at the apex.

1c. **Cryptomeria japonica** f. **compacta** (Beissn.) Beissner, Syst. Eintheil. Conif. 20. 1887, nom. nudum.—Voss, Vilmor. Blumengärt. **1**: 1235. 1896.—Rehder, Man. 26. 1927, ed. 2. 50. 1940; et Bibl. 43. 1949.

Cryptomeria japonica compacta Hort. ex Beissner, Handb. Nadelh. 147. 1891.

Cryptomeria japonica var. *pyramidata* Carr. ex Chen, Ill. Man. Chin. Trees Shrubs 49. 1937—Hao, Gymnosp. Sin. 98. 1945.

A horticultural variety with compact conical form and bluish green stiff leaves.

1d. **Cryptomeria japonica** f. **dacrydioides** (Carr.) Rehder, Bibl. 43. 1949.

Cryptomeria japonica dacrydioides Carr., Traité Conif. ed. 2. 193. 1867.

Cryptomeria dacryoides Sieb. ex Sieb. & Zucc., Fl. Jap. **2**: 53. 1870.

Cryptomeria japonica var. *dacryoides* Koidzumi in Bot. Mag. Tokyo **44**: 97. 1930.—Dallimore & Jackson, Handb. Conif. ed. 3. 253. 1948.

A horticultural form with short slender branchlets, small, closely set, stiff, dark green leaves.

1e. **Cryptomeria japonica** f. **elegans** [Jakob-Makoy] Beissner, Syst. Eintheil. Conif. 20. 1887.—Rehder, Man. 26. 1927, ed. 2. 50. 1940; et Bibl. 43. 1949.

Cryptomeria elegans Jakob-Makoy in Belg. Hort. **14**: 356. 1864.—Veitch ex Henkel & Hochst., Syn. Nadelh. 269. 1865. Keteleer in Rev. Hort. **1869**: 156. fig. 38. 1869.—Sieb. ex Sieb. & Zucc., Zucc., Fl. Jap. **2**: 54. 1870.

Cryptomeria japonica var. *elegans* Masters in Jour. Linn. Soc. Bot. **18**: 497. 1881.—Chen, Ill. Man. Chin. Trees Shrubs 49. 1937.—Dallimore & Jackson, Handb. Conif. 183. fig. 35. 1923, ed. 3. 255. fig. 42. 1948.

A garden form, densely branched, with spreading soft, slender, flattened and grooved leaves, 1–2.5 cm. long.

1f. **Cryptomeria japonica** f. **fasciata** Dallimore & Jackson, Handb. Conif. 183. 1923, ed. 3. 255. 1948, "var."

A garden form with many of the branches fasciated, probably a monstrous plant.

1g. **Cryptomeria japonica** f. **kusari-sugi** Dallimore & Jackson, 11. cc. 184, 256, "var."

A dwarf form with clustered branches.

1h. **Cryptomeria japonica** f. **husari-sugi** Dallimore & Jackson, 11. cc.

A garden form with curiously bent branchlets.

1i. **Cryptomeria japonica** f. **lobbii** [Carr.] Beissner, Syst. Eintheil. Conif. 20. 1887.—Rehder, Man. 26. 1927, ed. 2. 50. 1940; et Bibl. 43. 1949.

Cryptomeria lobbiana Billain in Allg. Gartenzeit. **21**: 233. 1853.

Cryptomeria japonica var. *lobbii* Carr., Traité Conif. 154. 1855.

Cryptomeria lobbii Hort. ex F. Schneider in Berlin. Allg. Gartenzeit. **1857**: 37. 1857.

A garden form with narrow-pyramidal crown, short and densely ramified branches, lighter green leaves and the cone scales with rather long teeth; introduced from Java to European gardens by Lobb in 1853.

1j. **Cryptomeria japonica** f. **nana** [Carr.] Beissner, Syst. Eintheil. Conif. 20. 1887.—Rehder, Man. 26. 1927, ed. 2. 50. 1940; et Bibl. 43. 1949.—Dallimore & Jackson, Handb Conif. 183. 1923, ed. 3. 255. 1948.

Cryptomeria japonica nana Hort. ex Knight & Perry, Syn. Conif. 22. 1850, nom. nudum.—Carr. in Jacques & Herincq, Man. Pl. **4**: 332. 1857.—Fortune ex Gordon, Pinet. 54. 1858.

Cryptomeria nana Lindl. & Gordon in Jour. Hort. Soc. London **5**: 208. 1850, nom. subnudum.

Cryptomeria japonica pygmaea hort. ex Knight & Perry, l. c.

A horticultural form with dwarf habit, dense and spreading or procumbent branches and rather short stiff leaves.

1k. **Cryptomeria japonica** f. **pungens** [Carr.] Beissner, Syst. Eintheil. Conif. 20. 1887.—Rehder, Man. 26. 1927, ed. 2. 50. 1940; et Bibl. 43. 1949.—Chen, Ill. Man. Chin. Trees Shrubs 49. 1937.—Hao, Gymnosp. Sin. 98. 1945.—Dallimore & Jackson, Handb. Conif. 183. 1923, ed. 3. 255. 1948.

Cryptomeria japonica pungens Carr., Traité Conif. ed. 2. 194. 187.

A horticultural form, compact, and with stiff, spreading and sharply pointed dark green leaves.

11. **Cryptomeria japonica** var. **sinensis** Sieb. in Sieb. & Zucc., Fl. Jap. **2**: 52. 1844.—Rehder, Man. 26. 1927, ed. 2. 50. 1940; et Bibl. 43. 1949.—Lee, For. Bot. China 81. 1935.—Chen, Ill. Man. Chin. Trees Shrubs 49. 1937.—Hao, Gymnosp. Sin. 97. 1945.—Dallimore & Jackson, Handb. Conif. ed. 3. 253. 1948.

Cryptomeria fortunei Hooibrenk ex Otto & Dietrich in All. Gartenzeit. **21**: 234. 1853.
Cryptomeria japonica var. *fortunei* Henry in Elwes & Henry, Trees Brit. Irel. **1**: 129. 1906.
Cupressus mairei Lévl., Cat. Pl. Yun-Nan 56. 1916.
Cryptomeria kawae Hayata in Bot. Mag. Tokyo **31**: 117. fig. [1]. 1917.—Chung in Mem. Sci. Soc. China **1**(**1**): 5 (Cat. Trees Shrubs China). 1924.—Hao, Gymnosp. 98. 1945.
Cryptomeria mairei (Lévl.) Nakai in Jour. Jap. Bot. **13**: 395. 1937.
Cupressus ducloxiana sensu Rehder in Jour. Arnold Arb. **10**: 110. 1929, non Hickel.

ANHWEI: *R. G. Ching 3326.* HUPEI: *C. Silvestri 3973.* KWEICHOW: *Y. Tsiang 8850.* YUNNAN: *R. C. Ching 21886; Kawai* in 1917 (type of *C. kawae*); *Maire*, s. n. (Tong-tchouen, type of *Cupressus mairei*), *62; Rock 12001; Tsiang & Wang 16019.* SZECHUAN: *C. Y. Wang 7609; F. T. Wang 20414, 20755; Wilson 4077.*

A distinct variety with smaller cones, the teeth of the scales short and acute, 1 rarely up to 2 mm. long; occurring in mixed woods at altitudes of 900–2900 meters, often cultivated in temple grounds.

1m. **Cryptomeria japonica** f. **spiralis** (Sieb.) Rehder, Bibl. 43. 1949.
Cryptomeria japonica var. *spiralis* Sieb. ex Sieb. & Zucc., Fl. Jap. **2**: 52. 1870.—Dallimore & Jackson, Handb. Conif. 184. 1923, ed. 3. 256. 1948.—Rehder, Man. ed. 2. 50. 1940.
Cryptomeria japonica spiraliter falcata Hort. ex Beissner, Syst. Eintheil. Conif. 20. 1887.

A garden shrubby form with strongly falcate leaves twisted spirally around the branchlets.

1n. **Cryptomeria japonica** f. **variegata** Hort. ex Dallimore & Jackson, Handb. Conif. 184. 1923, ed. 3. 256. 1948.

A horticultural form, the leaves variegated with yellow.

5. **CUNNINGHAMIA** R. Brown 杉屬

Cunninghamia R. Br. in P. P. King, Narr. Surv. Austral. **2** (**Appx.**): 564. 1826, in nota.—L. C. Richard, Mém. Conif. 149. t. 18. 1826.—Dallimore & Jackson, Handb. Conif. 186. 1923, ed. 3. 258. 1948.—Rehder, Man. 26. 1927, ed. 2. 51. 1940; et Bibl. 44. 1949.—Metcalf, Fl. Fuk. **1**: 27. 1942.—Li in Taiwania **1**: 302. 1950. non Schreber 1789, *nom. conserv.*

Belis Salisbury in Trans. Linn. Soc. London 8: 315. 1807.

Jacularia Rafinesque in Gard. Mag. London 8: 247. 1832.

Raxopitys [Nelson] Pinac. 97. 1866.

Type species: *Pinus lanceolata* Lamb. = *C. lanceolata* Hook.

1. **Cunninghamia konishii** Hayata in Gard. Chron. III. **43**: 194. 1908; in Jour. Linn. Soc. Bot. **35**: 299. t. 23. 1908; in Jour. Coll. Sci. Univ. Tokyo **25**(**19**): 213 (Fl. Mont. Form.). 1908; Ic. Pl. Form. **2**: 147. 1912; et Syst. Bot. **1**: 593. fig. 317. 1933.—Dunn in Jour. Linn. Soc. Bot. **39**: 438. 1911.—Kanehira, Formos. Trees 598. 1917, rev. ed. 51. fig. 16. pl. 18. 1936; et in Trans. Nat. Hist. Soc. Formos. **22**: 233. 1932.—Dallimore & Jackson, Handb. Conif. 189. 1923, ed. 3. 262. 1948.—Rehder, Man. 27. 1927. ed. 2. 51. 1940; et Bibl. 44. 1949.—T. Ito, [Ito. Fl. Formosa] 38. fig. 36. 1928.—Suzuki in Ann. Rep. Taihoku Bot. Gard. **1**: 115. 1931.—Chen, Ill. Man. Chin. Trees Shrubs 47. fig. 34. 1937.—Metcalf. Fl. Fuk. **1**: 28. 1942. —Li in Taiwania **1**: 302. 1950; et Woody Fl. Taiwan 55. fig. 12. 1963.—Li & Keng in Taiwania **5**: 65. pl. 20. 1954.
Cunninghamia kawakamii Hayata, Ic. Pl. Formos. **5**: 207. t. 16. 1916.—Kanehira in Trans. Nat. Hist. Soc. Formosa **8**: 25. 1918.

Cunninghamia lanceolata var. *konishii* (Hayata) Fujita in Trans. Nat. Hist. Soc. Formosa **22**: 49. 1932.

Chinese name: 巒大杉

TAIWAN: *R. Kanehira*, Feb. 1912; *U. Mori 211; S. Sasaki 2665; Wilson 9799, 10219, 10887.* FUKIEN: *Price 1238* (ex Metcalf).

Endemic to Taiwan, occurring in mixed forests in the northern and central part of the island at altitudes of 1300–2000 meters; distinguished by its smaller ovoid cones 2–2.5 cm. long.

2. **Cunninghamia lanceolata** (Lamb.) Hooker in Bot. Mag. **54**: t. 2743, 1827.—Rehder & Wilson in Sarg., Pl. Wils. **2**: 50. 1914; et in Jour. Arnold Arb. **9**: 16. 1928.—Chun, Chin. Econ. Trees 31. t. 11. 1922.—Pax in Limpricht in Repert. Sp. Nov. Fedde Beih. **12**: 305. 1922.—Rehder in Jour. Arb. 4: 125. 1923; Man. 27. 1927, ed. 2. 51. 1940; et Bibl. 44. 1949.—Sasaki in Trans. Nat. Hist. Soc. Formosa **15**: 184. 1925.—Hand.-Mazz., Symb. Sin. **7**: 17. 1929.—Groff in Lingn. Sci. Jour. **9**: 288. 1930.—Cheng in Sinensia **2**: 106. 1931; in P'ei in Contr. Biol. Lab. Sci. Soc. China **8**: 83. 1932; et in Contr. Biol. Lab. Sci. Soc. China **8**: 305. 1933.—Fujita in Trans. Nat. Hist. Soc. Formosa **22**: 49. 1932.—Orr in Notes Bot. Gard. Edinb. **18**: 149. 1933.—Lin in Proc. Fifth Pacific Sci. Congr. Canada **5**: 3997. 1934.—Lee, For. Bot. China 83. t. 35-36. 1935.—Merr in Trans. Am. Phil. Soc. n. s. **24**: 65. 1935.—Tsoong in Contr. Inst. Bot. Nat. Acad. Peiping **4**: 155. 1936.—Kia, Pl. Sin. Ill. 1226. fig. 2138. 1937.—Chien, Ic. Chin. For. Trees **1**: pl. 4. 1937.—Hao in Bot. Jahrb. Engler **68**: 578. 1938; et Gymnosp. Sin. 100. 1946.—Metcalf, Fl. Fuk. **1**: 28. 1942.—S. Y. Hu in Jour. West China Bord. Res. Soc. ser. B. **15**: 108. 1945.—Fang, Ic. Pl. Omei **2**(**2**): t. 182. 1946.—Dallimore & Jackson, Handb. Conif. ed. 3. 258. fig. 43. 1948.—Florin in Act. Hort. Berg. **14**: 349, 369. 1948.—Li & Keng in Taiwania **5**: 67. pl. 21. 1954.—Liu, Ill. Lign. Pl. Taiwan **1**: 53. fig. 43. 1960.

Pinus abies sensu Lour., Fl. Cochinch. 579. 1790, ed. Willd. no. 1793, non Linn.

Pinus lanceolata Lamb., Descr. Pinus **1**: 52. t. 34. 1803.

Abies lanceolata Poiret, Encycl. Méth. Bot. **6**: 523. 1804.

Belis jaculifolia Salisb. in Trans. Linn. Soc. London **8**: 315. 1807.

Cunninghamia sinensis R. Br. ex L. C. Richard, Mém. Conif. 80. t. 18. fig. 3. 1826.—Link in Linnaea **15**: 540. 1841.—Benth., Fl. Hongk. 337. 1861.—Parlatore in DC., Prodr. **16**(**2**): 432. 1868.—Debeaux in Act. Soc. Linn. Bordeaux **30**: 109 (Fl. Shangh. 57). 1875.—Fauvel in Mém. Soc. Sci. Nat. Cherbourg **23**: 200. 1880.—Franch. in Nouv. Arch. Mus. Hist. Nat. Paris II. **7**: 101 (Pl. David. **1**: 291). 1884; et in Jour. de Bot. **13**: 261. 1899.—Masters in Forbes & Hemsl. in Jour. Linn. Soc. Bot. **26**: 548 (Ind. Fl. Sin. II). 1899.—Beissner in Nouv. Giorn. Bot. Ital. n. ser. **4**: 185. 1897.—Pritzel in Diels in Bot. Jahrb. Engler **29**: 218. 1900.—Mottet in Rev. Hort. Paris **1903**: 549. figs. 232-234. 1903.—Dunn & Tutch. in Kew Bull. add. ser. **10**: 256 (Fl. Kwangt. Hongk.). 1912.—Matsuda in Bot. Mag. Tokyo **27**: 120. 1913.—Lévl., Cat. Pl. Yun-Nan 56. 1916.—Dallimore & Jackson, Handb. Conif. 186. fig. 36. 1923.—Chen, Ill. Man. Chin. Trees Shrubs 46. fig. 33. 1937.

Belis lanceolata Sweet, Hort. Brit. ed. 2. 475. 1830.

Raxopitys cunninghamii [Nelson], Pinac. 97. 1866.

Cunninghamia chinensis C. de Vos, Bered. Woordenb. Heest. Conif. 153. 1867.

Araucaria lanceolata Hort. ex Parlatore in DC., Prodr. **16**(**2**): 433. 1868, in syn.

Cunninghamia sinensis var. *prolifera* Lemée & Lévl. in Monde des Pl. II. **16**: 20. 1914.—Lévl., Pl. Yun-Nan 56. 1916.

Chinese name: 杉

TAIWAN: *U. Faurie 11; Henry*, s. n. FUKIEN: *L. Chen 17; H. H. Chung 1014, 1234, 2591, 2988; Dunn* ex Herb. Hongk. *3511; F. P. Metcalf 7390, 7411.* KWANGTUNG: *S. K. Lau 633, 2189; C. O. Levine* (CCC *367, 1375*); *Merrill 10862; W. T. Tsang* (LU *16693*), *21623, 24833, 26084, 28652; Wang* (West River) *549.* KWANGSI: *R. C. Ching*

8434; Steward & Cheo 48, 1076. CHEKIANG: *Merrill 14236; F. N. Meyer 1480; Tang & Hsia 47.* KIANGSU: *Chen & Teng 13; Ching & Tso 751; F. B. Forbes 1036.* ANHWEI: *Fan & Li 279; S. C. Sun 1359.* KIANGSI: *Chung & Sun 709; A. N. Steward* ex Herb. Nank. Herb. no. *2750; Wilson 1740.* HUPEI: *H. C. Chow 93; C. Silvestri 104, 3976; S. C. Sun 1086; Wilson 794.* HUNAN: *Fan & Li 396; W. T. Tsang 23510.* YUNNAN: *K. M. Feng 11248, 11482, 11529, 11660, 13630; Henry 9148a; E. E. Maire* (Tong-tchouan, holotype of *C. sinensis* var. *prolifera* Lemée & Lévl.), *60, 473; Rock 12000, 12005.* SZECHUAN: *S. S. Chien 3210, 3293; H. C. Chow 9037, 9381; W. P. Fong 12656; W. K. Hu 7763; C. Schneider 662, 780; H. Smith 10007, 13608; L. Y. Tai 730; F. T. Wang 20604; Wilson 794a, 794b, 4076, 4651; T. T. Yu 241, 460, 1475.* SHANTUNG: *Debeaux.* SHENSI: *Giraldi* (ex Beissner).

Endemic to the warmer regions of China, commonly cultivated on gently slopes at altitudes of 830–1350 meters, the sprouts from the cut-over trees serving as a means of renewing the forest; distinguished by its longer leaves, 3–6 cm. long, the upper surface unevenly or not at all stigmatiferous and by its larger ovoid cones 2.5–5 cm. long; first discovered in 1801, from Chusan Island, off the coast of Chekiang, introduced to European gardens by William Kerr in 1804.

2a. **Cunninghamia lanceolata** f. **glauca** (Dallimore & Jackson) comb. nov.

Cunninghamia sinensis var. *glauca* Hort. ex Dallimore & Jackson, Handb. Conif. 188. 1923.—Chen, Ill. Man. Chin. Trees Shrubs 47. 1937.

Cunninghamia lancaolata var. *glauca* Dall. & Jack., Handb. Conif. ed. 3. 259. 1948.

A horticultural form with glaucous or blue-green leaves.

6. **CUPRESSUS** Linn. 柏屬

Cupressus Linn., Sp. Pl. 1002. 1753; Gen. Pl. ed. 5. 435. 1754.—Benth. & Hook. f., Gen. Pl. **3**: 427. 1880.—Camus in Encycl. Econ. Sylv. **2**: 9 (Cyprès). 1914.—Dallimore & Jackson, Handb. Conif. 190. 1923, ed. 3. 264. 1948.—Rehder, Man. 15. 1927, ed. 2. 55. 1940; et Bibl. 49. 1949.—Wolf & Wagener in El Aliso **1**: 46 (New World Cypr.). 1948.

Lectotype=*C. sempervirens* Linn.

1. **Cupressus duclouxiana** Hickel ex Camus, Cyprès 91. t. 3. fig. 419-424. 1914.—Dallimore & Jackson, Handb. Conif. 195. 1923, ed. 3. 269. 1948.—Stapf in Bot. Mag. **150**: t. 9049. 1925.—Wils. in Jour. Arnold Arb. **7**: 60. 1926.—Florin in Act. Hort. Gothob. **3**: 3. 1927; et in Act. Hort. Berg. **14**: 369. 1948.—Rehder, Man. 16. 1927, ed. 2. 56. 1940; et Bibl. 50. 1949.—Hand.-Mazz., Symb. Sin. **7**: 5. 1929.—Orr in Notes Bot. Gard. Edinb. **18**: 150. 1933.—Lee, For. Bot. China 94. pl. 40, 41. 1935.—Chen, Ill. Man. Chin. Trees Shrubs 57. 1937.—Cheng in Trav. Lab. Forest Toulouse V. **1(2)**: 90. 1939.—Hao, Gymnosp. Sin. 109. 1945.—Florin in Act. Hort. Berg. **14**: 369. 1948.—Dallimore & Jackson, Handb. Conif. 195. 1923, ed. 3. 269. 1948.

Cupressus sempervirens sensu Franch. in Jour. de Bot. **13**: 263. 1899.—sensu Masters in Forbes & Hemsl. in Jour. Linn. Soc. Bot. **26**: 541 (Ind. Fl. Sin. II). 1902.—sensu Lévl., Cat. Pl. Yun-Nan 56. 1916, non Linn.

Chinese name: 乾柏

YUNNAN: *R. C. Ching 20117; W. Y. Chun 11161; K. M. Feng 359, 2532; Forrest 8166; Handel-Mazzetti 7602; E. E. Maire 63; Rock 3987, 6802, 7921, 8440, 11645; H.*

Smith 1605; C. Schneider 46; H. T. Tsai 52814; Tsiang & Wang 16018; C. W. Wang 63049, 67849, 69289, 71762; T. T. Yu 8004, 16130, 18271. SIKANG: *Wang & Wen 702; T. T. Yu 1388, 1576.*

2. **Cupressus chengiana,** sp. nov.

Arbor, 20 m. alta, ramulis teretis, vel leviter compressis, hornotinis 1.25 mm. diametro; foliis quadrifariis imbricatis, ecarinatis, ovatis vel obtusis, 1 mm. longis latisque, strobilibus masculis oblongis, 2–3 mm. longis, squamis 12, late ovatis, obtusis, antheris 3 vel 4; fructibus globosis, 5–10 mm. diametro, squamis 6–8, suborbicularibus angulatis, 4–6 mm. diametro, rugosis et papillatis, utrumque seminibus 5-ovatis, brunneis.

Chinese name: 川柏*

SZECHUAN: *W. C. Cheng 2066* (type) *F. T. Wang 21700; Wilson 798a, 2105.*

Endemic to northwestern Szechuan, occurring in the Min River Valley at altitudes of 1300–1660 meters; resembling *C. torulosa* in its terete branchlets, distinguished by its unusually small fruits with 6 to 8 rugose and pappillose scales. In *C. torulosa* the cone scales are cutinized.

3. **Cupressus funebris** Endl., Syn. Conif. 58. 1847.—Lindl. & Paxton, Fl. Gard. **1**: 43. fig. 31. 1850.—Lemaire in Jard. Fleur. **1(Misc.)**: 19. fig. [1]. 1850.—Morren in Belg. Hort. **3**: 126. t. 20. 1853.—Fortune, ibid. **4**: 343. t. 55. 1854.—Parlatore in DC., Prodr. **16(2)**: 471. 1868. —Debeaux in Act. Soc. Linn. Bordeaux **30**: 110 (Fl. Shangh. 58). 1875.—Franch. in Jour. de Bot. **13**: 263. 1899.—Masters in Forbes & Hemsl. in Jour. Linn. Soc. Bot. **26**: 540 (Ind. Fl. Sin. II). 1899.—Diels in Bot. Jahrb. Engler **29**: 219. 1900.—Pavotini in Nouv. Giorn. Bot. Ital. n. ser. **15**: 439. 1908.—Matsuda in Bot. Mag. Tokyo **24**: (21). 1910, **32**: 173. 1918. —Patschke in Bot. Jahrb. Engler **48**: 675. t. 8. fig. 6. 1913.—Rehder & Wilson in Sarg., Pl. Wils. **2**: 55. 1914.—Divers in Gard. Chron. III. **65**: 63. fig. 23. 1919.—Chun, Chin. Econ. Trees 38. 1922.—Pax in Limpricht in Repert. Sp. Nov. Fedde **12**: 305. 1922.—Wilson in Jour. Arnold Arb. **7**: 61. 1926.—Hand.-Mazz., Symb. Sin. **7**: 5. 1929.—Cheng in Sinensia **2**: 105. 1931; et in Contr. Biol. Lab. Sci. Soc. China Bot. Ser. **8**: 305. 1933.—Merr. in Lingn. Sci. Jour. **7**: 298. 1931.—Lee, For. Bot. China 93. 1935.—Chen, Ill. Man. Chin. Trees Shrubs 56. fig. 43. 1937.—Kia, Pl. Sin. Ill. 1229. fig. 2141. 1937.—Metcalf, Fl. Fuk. **1**: 31. 1942.—Hao, Gymnosp. Sin. 108. 1945.—S. Y. Hu in Jour. West China Bord. Res. Soc. ser. B. **15**: 108. 1945.—Fang, Ic. Pl. Omei **2(2)**: t. 184. 1946.—Law in Bot. Bull. Acad. Sin. **1(2)**: 163. 1947. —Dallimore & Jackson, Handb. Conif. 197. fig. 38. 1923, ed. 3. 270. fig. 44. 1948.—Orr in Notes Bot. Gard. Edinb. **20**: 104. 1948.—Florin Act. Hort. Berg. **14**: 349, 369. 1948.

Cupressus pendula Abel in Staunton, Emb. China **2**: 255. 1797, non Thunb, nec L'Héritier.— Lamb., Descr. Pinus **1**: 97. t, 43. 1803.

Cupressus funebris gracilis Carr., Traité Conif. 162. 1867.

Chinese name: 柏木

KWANGTUNG: *Y. Tsiang 1277.* KWANGSI: *R. C. Ching 6218; W. T. Tsang 27628; T. S. Tsoong 83415; C. Wang 40847.* CHEKIANG: *S. Chen 1930; C. Y. Chiao* ex Univ. Nank. Herb. no. *14184, 14809; H. H. Hu 516; Y. L. Keng 257, 575; Tang & Hsia 152.* KIANGSU: *R. C. Ching 3287.* KIANGSI: *T. N. Hsiung 505; Y. K. Hsiung 5471; S. K. Lau 4596; T. H. Wang 274.* HUPEI: *H. C. Chow 322; G. Niederlein 116; Wilson 798.* HUNAN: *Fan & Li 371; Handel-Mazzetti 502; W. T. Tsang 23589.* KWEICHOW: *Handel-Mazzetti 73; Steward, Chiao & Cheo 10, 825; Y. Tsiang 4928, 8004.* YUNNAN: *K. M. Feng 11652, 13423; Handel-Mazzetti 8610; O. Schoch 425; T. T. Yu 16131.*

SSZECHUAN: *Chiao & Fan 138; S. S. Chien 5241; H. C. Chow 8051, 8467, 8586, 8660, 8864, 8882, 9375, 12110; W. P. Fang 3356, 6064, 13775, 18138; W. K. Hu 7764; H. Smith 13611; L. Y. Tai 898, 1484; F. T. Wang 20824; T. T. Yu 242.* SIKANG: *K. L. Chu 3995; C. Schneider 809; C. Y. Chiao 1291; T. T. Yü 1184, 1656.*

A native of China, commonly cultivated, especially in temples and graveyards, in Kweichow, Yunnan and Szechuan the species has been recorded to occur in woods or mixed forests at altitudes of 1000–1750 meters; distinguished by its compressed branchlets, very acute leaves with the lateral pair strongly keeled and the median pair conspicuously glandulate, by its small globose cones 8–11 mm. in diameter.

4. **Cupressus torulosa** D. Don, Prodr. Fl. Nepal. 55. 1825.—Masters in Jour. Linn. Soc. Bot. **31**: 335. 1896.—Rehder & Wilson in Sarg., Pl. Wils. **2**: 54. 1914.—Chun, Chin. Econ. Trees 38. pl. 12. 1922.—Rehder in Jour. Arnold Arb. **4**: 125. 1923.—Chung in Mem. Sci. Soc. China **1**(**1**): 6 (Cat. Trees Shrubs China). 1924.—Wilson in Jour. Arnold Arb. **7**: 60 1926.—Rehder & Wilson in Jour. Arnold Arb. **9**: 17. 1928.—Merr. in Trans. Am. Phil. Soc. n. s. **24**: 66. 1935.—Chen, Ill. Man. Chin. Trees Shrubs 56. 1937.—Hao, Gymnosp. Sin. 109. 1945.

Cupressus sempervirens sensu Lour., Fl. Cochinch. 580. 1790, ed. Willd. 711. 1793, non Linn.

Juniperus nepalensis Loudon, Encycl. Trees Shrubs 1118. 1842.

Cupressus corneyana Knight & Perry, Syn. Conif. 20. 1850, nom. nudum.—Carr., Traité Conif. 128. 1855.

Juniperus chinensis corneyana Gordon, Pinet. 117. 1858.

Chinese name: 大果柏*

SZECHUAN: *W. C. Cheng 2073; F. T. Wang 31323; Wilson 2106, 3012.* SIKANG: *W. C. Cheng 1895; C. Schneider 3568; H. Smith 13387; T. T. Yu 13407.* KANSU: *F. N. Meyer 1981; Rock 12073.*

Originally described from Nepal, its range extending to the Western Himalayan Region. In China it occurs in Wu-tang shan of western Hupei, and in northwestern Szechuan, localized in Shan-tai (Tung-chuan) and Wenchuan, Kansu and eastern Sikang, usually occurring in arid region at altitudes of 1300–3000 meters; distinguished by its terete branchlets, 1.25 mm. in diameter, short and wide leaves 0.5–1 mm. long, 1–1.25 mm. wide; smaller cones 1–2 cm. in diameter, usually oblong in outline, and by its suborbicular seeds with well-developed wings. Rehder & Wilson named Wilson's collection as *C. torulosa*, but later they changed their identification to *C. duclouxtana*. After comparing the above cited specimens with some authentic material from India, I decided that they are conspecific. The cone scales of Wilson 3012, Meyer 1981, and Rock 12073 are papillose. In this respect they resemble *C. chengiana*. They are cited here because of their large cones.

Doubtful and Excluded species

1. *Cupressus formosensis* (Mats.) Henry in Elwes & Henry, Trees Brit. Irel. **5**: 1187. 1910=**Chamaecyparis formosensis** Mats. in Bot. Mag. Tokyo **15**: 137. 1901.
2. *Cupressus hodginsii* Dunn in Jour. Linn. Soc. Bot. 38: 367. 1908, 39: 438. 1911.=**Fokienia hodginsii** (Dunn) Henry & Thomas in Gard. Chron. III. 49: 67. fig. 22-23. 1911.
3. *Cupressus mairei* Lévl., Cat. Pl. Yun-Nan 56. 1916=**Cryptomeria japonica** var. **sinensis** Sieb. in Sieb. & Zucc., Fl. Jap. **2**: 52. 1844.

7. **FOKIENIA** Henry & Thomas 建柏屬

Fokienia Henry & Thomas in Gard. Chron. III. **49**: 66. 1911.—Clinton-Baker, Ill. Conif. **3**: 85. 1913.—Dallimore & Jackson, Handb. Conif. 299. 1923, ed. 3. 287. 1948.—Pilger in Engler, Pflanzenf. ed. 2. 13. 391. 1926.—Chen, Ill. Man. Chin. Trees Shrubs 57. 1937.—Metcalf, Fl. Fuk. **1**: 30. 1942.—S. Y. Hu in Jour. Arnold Arb. **32**: 390. 1951.

Cupressus sensu Dunn in Jour. Linn. Soc. Bot. **38**: 367. 1908, non Linn.

Type species: *Cupressus hodginsii* Dunn=*Fokienia hodginsii* (Dunn) Henry & Thomas.

1. **Fokienia hodginsii** (Dunn) Henry & Thomas in Gard. Chron. III. **49**: 67. fig. 22-23, 253. fig. 111. 1911. **59**: 72. fig. 30-31. 1916.—Goeze in Gartenflora **60**: 255. 1911.—Chun, Chin. Econ. Trees 37. 1922; in Sunyats. **1**: 211. 1934; et Ic. Pl. Sin. **1**: t. 13. 1927.—Dallimore & Jackson, Handb. Conif. 229. fig. 50. 1923, ed. 3. 287. fig. 51. 1948.—Hickel in Bull. Soc. Dendr. France 78. 1930; et in Lecomte, Fl. Gén. Indo-Chine **5**: 1082. fig. 127. 1931.—Brillet in Bull. Econ. Indo-Chine n. ser. **33**(B): 916B. t. [1-5]. 1930.—Cheng in Sinensia **2**: 105. 1931; et in Contr. Biol. Lab. Sci. Soc. China Bot. **8**: 303. 1933.—Lee, For. Bot. China 92. pl. 39. 1935.—Metcalf in Lingn. Sci. Jour. **14**: 688. 1935.—Kia, Pl. Sin. Ill. 1228. fig. 2142. 1937.—Chen, Ill. Man. Chin. Trees Shrubs 57. fig. 44. 1937.—Metcalf, Fl. Fuk. **1**: 30. 1942. Hao, Gymnosp. Sin. 106. 1945.—Orr in Notes Bot. Gard. Edinb. **20**: 104, 105. 1948.—S. Y. Hu in Jour. Arnold Arb. **32**: 390. 1951.

Cupressus hodginsii Dunn in Jour. Linn. Soc. Bot. **38**: 367. 1908.—Henry in Henry & Elwes, Trit. & Irel. **5**: 1150. 1910.

Fokienia kawae Hayata in Bot. Mag. Tokyo **31**: 116. fig. [1]. 1-2. 1917, (kawaii).—Chung in Mem. Sci. Soc. China **1**(**1**): 6 (Cat. Trees Shrubs China). 1924.—Wilson in Jour. Arnold Arb. **7**: 62. 1926.—Chen, Ill. Man. Chin. Trees Shrubs 58. 1937.—Hao, Gymnosp. Sin. 107. 1945.—Dallimore & Jackson, Handb. Conif. ed. 3. 289. 1948.

Fokienia maclurei Merr. in Philip. Jour. Sci. **21**(**Bot.**): 492. fig. 1a. 1922. Groff in Lingn. Sci. Jour. 9: 294. 1930.—Cheng in Sinensia **2**: 105. 1931.—Hao, Gymnosp. Sin. 107. 1945.

Chinese name: 建柏

FUKIEN: *A. E. Hodgins* ex Herb. Hongk. *7289, 8210; Dunn* ex Herb. Hongk. n. *3505; H. H. Chung 3410.* CHEKIANG: *R. C. Ching 2345, 2361; Y. L. Keng 350.* KWANGTUNG: *J. L. Gressitt 1740; Maclure 6572* (isotype of *F. maclurei* Merr.); *Y. W. Taam 470.* KWANGSI: *Steward & Cheo 517; C. Wang 39432, 40127.* KWEICHOW: *Y. Tsiang 7135, 8867.* YUNNAN: *K. M. Feng 14071; H. T. Tsai 52527.*

Endemic to southeastern China and the adjacent Indo-China, occurring in mixed forests at altitudes of 1300-1400 meters; distinguished by extremely flattened branchlets, globose woody cones, subpeltate scales each bearing two unequally bilaterally winged seeds.

8. **GLYPTOSTROBUS** Endl. 水松屬

Glyptostrobus Endl., Syn. Conif. 69. 1847.—Carr., Traité Conif. 150. 1855.—Gordon, Pinet. 89. 1858.—Parlatore in DC., Prodr. **16**(**2**): 438. 1868.—Dallimore & Jackson, Handb. Conif. 230. 1923, ed. 3. 289. 1948.—Henry & McIntyre in Proc. Irish. Acad. **37**(**B**): 90. 1926.—Kräusel in Mitt. Deutsch. Dendr. Ges. **41**: 154. 1929.—Chen, Ill. Man. Chin. Trees Shrubs 50. 1937.—Hao, Gymnosp. Sin. 95.

1945.—Hou, Fl. Canton 71. fig. 13. 1956.

Thuja sensu Staunton, Embassy China **2**: 436. 1797.—sensu D. Don in Lambert, Descr. Pinet. ed. 8. [2]: 129. 1837, p. p., non Linn.

Type species: *Thuja pensilis* Staunt.=*G. pensilis* (Staunt.) Koch.

1. **Glyptostrobus pensilis** (Staunton) Koch, Dendr. **2**(2): 191. 1873.—Hooker f. in Bot. Mag. 92: t. 5603. 1866.—Henry in Gard. Chron. III. **79**: 309. 1926.—Groff in Lingn. Sci. Jour. **9**: 290. 1930.—Lee, For. Bot. China 78. 1935.—Merr. in Trans. Am. Phil. Soc. n. s. **24**: 65. 1935.—Chen, Ill. Man. Chin. Trees Shrubs 50. fig. 37. 1937.—Kia, Pl. Sin. Ill. 1227. fig. 2139. 1937.—Masamune in Trans. Nat. Hist. Soc. Formosa **28**: 291. 1938.—Dallimore & Jackson, Handb. Conif. ed. 3. 290. 1948.—Metcalf, Fl. Fuk. **1**: 29. 1942.

Thuja pensilis Staunton, Embassy China **2**: 436. 1798, *nom. nudum.*—D. Don in Lamb., Descr. Pinet. ed. 2. **2**: 115. 1828, *descr.*

Juniperus aquatica Roxb., Hort. Bengal. 73. 1814, *nom. nudum;* et Fl. Ind. ed. 2. **3**: 838. *nom. subnudum.*

Taxodium japonicum var. *heterophylla* Brongniart in Ann. Sci. Nat. **30**: 184. 1833.

Taxodium heterophyllum Brongniart, l. c., in syn.

Taxodium sinensis Forbes, Pinet. Woburn. 179. 1839.

Glyptostrobus heterophyllus (Brongn.) Endl., Syn. Conif. 70. 1847.—Masters in Forbes & Hemsl. in Jour. Linn. Soc. Bot. **26**: 544 (Ind. Fl. Sin. II). 1899.—Dunn & Tutch. in Kew Bull. Add. Ser. **10**: 255 (Fl. Kwangt. Hongk.). 1912.—Chun, Chin. Econ. Trees 34. 1922.—Dallimore & Jackson, Handb. Conif. 230. 1923.—Chung in Mem. Sci. Soc. China **1**(**1**): 5 (Cat. Trees Shrubs China). 1924.—Henry in Trans. Scott. Arb. Soc. **40**: 105. 1926.—Hao, Gymnosp. Sin. 95. 1945.

Glyptostrobus lineatus sensu Franco in Anais Inst. Sup. Agr. **19**: 15. 1951, non Druce.

Glyptostrobus sinense Henry ex Loder in Gard. Chron. III. **66**: 259. fig. 118, 122, 123. **1**919.

Glyptostrobus aquaticus (Roxb.) Parker in Ind. Forest **51**: 61. 1925.

Chinese name: 水松

FUKIEN: *Dunn* ex Hongk. Herb. no. *3619; H. H. Chung 1284, 2389, 2594, 2706, 6974, 7356; H. Mayr* in 1886; *Metcalf* & *Class 945.* KWANGTUNG: *C. O. Levine* (CCC *409, 3374*); *Merrill 9952; Y. Tsiang 1721.*

Endemic in southwestern China, with very limited distribution along the coastal regions of Kwangtung and Fukien; distinguished by its short deciduous lateral branchlets covered with awl-shaped or linear distichous leaves, by its obovoid cones with their 15 cuneate scales, the fertile ones with 8–10 apical tubercles, and by its winged seeds; introduced to the Botanic Garden of Calcutta in 1812, not living long there, the date of its introduction to the European gardens uncertain, probably after the 1830s.

In the past several binomial has been interpreted to be synonymous to this species by incompetent botanists. Thanks to Master and Rehder, these nomenclatural problems are solved. In 1817, Poiret described *Thuja lineata* (Encycl. Méth. Bot. Suppl. **5**: 303), and gave no country of origin. His specimen was a juvenile plant cultivated in the garden of M. Noisette. In 1838 Loudon named the same plant *Taxodium sinense* Noisette ex Loudon (Arb. Brit. **4**: 2462.) According to Master (Journ. Bot. Brit. For. **38**: 38. 1900) and Rehder (Bibl. Cult. Trees Shrubs 42. 1949), Noisette's plant was a *Taxodium ascendens* f. *nutans* (Ait.) Rehder.

Druce in 1917 (Rep. Bot. Exch. Club Brit. Isles **1916** (**Suppl. 2**): 624), without

giving any reason, transferred Poiret's species to *Glyptostrobus*. Franco in 1951, not having any material support, applied *Glyptostrobus lineatus* (Poir.) Druce to the Chinese species. This mistake should not be perpetuated any longer.

9. **CALOCEDRUS** Kurz 肖楠屬

Calocedrus Kurz in Jour. Bot. Brit. For. **11**: 196. t. 133. 1873.—Florin in Taxon **5**: 191. 1956.—Li, Woody Fl. Taiwan 61. 1963.

Heyderia Koch, Dendr. **2**(**2**): 179. 1837.—Li in Jour. Arnold Arb. **34**: 22. 1953; et in Taiwania **5**: 77. 1954.

Libocedrus sensu Benth. & Hook. f., Gen. Pl. **3**: 426. 1880, p. p.—sensu Dallimore & Jackson, Handb. Conif. 300. 1923, ed. 3. 374. 1648, p. p.—sensu Wilson in Jour. Arnold Arb. **7**: 63. 1926.—sensu Rehder, Man. 20. 1927, ed. 55. 1940; et Bibl. 49. 1949, p. p.—sensu Chen, Ill. Man. Chin. Trees Shrubs 59. 193.7—sensu Li in Taiwania **1**: 309. 1850.—sensu Hao, Gymnosp. Sin. 104. 1945, non Endl.

Libocedrus subg. *Heyderia* Pilger in Engler & Prantl, Pflanzenf. ed. 2. **13**: 389. 1926.

Type species: *Calocedrus macrolepts* Kurz

1. **Calocedrus formosana** (Florin in Taxon **5**: 192. 1956.—Li, Woody Fl. Taiwan 61. 1963.

Libocedrus macrolepis sensu Matsum. & Hayata in Jour. Coll. Sci. Univ. Tokyo **22**: 401 (Enum. Pl. Formos.) 1906.—sensu Hayata ibid. **25**(**19**): 207. fig. 4 (Fl. Mont. Formos.). 1908.—sensu Kanehira, Formos. Trees 602. 1917.—sensu Wilson in Jour. Arnold Arb. **7**: 62. 1926, p. p.—sensu T. Ito, [Ill. Fl. Formosa] ed. 2. 40. fig. 38. 1928.—sensu Suzuki in Ann. Rep. Taihoku Bot. Gard. **1**: 115. 1931., non Benth. & Hook. f.

Libocedrus formosana Florin in Svensk. Bot. Tidskrift **24**: 126. fig. 2. t. 2. 1930.—Kanehira, Formos. Trees rev. ed. 56. fig. 18. pl. 20. 1936.—Chen, Ill. Man. Chin. Trees Shrubs 60. fig. 47. 1937.—Dallimore & Jackson, Handb. Conif. ed. 3. 380. 1948.—Li in Taiwania **1**: 309. 1950.

Libocedrus macrolepis var. *formosana* (Florin) Kudo in Jour. Soc. Trop. Agr. Formosa **3**: 16. 1931.

Heyderia formosana (Florin) Li in Jour. Arnold Arb. **34**: 23. 1953.

Chinese name: 臺灣肖楠

TAIWAN: *F.S.A. Bourne*, July 1888; *R. Kanehira*, s. n.; *Kawakami & Mori*, s. n.; *Kawakami & Suzuki*, s. n.; *C. Owatari*, s. n.; *W.R. Price 344; Y. Salake* in 1897; *S. Sasaki 279; I. Shimizu 3626; T. Suzuki 19256; Wilson 10267, 10270, 10960.*

Endemic to the northern and central part of Taiwan, occurring in mixed forests at altitudes of 300–1900 meters, growing in almost inaccessible faces of cliffs or on the edge of sharp rock ledges; distinguished by its strongly compressed smooth branchlets, by its larger elongate-ovoid cones on very short stalks, 6–8 mm. long. The vegetative growth of this species resembles that of Fokienia except the leaves on the axis of this species are verticellate and those on the flatter branchlets are green on both surfaces.

2. **Calocedrus macrolepis** Kurz in Jour. Bot. Brit. For. **11**: 196. t. 133. 1873.

Libocedrus macrolepis (Kurz) Benth. & Hook. f., Gen. Pl. **3**: 426. 1880.—Masters in Forbes & Hemsl. in Jour. Linn. Soc. Bot. **26**: 540. (Ind. Fl. Sin. II). 1899.—Henry in Garden **62**: 183. fig. [1]. 1902.—Henry & Thomas in Gard. Chron. III. **49**: 67. fig. 34. 1911.—Lévl., Cat. Pl. Yun-Nan 57. 1916.—Chun, Chin. Econ. Trees 34. 1922.—Rehder in Bailey, Cult. Ever-

greens 221. 1923.—Dallimore & Jackson, Handb. Conif. 305. 1923, ed. 3. 380. 1948.—Chung in Mem. Sci. Soc. China **1**(**1**): 5 (Cat. Trees Shrubs China).—1924.—Wilson in Jour. Arnold Arb. **7**: 62. 1926, p. p.—Merr. in Lingn. Sci. Jour. **5**: 22. 1928.—Florin in Svensk. Bot. Tidskrift **24**: 123. pl. 1. 1930.—Groff in Lingn. Sci. Jour. **9**: 292. 1930.—Lee, For. Bot. China 90. pl. 38. 1935.—Kia, Pl. Sin. Ill. 1230. fig. 2145. 1937.—Metcalf, Fl. Fuk. **1**: 30. 1942.—Masam., Fl. Kain. 39. 1943.—Cahen in Jour. Roy. Hort. Soc. London **68**: 29. fig. 4, 5. 1943.—Hao, Gymnosp. Sin. 105. 1945.

Thuja macrolepis Voss in Mitt. Deutsch. Dendr. Ges. **1907**(**16**): 88. 1907.

Heyderia macrolepis (Kurz) Li in Jour. Arnold Arb. **34**: 23. 1953.

Chinese name: 肖楠

Kweichow: *Y. Tstang 6376.* YUNNAN: *Henry 11566, 11588A.*

A very rare tree occurring in open woods of southeastern Kweichow and southeastern Yunnan at altitudes of 400–700 meters; distinguished by its verticilate scale-leaves on the axis, by its strongly compressed branchlets, with leaves green on both surfaces, by its elongate-ovoid cones on scaly stalks 10–12 mm. long, and by its strongly winged seed; introduced to European gardens by E. H. Wilson in 1899.