

蘭嶼の樹木

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Ching-en CHANG* : An Enumeration of the Woody Plants of Botel Tobago

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Botel Tobago or Orchid Island is in the Pacific Ocean, lying about 49 knots to the southeast of Taitung between $121^{\circ}31'$ to $131^{\circ}36'$ east longitude and $22^{\circ}00'$ to $22^{\circ}05'$ north latitude. Its total area is about 47.28 square km. The island is very mountainous with the highest peak, Mt. Hontau, reaching the altitude of 548 m and from here the mountains go on extending southward with the second highest peak Mt. Wangnan rising to the altitude of 480 m. The rock on the island is mainly andesite in the central part and agglomerate in the north and south ends. Coral reefs are seen surrounding the island along the seashore. The island has a tropical climate with high temperature and abundant rainfall. The annual mean temperature is 25.4°C and the annual mean rainfall is 3440 mm. Aside from temperature and rainfall the strong northeast monsoon and typhoons have much influence on the steady growth of plants, the former prevailing from November to March the following year and the latter from July to November.

In 1960 the National Resource Survey to Botel Tobago was organized and the expedition was sent to the Island. It was our first expedition to this island. The members of the expedition stayed there for two weeks and collected a significant amount of herbarium materials. It gave us a good opportunity to investigate the flora of this island; therefore, further botanical trips to that island were sent twice or even more times a year. Up to now we have collected a large amount of herbarium materials in which a considerable number of them were found to be new to the flora of Taiwan, and several papers concerning these new findings have been published previously.

Subsequently in 1972, the visits to the following herbaria were made: the Herbarium of Morris Arboretum in Philadelphia (MOAR); the U. S. National Herbarium in Washington, D.C. (US); the Herbarium of New York Botanical Garden (NY) and Gray Herbarium of Harvard University in Cambridge (GH), which gave me a good opportunity to compare our collections with those preserved in the herbaria mentioned above. Moreover, in August, 1979, I could have a chance to visit the Herbarium of the University of Tokyo (TI), where the type specimens of Taiwan

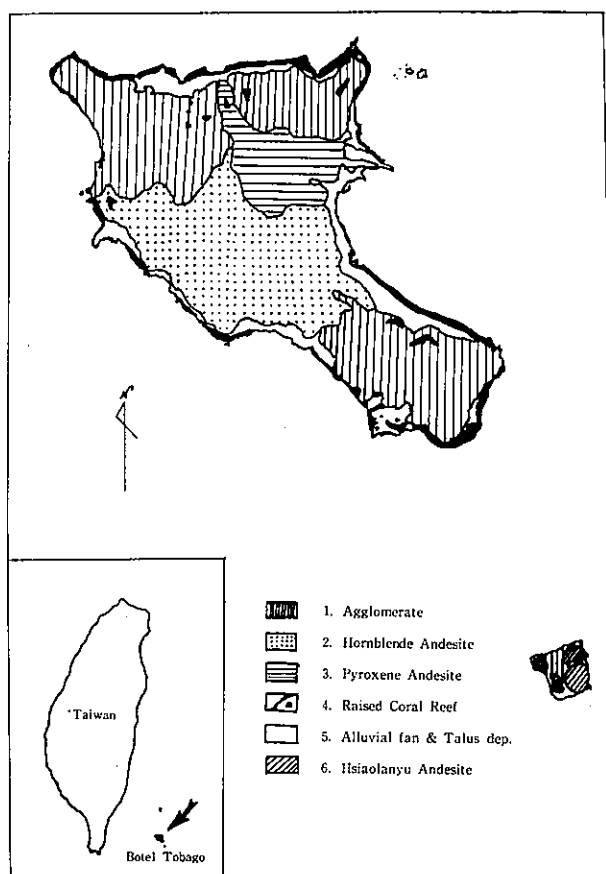


Fig. 1 Geological map of Botel Tobago

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plants are mainly preserved. In order to carry out further critical studies, the exchanges of specimens were made between the following foreign institutions, including some major herbaria in Taiwan: Department of Botany, National Taiwan University (TAI); Taiwan Forestry Research Institute (TAIF); Department of Botany, University of Tokyo (TI); Department of Botany, Kyoto University, (KYO); Department of Biology, Tohoku University (TUS); College of Forestry, University of Philippines; the Rijks-herbarium of Leiden (L); and the Herbarium of Kew Garden (K).

Most specimens cited in this paper are kept in the Herbarium of the Department of Forestry, Agricultural Institute at Pingtung, Taiwan. Additional specimens are from the Herbarium of Taiwan University (TAI), the Herbarium of Taiwan Forestry Research Institute (TAIF), the Herbarium of Department of Botany, University of Tokyo (TI) and the Herbarium of the National Science Museum, Tokyo (TNS).

A LIST OF WOODY PLANTS

Gymnospermae

1. Podocarpaceae

1. *Podocarpus costalis* PRESL, Epim. Bot. 236. 1846; YAMAM., Suppl. Icon. Pl. Form. 2:15. 1927. -*P. polystachyus sensu* MERR., Enum. Philip. Fl. Pl. 1:4. 1925, non R. BROWN. Philippines. (CHANG 9635)
2. *Podocarpus macrohyllus* (THUNB.) D. DON in Lamb. Desc. Pinus 2:22. 1824. Mainland China. (CHANG 8951)

Angiospermae

Dicotyledoneae

2. Piperaceae

1. *Piper arborescens* ROXB., Hort. Beng. 80. 1814; CHANG in Bull. Taiwan Inst. Agr. 10:53. f. 1. 1969. -*P. kotoense* Yamam. in Journ. Soc. Trop. Agr. Taiwan 4:304. 1932. Philippines, Malay Peninsula and Archipelago. (CHANG 5452)
2. *Piper betle* L., Sp. Pl. 28. 1753. India to Malaysia. (CHANG 1159)
3. *Piper interruptum* OPIZ. in Presl Rel. Haenk. 1:157. 1828; C. DC., Prodr. 16:377. 1869; LIU, SASAKI & KENG in Quart. Journ. Taiwan Mus. 8:285. 1955.

Philippines and New Guinea. (SASAKI in 1943. TNS)

4. *Piper philippinum* MIQ., Syst. Pip. 322. 1843; LIU et al., l. c. 285. Taiwan (Green Isl.) and Philippines (CHANG 12435)

3. Chloranthaceae

1. *Sarcandra glabra* (THUNB.) NAK., Fl. Korea 18:17. t. 2. 1930; LIU et al., l. c. 285. India, Malaysia, S. China, Taiwan to Japan. (CHANG 2762)

4. Ulmaceae

1. *Celtis philippensis* BLANCO, Fl. Filip. 197. 1837; KANEH., Form Trees rev. ed 140. f. 86. 1936. Hainan, Taiwan (Green Isl.). Philippines, Malaysia to tropical Australia. (CHANG 3137)
2. *Trema orientalis* (L.) BLUME, Mus. Bot. Lugd. Bat. 2:62. 1856; KANEH., l. c. 141. f. 88. India, Malaysia, S. China, Taiwan, Japan to Australia. (CHANG 3630)

5. Moraceae

1. *Artocarpus incisus* (THUNB.) L. f. Suppl. 411. 1781. -*A. altilis* (PARKINS.) FOSBERG, Journ. Wash. Acad. Sic. 31:95. 1941. -*A. communis* FORST., Char. Gen. 191. 1776. Malaysia to Ploynesia. (CHANG 2912)
2. *Artocarpus lanceolata* TREC. in Ann. Soc. Nat. Bot. 3 (8):121. 1847; KANEH. l. c. 146. Philippines. (CHANG 5572)
3. *Ficus* (Sect. *Sycidium*) *ampelas* BURM. f. Fl. Ind. 226. 1768; LIU et al., l. c. 286. -*F. kingiana* HEMSL. in HOOK., Icon. Pl. 26:pl. 2535. 1897. Taiwan, Ryukyus, Philippines, Sumatra to Moluccas. (CHANG 3588)
4. *Ficus* (sect. *Kalosyce*) *aurantiacea* GRIFF. var. *parvifolia* CORNER in Gard. Bull. Sing. 18:23. 1960; LIU & LIAO in Fl. Taiwan 2:129. 1976. -*F. megacarpa* MERR. in Govt. Lab. Publ. (Philip.) 17:14. 1904. -*F. terasonensis* HAYATA, Icon. Pl. Form. 8:116. f. 39. 1919. Philippines. Taiwan (Green Isl.), Indo-China and Moluccas. (CHANG 3522)
5. *Ficus* (Sect. *Sycocarpus*) *benguetsensis* MERR. in Govt. Lab. Publ. (Philip.) 29:10. 1905; HATUS. in Mem. Fac. Agr. Kagoshima

- Univ. 7 (2):303. 1970. -*F. kotoensis* HAYATA, l. c. 8:126. f.53.1919. -*F. harlandii* BENTH. var. *kotoensis* (HAYATA) SATA in Journ. Soc. Trop. Agr. 621. 1934. -*F. harlandii* sensu auct. non BENTH. Ryukyus, Taiwan and Philippines. (CHANG 7856)
6. *Ficus* (Sect. *Urostigma*) *benjamina* L. Mant. 1:129. 1767; LIU et al., l. c. 286. -*F. retusa* L. var. *nitida* (THUND.) MIQ. in Ann. Mus. Bot. Lugd. Bat. 3:288. 1867. -*F. cuspidato-caudata* HAYATA, l. c. 8:119. f. 43. 1919. India, Malaysia and Taiwan. (CHANG 3603)
 7. *Ficus* (Sect. *Urostigma*) *caulocarpa* (MIQ.) MIQ. in Ann. Mus. Bot. Lugd. Bat. 3:287. 1867; LIU & LIAO, l. c. 131. -*F. stipulosa* (MIQ.) MIQ. l. c. 3: 287. 1867. -*F. infectoria* sensu YAMAM. l. c. 5:16. 1932, non ROXB. India, Burma, Ryukyus, S. Japan, Taiwan and throughout SE. Asia to the Solomons. (CHANG 11671)
 8. *Ficus* (Sect. *Sycidium*) *cumingii* MIQ. in Lond. Journ. Bot. 7:232. 1848; LIU et al., l. c. 284. -*F. kusanoi* HAYATA In Journ. Coll. Sci. Univ. Tokyo 30:275. 1911. Philippines, Taiwan (Green Isl.) and N. Borneo. (CHANG 3580)
 9. *Ficus* (Sect. *Ficus*) *erecta* THUNB. Diss. Fic. 9. 1786; LIU & LIAO, l. c. 132. Japan, Ryukyus, S. China and Taiwan. (CHANG 11634)
 10. *Ficus* (Sect. *Palaeomorphe*) *heteropleura* BLUME, Bijdr. 466. 1825; HATUS., l. c. 303; LIAO, LIST Woody Pl. Taiwan 64. 1979. -*F. caudatifolia* WARD. in Perk. Frag. Fl. Philip. 194. 1905. -*F. caudato-longifolia* SATA, l. c. 26; KANEH., l. c. 152 ('*cuspidato-longifolia* Burma, Indo-china, Hainan, Thailand and W. Malaysia. (CHANG 32-19). *F. caudato-longifolia* SATA was reduced to the synonym of *F. vigata* REINW. by Corner probably on the basis of the original description "Arbor parbus vel saepe frutex magnus." But I found the plant is a climber by field observation. Therefore it is considered as the synonym of this species.
 11. *Ficus* (Sect. *Sycidium*) *irisana* ELMER, Leaf. Bot. 1:45. 1906; LIU & LIAO, l. c. 137. pl. 239. -*E. somai* HAYATA, l. c. 122. f. 48. 1919. -*F. hayatae* SATA, l. c. 28. -*F. gibbosa* sensu HENRY in Trans. Asiat. Soc. Japan 24. Suppl. 88. 1896, non BLUME. -*F. rigida* sensu KANEH., l. c. 160. f. 109, non BLUME. -*F. sibuyanensis* sensu LIU et al., l. c. 287, non ELMER. Ryukyus, Philippines and Taiwan (CHANG 7854)
 12. *Ficus* (Sect. *Urostigma*) *microcarpa* L. f. Suppl. Sp. Pl. 442. 1781; LIU & LIAO, l. c. 139. -*F. retusa* sensu auct. non L. -*F. retusa* L. var. *nitida* sensu auct. non MIQ. India, S. China, Taiwan, Japan, Ryukyus to New Caledonia. (CHANG 3075)
 13. *Ficus* (Sect. *Ficus*) *pedunculosa* MIG. in Lond. Journ. Bot. 7:442. 1848; LIU et al., l. c. 287. -*F. pedunculosa* MIQ. var. *glabrifolia* CHANG in Bull. Taiwan Prov. Ping. Inst. Agr. 6:55. 1965. syn. nov. Philippines, Taiwan (Green Isl.), Celebes, Moluccas, and N New Guinea (CHANG 8488)
 14. *Ficus* (Sect. *Ficus*) *pedunculosa* MIQ. var. *mearnsii* (MERR.) CORNER, l. c. 21:40. 1965; LIU & LIAO, l. c. 142. pl. 241. -*F. garanbensis* HAYATA, l. c. 8:118. 1919. China (?), Taiwan (including Green Isl.) and Philippines. (CHANG 9643)
 15. *Ficus* (Sect. *Oreosycea*) *pubinervis* BLUME, Bijdr. 452. 1825; LIU et al., l. c. 287. -*F. cuneato-nervosa* YAMAM, Suppl. Icon. Pl. Form. 1:2. 1925. Philippines, Sumatra, Java, Borneo, Soembawa, Flores, Timor, Celebes and Moluccas. (CHANG 3601)
 16. *Ficus* (Sect. *Eriosycea*) *ruficaulis* MERR. in Govt. Lab. Publ. (Philip.) 17:13. 1904; LIU & LIAO, l. c. 146. -*F. antoensis* HAYATA, l. c. 8:122. f. 49. 1919. -*F. hiiranensis* HAYATA, l. c. 8:123. f. 50. 1919. Philippines, Celebes, Sarawak and Taiwan. (CHANG 2779)
 17. *Ficus* (Sect. *Sycocarpus*) *septica* BURM. f., Fl. Ind. 226. 1768; KANEH. l. c. 161. f. 110. -*F. hauili* BLANCO, Filip. 684, 1837. -*F. kankauensis* HAYATA, l. c. 7:35. f. 54. 1918. Bonin Is, Taiwan, Philippines, Java, Timor to Solomons, New Hebrides and Australis. (CHANG 3099)
 18. *Ficus* (Sect. *Palaeomorphe*) *tinctoria* FORST. f., Prodr. Fl. Austr. 76. 1786; LIU & LIAO, l. c. 152.

- Hainan, Taiwan (including Green Isl.), Philippines and Celebes to Polynesia. (CHANG 3151)
F. tinctoria ssp. *swinhoei* (KING) CORNER is distributed in the southern part of Taiwan and the Philippines (Mindanao). It has smaller and hirsute leaves.
19. *Ficus* (Sect. *Phizoclandus*) *trichocarpa* BLUME var. *borneensis* (MIQ.) CORNER, l. c. 18:19. 1960. -*F. trichocarpa* BLUME var. *obtusa* sensu auct. non CORNER.
 Borneo, Taiwan (Green Isl.) and Flores. (CHANG 11809)
 New to the flora of Taiwan. This variety differs from *F. trichocarpa* var. *obtusa* by the leaves being nearly glabrous instead of densely pubescent beneath.
 20. *Ficus* (Sect. *Ficus*) *vaccinioides* HEMSL. & KING in Ann. Bot. Gard. Calc. 1:65. 1887; LIU, et al., 287.
 Endemic to Taiwan, Botel Tobago and Green Island. (CHANG 2857)
 21. *Ficus* (Sect. *Neomorphe*) *variegata* BLUME var. *garciae* (ELMER) CORNER, l. c. 18:33. 1960; LIU & LIAO, l. c. 154. -*F. garciae* ELMER, l. c. 2:550. 1908. -*F. konishii* HAYATA in Journ. Coll. Sci. Univ. Tokyo 30:273. 1911. -*F. glochidiifolia* HAYATA, l. c. 8:126. f. 52. 1919.
 Ryukyus, Philippines, Celebes and Taiwan. (CHANG 2840)
 22. *Ficus* (Sect. *Neomorphe*) *variegata* BLUME var. *sycomoroides* (MIQ.) CORNER, l. c. 18:33. 1960.
 Philippines, Borneo, Celebes, Moluccas and Flores. (CHANG 5596)
 New to the flora of Taiwan. This variety differs from *F. variegata* var. *garciae* by the basal nerves being elongate, usually ascending to the upper two-third of the blade.
 23. *Ficus* (Sect. *Palaeomorphe*) *virgata* REINW. ex BLUME var. *philippinensis* (MIQ.) CORNER, l. c. 17:477. 1959. -*F. philippinensis* MIQ. in Lond. Journ. Bot. 435. 1848. -*F. vasculosa* sensu auct. non WALL.
 Ryukyus, Philippines and Taiwan. (CHANG 2853)
 New to the flora of Taiwan.
 24. *Morus australis* POIR. in Lamk. Encycl. 4:380. 1783; KANEH. in Trans. Nat. Hist. Soc. Form. 29:22. 1939.
 Ryukyus, Mainland China, Taiwan and Philippines. (CHANG 7851)
 25. *Poikilospermum acuminatum* (TRECU) MERR. in Contr. Arn. Arb. 8:15. 1934; LIU et al., l. c. 288. -*Conocephalus acuminatus* TRECU in Ann. Sci. Nat. ser. 3. Bot. 8:91. 1847.
 Philippines. (CHANG 5385)
6. *Urticaceae*
1. *Boehmeria densiflora* HOOK. & ARN. in Bot. Beech. Voy. 271. 1841.
 Mainland China, Taiwan to Philippines and Ryukyus. (CHANG 5422)
 2. *Boehmeria nivea* (L.) GAND. in Freyc. Voy. Bot. 499. 1826.
 Mainland China, Philippines, India-China, Malaysia and Polynesia. (CHANG 5455)
 3. *Cypholophus moluccanus* (BL.) MIQ. in Ann. Mus. Bot. 4:303, 1869; KUDO & MASAM. in Ann. Rep. Taihoku Bot. Gard. 2:38. 1936.
 Malaysia, Polynesia and Taiwan (Green Isl.). (CHANG 2756)
 4. *Dendrocnide meyeniana* (WALP.) CHEW f. *subglabra* (HAYATA) CHEW in Gard. Bull. Sing. 21:204. 1965. -*Laportea batanensis* ROBINS. in Philip. Journ. Sci. 5:481. 1910. -*L. subglabra* HAYATA in Journ. Coll. Sci. Univ. Tokyo 30 (1):278. 1911. -*L. kotoensis* HAYATA, Gen. Ind. Fl. Form. 70. 1916, nomem; HAYATA ex YAMAM., l. c. 1:2. 1925. -*L. pterostigma* WEDD. f. *subglabra* (HAYATA) LI, Woody Fl. Taiwan 2:194. 1963. -*L. pterostigma* WEDD. var. *subglabra* (HAYATA) LIU in Fl. Taiwan 2:194. 1976.
 Philippines and Taiwan. (CHANG 3225)
 5. *Leucosyke quadrinervia* ROBINS., in l. c. 6:28! 1911; HAYATA, l. c. 3:175. 1913.
 Philippines and Taiwan (Green Isl.). (CHANG 4136)
 6. *Maoutia setosa* WEDD. in Sci. Nat. Bot. 4, 1:194. 1854; KANEH. l. c. 170. f. 122.
 S. Ryukyus, and Philippines. (CHANG 3098)
 7. *Pipturus arborescens* (LINK) ROBINS., l. c. 6:13. 1911; KANEH, l. c. 171. f. 124.
 Philippines and Ryukyus. (CHANG 3164)

8. *Villebrunea trinervis* WEDD. in Ann. Sci. 4: 196. 1854; CHANG in Quart. Journ. Taiwan Forest. 3(2):13. 1967. -*Oreocnide trinervis* (WEDD.) MIQ., Fl. Ind. Bat. 12:270. 1859. Philippines and Borneo. (CHANG 3108)
7. *Oleaceae*
1. *Olex imbricata* ROXB. Hort. Beng. 5. 1814. nomen nudum, Fl. Ind. 1:169. 1820; CHANG in Forest. Journ. Taiwan Inst. Agr. 20:31. f. 1. 1978. Philippines and Java. (YEH 866)
8. *Loranthaceae*
1. *Bifaria opuntia* (THUNB.) MERR., Enum. 2:113. 1923; LI, l. c. 144. f. 51. Tropical Asia, Australia to Polynesia. (CHANG 5416)
9. *Amaranthaceae*
1. *Deeringia polysperma* ROXB. MIQ. in DC. Prodr. 13:236. 1849; LIU, et al., l. c. 291. S. Ryukyus, Taiwan to Malaysia. (CHANG 2749)
10. *Nyctaginaceae*
1. *Pisonia aculeata* L., Sp. pl. 1026. 1753; KUDO & MASAM., in Ann. Rep. Taihoku Bot. Gard. 2:62. 1936. Tropical America, Africa, Madagascar, India, Burma, Indo-China, Hainan, Taiwan and Malaysia. (CHANG 2896)
2. *Pisonia umbellifera* (FORST.) SEEM. in Bonpl. 10:154. 1862; KUDO & MASAM. l. c. 2:62. 1936. Madagascar, Cochinchina, Hainan, Taiwan, Ryukyus, Malaysia to Australia and Polynesia. (CHANG 3165)
11. *Ranunculaceae*
1. *Clematis grata* WALL. var. *ryukyunensis* TAMURA in Acta Phytotax. & Geobot. 15: 17. 1953. HATUSIMA, l. c. 307. Ryukyus. (CHANG 5564)
2. *Clematis tashiroi* MAXIM. in Mel. Biol. 12: 713. 1888; LIU et al., l. c. 292. Ryukyus and Taiwan. (CHANG 5462)
12. *Lardizabalaceae*
1. *Stauntonia hexaphylla* (THUNB.) DECNE. in Ann. Sci. Nat. ser. 12:105. 1839; KANEH., l. c. 180. Japan, S. Korea, mainland China and Taiwan. (CHANG 2878)
13. *Menispermaceae*
1. *Cocculus orbiculatus* (L.) DC., Syst. 1:523. 1817; HATUS., l. c. 307. -*C. trilobus* (THUNB.) DC., Syst. 1:522. 1818. Japan, Taiwan to N. Philippines. (YEH 577)
2. *Cyclea insularis* (MAK.) HATUS., l. c. 5(3):29. 1966. -*Cissampelos insularis* MAKINO in Bot. Mag. Tokyo 24:227. 1910. -*Paracyclea insularis* (MAK.) YAMAM. & KUDO in Bot. Mag. Tokyo 46:157. 1932. Japan and Philippines. (YEH 883)
3. *Stephania merrillii* DIELS in Engl., Pfl.-reich 46:268. 1910; LIU, et al., l. c. 282. -*S. sasakii* HAYATA Gen. Ind. Pl. Form. 3. 1916. nomen. Philippines and Taiwan (Green Isl.). (CHANG 5457)
14. *Magnoliaceae*
1. *Kadsura japonica* (L.) DUNAL, Monogr. Ann. 57. 1817; LIU, Illust. Nat. Intr. Lign. Pl. Taiwan 82. f. 68. 1960. Japan, Korea and Taiwan. (CHANG 5506)
2. *Michelia compressa* (MAXIM.) SARG. Form. Fl. Jap. 11. Pl. 5. 1894; KENG in Fl. Taiwan 389. f. 346. 1976. -*M. cumingii* MERR. & ROLFE in Philip. Journ. Sci. 3:100. 1906. -*M. compressa* (MAXIM.) SARG. var. *formosana* KANEH. in Trans. Nat. Hist. Soc. Form. 20:384. 1920. -*M. formosana* (KANEH.) MASAM. in Ann. Rep. Taih. Bot. Gard. 3:57. 1933. Ryukyus, Philippines and Taiwan. (CHANG 5413)
15. *Annonaceae*
1. *Polyalthia liukiuensis* HATUS. in Journ. Geob. 26(4):86. f. 1. 1979. Fig. 2. Ryukyus. (CHANG 8606). New to the flora of Taiwan. The specimens I collected from Botel Tobago in 1976 are all in fruit. It seems that the plants of *Annonaceae* can not be identified with certainty in absence of flowering material. I have tentatively named it *Polyalthia*. Recently Mr. K. UEDA of Department of Botany, Kyoto University, Japan suggested that it might be *P. liukiuensis* HATUSIMA. Through his courtesy I have been able to examine the specimen of the Ryukyus. It proves that

both are conspecific.

16. Myristicaceae

1. *Myristica cagayanensis* MERR. in Philip. Journ. Sci. 17: 255. 1920; KANEH., 1. c. 193. f. 141. Philippines and Taiwan (Green Isl.). (CHANG 2882)
2. *Myristica simiarum* A. DC. in Ann. Sci. Nat. Bot. 4 (4): 29. 1855; KANEH., 1. c. 194. Philippines. (CHANG 3080)

17. Lauraceae

1. *Cinnamomum japonicum* SIEBOLD in Verhand. Bat. Genootsch. Kust. & Wetensch

12: 23. 1830; CHANG in Bull. Taiwan Inst. Agr. 6: 56. f. 4. 1965.

Japan, Korea and Ryukyus. (CHANG 3226)

2. *Cinnamomum kotoense* KANEH. & SASAKI in Trans. Nat. Hist. Soc. Form. 20: 380. 1930. Endemic. (CHANG 3140)

3. *Cryptocarya elliptifolia* MERR., 1. c. 14: 396. 1919; CHANG in Forest. Journ. Taiwan Inst. Agr. 20: 32. f. 2. 1978. Philippines. (CHANG 8832)

4. *Dehaasia triandra* MERR., 1. c. 2: 199. 1923; CHANG in Quart. Journ. Taiwan Forest. 3 (2): 14. 1967. -*Endiandra lauyensis* CHANG in Bot. Bull. Acad. Sinica 4 (1): 6. f. 1961. -*D. lauyensis* (CHANG) KOSTERM., Bibl. Laur. 469 (add.) 1964. Philippines. (CHANG 3105)

5. *Endiandra coriacea* MERR. in Govern. Lab. Publ. (Philip.) 35: 14. 1906; KANEH. & SASAKI in Trans. Nat. Hist. Soc. Form. 24: 397. f. 1. 1934. N. Philippines. (CHANG 5623)

6. *Litsea acuminata* (BLUME) KURATA, Ill. Imp. Trees Jap. 2: 48. pl. 24. 1968; CHANG in Fl. Taiwan 2: 435. pl. 364. 1976. -*Actinodaphne nantoensis* (HAYATA) HAYATA, 1. c. 3: 165. 1913. Japan and Taiwan. (CHANG 3619)

7. *Litsea garciae* VIDAL, Reb. Pl. Vasc. Filip. 228. 1886; Liu et al., 1. c. 293. -*L. kawakamii* HAYATA, 1. c. 3: 165. 1913. Philippines. (CHANG 2834)



Fig. 2 *Polyalthia liukiuensis* HATUSIMA

8. *Neolitsea sericea* (BL.) KOIDZ. var. *aurata* (HAYATA) HATUS. in Journ. Geobot. 17(4): 106. 1969. - *N. aurata* (HAYATA) KOIDZ. in Bot. Mag. Tokyo 23:256. 1918. S. Japan, the Bonins, the Ryukyus and Taiwan (Green Isl.). (CHANG 2285)
9. *Neolitsea villosa* (BL.) MERR., l. c. 4:261. 1909; CHANG, l. c. 2:456. 1976. - *N. kotoensis* (HAYATA) KANEH. & SASAKI in Trans. Nat. Hist. Soc. Form. 20:381. 1930. Philippines, Moluccas to Malay Peninsula and Taiwan (Green Isl.). (CHANG 5602)
10. *Persea thunbergii* (S. & Z.) KOSTERM. in Commun. For. Res. Inst. Bogor 57:35. 1957; HATUS. l. c. 308. - *Machilus thunbergii* S. & Z. in Abh. Bayer Akad. Wiss. Math. Phys. Cl. 4(3):704. 1846. Mainland China, Korea, Japan and Taiwan. (CHANG 8059)
18. *Hernandiaceae*
1. *Hernandia nymphaeifolia* (PRESL) KUBITZKI, Bot. Jahrb. 90:272. 1970. - *H. ovigera* sensu auct. non L. - *H. sonora* sensu auct. non L. Pantropic. (CHANG 6290)
19. *Capparidaceae*
1. *Capparis lanceolaris* DC. Prodr. 1:248. 1824; JACOBS in Blumea 12(3):459. 1965; CHANG in Bull. Taiwan Inst. Agr. 9:16. f. 2. 1968; LIU & LIAO in Fl. Taiwan 2:666. 1976. - *C. oblongata* MERR., l. c. 1:15. 1906. Philippines, Celebes, Java, New Guinea and N. Australia. (CHANG 5589)
20. *Saxifragaceae*
1. *Deutzia pulchra* VIDAL, Rev. Pl. Vasc. Filip. 124. 1886; KANEH., l. c. 238. f. 179. Taiwan and Philippines. (CHANG 2858)
2. *Hydrangea chinensis* MAXIM. in Mem. Acad. Sci. St. Petersburg. 7(10):7. 1867; SIMIZU & KAO in Taiwania 8:136. 1962. - *H. lobbi* MAXIM. in Mem. Acad. Sci. St. Petersburg. 7(10):15. 1867. - *H. glabrifolia* HAYATA, l. c. 3:106. 1913. Mainland China, Taiwan, Philippines and Ryukyus. (CHANG 2858)
21. *Pittosporaceae*
1. *Pittosporum moluccanum* (LAMK.) MIQ., Illus. Fl. Arch. Ind. 76. 1870; LIU, l. c. 258. - *P. litterale* MERR., l. c. 5:179. 1910. - *P. viburnifolium* HAYATA, l. c. 3:32. 1913. Malaysia, Philippines, Celebes, Moluccas, Java. Lesser Sunda Isl. (CHANG 5398)
22. *Hamamelidaceae*
1. *Distylium racemosum* S. & Z., Fl. Jap. 1:179. 1835; LIU et al., l. c. 295. Korea, Japan to Ryukyus. (CHANG 2794)
23. *Rosaceae*
1. *Osteomeles anthyllidifolia* LINDL. in Trans. Linn. Soc. 13:99. pl. 1. 1821; LI, l. c. 276. - *O. anthyllidifolia* LINDL. var. *subrotunda* (C. KOCH) MASAM. in Ann. Rep. Taihoku Bot. Gard. 2:124. 1932. S. China, Japan and Ryukyus. (CHANG 5534)
2. *Prunus marsupialis* KALKM. in Blumea 13(1) 71. f. 26. 1965; CHANG in Forest. Journ. Taiwan Inst. Agr. 20:32. f. 3. 1978. - *Pygeum pubescens* MERR., l. c. 9:359. 1914. - *P. preslii* sensu KANEH., l. c. 273. non MERR. Philippines. (CHANG 7910, SASAKI in 1911. TI)
3. *Raphiolepis indica* (L.) LINDL. ssp. *umbellata* (THUNB.) HATUS., l. c. 309. - *R. integerrima* HOOK. & ARN., Beechey Voy. 236. 1841. Japan and Korea. (CHANG 3818)
4. *Rubus flagelliflorus* FOCKE in Bot. Jahrb. 24: 393. 1900. Mainland China (Hupeh). (CHANG 6311) New to the flora of Taiwan. The specimen cited above was identified by the Herbarium at Kew. This species is characterized by its shallowly 5-lobed and by its densely sericeous pedicels and sepals, which are caudate at the apex.
5. *Rubus fraxinifolius* POIR in Lamk. Encycl. 6: 242. 1804. - *R. kotoensis* HAYATA, l. c. 3: 90. 1913. syn. nov. - *R. fraxinifolius* POIR var. *kotoensis* (HAYATA) KOIDZ. in Journ. Coll. Sci. Univ. Tokyo 34(2):144. 1913. Taiwan to Malaysia. (CHANG 2786)
6. *Rubus lanyuensis* CHANG in Forest. Journ. Taiwan Inst. Agr. 19:11. f. 1. 1977. Endemic. (CHANG 9860)
7. *Rubus tagallus* CHAM. & SCHLECHT. in Linnaea 2:9. 1827; CHANG in Forest. Journ. Taiwan Inst. Agr. 19:12. 1977. - *R. taiwanianus* MATSUM. in Bot. Mag. Tokyo 16:4. 1913. Ryukyus, Philippines and Taiwan. (CHANG 3166)

24. *Connaraceae*

1. *Rourea minor* (GAERTN.) LEENHOUTS in Fl. Males. 1(5):514. 1957; LI, 1. c. 329. f. 114. SE. Asia, Ceylon, Hongkong, Hainan, Taiwan (Green Isl.) through Malaysia to N. Australia. (CHANG 3629)

25. *Leguminosae*

1. *Caesalpinia crista* L., Sp. Pl. 380. 1753; HUANG & OHASHI in Fl. Taiwan 3:185. 1977. - *C. nuga* (L.) AIT., Hort. Kew. ed. 2. 3:32. 1811. India, Malaysia, mainland China, Ryukyus and Japan. (CHANG 6310)
2. *Cassia tora* L., Sp. Pl. 376. 1753. Pantropic. (CHANG 5614)
3. *Dendrolobium umbellatum* (L.) BENTH. in MIQ., Pl. Jungh. 216 & 218. 1852; HUANG & OHASHI, 1. c. 250. Pl. 570. 1977. Indo-China, India, Burma, China, Taiwan, Philippines, Malaysia, Polynesia to Australia and Africa. (CHANG 2206)
4. *Derris oblonga* BENTH. in Journ. Linn. Soc. 4. Suppl. 112. 1869; LI, 1. c. 343. Southern Asia. (CHANG 5469)
5. *Derris trifoliata* LOUR. Fl. Cochinch. 433. 1700; LIU et al., 1. c. 297. Tropics of the Old World. (CHANG 2890)
6. *Desmodium laxiflorum* DC., Prodr. 2:335. 1825; LIU et al., 1. c. 297. India, Burma, Indo-China, Thailand, Malaysia, Philippines, mainland China and Taiwan. (CHANG 5802)
7. *Erythrina variegata* L. var. *orientalis* MERR. Inter. Interpret. Herb. Amb. 276. 1917; LIU et al., 1. c. 297. Tropical Asia to Polynesia. (CHANG 6203)
8. *Indigofera zollingeriana* MIQ. Fl. Ind. Bot. 1:310. 1855; LIU et al., 1. c. 297. - *I. kotoensis* HAYATA, in Journ. Coll. Sci. Imp. Univ. Tokyo 30. 75. 1911. Malaysia, Philippines and S. China. (CHANG 5438)
9. *Milletia reticulata* BENTH. in MIQ. Pl. Jungh. 249. 1853; CHANG in Forest. Journ. Taiwan Inst. Agr. 18:27. 1976. S. China and Taiwan. (CHANG 2281)
10. *Mucuna nigricans* (LOUR.) STEUD., Nom. Bot. ed. 11. 2:163. 1841; LIU et al., 1. c. 298. - *M. membranacea* HAYATA, 1. c. 3:73. 1913. Tropical Asia. (CHANG 6320)

11. *Ormocarpum cochinchinense* (LOUR.) MERR., 1. c. 5:76. 1910; LIU et al., 1. c. 298.

Tropical Africa, India, Malaysia, S. China and Taiwan (Green Isl.). (CHANG 7712)

12. *Pongamia pinnata* (L.) PIERRE ex MERR., Interpret. Herb. Amb. 271. 1917; LIU et al., 1. c. 298.

N. Australia, Indo-Malaya, Ryukyus, S. China and Taiwan. (CHANG 5431)

13. *Pueraria lobata* (WILLD.) OHWI in Bull. Tokyo Sci. Mus. 18:16. f. 4. 1947; CHANG in Forest. Journ. Taiwan Inst. Agr. 18:28. 1976. - *P. thunbergiana* (S. & Z.) BENTH. in Journ. Linn. Soc. Bot. 9:122. 1867.

Mainland China, Taiwan and Japan. (CHANG 5541)

14. *Sophora tomentosa* L., Sp. Pl. 573. 1753; LIU et al., 1. c. 298.

Pantropics. (CHANG 2965)

26. *Rutaceae*

1. *Citrus depressa* HAYATA, 1. c. 8:16. 1919; LIU et al., 1. c. 299.

Ryukyus and Taiwan. (CHANG 2822)

2. *Clausena brevistylia* OLIVER in Journ. Linn. Soc. Bot. 5. Suppl. 2:31. 1861; CHANG in Bull. Taiwan Inst. Agr. 6:58. f. 5. 1965; Fl. Taiwan 3:512. 1977. - *C. grandifolia* MERR., 1. c. 9:294. 1914.

Australia and Philippines. (CHANG 3130)

3. *Exodia merrillii* KANEH. & SASAKI ex KANEH. 1. c. 313. f. 267; CHANG, 1. c. 3:515. Endemic to Taiwan and Botel Tobago. (CHANG 7847)

4. *Melicope triphylla* (LAM.) MERR., 1. c. 7:375. 1912; LIU et al., 1. c. 299; CHANG, 1. c. 3:519. - *M. awadan* (HATUSIMA) OHWI & HATUS. in Journ. Japan Bot. 16:527. 1940. Philippines, Ryukyus and S. Taiwan (South cape and Green Isl.). (CHANG 5571)

5. *Murraya crenulata* (TURCZ.) OLIVER in Journ. Linn. Soc. Bot. 5. Suppl. 2:29. 1861; CHANG in Bull. Taiwan Inst. Agr. 6:57. f. 1. 1956; 1. c. 3:520. - *Clausena citriodora* MERR., 1. c. 26:458. 1925.

Australia, Java, New Caledonia, Celebes and Philippines. (CHANG 5461)

6. *Murraya paniculata* (L.) JACK. var. *omphalocarpa* (HAYATA) SWINGLE in Weber & Batchelor, Citrus Industry 1:197. 1943;

- CHANG, 1. c. 3:523. — *M. omphalocarpa* HAYATA, 1. c. 3:51. 1913.
Endemic to Botel Tobago and Green Island. (CHANG 2943)
7. *Toddalia asiatica* (L.) LAM., Encycl. Meth. 2: 116. 1793; KANEH., 1. c. 318. f. 273.
India, Ceylon, Philippines to mainland China and Taiwan. (CHANG 2870)
8. *Zanthoxylum ailanthoides* S. & Z. in Abh. Akad. Wiss. Math. Phys. Cl. 4(2):138. 1846; CHANG, 1. c. 3:531. — *Fagara ailanthoides* (S. & Z.) ENGL. & PRANTL, Nat. Pflanzenfam. III. 4:118. 1896.
Mainland China, Korea, Japan, Ryukyus and Philippines. (CHANG 3107)
9. *Zanthoxylum integrifolium* (MERR.) MERR. Enum. 2:327. 1923; CHANG, 1. c. 3:532. — *Fagara integrifoliola* MERR., 1. c. 1. Suppl. 68. 1906.
Philippines. (CHANG 5391)
27. *Meliaceae*
1. *Aglaia elliptifolia* MERR., 1. c. 3:413. 1908; KANEH., 1. c. 323. f. 278; CHANG in Quart. Journ. Chinese Forest. 9(3):77. 1978.
S. Taiwan (including Green Isl.) and Philippines. (CHANG 2272)
2. *Aglaia tetrapetala* PIERRE, Fl. Cochinch. sub. t. 337. 1880; CHANG in Forest. Journ. Taiwan Inst. Agr. 19:14. f. 2. 1977; — *Amoora tetrapetala* (PIERRE) PELLEGR. in Suppl. Fl. Gen. Indo-China ed. Humbert 717. 1948.
Aglaia formosana sensu SASAKI in Trans. Nat. Hist. Soc. Form. 8(34):21. 1918. non HAYATA.
Indo-China and Cambodia. (CHANG 3123)
3. *Aphanamixis tripetala* (BLANCO) MERR., Sp. Blancoanae 211. 1918; CHANG in Forest. Journ. Taiwan Inst. Agr. 19:14. f. 3. 1977; 1. c. 76. — *Amoora elmeri* MERR. in Govt. Lab. Publ. (Philip.) 29:23. 1905.
Philippines. (YEH 668)
4. *Chisocheton kanehirai* SASAKI in Trans. Nat. Hist. Soc. Form. 18:172. 1938; CHANG, 1. c. 75. — *C. erythrocarpus* HAYATA & KANEH. ex HAYATA, 1. c. 10:2. 1921. non HIERON. 1875.
Endemic. (CHANG 6226)
5. *Dysoxylum arborescens* (BLUME) MIQ. Ann. Mus. Bot. Lugd. Bat. 4:24. 1968; CHANG in Bull. Taiwan Inst. Agr. 9:3. f. 2. 1968; 1. c. 73. f. 1.
Andaman through Malaysia to New Guinea and north as far as north Luzon. (CHANG 3633)
6. *Dysoxylum cumingiaum* C. DC. Monogr. Phan. 1:498. 1878; KANEH., 1. c. 326. f. 282. CHANG 1. c. 73. f. 2.
Philippines. (CHANG 5512)
7. *Dysoxylum leytense* MERR., 1. c. 8:376. 1913; CHANG in Forest. Journ. Taiwan Inst. Agr. 19:16. f. 5. 1977; 1. c. 74.
Philippines. (CHANG 7732)
28. *Malpighiaceae*
1. *Hiptage benghalensis* (L.) KURZ in Journ. Asiat. Soc. Beng. 43(2):136. 1874; KANEH., 1. c. 328.
India, Malaysia to S. China, Taiwan. (YEH 626)
2. *Rissopterys timoriensis* (DC.) JUSS. in Delessert, Icon. Sel. Pl. 3:21. pl. 35. 1837; LI, 1. c. 401.
Queensland to Malaysia and Micronesia. (CHANG 7837)
3. *Tristellateia australasiae* A. RICHARD, Sert. Astrol. 159. pl. 15. 1833; KANEH., 1. c. 328.
Taiwan, Cochinchina, Malaysia to tropical Australia and the Pacific Islands. (CHANG & HSU 2330. TAI)
29. *Euphorbiaceae*
1. *Acalypha grandis* BENTH. in HOOK. Lond. Journ. Bot. 2:232. 1843. — *A. kotoensis* HAYATA, 1. c. 9:99. 1920. syn. nov. — *A. grandis* BENTH. var. *kotoensis* (HAYATA) HURUS. in Journ. Fac. Sci. Univ. Tokyo III. 6(6): 301. 1954. — *A. caturus* sensu LIU et al., 1. c. 300, non BL. Malaya. (CHANG 3083)
2. *Acalypha hontauyuensis* KENG in Journ. Washington Acad. Sci. 4(6):204. 1951; CHANG in Quart. Journ. Taiwan Forest. 3(2):18. 1967.
Endemic. (CHANG 7821)
3. *Antidesma pentandrum* (BLANCO) MERR. var. *barbatum* (PRESL) MERR., 1. c. 9:463. 1914; KENG in Taiwanica 6:35. 1955. — *A. kotoensis* KANEH., 1. c. 329. f. 289.
S. Taiwan and N. Philippines. (CHANG 3300)
4. *Antidesma pleuricum* TUL. in Ann. Sci. Nat.

- III. 15:213. 1851. -*A. hontaushanensis* CHANG in Forest. Journ. Taiwan Inst. Agr. 6: 2. f. 2. 1964. syn. nov.
Philippines. (CHANG 3083)
5. *Bischofia javanica* BLUME, Bijdr. 1168. 1825; KANEH., 1. c. 331. f. 286.
India, Malaysia, S. China, Ryukyus, Polynesia and Australia. (CHANG 6280)
6. *Breynia accrescens* HAYATA in Journ. Coll. Sci. Univ. Tokyo 20:22. pl. IH. 1904, excl. form. b; KENG, 1. c. 37.
Endemic to Taiwan, Botel Tobago and Green Isl. (CHANG 6280)
7. *Claoxylon brachyandrum* PAX & HOFFM. in Engler, Pflanzenz. 63:115. 1914; KENG, 1. c. 39. -*C. kotoensis* HAYATA, 1. c. 9:101. 1920.
N. Philippines and Taiwan (south cape). (CHANG 5570)
8. *Drypetes littoralis* (C. B. ROBINS.) MERR., 1. c. 29:380. 1926; KENG, 1. c. 41. -*D. yamadai* (KANEH. & SASAKI) KANEH. & SASAKI in Trans. Nat. Hist. Soc. Form. 21:145. 1931.
Taiwan (Green Isl.) and Philippines. (CHANG 3191)
9. *Daphniphyllum glaucescens* BLUME ssp. *oldhamii* (HEMSL.) HUANG in Taiwania 12:176. 1966. -*D. glaucescens* BLUME var. *oldhamii* HEMSL. in Journ. Linn. Soc. 24:429. 1894.
Japan, mainland China, Taiwan and Indo-China. (CHANG 2864)
10. *Excoecaria agallocha* L. Syst. Nat. ed. 10:1288. 1789; KANEH., 1. c. 339.
Tropical Asia to Polynesia and Ryukyus. (CHANG 2962)
11. *Excoecaria kawakamii* HAYATA, 1. c. 3:173. 1913; KANEH., 1. c. 340. f. 297.
Endemic to Botel Tobago and Green Island. (CHANG 2949)
12. *Gelonium aequoreum* HANCE in Journ. Bot. 37:173. 1866; KANEH., 1. c. 341. f. 295; KENG 1. c. 49.
Endemic to Taiwan and Botel Tobago. (CHANG 5484)
13. *Glochidion lanceolatum* HAYATA in Journ. Coll. Sci. Univ. Tokyo 20:16. pl. 20. 1904; LIU et al., 1. c. 302. -*G. kotoensis* HAYATA, 1. c. 9:96. 1920.
Ryukyus and Taiwan. (CHANG 2944)
14. *Glochidion rubrum* BLUME, Bijdr. Fl. Nederl. Ind. 586. 1825; LI, 1. c. 427. -*G. fortune* sensu HENRY in Trans. Hist. Soc. Form. 24. Suppl.; 82. 1896, non HANCE.
Malaysia, Ryukyus and Taiwan. (CHANG 6286)
15. *Homalanthus fastuosus* F. - VILL. Novis App. 196. 1880; KENG, 1. c. 54. -*H. rotundifolius* sensu SASAKI, List Pl. Form. 264. 1928, non MERR.
Philippines. (CHANG 8271)
16. *Liodendron formosanum* (KANEH. & SASAKI) KENG in Journ. Wash. Acad. Sci. 41(6): 202. 1951. -*Putranjiva formosana* KANEH. & SASAKI, Cat. Govt. Herb. Form. 312. 1930. -*Drypetes formosanus* (KANEH. & SASAKI) KANEH., 1. c. 336. f. 929.
Endemic to Taiwan and Botel Tobago. (CHANG 3649)
17. *Macaranga sinensis* (BAILL.) MUELL. -AGR. in DC. Prodr. 15(2): 1011. 1866; KENG, 1. c. 57. -*M. dipterocarpifolia* MERR. 1. c. 1. Suppl. 205. 1908.
N. Philippines and Taiwan (Green Isl.). (CHANG 2961)
18. *Macaranga tanarius* (L.) MUELL. -AGR. in DC. Prodr. 15(2): 997. 1886; KANEH., 1. c. 350. f. 306.
S. Asia to Australia. (CHANG 14496)
19. *Mallothus japonicus* (THUNB.) MUELL. -AGR. in Linnaea 34:189. 1865; KANEH., 1. c. 351. f. 307.
Mainland China, Taiwan and Japan. (CHANG 11672)
20. *Mallothus philippensis* (LAM.) MUELL. -AGR. in Linnaea 34: 196. 1865; KENG, 1. c. 59.
S. Asia to N. Australia. (YEH 755)
21. *Melanolepis multiglandulosa* (REINW.) REICH. f. & ZOLL. in Linnaea 28: 324. 1856; KANEH., 1. c. 354. f. 319. -*Mallothus multiglandulosus* (REINW.) HURUS. in Trans. Fac. Sci. Univ. Tokyo III 6(6): 308. 1954. Tropical Asia. (CHANG 7788)
22. *Securinega suffruticosa* (PELLAS) REHDER in Journ. Arn. Arb. 13: 338. 1932; KENG, 1. c. 65.
Siberia, Japan, Korea, Ryukyus, mainland China and Taiwan. (CHANG 5569)
30. *Buxaceae*
1. *Buxus liukiensis* (MAK.) MAKINO in Bot.

Mag. Tokyo 16:179, 1902; SASAKI in Trans. Nat. Hist. Soc. Form. 18:179. 1928. *B. intermedia* sensu LIU & al., 304, non KANEH.

S. Ryukyus and Taiwan. (CHANG 5617)
31. *Anacardiaceae*

1. *Rhus succedanea* L., Mant. Pl. 221. 1771; KANEH., l. c. 336. f. 321. India to Mainland China, Taiwan and Japan. (CHANG 2889)

2. *Semecarpus cuneiformis* BLANCO, Fl. Filip. 220. f. 3. 1837; CHANG in Bull. Taiwan Inst. Agr. 7: 68. f. 3. 1966.

Philippines and Celebes. (CHANG 3668)

3. *Semecarpus gigantifolia* VIDAL, Syn. Atlas 22. pl. 36. f. a. 1883; LI, in Pacific Sci. 7: 183. 1953. -*S. vernicifera* HAYATA & KAWAK. in Hayata, l. c. 2: 108. 1932.

Philippines and Taiwan. (CHANG 2745)

32. *Aquifoliaceae*

1. *Ilex integra* THUNB., Fl. Jap. 77. 1784; HU in Journ. Arn. Arb. 34: 150. 1953.

Japan to mainland China. (CHANG 3169)

2. *Ilex kusanoi* HAYATA in Journ. Coll. Sci. Univ. Tokyo 30: 55. 1911; HU, l. c. 34: 143. 1953. -*I. taiwaniana* HAYATA in Journ. Coll. Sci. Univ. Tokyo 30: 58. 1911.

Ryukyus and Taiwan (Green Isl.). (CHANG 8266)

3. *Ilex rotunda* THUNB., Fl. Jap. 77. 1784; KANEH., l. c. 380. f. 337; HU, l. c. 30: 308. 1949. -*I. koshunensis* YAMAM., l. c. 1: 36. f. 16. 1925. -*I. sasakii* YAMAM., l. c. 1: 39. f. 19. 1925. Korea, Japan, Ryukyus, S. China, Taiwan and Indo-China. (CHANG 5373)

33. *Celastraceae*

1. *Euonymus cochinchinensis* PIERRE, Fl. Forest. Cochinch. 4. pl. 309. 1894; LI, l. c. 470. -*E. miyakei* in MATSUM. & HAYATA in Journ. Coll. Sci. Univ. Tokyo 22: 83. 1906.

Indo-China Peninsula and Philippines. (CHANG 2185)

2. *Euonymus japonicus* THUNB. in Nov. Act. Soc. Sci. Upsal. 208. 1780; CHANG in Forest. Journ. Taiwan Inst. Agr. 6: 2. f. 3. 1964.

Mainland China, Taiwan (Green Isl.), Japan and Ryukyus. (CHANG 2847)

3. *Maytenus emarginata* (WILLD.) D. HOU in Fl. Males. ser. 1. 6(2): 241. 1962. -*Gymnosporia spinosa* (BLANCO) MERR. & ROLFE in

Philip. Journ. Sci. 3: 109. 1908. -*G. trilocularis* HAYATA, l. c. 3: 59. 1913.

Malaysia, Ceylon and N. Australia. (CHANG 5515)

4. *Microtropis japonica* (FR. & SAV.) HALL. f. Meded. Rijks. Herb. 1910: 33. 1911; HOU in Taiwan 1: 180. 1950. -*M. kotoensis* (HAYATA) KOIDZ. in Bot. Mag. Tokyo 40: 334. 1926.

Japan, Taiwan (Green Isl.) and Ryukyus. (CHANG 5482)

34. *Staphyleaceae*

1. *Turpinia ovalifolia* ELMER, Leaf. Philip. Bot. 2: 490. 1908; LI, l. c. 480. -*T. lucida* NAK. in Journ. Arn. Arb. 5: 80. 1924.

Philippines. (CHANG 3599)

2. *Turpinia ternata* NAK. in Journ. Arn. Arb. 5: 78. 1924; KANEH., l. c. 400. f. 358.

Ryukyus, S. Japan and Taiwan. (CHANG 8437)

35. *Icacinaceae*

1. *Gomphandra luzoniensis* (MERR.) MERR., Enum. 2: 490. 1923; SLEUMER in Blumea 17: 199. 1869; CHANG in Forest. Journ. Taiwan Inst. Agr. 20: 34. f. 7. 1978. -*Stemonurus luzoniensis* (MERR.) HOWARD in Journ. Arn. Arb. 21: 468. 1940; OU in Quart. Journ. Chinese Forest. 9(2): 199. t. 2. 1976.

Taiwan (Green Isl.) and Philippines. (CHANG 3599)

2. *Nothapodytes foetida* (WIGHT) SLUMER in Notizbl. Bot. Gard. Berlin 15: 247. 1940; LI, l. c. 483. f. 186. -*Mappia ovata* MIERS var. *insularis* MATSUM. in Bot. Mag. Tokyo 15: 55. 1901.

S. India, Ceylon, Cambodia, Central Sumatra, Philippines, Ryukyus and Taiwan (Green Isl.). (CHANG 7995)

36. *Sapindaceae*

1. *Pometia pinnata* FOREST., Car. Gen. 109. pl. 55. 1776; LIU et al., l. c. 305.

Malaysia to Polynesia. (CHANG 2946)

37. *Sabiaceae*

1. *Meliosma rhoifolia* MAXIM. in Bull. Acad. Sci. St. Petersb. 12: 63. 1867; KANEH., l. c. 416. f. 371.

Ryukyus and Taiwan. (CHANG 3589)

38. *Rhamnaceae*

1. *Berchemia lineata* (L.) DC. Prodr. 2: 23. 1825;

- KANEH., l. c. 418. f. 374.
Ryukyus, Tonkin, S. China and Taiwan.
(CHANG 5508)
2. *Colubrina asiatica* BRONGN. in Ann. Sci. Nat. 1(10): 369. 1827; KANEH., l. c. 420.
Indo-Malaya to Africa, Australia, Polyne-
sia and Ryukyus. (CHANG 7838)
 3. *Sageretia theezans* (L.) BRONGN., Mem. Fam. Rhamn. 53. 1826; KANEH., l. c. 427. f. 385.
-*S. thea* (OSBECK) M. C. JONNST. in Journ. Arn. Arb. 49: 378. 1968.
India to mainland China, Philippines, Ryukyus, S. Japan and S. Korea. (CHANG 6267)
39. *Vitaceae*
1. *Ampelopsis brevipedunculata* (MAXIM.) TRAUTV. var. *hancei* (PLANCH.) REHD. in Journ. Arn. Arb. 2: 177. 1922; LI, l. c. 521. f. 202.
-*A. heterophylla* (THUNB.) S. & Z. var. *hancei* PLANCH. in DC. Mongr. Phan. 5: 475. 1887.
Mainland China, Taiwan and Philippines. (CHANG 5440)
 2. *Cayratia japonica* (THUNB.) GAGNEP. in Leconte, Not. Syst. 1: 349. 1911; LIU, III. Nat. Intr. Lign. Pl. Taiwan 2: 849. f. 693. 1962;
LU in Fl. Taiwan 3: 668. pl. 770. 1977.
Mainland China, Taiwan, Indo-China and Philippines. (CHANG 5536)
 3. *Cissus adnata* (WALL.) ROXB., Fl. Ind. 1: 405. 1820; HATUS. in Mem. Fac. Agr. Kagoshima Univ. 5(2): 15. 1970. LU., l. c. 670. 1977.
Taiwan to Malaysia, India and Madagascar. (CHANG 5633)
 4. *Cissus repens* LAMK., Encycl. Meth. 1: 131. 1783.
India to mainland China, Taiwan, Philippines and Malaysia. (CHANG 3605)
 5. *Leea guineensis* G. DON, Gen. Hist. 1: 712. 1831; LAI & LI in Journ. Chinese Forest. 9(3): 116. 1976. -*L. manillensis* WALP. in Nova Acta Acad. Caes. Leop.-Carol. 19. Suppl. 1: 314. 1843.
Philippines and Taiwan. (CHANG 9797)
 6. *Leea philippinensis* MERR., l. c. I. Suppl.: 98. 1906; LIU et al., l. c. 306.
Taiwan (Green Isl.) and Philippines. (CHANG 4070)
 7. *Tetrastigma lanyuensis* CHANG in Bull. Tai-

wan Inst. Agr. 9: 23. f. 3. 1968. -*Cissus lanyuensis* (CHANG) LU, l. c. 660.

Endemic. (CHANG 5505)

Claiming that the inflorescences opposite to the leaves LU transfers this species to *Cissus*. However, the pistillate flowers (the stamens in pistillate flowers are not functional) with short, thick style and broad, lobed stigma are different from those species of *Cissus*. The flowers of the latter are bisexual and with thin style and small stigma. Moreover, according to the specimens in our herbarium the inflorescences are usually axillary and rarely opposite to the leaves. So it is retained in the original genus.

40. *Elaeocarpaceae*

1. *Elaeocarpus argenteus* MERR. in Gov. Lab. Publ. (Philip.) 29: 26. 1905; HATUS. l. c. 7(2): 316. 1970; CHANG in Bull. Taiwan Inst. Agr. 12: 14. f. 2. 1971; Fl. Taiwan 3: 684. 1977.
Philippines. (CHANG 3005)
2. *Elaeocarpus multiflorus* (TURCZ.) F. -VILL. in Blanco, Fl. Filip. 3. Novis. App. 31. 1880; CHANG in Bull. Taiwan Inst. Agr. 10: 53. f. 2. 1969; l. c. 686. Pl. 775. -*E. arthropis* OHWI in Journ. Jap. Bot. 26. 236. 1951.
Philippines, Celebes and Ryukyus. (CHANG 3211)
3. *Elaeocarpus sphaericus* (GAERTN.) SCHUMANN var. *hayatae* (KANEH. & SASAKI) CHANG, l. c. 686. 776. -*E. hayatae* KANEH. & SASAKI in Trans. Nat. Hist. Soc. Form. 24: 298. f. 2. 1924.
Endemic. (CHANG 8255)

41. *Malvaceae*

1. *Abutilon indicum* (L.) SWEET, Hort. Brit. ed. 1: 54. 1826; HU, Fl. China Fam. 153. 32. pl. 17. f. 10. 1955; CHANG in Fl. Taiwan 3. 711. Pl. 783. 1977.
Tropics and subtropics of both hemispheres. (CHANG 11518)
2. *Abutilon indicum* ssp. *guineense* (SCHUMACH.) BORSS., Malaysian Malv. rev. 175. 1966; CHANG, l. c. 714. -*A. asiaticum* (L.) SWEET, Hort. Brit. ed. 1: 53. 1826. -*A. taiwanensis* HU, l. c. 32. pl. 17. f. 5. Tropical and subtropical Asia, Africa and Australia.

(CHANG 6282)

3. *Hibiscus mutabilis* L., Sp. pl. 694. 1753; MATSUM. & HAYATA 1. c. 55; CHANG, 1. c. 715.
Mainland China and Taiwan. (CHANG 2953)
 4. *Hibiscus tiliaceus* L. Sp. 694. 1753; MATSUM. & HAYATA, 1. c. 56; HU, 1. c. 44. pl. 19. f. 6. Pantropic. (CHANG 5576)
 5. *Malvastrum coromandelianum* (L.) GARCKE in Bonplandia 5: 297. 1857; HU, 1. c. 11. pl. 4. f. 1-4.
Tropical and subtropical America. (HSU 4922 TAI)
 6. *Sida rhombifolia* ssp. *insularis* (HATUSIMA) HATUS., Fl. Ryukyus 846. 1971; CHANG, 1. c. 724. -*S. insularis* HATUS. in Journ. Jap. Bot. 35: 361. f. 1. 1960.
Ryukyus and N. Philippines. (CHANG 7828)
 7. *Urena lobata* L., Sp. pl. 692. 1753; HAYATA, 1. c. 1: 97. 1911; HU, 1. c. 75. pl. 18. f. 8. -*U. lobata* L. var. *tomentosa* (BLUME) WALP. in Nov. Act. Acad. Leon. -Carol. 19. Suppl. 1: 304. 1843.
Pantropic. (CHANG 2270)
42. *Sterculiaceae*
1. *Pterospermum niveum* VIDAL, Rev. Pl. Vas. Filip. 67. 1816; KANEH., 1. c. 445. f. 402.
Philippines. (CHANG 2951)
 2. *Sterculia ceramica* R. BROWN in Benn. Pl. Jav. Rar. 233. 1884; KANEH., 1. c. 448. f. 404.
Philippines. (CHANG 2888)
43. *Actinidiaceae*
1. *Saurauia oldhamii* HEMSLE. in Journ. Linn. Soc. Bot. 33. 79. 1886; KANEH., 1. c. 451. f. 408.
Mainland China, Taiwan to Ryukyus. (CHANG 5415)
44. *Theaceae*
1. *Eurya acuminata* DC. in Mem. Soc. Phys. Geneva 1: 418. 1822; KANEH. 1. c. 464. -*E. matsudai* HAYATA, 1. c. 9: 6. pl. 5. 1920.
Indo-Malay to S. China, Taiwan. (CHANG 3064)
 2. *Eurya emarginata* (THUNBERG) MAKINO in Bot. Mag. Tokyo 18: 19. 1904; KANEH., 1. c. 463.
Mainland China, Korea to Japan. (CHANG 5546)
45. *Guttiferae*
1. *Calophyllum changii* N. ROBSON in Fl. Taiwan 22: 621. 1976. -*C. glabrum* sensu CHANG in Bull. Taiwan Inst. Agr. 7: 68. f. 4. 1966., non MERR.
Endemic. (CHANG 2737)
 2. *Calophyllum inophyllum* L., Sp. pl. 513. 1753; N. ROBSON, 1. c. 621. f. 427.
India, Hainan, Taiwan, Bonin Is., Polynesia, Melanesia and Australia. (CHANG 6318)
 3. *Garcinia linii* CHANG in Forest. Journ. Taiwan Inst. Agr. 6: 1. pl. 1. 1964; N. ROBSON, 1. c. 624. -*G. subelliptica* sensu auct., non MERR.
Endemic. (CHANG 3641)
 4. *Garcinia subelliptica* MERR., 1. c. 3: 361. 1908; N. ROBSON 1. c. 625. f. 428. -*G. spicata* sensu auct. non HOOK.
Philippines, Taiwan (Green Isl.) and Ryukyus. (CHANG 5549)
46. *Flacourtiaceae*
1. *Flacourtia rukam* ZOLL. & MERR. Syst. Verz. 33. 1854; LIU et al., 1. c. 309.
Malaysia and Micronesia. (CHANG 3158)
 2. *Idesia polycarpa* MAXIM. in Bull. Acad. Sci. St. Petersburg. Ser. III. 6: 485. 1886; LIU et al., 1. c. 24.
Mainland China, Taiwan to Japan. (YEH 705)
47. *Thymelaeaceae*
1. *Wikstroemia indica* C. A. MEY. in Bull. Acad. Sci. St. Petersburg. 1: 357. 1843; LIU et al., 1. c. 309. -*W. retusa* sensu HATUS., 1. c. 317; CHANG in Forest. Journ. Taiwan Inst. Agr. 21: 59. f. 1. 1979, non A. GRAY.
India, Burma, S. China to Taiwan. (CHANG 11384)
48. *Elaeagnaceae*
1. *Elaeagnus kotoensis* HAYATA, 1. c. 9: 92. f. 90. 1920; KANEH., 1. c. 485. f. 446.
Endemic. (CHANG 8425)
 2. *Elaeagnus philippinensis* PERR. in Mem. Soc. Linn. Paris 3: 14. 1824; HATUS., 1. c. 317; CHANG in Forest. Journ. Taiwan Inst. Agr. 20: 35. f. 9. 1978.
Philippines. (CHANG 11426)
49. *Lythraceae*
1. *Pemphis acidula* FOREST., Char. Gen. 68. t. 34. 1776; KANEH. 1. c. 489. g. 451.

Tropical coasts of the Old World. (CHANG 6171)

50. *Lecythidaceae*

1. *Barringtonia asiatica* (L.) KURZ in Journ. As Soc. Beng. 45(2): 131. 1876. KANEHIRA, l. c. 490. f. 452. Malaysia to Australia, Polynesia and S. Ryukyus. (CHANG 5472)

51. *Combretaceae*

1. *Terminalia catappa* L., Syst. Nat. ed. 12(2): 674. 1767; LIU et al., l. c. 8: 42. Tropical Asia, N. Australia, Polynesia and Malaysia. (CHANG 6199)

52. *Myrtaceae*

1. *Acmena acuminatissima* (BL.) MERR. & PERRY in Journ. Arn. Arb. 19: 12. 1938; CHANG in Bull. Taiwan Inst. Agr. 5: 48. 1964; in Fl. Taiwan 3: 826. 1977. - *Eugenia cuspidato-obovata* HAYATA, l. c. 3: 116. 1913. S. China, Burma, Thailand to Philippines. (CHANG 3084)
2. *Syzygium claviflorum* (ROXB.) WALL. List No. 3575. 1831. nomen; MERR. & PERRY, l. c. 221. 1938; CHANG, l. c. 50; in Fl. Taiwan 3: 832. S. China, Thailand, Indo-China and Malay Peninsula. (CHANG 2928)
3. *Syzygium densinervium* MERR. var. *insularis* CHANG, l. c. 52; in Fl. Taiwan 3: 832. - *Eugenia densissima* sensu HAYATA, l. c. 3: 118. 1913, non MERR. - *E. kashotoensis* sensu KANEH., l. c. 503. f. 465, non HAYATA. Species of the Philippines, the variety is confined to Botel Tobago and Green Isl. (CHANG 5548)
4. *Syzygium lanyuense* CHANG l. c. 51. f. 2. in Fl. Taiwan 3: 834. Endemic. (CHANG 3110)
5. *Syzygium paucivenium* (ROBINS.) MERR. l. c. 79: 408. 1951; CHANG, l. c. 52. f. 3; in Fl. Taiwan 3: 834. - *Eugenia kashotoensis* HAYATA in Journ. Coll. Sci. Univ. 113. 1911. Tokyo 30(1): - *E. densissima* sensu MORI in Trans. Nat. Hist. Soc. Form. 28: 441. 1938, non MERR. Taiwan (Green Isl.) and N. Philippines. (CHANG 3662)
6. *Syzygium tripinnatum* (BLANCO) MERR. l. c. 79: 419. 1951; CHANG, l. c. 6: 59. 1965; in Fl.

Taiwan 3: 835. - *S. okudai* MORI, l. c. 440. Philippines. (CHANG 5449)

53. *Melastomataceae*

1. *Astronia ferruginea* Elm., Leaf. Philip. Bot. 4: 1205. 1911; LI, in Pacific Sci. 7: 184. 1953. - *A. formosana* KANEH., l. c. 258. 1917. - *A. cumingiana* sensu KANEH., l. c. 507. f. 469, non VIDAL. S. Taiwan (South cape and Green Isl.) and N. Philippines. (CHANG 2929)
 2. *Medinilla hayataiana* H. KENG in Quart. Journ. Taiwan Mus. 8: 26. pl. 6. 1955. - *M. kawakamii* HAYATA Gen. Ind. Form. 29. 1912. nom. nud. Endemic. (CHANG 11676)
 3. *Melastoma affine* Don in Mem. Mem. Wern. Soc. 4: 288. 1923; HATUS., l. c. 318; KENG & LI in Fl. Taiwan 3: 854. 1977. - *M. polyanthum* BLUME in Flora 2: 481. 1831; LIU et al., l. c. 311. S. Asia from Malay Peninsula through S. China to Philippines. (CHANG 2862)
 4. *Memecylon lanceolatum* BLANCO, Fl. Philip. 301. 1837; CHANG in Forest. Journ. Taiwan Agr. 6: 3. pl. 4. 1964; KENG & LI, l. c. 858. Philippines, Bornè and Celebes. (CHANG 5607)
 5. *Otanthra scaberrima* (HAYATA) OHWI in Journ. Jap. Bot. 12: 386. 1936; LIU et al., l. c. 311. Taiwan. (YAMAMOTO s. n. in 1947 TAI.).
- # 54. *Araliaceae*
1. *Boerlagiodendron pectinatum* MERR., l. c. 3: 253. 1908; KANEH., l. c. 520. f. 480. - *B. kotoense* (HAYATA) NAK. in Journ. Arn. Arb. 5: 22. 1924. Philippines and Taiwan (Green Isl.). (CHANG 3152)
 2. *Dendropanax trifidus* (THUNB.) MAKINO ex HARA in Journ. Jap. Bot. 16: 260. 1940; HATUS., l. c. 318. - *D. japonicum* SEEMANN in Journ. Bot. 2: 301. 1864. Japan to S. Korea and Ryukyus. (CHANG 6260)
 3. *Schefflera odorata* (BLANCO) MERR. & ROLFE in Philip. Journ. Sci. 3: Bot. 117. 424. 1908; LIU et al., l. c. 312; CHANG in Bull. Taiwan Inst. Agr. 12: 14. 1971; HO, Trop. Pl. Taiwan Col. 33. 1979. Philippines. (CHANG 3052)

4. *Schefflera octophylla* (LOUR.) HARMS in ENGLER & PRANTL, Nat. Pflanzenf. 3(8): 38. 1894; LIU et al., 1. c. 312. Mainland China, Taiwan to Japan and Philippines. (CHANG 6205)
55. *Myrsinaceae*
1. *Ardisia cornudentata* MEZ in Engl. Pflanzenr. 9 (IV. 236): 144. 1902; WALKER in Quart. Journ. Taiwan Mus. 12: 174. f. 7. 1959. Endemic to Taiwan, Botel Tobago and Green Island. (CHANG 6270)
 2. *Ardisia elliptica* THUNB. Nov. Gen. Pl. 119. 1795; WALKER, Fl. Okinawa & S. Ryukyus Isl. 813. 1976. - *A. kotoensis* HAYATA in Journ. Coll. Sci. Univ. Tokyo 30(1): 180. 1911. - *A. squamulosa* PRESL, Rel. Haenk. 2: 65. 1835. S. Asia, Ryukyus, Malaysia to Philippines. (CHANG 3631)
 3. *Ardisia quinqueгона* BL., Bijdr. 689. 1826; LIU et al., 1. c. 213. Mainland China, Taiwan, Ryukyus and Malaysia. (CHANG 3085)
 4. *Ardisia sieboldii* MIQ. in Ann. Mus. Bot. Lugd. Bat. 3: 190. 1867; KANEH., 1. c. 564. f. 523. WALKER, 1. c. 171. f. 5. 1959. - *A. formosana* ROLFE in Journ. Bot. Brit. & For. 20: 358. 1882. S. Japan, Ryukyus, Bonins and Taiwan. (CHANG 3057)
 5. *Maesa tenera* MEZ in ENGL. Pflanzenr. 9(IV 236): 28. 1902; WALKER, 1. c. 166. f. 3. 1959. - *M. formosana* MEZ, 1. c. 28. 1902. Mainland China, Taiwan (including Green Isl.) Indo-China to Japan. (CHANG 2771)
56. *Plumbaginaceae*
1. *Limonium wrightii* (HANCE) KTZE., Rev. Gen. Pl. 396. 1891; LI in Fl. Taiwan 4: 91. 1978. - *Statice arbuscula* MAXIM. in Trautv., Regel, MAXIM. & WINKL., Decas Pl. Nov. 8. 1882. Bonins, Ryukyus and Taiwan. (CHANG 2215)
57. *Sapotaceae*
1. *Palaquium formosanum* HAYATA in Journ. Coll. Sci. Univ. Tokyo 30(1): 184. 1911; LI in Fl. Taiwan 4: 94. f. 928. 1977. Philippines and Taiwan (including Green Isl.). (CHANG 2952)
 2. *Planchonella obovata* (R. BR.) PIERRE, Not. Bot. Sapot. 36. 1890. - *Sideroxylon ferrugineum* HOOK. & ARN., Bot. Beechy. Voy. 266. 1841. - *S. liukuensis* NAKAI, Bot. Mag. Tokyo 33: 209. 1919. - *Pouteria obovata* (R. BR.) BAEHNI in Candollea 9: 329. 1943. Australia, Caroline Islands, Malaysia, India, Indo-China, Ryukyus and Taiwan. (CHANG 3111)
 3. *Planchonella duclitan* (BLANCO) BAKHUIZAN in Blumea 12: 62. 1963; CHANG in Bull. Taiwan Inst. Agr. 10: 55. f. 4. 1969. - *Sideroxylon duclitan* BLANCO, Fl. Filip. 129. 1837. Philippines, Sumatra, Java, Borneo, Celebes and New Guinea. (CHANG 9136)
58. *Ebenaceae*
1. *Diospyros ferrea* (WILLD.) BAKH. in Gard. Bull. St. Set., 7: 162. 1933; YAMAZ. in Journ. Jap. Bot. 49: 248. 1974. - *Maba buxifolia* PERSOON, Syn. Pl. 2: 606. 1807. - *D. ferrea* BAKH. var. *buxifolia* (ROTTB.) BAKH. in Gard. Bull. St. Set. 7: 192. 1933. India, Indo-China, Malaysia, Australia to Ryukyus and S. China, Taiwan. (CHANG 2918)
 2. *Diospyros kotoensis* YAMAZ. in Journ. Jap. Bot. 49: 247. f. 2. 3. 1974; LI in Fl. Taiwan 4: 102. 1978. - *D. nitida* sensu LIU et al., 1. c. 8: 314. 1955; CHANG, 1. c. 3(2): 27. 1967, non MERR. Endemic. (CHANG 5520)
 3. *Diospyros maritima* BLUME, Bijdr. Fl. Nederl. Ind. 669. 1825; KANEH., 1. c. 575. f. 532. - *D. kusanoi* HAYATA in Journ. Coll. Sci. Univ. Tokyo 30(1): 186. 1911. Taiwan, Ryukyus, S. China, Indo-China, Malaysia, Philippines, New Guinea and tropical Australia. (CHANG 5586)
 4. *Diospyros philippinensis* (DESV.) GURKE in ENGL. & PRANTL Nat. Pflanzenf. 4(18): 164. 1897. - *D. discolor* WILLD. Sp. Pl. 1108. 1805. S. Taiwan and Philippines. (CHANG 5375)
59. *Symplocaceae*
1. *Symplocos cochinchinensis* (LOUR.) MOORE var. *philippinensis* (BRAND) NOOT. Rev. Symplocac. 154. 1975; in Fl. Taiwan 4: 116. Pl. 935. 1978. - *S. kotoensis* HAYATA, 1. c. 5: 107. f. 31. 1915. Java, Lesser Sunda Islands, Celebes, Moluccas, Philippines and Taiwan (Green Isl.).

(CHANG 5406)

60. *Styracaceae*

1. *Styrax japonica* S. & Z. Fl. Jap. 1:53. 1837; STEENIS, Fl. Males. 24:52. 1949. - *S. philippinensis* MERR. & QUIS. in Philip. Journ. Sci. 56. 313. pl. 1. 1935. - *S. japonica* S. & Z. var. *kotoensis* (HAYATA) MASAM. & SUZUKI in Trans. Nat. Soc. Form. 30:338. 1939. Japan, Korea, N. China, Taiwan (Green Isl.), Ryukyus and N. Philippines. (CHANG 5547)

61. *Oleaceae*

1. *Linociera coriacea* (MERR.) VIDAL Rev. Pl. Vasc. Filip. 181. 1886; CHANG in Forest. Journ. Taiwan Inst. Agr. 16:1. f. 1974. Philippines. (CHANG 5628)
2. *Linociera ramiflora* (ROXB.) WALL. Cat. No. 2824. 1831; KANEH., l. c. 613. f. 570. - *L. cumingiana* VIDAL, Phan. Cuming. Philip. 185. 1885. Malaysia Philippines, Hainan and Taiwan (Green Isl.). (CHANG 5601)
3. *Osmanthus marginatus* (CHAMP. & BENTH.) HEMSL. in Journ. Linn. Soc. Bot. 26:88. 1890; CHANG in Quart. Journ. Taiwan Forest. 3(2):27. 1967. Mainland China, Taiwan and Ryukyus. (CHANG 5619)

62. *Loganiaceae*

1. *Buddleia asiatica* LOUR., Fl. Cochinch. 72. 1790; KANEH., l. c. 623. f. 580. India, Malaysia, mainland China and Taiwan. (CHANG 2261)
2. *Geniostoma rupestre* FOREST. Char. Gen. Pl. 12. t. 1776; HATUS., l. c. 320. - *G. batanense* MERR., l. c. 3:427. 1908. - *G. kasyotense* KANEH. & SASAKI in Trans. Nat. Hist. Soc. Form. 24:400. f. 3. 1934. Malaysia, N. Australia, Taiwan (Green Isl.) and West Pacific. (CHANG 2808)

63. *Apocynaceae*

1. *Alyxia insularis* KANEH. & SASAKI in Trans. Nat. Hist. Soc. Form. 24:402. f. 4. 1934. Endemic to Botel Tobago and Green Isl., (CHANG 5530)
2. *Anodendron affine* (HOOK. & ARN.) DRUCE in Rep. Bot. Exch. Club. Brit. Isles 4:605. 1917. Japan, Mainland China and Taiwan.

(CHANG 11695)

3. *Cerbera manghas* L., Sp. Pl. 208. 1753; KANEH., l. c. 628. f. 586. Tropical Asia. (CHANG 5450)
4. *Parsonsia laevigata* (MOON) ALSTON in Ann. Roy. Bot. Gard. Peradenya 11:203. 1929; YAMAZ. in Journ. Jap. Bot. 43(2):62. 1968; LI in Fl. Taiwan 4:212. f. 972. 1978. - *P. helicandra* HOOK. & ARN., Bot. Beechey Voy. 197. 1841; CHANG in Quart. Journ. Taiwan Forest. 3(2):28. 1967. Ryukyus, Taiwan to Malaysia. (CHANG 5587)
5. *Rauwolfia verticillata* (LOUR.) BAILLON in Bull. Soc. Linn. Paris 1:768. 1888; KANEH., l. c. 631. f. 588. Mainland China, Taiwan and Indo-China. (YEH 505)
6. *Tabernaemontana subglobosa* MERR., l. c. 7:242. 1912; HATUS., l. c. 321. Liao; CHANG & HO. in Mem. Coll. Agr. Taiwan Univ. 17(2):161. pl. 1-8, 9. 1977. - *T. dichotoma* sensu HAYATA, l. c. 3:151. 1913, non ROXB. Philippines (CHANG 5556)
7. *Trachelospermum lanyuense* CHANG sp. nov. Fig. 3

Ramuli teretes glabri. Folia obovata vel obovato-elliptica, 6-8 cm longa, 3-4 cm lata, coriacea vel teniter coriacea, apice mucronata vel obtusa basi acuta, utrinque glabra costa supra impressa subtus valde elevata. Petioli 5-10 mm longi. Inflorescentiae cymosae terminales axillaresque glabrae. Sepala elliptico-oblonga circ. 1.5-2 mm longa margine fuscociliolata. Corolla alba, tubus 4-5 mm longus, extus glaber lobi oblique obovati, circ. 6 mm longi 5 mm lati. Antherae paucae exsertae.

Climbing vine. Branchlets terete, glabrous. Leaves opposite, obovate, rarely elliptic, 6-8 cm long, 3-4 cm broad, coriaceous or subcoriaceous, mucronate or obtuse at apex, acute at base, the margins entire, glabrous on both surfaces, the lateral veins 6-7 on each side of the midrib, slightly impressed above, elevated beneath; petioles 5-10 mm long. Inflorescences cymose, terminal and axillary, glabrous; peduncles about 3 cm long; pedicels glabrous, 5-7 mm long; bracts

ovate-oblong; sepals 5, elliptic-oblong, 1.5–2 mm long, glabrous, somewhat pubescent in the throat around the anthers, the lobes oblique obovate, about 6 mm long, 5 mm broad; stamens 5, slightly exserted.

The present species is perhaps near *T. liukiense* HATUSIMA; but it differs from it by glabrous branchlets and larger glabrous leaves and by longer and acutish sepals.

Endemic. (CHANG 2984)

64. Asclepiadaceae

1. *Hoya carnosa* (L. f.) R. BR. in Mem. Wern. Soc. 1: 27. 1809; LIU, Lign. Pl. Taiwan 621. 1972.
Mainland China, Taiwan to Japan. (CHANG 11761)
2. *Marsdenia formosana* MASAM. in Journ. Soc. Trop. Agr. 2: 241. 1930; YAMAZ. in Journ. Jap. Bot. 44(10): 320. 1969; LIU, l. c. 621. 1972. – *M. acuta* sensu SASAKI, List. Pl. Form. 342. 1928, non TANAKA.

Ryukyus and Taiwan. (CHANG 11555)

3. *Marsdenia tinctoria* R. BR. var. *tomentosa* (MERR. & DECNE.) MASAM. in Trans. Nat. Hist. Soc. 29: 59. 1939; LU & KAO in Fl. Taiwan 4: 241. 1978. – *M. tomentosa* MERR. & DECNE. in Bull. Acad. Brux. 3: 172. 1836. S. Kyushu and Taiwan. (CHANG 11812)
The species of tropical Africa and tropical Asia.

65. Boraginaceae

1. *Cordia cumingiana* VIDAL, Phan. Cuming. Philip. 187. 1885; LI, l. c. 810. – *C. kanehirai* HAYATA, l. c. 6: 31. 1916.
Philippines. (CHANG 2947)
2. *Ehretia dicksonii* HANCE in Ann. Sci. Nat. 4(18): 224. 1862; LI, l. c. 812. f. 328. – *E. dicksonii* HANCE var. *typica* NAKAI in Journ. Arn. Arb. 5: 40. 1924.
Ryukyus and Taiwan. (CHANG 9795)
3. *Ehretia philippinensis* A. DC., Prodr. 9: 504. 1845; CHANG in Bull. Taiwan Inst. Agr.

7: 71. 1966. – *E. lanyuensis* LIU & CHANG in Quart. Journ. Taiwan Mus. 13: 63. 1960. Philippines. (CHANG 2947)

4. *Ehretia thyrsoflora* (S. & Z.) NAK., Trees & Shrubs Ind. Jap. 1: 327. pl. 199. 1922; HOU in Taiwan 1: 199. 1950. – *E. taiwaniana* NAK. in Journ. Arn. Arb. 5: 38. 1926.
India, Indo-china, mainland China, Taiwan, Ryukyus, Japan and Philippines. (CHANG 2916)

5. *Messerschmidia argentea* (L. f.) JOHNSTON in Journ. Arn. Arb. 16: 164. 1935; LI, l. c. 815.
– *Tournefortia argentea* L. f. Suppl. Pl. 133. 1781.
Tropical Asia to gascar, tropical Australia and Polynesia. Madagascar. (CHANG 5453)

6. *Tournefortia sarmentosa* LAM., Encycl. Meth. 1:



Fig. 3 *Trachelospermum lanyuense* CHANG

416. 1891; HOU in Taiwania 1: 206. 1950.
Mauritius to Indo-China, Malay, Philip-
pines Taiwan and tropical Australia.
(CHANG 20913. TAIF)

66. Verbenaceae

1. *Callicarpa formosana* ROLFE in Journ. Bot. 20: 358. 1882; KANEH., 1. c. 643. f. 599.
Mainland China, Taiwan and Philippines.
(CHANG 6273)
2. *Callicarpa longifolia* LAM., Encycl. Meth. 1: 563. 1785; LI, 1. c. 821. -*C. kotoensis* HAYATA in Journ. Coll. Sci. Univ. Tokyo 30(1): 219. 1911. -*C. antoensis* HAYATA, 1. c. 6: 35. 1916. -*C. japonica* THUNB. var. *kotoensis* (HAYATA) MASAM. in Trans. Nat. Hist. Soc. Form. 30: 63. 1940.
India to Malaysia. (CHANG 3150)
3. *Clerodendron inerme* (L.) GAERTH. Fruct. 1: 271. pl. 57. 1788; KANEH., 1. c. 691.
India through tropical Asia and Australia to the Pacific islands. (CHANG 2914)
4. *Premna obtusifolia* R. BROWN, Prodr. Fl. Nov. Holland 512. 1810; HSIAO in Fl. Taiwan 4: 628. 1978. -*P. integrifolia* L., Mant. pl. 252. 1771.
Tropical Asia to Australia. (CHANG 5542)
5. *Vitex rotundifolia* L. f., Suppl. Pl. Syst. Veg. 294. 1781; KANEH., 1. c. 653. f. 609. -*V. trifolia* L. ssp. *littoralis* STEENIS in Blumea 8: 516. 1957.
Mainland China, Taiwan, Korea to Japan and Malaysia. (CHANG 5545)

67. Solanaceae

1. *Datura metel* L., Sp. Pl. 179. 1753; LIU & OU in Fl. Taiwan 4: 531. pl. 1093. 1978.
Native of India, Naturalized in Taiwan.
(CHANG 5621)
2. *Solanum biflorum* LOUR. Fl. Cochinch. 126. 1790; CHANG, 1. c. 3(2): 29. 1967. -*Lycianthes biflora* (LOUR.) BITT. in Abhandl. Nat. Brem. 242. 461. 1919.
India, S. China, Taiwan, Ryukyus and Japan. (CHANG 2841)
3. *Solanum ferox* L., Sp. Pl. ed. 2: 267. 1762; LIU & OU, 1. c. 540.
Mainland China, Taiwan, India, Australia and Malaysia. (CHANG 5608)
4. *Solanum indicum* L., Sp. Pl. 187. 1753; LIU & OU, 1. c. 542.

Tropical and subtropical Asia. (CHANG 6184)

5. *Solanum luzoniense* MERR., 1. c. 13: 58. 1918; CHANG in Bull. Taiwan Inst. Agr. 7: 69. f. 5. 1966; LIU & OU, 1. c. 542.
Philippines. (CHANG 3606)

68. Bignoniaceae

1. *Radermachia sinica* (HANCE) HEMSL. in HOOK. Icon. Pl. 2728. in index 1902. -*Stereospermum sinicum* HANCE in Journ. Bot. Brit. & For. 20: 16. 1882.
S. China and Taiwan. (CHANG 7796)

69. Gesneriaceae

1. *Cyrtandra umbellifera* MERR., 1. c. 3: 435. 1908; KAO & De VOL in Taiwania 17(2): 149. 1972. -*C. kotoensis* HOSOK. in Trans. Nat. Hist. Soc. Form. 25: 412. 1935.
Philippines. (CHANG 2750)
2. *Lysionotus ikedae* HATUS., 1. c. 324; KAO & De VOL, 1. c. 677.
Endemic. (CHANG 7631)

70. Acanthaceae

1. *Goldfussia penstemonoides* NEES in DC., Prodr. 11: 175. 1847; HSIEH & HUANG in Taiwan 19(1): 21. 1974.
Philippines and Taiwan. (CHANG 8333)

71. Rubiaceae

1. *Canthium gynochthodes* BAIL., Adansonia 12: 199. 1878; HATUSIMA, 1. c. 325. -*Plectronia gynochthodes* (BAIL.) MERR. Enum. 3: 536. 1925; CHANG in Forest. Journ. Taiwan Inst. Agr. 6: 3. f. 5. 1964.
Philippines and Taiwan (Green Isl.). (CHANG 5419)
2. *Gardenia jasminoides* ELLIS in Philip. Trans. 51(2): 935. pl. 23 (A-G). 1761; KANEH., 1. c. 668. -*G. augusta* MERR. var. *kosyunensis* SASAKI in Trans. Nat. Hist. Soc. Form. 18: 217. 1928. -*G. angustifolia* LODDIGES var. *kosyunensis* (SASAKI) MASAM., Short Fl. Form. 202. 1936.
S. China, Indo-China to Japan. (CHANG 5585)
3. *Guetardara speciosa* L., Sp. Pl. 991. 1753; KANEH., 1. c. 667. f. 621.
Tropical Asia and Australia to Polynesia. (LU & al. 261 TAI)
4. *Ixora philippinensis* MERR., 1. c. 5: 238. 1910; LIU, SASAKI & KENG, 1. c. 322. -*I. gracilifolia* HAYATA, 1. c. 9: 61. 1920, non BENTH.,

1850. -*I. hayatai* KANEH. in Trans. Nat. Hist. Soc. Form. 21: 146. 1931. Philippines. (CHANG 3145)
5. *Lasianthus cyanocarpus* JACK in Trans. Linn. Soc. 14: 125. 1825; LIU & CHAO in Taiwan 10: 129. f. 6. 1964. Ryukyus, mainland China, Taiwan to India. (CHANG 3201)
6. *Lasianthus fordii* HANCE in Journ. Bot. 23: 324. 1885; LIU & CHAO, l. c. 128. f. 7. Mainland China, Taiwan, Ryukyus, Philippines and Japan. (CHANG 6253)
7. *Lasianthus obliquinervis* MERR., l. c. 1. Suppl. 136. 1907; LIU & CHAO, l. c. 141. f. 13. Mainland China, Taiwan to Ryukyus and Philippines. (CHANG 3067)
8. *Lasianthus obliquinervis* MERR. var. *simizui* LIU & CHAO, l. c. 143. f. 14. Endemic. (CHANG 3102)
9. *Lasianthus obliquinervis* MERR. var. *taitoensis* (SIMIZU) LIU & CHAO l. c. 145. f. 15. Endemic to Taiwan and Botel Toago. (CHANG 5429)
10. *Lasianthus wallichii* WIGHT in Calc. Journ. Nat. Hist. 6: 501. 1864; YAMAZ. in Journ. Jap. Bot. 44(1): 32. 1969. -*L. plagiophyllus* HANCE in Journ. Bot. New. ser. 4: 196. 1875; LIU & CHAO, l. c. 147. f. 16. India, S. China, Taiwan to Ryukyus. (CHANG 3068)
11. *Morinda citrifolia* L., Sp. Pl. 176. 1753; KANEH., l. c. 299. 1917. Tropical Asia, Australia and Polynesia. (CHANG 2922)
12. *Mussaenda macrophylla* WALL. var. *brevipilosa* JAYAW. in Journ. Arn. Arb. 45: 117. 1964. -*M. macrophylla* sensu MERR., l. c. 3: 437. 1908, non WALL. -*M. kotoensis* HAYATA in Journ. Coll. Sci. Univ. Tokyo 30(1): 143. 1911. Philippines. The species of Nepal and Assam to Yunnan. (CHANG 2801) New to the flora of Taiwan.
13. *Mussaenda parviflora* MIQ. var. *yaeyamensis* (MASAM.) YAMAZ. in Journ. Jap. Bot. 39: 320. 1964; HATUS., l. c. 326. S. Ryukyus. The species of Ryukyus and Taiwan. (CHANG 2908)
14. *Neonauclea reticulata* (HAVIL.) MERR. in Journ. Wash. Acad. Sci. 5: 542. 1915; SASAKI in Trans. Nat. Hist. Soc. Form. 17: 212. 1928. -*N. truncata* (HAYATA) YAMAM. in Journ. Soc. Trop. Agr. 7: 149. 1935. Philippines and Taiwan. (CHANG 2252)
15. *Pavetta indica* L., Sp. Pl. ed. 2. 160. 1735; DC., Prodr. 4: 490. 1880; MATSUM. & HAYATA in Journ. Coll. Sci. Univ. Tokyo 22: 193. 1906. Fig. 4 India, mainland China and Philippines to Malaysia. (CHANG 11875) This species was first recorded for Taiwan by J. MATSUMURA and B. HAYATA. However the specimen KAWAKAMI in 1904 cited by them can not be located in any herbarium of Taiwan nor in the Herbarium of Tokyo University. In the Herbarium of Tokyo University there is only one collection from Botel Tobago by R. KANEHIRA and S. SASAKI, which was identified as *Pavetta indica* L. at first and after corrected *Tarenna kotoensis* HAYATA. This specimen with the terminal inflorescence and 4-seeded fruit is certainly a species of *Tarenna*, not *P. indica*.
16. *Psychotria cephalophora* MERR., l. c. 3: 483. 1909; KANEH., l. c. 678. f. 631. -*P. kotoensis* HAYATA, l. c. 9: 62. 1920. Philippines and Taiwan (Green Isl.). (CHANG 2273)
17. *Psychotria manillensis* BARTL. ex DC., Prodr. 4: 522. 1830; CHANG in Forest. Journ. Taiwan Inst. Agr. 10: 3. 1968. -*P. liukiensis* HATUS. in Journ. Jap. Bot. 13: 674. f. 2. 1937. Ryukyus, Taiwan (Green Isl.) and Philippines. (CHANG 6237)
18. *Psychotria serpens* L., Mant. Pl. 2: 204. 1771; KANEH., l. c. 679. f. 633. Mainland China, Taiwan, S. Japan and Ryukyus. (CHANG 3178)
19. *Randia wallichii* HOOK. f., Fl. Brit. Ind. 3: 113. 1882. -*Tarenna incerta* KOORD. & VAL., Bijdr. Boom. Java 8: 269. f. 6. 1902; CHANG in Bull. Taiwan Inst. Agr. 7: 70. f. 6. 1966. Java, Philippines, India and Burma. (CHANG 3135)
20. *Tarenna kotoensis* (HAYATA) KANEH. & SASAKI, l. c. 683. f. 638; Yamaz. in Jap. Bot. 44 (2): 64. 1969. N. Philippines (Batan Isl.). (CHANG 2954)

21. *Timonius arboreus* ELMER, Leaf. Philip. Bot. 1: 72. 1906; KANEH., l. c. 684. f. 640. Taiwan (Green Isl.) and Philippines. (CHANG 2972)
22. *Uncaria lanosa* WALL. var. *appendiculata* (BENTH.) RIDSD. forma *philippinensis* (ELMER) RIDSD. in Blumea 24(1): 89. 1978; Philip., HEMING. & RIDSD. in Lloydia 4(6): 505. 1978. - *U. philippinensis* ELMER, Leaf. Philip. Bot. 1: 38. 1906. - *U. florida* sensu HENRY in List. Pl. Form. 49. 1896; MATSUM. & HAYATA, Enum. Pl. Form. 182. 1906, non VIDAL. - *U. setiloba* sensu SASAKI, List Pl. Form. 385. 1928, non BENTH. Philippines. (CHANG 2238)
New to the flora of Taiwan.
23. *Wendlandia luzoniensis* DC., Prodr., 4: 412. 1830; KANEH., l. c. 690. f. 645. Taiwan (Green Isl.) and Philippines. (CHANG 3063)

72. Goodeniaceae

Fig. 4 *Pavetta indica* L.

1. *Scaevola sericea* VAHL, Symb. Bot. 2: 37. 1791; Li, l. c. 1899. f. 362. Ryukyus, Taiwan, throughout Malaysia, Madagascar, tropical Australia and Polynesia. (CHANG 5568)

73. Compositae

1. *Crossostephium chinense* (L.) MAKINO in Bot. Mag. Tokyo. 20: 33. 1906. Mainland China, Taiwan, N. Philippines (BATAN Isl.) and Ryukyus. (CHANG 6316)

Monocotyledoneae

74. Pandanaceae

1. *Freycinetia formosana* HEMSL. in Kew Bull. 166. 1896; KANEH., l. c. 63. f. 23; LI, Fl. Taiwan 5: 821. 1978. - *F. batanensis* MARTELLI in Webbia 3: 29. 396. 1910. Ryukyus, Philippines and Taiwan. (CHANG 2816)
2. *Pandanus odoratissimus* L. f. var. *sinensis* (WARB.) KANEH., l. c. 63. f. 24. - *P. tectorius* sensu HAYATA, l. c. 8: 132. 1919, non SOLLANDER. S. China and Taiwan. (CHANG 14719)

75. Gramineae

1. *Bambusa dolichomerithalla* HAYATA, l. c. 6. 146. f. 55. 1916; LIN in Fl. Taiwan 5: 751. 1978. Taiwan. (CHANG 9027)
2. *Bambusa vulgaris* SCHRADER ex WENDLAND, Collect. Pl. 11: 26. t. 47. 1810; LIN. in Fl. Taiwan 5: 766. 1978; CHANG in Forest. Journ. Taiwan Inst. Agr. 18: 18. f. 1. 1976. Old World. of the Tropics (CHANG 7823)

76. Palmae

1. *Arenga engleri* BECCARI, Malesia 3: 184. 1889; KANEH., l. c. 71. f. 25. Ryukyus and Taiwan. (CHANG 5552)

2. *Calamus formosanus* BECC. in Rec. Bot. Survey Ind. 2: 211. 1902; KANEH., 1. c. 71. 1936. Endemic to Taiwan and Botel Tobago. (CHANG 8697)
3. *Pinanga bavnensis* BECC. in Webbia 3: 193. 1910; LI, 1. c. 919, -*P. tashiroi* HAYATA, 1. c. 3: 196. 1913; KANEH. 1. c. 74. f. 29. -*Pseudo-pinanga tashiroi* (HAYATA) BURET in Notizbl. Bot. Gart. Berlin 13: 194. 1936. Indo-China and mainland China. (CHANG 5594)

77. *Flagellariaceae*

1. *Flagellaria indica* L., Sp. Pl. 333. 1753; KANEH., 1. c. 75. Tropical Asia, Australia, Ryukyus and Taiwan. (CHANG 7802)

78. *Liliaceae*

1. *Dracaena angustifolia* ROXB., Hort. Beng. 24: 1814; LIU, 1. c. 2: 1256. pl. 1060. 1962. -*Pleomele angustifolia* (ROXB.) N. E. BR. in Kew Bull. 277: 1914. Indis to Indo-China, S. Taiwan, Malaysia, Micronesia and Australia. (CHANG 3095)
2. *Heterosmilax japonica* KUNTH, Enum. Pl. 5: 270. 1850; T. KOYAMA in Quart. Journ. Taiwan Mus. 10: 20. 1957; LI, 1. c. 922. f. 370. S. Japan, Ryukyus and Taiwan. (CHANG 7275)
3. *Smilax bracteata* PRESL, Reliq. Haenk. 1: 131. 1827; T. KOYAMA, 1. c. 10: 18. 1957; LIU, 1. c. 2: 1236. pl. 1042. 1962.

Indo-China, Philippines, Ryukyus, Japan and Taiwan. (CHANG 2835)

79. *Maranthaceae*

1. *Donax connaeformis* (FOREST. f.) K. SCHUM. in Engl. Bot. Jahrb. 15: 440. 1893. Indo-China, Malay, Philippines to Malaysia. (CHANG 8976)

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著者はまえがきに「古くから『日本植物図鑑』があるように、『北海道植物図鑑』があったらなあ、と思い、野外調査を始めたのが、昭和44年であり、ついでカラスライドに着手したのは、48年でありました。こんなに広大な北海道、それにまだ10年そこそこまことにおこがましいことではありますが、採集したおしほ標本、撮影したスライド、さらに野山での出合いで語りかけたフィールドノートを基にまとめることにいたしました」と書いておられる。第1巻では539種の解説がなされているが、その内496種には写真が入っていて、その内訳は担振283、渡島77、日高41、檜山27、根室21、後志16、石狩13、釧路9、宗谷5、十勝3、上川1となっている。

担振が57%をしめているのは、著者のおすまいに近いためであると言う。下巻は2年後を目ざし、500種を収録されるとの事であるが、一日も早く完成されるよう御期待申し上げるものである。（里見信生）

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