RECORDS OF INDO-CHINESE PLANTS, II*

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THIS PAPER includes various notes on nomenclature, some reductions of previously proposed species, records of a considerable number of others as new to Indo-China, including the first records of representatives of the genera *Tsuga* and *Itoa* (other than in the reduction of *Carrierea*) as occurring in that country, as well as the descriptions of seventeen presumably new species in *Bauhinia, Aspidopterys, Ilex, Meliosma, Homalium, Lagerstroemia, Vaccinium, Agapetes, Gentiana, Premna, Adina, Thladiantha, Ainsliaea,* and *Ligularia.* Most of the data are based on material collected by Dr. A. Pételot, supplemented by a small but very interesting collection prepared by Mrs. H. Greenway of Wellesley, Massachusetts, on Langbain Peak, Annam, in March 1939. The total number of additions to the Indo-Chinese recorded flora is about thirty-nine species. Types, unless otherwise stated, are deposited in the herbarium of the Arnold Arboretum.

PINACEAE

Tsuga Carrière

Tsuga yunnanensis (Franch.) Mast. Jour. Linn. Soc. Bot. **26:** 556. 1902; Rehd. & Wils. in Sargent, Pl. Wils. **2:** 36. 1914; Flous, Trav. Lab. Forest. Toulouse II. **4**(3)**:** 127. *f. 1–13.* 1936.

Abies yunnanensis Franch. Jour. de Bot. **13:** 258. 1899.

INDO-CHINA: Tonkin, Chapa, massif de Fan Tsi Pan, *Pételot 2216,* between 2000 and 2500 m. alt. Szechuan, Yunnan, southeastern Tibet.

Dr. Flous in her recent revision of the genus *Tsuga* reduced *Tsuga intermedia* Hand.-Maz., Anz. Akad. Wiss. Wien, Math.-Nat. Kl. **61:** 82. 1925, to the synonymy of this species. Rehder, Jour. Arnold Arb. **7:** 49. 1926, placed *Tsuga leptophylla* Hand.-Maz. here, but Dr. Flous refers the latter to *Tsuga Brunoniana* (Wall.) Carrière, but cites specimens only from India; Handel-Mazzetti's type is from Yunnan.

COMMELINACEAE

Aneilema R. Brown

Aneilema bracteatum (C. B. Clarke) O. Ktze. Rev. Gen. Pl. 719. 1891; Merr. Brittonia **2:** 191. 1936.

*For the first paper in this series see Jour. Arnold Arb. **20:** 347–355. 1939.

Aneilema nudiflorum R. Br. var. *bracteatum* C. B. Clarke in DC. Monog. Phan. **3**: 211. 1881; Cherfils in Lecomte, Fl. Gén. Indo-Chine **6**: 905. 1937.

Aneilema Kuntzei C. B. Clarke ex O. Ktze. Rev. Gen. Pl. 719. 1891, in syn.

This striking form impresses me as being entirely worthy of specific rank. Clarke's variety was originally based on a Schomburgk specimen from Siam. His amplified manuscript description of *Aneilema Kuntzei*, which Kuntze quotes, was based on *Kuntze 3810*, from Tourane, Annam. The species is further represented by *Pételot 2101* from Muong Than, between Hanoi and Hoa Binh, Tonkin. A number of collections are now available from Hainan, thus giving the range of the species Siam, Indo-China, and Hainan.

Attention is directed to my discussions of Kuntze's types of his Indo-Chinese species,* involving twenty-seven species and several new genera described by Kuntze and based mostly on his own Indo-Chinese collections. While all of Kuntze's new genera are reduced to previously described ones, fifteen of his specific names are valid, and in a number of cases replace those currently accepted for Indo-Chinese species. *Aneilema Kuntzei* C. B. Clarke does not appear in Index Kewensis.

Ulmaceae

Aphananthe Planchon

Aphananthe aspera (Thunb.) Planch. in DC. Prodr. **17**: 208. 1873; Schneider in Sargent, Pl. Wils. **3**: 290. 1916; Nakai, Fl. Sylv. Koreana **19**: 45. *t. 15*. 1932.

Prunus aspera Thunb. Fl. Jap. 201. 1784.

Indo-China: Tonkin, Hoa Binh Province, between Hoa Binh and Vu Ban, *Pételot 2271*, April 28, 1938. Korea and Japan southward and westward to Formosa, Kwangtung, and Yunnan. The second species of the genus to be reported from Indo-China.

Moraceae

Ficus Linnaeus

Ficus pisifera Wall. List no. 4504. 1832, *nomen nudum;* Miq. Hook. Jour. Bot. **7**: 427. 1848; King, Ann. Bot. Gard. Calcutta **1**: 3. *t. 1*. 1887.

Indo-China: Sontay Province, Mount Bavi, *Pételot 2242*, June 1938, altitude about 400 m. Malay Peninsula to Sumatra, Java, Borneo, and the Philippines.

*Merrill, E. D. Otto Kuntze's new genera and new species of Indo-China plants. Brittonia **2**: 189–200. 1936.

URTICACEAE

Pilea Lindley

Pilea plataniflora C. H. Wright, Jour. Linn. Soc. Bot. **26**: 477. 1899; Hand.-Maz. Symb. Sin. **7**: 138. 1929.

INDO-CHINA: Tonkin, Chapa, *Pételot 2252*, August 1935, on calcareous rocks at 1600 m. alt.; Hoa Binh Province, *Pételot 2252*, May 1935, on calcareous rocks. Yunnan and Szechuan to Kweichow, Kwangsi, Hupeh, and Formosa.

Handel-Mazzetti fortunately gives a complete and detailed description of this species, supplementing the rather meager original one of Wright. Synonyms are *Pilea Blinii* Lév. and *P. Dielsiana* Hand.-Maz.

POLYGONACEAE

Polygonum Linnaeus

Polygonum capitatum Ham. ex D. Don, Prodr. Fl. Nepal. 73. 1825; Steward, Contr. Gray Herb. **5**(88): 78. 1930.

INDO-CHINA: Tonkin, Chapa, *Pételot 686, 2223* (leaves slightly cordate), *2230*, alt. 1500–1600 m. India to Burma, Yunnan, and Tibet.

Polygonum dichotomum Blume, Bijdr. 529. 1825; Danser, Bull. Jard. Bot. Buitenz. III. **8**: 222. 1927.

Polygonum pedunculare Wall. List. no. 1718. 1829, *nomen nudum*; Meisn. in Wall. Pl. As. Rar. **3**: 58. 1832; Courchet in Lecomte, Fl. Gén. Indo-Chine **5**: 39. 1910.

INDO-CHINA: Bac Giang Province, near Long Met, *Pételot 2231*, Sept. 1939, in shallow water. India to China southward through Malaysia to Java and New Guinea.

Dr. Danser in accepting Blume's specific name of 1825 examined authentic material representing *P. dichotomum* Blume, the type being from Java; Wallich's type was from Singapore. Steward, Contr. Gray Herb. **5**(88): 91. 1830, placed both *P. dichotomum* Blume and *P. pedunculare* Wall. as synonyms of *P. strigosum* R. Br. var. *pedunculare* (Wall.) Steward. As a binomial Blume's name has priority.

Polygonum malaicum Danser, Bull. Jard. Bot. Buitenz. III. **8**: 218. *f. 13*. 1927.

Polygonum chinense Linn. var. *malaicum* Steward, Contr. Gray Herb. **5**(88): 73. 1930.

INDO-CHINA: Tonkin, Chapa, *Pételot 2227*, August 1936, in open

forests at 1900 m. alt. Sumatra, Malay Peninsula, Burma (*Dickason 5190, 5254*), Siam, and Yunnan.

This form may have been included by Courchet in his concept of *Polygonum chinense* Linn., but it seems to me to be amply distinct from that species. Danser suggested that *Polygonum auriculatum* Meisn. Monog. Polygon. Prodr. 59. *t. 6.* 1826, type from Annam, which he had not seen, might be a synonym, in which case the latter name would have priority. I judge from Meisner's detailed illustration that his species is closer to *P. chinense* L. than to *P. malaicum* Danser; Steward placed it as a synonym of the Linnean species. The type of *P. chinense* L. was from the vicinity of Canton, China, where the species is of common occurrence.

Polygonum minus Huds. Fl. Angl. 148. 1762; Danser, Bull. Jard. Bot. Buitenz. III. **8**: 174. 1927; Steward, Contr. Gray Herb. **5**(88): 63. 1930.

INDO-CHINA: Tonkin, Phuc Yen Province, borders of small streams, *Pételot 2233,* October 1935; Steward cites *Pételot 315* as representing this species. A widely distributed Eurasian species extending into the tropics of the Old World.

Polygonum palmatum Dunn, Kew Bull. 341. 1912; Steward, Contr. Gray Herb. **5**(88): 75. 1930.

Polygonum Meeboldii W. W. Sm. Rec. Bot. Surv. India **6**: 32. 1913.

INDO-CHINA: Tonkin, Chapa, *Pételot 1618,* July 1924. Assam.

Polygonum Meeboldii W. W. Sm. was published one year later than *P. palmatum* Dunn, both species being based on the same collection.

Polygonum virginianum Linn. Sp. Pl. 360. 1753, var. **filiforme** (Thunb.) Merrill, comb. nov.

Polygonum filiforme Thunb. Fl. Jap. 163. 1784.

Tovara virginiana Raf. var. *filiformis* Steward, Contr. Gray Herb. 5(88): 14. *t. 1. f. A.* 1930.

INDO-CHINA: Tonkin, near Van Linh, *Pételot 2232,* November 17, 1938, among calcareous rocks. Japan to Kwangtung, Yunnan, and Burma, with a closely allied form in Mindanao, the species in eastern North America.

While Steward elected to recognize only *Tovara* Raf. as a group worthy of generic rank from among the numerous proposed segregates from *Polygonum* Linnaeus, *sensu latiore,* I have no personal opinion to express, other than the general statement that a detached and critical consideration of all proposed generic segregates seems to be called for.

AMARANTHACEAE

Amaranthus Linnaeus

Amaranthus ascendens Loisel. Not. Pl. France 141. 1810; Thellung, Mém. Soc. Sci. Nat. Cherbourg **38:** 215. 1912 (Fl. Adv. Montpellier 215).

Amaranthus viridis sensu Hegi, Ill. Fl. Mittel-Eur. **3:** 264. *f. 560, a–k.* 1911, et sensu Standl. North Am. Fl. **21:** 118. 1917; non Linn.

INDO-CHINA: Tonkin, Chapa, *Pételot 2298,* in gardens, alt. about 1500 m., August 1939, apparently introduced here.

Widely distributed in the warmer parts of the world, possibly of tropical American origin. It is similar to *Amaranthus lividus* Linn., and by Thellung has been placed as a subspecies of the latter. This form has been badly confused with *Amaranthus viridis* Linn. with which it has little in common (see Merrill, E. D. On the application of the binomial *Amaranthus viridis* Linnaeus. Am. Jour. Bot. **23:** 609–612. *f. 1.* 1936). The illustration in that paper is of the actual holotype of *Amaranthus viridis* Linn. in Linnaeus' herbarium.

ROSACEAE

Photinia Lindley

Photinia Beauverdiana Schneider, Bull. Herb. Boiss. II. **6:** 319. 1906.

INDO-CHINA: Tonkin, Chapa, *Pételot 2184,* August 1938, a small tree 4–5 m. high, alt. about 1500 m. Anhwei and Chekiang to Formosa, and Kwangtung, westward to Hupeh, Hunan, Kiangsi, Kweichow, Szechuan, and Yunnan, but not previously recorded from Indo-China.

LEGUMINOSAE

Bauhinia Linnaeus

Bauhinia caterviflora Chen, Jour. Arnold Arb. **19:** 129. 1938, Lingnan Sci. Jour. **18:** 479. 1939.

INDO-CHINA: Tonkin, Chapa, *Pételot 2165,* August 1936, alt. about 1600 m. Yunnan, Szechuan.

A species new to Indo-China, the cited specimen differing from the type in being much less pubescent, but falling well within the variation of the species as interpreted by Miss Chen.

Bauhinia Pierrei Gagnep. Not. Syst. **2:** 178. 1912, et in Lecomte, Fl. Gén. Indo-Chine **2:** 136. 1913.

Bauhinia Howii Merr. & Chun, Sunyatsenia **2:** 243. *t. 48.* 1935; Chen, Lingnan Sci. Jour. **18:** 476. 1939.

Two collections from Tonkin, which I have identified from Gagnepain's descriptions, *Pételot 2161, 2164,* the latter number more pubescent than indicated by him, enable me to reduce the Hainan *Bauhinia Howii* Merr. & Chun. This species is further represented by *Clemens 3158* from near Hue, Annam. In no essentials do the Hainan specimens differ from the Indo-Chinese form. Annam, Tonkin, Hainan.

There is an unfortunate error in the secondary division of Gagnepain's key to the *Bauhinia* species which probably misled us when *Bauhinia Howii* was proposed and described as a new species. In Lecomte, Fl. Gén. Indo-Chine **2:** 120. 1913, under group A, stamens 2 or 3, the characters of sections one and two are exactly reversed. The first 21 species have pubescent, not glabrous ovaries while the succeeding eight have glabrous, not pubescent ones. The key, therefore, should be read just the reverse of what Gagnepain states. Again under B while the characters are correctly given in the key on page 120, they are exactly reversed in the center heads § III p. 122 which should read "ovaire glabre" and § IV p. 123 which should read "ovaire velu."

Bauhinia inflexilobata sp. nov.

Frutex scandens, cirrhosus, partibus junioribus exceptis glaber; ramis ramulisque teretibus, glabris, ramis lenticellatis, ramulis inflorescentiisque in sicco subatris; foliis ambitu ovatis, subcoriaceis, utrinque glabris, subconcoloribus, nitidis, 10–15 cm. longis, 8–12 cm. latis, basi perspicue 9-nerviis, rotundato-truncatis vel leviter late cordatis, apice perspicue bilobatis, lobis circiter 6 cm. longis, oblongo-ovatis, perspicue acuminatis, sursum angustatis, falcato-inflexis, apicibus subcontiguis; petiolo glabro, 5–8 cm. longo; paniculis terminalibus, elongatis, paucifloris, 40–50 cm. longis, ramis primariis valde distantibus, 6–10 cm. longis, glabris vel partibus junioribus parcissime consperse pubescentibus; floribus paucis, longe pedicellatis, subumbellatim dispositis, pedicellis 4–6 cm. longis, parcissime pubescentibus, bracteis lineari-lanceolatis, caducis, 2–3 mm. longis, bracteolis nullis vel minutis et deciduis; calycis tubo 7–8 mm. longo, angusto, vix 1.5 mm. diametro, deorsum quam pedicello vix crassiore, alabastro ellipsoideo, obtuso, circiter 1 cm. longo; sepalis 5, oblongis, circiter 1 cm. longis et 3 mm. latis, subobtusis, extus leviter pubescentibus, vetustioribus reflexis; petalis late ellipticis, circiter 2.5 cm. longis, 1.8–2 cm. latis, late rotundatis, extus in partibus medianis adpresse pubescentibus, intus glabris, breviter unguiculatis; staminibus fertilibus 3, filamentis glabris, antheris oblongo-ellipsoideis, 6 mm. longis, staminodiis 2, glabris, 4–5 mm. longis; ovario oblongo, stipitato, dense breviter adpresse ferrugineo-hirsuto, stylo deorsum hirsuto, sursum glabro.

INDO-CHINA: Tonkin, route from Laokoy to Chapa, *Pételot 2169,* altitude about 900 m. in shrubby savannas.

A species characterized by its deeply lobed glabrous leaves, the lobes falcate-inflexed, their acuminate apices almost meeting, its elongated inflorescences, the few, widely scattered ultimate branches bearing a few long-pedicelled flowers. By Gagnepain's arrangement of the Indo-Chinese species it falls in the first section, with three perfect stamens and pubescent (not glabrous!) ovaries in the general alliance of *B. Kerrii* Gagnep., *B. subumbellata* Pierre, and *B. pyrrhoclada* Drake, although it is not at all closely allied to these three species.

Bauhinia Petelotii sp. nov.

Frutex scandens, cirrhosus, partibus junioribus inflorescentiisque exceptis glaber vel subglaber; ramis teretibus, subatropurpureis, glabris, novellis parcissime breviter pubescentibus; foliis ambitu suborbiculari-ovatis, 8–11 cm. diametro, perspicue bilobatis, subcoriaceis, utrinque subconcoloribus, nitidis, glabris vel subtus ad nervos minutissime parceque breviter pubescentibus, basi perspicue 9-nerviis, subprofunde cordatis, lobis basalibus latissime rotundatis, lobis terminalibus ovatis, sursum angustatis, acutis vel obtusis vel obscure breviter acuminatis, circiter 4 cm. longis et (deorsum) 4–5 cm. latis; petiolo 2.5–4.5 cm. longo, glabro vel obscure pubescente; inflorescentiis terminalibus, vix pedunculatis, breviter adpresse pubescentibus, 7–8 cm. longis latisque; floribus albidis, racemosis, pedicellis 3–4 cm. longis, brevissime consperseque pubescentibus, bracteolis linearibus, circiter 2 mm. longis, deciduis; calycis tubo circiter 5 cm. longo, obscure pubescente, anguste obconico, basi quam pedicello vix crassiore; alabastro ellipsoideo, circiter 1 cm. longo, obtuso; sepalis 5, subellipticis, reflexis, 10–11 mm. longis, circiter 4 mm. latis, extus leviter pubescentibus, acutis vel obtusis, haud penicillatis; petalis obovatis, unguiculatis, extus in partibus medianis plus minusve adpresse pubescentibus, circiter 2.8 cm. longis, 2 cm. latis, apice rotundatis; staminibus fertilibus 3, filamentis crassis, deorsum dense hirsutis, sursum glabris, antheris oblongo-ellipsoideis, 3 mm. longis; staminodiis 2, robustis, deorsum incrassatis, dense hirsutis, sursum glabris; ovario dense breviter ferrugineo-hirsuto; stylo glabro.

INDO-CHINA: Tonkin, Bac Giang Province, near Pho Vu, *Pételot 4879,* May 1933, a large liana with white flowers in open forests.

A species, by Gagnepain's arrangement, falling in the same group as *Bauhinia inflexilobata* Merr., but quite unlike that species and equally unlike the three mentioned above in the discussion of the latter species. Characterized by being nearly glabrous, except for the somewhat pubes-

cent, short scarcely peduncled, simple racemes, its ample flowers, thickened staminodes or sterile filaments which are densely pubescent below, and its cordate leaves which are conspicuously 2-lobed, the ovate, obtuse, acute or slightly acuminate lobes, and the acute ample terminal sinus, the latter being somewhat less than a right angle.

Mezoneurum Desfontaines

Mezoneurum latisiliquum (Cav.) Merr. Philip. Jour. Sci. Bot. **4:** 268. 1909, **5:** 57. 1910.

Bauhinia ? latisiliqua Cav. Ic. **5:** 5. *t. 408.* 1799, *excl. descr. fol.*
Mezoneurum glabrum Desf. Mém. Mus. Hist. Nat. (Paris) **4:** 246. *t. 10.* 1818.

INDO-CHINA: Tonkin, route from Hanoi to Hoa Binh, *Pételot 2166,* May 1935, in thickets. Philippines (Luzon to Mindanao), British North Borneo, and Timor; credited by Baker also to Burma (Tenasserim). The cited collection conforms very closely with authentic Philippine material.

Millettia Wight & Arnott

Millettia Gentiliana Lév. Fl. Kouy-Tchéou 239. 1914; Rehd. Jour. Arnold Arb. **13:** 326. 1932.

INDO-CHINA: Tonkin, Sontay Province, route to the Notre Dame rocks, *Pételot 5181,* October 8, 1935, a large vine, borders of small streams. Kweichow Province, China.

The cited specimen is an excellent match for an isotype of Léveillé's species in the herbarium of the Arnold Arboretum.

MALPIGHIACEAE

Aspidopterys Jussieu

Aspidopterys glabriuscula (Wall.) Juss. Ann. Sci. Nat. II. Bot. **13:** 267. 1840, Arch. Mus. Hist. Nat. **3:** 511. 1843; Niedenzu, Pflanzenr. **91 (IV. 141):** 29. *f. 8A.* 1928, *sensu lat.*

INDO-CHINA: Tonkin, Chapa, *Pételot 2297,* August 1939, alt. 1500 m. Assam, Bhotan, Sikkim, eastern Bengal, Burma, and Yunnan.

The cited specimen agrees very closely with the specimen of *Henry 11055A* in the herbarium of the Arnold Arboretum, this being the type number of *Aspidopterys Henryi* Hutch. Kew Bull. 94. 1917 which Niedenzu reduced to *A. glabriuscula* (Wall.) Juss. var. *subrotunda* Niedenzu. However, neither our specimen of *Henry 11055A* nor *Pételot 2297* conforms with Hutchinson's original description nor with that of

Niedenzu (as a variety) as the leaves are oblong-lanceolate, not ovate or ovate-orbicular. The cited specimen, however, agrees better with Niedenzu's figure of *A. glabriuscula* Juss. A reconsideration of specific limits in this genus is badly needed.

Aspidopterys oligoneura sp. nov. § *Platypterys, Cyclopterys.*

Frutex scandens, partibus novellis infructescentiisque parcissime subdecidue ferrugineo-pubescentibus exceptis glaber, ramis teretibus, ramulis ultimis circiter 2 mm. diametro; foliis oblongo-ovatis vel ovato-ellipticis, chartaceis vel subcoriaceis, 7–13 cm. longis, 3.5–6 cm. latis, utrinque glaberrimis, supra subolivaceis, subtus paullo pallidioribus, basi rotundatis vel late acutis, haud cordatis, apice distincte acute acuminatis; nervis primariis utrinque 3, rariter 4, subadscendentibus, juxta marginem curvato-anastomosantibus; petiolo 1.5–2 cm. longo; infructescentiis axillaribus, 5–13 cm. longis, paniculatis, junioribus plus minusve ferrugineo-pubescentibus, pilis subdeciduis, vetustioribus glabris, pedicellis gracilibus, 1–1.5 cm. longis; fructibus ambitu subellipticis vel elliptico-ovatis, basi late rotundatis, apice plerumque perspicue emarginatis, 2–2.5 cm. longis, 1.5–2 cm. latis, alis submembranaceis, pallide brunneis, nitidis, crista dorsali 4–12 mm. longa, circiter 1 mm. lata, axibus persistentibus, anguste pyramidatis, 4 mm. longis; sepalis persistentibus oblongis, obtusis, 1.5 mm. longis; filamentis persistentibus 2 mm., antheris 1 mm. longis; petalis ignotis.

INDO-CHINA: Tonkin, Hoa Binh Province, Muong Thon, route from Hanoi to Hoa Binh, *Pételot 2100* (TYPE), *6392*, May 1938 and May 1939.

A species essentially characterized by its few lateral nerves and within the section by its fruits, including the wings, being relatively narrow, as well as by the narrow but distinct dorsal crests on the samaras. By Niedenzu's arrangement it apparently belongs in the group with *Aspidopterys albomarginata* Hance, the dorsal crests of which are about 5 mm. wide, the leaves with 5 or 6 pairs of lateral nerves. When the samaras fall the axis to which they were attached, interpreted by Dr. Dop as the columella, and by Niedenzu as the torus, persists, being narrowly conical and about 4 mm. long, its base being surrounded by three, triangular, acute, brown lobes about 1 mm. long. Dop in 1911 described the dorsal crests of Hance's species as 5 to 7 mm. wide; Niedenzu in 1928 placed it as a species of doubtful status, thinking that it might be near *A. concava* (Wall.) Juss. Niedenzu's disposition of other Indo-Chinese species recognized by Dop, is as follows: *A. macrocarpa* Dop = *A. elliptica* (Blume) Juss., *A. Thorelii* Dop = *A. hirsuta*

(Wall.) Juss. var. *Thorelii* (Dop) Niedenzu, and *A. costulata* Pierre = *A. tomentosa* (Blume) Juss. I suspect that the species described by Dop as *Aspidopterys nutans* Hook. f. (non Juss.) is *A. lanuginosa* (Wall.) Juss. as interpreted by Niedenzu.

Aquifoliaceae

Ilex Linnaeus

Ilex megistocarpa sp. nov.

Arbor glabra, ramis pallide brunneis, lenticellatis, ultimis circiter 3 mm. diametro, sulcatis; foliis firmiter chartaceis vel subcoriaceis, oblongis vel oblongo-ellipticis, pallide olivaceis, opacis vel supra plus minusve nitidis, utrinque subconcoloribus, integerrimis, margine anguste cartilagineis, 12–15 cm. longis, 4–5 cm. latis, basi late acutis vel subrotundatis, apice obscure acuminatis, nervis primariis utrinque circiter 10, supra subobscuris, subtus perspicuis, elevatis, distincte arcuato-anastomosantibus, secundariis reticulisque primariis laxis, subelevatis, distinctis; petiolo 1–1.5 cm. longo; fructibus axillaribus, ut videtur solitariis, magnis, globosis, circiter 1.5 cm. diametro, in sicco extus longitudinaliter striatis vel subsulcatis; pedicellis 8–10 mm. longis, glabris vel obscurissime puberulis, plus minusve 4-angulatis, rugulosis; calycibus sub fructu disciformibus, 6–7 mm. diametro, obscure late 8-crenatis; pyrenis 8, extus profunde 2-sulcatis, 3-carinatis, faciebus lateralibus profunde exsculptis, plerumque 2-carinatis; stigmatibus sessilibus, subglobosis.

Indo-China: Tonkin, Chapa, *Pételot 2303,* August 1939, altitude about 1500 m.

A species characterized especially by its unusually large fruits which are normally composed of eight deeply sculptured pyrenes, their lateral faces normally 2-carinate, deeply sulcate, the external face normally deeply 2-sulcate and 3-carinate. I have been unable to refer this to any of the described species from Indo-China, Burma, China, and other contiguous regions.

Ilex chapaensis sp. nov.

Species *Ilici Henryi* Loes. valde affinis, differt inflorescentiis ♂ minute puberulis, floribus multo majoribus, 12–14 mm. diametro. Frutex 4–6 m. altus, ramis teretibus, leviter lenticellatis, ramulis ultimis circiter 1 mm. diametro; foliis submembranaceis, oblongo-ellipticis, distincte acuminatis, basi acutis vel late acutis, 6–7 cm. longis, 2–3.5 cm. latis, supra subolivaceis, subtus paullo pallidioribus et pallide brunneis, mar-

gine apiculato-serrulatis, vel crenulato-serrulatis, apiculis adpressis; nervis primariis utrinque circiter 9, gracilibus, obscure arcuato-anastomosantibus, reticulis laxis, subobsoletis; petiolo circiter 1 cm. longo; inflorescentiis axillaribus et in axillis defoliatis, solitariis vel subfasciculatis, puberulis, breviter (1–2 mm.) pedunculatis, plerumque umbellatim 3-floris, pedicellis puberulis, sursum leviter incrassatis, 3–4 mm. longis; floribus ♂ 8-meris, 12–14 mm. diametro; sepalis ovatis vel late ovatis, obtusis vel rotundatis, margine obscure brevissime ciliatis; petalis late oblongis, rotundatis, circiter 6 mm. longis et 3 mm. latis, margine sursum obscure brevissime ciliatis; floribus ♀ fructibusque ignotis.

INDO-CHINA: Tonkin, Chapa, *Pételot 5945,* April 1936, in open forests, alt. 1500–1600 m., flowers greenish.

This species very closely approximates and strongly resembles *Ilex Henryi* Loesen. of Szechuan, which was based on a fruiting specimen. In vegetative and inflorescence characters the two are exceedingly similar, but the Chapa specimens differ from several recent Szechuan collections that manifestly represent Loesener's species in the staminate flowers being about twice as large as in *Ilex Henryi* Loesen., and in its puberulent inflorescences.

CELASTRACEAE

Microtropis Wallich

Microtropis Petelotii Merr. & Freem. Proc. Am. Acad. Arts Sci. **73:** 291. 1940.

INDO-CHINA: Tonkin, Fan Tsi Pan, route to Lo Qui Ho, near Chapa, *Pételot 4428,* alt. 1900 m. Yunnan, Kwangsi.

HIPPOCRATEACEAE

Hippocratea Linnaeus

Hippocratea obtusifolia Roxb. Fl. Ind. **1:** 170. 1820; Wight, Ic. **3**(3): 5. *t. 963.* 1845; Laws. in Hook. f. Fl. Brit. Ind. **1:** 623. 1875.

INDO-CHINA: Tonkin, Langson Province, between Dong Mo and Van Linh, *Pételot 2119,* Feb. 1938, on calcareous rocks. Tropical Africa, India, southern China and Hainan, Malaysia and tropical Australia.

This species was originally described from British India and in modern times has been interpreted more or less as a collective entity. The Indo-Chinese specimen seems certainly to represent the same form as the

Chinese one currently referred to Roxburgh's species, and conforms reasonably well to the characters as given by Roxburgh, as well as with Wight's illustration. Lawson certainly erred when he stated that the petals of Roxburgh's species were subulate; they are oblong-ovate or ovate-lanceolate. He may, however, have included much more than a single species in his interpretation of the species.

SABIACEAE

Meliosma Blume

Meliosma affinis sp. nov. § *Simplices.*

Arbor 7–8 m. alta, ramulis inflorescentiisque exceptis glabra, ramis teretibus, subcinereis, lenticellatis, circiter 3 mm. diametro, ramulis consperse subadpresse hirsutis; foliis simplicibus, firmiter chartaceis, oblongo-oblanceolatis, breviter acuminatis, basi cuneatis, integris vel sursum distanter irregulariterque paucidentatis, dentibus parvis, supra sicco brunneo-olivaceis, nitidis, subtus paullo pallidioribus, utrinque glabris; nervis primariis utrinque 15–20, subtus perspicuis, elevatis, circiter ad marginem arcuato-anastomosantibus, reticulis primariis laxis, ultimis confertis, haud foveolatis; petiolo 1.5–2 cm. longo, glabro vel junioribus consperse subadpresse hirsuto; inflorescentiis terminalibus, erectis, breviter adpresse hirsutis, 3–4-pinnatim paniculatis, multifloris, circiter 20 cm. longis, ramis primariis patulis, inferioribus 10 cm. longis; floribus in ramulis ultimis racemose dispositis, breviter sed distincte pedicellatis, haud sessilibus et glomeratis, circiter 4 mm. diametro; pedicellis breviter hirsutis, plerumque circiter 1 mm. longis, bracteolis parvis, breviter hirsutis, acuminatis, circiter 0.6 mm. longis; sepalis glabris vel margine obscure ciliatis, orbiculari-ovatis, 0.5 mm. longis; petalis glabris, 3 majoribus orbiculari-ovatis, rotundatis, 2.2 mm. diametro, 2 minoribus tenuioribus, membranaceis, oblongo-lanceolatis, obtusis, 2.5 mm. longis, 0.6 mm. latis; filamentis fertilibus 1 mm. longis, antheris 1–1.2 mm. latis, antheris sterilibus paullo minoribus; ovario ovoideo, breviter obscure pubescente; stylo simplice, glabro, circiter 1 mm. longo.

INDO-CHINA: Tonkin, Hoa Binh Province, between Hoa Binh and Vu Ban, *Pételot 2125,* May 22, 1938.

A species closely resembling in general features the rather widely distributed Asiatic *Meliosma simplicifolia* (Roxb.) Walp., differing however by its constantly pedicelled, racemosely arranged flowers, those in the latter species being sessile, as is also true of those of *Meliosma dolichobotrys* Merr. and *M. Petelotii* Merr.

RHAMNACEAE

Sageretia Brongniart

Sageretia hamosa (Wall.) Brongn. Ann. Sci. Nat. **10:** 360. 1827; Laws. in Hook. f. Fl. Brit. Ind. **1:** 641. 1875.

Zizyphus hamosa Wall. in Roxb. Fl. Ind. **2:** 369. 1824.

INDO-CHINA: Tonkin, Chapa, *Pételot 2294,* August 1939, alt. about 1500 m. India and Ceylon to Java, and western and southern China.

The second species of the genus to be reported from Indo-China, the specimen, which is in flower, apparently conforming reasonably well with Brongniart's species as it is currently interpreted.

THEACEAE

Adinandra Jack

Adinandra glischroloma Hand.-Maz. Anz. Akad. Wiss. Wien Math.-Nat. Kl. **60:** 96. (Pl. Nov. Sin. Forts. **19:** 2) 1923.

INDO-CHINA: Tonkin, Chapa, *Pételot 3818,* August 1930, altitude about 1500 m. Kwangtung, Szechuan.

This is the third species of the genus to be recorded from Indo-China. The specimen cited is somewhat intermediate between Handel-Mazzetti's species and the closely allied *Adinandra macrosepala* Metc. of Chekiang, Fukien, and Kwangtung, but seems to be safely referable to *A. glischroloma* Hand.-Maz.

Pyrenaria Blume

Pyrenaria cheliensis Hu, Bull. Fan. Mem. Inst. Biol. **8:** 140. 1938.

INDO-CHINA: Tonkin, Chapa, *Pételot 4590, 5435, 6435, s.n.,* July, April, and August, 1930, 1935, altitude about 1500 m.

This third species of the genus for Indo-China was tentatively indicated by me as undescribed several years ago. I am now of the opinion that it cannot be distinguished from Hu's species of southwestern Yunnan, of which, however, I have seen but a single leaf and a portion of a fruit. The material agrees very well with this fragmentary material and with Hu's detailed description.

FLACOURTIACEAE

Itoa Hemsley

Itoa orientalis Hemsl. in Hook. Ic. **27:** *t. 2688.* 1901; Sleumer, Notizbl. Bot. Gart. Berlin **11:** 1026. 1934.

Carrierea Vieillardii Gagnep. Not. Syst. **3**: 368. *1. f.* 1918.
Mesaulosperma Vieillardii Van Slooten, Bull. Jard. Bot. Buitenz. III. **7**: 386. 1925.

Dr. Sleumer has reduced *Carrierea Vieillardii* Gagnep. to *Itoa orientalis* Hemsl., which we judge to be the correct disposition of it, at the same time reducing the genus *Mesaulosperma* Van Slooten to *Itoa* Hemsley. The present species occurs in Yunnan, Szechuan and Kweichow (*Tsiang 6604*) in China, and at Chapa in northern Tonkin, Indo-China. The results of Dr. Sleumer's studies in this case, involves the removal of the genus *Carrierea* from the Indo-Chinese list and the substitution of the genus *Itoa* Hemsley.

Homalium Jacquin

Homalium Petelotii sp. nov. § *Blackwellia*.

Arbor parva vel frutex, inflorescentiis plus minusve subcinereo-puberulis exceptis glabra, ramis teretibus, perspicue lenticellatis, gracilibus; foliis oblongis vel oblongo-ellipticis, firmiter chartaceis, 5–9 cm. longis, 2–3 cm. latis, breviter acuminatis, basi acutis, subolivaceis, glaberrimis, margine crenato-serratis vel crenato-dentatis, nervis primariis utrinque 7–8, curvato-adscendentibus, arcuato-anastomosantibus, subtus elevatis, distinctis; petiolo 2–4 mm. longo, glabro vel obscure puberulo; racemis axillaribus, solitariis, simplicibus, 9–13 cm. longis, obscure subcinereo-puberulis, floribus plerumque binis vel solitariis, haud confertis, internodiis 2–10 mm. longis; floribus 6-meris, circiter 8 mm. longis, pedicellis cinereo-puberulis, 2.5–3 mm. longis, infra calycem articulatis; calycis tubo anguste obconico, 3 mm. longo, leviter puberulo, obscure sulcato; sepalis 6, anguste oblongis, 3 mm. longis, 0.5 mm. latis, obtusis, extus obscure puberulis; petalis 6, spathulatis vel anguste oblongo-obovatis, circiter 4 mm. longis, 1.5 mm. latis, obtusis, basi cuneatis, margine ciliatis; staminibus 6, filamentis glabris, 4 mm. longis; ovario consperse subhirsuto, stylis 3, liberis, gracilibus, circiter 3 mm. longis, subglabris vel deorsum leviter subhirsutis.

Indo-China: Tonkin, Vinh Yen Province, massif de Tam Dao, *Pételot 5983,* October 10, 1936, in shrubby savannas, altitude about 900 m.

A species of the section *Blackwellia* characterized by its slender conspicuously lenticellate branches, all parts except the inflorescences being glabrous. It belongs in the general alliance with *Homalium hainanense* Gagnep., differing among other characters in its distinctly scattered, larger flowers, these not being crowded as in Gagnepain's species.

LYTHRACEAE

Lagerstroemia Linnaeus

Lagerstroemia micrantha sp. nov.

Arbor, ut videtur parva, inflorescentiis dense griseo-puberulis exceptis glabra, ramis glabris, teretibus, ramulis 1–1.2 mm. diametro; foliis firmiter chartaceis, oblongo-ovatis, olivaceis, subtus pallidioribus, utrinque glabris, 4–8 cm. longis, 2–3.5 cm. latis, acuminatis, basi latissime acutis vel subrotundatis, nervis primariis utrinque circiter 6, subtus distinctis, elevatis; petiolo 2–3 mm. longo; paniculis terminalibus, multifloris, 7–10 cm. longis, subpyramidatis, dense cinereo-puberulis, multifloris; floribus minutis, pedicellatis, pedicellis 1–2 mm. longis; calycibus utrinque glaberrimis, circiter 2.5 mm. longis, tubo cupulato, haud corniculato, obscure 12-costato, costis vix elevatis, lobis 6, anguste triangulari-ovatis vel triangulari-oblongis, plus minusve acuminatis, 1.2 mm. longis; petalis crispule undulatis, limbo subelliptico, 3 mm. longo, 2 mm. lato, unguibus gracilibus, 1.2 mm. longis; staminibus numerosis, filamentis circiter 5 mm. longis; ovario subgloboso, glabro, stylo 5 mm. longo.

INDO-CHINA: Annam, Quang Binh Province, Kim Bang village, *Pételot 3743*, June 1930.

A species strongly characterized by its unusually small flowers, the calyces of which are entirely glabrous within and without, and rather obscurely 12-costate, the costae scarcely elevated, not at all winged, the tube not appendaged. In accordance with Gagnepain's arrangement of the Indo-Chinese species it falls in the group with *Lagerstroemia indica* Linn. but is totally unrelated to that species. The flowers are exceedingly small for the genus.

MYRTACEAE

In connection with the studies of Dr. L. M. Perry and myself* on certain Old World species of *Eugenia*, we have segregated from *Eugenia* Linnaeus *sensu latiore* the genera *Cleistocalyx* Blume, *Acmena* DC., and *Syzygium* Gaertn. concluding that most of the fifty-five species that Gagnepain placed in *Eugenia* in his treatment of the Myrtaceae in

*Merrill, E. D. & Perry, L. M. A synopsis of Acmena DC., a valid genus of the Myrtaceae. Jour. Arnold Arb. **19**: 1–20. 1938.

——— The Myrtaceae of China. op. cit. **19**: 191–247. 1938.

——— Reinstatement and revision of Cleistocalyx Blume (including Acicalyptus A. Gray) a valid genus of the Myrtaceae. Jour. Arnold Arb. **18**: 322–343. *t. 215.* 1937.

——— The myrtaceous genus Syzygium Gaertner in Borneo. Mem. Am. Acad. Arts Sci. **18**: 135–202. Repr. Mem. Gray Herb. **4**: 135–202. 1939.

Lecomte's Flore Générale de l'Indo-Chine **2:** 788–864. 1920–21, properly belong in *Syzygium*. In our paper on the Indo-Chinese species of *Syzygium** we transferred most of these from *Eugenia* to *Syzygium*, adding eight new species, *S. Petelotii* Merr. & Perr., *S. sterrophyllum* Merr. & Perr. (*Eugenia fluviatilis* sensu Gagnep., non Hemsl.), *S. szemaoense* Merr. & Perr., *S. vestitum* Merr. & Perr., *S. touranense* Merr. & Perr., *S. imitans* Merr. & Perr., *S. crassifolium* Merr. & Perr., and *S. stictanthum* Merr. & Perr.

In accepting the generic name *Syzygium* Gaertn. for most of the Old World species hitherto placed in *Eugenia*, various specific names of Indo-Chinese species had to be changed, while at the same time a few reductions were made. These changes are summarized as follows: *Eugenia Millettiana* sensu Gagnep., non Hemsl. = *Syzygium Levinei* (Merr.) Merr. & Perr., *Eugenia javanica* Lam. = *Syzygium samarangense* (Blume) Merr. & Perr., *Eugenia Jambolana* Lam. = *Syzygium Cumini* (Linn.) Skeels, *Eugenia resinosa* Gagnep. = *Syzygium polyanthum* (Wight) Walp., *Eugenia longiflora* F.-Vill. = *Syzygium lineatum* (DC.) Merr. & Perr., *Eugenia cymosa* sensu Gagnep., non Lam. = *Syzygium syzygioides* (Miq.) Merr. & Perr., *Eugenia brachyata* sensu Gagnep. non Roxb. = *Syzygium cinereum* Wall., and *Eugenia Deckeri* Gagnep. = *Syzygium odoratum* (Lour.) Merr. & Perr.

To the list of Indo-Chinese species the following previously described species were added: *Syzygium buxifolium* Hook. & Arn., *S. irregulare* (Craib) Merr. & Perr., and *S. corticosum* (Lour.) Merr. & Perr. *Eugenia circumscissa* Gagnep. we believe to represent an undescribed generic type, but more ample collections are needed.

No representative of *Acmena* is as yet reported from Indo-China, although *Acmena acuminatissima* (Blume) Merr. & Perr. probably occurs there. *Cleistocalyx* is represented by three species, *C. retinervius* Merr. & Perr. Jour. Arnold Arb. **18:** 334. *t. 215, f. 12–15.* 1937, *C. nigrans* (Gagnep.) Merr. & Perr. (*Eugenia nigrans* Gagnep.), and *C. operculatus* (Roxb.) Merr. & Perr. (*Eugenia operculata* Roxb.).

Ericaceae

Vaccinium Linnaeus

Vaccinium Dopii H. Copel. Philip. Jour. Sci. **47:** 103. 1932.

Vaccinium Petelotii Dop in Lecomte, Fl. Gén. Indo-Chine 3: 707. 1930, non Merrill, 1926.

This record is made merely to record Dr. H. Copeland's new name for

*Merrill, E. D. & Perry, L. M. On the Indo-Chinese species of Syzygium Gaertner. Jour. Arnold Arb. **19:** 99–116. 1938.

Dr. Dop's species, the latter's specific name being invalidated by the earlier *Vaccinium Petelotii* Merr. The types of both species were from Chapa, Tonkin, but the two are not closely allied.

Vaccinium Greenwayae sp. nov.

Frutex glaber, circiter 1 m. altus, *V. bracteato* Thunb. affinis, differt omnibus partibus (filamentis exceptis) glaberrimis, bracteis nullis (vel caducis), corolla cylindraceo-urceolata, sursum leviter angustata, sepalis latioribus, plerumque sursum ad marginem perpauce breviter papillosis vel dentatis. Ramis ramulisque gracilibus, ultimis vix 1 mm. diametro; foliis subcoriaceis, in sicco pallidis, oblongo-ellipticis, breviter acute acuminatis, basi acutis, 3–5 cm. longis, 1–2 cm. latis, margine obscure distanter minute crenulato-serratis, dentibus minute apiculatis, nervis primariis utrinque circiter 5, supra obscuris, subtus haud distinctis, subadscendentibus, arcuato-anastomosantibus, reticulis laxis; petiolo crasso, circiter 1 mm. longo; racemis simplicibus, ad 6 cm. longis, in axillis superioribus, vel inflorescentiis depauperato-paniculatis; floribus circiter 7 mm. longis, roseis, cylindraceo-urceolatis, corolla sursum leviter angustata; pedicellis 0.5–1 mm. longis, sub calyce articulatis; bracteolis lanceolatis, acuminatis, circiter 1 mm. longis, bracteis nullis vel caducis; calycibus in sicco plus minusve rugosis, in sicco subatris, tubo lato, brevi, subpatelliformi, lobis latissime triangularibus, vix 1 mm. longis, acutis, margine sursum plerumque perpaucis breviter papillosis; corolla glabra, circiter 7 mm. longa, 4 mm. diametro, cylindraceo-urceolata, sursum leviter angustata, lobis oblongo-ovatis, patule recurvatis, obtusis, 1.2 mm. longis; staminibus 10, inclusis, filamentis 3–3.5 mm. longis, pubescentibus, deorsum leviter incrassatis; antheris flavidis, circiter 4 mm. longis, dorso haud cornuto, tubis terminalibus gracilibus, liberis, 2.5–3 mm. longis; stylis glabris, 6 mm. longis; fructibus (valde immaturis) glaberrimis.

INDO-CHINA: Annam, Dalat, Langbian Peak, *Mrs. H. Greenway 19,* March 12, 1939, in open forests at 2000 m. altitude.

A species with much the general appearance of *Vaccinium bracteatum* Thunb., which is widely distributed in eastern Asia, differing, however, in so many characters that I feel constrained to characterize it as a distinct species. Dr. Dop's interpretation of *Vaccinium bracteatum* Thunb. (Lecomte, Fl. Gén. Indo-Chine **3:** 710. 1930) is manifestly *sensu latissimo,* and doubtless he would have included this form in his concept of the species. I cannot agree to his inclusion of *Vaccinium malaccense* Wight and *V. Griffithianum* Wight in the synonymy of Thunberg's species. Incidentally, he characterized the var. *glabratum* Dop as having the

inflorescences and calyces almost glabrous, this based on a specimen collected by Pierre in Cambodia. I suspect that what led him to do this was Hooker f. and Thomson's recognition of *Vaccinium Griffithianum* Wight var. *glabratum* Hook. f. & Th. in Hook. f. Fl. Brit. Ind. **3:** 454. 1882, but Dop's variety was not based on that of Hooker f. & Thomson. Pierre's specimen, of which a duplicate named by Dr. Dop is in the Arnold Arboretum herbarium, is manifestly not the same as Mrs. Greenway's material.

Agapetes Don

Agapetes subcaudata sp. nov. § *Longifiles.*

Frutex ut videtur epiphyticus, ramosus, ramis teretibus, glabris, ramulis gracilibus, partibus vetustioribus glabris, ramulis novellis circiter 1 mm. diametro, glabris vel leviter pubescentibus vel consperse capitato-pilosis, pilis debilibus, elongatis; foliis oblongo-lanceolatis, coriaceis vel subcoriaceis, subnitidis, glabris, supra pallide olivaceis, subtus pallidioribus, 3–5 cm. longis, 1.3–1.8 cm. latis, subgraciliter acute subcaudato-acuminatis, basi acutis, nervis primariis utrinque 4 vel 5, obscuris; petiolo glabro, 1–1.5 mm. longo; inflorescentiis terminalibus, stricte racemosis, 6–8 cm. longis basi subinvolucrato-bracteatis, pedicellis bracteolis perspicuis persistentibus subtentis, rhachibus et pedicellis et calycis consperse debiliter capitato-pilosis, pilis pallidis, plerumque patulis, 0.5–1.5 mm. longis; bracteis bracteolisque submembranaceis, persistentibus, sessilibus, bracteolis reticulato-nervosis, graciliter acuminatis, oblongo-ovatis vel oblongo-lanceolatis, inferioribus circiter 1 cm. longis et 5 mm. latis, superioribus gradatim minoribus, ultimis vix 5 mm. longis, junioribus saltem ad marginem consperse capitato-pilosis, vetustioribus glabris; floribus roseo-albidis, paucis (6–10), circiter 1.5 cm. longis, alabastris lanceolatis, sursum gradatim angustatis, apice obtusis vel subobtusis, pedicellis 5–10 mm. longis; calycis tubo subcupulato, circiter 2.5 mm. diametro, lobis triangulari-ovatis, acutis, circiter 1.5 mm. longis; corollae tubo cylindrico, extus glabro, intus plus minusve piloso, 4–5 mm. longo, et 3 mm. diametro, lobis anguste lanceolatis, valde elongatis, sursum gradatim angustatis, glabris, obtusis, circiter 8 mm. longis, post anthesin arcte circinatim recurvatis; staminibus 10, filamentis circiter 3.5 mm. longis, perspicue subalbido-pilosis, deorsum incrassatis; antheris elongatis, gracilibus, circiter 11 mm. longis, leviter cohaerentibus, glabris, dorso circiter medium calcaribus gracilibus sursum curvatis 1 mm. longis instructis, rostris gracilibus, liberis circiter 7 mm. longis; stylis glabris, 1.4 cm. longis.

INDO-CHINA: Annam, Dalat, Langbian Peak, *Mrs. H. Greenway 24,* March 12, 1939, in the rain forest at 2000 m. alt.

A species, by Airy-Shaw's arrangement, Kew Bull. 24–53. 1935, falling in the series *Longifiles* and apparently most closely allied to *Agapetes bracteata* Hook. f. of Burma, differing in numerous characters, particularly in its longer strictly racemose inflorescences. It is not closely allied to any hitherto described species of Indo-China. At full anthesis the corolla lobes become rather tightly coiled leaving the very narrow anther cone exserted above the cylindric corolla tube. Attention is called to the fact that *Agapetes Acosta* Dunal, admitted by Dop in Lecomte, Fl. Gén. Indo-Chine **3:** 703. 1930 and indicated in his key as a species of doubtful status, is a synonym of *Vaccinium bracteatum* Thunb. See Merrill, Trans. Am. Philos. Soc. II. **24**(2)**:** 297. 1935 for a critical discussion of *Acosta spicata* Lour., the basis of *Agapetes Acosta* Dunal, based on an actual examination of Loureiro's type specimen.

OLEACEAE

Osmanthus Loureiro

Osmanthus Matsumuranus Hayata, Jour. Coll. Sci. Univ. Tokyo **30**(1)**:** 192. 1911; Merr. Jour. Arnold Arb. **19:** 63. 1938.

I have previously recorded Hayata's species from Tonkin on the basis of *Pételot 5954* (Jour. Arnold Arb. **19:** 63. 1938). The same species is represented by *Poilane 1719* from Annam, determined by Gagnepain as representing *Linociera Thorelii* Gagnep. I have three Pierre sheets representing the latter which is clearly a *Linociera. Wang 75681,* from Yunnan, recorded by Dr. Hu, Bull. Fan. Mem. Inst. Biol. **8:** 353. 1938, as representing *Sarcosperma laurinum* Hook. f. of the Sarcospermataceae is *Osmanthus Matsumuranus* Hayata. Formosa, Hainan, Kwangtung, Kwangsi, Yunnan, and Indo-China.

GENTIANACEAE

Gentiana Linnaeus

Gentiana Greenwayae sp. nov. § *Chondrophylla, Humiles.*

Gentiana quadrifaria sensu Wernham, Jour. Nat. Hist. Soc. Siam **4:** 140. 1921, non Blume.

Planta annua, 2.5–6 cm. alta, simplex et 1-flora vel pauciramosa et subconfertim 2–6-flora, caulibus gracilibus, minute puberulo-scaberulis, floribus sessilibus, pallide coeruleis, circiter 1.3 cm. longis; foliis numero-

sis, subconfertis (internodiis 1–5 mm. longis) oblongis vel oblongo-ellipticis, sessilibus vel caulinis breviter petiolatis, 1–2.5 cm. longis, 3–6 mm. latis, haud nervosis, costa supra obsoleta, subtus subdistincta, sicco viridibus, subtus pallidioribus, subcoriaceis, utrinque subaequaliter angustatis, basi acutis, apice acutis vel brevissime acute acuminatis, margine anguste hyalino-cartilagineis, obscure brevissime ciliatis; floribus erectis, sessilibus, circiter 1.3 cm. longis; calycis tubo membranaceo, 5 mm. longo, lobis anguste lanceolatis, acute acuminatis, suberectis, 3 mm. longis, obscure carinatis, 3-nerviis, margine carinaque obscure breviter pubescentibus; corollae tubo circiter 10 mm. longo, lobis ovatis, acutis, 2.5–3 mm. longis, plicis membranaceis, subalbidis, late ovatis, integris vel obscure paucidentatis (haud fimbriatis), leviter inaequilateralibus, acutis vel obtusis, circiter 2 mm. latis et 1.5 mm. longis; ovario stipitato, lanceolato, glabro, leviter compresso, 3.5–4 mm. longo, stipite 1.5 mm. longo; stylo 1.5–2 mm. longo, cylindrico, obtuso; staminibus aequilongis, filamentis 3 mm. longis, antheris oblongis, 1.6 mm. longis.

INDO-CHINA: Annam, Langbian Peak, Dalat, *Mrs. H. Greenway 18,* March 12, 1939, in open forests at 2000 m., flowers very pale blue. Type deposited in the Gray Herbarium.

In 1914, Gagnepain and Dop credited only two species of this genus to Indo-China, *Gentiana Loureirii* Griseb. and *G. Hesseliana* Hosseus, to neither of which the present one is closely allied. Seven years later Wernham, Jour. Nat. Hist. Soc. Siam **4:** 140, listed *Gentiana quadrifaria* Blume from Langbian Peak and Dalat, and I am convinced that this record actually represents the species here proposed as new. In any case the very broad interpretation of Blume's species in Hooker's Flora of British India, on which probably Wernham's identification was in part based, covers several distinct and not too closely allied species, and there is no good evidence that Blume's species actually occurs in continental Asia. Fyson's rather crude sketch of *"Gentiana quadrifaria"* Blume (Fl. Nilgiri & Pulney Hill-tops **2:** 193. 1915) represents a species in habit very similar to the Indo-Chinese one here considered, but it certainly represents a species not the same as Blume's Javan type. Following Marquand's arrangement of the 184 known Chinese species of *Gentiana* (Kew Bull. 134–180. 1937), the present one clearly falls in the section and series indicated and I judge in the general alliance of *Gentiana praticola* Franch. of Yunnan, differing notably in its larger leaves, its acuminate (not obtuse) calyx lobes, and its broadly ovate (not lanceolate) plicae.

VERBENACEAE

Premna Linnaeus

Premna stenobotrys sp. nov.

Ut videtur arbor parva, inflorescentiis exceptis glabra, ramis ramulisque teretibus; foliis oblongis vel oblongo-ovatis vel oblongo-ellipticis, glaberrimis, haud glandulosis, integerrimis, subchartaceis, acutis vel acuminatis, basi rotundatis et plerumque leviter cordatis, nitidis, in sicco pallide olivaceis vel brunneis, 6–11 cm. longis, 2.5–5 cm. latis, nervis primariis utrinque 6–7, gracilibus, obscure arcuato-anastomosantibus, reticulis laxis; petiolo 1.5–4 cm. longo; inflorescentiis terminalibus, puberulis, 2–5 cm. longis, plerumque 1.5 cm. latis, breviter pedunculatis, racemoso-paniculatis vel subcorymboso-paniculatis, ramis primariis subnumerosis, vix 1 cm. longis, racemose dispositis, plerumque subconfertis, bracteis bracteolisque oblongo-ovatis vel anguste oblongis, acutis vel obtusis, 1.5–2 mm. longis, puberulis; pedicellis brevibus, puberulis; floribus 5–5.5 mm. longis, calycibus 3–3.5 mm. longis, extus obscurissime puberulis, bilabiatis, plerumque 5-dentatis, labio inferiore 2-dentato, superiore paullo majore, irregulariter 3-dentato vel subintegro, dentibus parvis, latis, brevibus; corolla 5–5.5 mm. longa, extus glabra, tubo circiter 3 mm. longo, sursum leviter ampliato, intus ad orem villoso, haud glanduloso; labio inferiore subaequaliter 3-lobato, circiter 3 mm. lato et 1.5–2 mm. longo, lobis rotundatis, suborbicularibus 1.2–1.5 mm. diametro, labio superiore circiter 2.5 mm. longo et 2 mm. lato, rotundato, perspicue cucullato, marginibus sursum inflexo; filamentis gracilibus, glabris; ovario globoso, glabro, stylo glabro 4 mm. longo; fructibus obovoideo-ellipsoideis, rotundatis, laevibus, glabris, circiter 6 mm. longis et 3.5 mm. diametro.

INDO-CHINA: Tonkin, Cho Ganh Province, *Pételot 1179,* October 1923, on calcareous hills.

This species could, with almost equal proprietry, be placed among the simple leaved species of *Vitex*. After a critical study of the rather few flowers available, I have placed it in *Premna* for several reasons; its simple leaves, these, even when dry, with the rather disagreeable odor characteristic of some other species of *Premna;* the absence of glands; the short flowers with distinctly 2-labiate and normally 5-toothed calyces, the lower lip 2-toothed, the upper lobe irregularly and often obscurely 3-toothed (sometimes entire or subentire); the short corollas, these 4-lobed, the lower lip subequally 3-lobed but the upper one entire and distinctly cucullate. While most of the few inflorescences are distinctly racemose-paniculate and narrow, one approaches the corymbose type.

Premna stenobotrys does not appear to be closely allied to any of the other described Chinese and Indo-Chinese species of the genus.

Glossocarya Wallich

Glossocarya siamensis Craib, Kew Bull. 240. 1922; Dop in Lecomte, Fl. Gén. Indo-Chine **4:** 888. *f. 90, 9; 91, 1–3.* 1935.

Clerodendron Squiresii Merr. Jour. Arnold Arb. **19:** 64. 1938.

Although I have seen no fruiting material representing the species I described as *Clerodendron Squiresii* Merr. in 1938, I am now convinced that the type of the latter species represents the allied genus *Glossocarya,* and the species described in 1922 as *G. siamensis* Craib. Indo-China and Siam.

Scrophulariaceae

Lindernia Allioni

Lindernia numularifolia (G. Don) Wettst. in Engl. & Prantl, Nat. Pflanzenfam. **4**(3B): 79. 1891.

Vandellia numularifolia G. Don, Prodr. Fl. Nepal. 86. 1825; Benth. in DC. Prodr. **10:** 416. 1846; Hook. f. Fl. Brit. Ind. **4:** 282. 1884.

Indo-China: Tonkin, Chapa, *Pételot 2307,* August 1939, alt. about 1500 m. Northern India to Szechuan.

Not hitherto recorded from Indo-China, the cited specimen agreeing closely with Szechuan material referred by Hemsley to this species.

Rubiaceae

Adina Salisbury

Adina pubicostata sp. nov.

Arbor parva, ramulis et foliis subtus ad costam et pedunculos perspicue breviter pubescentibus, ramis teretibus, glabris, ramulis ultimis 1–1.5 mm. diametro; foliis subchartaceis, lanceolatis vel oblongo-lanceolatis, 8–17 cm. longis, 1.5–3.5 cm. latis, longe caudato-acuminatis, acuminibus angustis, rectis vel falcatis, ad 2 cm. longis, obtusis, basi cuneatis, supra olivaceo-viridibus, glabris, subtus paullo pallidioribus, costa excepta glabris, nervis primariis utrinque circiter 12, subtus elevatis, plus minusve curvatis, arcuato-anastomosantibus, perspicuis, reticulis laxis; petiolo breviter pubescente, 4–9 mm. longo; capitulis sub fructu globosis 8–9 mm. diametro, terminalibus et in axillis superioribus, solitariis vel terminalibus binis vel trinis, haud paniculatis, pedunculo breviter dense pubescente, 2–4 cm. longo; capsulis numerosis, glabris, sessilibus oblongo-ovatis, basi cuneatis, 3–3.5 mm. longis, sursum circiter 1.5

mm. diametro; calycis lobis persistentibus, stellatim patulis, anguste oblongis, obtusis, circiter 1 mm. longis et 0.2 mm. latis.

INDO-CHINA: Tonkin, Chapa, *Pételot 3571,* August 1929, in forests, altitude about 1500 m.

A species clearly allied to *Adina pilulifera* (Lam.) Franch. (*A. globiflora* Salisb.) which is common and widely distributed in China, and which is represented in Tonkin and Annam by the variety *tonkinensis* Pitard in Lecomte, Fl. Gén. Indo-Chine **3:** 39. 1922. It is distinguished by its vegetative characters and especially by the midrib on the lower surfaces of the leaves being shortly and densely pubescent. Pitard's variety is apparently represented by *Pételot 4865* from Chapa.

Lasianthus Jack

Lasianthus Chevalieri Dop in Lecomte, Fl. Gén. Indo-Chine **3:** 384. *f. 30, 6.* 1924.

The type of this species was from Langbian Peak, Annam, altitude 1500 to 2000 m. The species, which seems manifestly to be closely allied to *Lasianthus longisepalus* Geddes, Kew Bull. 245. 1928, type from Chantabun, Kao Soi Dao, Siam, is well represented by *Mrs. H. Greenway 22,* from the type locality at 2000 m. alt.

Psychotria Linnaeus

Psychotria langbianensis Wernh. Jour. Nat. Hist. Soc. Siam **4:** 137. 1921.

Psychotria Lecomtei Pitard in Lecomte Fl. Gén. Indo-Chine 3: 360. 1924.

Wernham's species was based on a specimen from Dalat at 5000 ft. altitude, collected by Boden-Kloss, while that of Pitard, published three years later was based on material collected on Mount Langbian, Dalat, by Lecomte and Finet, Chevalier, and Hayata, the altitude not indicated. The two descriptions manifestly appertain to a single species which is further represented by *Mrs. H. Greenway 25,* March 13, 1939, in the rain forest at 2000 m. alt. on Langbian Peak, Dalat. Pitard, in preparing his treatment of the Rubiaceae for the Flora Génerale de l'Indo-Chine overlooked the six new species in this family described by Wernham on the basis of the Boden-Kloss collection of 1918 from Dalat.

CUCURBITACEAE

Thladiantha Bunge

Thladiantha indochinensis sp. nov.

Herba scandens, ramis gracilibus, sulcatis, consperse pubescentibus, pilis flaccidis, articulatis, haud glandulosis; foliis submembranaceis,

ovatis, acuminatis, basi profunde cordatis, lobis late rotundatis, margine subdistanter calloso-denticulatis, 9–12 cm. longis, 5–9 cm. latis, utrinque consperse villosis, pilis plerumque articulatis; petiolo 2.5–4.5 cm. longo, plus minusve articulato-hirsuto; cirrhis simplicibus, glabris vel parce villosis, elongatis; racemis ♂ 7–9 cm. longis, pedunculatis, haud bracteatis, 9–12-floris, pilis longis patulis flaccidis articulatis plus minusve vestitis, pedicellis gracilibus, 1.5–2.5 cm. longis, articulato-villosis; pedunculo (cum rhachi) 5–6 cm. longo; floribus ♂ flavidis; receptaculo subcampanulato, longe articulato-villoso, haud glanduloso; sepalis oblongo-ovatis, acutis vel acuminatis, circiter 5 mm. longis, articulato-villosis; petalis oblongo-ovatis, obtusis, circiter 2 cm. longis, extus glabris, intus plus minusve granuloso-glandulosis, 7-nerviis, secus marginem sursum dense perspicue granuloso-glandulosis; staminibus 5, antheris oblongis, 3.5 mm. longis. Floribus ♀ fructibusque ignotis.

INDO-CHINA: Tonkin, Chapa, *Pételot 2185, 2194* (TYPE), September 1929 and August 1932, in open forests, altitude 1500 to 1800 m., flowers yellow. Type deposited in the Gray Herbarium.

A species clearly allied to *Thladiantha villosula* Cogn. of Hupeh and Yunnan, differing in its longer, many flowered, staminate racemes, larger flowers, the strikingly and densely granulose-glandular margins of the petals, and in its indumentum. The weak, rather pale, mostly spreading, distinctly jointed trichomes on the younger vegetative parts and inflorescences are very conspicuous and characteristic.

COMPOSITAE

Ainsliaea de Candolle

Ainsliaea chapaensis sp. nov. § *Scaposae.*

Herba perennis 25–35 cm. alta, rhizomate incrassato, subligneo, ad 5 mm. diametro, cauli infra folia dense sordide villoso; foliis basalibus paucis, ovatis, subcoriaceis, longe petiolatis, utrinque subconcoloribus, 2.5–4 cm. longis, 1.5–3 cm. latis, acutis vel apiculatis, basi late rotundatis vel obscure cordatis, margine distanter minute calloso-denticulatis, supra olivaceis, glabris, laevibus, subtus paullo pallidioribus, praesertim secus costam nervosque subvillosis, nervis primariis utrinque 2 vel 3, distantibus, curvatis, obscure arcuato-anastomosantibus, reticulo obsoleto; petiolo 1.5–3 cm. longo, juniore villoso, maturo glabro vel subglabro; foliis caulinis paucis, valde reductis, 1–2 cm. longis, oblongis vel oblongo-ellipticis, utrinque acutis, brevissime petiolatis, superioribus bracteiformibus; inflorescentiis spicatis vel depauperato-paniculatis, ramis primariis nullis vel paucis et 2–5 cm. longis, subadpresse pallide arachnoideo-

villosis; capitulis paucis, solitariis vel binis, sessilibus, sub anthesi circiter 1.4 cm. longis, 3–4-floris, internodiis 1–4 cm. longis; involucri bracteis extus plus minusve villosis, acutis vel obscure acuminatis, exterioribus ovatis, 1.5 mm. longis, interioribus circiter 9 mm. longis et 3 mm. latis; corollae lobis 4 mm. longis; antheris 4 mm. longis; styli lobis oblongo-ovatis, truncatis, 0.5 mm. longis; acheniis 3 mm. longis, subadpresse villosis, pappi setis plumosis, 7 mm. longis.

INDO-CHINA: Tonkin, Chapa, *Pételot 2068*, April 1938, in open forests, altitude about 1500 m. Type deposited in the Gray Herbarium.

Judging from Franchet's description this species is allied to *Ainsliaea rubrifolia* Franch. of Szechuan. It seems to be well distinguished within the section *Scaposae* by its vegetative characters and its distinctly villous involucral bracts.

Ainsliaea Petelotii sp. nov. § *Aggregatae*.

Planta 30–55 cm. alta, suffruticosa, perspicue tomentosa, caulibus circiter 3 mm. diametro, teretibus sub foliis plerumque glabris, sursum pallide tomentosis, simplicibus vel e rhizomate ramosis, basi nudis; foliis plerumque 8–14 cm. supra basim pseudoverticillatim aggregatis vel confertis, oblongo-oblanceolatis, acutis, deorsum angustatis, acutis, integris vel distanter (3–5 mm.) breviter apiculato-serrulatis dentibus atris, chartaceis vel subcoriaceis, 5–10 cm. longis, 1.5–3 cm. latis, supra laevibus, atro-olivaceis, subnitidis, subtus dense molliter albido-tomentosis vel arachnoideo-tomentosis, nervis primariis utrinque 2 vel 3, adscendentibus; petiolo 5–10 mm. longo; foliis superioribus paucis, gradatim reductis, 1–2.5 cm. longis, ultimis bracteiformibus; inflorescentiis 15–45 cm. longis, simpliciter spicatis; capitulis 3-floris, solitariis sessilibus, sub anthesi circiter 1 cm. longis, oppositis, vel depauperato-fasciculatis, internodiis 5–10 mm. longis; involucri bracteis glaberrimis, integris, acutis, exterioribus ovatis, 1 mm. longis, interioribus oblongo-lanceolatis, 8 mm. longis, 2 mm. latis; corollae lobis 4 mm. longis; antheris 3.5 mm. longis; styli lobis brevissimis; acheniis circiter 2.5 mm. longis, adpresse villosis, pappi setis 6 mm. longis, plumosis.

INDO-CHINA: Tonkin, Chapa, massif de Song Ta Van, *Pételot 2082* (TYPE), in very dry open places, alt. 1900 m., April 1936; Chapa, *Pételot 4552*, February 1931, in small very dry open places in full sunlight, alt. about 1600 m. Type deposited in the Gray Herbarium.

This species is well characterized by its indumentum and its leaves being very pale and densely arachnoid pubescent beneath in striking contrast to the dark-olivaceous, entirely glabrous and somewhat shining upper surfaces.

The last conspectus of the entire genus was that published by Beauverd* in 1909, wherein he recognized thirty-three species. Since that time about thirty additional ones have been described from China, Japan, Formosa, Indo-China, and Sumatra thus indicating the need of a new revision of the group.

Lactuca Linnaeus

Lactuca repens (Linn.) Benth. ex Maxim. Bull. Acad. Sci. St. Pétersb. III. **19**: 532. 1874, Mél. Biol. **9**: 364. 1877, Bull. Soc. Nat. Moscou **54**(1): 29. 1879.

Prenanthes repens Linn. Sp. Pl. errata [1]. 1753, Syst. ed. 10, **2**: 1193. 1759, Sp. Pl. ed. 2, 1122. 1763.
Prenanthes altissima Linn. Sp. Pl. 798. 1753, err.
Chorisis repens DC. Prodr. **7**: 178. 1838.
Nabalus repens Ledeb. Fl. Ross. **2**: 840. 1846.
Ixeris repens A. Gray, Mem. Am. Acad. Arts Sci. II. **6**: 397. 1859.
Prenanthes repens, foliis trilobis Linn. Amoen. Acad. **2**: 360. *t. 4. f. 23.* 1751.

INDO-CHINA: Annam, Quang Binh Province, Ban Khe, *Pételot 2065,* Feb. 23, 1936, sand dunes along the coast. Kamchatka southward to Formosa, Kwangtung, and Hainan, but not previously recorded from Indo-China.

Both in its original publication and in its transfer to *Lactuca* confusion has occurred because of obscurity in connection with the accepted binomial. The whole basis of the species was the Kamchatka plant described and illustrated by Linnaeus in 1751. In the first edition of the Species Plantarum he inadvertently applied the wholly inapplicable specific name *altissima* to this Kamchatka species, but in the unpaged errata following the last page of the index he made an entry, line 19 from the top: "p. 798, no. 7, *altissima* lege *repens*"; this correction must of course be accepted. The transfer to *Lactuca* is almost as obscure. Currently it is accredited to Bentham in Benth. & Hook. f. Gen. Pl. **2**: 526. 1873, where it does not appear; Bentham merely indicated that *Prenanthes repens* Linn. was a *Lactuca,* but did not transfer the specific name. Maximowicz effected publication the following year, as indicated above, crediting Bentham as the authority of the binomial under *Lactuca.*

Ligularia Cassini

Ligularia Petelotii sp. nov.

Herba perennis, sordide breviter pubescens, circiter 70 cm. alta,

*Beauverd, G. Les espèces du genre Ainsliaea. Bull. Soc. Bot. Genève II. 1: 376–384. *f. 3–5.* 1909.

rhizomate 1.5 cm. crasso; foliis radicalibus subreniformibus, magnis, late cordatis, subchartaceis, 15–30 cm. latis, 10–15 cm. longis, in sicco olivaceo-brunneis, utrinque subconcoloribus vel subtus paullo pallidioribus, margine irregulariter acuminato-dentatis, dentibus 1–4 mm. longis, utrinque consperse breviter crispatule pubescentibus, basi radiatim 9-nerviis, reticulo laxo, obscuro; petiolo circiter 15 cm. longo, dense sordide crispatulo-pubescente; foliis caulinis paucis, superioribus valde reductis, lineari-lanceolatis, acuminatis, 4–5 cm. longis, basi petioli vaginantibus, infimis bracteiformibus lineari-lanceolatis, basi haud vaginantibus, ad 3 cm. longis, 1–2 mm. latis; inflorescentiis paniculatis, longe exsertis, pubescentibus, laxis, paniculis circiter 15 cm. longis, ramis paucis, inferioribus 8 cm. longis; pedicellis elongatis, bracteolis paucis, linearibus, ad 1 cm. longis; capitulis circiter 20, sub fructu 1.5 cm. longis, disco glabro, 6 mm. diametro; involucri bracteis numerosis, glabris vel exterioribus deorsum leviter pubescentibus, interioribus 12 mm. longis, deorsum 3 mm. latis, sursum angustatis, apice plus minusve acuminatis, margine submembranaceis, exterioribus angustioribus; acheniis numerosis, subcylindricis, glabris, 5–5.5 mm. longis, obscure 8-costatis; pappi setis albidis, 12 mm. longis.

INDO-CHINA: Tonkin, Chapa, massif de Song Ta Van, *Pételot 2081,* April 1936, in open forests, alt. 1900 m. Type deposited in the Gray Herbarium.

Many authors, including Gagnepain in his treatment of the Indo-Chinese species of Compositae, would place this in *Senecio,* but it belongs in *Ligularia* as defined by Cassini, and the general tendency at present, among numerous botanists, is to recognize *Ligularia* as a generic entity distinct from *Senecio.* It is not at all related to any of the nine species of *Senecio* credited to Indo-China by Gagnepain, nor have I been able to match it among the extensive collections of Indian and Chinese species available to me.

Vernonia Schreber

Vernonia annamica (Gagnep.) comb. nov.

Pulicaria annamica Gagnep. Bull. Soc. Bot. France **68**: 121. 1921 (April).

Vernonia pulicarioides Gagnep. in Lecomte, Fl. Gén. Indo-Chine **3**: 482. 1924.

Another representative of this species is *Pételot 4556* from Tranninh Province, Laos, Indo-China.

Vernonia annamensis S. Moore, Jour. Nat. Hist. Soc. Siam **4**: 143. 1921 (November), not included by Gagnepain in his 1924 treatment of

the Compositae of Indo-China, although based on a Boden-Kloss collection from Annam, does not invalidate the binomial proposed above. Gagnepain should have maintained his original specific name rather than have proposed a new one when he transferred his species from *Pulicaria* to *Vernonia*. The type of Gagnepain's species was from Langbian between Dran and Dalat, while that of *V. annamensis* Moore was from Le Bosquet at 5200 ft. altitude in Langbian Province also between Dran and Dalat. The descriptions appertain to two very different species. Another overlooked Indo-Chinese species of this genus is *Vernonia dranensis* S. Moore op. cit. 144, its type from Dran also in Langbian Province.

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