NOTES ON THE GENUS ALBIZIA DURAZZ. (LEGUMINOSÆ-MIMOSOIDEÆ) IN MAINLAND S.E. ASIA

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ABSTRACT: A revision comprising the 22 species of *Albizia* in Mainland S.E. Asia is presented together with distribution-charts for the species endemic to the region. 3 new species are described; 2 new combinations are made.

RÉSUMÉ : Révision des 22 espèces d'*Albizia* d'Asie continentale du SE; carte de répartition des espèces endémiques de cette région. Description de 3 espèces nouvelles et proposition de 2 combinaisons nouvelles.

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The revision is restricted to give a key to the species and the new species and combinations. Detailed synonomy and descriptions will appear in the treatments of the Mimosaceæ in the two regional floras: Flora of Thailand and Flore du Cambodge, du Laos et du Viêt-Nam. A dactylographed list of the specimens studied is available at The Botanical Institute, 68 Nordlandsvej, 8240 - Risskov, Denmark.

Albizia is a cosmopolitic, tropical to warm-temperate genus consisting of about 100 species of which c. 40 are found in Africa (BRENAN, 1965), c. 50 in Asia-Australia and c. 10 in tropical America. The regions of the revision contain 22 species and are as follows: China (Mainland), Burma and Malay Peninsula with provinces as indicated in The Times Atlas of The World (London, 1958); Thailand with provinces as used in Flora of Thailand and Cambodia, Laos and Vietnam with provinces as used in Flore du Cambodge, du Laos et du Viêt-Nam.

During this study I have visited the herbaria of British Museum (Natural History), Copenhagen, Kew, Leiden and Paris, and I wish to express my gratitude for the hospitality, help and advice I have enjoyed during these stays. Special thanks to Mr. FORMAN and Dr. POLHILL, Kew, and Dr. VIDAL, Paris, for advices and fruitful discussions. A special thank to Pr. Dr. STEINBERG from the Florence Herbarium, who assisted me in the typification of *Albizia julibrissin* Durazz., the type of the genus.

I also wish to express my gratitude to the Directors, Keepers and Curators of the following herbaria who put plenty of material (about 1200 specimens) at my disposal: Arnold Arboretum (A); Herbarium Jutlandicum, University of Aarhus (AAU); Aberdeen University Herbarium (ABD); British Museum (Natural History) (BM); Forest Herbarium, Bangkok (BKF); Brussels (BR); Copenhagen (C); Edinburgh (E); Greene Herbarium

(GH); Kew (K); Leiden (L); New York Botanical Garden (NY); Paris (P); U.S. National Herbarium, Smithsonian Institution (US); (the abbreviations are those of: HOLMGREN & KEUKEN, Index Herbariorum, ed. 6, Regnum Vegetabile 92 (1974) pp. 397).

Finally I wish to express my gratitude to my adviser, professor Kai LARSEN, for critical advice and encouragement during this study, to Mrs. Fox MAULE, M. Sc., for latinizing the diagnoses and to Mrs. Ditte WESTPHALL for typing the manuscript.

HISTORY AND CLASSIFICATION

The genus *Albizia* was described by DURAZZINI in 1772. The *Albizia* species had earlier been described under the genera *Adenanthera* and *Mimosa* by LINNÆUS (1753, 1754). Later they were treated under *Acacia* and *Inga* by WILLDENOW (1806) and DE CANDOLLE (1825), under *Acacia* by WIGHT & ARNOTT (1834). DURAZZINI's paper (*l. c.*) was first detected by BOIVIN (1838), who spelled it « *Albizzia* ». Under that name it has been treated by many authors, but in spite of the fact that the genus was named after Filippo DEGLI ALBIZZI the original spelling *Albizia* has to be maintained.

BENTHAM (1844) divided the genus in 5 sections based on inflorescence and leaf-morphology. The species indigenous to S.E. Asia all have flowers placed in heads or corymbs and belong to BENTHAM's sections « *Macrophyllæ*, *Obtusifoliæ*, *Microphyllæ* and *Falcifoliæ* ». The classification was based on leaf-morphology, principally the number of pinnæ and leaflets and the position of the main nerve in the latter. FOURNIER (1861) used nearly the same classification. In 1875 BENTHAM presented his world revision of the *Mimosaceæ*. The classification of the S.E. Asian *Albizia* species was based on the same principles as in the previous paper. One of the remarkable points in the 1875 revision is the subdivision of ser. *Obtusifoliæ* in groups based on morphology of the inflorescence. A group with axillary to shortly racemose peduncles is in S.E. Asia represented by *A. lebbeck*. Another group with the peduncles placed in subcorymbose racemes is represented by *A. retusa* and *A. pedicellata*. A third group has short peduncles fascicled in leafless inflorescences and is represented by *A. procera*, *A. odoratissima*, *A. corniculata* (as *A. millettii* Benth.).

The differences between the groups mentioned above are not so clear-cut. In some species (*A. pedicellata*, *A. retusa*, *A. lucidior*, *A. saponaria*, *A. splendens*, *A. procera*, *A. lebbekoides*, *A. burmanica*, *A. crassiramea*, *A. odoratissima* and *A. vialeana*) the peduncles are fascicled in panicles while in others (*A. sherriffii*, *A. duclouxii*, *A. lebbeck*, *A. kalkora*) they are clustered in the upper leaf-axils. But in some species (*A. attopeuense*, *A. burmanica*, *A. chinensis*) one may find gradual transitions between the two types as the panicle may become leafy. The peduncles in the panicle are always subtended by leaf-buds. As can be demonstrated in *A. attopeuense* the flowering time is just before and when the young leaves develop

in March-April. If the leaves unfold before flowering the flowers are placed in pedunculate heads in the upper leaf-axils, if they unfold afterwards the pedunculate heads are collected in panicles.

On the contrary to *Pithecellobium* there is nearly always two kinds of flowers in the heads (sessile flowers) or corymbs (pedicellate flowers). The most common distribution of flowers is the central flower terminating the axis of the peduncle and the marginal flowers placed below it. The central flower is most often larger than the marginal ones, the staminal tube is often strongly exserted and the ovary is most often sessile, surrounded by a ring-shaped nectarium at the base. I have never seen pods developed from the central flower, and I suppose that it has an attractive function (different colours and large nectarium) as can be seen in *A. julibrissin*, *A. garrettii* and *A. sherriffii*. *A. burmanica* deserves a special note as it has 3-4 central flowers. In *A. lebbekoides* and *A. procera* I have never observed more than one kind of flowers.

The pods are flat to ± turgid (*A. attopeuense*, *A. splendens*) dehiscent or indehiscent and the valves are chartaceous to woody. The seeds have very hard testæ with pleurogram, a feature they have in common with many other *Mimosaceæ* (see CORNER (1951, 1976), VASSAL (1963). There are two different shapes of pleurograms in the genus. In *A. attopeuense* and *A. splendens* the pleurogram is horseshoe-shaped to U-shaped and placed near the micropylar end of the seed. In the other S.E. Asian species examined the pleurograms are subcircular to narrowly elliptical, most often with linea fissura parallel to the margins of the seeds. The seeds of the S.E. Asian species known in fruit are shown in Pl. 1.

The whole group of Ingoid *Mimosaceæ* is in need of a world-wide revision as the generic limits are very diffuse, and the base of the genera has to be reassessed. I have accordingly desisted from presenting a new classification, and the characters mentioned in the generic description only apply to S.E. Asian representatives. In table 1 some of the criteria being used by me are presented and compared with those used by BENTHAM (1844, 1875), FOURNIER (1861) and KOSTERMANS (1954). *A. attopeuense* and *A. splendens* formerly treated as *Pithecellobium* (BENTHAM) and *Serialbizzia* (KOSTERMANS) are placed in *Albizia* as they have floral dimorphy and seeds with pleurogram. The two species cannot be recognized as belonging to a distinct genus when flowering and they are included here for practical reasons.

Cathormion umbellatum also has floral dimorphy and is very close to *Albizia*, but it has straight stipular thorns and pods breaking in indehiscent segments.

DISTRIBUTION AND ECONOMIC PROPERTIES

The *Albizia* species are often found in open situations, such as forest margins, roadsides, along streams and in forest clearings. More rarely they are found in shaded habitats. Table 2 shows the distribution of

TABLE 1: MORPHOLOGY AND CLASSIFICATION OF THE S.E. ASIAN *ALBIZIA* SPECIES

Species \ Characters	Pairs of pinnæ per leaf	Pairs of leaflets per pinna	Stipular thorns	Peduncles axillary	Peduncles in panicles	Floral dimorphy	Pods indehiscent	Pods dehiscent	Pods coriaceous	Pods charthaceous	Seeds with circular to narrowly ellipt. pleurogram	Seeds with horseshoe-shaped pleurogram	Bentham (1844): Sect.	Fournier (1861): Subsect.	Bentham (1875): Ser.	Kostermans (1954): Genus
1. *Albizia attopeuense*	1	2-3		(+)	(+)	+	+		+	+	+	+				Ser.[7]
2. *A. splendens*	1	1-3			+	+	+		+	+	+	+			Pith.[6]	Ser.[7]
3. *A. pedicellata*	8-9	9-17	+		+	+	+			+	+				Ob.	
4. *A. julibrissin*	4-8	c. 15-25		+		+		+		+	+		Falc.	Falc.	Falc.	
5. *A. garrettii*	5-8	10-22		+		+		+		+	+					
6. *A. sherriffii*	8-16	13-27		+		+		+		+	+					
7. *A. duclouxii*	1-3	7-12		+		+		?		?	?					
8. *A. kalkora*	2-4	4-10		+		+		+		+	+		Ob.[1]		Ob.[5]	
9. *A. poilanei*	4-5	5-8		+		+		+		+	+					
10. *A. lebbeck*	2-3	3-6		+		+		+		+	+		Ob.	Ob.	Ob.	
11. *A. chinensis*	4-14	(10)20-30		(+)	+	+				+	+		Falc.[2]		Falc.[2]	
12. *A. retusa*	c. 3	4-6			+	+				+	+		Ob.	Ob.	Ob.	
13. *A. lucidior*	1-3	2-7			+	+		+		+	+		Mac.[3]	Mac.[3]	Mac.[3]	
14. *A. saponaria*	2	1-3			+	+				+	+			Mac.	Mac.	
15. *A. procera*	2-5	5-11			+	+		+		+	+		Ob.	Ob.	Ob.	
16. *A. crassiramea*	3-4	3-5			+	+		+		+	+					
17. *A. lebbekoides*	3-4	15-25			+	–		+		+	+		Ob.	Ob.	Falc.	
18. *A. burmanica*	6	17-23		(+)	+	–		?		?	?					
19. *A. vialeana*	4-6	17-25			+	+		+		+	+					
20. *A. odoratissima*	3-5	c. 10-16			+	+		+		+	+		Ob.	Ob.	Ob.	
21. *A. corniculata*	(1-)3-5	3-10			+	+		+		+	+		Ob.[4]	Ob.[4]	Ob.[4]	
22. *A. myriophylla*	8-20	25-60			+	+		+		+	+		Mic.	Falc.	Mic.	

BENTHAM (1844): Sections *Spicifloræ*, *Macrophyllæ* (Mac.), *Obtusifoliæ* (Ob.), *Microphyllæ* (Mic.), *Falcifoliæ* (Falc.).
FOURNIER (1861): Sect. *Eualbizzia* subsect. *Microphyllæ* (Mic.), *Falcifoliatæ* (Falc.), *Obtusifoliæ* (Ob.), *Macrophyllæ* (Mac.). — Sect. *Lophantha*.
BENTHAM (1875): Sect. *Lophantha: ser. Granulosæ*, *Pachyspermæ*. — Sect. *Eualbizzia: ser. Macrophyllæ* (Mac.), *Obtusifoliæ* (Ob.), *Microphyllæ* (Mic.), *Falcifoliæ* (Falc.). — Sect. *Zygia*. 1) as *Acacia macrophylla* Bunge under *A. lebbeck* (L.) Benth.; 2) as *Albizzia stipulata* Boivin; 3) as *A. lucida* (Roxb.) Benth.; 4) as *A. millettii* Benth.; 5) as *A. odoratissima* (L. f.) Benth.; 6) as *Pithecolobium confertum* Benth.; 7) as *Serialbizzia* Kosterm.

TABLE 2: DISTRIBUTION OF THE S.E. ASIAN REPRESENTATIVES

Species \ Region	India	China	Burma	Thailand	Cambodia	Laos	N Vietnam	S Vietnam	Malay Peninsula	Sumatra	Borneo	Philippines	Malesia	Notes
1. *Albizia attopeuense*														
a. var. *attopeuense*				+		+		+						
b. var. *laui*		+												
2. *A. splendens*									+	+	+			
3. *A. pedicellata*									+	+	+	+		
4. *A. julibrissin*														
a. var. *julibrissin*	+	+	+											
b. var. *mollis*	+	+												
5. *A. garrettii*	+	+	+	+										
6. *A. sherriffii*	+	+	+											
7. *A. duclouxii*		+												
8. *A. kalkora*		+					+							Also recorded from Japan
9. *A. poilanei*								+						
10. *A. lebbeck*	+	+	+	+	+	?	+	+	+	+	+	+	+	Also cultivated
11. *A. chinensis*	+	+	+	+	+	+	+	+						Also Java, cultivated
12. *A. retusa*				+					+	+	+	+	+	
13. *A. lucidior*	+	+	+	+	+	+	+	+						Cultivated
14. *A. saponaria*									+	+	+	+		Cultivated?
15. *A. procera*	+	+	+	+	+	+	+	+		+	+	+	+	Cultivated
16. *A. crassiramea*			+	+		+	+							
17. *A. lebbekoides*				+	+	+	+	+					+	Cultivated
18. *A. burmanica*			+											
19. *A. vialeana*				+	+			+						
20. *A. odoratissima*	+	+	+	+	+	+	+	+						Cultivated
21. *A. corniculata*		+		+	+	+	+	+			+	+		
22. *A. myriophylla*	+		+	+	+	+		+	+					
Total		12	11	13	9	9	9	11	6					

the S.E. Asian representatives and map 1-9 some distribution maps for species endemic to the region or with distribution-centre very close to it. The following distribution-patterns can be observed:

1. Species with rather restricted distribution: *A. attopeuense* (fig. 1, *1*); *A. garrettii* (fig. 3, *4*); *A. sherriffii* (fig. 3, *4*); *A. duclouxii* (endemic to S. China: Yunnan); *A. poilanei* (fig. 3, *5*); *A. crassiramea* (fig. 4, *6*); *A. burmanica* (fig. 4, *7*); *A. vialeana* (fig. 4, *7*).

2. Chinese to Indo-Chinese species: *A. kalkora*.

3. W. Malesian species: *A. splendens* (fig. 1, *2*); *A. pedicellata* (fig. 2); *A. saponaria*; *A. corniculata* (fig. 5, *8*, in Borneo, still only recorded from Sarawak, Brunei and Sabah).

4. Malesian species reaching S. Thailand: *A. retusa*.

5. Widely distributed species: *A. julibrissin* (Temp. and subtropical Asia, reaching the mountains of N. Burma); *A. lebbeck* (N. trop. Africa, trop. Asia); *A. chinensis*, *A. lebbekoides*, *A. procera* (Tropical Asia, not found in the Malay Peninsula, but reappearing in Java); *A. lucidior*, *A. odoratissima* (Mainland tropical Asia, reaching Penang in Malaysia).

The species in this group are often cultivated and it is thus difficult to describe their original distributions. The following informations regarding economic properties have been obtained from BURKILL (1966): Good timber trees: *A. lucidior*, *A. odoratissima*, *A. lebbeck*.

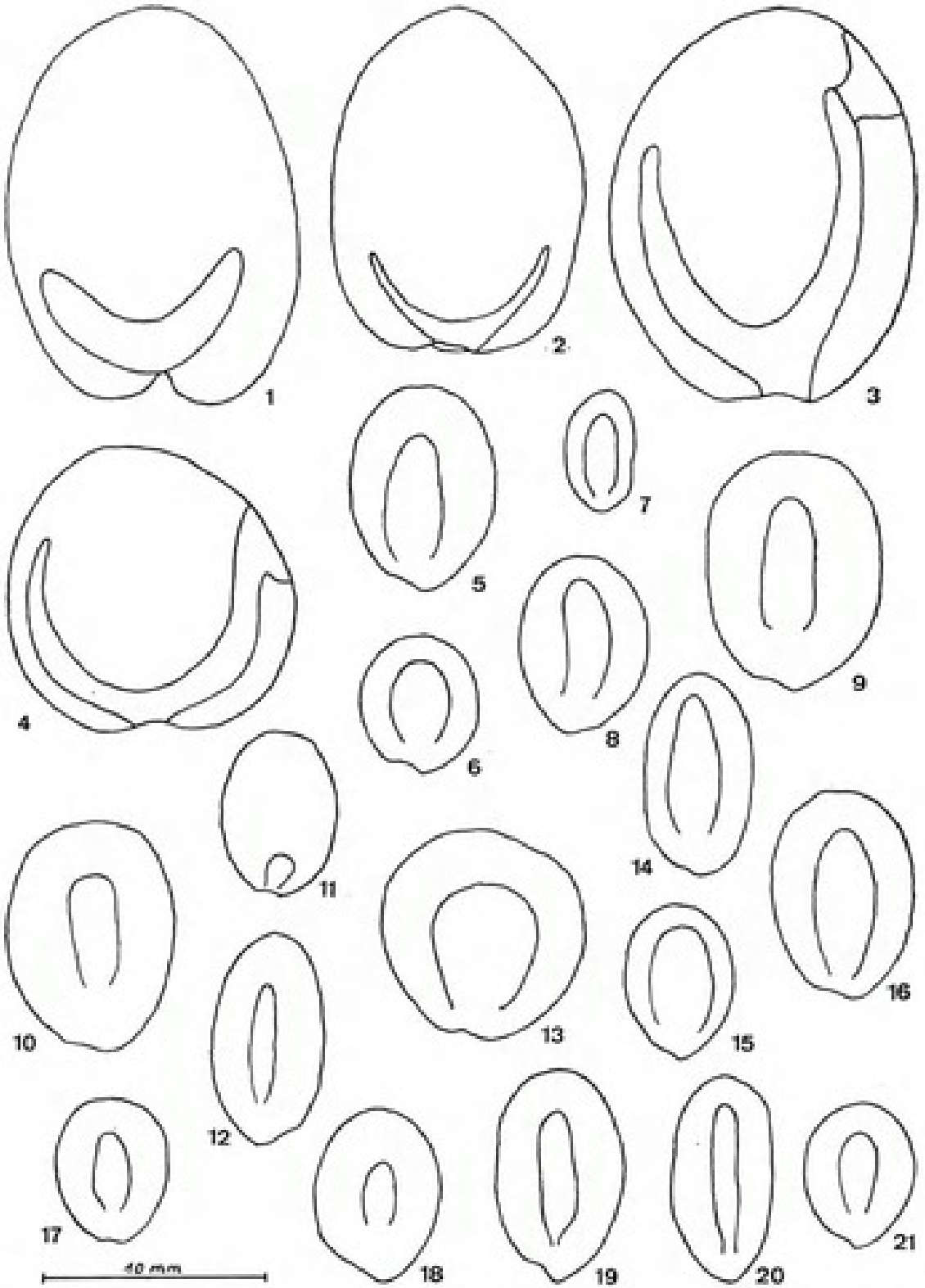
Nearly as good wood comes from *A. procera* and *A. lebbekoides*, whereas a species as *A. chinensis* has wood of an intermediate value. The wood and bark of *A. saponaria* and the bark of *A. lucidior* contain saponins, the bark of the former so much that it has been employed as soap and fish-poison. Some of the species are good shade-trees as the foliage is light: *A. chinensis*, *A. lebbeck* and *A. odoratissima*. *A. julibrissin* is a widely cultivated ornamental in warm temperate to subtropical regions all over the world.

ALBIZIA Durazzini

Mag. Tosc. 3: 11 (1772); BENTHAM & HOOKER f., Gen. Pl. 1: 596 (1865); BENTHAM, Trans. Linn. Soc. London 30: 557 (1875); HUTCHINSON, Gen. Fl. Pl. 1: 294 (1964). — *Serialbizzia* KOSTERMANS, Bull. Organ. Natuurw. Onderz. Indonesië 20: 15 (1954).

TYPE SPECIES: *Albizia julibrissin* Durazz.

TYPIFICATION: The genus *Albizia* was published by DURAZZINI in the rare periodical, Magazzino Toscana (Mag. Tosc. 3 (4): 1-14, 1772). This periodical has never been consulted by the authors mentioned above



Pl. 1. — Seeds of S.E. Asian **Albizia** species: **1, A. attopeuense** var. **lasi** : *Lau 40* (A); **2, A. attopeuense** var. **attopeuense** : *Kerr 20239* (BM); **3, A. splendens** : *Hesch 33236* (K); **4, A. splendens** : *Hesch 33236* (K); **5, A. julibrissin** : *Henry 10194D* (E); **6, A. garrettii** : *Garrett 602* (A); **7, A. sherriffii** : *Yü 20511* (E); **8, A. kalkora** : *Henry 6203A* (K); **9, A. poilanei** : *Poilane 18395* (P); **10, A. lebbeck** : *Kerr 4239* (ABD); **11, A. chinensis** : *Suvarnakoses 937* (BKF); **12, A. retusa** : *Ramos 80444* (K); **13, A. lucidior** : *Bunchuai 1329* (C); **14, A. saponaria** : *Robinson 524* (K); **15, A. procera** : *Kerr 5082* (BM); **16, A. crassiramea** : *Kerr 6385* (BM); **17, A. lebbekoides** : *Collins 1401* (ABD); **18, A. vialeana** : *Poilane 23381* (BM); **19, A. odoratissima** : *Ma Aye 85* (A); **20, A. corniculata** : *Tsang 30699* (E); **21, A. myriophylla** : *Pierre 1124* (A).

although F. VON MUELLER (1872) reviewed it after personal communication with the staff of the herbarium of Florence. F. VON MUELLER mentioned no type and the problems of typification have remained unsolved. Through the kind and gracious help of Pr. Dr. STEINBERG, Conservator of Herbarium Universitatis Florentinæ, Florence, who sent me a photocopy of DURAZZINI's paper and photos of the herbarium specimen mentioned below, I have been able to draw the following conclusions:

The seeds of *A. julibrissin*, a native of temperate and subtropical Asia, were brought by Filippo DEGLI ALBIZZI in 1749 from Constantinople to Florence, where it was planted. DURAZZINI described it in 1772 in a communication held at the Accademia dei Georgofili of Florence. The herbarium of this academy was later given to the herbarium of Florence, but no specimens of *A. julibrissin* was in it.

The sheet (Pl. 2) mentioned below is from the Herbarium MICHELI, which after his death was reordered according to the nomenclature of LINNÆUS, and augmented with new material by Giovanni Targioni TOZZETTI (acc. to Dr. STEINBERG, personal communication). The specimen must have been taken before 1786 and probably between 1772 (the year of DURAZZINI's paper) and 1786 (SCOPOLI, Del. Insubr. 1: 18), as it bears the name « *Albizia julibrissin* » on an old label and the name « *Mimosa julibrissin* Scop. (Del. Insubr. 1: 18, 1786) » on a newer one.

As the drawing accompanying DURAZZINI's description (*l. c.*) is rather rude and does not show the flowers in details, the plant without collector and without locality, probably taken from trees near Florence, grown from the seeds brought there by Filippo DEGLI ALBIZZI, and who is matching DURAZZINI's description, is chosen as a neotype of the species:

NEOTYPE: *s. coll.*, *s.n.*, Herb. Micheli (FI).

KEY TO THE FLOWERING SPECIMENS

(When nothing else is mentioned the floral characters relate to the marginal flowers!)

1. Scandent shrubs or climbers with a recurved hook under the leaf-scars.
   2. Pinnæ (1-)3-4 pairs; leaflets 3-10 pairs, obovate to ovate ..... 21. *A. corniculata*
   2'. Pinnæ 8-20 pairs; leaflets 25-60 pairs, linear to narrowly oblong .. .. 22. *A. myriophylla*

1'. Erect trees or shrubs without a recurved hook under the leaf-scars.
   3. Flowering peduncles arranged in a terminal panicle or in more panicles in the upper leaf-axils.
      4. Flowers sessile.
         5. Leaves with only 1 pair of pinnæ.
            6. Marginal flowers with staminal tube longer than the corolla tube, often longer than the corolla; ovary stipitate... ..... 14. *A. saponaria*
            6'. Marginal flowers with staminal tube shorter than or as long as the corolla tube; ovary sessile.
               7. Corolla glabrous; marginal flowers with staminal tube as long as the corolla tube..... 2. *A. splendens*
               7'. Corolla puberulous to sericeous; marginal flowers with staminal tube shorter than the corolla tube. 1. *A. attopeuense*

7′*a*. Reticulation of the upper leaflet-surface lighter than the rest; marginal flowers 7-7.5 mm long. 1a. var. *attopeuense*

7′*b*. Reticulation of the upper leaflet-surface with the same colour as the rest; marginal flowers 8-8.5 mm long. ..... 1b. var. *laui*

5′. Leaves with 2 to more pairs of pinnæ.

8. Heads with only 1 kind of flowers.

9. Pinnæ with 5-11 pairs of leaflets; leaflets ovate to subrhomboid ..... 15. *A. procera*

9′. Pinnæ with 15-25 pairs of leaflets; leaflets oblong to subfalcate ..... 17. *A. lebbekoides*

8′. Heads with central and marginal flowers.

10. 3-4 central and c. 20 marginal flowers per head. 18. *A. burmanica*

10′. Heads with only 1 central flower.

11. Staminal tube longer than the corolla tube, often longer than the corolla..... 14. *A. saponaria*

11′. Staminal tube as long as but never longer than the corolla tube.

12. Pinnæ with 3-5 pairs of leaflets .. 16. *A. crassiramea*

12′. Pinnæ with 10 or more pairs of leaflets.

13. Main-vein of leaflets forming the upper margin or nearly so ..... 11. *A. chinensis*

13′. Main-vein of leaflets removed at least 1/5 of the breadth of the leaflet from the upper margin.

14. Leaflets 10-16 pairs, shortly petiolulate, broadly oblong, 0.6-1.2 × 1.1-3.5 cm ..... 20. *A. odoratissima*

14′. Leaflets 17-25 pairs, sessile, narrowly oblong to subfalcate, 0.2-0.4 × 0.8-1.5 cm ..... 19. *A. vialeana*

4′. Flowers pedicellate.

15. 8-9 pairs of pinnæ; stipules often transformed in 2 recurved hooks ..... 3. *A. pedicellata*

15′. 1-3 pairs of pinnæ; stipules never transformed in 2 recurved hooks.

16. Marginal flowers with glabrous calyces; peduncles not subtended by bracts ..... 12. *A. retusa*

16′. Marginal flowers with puberulous to velutinous calyces; peduncles often subtended by caducous bracts. 13. *A. lucidior*

3′. Flowering peduncles not arranged in panicles.

17. 3-4 central and c. 20 marginal flowers per head..... 18. *A. burmanica*

17′. 1 central flower per head.

18. Flowers sessile.

19. Ovary sessile.

20. 1 pair of pinnæ ..... 1. *A. attopeuense* (look under 7′*a* for key to varieties)

20′. 4-14 pairs of pinnæ ..... 11. *A. chinensis*

19′. Ovary stipitate ..... 6. *A. sherriffii*

18′. Flowers pedicellate.

21. Leaves with 8-16 pairs of pinnæ; corymbs with 40-50 flowers ..... 6. *A. sherriffii*

21′. Leaves with up to 8 pairs of pinnæ; corymbs with up to c. 35 flowers.

22. Marginal flowers with staminal tube as long as the corolla tube.

23. Leaflets obtuse or nearly so, mucronate; c. 35 flowers per corymb; corolla of marginal flowers up to 7 mm long ..... 5. *A. garrettii*

23'. Leaflets acute, mucronate; 20-25 flowers per corymb; corolla of marginal flowers 8-11 mm long ..... 4. *A. julibrissin*
23'*a*. Branchlets and leaves glabrous to faintly puberulous; leaflets 0.3-0.5 × 1.0-1.5 cm ..... 4a. var. *julibrissin*
23'*b*. Branchlets and leaves densely puberulous to tomentose; leaflets 0.5-0.7 × 1.5-2.0 cm ..... 4b. var. *mollis*
22'. Marginal flowers with staminal tube shorter than the corolla tube.
24. Ovary puberulous ..... 7. *A. duclouxii*
24'. Ovary glabrous.
25. Ovary sessile ..... 10. *A. lebbeck*
25'. Ovary stipitate.
26. Peduncles 4-6 cm long; calyx of marginal flowers 3.5-4.5 mm long ... 8. *A. kalkora*
26'. Peduncles 11-12 cm long; calyx of marginal flowers 5-5.5 mm long . 9. *A. poilanei*

Key to the fruiting specimens

(fully mature pods required)

(the colour of the pods is described on dried specimens only)

1. Scandent shrubs or climbers with a recurved hook under the leaf-scars.
2. Pinnæ (1-)3-4 pairs; leaflets 3-10 pairs, obovate to ovate.... 21. *A. corniculata*
2'. Pinnæ 8-20 pairs; leaflets 25-60 pairs, linear to narrowly oblong. 22. *A. myriophylla*
1'. Erect trees or shrubs without a recurved hook under the leaf-scars.
3. Pod indehiscent or irregularly breaking up, flat or turgid.
4. Pod dark-brown, ± turgid; seeds with U-shaped areoles.
5. Pleurogram of seeds shortly U-shaped, symmetrical, not reaching the middle of the seed ..... 1. *A. attopeuense*
5*a*. Reticulation of upper leaflet surface lighter than the remaining part (when dry) ..... 1a. var. *attopeuense*
5*b*. Reticulation of upper leaflet surface with the same colour as the remaining part (when dry)..... 1b. var. *laui*
5'. Pleurogram of seeds asymmetrically U-shaped, reaching over the middle of the seed ..... 2. *A. splendens*
4'. Pods yellowish, flat; seeds with circular to narrowly oblong areoles.
6. Leaflets oblong to subrhomboid.
7. Leaflets sessile, 9-17 pairs per pinna, elliptical to oblong ..... 3. *A. pedicellata*
7'. Leaflets petiolulate, 4-6 pairs per pinna, ovate to subrhomboid ..... 12. *A. retusa*
6'. Leaflets subulate ..... 11. *A. chinensis*
3'. Pods dehiscent, flat.
8. Peduncles arranged in panicles.
9. Seeds orbicular ..... 13. *A. lucidior*
9'. Seeds distinctly longer than broad.
10. Leaflets narrowly oblong to subfalcate, sessile.
11. Branchlets with greyish bark; lower rachis-gland up to 0.5 mm diam.; pod c. 2 cm broad at the broadest place ..... 17. *A. lebbekoides*
11'. Branchlets with dark bark; lower rachis-gland c. 1.5-2 mm long; pods 3 cm broad at the broadest place. ..... 19. *A. vialeana*

10'. Leaflets ovate, rhomboid or elliptical, petiolulate.
12. Petiolules short up to 1 mm long, leaflets with distinctly excentric main-vein ..... 20. *A. odoratissima*
12'. Petiolules longer, more than 1 mm long, leaflets with diagonal to slightly excentric main-vein.
13. Branchlets with greyish bark; rachis-gland 6-10 mm long ± narrowly elliptical ..... 15. *A. procera*
13'. Branchlets with brownish to very dark-brown bark; rachis-gland 1.5-3 mm long, circular to elliptical.
14. Rachis-gland 2.5-3 mm long, sub-circular to elliptical; petiolules 1-2 mm long; pod red-brownish ..... 16. *A. crassiramea*
14'. Rachis-gland 1.5-2 mm diam., circular; petiolules 3-5 mm long; pod greyish-brown ..... 14. *A. saponaria*

8'. Peduncles not arranged in panicles.
15. Pods small, 8-10 × c. 1.2 cm; seeds with densely contorted funicles ..... 6. *A. sherriffii*
15'. Pods larger, more than c. 14 × 2 cm; seeds with straight to slightly curved funicles.
16. Leaflets with sharply acute apices ..... 4. *A. julibrissin*
16*a*. Leaflets and pods glabrous to faintly puberulous. ..... 4a. var. *julibrissin*
16*b*. Leaflets and pods dznsely puberulous to tomentose ..... 4b. var. *mollis*
16'. Leaflets with obtuse to rounded to truncate apices.
17. Leaflets petiolulate, petiolule c. 1 mm long.
18. Rachis-gland puberulous; pod dark-brown with prominulous marks over the seeds. 8. *A. kalkora*
18'. Rachis-gland glabrous; pod yellowish to brownish with prominent marks over the seeds. ..... 10. *A. lebbeck*
17'. Leaflets sessile (petiolules less than 0.5 mm long).
19. Pod yellowish c. 4 × 26 cm; funicle c. 1.5 cm long; seeds 10 × 7.5-8 × 1.5 mm... 9. *A. poilanei*
19'. Pod brownish c. 3 × 14 cm; funicle c. 1 cm long; seeds 6 × 5 × 1.5 mm ..... 5. *A. garrettii*

Pods unknown in: *A. burmanica*, *A. duclouxii*.

1. **Albizia attopeuense** (Pierre) I. Nielsen, *comb. nov.*

var. **attopeuense**

— *Pithecolobium attopeuense* Pierre, Fl. For. Cochinch. 5: *tab. 396 A* (1899).
— *Serialbizzia attopeuense* (Pierre) Kostermans, Commun. Forest Res. Inst. 54: 8 (1956).
— *Serialbizzia acle* auct. *non* (Merrill) Kostermans: Kostermans, Bull. Organ. Natuurw. Onderz. Indonesië 20: 16 (1954) *p.p., quoad syn. P. attopeuense* Pierre.
— *Pithecellobium corymbosum* Gagnepain, Bull. Soc. Bot. Fr. 99: 49 (1952) *p. maj. part., non* Benth. 1844.

Type: *Harmand 1275*, Laos (holo-, P; iso-, K).

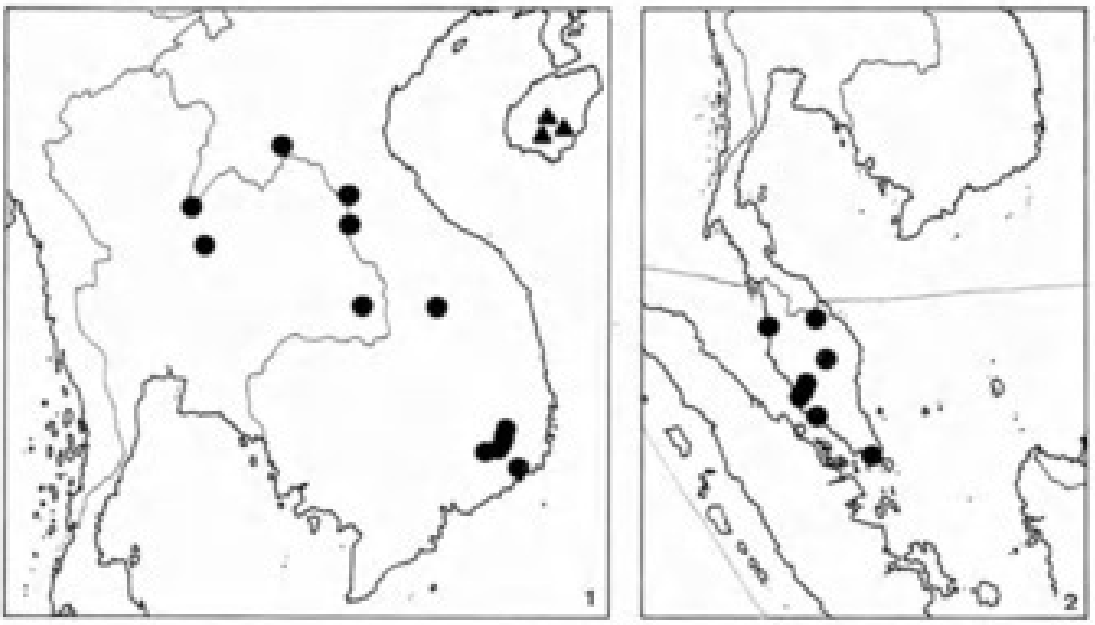


Fig. 1. — Distribution of **Albizia** in S.E. Asia: **1, A. attopeuense** (Pierre) I. Nielsen: var. **attopeuense** •; var. **laui** (Merr.) I. Nielsen ▲. — **2, A. splendens** Miq. •

Thailand, Laos, S. Vietnam (fig. 1, *1*).

var. **laui** (Merrill) I. Nielsen, *comb. et stat. nov.*

— *Albizia laui* Merrill, Lingnan Sci. J. 14: 7 (1935); Chun & How, Acta Phytotax. Sin. 7: 17 (1958), *descr. ampl.*

Type: *Law 40*, China : Hainan (holo-, NY; iso-, A, BM, E, K).

China: Hainan (fig. 1, *1*).

Differs from var. *attopeuense* in the following points: 1. Reticulation of the upper leaflet-surface with same colour as the remaining part of the surface; 2. The central flower only removed 2 mm from the marginal ones; 3. Calyx of the central flower only 4 mm long; 4. Corolla of the marginal flowers 8-8.5 mm long.

The Thai- and Indo-Chinese specimens look as if they are flowering before and during the unfolding of the young leaves in March-April. Whereas the Hainan specimens are flowering when the old leaves are still present. The inflorescence is panicle-like and very variable. Originally it consists of a short branchlet in an axil of an old leaf-scar, the peduncles being solitary or paired in the axils of young developing leaves (*Kerr 20724*). In *Poilane 22176*, *Harmand 1275*, the branchlet is shorter and the peduncles only subtented by buds. In some branches of *Poilane 22176* as many as 3 panicles (branchlets) may be seen in the old leaf-axils. In the Hainan specimen (*How & Chun 70239*) a cluster of panicles, « branchlets », may

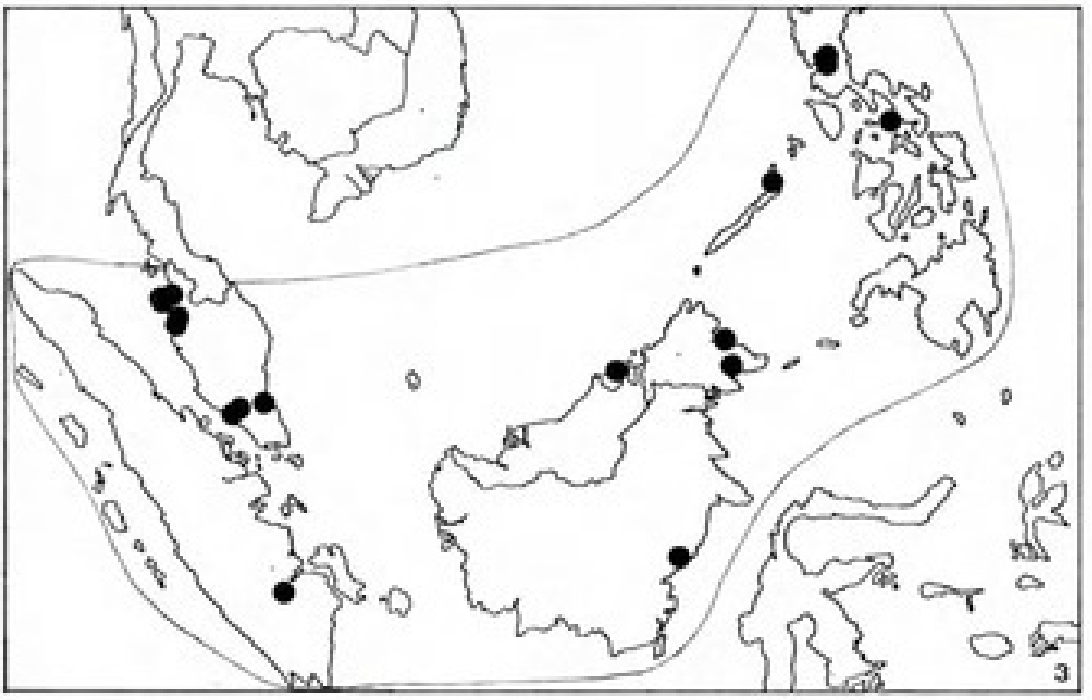


Fig. 2. — Distribution of **Albizia pedicellata** Baker ex Benth. in S.E. Asia.

be seen in the axils of the old leaves; the peduncles often paired and subtended by buds.

Both GAGNEPAIN (*l. c.*) and KOSTERMANS (1956) overlooked that the name *Pithecellobium corymbosum* was preoccupied, having been used by BENTHAM, London J. Bot. 3: 221 (1844) on a species from Guiana, S. America. GAGNEPAIN's syntypes represented 4 different species: *Poilane 4026, 5816, 21946, 22176* = *Albizia attopeuense*; *Poilane 5765* = *Archidendron robinsonii*; *Poilane 7918* = *A. bauchei*; *Poilane 10356* = *A. poilanei.*

2. **Albizia splendens** Miquel

Fl. Ind. Bat., Suppl. I. Sumatra 2: 280 (1861).
— *Pithecolobium splendens* (MIQUEL) CORNER, Wayside Trees 1: 421 (1940).
— *Serialbizzia splendens* (MIQUEL) KOSTERMANS, Bull. Organ. Natuurw. Onderz. Indonesië 20: 17 (1954).

TYPE: *Teijsmann s.n.* (*H.B. 4228*), Sumatra, U.

Malaysia, Borneo, Sumatra (fig. 1, *2*).

3. **Albizia pedicellata** Baker ex Bentham

Trans. Linn. Soc. London 30: 563 (1875).
— *Albizia magellanensis* ELMER, Leafl. Philipp. Bot. 2: 693 (1910); type: *Elmer 12089*, Philippines, Magellanes (holo-, NY; iso-, K, L).

— *Albizia myriantha* MERRILL, Philipp. J. Sci. Bot. 10: 8 (1915); type: *Merrill 9259*, Philippines, Palawan (holo-, NY; iso-, K, L).

TYPE: *Maingay 586* (*2503*), Malacca (holo-, K).

Malay Peninsula, Sumatra, Borneo, Philippines (fig. 2).

4. **Albizia julibrissin** Durazzini

Mag. Tosc. 3 (4): 13 (1772).

var. **julibrissin**

— *Mimosa speciosa* auct. *non* JACQ.: MURRAY, Syst. Veg., ed. 14: 915 (1784); THUNBERG, Trans. Linn. Soc. London 2: 336 (1794).

NEOTYPE: *s. coll., s.n.*, herb. Micheli, FI.

Warm temperate and subtropical Asia (Turkey to Japan).

var. **mollis** (Wallich) Bentham

London J. Bot. 3: 91 (1844).
— *Acacia mollis* WALLICH, Pl. As. Rar. 2: 76, *tab. 177* (1831).
— *Albizzia mollis* (WALLICH) BOIVIN, Encycl. 19e siècle 2: 33 (1838), not seen.

TYPE: *Lakkey in Wallich 5235 A*, Nepal (holo-, K).

E. Himalaya to S. China.

This variety differs from the main variety in the following points: 1. Branchlets and leaves densely puberulous to tomentose; 2. Leaflets larger, 0.5-0.7 × 1.5-2.0 cm; 3. Inflorescence, flowers and young pods densely puberulous to tomentose.

THUNBERG (1794) referred his *Mimosa arborea* under *Mimosa speciosa* and gives as reference to *Mimosa speciosa* « Linn. Syst., ed. 14: 915 » = MURRAY, Systema Vegetabilium, ed. 14: 915 (1784). MURRAY, however, refers to *Mimosa speciosa* Jacq. (1783), which belongs to *A. lebbeck*. *A. lebbeck* does not occur in Japan and the descriptions of THUNBERG and MURRAY clearly apply to *A. julibrissin*. So *Mimosa speciosa* Jacq. has been misapplied by both THUNBERG and MURRAY.

5. **Albizia garrettii** I. Nielsen, *sp. nov.*

Arbor circa 10-15 m alta (secundum GARRETT). *Folia: rachis 12-18 cm longa, pinnis 5-8-jugis, 4-10 cm longis; foliola 10-22-juga, sessilia, opposita, irregulariter oblonga, 0.3-0.4 × 0.6-1.0 cm, apice obtusa, mucronata; costa tertia parte latitudinis folioli a margine superiore distat.*

Pl. 2. — Neotype of **Albizia julibrissin** Durazz. (herb. Micheli, FI).

Inflorescentia: pedunculi 2 simul e foliorum summorum axillis orti, florentes c. 5 cm longi, cum corymbis circa 35 floribus instructis.

Flos centralis: calyx sessilis, tubulari-urceolatus, puberulus, 5.5-6 mm longus, dentibus brevioribus quam 0.1 mm. Corolla tubularis, puberulo-villosa, 10 mm longa, lobis oblongis acutis, circa 3 mm longis. Tubus staminum corolla æquilongus vel longior. Ovarium sessile, glabrum, 1.5-2 mm longum.

Flores marginales: calyx pedicellatus, pedicello usque 4-5 mm longo, anguste campanulatus, puberulus, 3 mm longus, dentibus triangularibus, 0.3-0.5 mm longis. Corolla infundibuliformis, puberula, 6.5-7 mm longa, lobis ovatis, acutis, 2.5 mm longis. Tubus staminum tubo corollæ æquilongus. Ovarium glabrum, 2.5 mm longum versus stipem paulatim angustius, 0.5 mm longum.

Legumen (Garrett 602) : 3 × 14 cm, applanatum, apice mucronato ; valvæ papyraceæ, infuscatæ, glabræ, utraque sutura dehiscentes. Semina circa 10.6 mm longa, 5 mm lata et 1.5 mm crassa, suborbicularia, plana, flava, pleurogrammata ; pleurogramma 4 mm longum, 2.5-3 mm latum, linea fissura marginibus parallela.

TYPE: *Garrett 555*, Thailand, 24.5.1930, fl. (holo-, K; iso-, A, BKF, C, P, US).

PARATYPE: *Garrett 602*, Thailand, 15.10.1930, fruit, A, BKF, C, K, P, US.

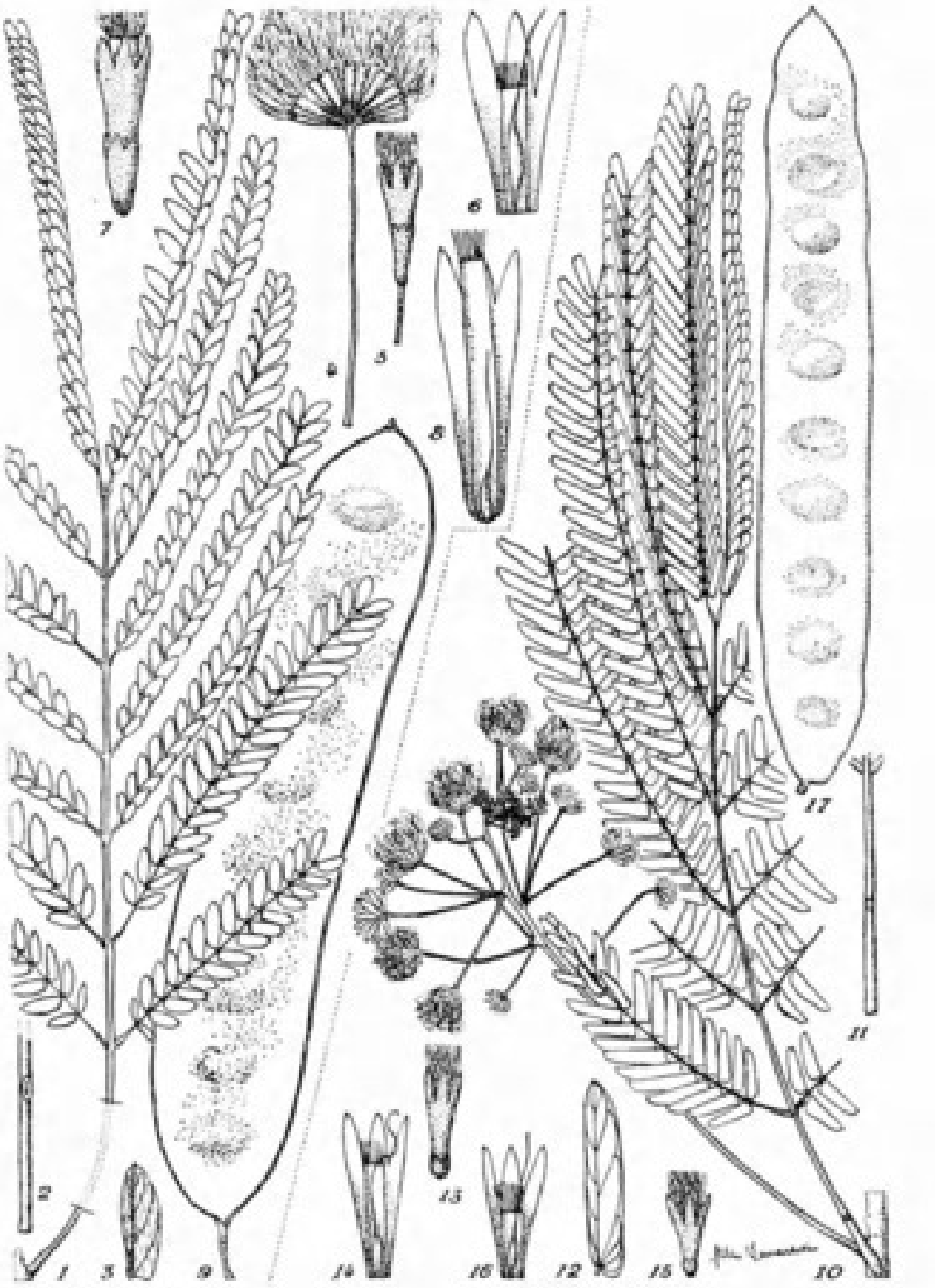
Small tree, c. 10-15 m high (acc. to GARRETT). Branchlets terete with dark-brown bark with light lenticels, puberulous in the distal part when young, glabrescent.

Leaves: rachis 12-18 cm long, puberulous; glands c. 1-1.5 cm from the base and between 1-2 distal pairs of pinnæ, 2-2.5 mm long, elliptical to slit-like, concave, sessile. Pinnæ 5-8 pairs, proximal subopposite, distal pairs opposite, 4-10 cm long, the proximal ones shorter than the distal, densely puberulous to tomentose; glands between the 1-2 distal pairs of leaflets, c. 0.75 mm long, narrowly elliptical, concave, sessile. Leaflets sessile, opposite, 10-22 pairs, 0.3-0.4 × 0.6-1.0 cm, asymmetrically oblong; base asymmetrical, truncate in the proximal pointing part narrowly cuneate in the distal pointing; apex asymmetrically obtuse, mucronate; main vein removed about 1 mm from the upper margin (1/3 of the breadth of the leaflet); upper surface glabrous with a few scattered hairs, dark with brownish prominent midrib (when dry); lower surface puberulous with yellow hairs (when dry), especially along the main vein.

Inflorescence: peduncles 2 together in the axils of the young, upper leaves, c. 5 cm long when flowering, densely puberulous, bearing corymbs of c. 35 pedicellate flowers (except the central flower which is sesssile). Flowers pale greenish-white (acc. to GARRETT).

Central flower: calyx sessile, terminating the axils of the corymb, 5.5-6 mm long, tubular to slightly urceolate, 2 mm wide near the base, 1.5 mm wide in the upper part, puberulous, teeth small lesser than 0.1 mm long, inconspicuous. Corolla 10 mm long, tubular, puberulous to villous; lobes 3 mm long, oblong, acute. Staminal tube as long as or longer than the corolla. Ovary sessile, glabrous, c. 1.5-2 mm long.

Marginal flowers: calyx pedicellate, pedicel up to 4-5 mm long, longest in the lower flowers; calyx 3 mm long, narrowly campanulate, lower diam. 0.75 mm, upper 1.5 mm, puberulous; teeth 0.3-0.5 mm long, triangular, acute. Corolla 6.5-7 mm long, funnel-shaped, puberulous, especially at the tip of the lobes; lobes 2.5 mm long, ovate, acute. Staminal tube as



Pl. 3. — **Albizia garrettii** Nielsen: **1**, leaf × 2/3; **2**, petiolar gland × 1; **3**, leaflet seen from beneath × 2; **4**, peduncle × 2/3; **5**, marginal flower × 2; **6**, section of marginal flower showing staminal tube and ovary × 3; **7**, central flower × 2; **8**, section of central flower showing staminal tube and ovary × 3; **9**, pod × 2/3. (1-8, *Garrett 555*; 9, *Garrett 602*). — **Albizia burmanica** Nielsen: **10**, leaf and inflorescence × 2/3; **11**, petiolar gland × 1; **12**, leaflet seen from beneath × 2; **13**, central flower × 2; **14**, section of central flower showing staminal tube and ovary × 3; **15**, marginal flower × 2; **16**, section of marginal flower × 3; **17**, young pod × 2/3. (10-16, *Lace s.n.* (type); 17, *Huk s.n.*).

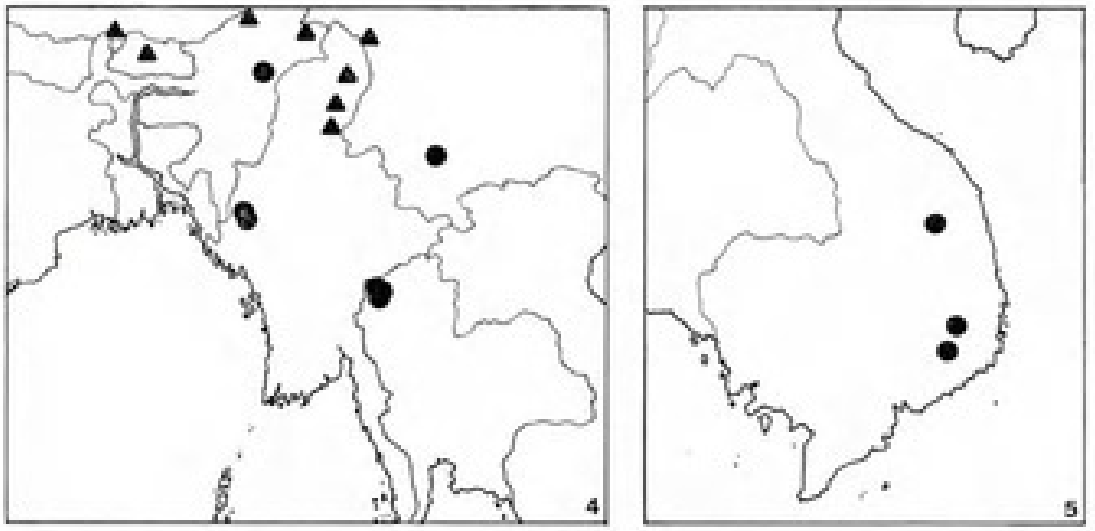


Fig. 3. — Distribution of **Albizia** in S.E. Asia : **4, A. garrettii** I. Nielsen •; **A. sherriffii** Baker f. ▲. — 5, **A. poilanei** I. Nielsen •.

long as the corolla tube. Ovary stipitate, stipe 0.5 mm long, ovary 2.5 mm long, glabrous, gradually narrowing into the stipe.

Pod (*Garrett 602*) 2-5 crowded together on old peduncles. Pod, flat with a mucronate apex, shortly stalked, stalk c. 6 mm long, 3 × 14 cm. Valves dehiscing along both sutures, chartaceous, brownish, glabrous. Seeds c. 10, funiculate, funicle thin c. 10 mm long. Seed (Pl. 1, *6*) 6 mm long, 5 mm wide, 1.5 mm thick, suborbicular in circumscription, flat, yellowish. Pleurogram 4.4 mm long and 2.5-3 mm wide; linea fissura parallel to the margins of the seed. — Pl. 3, *1-9*.

The species is named in honour of H. B. G. GARRETT, who made so many beautiful collections in N. Thailand and who was the first to collect this species in Thailand.

6. **Albizia sherriffii** Baker f.

J. Bot. 76: 20 (1938).
— *Albizzia vernayana* MERRILL, Brittonia 4: 91 (1941); type: *Kingdon Ward 482*, Upper Burma (holo-, A; iso-, NY).

TYPE: *Ludlow & Sherriff 1222*, Tibet (holo-, iso-, BM).

Bhutan, S. Tibet, N. India, N. Burma, China: Yunnan (fig. 3, *4*).

Pod: 8-10 cm long, c. 1.2 cm wide, gradually narrowing into the stalk, often somewhat constricted in some parts, flat. Valves finely puberulous, dehiscing along both sutures with somewhat thickened margins. Seeds (Pl. 1, *7*) flat, funiculate, funicle very contorted (c. 1 cm long), 5 mm long,

3 mm broad and 9.5 mm thick; pleurogram 3.5 mm long, 1.5 mm broad, linea fissura parallel to the margins.

MERRILL (*l. c.*) overlooked the species published earlier by BAKER f. The species is here described in fruit for the first time. The pod is very remarkable, being very narrow and somewhat sinuate. The seeds are also remarkable, having densely contorted funicles.

7. **Albizia duclouxii** Gagnepain

Notul. Syst. (Paris) 2: 116 (1911).

TYPE: *Ducloux 6112*, China: Yunnan (holo-, P).

S. China : Yunnan.

8. **Albizia kalkora** *sensu* Prain

J. Asiat. Soc. Beng. 66 (2): 511 (1897).
— ? *Mimosa kalkora* ROXBURGH, Fl. Ind. 2: 547 (1832); type: ?
— *Acacia macrophylla* BUNGE, Mem. Acac. Imp. Sci. St. Petersbourg Divers Savans 2: 94 (1833); type: *Bunge s.n.*, N. China (holo-, LE; iso-, K).
— *Albizzia lebbeck* BENTHAM var. *parviflora* BENTHAM, London J. Bot. 3: 87 (1844); type: as for *Acacia macrophylla*.
— *Albizzia esquirolii* LÉVEILLÉ, Fl. Kouy-Tchéou: 224 (1914-15); type: *Bodinier 2634*, China (holo-, P).
— *Albizzia henryi* RICKER, J. Wash. Acad. Sci. 8: 243 (1918); type: *Henry 10683*, China (holo-, US; iso-, K).
— *Albizzia simeonis* HARMS, Repert. Spec. Nov. Regni Veg. 17: 133 (1921); type: *Simeon Ten 106*, China (holo-, E).
— *Albizzia lebbeck* auct. *non* BENTHAM, Trans. Linn. Soc. London 30: 562 (1875), *p.p.*, *quoad syn. Acacia macrophylla* BUNGE.

Japan, China, N. Vietnam.

The type of this species has been searched in vain in Brussels, Paris, Geneva, British Museum (Nat. Hist.), Kew, Edinburgh and it is not among ROXBURGH's Flora Indica Drawings at Kew. ROXBURGH (1832) writes that it has " Leaflets from fifteen to thirty pairs, sublinear, smooth ". Later he writes: " A large timber tree; a native of the hills in the vicinity of Gwalpara, and from thence brought to the botanic garden by Mr. R. KYD ". On the base of this description, BENTHAM (1875) reduced *Mimosa kalkora* to synonymy under *A. odoratissima*, but did not mention any type. PRAIN (*l. c.*) did not mention any type either but cited three numbers: *Mann 388* from Khasi Hills, Assam; *Giesseliere*, Naga Hills, Assam; and *Henry 6203*, S. China. I have only been able to find the last one of the specimens mentioned. This belongs to the same species as the other Chinese specimens enumerated by me, but does not confirm with the description of ROXBURGH. I have not seen any specimens referable to

this species (*sensu* PRAIN) with that many leaflets as described by ROXBURGH, nor have I seen any specimens from India, Himalaya or Burma in the rich collections in Kew and Paris. The identity of *Mimosa kalkora* Roxb. is thus very uncertain and probably *not* the same as that of *A. kalkora sensu* Prain. If *Mimosa kalkora* Roxb. proves to be a dubious name the oldest epithet available is *Acacia macrophylla* Bunge (1833). But as *A. kalkora* Prain is a commonly used and well established name, I have retained it here. *A. kalkora* is a rather variable species. The specimens described as *A. henryi* Ricker and *A. simeonis* Harms have long-pedicelled flowers with pedicels 6-7 mm long and glabrous calyces. But transitions to shorter pedicels and more hairy calyces can be found.

9. **Albizia poilanei** I. Nielsen, *sp. nov.*

Arbor circa 20 m alta (secundum POILANE*). Folia: rachis 10-15 cm longa; pinnæ 5-jugæ vel minus, 4-9 cm longæ; foliola 5-8-juga, sessilia, opposita, 0.6-1.0 × 1.6-2.2 cm, irregulariter oblonga; costa excentrica, quæ parte tertia latitudinis folioli a margine superiore distat; apex folioli obtusus, rotundatus, mucronatus.*

Inflorescentia: pedunculi solitarii vel 2-3 fasciculati e foliorum summorum axillis orti, 11-12 cm longi, cum corymbis circa 35 floribus instructis.

Flos centralis sessilis vel breviter pedicellatus. Calyx urceolatus vel tubularis, tomentosus, 6-9 mm longus, dentibus triangularibus, obtusis, 1 mm longis. Corolla circa 13 mm longa, tubularis, tubo inferne glabro vel subglabro, superne velutino sicut lobis ovatis, acutis, (2-)3.5-4 mm longis. Tubus staminum longior quam tubus corollæ, toto corollæ fere æquilongus. Ovarium glabrum, sessile, circa 4 mm longum.

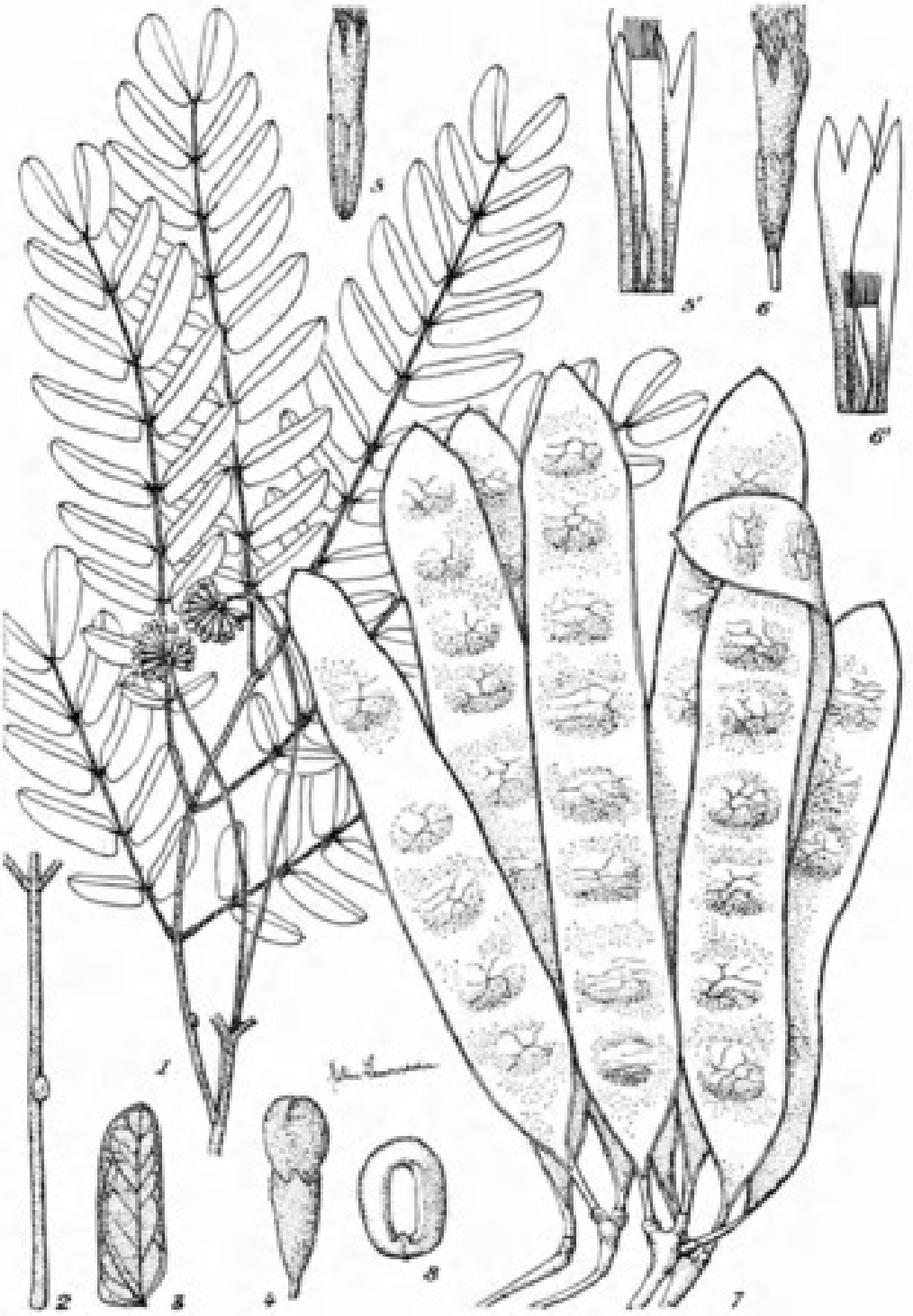
Flores marginales pedicellati, pedicellis 3 mm vel brevioribus. Calyx tubularis vel anguste infundibuliformis, velutino-tomentosus, pilis albis (secundum POILANE*), 5-5.5 mm longus, dentibus ovato-triangularibus, obtusis, circa 1 mm longis. Corolla infundibuliformis, 8-10 mm longa, tubo inferne glabro vel subglabro, superne dense puberulo-velutino sicut lobis ovatis, acutis, 2-2.5 mm longis. Tubus staminum brevior quam tubus corollæ, 4.5-5 mm longus. Ovarium substipitatum, 3.5-4 mm longum, gradatim angustius versus stipitem 0.5 mm longum.*

Legumen (Poilane 18595) usque 4 × 26 cm, applanatum, marginibus parallelis, apice rotundatum, glabrum, flavescens, papyraceum, utraque sutura dehiscens. Semina circa 8, 10 mm longa, 7.5-8 mm lata et 1.5 mm crassa, ellipsoidea, pleurogrammata; pleurogramma 5.5 mm longum, 1.5 mm latum, linea fissura marginibus subparallela.

TYPE: *Poilane 24739*, S. Vietnam (holo-, K; iso-, A, P).

Tree c. 20 m high and 1.5 m in circumference in the lower part (acc. POILANE), deciduous with protruding shortly decurrent leaf scars. Branchlets terete, puberulous to velutinous, glabrescent.

Leaves: rachis 10-15 cm long, velutinous; gland(s) 2-3 cm above the base and often another one between the distal pair of pinnæ, 1-3 mm long, circular to elliptical, flat to cushion-shaped, puberulous, sessile. Pinnæ up to 4-5 pairs, 4-9 cm long, velutinous; glands (may be absent) 1-2 mm below the bases of the leaflets, c. 1 mm long, slit-like. Leaflets 5-8 pairs, opposite, sessile, 0.6-1.0 × 1.6-2.2 cm, asymmetrically oblong, chartaceous; base asymmetrically truncate, distal pointing part often slightly rounded; apex obtuse, rounded, mucronate; lower surface velutinous with prominent veins; upper surface puberulous especially along the midrib, with promi-



Pl. 4. — **Albizia poilanei** Nielsen: **1**, leaf and peduncles with buds × 2/3; **2**, petiole with gland × 1; **3**, leaflet seen from beneath × 4/3; **4**, bud × 3; **5**, central flower × 2; **5'**, section of central flower, showing staminal tube and ovary; **6**, marginal flower × 2; **6'**, section of marginal flower, showing staminal tube and pistil; **7**, pods reduced to 4/9; **8**, seed × 1.5. (1-6', *Poilane 24739*; 7-8, *Poilane 18595*).

nent veins, main-vein excentric removed 1/3 of the breadth of the leaflet from the upper margin.

Inflorescence: peduncles solitary or 2-3 clustered together in the axils of the upper leaves. Peduncle 11-12 cm long, puberulous to velutinous, bearing a corymb of c. 35 pedicellate flowers.

Central flower sessile to shortly pedicellate terminating the axis of the " corymb ". Calyx 6-9 mm long and 3-3.5 mm diam. at the broadest place, urceolate to tubular, tomentose; teeth 1 mm long, triangular, obtuse. Corolla c. 13 mm long, tubular; tube glabrous or nearly so in the lower part, upper part and lobes velutinous; lobes (2-)3.5-4 mm long, ovate, acute. Staminal tube longer than the corolla tube about as long as the corolla. Ovary sessile, glabrous, c. 4 mm long.

Marginal flowers pedicellate, pedicels up to 3 mm long, longest in the lowermost flowers. Calyx 5-5.5 mm long, tubular to narrowly funnel-shaped, velutinous to tomentose by white hairs (acc. POILANE); teeth c. 1 mm long, triangular to ovate, obtuse. Corolla 9-10 mm long, funnel-shaped, tube glabrous or nearly so in the lower part, upper part and lobes densely puberulous to velutinous; lobes 2-2.5 mm long, ovate, acute. Staminal tube shorter than the corolla tube, 4.5-5 mm long. Ovary substipitate, 3.5-4 mm long, gradually narrowing into the c. 0.5 mm long stipe, glabrous to very fine microscopically puberulous.

Pod (*Poilane 18595*) up to 26 cm long and 4 cm broad, flat with parallel margins. Valves dehiscing along both sutures, glabrous, yellowish, chartaceous. Seeds c. 8, funiculate, funicle thin, filiform, c. 1.5 mm long. Seeds (Pl. 1, *9*) 10 mm long, 7.5-8 mm broad and 1.5 mm thick, ellipsoid; linea fissura nearly parallel to the margins; pleurogram 5.5 mm long and 1.5 mm broad. — Pl. 4.

This species is according to POILANE flowering in March and fruiting in October.

S. Vietnam (fig. 3, *5*).

10. **Albizia lebbeck** (L.) Bentham

London J. Bot. 3: 87 (1844), *p.p., excl. Acacia macrophylla* BUNGE. — *Mimosa lebbeck* L., Sp. Pl. 1: 516 (1753).

TYPE: *herb. Linné 1228.16*, LINN.

Tropical and subtropical Asia and Africa, also cultivated.

The type of *Mimosa lebbeck* L. bears no indication of origin, but according to LINNÆUS (*l. c.*) it comes from Egypt.

11. **Albizia chinensis** (Osbeck) Merrill

Amer. J. Bot. 3: 575 (1916).
— *Mimosa chinensis* Osbeck, Dagbok Ostind. Resa: 233 (1757).

Type: *Osbeck s.n.*, China near Whampoa (not seen)?

India, Ceylon, Burma, S. China, N. Thailand, Cambodia, Laos, Vietnam, Java.

This species is easily recognized by the large stipules, the leaflet-morphology with the main nerve nearly forming the upper margin of the leaflet, the indehiscence of the pods and the tiny pleurograms of the seeds. The species is rather variable in indumentum and in the morphology of the inflorescence. Some Indo-chinese specimens have the clusters of peduncles subtended by caducous bracts with glands similar to those of the leaves. In other specimens not even the bracts are present and the cluster of peduncles may be surrounded by a pair of big, auriculate stipules at the base.

Notes on typification: Peter Osbeck (*l. c.*: 233) writes (translated): " Octob. 6. Beautiful, bright weather. After the sermon I rowed with a Chinese boat over to the French Island, where I besides the herbs mentioned above, collected the following:

Mimosa (*chinensis*) inermis, stipulis foliolo longe majoribus semicordatis. Folia septem vel octojuga. Foliola numerosa, fere lanceolata, sed basi obtusiora. Differt impremis and manifeste a reliquis maximus suis stipulis, quæ semicordatæ cauli adsident eumque amplectuntur plusquam decies majores foliolis. Flores non vidi ".

" French Island " Osbeck mentions as locality is according to Merrill (1916: 575) one of the small islands outside Whampoa (Canton, Kwangtung prov., China, authors remark). Merrill mentions no type, and I have not been able to trace the type in any of the following herbaria: Lund, Uppsala, Stockholm, Linnean Society or any of the herbaria mentioned in the introduction. If no type of *Mimosa chinensis* exists a neotype has to be chosen if possible from the above mentioned area, as Osbeck's description leaves no doubt concerning the identity of the plant.

12. **Albizia retusa** Bentham

London J. Bot. 3: 90 (1844).
— *Albizia littoralis* Teijsmann & Binnendijk, Natuurk. Tijdschr. Ned. Indië 29: 259 (1866); type: *De Fretes s.n.*, Amboiana (not seen!).

Type: *Cuming 1223*, Philippine Isl. (holo-, K).

S. Thailand, Malaysia, Philippine Isl., Indonesia.

13. **Albizia lucidior** (Steudel) I. Nielsen, *comb. nov.*

— *Inga lucidior* Steudel, Nomencl. Bot., ed. 2, 1: 810 (1840).
— *Mimosa lucida* Roxburgh, Fl. Ind. 2: 544 (1832), *non* Vahl (1807); type: *Roxburgh s.n.*, India (holo-, BR; iso-, K).
— *Albizzia lucida* (Roxb.) Benth., London J. Bot. 3: 86 (1844).
— *Albizzia meyeri* Ricker, J. Wash. Acad. Sci. 8: 242 (1918); also based on Roxburgh's material.
— *Albizzia teysmannii* Kurz, Fl Burm. 1: 428 (1877); type: *Teysmann 6046*, Thailand (photo, K).
— *Albizzia gamblei* Prain, J. Asiat. Soc. Beng. 66 (2): 513 (1897); type: *Gamble 9661*, India, Sikkim (lecto-, K).
— *Albizzia bracteata* Dunn, J. Linn. Soc. London 35: 493 (1903); type: *Hancock 304*, China, Yunnan (holo-, K).
— *Albizzia lucida* (Roxb.) Bentham var. *pilosula* Gagnepain, Fl. Gén. Indoch. 2: 96 (1913); type: *Thorel 3276*, Laos (holo-, P; iso-, K).
— *Inga bigemina* auct. *non* Willdenow: Wight & Arnott, Prod. 1: 269 (1834), *p.p., quoad syn. Inga lucida* Wallich *et Mimosa lucida* Roxburgh.
— *Inga lucida* Wallich, Num. List Specim. E. India: 183, n. *5267 A* (1831-32), *nom. nud.*
— *Acacia saponaria* Hamilton, *in* Wallich, Num. List Specim. E. India: 183, n. *5267 D* (1831-32), *nom. nud.*

Type: *Roxburgh s.n.*, India orientalis (holo-, BR; iso-, K).

India, Himalaya, S. China, Burma, Thailand, Indo-China.

Certain variations can be observed within this species. The number of leaflets per pinna varies, the specimens from Sikkim have the highest number and those from Thailand the lowest. The inflorescence and the size of the flowers also vary. Specimens from S. China and N. Burma have not so richly branched panicles as the more southern specimens, and the peduncles are subtended by glandular bracts and they have larger flowers. Dunn (*l. c.*) described specimens like that as *A. bracteata*, but the type of *Mimosa lucida* Roxb. has similar bracts, and similar patterns can be seen in specimens from Sikkim described by Prain as *A. gamblei* (*Gamble 161 A, 4093 A, 9661* (type).

14. **Albizia saponaria** (Loureiro) Blume ex Miquel

Fl. Ind. Bat. 1: 19 (1844); Bentham, Trans. Linn. Soc. London 30: 561 (1875); Gagnepain, Fl. Gén. Indoch. 2: 89 (1913), *p.p.*; Merrill, Trans. Amer. Philos. Soc. 24: 186 (1935).
— *Mimosa saponaria* Loureiro, Fl. Cochinch.: 654 (1790); ed. 2, Willd.: 802 (1793).

Lectotype: *Cortex saponarius*, Rumphius, Herb. Amb. 4: 131, *tab. 66* (1743).

Malay peninsula, Malay Islands to New Guinea.

This species is very variable in the numbers of leaflets per pinna, indumentum of the leaflets and length of staminal tube in relation to the corolla tube.

GAGNEPAIN (*l. c.*) recorded this species from Indo-China. 2 collections are mentioned: 1) *Bon 4881* from Ninh Bin, N. Vietnam (= *A. saponaria*); BON stated on the label that it was cultivated; 2) *Massie s.n.* from Laos (= *A. crassiramea*). I have not seen more collections of that species from Indo-China, and have accordingly not recorded it from there.

MERRILL (1935) did not indicate any type for *Mimosa saponaria* Lour., and I have not been able to trace it neither in the collections of British Museum (Natural History) nor in Paris. LOUREIRO (1790), who described the species without flowers and pods, referred to RUMPHIUS's illustration in his protologue and so did BENTHAM (1875); for this reason I choose this plate as the lectotype. The question is open, whether the species has been cultivated in Indo-China since LOUREIRO's time or he just misinterpreted RUMPHIUS's picture, as *A. saponaria* is not the only species with saponins in the bark, the same character is found in *A. lucidior*, which is indegenous to Indo-China.

15. **Albizia procera** (Roxburgh) Bentham

London J. Bot. 3: 89 (1844).
— *Mimosa procera* ROXBURGH, Pl. Corom. 2: 12, *tab. 121* (1799).

TYPE: *Roxburgh*, Pl. Corom. 2: *tab. 121* (1799).

Tropical Asia (except Malay Peninsula).

16. **Albizia crassiramea** Lace

Kew Bull. 1915: 402 (1915).
— *Albizzia laotica* GAGNEPAIN, Bull. Soc. Bot. France 99: 48 (1952); lectotype: *Poilane 16833*, Laos, Xieng Khouang (P; iso-, BM).
— *Albizzia saponaria* auct. *non* MIQUEL: GAGNEPAIN, Fl. Gén. Indoch. 2: 89 (1913), *pro specimen Massie s.n.*

TYPE: *Lace 5910*, Burma, Maymyo Plateau (holo-, E; iso-, E, K).

Burma, N. Thailand, Laos, N. Vietnam (fig. 4, *6*).

In describing *A. laotica* GAGNEPAIN (*l. c.*) pointed out that it was near to *A. millettii* (= *A. corniculata*), but the specimens from Laos and N. Vietnam: *Poilane 2090, 16833, 25242, 26758*, all mentioned as syntypes by GAGNEPAIN, differ in no respect from the type of *A. crassiramea*.

17. **Albizia lebbekoides** (A. DC.) Bentham

London J. Bot. 3: 89 (1844).
— *Acacia lebbekoides* A. DC., Prodr. 2: 467 (1825); DECAISNE, Herb. Timor. Descr.: 133 (1835).

TYPE: *Decaisne s.n.*, Timor (holo-, G-DC; iso-, K).

18. **Albizia burmanica** I. Nielsen, *sp. nov.*

Arbor altitudine mediocri. Folia: rachis 10-12 cm longa, pinnis 6-jugis vel minus, 6-7 cm longis; foliola 17-23-juga, sessilia, opposita, anguste irregularia, oblonga, 0.3 × 1.1 cm, costa excentrica, quæ parte tertia latitudinis folioli a margine superiore distat.

Inflorescentia: paniculæ e foliorum summorum axillis ortæ, circa 8 cm longæ, fasciculos 2-4 pedunculorum circa 3 cm longorum gerentes; pedunculi 3 cm longi, capitula circa 25 flores sessiles gerentes.

Flores centrales 3-4: calyx urceolatus, dense sericeus, 1.5-2 mm longus, dentibus triangularibus, 0.3 mm longis. Corolla subtubularis, dense sericea, 7 mm longa; lobis lanceolatis, acutis, 2 mm longis. Tubus staminum longior quam corolla. Ovarium sessile, glabrum, circa 1.5 mm longum.

Flores marginales: calyx tubularis, dense sericeus, 1.4-2 mm longus, dentibus triangularibus, circa 0.3 mm longis. Corolla anguste infundibuliformis, dense sericea, 5 mm longa, lobis lanceolatis, acutis, 2 mm longis. Tubus staminum tubo corollæ fere æquilongus. Ovarium glabrum, 1.4 mm longum, stipitatum, stipite 1 mm longo.

Legumen maturum ignotum.

TYPE: *Lace s.n.*, 3.8.1909, Burma, Myingyan (holo-, E).

PARATYPE: *Huk s.n.*, 12.10.1890, Upper Burma, P.

A medium-sized tree. Branchlets terete, lenticellate, greyish, glabrous.

Leaves: rachis 10-12 cm long, densely puberulous; glands 1 cm above the base and between the 2 distal pairs of pinnæ, c. 0.5 mm diam., sessile, subglobose. Pinnæ up to 6 pairs, opposite, 6-7 cm long, puberulous; gland(s) between the 1-2 distal pairs of leaflets, minute, elliptical, sessile, less than 0.5 mm long. Leaflets 17-23 pairs, opposite, sessile, 0.3 × 1.1 cm, oblong, chartaceous; base asymmetrical, truncate, apex rounded; both surfaces with prominulous veins, main-vein excentric, removed 1/4 of the breadth of the leaflet from the upper margin; upper surface glabrous, lower very faintly adpressed puberulous.

Inflorescence: axillary panicles in the upper leaf axils. Panicle c. 8 cm long, unbranched or 1 generation of side-branches, shortly tomentose, bearing clusters of 2-4 peduncles in the upper half. Peduncles 3 cm long bearing heads of c. 25 sessile flowers.

Central flowers 3-4: calyx 1.5-2 mm long, 1.5 mm broad, urceolate, densely sericeous, with c. 0.3 mm long triangular teeth. Corolla 7 mm long, subtubular, slightly widened in the proximal part, densely sericeous; lobes 2 mm long, lanceolate, acute. Staminal tube longer than the corolla, 8-9 mm long. Ovary sessile, glabrous, c. 1.5 mm long, lower part surrounded by a 0.5 mm high, ring-shaped nectarium.

Marginal flowers: calyx 1.5-2 mm long, tubular, densely sericeous with c. 0.3 mm long triangular teeth. Corolla 5 mm long, narrowly funnel-shaped, densely sericeous; lobes 2 mm long, lanceolate, acute. Staminal tube only slightly longer than the corolla tube. Ovary 1.5 mm long, glabrous, stipitate, stipe 1 mm long.

Pod (not seen fully developed) c. 2 × 15 cm, brownish, glabrous with c. 10 seeds (*Huk s.n.*, 12.10.1890, P). — Pl. 3, *10-17*.

Central and Upper Burma (endemic).

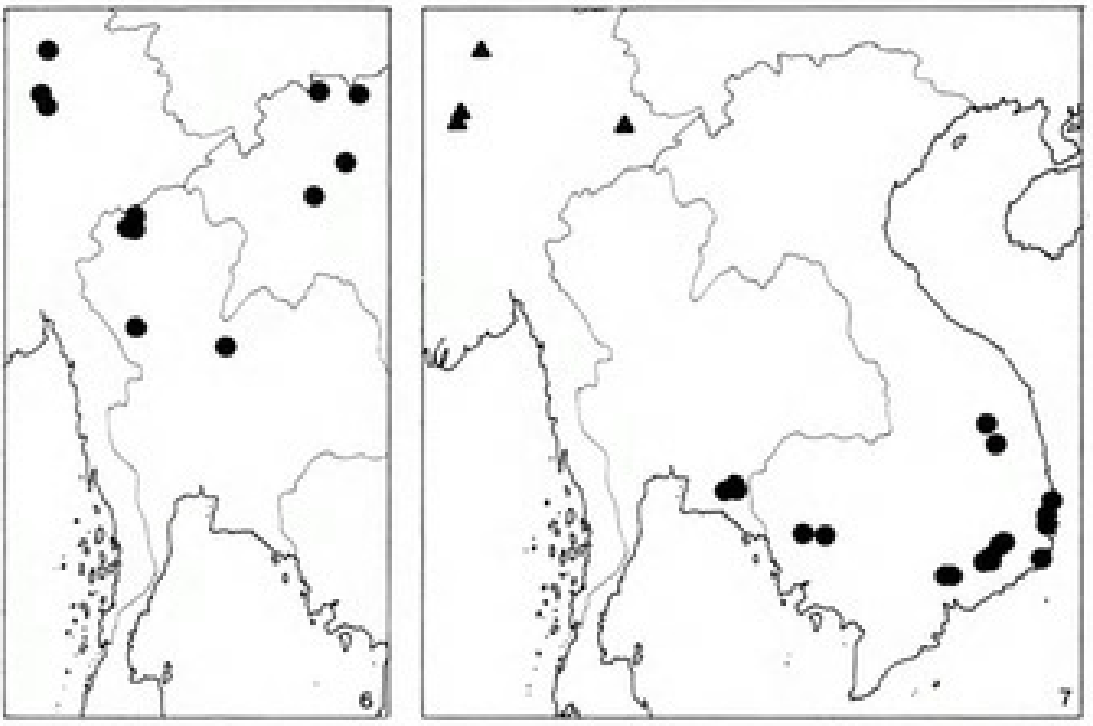


Fig. 4. — Distribution of **Albizia** in S.E. Asia: **6, A. crassiramea** Lace •. — **7, A. burmanica** I. Nielsen ▲; **A. vialeana** Pierre •.

SPECIMENS EXAMINED: BURMA: *Lace s.n.*, between Sciktein and Taungtha, 500 m, 3.8.1909 (type); *Rogers 486*, Pop Hill, c. 1000 m; *Huk 27*, Shwebo; *Huk s.n.*, Shan State, 14.7.1890; *Huk s.n.*, Upper Burma, 12.10.1890.

19. **Albizia vialeana** Pierre

Fl. Cochinch. 5: *tab. 399 A* (1899).

TYPE: *Pierre 5966*, S. Vietnam, « Cochinchine ad Songlu » (holo-, P; iso-, BM, E, K, US).

S.E. Thailand, Cambodia, S. Vietnam (fig. 4, 7).

20. **Albizia odoratissima** (L. f.) Bentham

London J. Bot. 3: 88 (1844).
— *Mimosa odoratissima* L. f., Suppl. Pl.: 437 (1781).
— *Albizzia odoratissima* (L. f.) BENTH. var. *mollis* BENTH. ex BAK. Fl. Br. Ind. 2: 299 (1878); type: *Thomson s.n.*, India, Rohilchund, 1845 (holo-, K).

TYPE: *Koenig in Linné 1228.18*, India, E. Coromandel, 1776 (holo-, LINN; iso-, BM).

Tropical and subtropical Asia: S. China, S.E. Mainland Asia (except Malay Peninsula), India, Ceylon.

This species is very variable in the indumentum. Tomentose specimens occur all over the range of the species and have been described as var. *mollis* by BAKER (*l. c.*) from India. But there are transitions between glabrous specimens and tomentose ones, and I think it would be unwise to establish varieties on this criterion alone.

Fruiting specimens are often confused with *A. kalkora*; but the inflorescence here is a panicle and at *A. kalkora* a cluster of peduncles.

21. **Albizia corniculata** (Loureiro) Druce

Bot. Soc. Exch. Club Brit. Isles 4: 603 (1917); MERRILL, Trans. Amer. Philos Soc. 24: 186 (1935).

— *Mimosa corniculata* LOUR., Fl. Cochinch.: 651 (1790); ed. 2, WILLD.: 800 (1793).

— *Albizzia millettii* BENTH., London J. Bot. 3: 89 (1844); type: *Millett s.n.*, Hong Kong (holo-, K).

— *Albizzia scandens* MERRILL, Philipp. J. Sci. Bot. 4: 265 (1909); type: *Foxworthy 829*, Palawan Isl. Philippines (iso-, K, L).

— *Albizzia millettii* BENTH. var. *arfeuilleana* PIERRE ex GAGNEPAIN, Fl. Gén. Indoch. 2: 91 (1913); type: *Pierre 5964*, 8.1866, S. Vietnam, Cochinchine (iso-, US).

— *Albizzia millettii* BENTH. var. *siamensis* CRAIB, Fl. Siam. En. 1: 555 (1928); type: *Collins 526*, Thailand (holo-, K; iso-, ABD).

— *Albizzia nigricans* GAGNEPAIN, Bull. Soc. Bot. France 99: 48 (1952); lectotype: *Poilane 23*, S. Vietnam, P.

LECTOTYPE: *Millett s.n.*, Hong Kong, K.

S. China, Indo-China, Thailand, Philippines (Palawan); N. part of Borneo (Sarawak, Brunei, Sabah) (fig. 5, *8*).

I have not been able to localize the type of *Mimosa corniculata* Loureiro neither in British Museum (Natural History) nor in Paris, and it is not mentioned in GOMEZ's list, in MERRILL (1935: 13) over the LOUREIRO specimens preserved in the Museum of Lisbon. As this species is the only Chinese one with recurved hooks it is not difficult to interpret. LOUREIRO (*l. c.*) gives the locality as " Habitat agrestis circa Cantonem Sinarum ". The type of *A. millettii* Benth. is from nearly the same area and can serve as type for *Mimosa corniculata* Lour., as no collection exists fitting to that description among LOUREIRO's specimens.

A. millettii var. *arfeuilleana* Pierre ex Gagn. and *A. millettii* var. *siamensis* Craib, represent specimens with broad leaflets, but the variation in leaflet-shape and -size is so wide and continuous, that it cannot be justified to give varietal rank to these specimens.

A. scandens Merr. and *A. nigricans* Gagn. also fall within the variation of this species. *A. nigricans* based on *Poilane 23* and *Krempf s.n.*, should, according to GAGNEPAIN, differ from *A. corniculata* in having only 1 pair of pinnæ and 3-4 ovate to elliptical to rectangular leaflets, just as many other specimens of *A. corniculata*.

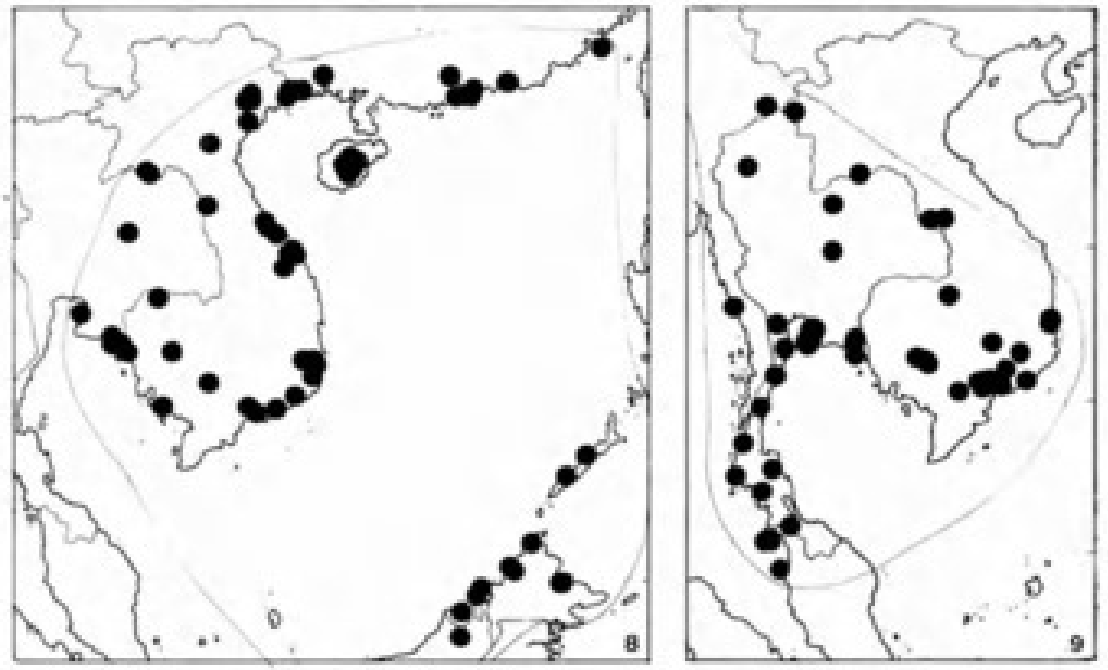


Fig. 5. — Distribution of **Albizia** in S.E. Asia: **8, A. corniculata** (Lour.) Druce •. — **9, A. myriophylla** Benth. •.

22. **Albizia myriophylla** Bentham

London J. Bot. 3: 90 (1844).
— *Albizzia myriophylla* Benth. var. *foliolosa* Bak., Fl. Br. Ind. 2: 301 (1878); type: *Wallich 5241*, India, Maalmyre (holo-, K).
— *Mimosa microphylla* Roxb., Fl. Ind. 2: 549 (1832), *nom. illeg., non* Poir. 1810; type: *Roxburgh s.n.*, Ind. Orientalis (holo-, BM).
— *Albizzia microphylla* (Roxb.) MacBride, Contr. Gray Herb. 59: 3 (1919).
— *Albizzia thorelii* Pierre, Fl. Cochinch. 5: *sub tab. 399* (1899); lectotype: *Pierre 5978*, Ba Ria, S. Vietnam, 6.1866 (P; iso-, BM, E, K, US).
— *Albizzia vialeana* Pierre var. *thorelii* (Pierre) Hô, Ill. Fl. S. Vietnam 1: 804 (1970).

Type: *Wallich 5242 A*, India, Sillet (holo-, K).

India, E. Himalaya, Burma, Thailand, Cambodia, Laos, S. Vietnam, N. part of Malay Peninsula (fig. 5, 9).

The name *Mimosa microphylla* was first used by Poiret (Encycl. Bot., Suppl. 1: 36, 1810) for *Pithecellobium unguis-cati* (L.) Benth. The name was thus preoccupied when used by Roxburgh for this species in 1832 (*l. c.*), and Bentham (1844) was right when he gave it the new name *A. myriophylla*.

Specimens described as *A. thorelii* Pierre (*l. c.*) and var. *foliolosa* Baker (*l. c.*) have leaves with c. 8 pairs of pinnæ and pinnæ with 25-30 pairs of 1 × 7 mm, narrowly oblong leaflets, but similar inflorescence and flowers. Both *A. thorelii* Pierre and *A. myriophylla* var. *foliolosa* Baker are therefore reduced to synonomy under this species. Pierre (*l. c.*) did not indicate any type for this species, only that it came from the provinces Bien Hoa

and Tay Ninh, S. Vietnam, and the local name was " Son trang " or " sung rang ". The specimen *Pierre 5978* from Ba Ria, Phuoc Tuy prov., S. Vietnam, bears the name *A. thorelii* in the hand-writing of PIERRE, fits with the description and the local name and is therefore chosen as lectotype.

DUBIOUS NAME

Albizia elegans Kurz

Fl. Burm. 1: 427 (1877); PRELIM, Rep. for. Veg. Pegu App. B: 47 (1875); J. Asiat. Soc. Beng 45 (2): 299 (1876); PRAIN, J. Asiat. Soc. Beng. 66 (2): 512 (1897); BRANDIS, Indian Trees: 272 (1906).

KURZ did not mention any type; he only wrote that the species was: " Not unfrequent in the tropical forests of the eastern slopes of the Pegu Yomah, as along the feeders of the Swa-choung, etc. ". PRAIN (*l.c.*) presented an emendation of the description, but based his description of inflorescence and flowers on a WALLICH specimen, which KURZ had not seen, as he made his description without flowers and pods. PRAIN (*l. c.*) cited two specimens: *Kurz s.n.* from Burma, Pegu, Bookee-ridges and on banks of Swa-choung, and a WALLICH specimen without number and locality from the Calcutta Herbarium. KURZ (1875) says in a note that the species is near to *A. lebbekoides* and in 1876 that it is near to *A. stipulata* (= *A. chinensis*). However, according to PRAIN's description (*l. c.*) the heads should not be panicled and the calyx pedicellate. Those two characters bring it closer to *A. julibrissin* and *A. sherriffii*. But as I have seen none of the specimens cited above I regard *A. elegans* as a dubious name.

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