RESERVED TREES OF NORTHEASTERN THAILAND (SIAM)*

By

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INTRODUCTION

The forests in the Northeastern part of Thailand can be defined into three types; semi-evergreen forest, mixed deciduous forest and dry diptercarps forest. The timber tree species are scattered in these three types of forest, and only few species are found growing indiscriminately in two or more types of forests, such as mai yang hieng (Dipterocarpus obtusifolius TEIJSM.) which occure both in semi-evergreen forests and dry dipterocarps forest; mai phayawm (Shorea talura ROXB.) which is found in all three types of forests; mai paw oktaek (Pterocymbium javanicum R.BR.) which thrives in mixed decicuous and semi-evergreen forests, and mai daeng (Xylia kerrii CRAIB & HUTCH.) which grows prolifically both in dry diptero - carps and mixed deciduous types. It is deemed feasible therefore to base the key for their identification primarily on the habitat of the species.

—Sisaket, Ubolrachadhani, Udaundhani, Khawnkaen, Nakhawn Phanom, Mahasarakham Kalasind, Loei, Roi Et, Nawngkhai and Sakolnakhawn.

*The regional division of Thailand in this paper is accorded to the forestry-point-of-view, and the Northeastern region in this sense covers

The most valuable timber of this region is mai phayung (Dalbergia cochinchinensis PIERRE), which is almost comparable in value to mai sak (Tectona grandis LINN. F.) of the northern region. In the 78 species treated in this paper all but two are well known to science. The two doubtful species, i.e. mai tan hok (Litsea sp.) and mai yang bong (Persea sp.) have not yet been identified because of lack of complete botanical materials.

As they are well known species, it is thought expedient to omit the repetition of their full description, and references can be made to available literatures both Thai and foreign. In this paper only a field key is being given in order to serve as a handbook for foresters and those who work in this region. In preparing this field key, the vegetative characters are largely employed, as they prove practical. Nevertheless it is unavoidable to use also the reproductive characters. In general the floral parts alway fall off after the anthesis, but the fructification takes much longer time, and one frequently comes across the fruit in various stages. For this reason the characters of the fruit have been used incorporatedly with the vegetative characters throughout.

This work is the result of the Forest Products Research Division working programme for 1958-1959, Project BZ. 2: The study of all reserved trees of Thailand, drawn by Mr. KRIT SAMAPHUDDHI, Chief of the Forest Product Research Division.

PLANT NAMES

All botanical names appearing in this work, follow the modern concept as far as references are available, and all the vernacular names

appended are preferred names, as it is the only way to eliminate the misunderstanding in local practices.

TAXONOMIC CONSIDERATION

In the course of preparation of this paper the author was faced with problems of the status of some species which was as follows:

1) It is feasible to treat Lagerstroemia noei CRAIB as a synomymy of Lagerstroemia balansae KOEHNE, and Lagerstroemia collettii CRAIB as Lagerstroemia venusta WALL., for the morphological variation is very slight. The revision of this group of tree species is badly needed, but it is outside the scope of this work.

2) The following names had been adopted according to the International Rules of the Botanical Nomenclature:-

Aphanamixis polystachya (WALL.) PARKER (Synonym : Amoora rohituka WIGHT & ARN.) Lannea coromandelica (HOUTT.) MERR. (Synonyms : Odina wodier ROXB., Lannea wodier (ROXB.) ADELB.).

Peltophorum pterocarpum (DC.) BACKER ex HEYNE (synonyms : Peltophorum inerme LLANOS, Peltophorum ferrugineum BENTH.)

Vitex pinnata LINN. (synonym : Vitex pubescens VAHL)

REFERENCES

3) ENDERT, F.H : Key to the tree genera in Indonesia, pp. 78, 1956
4. RAIZADA, M.B : Name changed in common Indian plants. Ind. For. 84: 467-538, 1958.
1) BRANDIS, D. : Indian Trees, pp. xxxii+767, illustrated, 1921.
2) CRAIB, W.G. : Florae Siamensis Enumeratio, vols. 1-3 (pars), 1925-1954.

) SMITINAND, TEI : Identification keys to the Dipterocarpaceae of Thailand. Nat. Hist. Bull. Siam Soc. 19:57-83, 1958.

) Royal Forest Department : Siamese plant names, Part 1 : pp. 504, 1948

) WINIT WANANDORN, PHYA : Siamese Phant names, Part 2 : pp. 801 , 1960.

FIELD KEY TO RESERVED TREES OF NORTHEASTERN THAILAND

.. Species of dry dipterocarps forests. 3

.. Species of mixed deciduous or evergreen forest. 14

)a.Leaves simple. 4

)b.Leaves compound. 10

4a.Leaves stipulate, alternate. 5

4b. Leaves exstipulate, subopposite, grey tomentose. Terminalia alata HEYNE (Rokfa)

5a.Lateral veins straight from the midrib to the margin, abruptly joined to form the marginal vein; fruits with accrescent calices,2 long, 3 short. 6

5b.Lateral veins not as such; fruits with accrescent calices 3 long 2 short.8

6a.Fruits spheral or with 5 tuberculates at the top. 7

6b.Fruits covered with 5 transversely plicate accrescent ridges.

Dipterocarpus intricatus DYER.(Yang krat)

7a.Fruits spheral Dipterocarpus obtusifolius TEIJSM.(Yang hien)

7b.Fruits 5-tuberculated at the top. Dipterocarpus tuberculatus ROXB.(Yang phluan)

8a.Accrescent calices markedly unequal, basal part smooth and tightly clasped the nut. 9

8b loosely clasped the nut. Pentaeme siamis DC.(Rang). thickened.

17 a. Stem with milky latex; leaves opposite 21

17 b. Stem with resin; leaves alternate 18

a. Leaves glabrous, broadly ovate; fruits ovoid, greyish tomentose.

Shorea obtusa WALL. (Teng)

b. Leaves sometimes with short tomentose underneath; fruits elliptic, glabrous.

Shorea taluna ROXB. (Phayawm)

a. Leaves exstipulate; fruits smooth. 11

b. Leaves stipulate; fruits echinate.

Sindora siamensis CRAIB (Makha tae)

a. Fruits dry, dehiscent. 12

b. Fruits fleshy, indehiscent. Canarium subulatum Guillaum. (Makoem)

a. Leaves paripinnate. 13

b. Leaves bipinnate; only one pair of pinnae at the end of common petiole; fruits woody oblique compressed Xylia kerrii CRAIB & HUTCH. (Daeng)

a. Large tree often low branched; bark whitish, lenticellate; leaflets rounded tip; fruits woody, oblong, twice as long as broad; seeds ligneously arillate.

Afzelia xylocarpa CRAIB (Makha mong).

b. Medium tree, bark black, fissured; leaflets acute; fruits not woody, strap-shaped, many time longer than broad; seeds exarillate.

Cassia garrettiana CRAIB (Samae sarn).

a. Species of mixed deciduous forests. 15

b. Species of evergreen forests. 61

a. Leaves simple. 16

b. Leaves compound. 40

a. Stem with milky latex or resin. 17

b. Stem without latex or resin 22

26a. Bark smooth greenish white; leaves coriaceous, shining; fruits fleshy.
Garcinia cellinsae CRAIB (Put)

18a. Leaves with lateral veins straight from midrib to margin. 19

18b. Leaves without such venation. Shorea talura ROXB. (Phayawm)

19a. Leaves more or less hairy, stipules tomentose. 20

19b. Leaves glabrous, dried up slaty brown, shining; stipules canescent.
Dipterocarpus turbinatus GAERTN.F.(Yang daeng)

20a. Leaves elliptic-ovate, atmost 10 cm. long; fruits 5-ridged.
Dipterocarpus costatus GAERTN.F.(Yang pai)

20b. Leaves ovate cordate, at least 15 cm. long; fruits spheral.
Dipterocarpus obtusifolius TEIJSM.(Yang hieng)

21a. Leaves hairy; fruits capsular, stout, linear elliptic.
Lightia tomentosa ROEM. & SCHULT.(Mok man)

21b. Leaves glabrous; capsules slender, cylindric.
Holarrhena antidysenterica WALL.(Mok luang)

22a. Leaves stipulate. 23

22b. Leaves exstipulate. 27

23a. Leaves alternate. 24

23b. Leaves opposite. 25

24a. Deciduous tree; fruits winged, compressed.
Holoptelea integrifolia PLANCH.(Kachao)

24b. Evergreen tree, twig end curved out; fruits drupaceous.
Irvingia malayana OLIV. (Kabok)

25a. Leaves elliptic ovate; fruits drupaceous or capsular. 26

25b. Leaves cordate; fruits collected in globular head.
Adina cordifolia HK.F. (Kwao)

34a. Fruiting calyx strongly ribbed, caneseent.
Lagerstroemia venusta WALL. (Salao)

26b. Bark spongy, greyish black; leaves chartaceous with reddish petiole.

Hymenodictyon excelsum WALL. (Somkop)

27a. Leaves alternate. 28

27b. Leaves opposite, subopposite or subwhorl. 37

28a. Leaver palminerved. 29

28b. Leaves penninerved. 31

29a. Basal veins 5-7. 30

29b. Basal veins 3; roughly serrate towards the tip; fruits 5-longitudinally winged

Pentace burmanica KURZ (Sisiat plueak)

30a. Large deciduous tree up to 40 m. tall, 300 cm. girth; stem cankerous;

leaves chartaceous; fruit boat-shape-winged.

Pterocymbium javanicum KOSTERM.(Paw oktaek)

30b. Evergreen tree up to 20 m. tall, 150 cm. girth; stem not cankerous;

leaves coriaceous; fruits 5-regular-spread-winged.

Berria mollis WALL. (Lieng man)

31a. Bark scaly or longitudinally streaked, blackish. 32

31b. Bark pock-marked, whitish; stems fluted 35

32a. Bark longitudinally streaked, blackish; blaze with bluish purple cambium;

fruits capsular. 34

32b. Bark scaly, blaze without such cambium. 33

33a. Fruits brown, compressed, winged, collected in a head.

Anogeissus acuminata WALL., var. lanceolata

C.B. CLARKE (Ben).

33b. Fruits green to black, globose, drupaceous.

Diospyros mollis GRIFF. (Makluea)

41a. Leaves stipulate 42

41b. Leaves exstipulate 46

34b. Fruiting calyx nearly smooth, glabrous.

Lagerstroemia macrocarpa WALL. (Inthanin bok).

35a. Fruiting calyx smooth, brown tomentose. 36

35b. Fruiting calyx ribbed, brown tomentose.

Lagerstroemia floribunda JACK (Tabaek na).

36a. Under surface of leaves tomentose.

Lagerstroemia calyculata KURZ (Tabaek).

36b. Under surface of leaves glabrous.

Lagerstroemia balansae KOEHNE (Tabaek plueak na).

37a. Leaves suopposite or subwhorl. 38

37b. Leaves opposite, ovate; fruits drupaceous.

Gmelina arborea ROXB. (Saw).

38a. Leaves suopposite; fruits winged or drupaceous. 39

38b. Leaves subwhorl; fruits drupaceous.

Terminalia chebula RETZ. (Samaw phiphek).

39a. Bark scaly; young shoots brown, silky tomentose; petioles with glands on both sides; fruits drupaceous.

Terminalia bellerica ROXB. (Samaw thai)

39b. Bark fissured and transversely cracked; young shoots grey tomentose petioles without glands; fruits 5-longitudinally-winged.

Terminalia alata HEYNE (Rokfa).

40a. Leaves pinnate. 41

40b. Leaves digitate 59

49 b. Fruits many-seeded, cylindric, pendulous, many times longer than broad
Cassia fistula LINN. (Chaiya prack

42a. Leaves bipinnate 43

42b. Leaves imparipinnate; leaflet opposite; fruits woody, flat, pendulous.

Millettia leucantha KURZ (Sathorn).

43a. Twig and petiole thorny. 44

43b. Twig and petioles not thorny. 45

44a. Stem dark coloured;bark peeling off in long strips; branchlet brown or purple, shining; leaflets 30-50 pairs, linear; fruits thinly compressed.

Acacia catechu WILID. (Sisiat kaen).

44b. Stem whitish, bark smooth; branchlet whitish; leaflet 10-20 pairs, very oblique, fruits thick, inflated.

Caesalpinia sappan LINN. (Fang).

45a. Stipules simple, not covering twig end; fruits with vertical seeds.

Peltophorum pterocarpum BACKER (Nonsi).

45b. Stipules much branched, covering twig end; fruits with horizontal seeds.

Peltophorum dasyrachis KURZ (Nonsi, Alang).

46a. Leaves imparior paripinnate. 47

46b. Leaves bipinnate. 54

47a. Leaves imparipinnate. 48

47b. Leaves paripinnate; large deciduous tree, often low branched; bark whitish, lenticellate; fruit woody, oblong.

Afzelia xylocarpa CRAIB (Makha mong).

48a. Fruits leguminose. 49

48b. Fruits drupaceous or capsular. 55

49a. Fruits 1-3-seeded, roundish or oblong, compressed or ovoid. 50

57 b. Leaves impazipinnate leaflets 3-4-paired; drupe reniform oblong, 1.5 cm.
Lannea coromandelica MERR.

50a. Fruits roundish or oblong, compressed. 51

50b. Fruits ovoid, pericarp fragile, one-seeded.

Dialium cochinchinense PIERRE (Khleng).

51a. Stem black, bark scaly; blaze red-sapped; fruits roundish, compressed, winged all around. Pterocarpus macrocarpus KURZ (Pradu).

51b. Stem greyish, bark smooth; blaze not red-sapped; fruits oblong. 52

52a. Leaflets round-tipped or emarginate. 53

52b. Leaflets acute or blunt-tipped.

Dalbergia cochinchinensis PIERRE (Phayung).

53a. Leaflets emarginate; blaze reddish.

Dalbergia cultrata OLIV. (Kaphi khaokhwai).

53b. Leaflets round-tipped; blaze yellowish.

Dalbergia oliveri GAMBLE (Chingchan).

54a. Pinnae 2-3 pairs; fruits strap-shaped, straw-coloured.

Albizzia lebbek BENTH. (Pruek).

54b. Pinnae only one pair at the end of common petiole; fruits oblique, woody, dark coloured. Xylia kerrii CRAIB & HUTCH. (Daeng).

55a. Fruits drupaceous. 56

55b. Fruits capsular. 58

56a. Leaflets many-paired, intramarginal vein present; fruits 3 cm. diametre.

Spondias pinnata ROXB. (Makawk).

56b. Leaflets 3-4-paired. 57

57a. Leaves lyrately imparipinnate, leaflets 3-paired; drupe ovoid 1 cm.

66a. Stem with resin; bark more or less thick; leaves penninerved 67
66b. Stem with thin latex; bark thin with fibre; leaves 3-5 basal-veined

Broussonetia papyrifera VENT.(

(Or chang).

58a. Bark scaly; blaze pinkish purple, aromatic; capsule 1 cm. diametre.

Cedrela toona ROXB. (Yom hawm).

58b. Bark shallowly fissured; blaze yellowish not aromatic; capsule 2-3 cm. diametre.

Chukrasia veluting WALL. (Yom hin).

59a. Evergreen tree, bark longitudinally streaked; leaflets usually tri-foliate; petioles narrowly decurrent; fruits drupaceous.

Vitex pinnata LINN. (Non)

59b. Deciduous tree, bark prickly; leaflets digitate, 5-6 in number, petioles not decurrent; fruit capsular. 60

60a. Flowers white, blooming without leaves.

Salmalia kerrii SUVARN & SMIT. (Ngiu ngao).

60b. Flowers orange red to red, blooming with some leaves.

Salmalia insigne SCHOTT & ENDLICH.(Ngiu pa).

61a. Leaves simple, broad or needle-shaped. 62

61b. Leaves compound. 81

62a. Leaves broad. 64

62b. Leaves needle-shaped. 63

63a. Leaves in bundles of 2 Pinus merkusii JUNGH. (Son sawngbai).

63b. Leaves in bundles of 3. Pinus khasya ROYLE. (Son sambai).

64a. Leaves stipulate. 65

64b. Leaves exstipulate 74

65a. Stem with resin or thin latex. 66

65b. Stem without latex; bark cankerous; leaves 5-6-basal-veined.

Pterocymbium javanicum R.BR. (Paw oktaek).

74a. Fruit capsular; blaze with yellow band in between the outer bark. Solenospermum wallichii LOESN. (Sav

67a. Leaves with lateral veins straight from midrib to margin; fruits with accrescent calices, 2 outer long, three inner short, ear-shaped.

Dipterocarpus alatus ROXB. (Yang na).

67b. Leaves without such characters. 68

68a. Fruiting calices 2 outer long, 3 inner short, acute. 69

68b. Fruiting calices 3 outer long, 2 inner short, acute. 72

69a. Under surface of leaves covered with yellow scales; lateral veins joined well away from the margin.

Anisoptera costata KORTH. (Krabak).

69b. Under surface of leaves not as above; lateral veins not joined. 70

70a. Twig end greyish; leaves often with domatia in axils of lateral veins. 71

70b. Twig end brownish; leaves without domatia; reticulate venation obvious on the upper surface. Vatica odorata SYM. (Phancham)

71a. Leaves with domatia, lateral veins 4-5 on each side; nut ovoid, acute.

Hopea odorata ROXB. (Takien thawng).

71b. Leaves without domatia, lateral veins 2-3 on each side; nut oblong, blunt.

Hopea ferrea LANESS. (Takien hin).

72a. Leaves ovate, acute or acuminate. 73

72b. Leaves oblong, rounded or obtuse; nut elliptic.

Shorea talura ROXP. (Phayawm).

73a. Mature leaves glabrous, short acuminate.

Shorea thorelii HANCE (Teng dong).

73b. Mature leaves pubescent, acute, [illegible] Fisoh (Hsien khamawng).

82a. Leaves paripinnate; fruits dry
→ng saluong).

74b. Fruits drupaceous; blaze not as above. 75

75a. Leaves alternate. 76

75b. Leaves opposite or subopposite. 79

76a. Evergreen spocies, leaves crowding. 77

76b. Deciduous species, leaves spacing; stem with highly irregular buttresses.

Tetrameles nudiflora LOUR. (Somphong).

77a. Stem with aromatic bark; fruits 1-2 cm. long 78

77b. Stem with caustic sap; fruits 5-6 cm. long.

Mangifera caloneura KURZ (Mamuang pa).

78a. Fruiting calices reflexed; bark with mucilaginous substance.

Persia sp. (Yang bong).

78b. Fruiting calices erect; bark not as above.

Litsea sp. (Tanhok).

79a. Fruits dry, woody; blaze with a yellow band in the outer bark.

Solenospermum wallichii LOESN. (Sawng saluong).

79b. Fruits fleshy; blaze not as above. 80

80a. Leaves chartaceous, acute; lateral veins almost at right angle to midrib; petioles dilated towards the base.

Fagraea fragrans ROXB. (Kankrao).

80b. Leaves rigidly coriaceous, obtuse or emarginate, laterals indistinct; petioles not dialated; fruits drupaceous, ripe yellow.

Ochrocarpus siamensis T. ANDERS.(Saraphi)

81a. Leaflets many. 82

81b. Leaflets 3, entim or crenate. Pithecellobium pedicellare BL. (Trem).

82b. Leaves imparipinnate; fruits fleshy, pinkish.

Aphanamixis polystachya PARKER (Tasuea)

83a. Stem with scaly bark, dark-coloured, aromatic; fruits dehiscent.

Cedrela toona ROXB (Yom hawm)

83b. Stem with smooth bark, brownish, not aromatic; fruits indehiscent, winged

Ailanthus foveliana LINN. (Yom pa.)

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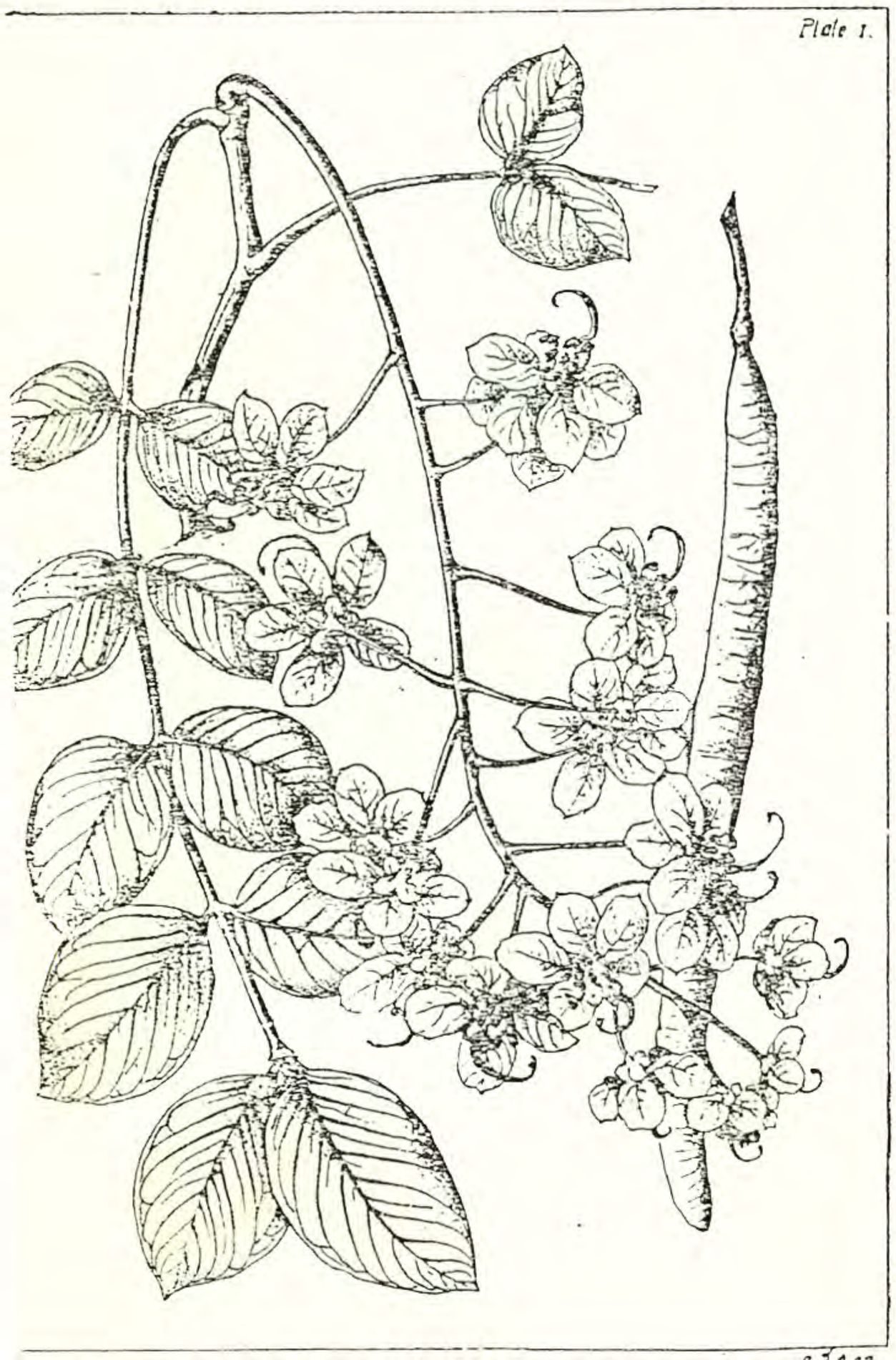
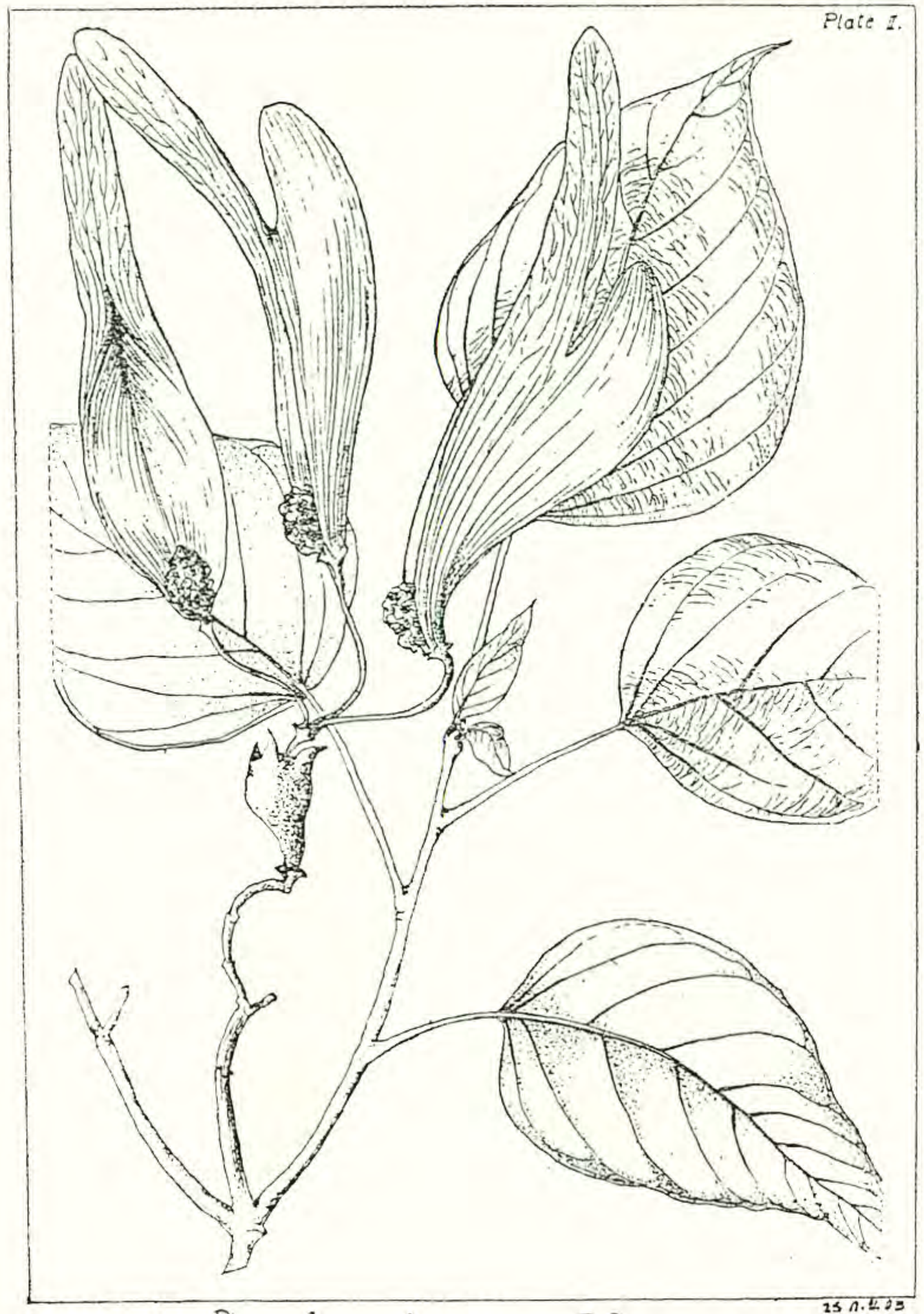


Cassia fistula Linn

Plate I.



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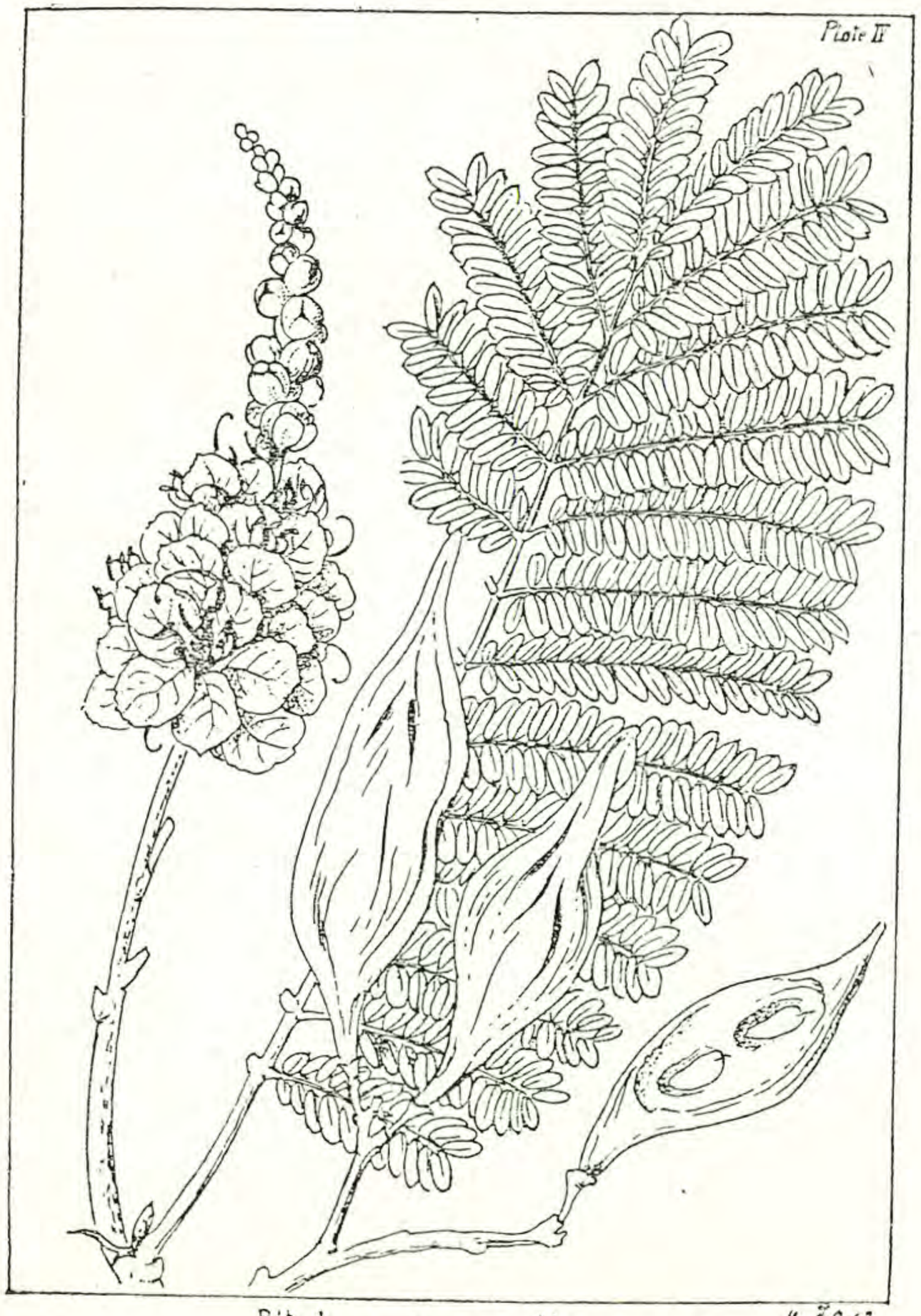
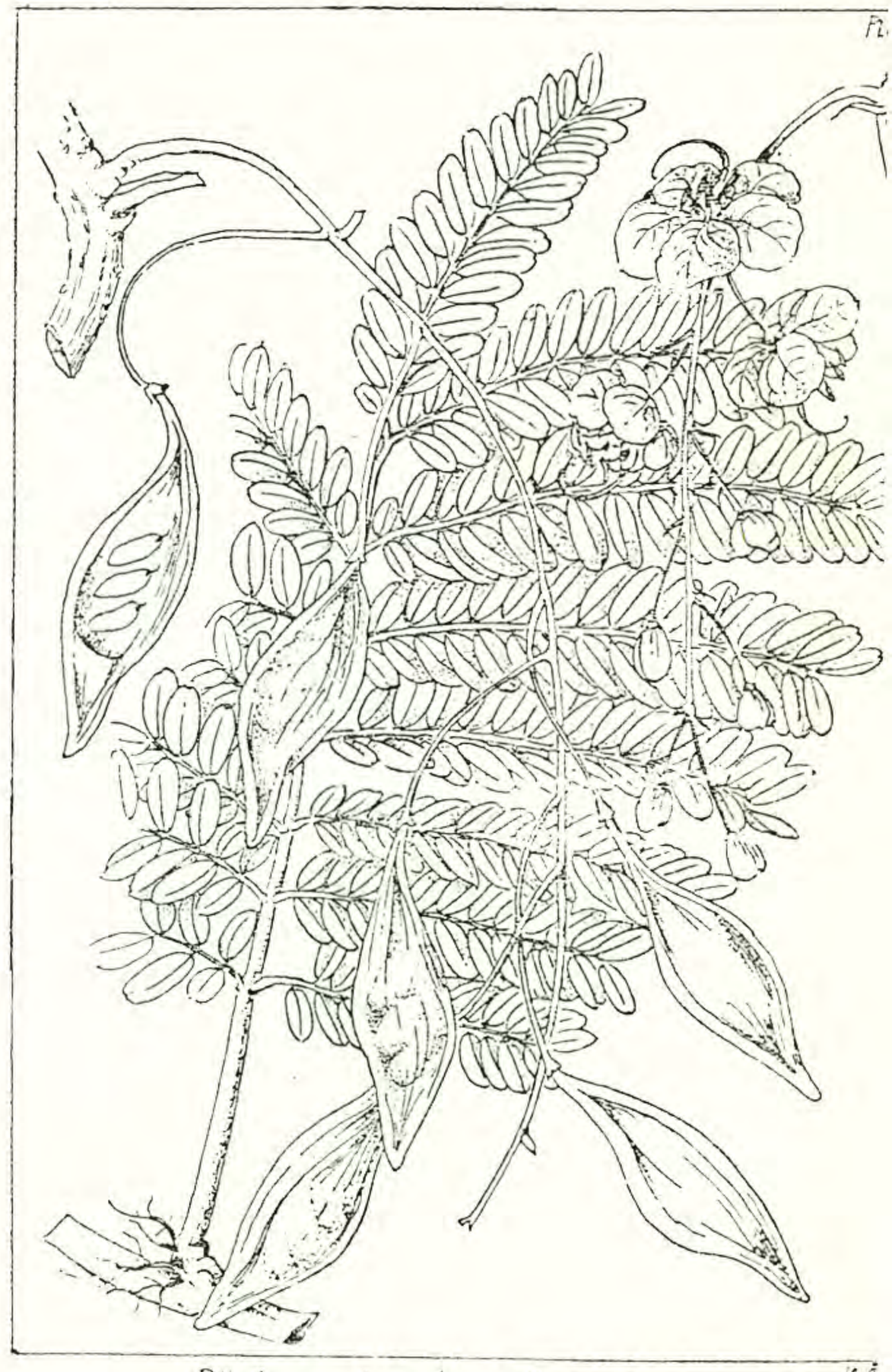


Peltophorum inerme Llan.



Peltophorum dasyrachis Kurz

Plate V

Salmalia kerrii Suvarn. & Smit.

Plate VI

Terminalia alata Heyne

Plate VIII.

Terminalia bellerica Roxb.

Plate

Terminalia chebula Retz.

Plate IX

Hopea ferrea Pierre

Plate X

Hopea odorata Roxb

Diplerocarpus costatus Gartn.f.

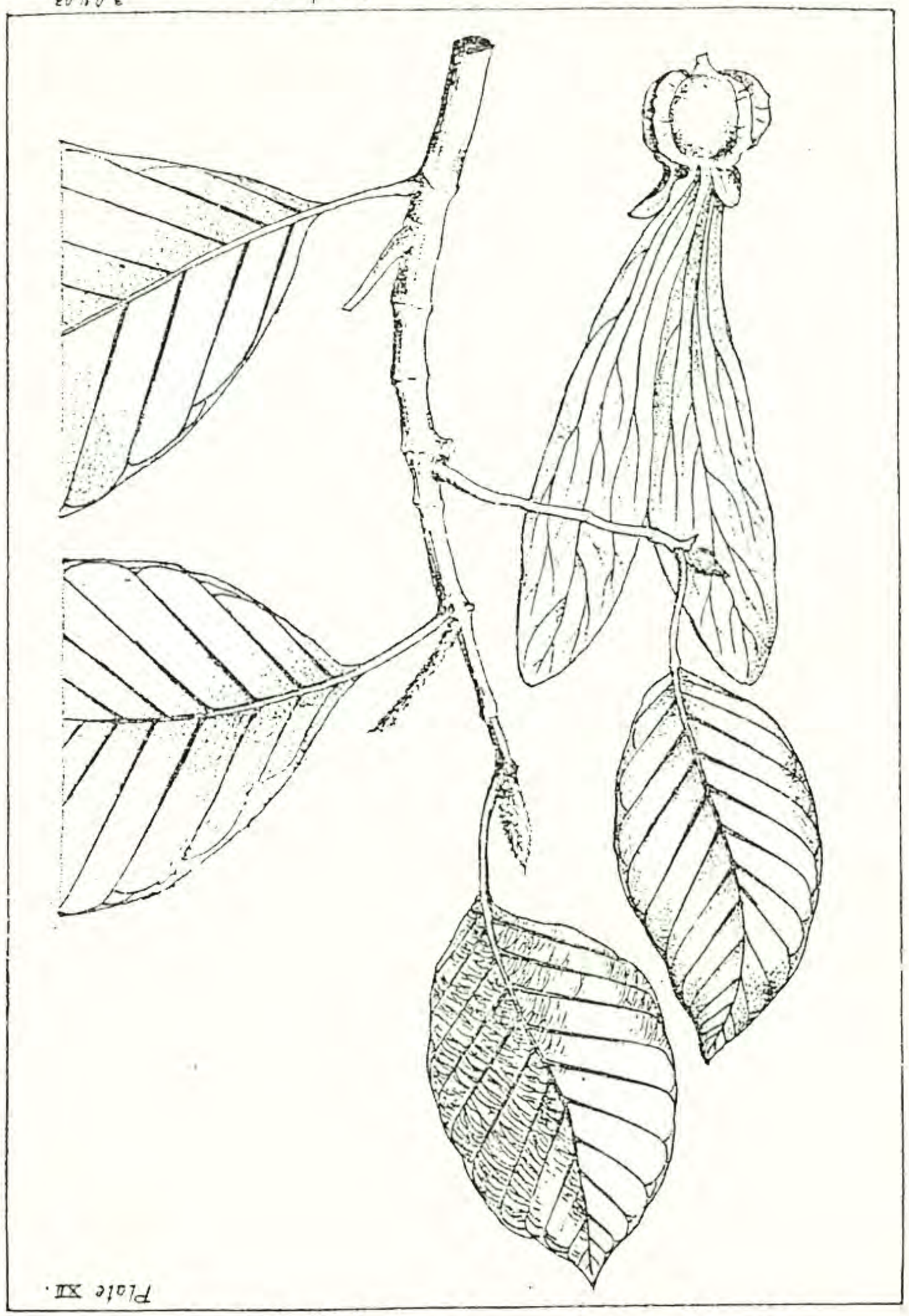
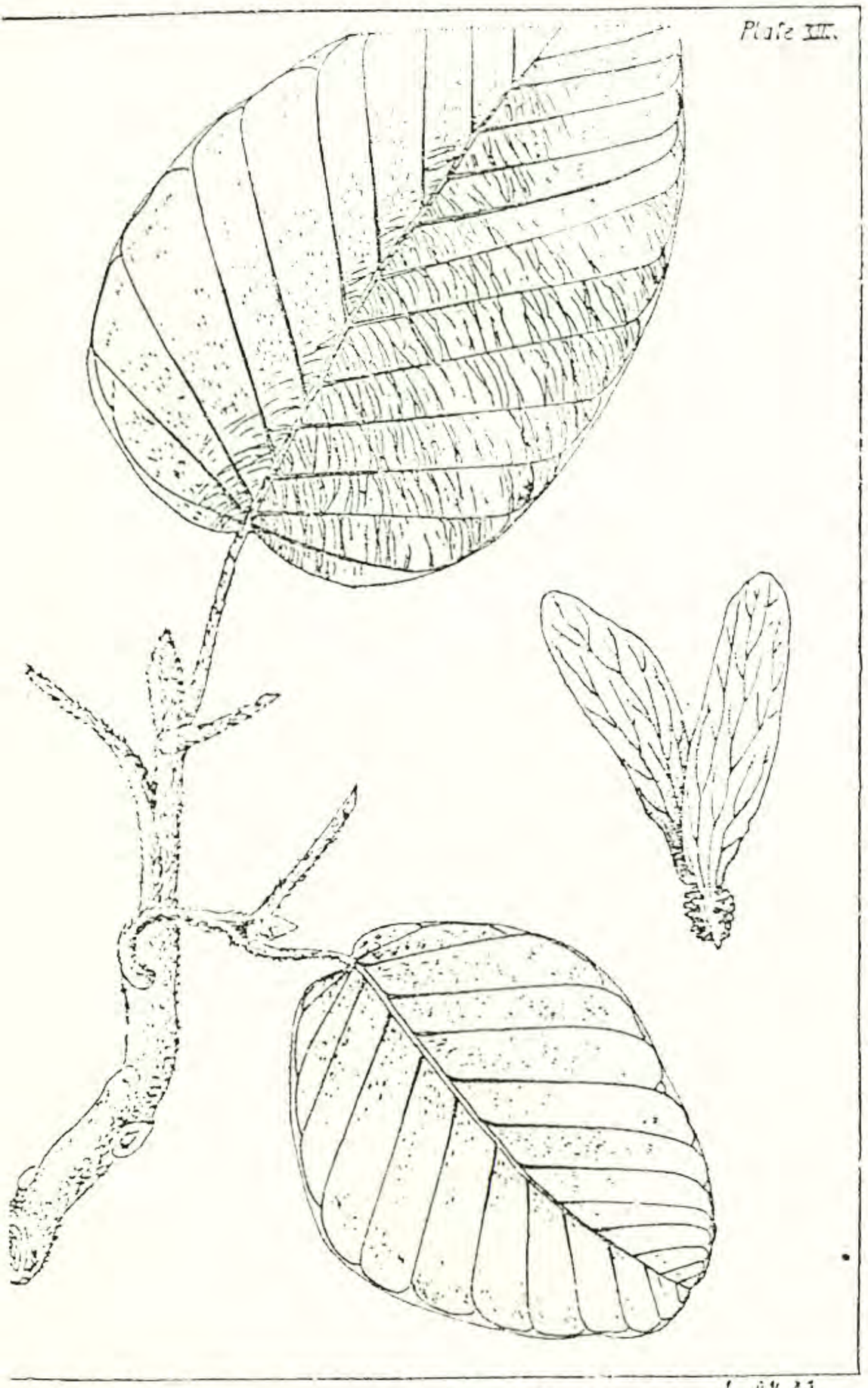


Planche XII.

Heloplelea integrifolia Planch.

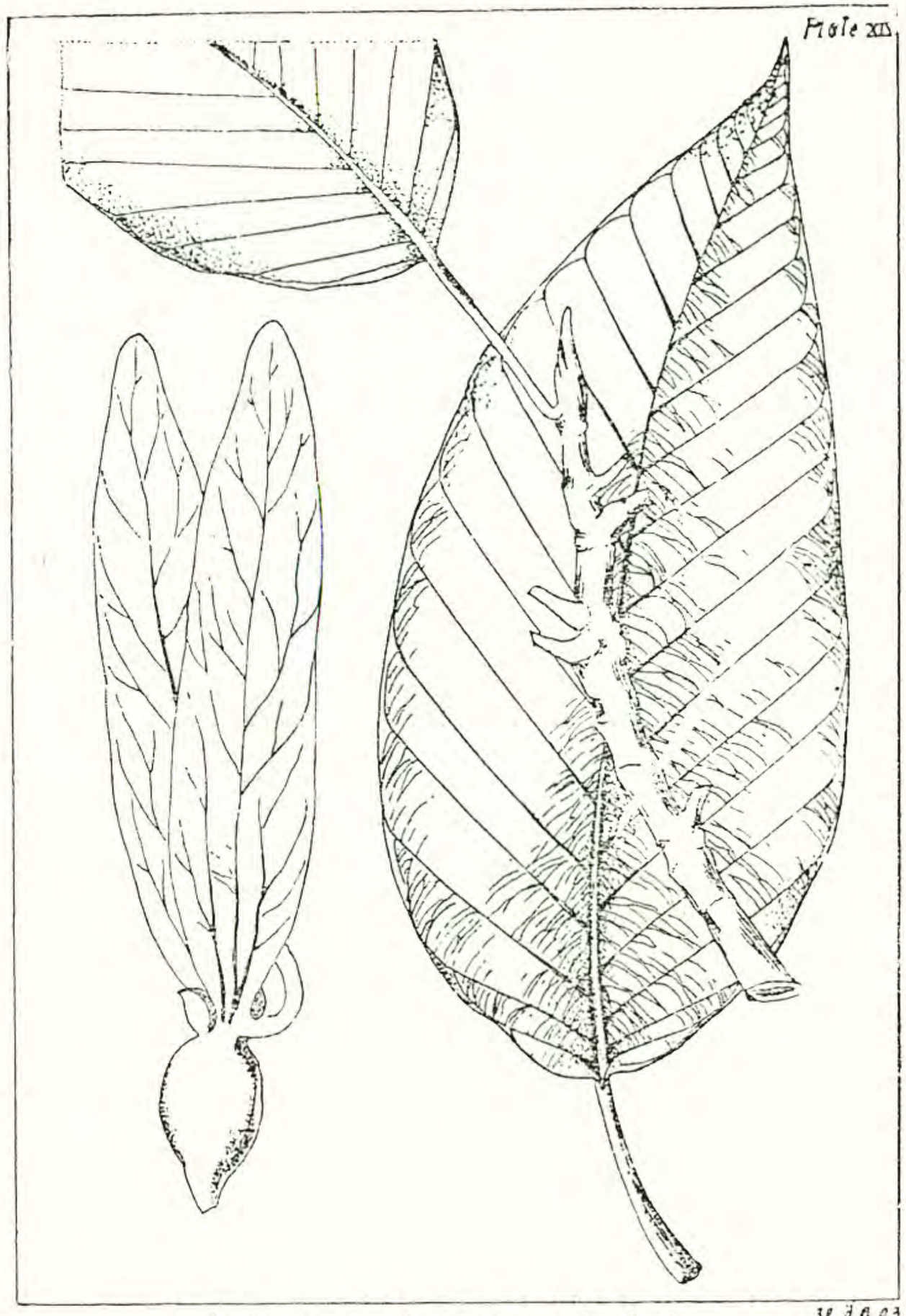
Plate

Plate XIII.



Dipterocarpus intricatus Dyer

Plate XII.



Dipterocarpus turbinatus Gaertn f

Plate XII

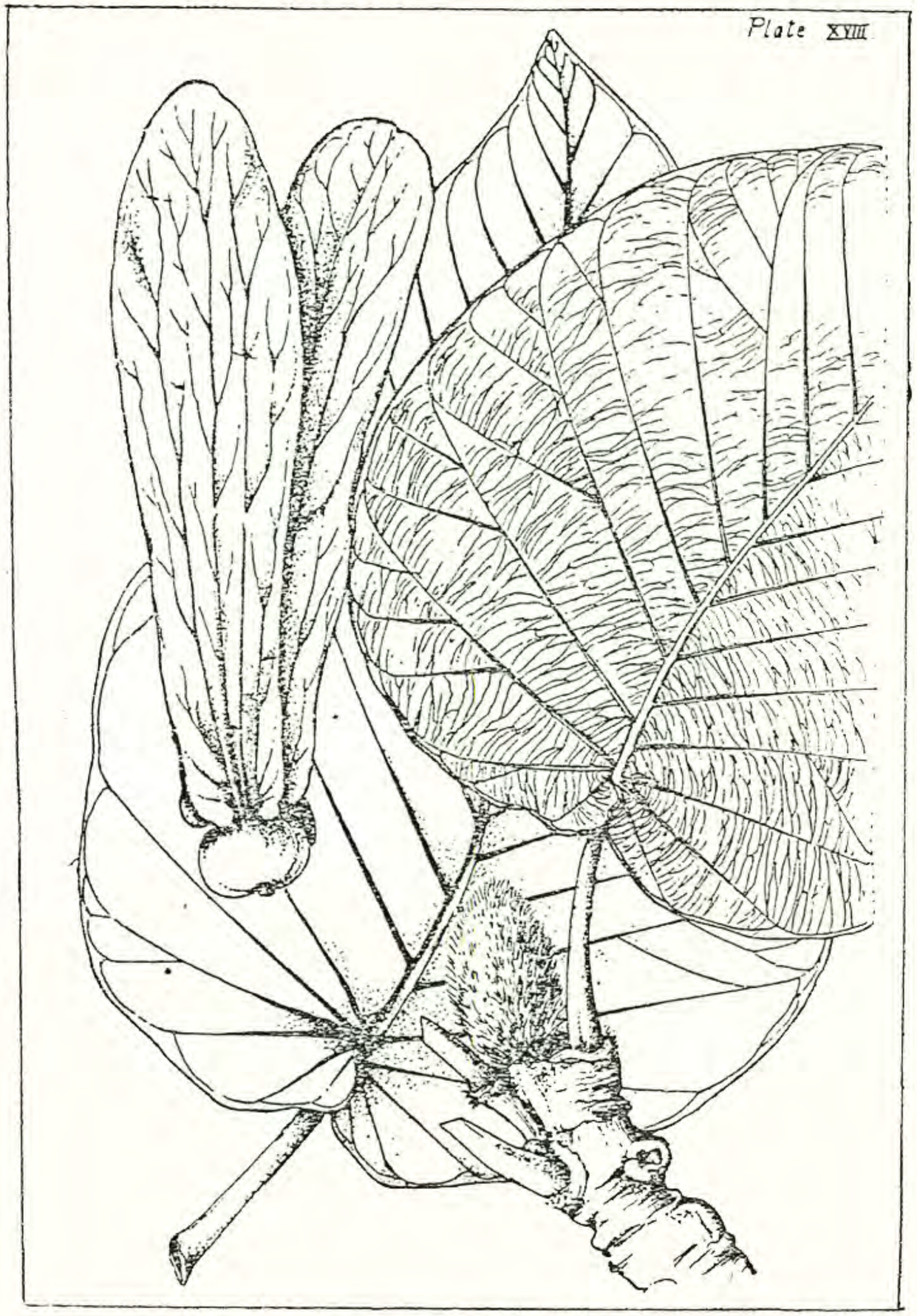
Dipterocarpus dyeri Pierre

Dipterocarpus obtusifolius Teijsm.

Plate XVII

Dipterocarpus alatus Roxb

Plate XVIII



Dipterocarpus tuberculatus Roxb.

Plate XX

Lagerstroemia balansae Koehne.

19 ANOS

Plate

Lagerstroemia loudonii Teijsm. & Binn.

Plate XXI

Lagerstroemia calyculata Kurz

19 R.A.03

Plate XXII.

Lagerstroemia venusta Wall.

19 R.A.03

Plate XXII.

Lagerstroemia floribunda Roxb.

Plate XXIII

Lagerstroemia macrocarpa Wall.