

# Taxonomic Notes on the Vascular Plants of Sam Lan Forest Saraburi and Khao Khieo Reserve, Si Racha, Chon Buri

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## INTRODUCTION

The purpose of this paper is to elaborate and supplement various taxonomic points in my paper "Vascular Flora of Sam Lan Forest Park, Muang District, Saraburi Province, Thailand" (in manuscript) and my present research on the flora of Khao Khieo, Si Racha District, Chon Buri Province, Thailand.

Research for this paper was done in the Herbarium, Botany Section, Department of Agriculture, Bangkok, Thailand (BK).

It is hoped that more botanists will take an active interest in the flora of Thailand so that many of the botanical problems, such as those presented here, will be resolved.

## ANNONACEAE

*Anomianthus dulcis* (Dun.) Sinc. reduced to *Uvaria dulcis* Dun.

*Anomianthus dulcis* (Dun.) Sinclair (1953), a common woody climber at Sam Lan and Khao Khieo, in my opinion, should be reunited with *Uvaria* as *U. dulcis* Dun. As far as I can determine the only difference between the two genera is the presence of a gland on each side of the claw on the inner series of petals in *Anomianthus*. Otherwise the flower, fruit, and vegetative parts correspond with *Uvaria*. While this gland is enough of a morphological distinction to merit a separate species, I do not think that this single difference is sufficient to allow for generic status. Therefore, I have considered the species as *U. dulcis* Dun.

*Uvaria grandiflora* Roxb. var. *flava* (Teijs. & Binn.) Sincl. vs. *U. dac* Pierre apud Fin. & Gagn.

In the evergreen forests at Sam Lan there is a rather common woody climber that has been difficult to properly identify. I have narrowed the problem down to two possibilities: *Uvaria grandiflora* Roxb. var. *flava* (Teijsm. & Binn.) Sincl. and *U. dac* Pierre apud Fin. & Gagn. As far as flower morphology is concerned the description of *U. dac* fits best (Finet and Gagnepain, 1907), however the mature fruits (which are delicious) do not confer as well. In BK there is a specimen from Si Racha (Collins 1680, in bud) which Sinclair (1953) identified

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as *U. grandiflora* var. *flava* which he notes as "probably only a colour form" of *U. grandiflora*. Without a doubt these two taxa are closely related, if not the same, and at this moment I cannot be absolutely certain of what the Sam Lan material actually is since I have not seen any authentic specimens of *U. dac*. The Sam Lan material corresponds well with Collins 1680 and it is possible that *U. grandiflora* may be so variable as to include *U. dac*. I think that var. *flava* is a reasonable compromise, for the moment, since I have noticed that the immature fruits at Sam Lan are much less warty than the mature ones. *U. dac*, to my knowledge, has not been recorded from Thailand, however if it is the same as *U. grandiflora* var. *flava* the latter taxon has priority and *U. dac* must be reduced to a synonym.

***Polyalthia debilis* (Pierre) Fin. & Gagn. vs. *P. parviflora* Ridl.**

From the specimens and literature available it would seem that *Polyalthia debilis* (Pierre) Fin. & Gagn. and *P. parviflora* Ridl. are probably the same. The specimens of *P. parviflora* identified by Sinclair in BK (including the type specimen of *P. rufa* Craib (Craib, 1924) which Sinclair reduced to *P. parviflora* (Sinclair, 1953) plus the description of *P. debilis* (Finet and Gagnepain, 1907) cannot be adequately distinguished. Since I have not seen any authentic specimens of *P. debilis* I can only note its similarity to *P. parviflora* to which the Sam Lan material matches. If the two species are the same then *P. debilis* would have priority.

***Goniothalamus marcanii* Craib, the fruit.**

The original description (Craib, 1922) does not include the fruits. Sinclair (1955) notes that the fruits are orange, sessile, and sparsely brown pubescent—becoming more glabrous with age. He also notes that each fruit has two seeds.

The fruiting specimens that I have collected from Si Racha (type locality) do not conform with Sinclair's description. Unfortunately all the specimens of *Goniothalamus marcanii* Craib in BK, including all of those identified by Sinclair, are in flower. Therefore I cannot be certain of what Sinclair described the fruits from, but I am quite certain that it was not *G. marcanii* Craib. The fruits of the Si Racha material most closely resemble those of *G. subevenius* King, however the flowers, leaves, and stems of these two species are quite different.

The following description of the fruits of *G. marcanii* Craib is based on my material from Si Racha which fortunately had a few flowers. Thus I am certain of its identity.



Calyx persistent and slightly accrescent in fruit. Fruit ovate, apiculate at the tip; entirely glabrous, even when immature, 1.0–1.5 cm long and 5–7 mm wide, on glabrous pedicels 1.0–1.5 cm long (glabrous and stalked even when immature). Green when fresh, black when dry, pericarp thin. Seed one, albumen ruminant.

Specimen examined; Chon Buri, Si Racha, Khao Khieo : Maxwell 75–939.

### XANTHOPHYLLACEAE

*Xanthophyllum siamense* Craib, *X. obliquum* Craib, *X. obliquum* Craib var. *viride* Craib, *X. flavescens* Roxb., *X. affine* Korth. ex Miq., and *X. excelsum* (Bl.) Miq.

One of the species of *Xanthophyllum* found at Sam Lan presented a taxonomic problems since it matched the type specimens at BK of *X. siamense* Craib (1922), *X. obliquum* Craib (1922), and *X. obliquum* Craib var. *viride* Craib (1922). Also *X. siamense* does not differ significantly from *X. affine* Korth. ex Miq.— the former has narrower leaves. Furthermore Merrill (1923) lists *X. affine* as a synonym of *X. excelsum* (Bl.) Miq. Van der Meijden (1974) notes that all three of Craib's taxa and *X. excelsum* are synonyms of *X. flavescens* Roxb. He also indicates that *X. flavescens* and *X. affine* are closely related, but there are distinct structural differences between the two. I fully agree that all three of Craib's taxa are the same and I must rely on van der Meijden's studies in Leiden for the reduction of all of them to synonyms of *X. flavescens*.

### STERCULIACEAE

#### *Pterospermum*

At Sam Lan and Khao Khieo there are two closely related, but distinct, species of *Pterospermum* viz: *P. diversifolium* Bl. and *P. littorale* Craib.

Initially I considered the former species as *P. grandiflorum* Craib, but now I feel that there is no real difference between them. At BK there are several specimens of *P. diversifolium* and only one of *P. grandiflorum* [ the type specimen, Kerr 1805, is absent; but Kerr 5895, enumerated by Craib (1925) is present ], and there are no structural differences between the two collections. The extreme variation between the large peltate leaves of juvenile trees and the smaller, cordate ones of mature individuals of *P. diversifolium* has been noted by some botanists (Gagnepain, 1911). I have also observed this feature at Sam Lan and Khao Khieo (figure 1, 2). However, this feature has not been recorded for *P. grandiflorum* (Craib, 1913; Tardieu-Blot, 1945).



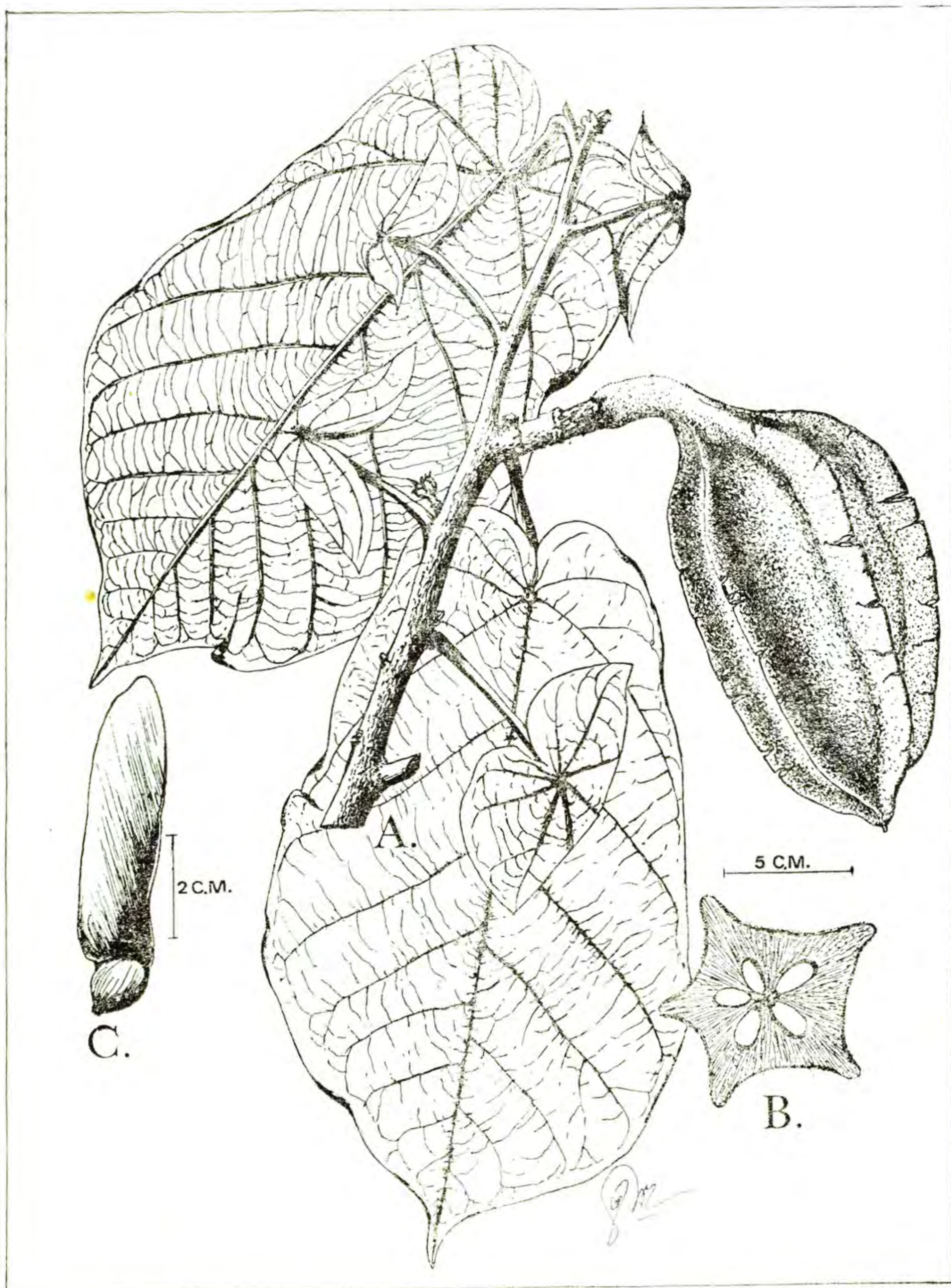


Fig. 1 *Pterospermum diversifolium* Bl. A. Leaves and fruit; B. Cross-section of fruit; C. Seed, (Maxwell 73-612).



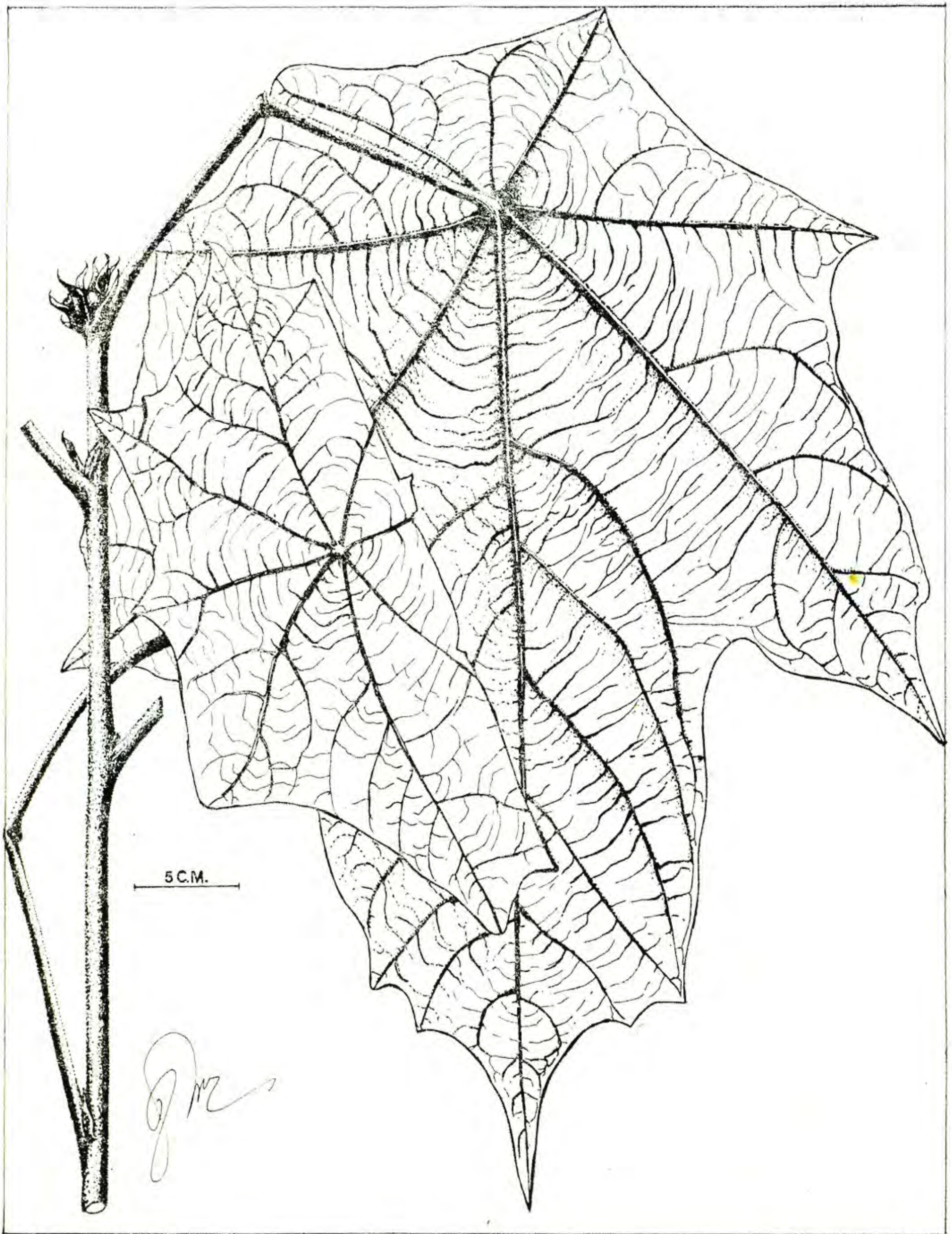


Fig. 2 *Pterospermum diversifolium* Bl. Juvenile leaf (Maxwell 74-273).



*Pterospermum littorale* Craib is closely related to *P. diversifolium* Bl. since the flowers and capsules are structurally similar, but there are other differences which merit their distinction as separate taxa. This situation has also been reported from the Sattahip area, Chon Buri Province where these two species were also collected (Maxwell, 1974). There is also a distinct difference between the leaves of both juvenile and mature trees (figure 3).

As the juvenile leaves, stipules, and capsules of *Pterospermum littorale* Craib (1912) have never been described before the following description based on specimens from the same tree at Sam Lan is provided.

Juvenile leaves sub-coriaceous, ovate to orbicular in outline, deeply 3 or 5 lobed, with the mid-lobe longest and widest. Blades 15–18 cm long and about as wide, mid-lobe lance-obovate, 4–6 cm wide. Primary veins 7, sunk above, prominent below; secondary venation pinnate with up to 12 pair of veins, arching toward the tip. Leaf bases distinctly peltate, margins of the lobes entire to shallowly and irregularly lobed. Upper surface green and glabrous, lower surface densely white canescent mixed with brown stellate hairs. Petioles 4–7 cm long, covered with brown stellate hairs. Stipules lance-subulate, c. 1.0 cm long, covered with brown stellate hairs, especially on the veins. Capsules woody, oblong, c. 7 cm long and 3–4 cm in diameter sub-acute at the tip, with 5 prominent ridges and 5 concave faces (figure 3).

Specimens examined: Chon Buri, Si Racha, Khao Chalat, Collins 1013; Khao Khieo, Maxwell 74–1008. Rayong, Ban Phe, Put 2761; Bangkok, Kerr 7859; Prachuap Khiri Khan, Huai Yang, Kerr 10889.

***Pterocymbium tinctorium* (Blanco) Merr. var. *javanicum* (R. Br.) Kost.**

There is a wide range of variation between the juvenile and mature leaves of this variety. It is worthwhile to give a full description of the juvenile plant since this is not well known.

Stem tips, developing blades, and petioles covered with brownish stellate hairs, lower stems puberulous with simple hairs. Stipules subulate, 4–5 mm long, at first covered with similar stellate hairs, later glabrous, caducous. Fully mature juvenile leaf blades orbicular in general outline, 11–13 cm long and 10–13 cm wide, deeply 3-lobed 2/3 to the base of the blade, often with a small lobe and shallow indentation near the base on each side. Mid-lobe ovate, acuminate, 8–10 cm long and 4–5 cm wide, side lobes lance-acute, 4–6 cm long, 1.5–2.0 cm wide. Base of blades truncate to sub-cordate, 3–5 cm wide. Blades 5-nerved from the base, the two lateral nerves less prominent and leading to the tip of each minor lobe near the base of the blade. The three prominent nerves each ending at the tip of a major lobe, veins somewhat raised on the upper surface of the blade, much more prominently raised below. Secondary venation pinnate with 4–7 pair of arching



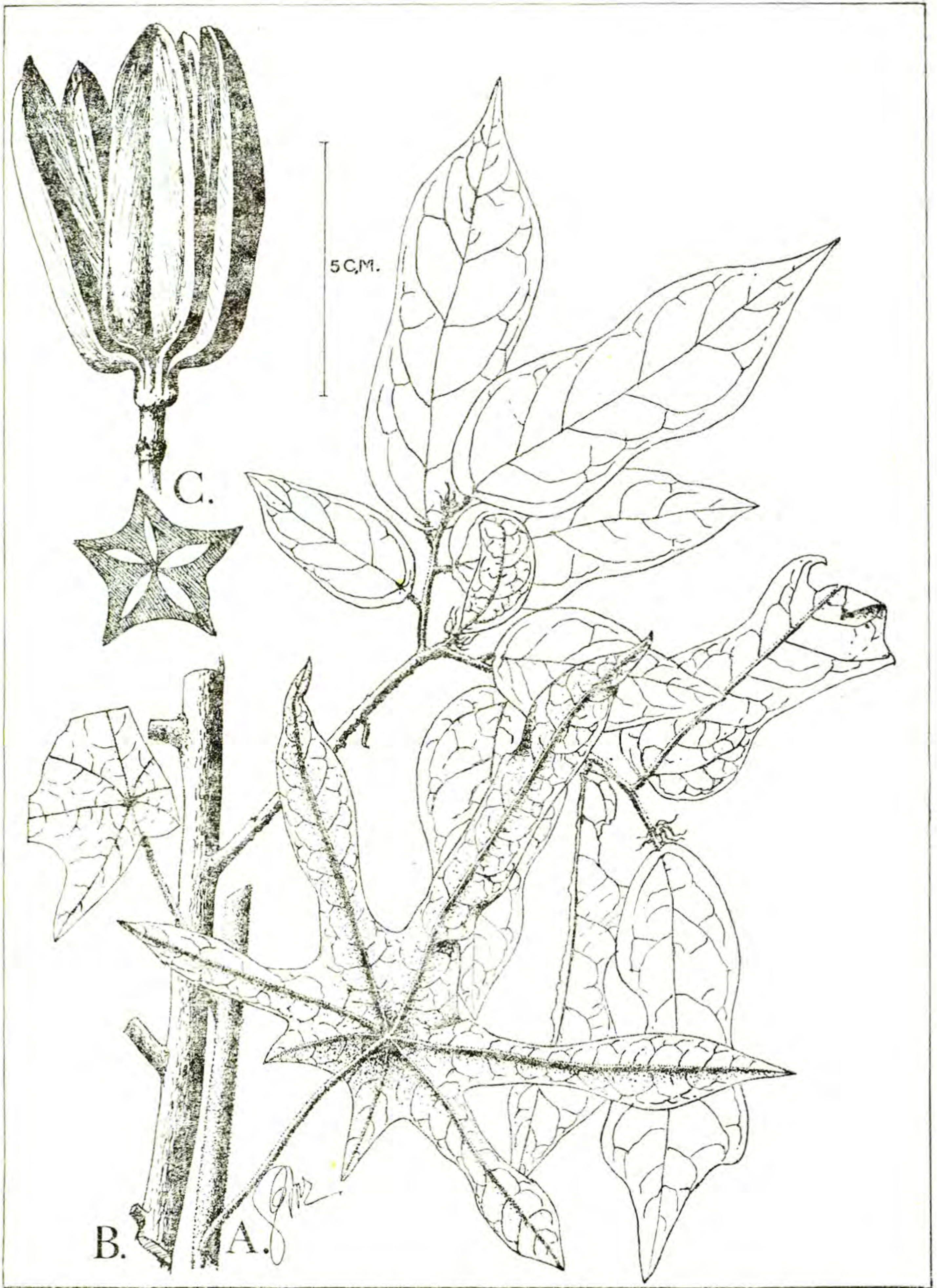


Fig. 3 *Pterospermum littorale* Craib A. Juvenile leaf; B. Mature leaves; C. Fruit and its cross-section (Maxwell 74-1008).



nerves branching from the major vein in each lobe. Blades mostly glabrous or with scattered puberulence on both surfaces and especially along the margins, and more densely so on the veins. Petioles 6-9 cm long, cylindric, faintly striate and minutely puberulous throughout (figure 4).

Specimen examined: Saraburi, Sam Lan, Maxwell 74-504A.

**Helicteres gagnepainiana** Craib, Kew Bull. 1912: 146.

The description of this species was based on flowering material only. As fruiting material has recently been identified the following description of the fruits is given.

Capsules 5-valved, cylindric, acute at the tip, rounded at the base, 1.5-2.0 cm long and 6-8 mm wide. Densely covered with brown-tan stellate hairs, becoming more glabrous, especially about the margins of each valve, after dehiscence. Seeds elliptic, flattened, c. 2 × 1.5 mm, densely covered with brown-tan stellate hairs.

Specimens examined: Chon Buri, Si Racha: Collins 2022, Maxwell 75-442.

The type specimen, Kerr 2046, is from Nong Kaw, Si Racha.

**Sterculia hypochra** Pierre

From the description and illustration given by Pierre (1888) of *Sterculia hypochra* collections from Kanchanaburi and Khao Khieo, Si Racha fit well. A vegetative specimen collected at Sam Lan has also been tentatively referred to *S. hypochra*. *Sterculia hypochra* Pierre, from the material collected at Khao Khieo (flowers, fruits, and leaves) is, therefore, a new record for Thailand.

Specimens examined: Kanchanaburi, Sisawat, Kerr 10238, Tha Khanun, Kerr 10288, (fruit). Chon Buri, Si Racha, Khao Khieo, Maxwell 75-13 (flowers), Maxwell 75-129.

## VITACEAE

**Tetrastigma**

Even with flowering (staminate and carpellate) and fruiting specimens of *Tetrastigma* the distinctions of many species remain unclear, since quite a number of species (many incompletely known) have been described from S.E. Asia. Descriptions of some species were based on minor and probably not constantly distinctive characters.

At Sam Lan I have distinguished two, and possibly a third, species of *Tetrastigma*, viz: *T. crassipes* Planch. and *T. harmandii* Planch; the latter, if correct, would be a new record for Thailand. *Tetrastigma strumarum* Gagnep. may be a third species there.



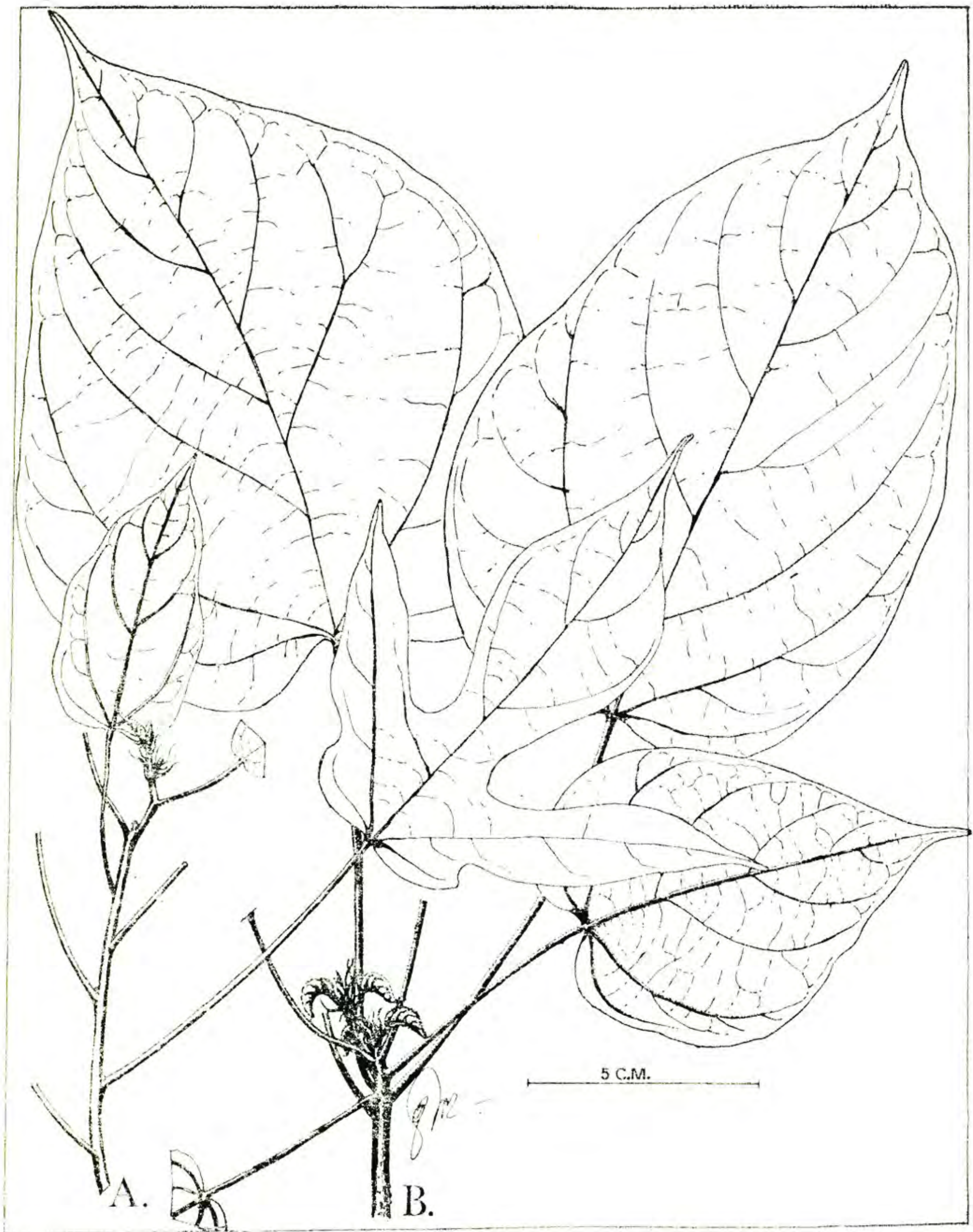


Fig. 4 *Pterocymbium tinctorium* (*javanicum*) Merr. var. *javanicum* (R.Br.) Kost.  
A. Juvenile leaves (Maxwell 74-504 A); B. Mature leaves (Maxwell 74-504).



At Khao Khieo the distinction between *T. harmandii* and *T. crassipes* is not clear, and it is possible that hybridization is operating. *Tetrastigma siamense* Gagnep. & Craib, at least at Khao Khieo, seems to be more distinct than any of the other species of *Tetrastigma* found, i.e. it is less variable. At these two places I have observed that the number of leaflets per leaf (3-5, 5-7, 3-7) and the size of the inflorescences often varies on the same plant. The size and shape of the stem is another variable feature on the same plant, in that it is often very flat on the older portions and more cylindrical towards the tip. Thus, many unidentified specimens of *Tetrastigma* at BK, without notes indicating this variation, often cannot be identified with certainty, since the literature often fails to note this variation.

It is likely that many species of *Tetrastigma* from S.E. Asia will eventually be reduced after a critical study, however this is a task which cannot be done in Thailand. Therefore, my identifications of *Tetrastigma* at Sam Lan and Khao Khieo remain tentative.

#### PAPILIONACEAE

##### ***Dalbergia abbreviata* Craib and *D. pierreana* Prain**

The difference between *Dalbergia pierreana* Prain and *D. abbreviata* Craib is very slight; the latter species differs only in having larger leaflets. In my opinion *D. abbreviata* should be reduced as a synonym of *D. pierreana*.

##### ***Millettia buteoides* Gagnep. var. *siamensis* Craib and *M. latifolia* Dunn**

I have decided that there is no difference between *Millettia latifolia* Dunn and *M. buteoides* Gagnep. var. *siamensis* Craib (the variety described based on fruiting specimens from Muak Lek, Saraburi). The pods of both taxa are similar, and without any description of the flowers for *M. buteoides* var. *siamensis* I have found it difficult to properly identify fruiting material from Sam Lan. There seems to be a lot of variation in the pubescence (especially the leaves) and length of the inflorescence in *M. latifolia* and, if one regards these factors as differences within the range of variation for the species then *M. buteoides* var. *siamensis*, in my opinion, should be united with *M. latifolia*. One important fact that many botanists have not noted is that the pods of *M. latifolia* become increasingly more glabrous with age. This fact is clearly seen in some of the specimens at BK and with my own collections from Sam Lan. The pods of *M. buteoides* var. *siamensis* are pedicelled, dehiscent, and generally have two seeds although in some specimens (including the type specimen of this variety) only one seed near the distal tip develops. This combination of characters does not differ substantially from *M. latifolia*. I have collected the pods of *M. latifolia* (along with flowers from the same tree) and they are indistinguishable from *M. buteoides* var. *siamensis*.



The flowers in all cases are the same and could not be considered as anything but *M. latifolia*. This, I feel, is sufficient proof that *M. buteoides* var. *siamensis* is really *M. latifolia*, since I have not seen any *M. latifolia* or *M. buteoides* var. *siamensis* like pods come from anything but *M. latifolia* flowers.

***Mucuna interrupta*** Gagnep., ***M. nigricans*** (Lour.) Steud., and ***M. nigricans*** (Lour.) Steud. var. ***cordata*** Craib.

Apparently the major difference between *Mucuna nigricans* (Lour.) Steud. and *M. interrupta* Gagnep. lies in the pods: one distinct series of corrugations in the former and two in the latter. As far as the flowers and leaves are concerned, there is little, if any, difference. Even though the pods of these two species are different there are no other species of *Mucuna* in S.E. Asia that have pods with winged margins and corrugated surfaces. With this in mind, it might be better to consider *M. interrupta* as a variety of *M. nigricans*; since the difference between the two is not apparent from flowers or leaves. I merely suggest this idea to future workers, who may have enough material for a detailed study; accordingly *M. interrupta* is retained as a distinct species.

I feel that *M. nigricans* (Lour.) Steud. var. *cordata* Craib (1928) is actually *M. interrupta*. Craib (1928) describes this variety (without fruit) based on a collection from Muak Lek, Saraburi (Noe 125). The bracts, flowers, leaves, etc. of the type specimen are identical to the Sam Lan material. Without having access to the type specimens of either *M. nigricans* or *M. interrupta*, I cannot be certain of their exact relationships.

***Spatholobus compar*** Craib and ***S. harmandii*** Gagnep.

Craib (1927) distinguishes *Spatholobus compar* Craib from *S. harmandii* Gagnep. by having shorter calyx lobes united a little higher, the standard with a more truncate base, and a less densely pubescent ovary. From the description and illustration by Gagnepain (1916) the type specimen of *S. compar* at BK is virtually indistinguishable. Since *S. compar* does not have any structural differences, except minor variations in size and shape of the standard and indumentum of the ovary, I do not feel that *S. compar* is different from *S. harmandii*.

## COMBRETACEAE

***Terminalia darfeuillana*** Pierre ex Laness. and ***T. pierrei*** Gagnep.

Lecompte (1969) notes that the type specimen of *T. pierrei* Gagnep. is a poor specimen and could very well be the same as *T. darfeuillana* Pierre ex Laness. Lecompte did not reduce *T. pierrei* to a synonym of *T. darfeuillana* due to the fact that the type specimen of the latter is incomplete (without fruit). While the leaves and flowers of the two species are almost identical, Lecompte pointed out that finding an appropriate specimen to serve for describing the fruit of *T. darfeuillana* is probably impossible, since one cannot be certain of how the fruits of the two



species differ — if they do at all. By best estimates, however, it would seem that *T. pierrei* is, in fact, the same as *T. darfeuillana*. It is with this reasoning that I have considered *T. darfeuillana*, collected in flower and fruit, as the identity of the species at Sam Lan.

#### BEGONIACEAE

***Begonia debilis* King var. *punicea* Craib and *B. integrifolia* Dalz.**

After having examined the BK material of *Begonia debilis* King var. *punicea* Craib (the type specimen from Muak Lek, Saraburi) and *B. integrifolia* Dalz., plus several collections of my own from Sam Lan, my conclusion is that the former is merely a glabrous form of the latter. Two other collections (Put 488, Collins 928), considered by Craib (1931) as "possibly referable" to *B. debilis* var. *punicea*, are actually variant between *B. debilis* var. *punicea* and *B. integrifolia*, especially in the pubescence of the leaves. I have noticed that the pigmentation of the leaves of this species from Sam Lan varies considerably. The leaves can be either entirely deep green or mottled deep green and greyish-green above, and greenish to silvery-whitish and often with reddish veins below. The sepals and petals are white and often tinted with a pink-red hue.

#### ARALIACEAE

***Schefflera elliptica* (Bl.) Harms., *S. clarkeana* (C.B. Cl.) Craib, *S. venulosa* (W. & A.) Harms., *S. minimiflora* Ridl., *S. bengalensis* Gamble, and *S. bengalensis* Gamble var. *impolita* Craib**

*Schefflera clarkeana* (C.B. Cl.) Craib (*Heptapleurum venulosum* Seem. var. *macrophyllum* C.B. Cl.) in Craib's opinion (1931) is not a variety of *venulosum*, but closer to *S. elliptica* (Bl.) Harms. *Schefflera clarkeana* differs from *S. elliptica* only in the width of the leaflets. Also *S. elliptica*, as noted by Craib, has often been reduced to *S. venulosa* (W. & A.) Harms.

*Schefflera minimiflora* Ridl., a costal species, is probably a mere variant of *S. elliptica* since the differences are minor and in many cases indistinct. *Schefflera bengalensis* Gamble has narrower leaflets than *S. elliptica* and also *S. bengalensis* var. *impolita* Craib does not appear to be distinct since the separation is based on the leaflets again.

These taxa, in my opinion, are all the same since the only apparent differences lie with the leaflets. Assuming that environmental, e.g. shade and moisture, differences are influencing the vegetative features somewhat; there still seems to be few, if any, structural differences between these taxa which would merit any one of them as being distinct. As not enough specimens have been studied I can not draw a definite conclusion, however regarding my collections from Sam Lan and Khao Khieo I consider them as *S. elliptica* (Bl.) Harms.



## RUBIACEAE

***Adina parvula* Geddes and *A. polycephala* Benth.**

Geddes (1928) distinguishes *A. parvula* Geddes by its smaller leaves, minor variations in pubescence, and the shape of the fruit from *A. polycephala* Benth. After having examined many specimens in BK of this group, I feel that a separation such as this without any structural differences is not justified. In addition Craib (1932) notes that at least one specimen (Collins 732) has characteristics of both *A. parvula* and *A. polycephala*. There are also other similar occurrences in BK which support Craib's observation.

***Argostemma albovenatum* Geddes, *A. craibianum* Geddes, *A. plumbeum* Craib, *A. plumbeum* Craib var. *obtusum* Craib, *A. umbellatum* Geddes, and *A. umbellatum* Geddes var. *australe* Craib**

Included in the BK collection of *Argostemma* are 4 species and 2 varieties none of which have been collected from Saraburi (Craib, 1932). All of these differ little structurally and the separations have been based on the variation of size and pubescence. I have examined the type specimens of these six Thai taxa and aside from minor differences the Sam Lan material could be considered as being any one of them. Craib (1916, 1932) notes that *A. plumbeum* Craib, to which all the others are closely related, differs little from *A. courtallense* Arn. and *A. tavoyanum* Wall. Hooker (1880) writes that *A. tavoyanum* Wall. may be a smaller variety of *A. courtallense*. It appears that all of the Sam Lan material is closest to *A. tavoyanum* Wall. However, if one believes in lumping these six Thai taxa then *A. plumbeum* Craib should be retained. For the moment, without having studied *A. tavoyanum* and *A. courtallense*, I think that the Sam Lan material should be identified as *A. plumbeum* Craib.

***Pavetta aspera* Craib, *P. aspera* Craib var. *breviflora* Craib, *P. nervosa* Craib, and *P. indica* L. var. *hispida* Pierre ex Pit.**

It is well known that *Pavetta indica* L. is very variable, and because of this fact the group has been split repeatedly into many species and varieties, which is not satisfactory. One of the Sam Lan species, in my estimation, most closely resembles *P. indica* L. var. *hispida* Pierre ex Pitard (1923). Aside from insignificant differences in pubescence I do not see how *P. aspera* Craib (1932), *P. aspera* Craib var. *breviflora* Craib (1934), and *P. nervosa* Craib (1932) differ from *P. indica* L. var. *hispida* Pierre ex Pit. I have, therefore, considered all three of Craib's taxa as synonyms of *P. indica* L. var. *hispida* Pierre ex Pit.

***Tarenna vanprukii* Craib, *T. vanprukii* Craib var. *obtusata* Craib, *T. quocensis* Pierre ex Pit., and *T. collinsae* Craib**

With several flowering and fruiting specimens of *Tarenna* from Sam Lan and Khao Khieo, plus abundant material in BK from throughout the Kingdom, I have concluded that *Tarenna vanprukii* Craib (1915, p. 431), *T. vanprukii* Craib var. *obtusata* Craib (1932), and *T. quocensis* Pierre ex Pitard (1923) are the same as *T. collinsae* Craib (1915, p. 430).



Specimens from the Sattahip area also suggested a strong relationship (Maxwell, 1974). Craib (1932) lists many specimens of all these taxa from Thailand and further notes that *T. collinsae* and *T. vanprukii* are probably the same. Unfortunately the type specimens of these species are not at BK except *T. vanprukii* var. *obtusa*, but I have examined collections of *T. collinsae* from Si Racha (type area) and specimens of *T. vanprukii* and *T. quocensis* enumerated by Craib (1932); and they, along with the Sattahip, Sam Lan, and Khao Khieo specimens, appear to be the same. The original descriptions of the four taxa differ only slightly and, since *T. collinsae* has priority I have considered the other three taxa as synonyms.

**Randia celastroidea** Craib vs. **R. griffithii** Hk. f.

Craib (1932) separated *Randia celastroidea* Craib from *R. griffithii* Hk. f. on the basis of glabrous petioles and pubescent receptacles in the former, and ciliate petioles and glabrous receptacles in the latter. Otherwise the two species appear to be the same and perhaps with further studies *R. celastroidea* will be united with *R. griffithii*. At this time, however, I have considered the Sam Lan plants as *R. celastroidea*, since they so closely resemble the type specimen (Kerr 6051) at BK.

**Randia siamensis** (Miq.) Craib vs. **R. longiflora** Lamk.

*Randia siamensis* (Miq.) Craib, at least from the herbarium material and literature available to me, seems to be merely a small-flowered form of *R. longiflora* Lamk. At the moment I would rather not dispute the status of *R. siamensis*, since I have not had the opportunity to study the variation among them. In any case two forms of *R. siamensis* can be distinguished at Sam Lan and Khao Khieo: glabrous and pubescent. In the glabrous form the plant is entirely glabrous, while in the pubescent form the axes of the inflorescence and fruit are puberulous and the calyx is densely appressed pubescent. This variation in indumentum has also been observed for *R. longiflora* (Hooker, 1880; Pitard, 1923).

**Gardenia magnifica** Geddes, **G. cambodiana** Pierre ex Pit., and **G. collinsae** Craib

There is a taxonomic problem concerning the exact relationship between *Gardenia collinsae* Craib (1914), *G. cambodiana* Pierre ex Pitard (1923), and *G. magnifica* Geddes (1928). Craib (1914, 1932) notes that *G. collinsae* differs from *G. lucida* Roxb. in having more (c. 10) pairs of lateral nerves, and from *G. cambodiana* and *G. magnifica* by the narrower calyx lobes. Craib (1932) further comments that *G. magnifica*, distinguished by its larger flowers, is probably not distinct from *G. cambodiana*. I fully agree with this idea. However, the distinction between *G. cambodiana* and *G. collinsae* is questionable, since they can only be separated by the relative widths of the calyx segments, i.e. linear in *G. collinsae* and spatulate in *G. cambodiana*. The flowers, fruits, twigs, and leaves are otherwise identical. If all three of these species prove to be the same then *G. collinsae* has priority. Specimens from Sam Lan have spatulate calyx lobes, therefore I have considered them as being *G. cambodiana*.



**Saprosma latifolium** Craib, Kew Bull. 1932: 485.

This species has been described from fruiting specimens. As flowering material has become available the description of the flowers is given here.

Stipules ovate, acute to acuminate, connate by a thin membrane in the lower half, fimbriate at the base inside; 4–5 mm long, glabrous or with a few papillae on the margins, caducous.

Inflorescences of axillary glomerules, each 6–10 flowered. Bracts ovate-acuminate, glabrous, 3–4 mm long; bracteoles lanceolate, acute, glabrous. Calyx campanulate, 1–2 mm long; lobes 5, triangular-acute, c. 0.5 mm long, glabrous, or with a few scattered papillae. Corolla lobes valvate, 7–8 mm long, as long as the corolla tube, glabrous outside, villous about the throat inside, white. Stamens 5, sub-sessile, glabrous, inserted at the sinus of the corolla lobes. Stigma bifid, papillose, c. 1.0 mm long; style minutely papillose in the upper half, glabrous in the lower half. Ovary glabrous, 1–2 mm long, flattened at the apex; 2-locular, ovules 1 per locule, basifixed, elliptic, 1.0 mm long.

Aside from minor differences in the leaves and perhaps the stipules this species is indistinguishable from *S. consimile* Kurz.

Specimen examined: Chon Buri, Si Racha, Khao Khieo, Maxwell 75–533.

**Psychotria brunnescens** Craib, Kew Bull. 1932: 477.

The original description of this species is based on flowering material, and as fruiting material has recently been collected the description of fruits is given herewith.

Infructescence 3–5 cm long, 4–6 cm wide, with three main axes and numerous fruits. Fruits fleshy, didymous, 6–8 mm wide and 3–4 mm high; both lobes globose, crowned by the very short calyx lobes (c. 1 mm) included within the sinus between the lobes of the fruit. Exocarp smooth (green in fresh material), glabrous, with 4–5 faintly raised nerves on each lobe. Seed globose, 3–4 mm in diameter, flattened in the hyphae zone, deeply rugose, endosperm ruminant.

*Psychotria pseudo-ixora* Pierre ex Pitard (1923), especially with respect to the fruit, appears to be closely related to *P. brunnescens*.

Specimen examined: Chon Buri, Si Racha, Khao Khieo, Maxwell 75–726.

**Hedyotis**, notes on an unidentified species from Sam Lan.

At Sam Lan I collected a species of *Hedyotis* which I have been unable to identify. From the literature available to me this species is closely related to four other species, but it does have characteristics which seem to be unique. The following table summarizes the basic distinctions and relationship of these species [*H. nalampooni* Fukuoka and *H. pahompokae* Fukuoka both described from specimens collected in northern Thailand, *Oldenlandia* (*Hedyotis*) *krewhansensis* Pierre ex Pit. from Indo-China, and *H. umbellata* (L.) Lamk. from India]. I have not seen the type specimens of these species and the information in this table is summarized from Pitard (1923) and Fukuoka (1970).



Species Habit	Stem	Petiole ( mm )	Calyx lobes	Calyx tube	Corolla	Stigma	Ovary	Capsule
<i>O. krewanhensis</i> erect or spreading	4-angled, winged	5-12	hispid in and out	not described	glabrous in, pubescent out	capitate, subbilobed	not descr.	epicarp hispid
<i>H. umbellata</i> spreading	4-angled, winged	not descr.	glabrous, margin ciliate/ pubescent	puberulent or not	glabrous in and out	2 spreading lobes	not descr.	epicarp glabrous
<i>H. nalampooni</i> erect	terete, slightly angled above	1.5	midrib & margin hirsute, glabrous inside	pubescent	glabrous, tip of lobes a bit, hirsute	2 spreading lobes	densely hirsute	epicarp sparsely hirsute
<i>H. pahompokae</i> erect	4-angled, winged	1.5	midrib & margin sparsely hirsute	sparsely hirsute	glabrous out, lobes sparsely hirsute	2 spreading lobes	densely hirsute	epicarp hirsute
<i>H. sp.</i> ( Maxwell 74-901 ) erect	4-angled, winged	1.5	glabrous with needle- like thickenings	sparsely hirsute with glands in sinus.	glabrous out, villous in, lobes with needle thickenings	2 spreading lobes	glabrous	epicarp hispid



*Hedyotis nalampooni* and *H. pahompokae* are very close, in fact there doesn't seem to be any structural differences between them. The basic differences are based on minor variations in plant form and pubescence. *Oldenlandia krewanhensis* and *H. umbellata* are also related, and there are a few good distinctions. Fukuoka (1970) lists various distinguishing characteristics between his two species and the other related species. Most of these differences are artificial, i.e. not structural.

The unidentified species (Maxwell 74-901) has glands at the base of each calyx sinus, at the base of the pedicels, and in the upper and middle nodes. The leaves, inflorescence axes, calyx lobes, and corolla lobes have many minute, needle-like thickenings in the tissue (best observed when soaked in water). The growth form of this species resembles that of *H. pahompokae*.

#### APOCYNACEAE

*Ichnocarpus fulvus* Kerr, Kew Bull. 1937 : 91.

This species is only known from its floral characters and as fruiting specimens have been collected the description of the fruits is given as follows.

Fruiting racemes 4-6 cm long, densely fulvous-tomentose in the lower half, less so above; pedicels scaly, thinly fulvous-tomentose, 3-5 mm long. Fruit of two divergent follicles, united only at the base, 6-18 cm long, 4 cm diameter, moniliform with 2-4 constrictions, straight, narrowed at the tip, striate-lenticellate, thinly tomentose and finally glabrous, greenish. Seeds 15-20 mm long, 3 mm wide, plano-convex with a vertical groove on the inner (flat) face, glabrous; coma 2.0-2.5 cm long, composed of numerous soft, white hairs.

Specimen examined: Chon Buri, Si Racha, Khao Khieo, Maxwell 75-65. (the type specimen, Marcan 1361, is from Si Racha).

*Beaumontia murtonii* Craib vs. *B. brevituba* Oliv.

Craib (1914) distinguishes *Beaumontia murtonii* Craib from *B. brevituba* Oliv. on the basis of the size and shape of the calyx lobes. Kerr (1939) notes that there is "considerable difference in the size of the flowers and relative breadth of the calyx lobes" in Thai collections. These variations should be included under *B. brevituba* Oliv. since *B. murtonii* does not have any structural differences which would merit two distinct species. For this reason I have considered the Khao Khieo specimens as being *B. brevituba*.



## ASCLEPIADACEAE

***Hoya diversifolia* Bl., *H. carnos*a R. Br., *H. ovatifolia* W. & A., and *H. graveolens* Kerr**

Without the availability of type specimens or original descriptions it is very difficult to distinguish *Hoya diversifolia* Bl. from *H. carnos*a R. Br. Craib and Kerr (1951) list the former but not the latter species for Thailand and there is only one specimen of *H. diversifolia* and none of *H. carnos*a in BK. A relationship also exists between *H. ovatifolia* W. & A., *H. graveolens* Kerr, and the Sam Lan material. Until that time when a thorough revision of *Hoya* is made I think that *H. diversifolia* is the closest species within this group of four species which best represents this group at Sam Lan. This problem was also noted for the Sattahip area (Maxwell, 1974). *Hoya graveolens* Kerr, if it is distinct, seems to be a seashore species which has only been found at Si Racha (type area) and Sattahip. The other three species are apparently much more widespread and occupy forest habitats.

***Heterostemma siamicum* Craib, Kew Bull. 1911: 418.**

The description of the fruits is given here since the species was described from flowering specimens.

Follicles spreading horizontally or sometimes reflexed, up to 16 cm long and 4 mm wide, narrowed at the apex, striate, glabrous, green, grey-brown when dry. Peduncle up to 4 cm long, pedicels up to 3 cm long; glabrous. Seeds linear, flattened, 10–12 mm long, 1 mm wide, keeled on the lower surface for generally at least half its length; seed wings membranous, as long as the body, each 2 mm wide, light brown, glabrous and smooth except for a striate-rugose zone in the upper part above the keel; coma of numerous silky-white hairs, 3–4 cm long. Ripe fruits from September to December.

There is probably very little distinction in fruiting specimens of *H. siamicum* Craib and *H. piperfolium* King & Gamble. The shape of the leaf bases in *H. siamicum* are variable and in one specimen (Maxwell 74–892) there are cordate, truncate, and acutely based leaves on the same specimen. I have noticed this same feature for several flowering specimens of *H. siamicum* in BK. However, in most material in BK, the leaf bases of *H. siamicum* are cordate, and those of *H. piperfolium* are always truncate to acute. It is only when flowers are available that a precise separation can be made in specimens with truncate or acute leaf bases.

Specimens examined: Petchaburi, Kerr 11094; Prachuap Khiri Khan, Sam Roi Yot, Put 2497; Saraburi, Sam Lan, Maxwell 74–892.



## VERBENACEAE

**Hymenopyramis siamensis** Craib, **H. cana** Craib, **H. acuminata** Fletcher, **H. vesiculosa** Fletcher, and **H. brachiata** Wall. ex Kurz

Fletcher (1938) records five species of *Hymenopyramis* for Thailand. Structurally all of them are the same with the major differences being based on variations in the size and pubescence of the leaves and fruiting calyx. Four of these species have been described from Thai material and also have been separated from *H. brachiata* Wall. ex Kurz, viz: *H. siamensis* Craib (1912), and *H. cana* Craib (1922) both closely related to *H. brachiata*; *H. acuminata* Fletcher (1938) and *H. vesiculosa* Fletcher (1938) both separated from *H. siamensis*.

It seems that much of the confusion with all of these species lies in the fact that Craib and Fletcher failed to realize the variability of *H. brachiata* and also that environmental factors, e.g. exposure and nutrition, may be responsible for minor differences—none of which are of a structural nature. At Sam Lan and Khao Khieo I have noticed that the characteristics which Craib and Fletcher based their species on are indeed quite variable and often not at all constant within a given population or even the same individual. Many of the specimens of *Hymenopyramis* from these two areas were difficult to identify (only the type specimens of *H. cana*, *H. acuminata*, and *H. vesiculosa* are at BK) and even some of the specimens at BK determined by Fletcher (1938) are vaguely distinguishable. I have, therefore, considered all the Sam Lan and Khao Khieo material as being *H. brachiata*, thereby giving this species a fairly broad range of variation, which includes the four other species of Craib and Fletcher. Presently I do not think that reducing the four Thai species to varieties of *H. brachiata* would serve to clarify matters since variation within the group is great and extremely difficult to delineate.

## ZINGIBERACEAE

**Globba laeta** K. Lar. variation at Sam Lan

Larsen (1972) describes *Globba laeta* K. Lar., a new species from northern Thailand, which appears to be quite distinct. The collection of this species from Sam Lan differs somewhat from the original description in the leaves being pubescent below, a glabrous calyx, and orange pigmentation of the corolla, lip, staminodes, and stamen. Structurally, however, the Sam Lan material corresponds.



**Globba obscura** K. Lar. vs. **G. villosula** Gagnep.

I cannot accept *Globba obscura* K. Larsen (1972) as a distinct species because it only differs from *G. villosula* Gagnep. in having glabrous leaves and slight variations (size) in the bracts. I have collected and studied *G. obscura* from the type locality (Khao Khieo, Khao Yai National Park) and I found that it is structurally indistinguishable from *G. villosula* collected and studied from the Sam Lan material.

## HYPOXIDACEAE

**Molineria** and **Curculigo**

Throughout the years there has been much confusion in the Asiatic genera *Molineria* and *Curculigo*. At Sam Lan and Khao Khieo I have found two distinct species of this family, i.e. *Molineria latifolia* (Dry. ex W.T. Ait.) Herb. ex Kurz and *Curculigo orchioides* Gaertn. The former, which various botanists have considered as *Curculigo* (Hooker, 1892; Ridley, 1924; Gagnepain, 1928) is readily distinguished at Sam Lan and Khao Khieo (it varies considerably elsewhere) by the leaves being thin and from 5–8 cm wide, and the perianth situated 5 mm or less from the top of the ovary. This interpretation of the species follows that of Backer and Bakhuizen van den Brink (1968). *Curculigo orchioides* has leaves which are thinner and generally not more than 4 cm (often less) wide. This species also has a distinct "beak" of 1–2 cm separating the ovuliferous part of the ovary from the perianth. The variation of *Molineria latifolia* is great and what has been found at Sam Lan and Khao Khieo seems to be a form with wide leaves and a very lax inflorescence.

## ROXBURGHACEAE

**Stemona collinsae** Craib, **S. kerrii** Craib, and **S. curtisii** Hk. f.

Tentatively I have considered *Stemona collinsae* Craib as the only representative of this family at Sam Lan and Khao Khieo. Due to the fact that there is only one authentic specimen of *S. collinsae* (Collins 399, from Si Racha, type) at BK, plus the fact that the type specimen of *S. kerrii* Craib is not available for my study, I cannot be certain whether or not these two species are really distinct from *S. curtisii* Hk. f. *Stemona kerrii* Craib was separated from *S. curtisii* Hk. f. and *S. collinsae* Craib from *S. kerrii*. However, I strongly suspect that both of Craib's species (both with alternate leaves) will eventually be reduced to *S. curtisii*.



## LILIACEAE

**Neolourya** vs. **Peliosanthes**

I find it very difficult to accept *Neolourya* Rodr. as a genus distinct from *Peliosanthes*. Rodriguez (1934) distinguishes *Neolourya* by having a longer and cylindrical-curved style, while that of *Peliosanthes* is short, pyramidal, and very inconspicuous. The flowers and vegetative characteristics are otherwise indistinguishable, and no fruits have never been described for *Neolourya*. The specimens collected at Sam Lan and Khao Khieo fit the description of *N. pierrei* Rodr., but aside from the style I do not see how it differs from *Peliosanthes violacea* Wall. The structural difference of the style is quite obvious, but I hesitate in accepting this as a good generic distinction. Jessop (1975), who is presently undertaking a detailed study of *Peliosanthes*, agrees with my treatment of *Neolourya* and further notes that *Peliosanthes* is monotypic.

## ARACEAE

**Arisaema balansae** Engl., **A. pencillatum** N.E. Br., and **A. cuspidatum** (Roxb.) Engl.

Hu (1968) notes that *Arisaema balansae* Engl. (spathe limb auriculate) and *A. pencillatum* N.E. Br. (sterile appendage with many processes) are both similar to *A. cuspidatum* (Roxb.) Engl. She notes that the two former species could perhaps be united with *A. cuspidatum*. The Sam Lan material lends support to her view since the characteristics of all three species (especially *A. balansae* and *A. pencillatum*) seem to be mixed. I have, therefore, listed *A. cuspidatum* as being the most appropriate taxon for the specimens collected.

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