

A REVIEW OF THE GENUS SYMPETALANDRA STAPF AND ITS POSITION IN CAESALPINIOIDEAE

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SUMMARY

A review is made of tribe *Dimorphandreae* and a new key is provided for the five genera belonging to it. The genus *Brandzeia* Baill. from Madagascar is discarded as it is founded on a mixture of different other genera.

In the past insufficient attention has been paid to three characters which distinctly count in generic distinctions in this tribe, viz. the occurrence of pellucid glands in the leaves and flowers, whether the leaflets are alternate or opposite, and whether the floral parts are inserted on a epigynous, cup-shaped receptacle or whether this is absent.

The genus *Sympetalandra* is found to be quite distinct from *Erythrophleum*; several characteristics remind more of *Mora*.

The genus *Sympetalandra* is redefined and a key is provided for the distinction of five species, among which two are new, while two other ones needed a new combination.

Hitherto *Sympetalandra* was known from Sumatra, Malaya, Borneo, and the Philippines, but now it is also known from Flores in the Lesser Sunda Islands.

DISCUSSION ON THE GENERA OF TRIBE DIMORPHANDREAE

In describing *Sympetalandra* as a monotypic genus of trees from Sarawak, Stapf (*vide infra*) correctly placed this genus in *Caesalpinioideae*. There is admittedly some similarity in habit with the Mimosaceous genus *Adenanthera* which, although typically 'mimosoid' in pod and leaves, has very similar inflorescences and flower type, with almost equal, narrow petals. As Bentham observed, the only conclusive technical difference between *Caesalpinioideae* and *Mimosoideae* seems to be the imbricate petals of the latter and the valvate ones of the former. This rather meagre evidence seems to me also distinctly in favour of not raising these subfamilies to family rank, a view also shared by Brenan (Fl. E. Trop. Afr. Leg.-Caes., 1967, 1).

Stapf argued that within this subfamily *Sympetalandra* showed affinity with the pan-tropical, arboreous tribe *Dimorphandreae*, but could not be said to be closely allied to one of the other five genera then attributed to this tribe, viz. *Dimorphandra* Schott, *Mora* Bth. (tropical America), *Burkea* Hook. (tropical Africa), *Brandzeia* Baill. (Madagascar), and *Erythrophleum* Afz. (mainly tropical Africa, but also in SE. Asia and Queensland).

I found it necessary to review the position and degree of affinity of these genera and to test some characters formerly neglected. Following the sequence given by Taubert (in E. & P., Nat. Pfl. Fam. 3, 3, 1891, 126) I will give here an annotated diagnosis of them.

Dimorphandra possesses 5 fertile and 5 staminodial stamens; anthers glabrous. All floral parts are inserted directly on a smallish, not extended receptacle; calyx cupular, shortly 5-lobed. Ovary sessile or very short-stipitate; ovules c. 8—11. Pod fleshy or hard, whether

or not dehiscent. Seeds small, albuminous. Leaves 2-pinnate; leaflets rather large or small, mostly opposite but e.g. in *D. mollis* alternate*, not pellucid-punctate.

The occurrence of alternate as well as opposite leaflets in one genus is curious and points to heterogeneity; in *Leguminosae* this character is usually very constant.

Mora, often regarded as a section of *Dimorphandra*, shares the occurrence of staminodes, but differs in having a long style, anthers at apex caducous-woolly, ovary sessile or stipitate, large reniform soft exalbuminous seeds, and a coarse but not really woody pod. Leaves 1-pinnate with coriaceous, large and always opposite leaflets, dark brown in the herbarium, not pellucid-punctate.

Ducke has shown (Arch. Jard. Bot. Rio de Janeiro 4, 1925, 39—45) that there is variation in the staminodial stamens. As a matter of fact in all other genera of this group no staminodes are found, though occasionally the stamens may be unequal (5 long, 5 shorter); they are always exerted (except in *Burkea*).

These two genera are mutually closer allied than to the others, but I can agree with Sandwith (Kew Bull. 1932, 395—406) to keep them apart on the generic level.

Burkea has 10 equal, elongate, acute anthers (dorsifixed and introrse as in the whole group), but the filaments are so short that the stamens remain included. All floral parts are free, the receptacle being not extended into a cup. The ovary is almost sessile (and hairy as is often the case in this group), with a very short style and cup-shaped stigma, the pistil remaining included in the flower; ovules 1 or 2. Pod thin and flat, indehiscent; seed 1, flattened, albuminous. Leaves 2-pinnate, with alternate leaflets on the pinnae; leaflets pellucid-punctate (*Seydel* 2138).

Except for *Sympetalandra* (*vide infra*), this is the only genus in the group with pellucid dots in the leaves. By its characters it stands well-apart from *Dimorphandra* and *Mora*.

Brandzeia was described by Baillon (Adansonia 9, 1869, 215, t. 6) from Madagascar; he compared it with *Erythrophleum* because the floral parts are inserted on a cup-shaped receptacle. But it differs from all other genera by clawed petals and the occurrence of a cupular gland at the base of the petiole of the otherwise 'albizoid' leaves. From the description it appeared to me quite aberrant in the tribe. At Kew there is no authentic material except a sterile sheet (*Baron* 5631) under this name. To this, Mr. Shaw kindly communicated, is a note attached by Miss Dumaz-le-Grand reading: 'Genre caduc. Viguier qui l'a étudié dit que Baillon l'a établi d'après une mélange d'échantillons appartenant à des genres différents: rameaux feuillés portant des fruits d'*Albizia* et rameaux en fleurs de *Bathieaea rubriflora* Drake. Sept. 1952'. Unfortunately Viguier's MS revision of Madagascan *Leguminosae* is not published, but to me the note is sufficient to discard the genus, which is based on a mixture of discordant elements. Mr. M. Peltier (Paris) carefully checked this (in litt. 1-2-1974).

Erythrophleum flowers possess a cupular receptacle carrying the free floral parts. Petals oblanceolate, not clawed. Stamens are equal or unequal; anthers small, oval, the cells with a thickened, brown margin. Ovary stipitate, hairy; ovules (5—)7—8. Pod flat, 2-valved, coriaceous, rarely hard (*E. guineensis*). Seeds flattish, albuminous. Leaves 2-pinnate, either 2- or 3-jugate (in *E. micrantha* possibly also 4-jugate); leaflets always alternate and not pellucid-punctate.

The genus is markedly homogeneous although it occurs over a wide area: most species in Africa, a few in SE. Asia and a few in Australia, but absent from Malasia.

Sympetalandra has no cupular receptacle on which the calyx, corolla, and stamens are inserted. The calyx lobes are, as in all genera, connate into a short tube, distinctly pellucid-

* Leaves or pinnae are in this group all *pari*-pinnate as there is, near the insertion of the so-called terminal leaflet, always a small scar or mucro terminating the rachis of the leaf or pinna.

glandular punctate. Corolla lobes fused at base, just leaving room for the stipe of the ovary to pass, also pellucid-glandular punctate. Filaments almost free at base but inserted on the base of the corolla at the place of fusion; anthers small, oval, dorsifixed, with a dark brown large connective. Ovary stipitate, glabrous or hairy, with a longish style; ovules 2—6. Pod very large and distinctly woody, probably finally always dehiscent. Seeds 1—4 developing, very large, thick, exalbuminous. The leaves are coarse and were originally described as 1-pinnate, with 2 pairs of opposite leaflets (in the inflorescence sometimes reduced to 2 leaflets in all), but later collections of certainly congeneric specimens had 2-pinnate, 1—3-jugate leaves; leaflets always large, opposite, and pellucid-punctate.

Under his description of *Erythrophleum unijugum*, Airy Shaw (Kew Bull. 1939, 181) commented on the validity of the genus *Sympetalandra* and, following a suggestion made by Merrill on this point, seriously doubted it to be generically distinct from *Erythrophleum*, writing 'that even if no further links are discovered, it will at most constitute a section of *Erythrophleum*'.

On closer examination it appears, however, that this can not be upheld. *Sympetalandra* stands quite apart from all other genera by its fused petals and its stamens inserted on the corolla and, furthermore, by its pellucid-glandular calyx and corolla. The absence of a receptacular cup carrying on its rim the floral parts is shared with *Dimorphandra* and *Mora*; its coarse leaf-habit is only matched in *Mora*. In the group it shares pellucid-glandular leaves only with the African genus *Burkea* which is otherwise quite different. The very large pod with thick seeds is only approached in *Mora*, but the valves are thick to woody. The opposite leaflets it shares only with *Dimorphandra* (in part) and *Mora*. None of these characters are found in *Erythrophleum*. Although standing distinctly apart, I feel *Sympetalandra* is as much allied to *Mora* as to *Erythrophleum*, or even more so. I am happy that this is also the opinion of Hutchinson (Gen. Fl. Pl. 1, 1964, 234, 239).

As far as the distribution of *Sympetalandra* is concerned, there is much news now the genus is well-defined, the most unexpected extension being the collections of it by the untiring endeavours of Father Erwin Schmutz in the rain-forest patches of the island of Flores. In fact, the identification of his collections led me to this review.

The key given by Taubert to the genera of the tribe *Dimorphandreae* (in E. & P., Nat. Pfl. Fam. 3, 3, 1891, 126) can be improved as follows:

- 1a. Free floral parts inserted on a cup-shaped receptacle. Anther cells brown-margined. Leaflets alternate, not pellucid-punctate. — *Old World* 1. **Erythrophleum**
 - b. No receptacle under the floral parts. Anther cells not brown-margined. 2
- 2a. Stamens: 5 fertile and 5 staminodial. Leaves not pellucid-punctate 3
 - b. Stamens 10, (in bud) equal or unequal, but all fertile. Leaves pellucid-punctate . . . 4
- 3a. Leaves 2-pinnate, never wholly glabrous. Anthers glabrous. Style short. Ovules 8—11. Pod various. Seeds small, hard, albuminous. — *New World*
 2. **Dimorphandra**
 - b. Leaves 1-pinnate, glabrous. Anthers at apex caducous-woolly. Ovules 4 or 5. Seeds large, soft, exalbuminous, in a coarse pod. — *New World* 3. **Mora**
 - 4a. Leaves 1- or 2-pinnate; leaflets opposite. In mature flowers petals and stamens fused at the base. Stamens exserted. Ovules 2—6. Pods very coarse (10—70 cm), tardily dehiscent, with woody valves. Seeds 1—4, massive (3—5.5 cm). — *Malesia*
 4. **Sympetalandra**
 - b. Leaves 2-pinnate; leaflets alternate. Petals and stamens free. Stamens not exserted. Ovules 1 or 2. Pod flat, indehiscent, thin-coriaceous, 4—6 by 2—3 cm. Seed 1, flat, c. 1 cm. — *Africa* 5. **Burkea**

- b. Leaves 2-pinnate, not nigrescent. Floral rachis hairy, not nigrescent, not thickish. Ovules 3—6 4
- 4a. Leaves 1-jugate. Pedicels *c.* 1 mm. Calyx laxly puberulous. No intrastaminal disk. Ovary glabrous, with some large glands, sessile (in bud). Ovules 5 or 6
4. *S. hildebrandii*
- b. Leaves 3—2-jugate. Pedicels 2.5—3 mm. Calyx glabrous. Intrastaminal disk annular, adnate to the base of the staminal tube, 5-crenate. Ovary densely tomentose, stipitate. Ovules 3 or 4. 5. *S. schmutzii*

I. *Sympetalandra borneensis* Stapf

S. borneensis Stapf in Hook., Icon. Pl. ser. IV, 8 (1901) t. 272; Merr., En. Born. (1921) 295; Pl. Elm. Born. (1929) 98. — T y p e: *Haviland & Hose 1628* (K; isotypes in L, SAR).

Stapf's excellent description needs only little emendation, partly due to new material. Leaflets sometimes in 1 or 3 pairs, 6—17 by 3—7 cm. Peduncle 1.5—5 cm. Rachis 2.5—9 cm. Pedicels articulated at the base. Calyx and petals pellucid-punctate though a bit obscurely so. Filaments and style in very young buds straight, in ripe buds geniculate, coiled or tortuous, expanding in anthesis.

BORNBO. S a r a w a k. Kuching, small tree, style and filaments pinkish, fl. Sept. 1892, *Haviland & Hose 1628*; fl. Oct. 1886, *Beccari 2658* (Fl, K, L); fl. 10—1892, *Haviland 1776* (K) (sometimes pre-identified as *Millettia atropurpurea* and *Adinobotrys atropurpurea* Dunn); Sitam, *Haviland 103* ('b.z.e.g.');

Bako National Park, at sea-level, 'edge of the kerangas forest type S1 to pedada', tree 25 m, 25 cm diam., beyond anthesis with young fruit not collected, 11—3—1959, *S 9902 Brunig*.

N o t e s. The specimens are in all aspects clearly conspecific. In all five collections the leaves are 1-pinnate with 2 pairs of opposite leaflets; only in the inflorescence sometimes a leaf is found with one pair of leaflets, in one collection there is a lower leaf with 3 pairs of leaflets.

It is a pity that as yet no fruit has been collected, but this may become available in future, now the location of Brunig's collection in Bako National Park is known. It must obviously be mature in May-July.

Several authors have applied the name *S. borneensis* to other species; see under 2. *S. unijuga* and 4. *S. hildebrandii*.

2. *Sympetalandra unijuga* (Shaw) Steen., *comb. nov.*

Erythrophleum densiflorum auct. non (Elm.) Merr.: Merr., En. Born. (1921) 295; Pl. Elm. Born. (1929) 98. — (*Villamil 52, Elmer 20923*).

S. borneensis auct. non Stapf: Merr., Pl. Elm. Born. (1929) 98 (*Elmer 20923*); Kostermans, Gard. Bull. Sing. 17 (1958) 5, *pro specim. maj. part.*; Whitmore, Tree Fl. Malaya 1 (1972) 274, *excl. SF 31984, et al.*?; Meijer, Field Guide Tree Fl. West Malesia (1974) 197, fig. 47.

Erythrophleum unijugum Airy Shaw, Kew Bull. (1939) 180. — T y p e: *Agullana For. Dep. 1780* (K).

Serianthes gicalobium Kostermans, Reinwardtia 2 (1953) 357. — T y p e: *bb 20030* (BO, L).

Buttressed tree, up to 30 m high; clear bole up to 18 m; trunk to 50(—70) cm diam. Leaves 2-pinnate (in juvenile specimens or shoots some leaves 1-pinnate); jugae 1 (2 or 3); petiole 2—5(—8) cm; main rachis 6—10 cm; stalk of pinnae 2—5 cm; rachis of pinnae 6—15(—18) cm; leaflets per pinna (2—)3—4(—5) pairs, papyraceous to chartaceous, pale brown, rarely darkening, ovate-oblong to oblong-elliptic, 6—10(—17) by 2—4(—7.5) cm, acuminate, often oblique at base. Rachis of racemes laxly to densely hairy. Pedicels 0.5—1 mm, articulate at the top, leaving a short, thick knob. Calyx not ciliate. Ovules 3—6. *Pod* falcate, flat and more or less constricted between the swollen seed cavities, coarsely and prominently reticulate-veined, with more-parallel veins towards the sutures,

size depending on the number of seeds 15—36 by 3.5—4(—5) cm; pericarp woody, c. 2 mm thick. *Seeds* massive, 1—4 developed, situated in closed cavities as the endocarp of both valves is closely cohering between the seeds; testa pink when fresh, dark brown, hard-cartilaginous when dry; seed with 2 large thick cotyledons, c. 4 by 2.5 cm, and 2 cm thick, in 1-seeded pods even larger.

SUMATRA. East Coast Res. *Barends BW 11a* (not seen, cf. Kostermans, l.c.). — Indragiri. *Buwaldia 365=bb 28588*. — Bencoolen. *Idris 13=bb 8786* (sterile); *bb 8487* (not seen, cf. Kostermans, l.c.).

BORNEO. Sabah. *A 808, A 3516; Agullana For. Dep. 1780; BNB 4541, 7425 Matusop* (fr.); *Elmer 20923; SAN 8858 Puasa, 16313, 16398, 19301, 19609* (fr.), *21289, 29398, 30697, 36730* (fr. juv.), *40657* (fr.), *44953* (Meijer, l.c. fig., not seen), *58058, 58111, 61068, 62075* (fr.), *62302* (fr.), *63893, 70254; SH 9250 Agama & Puasa=FD 44269; SH 9953 Agama=FD 48740; Villamil 52* (not seen, cf. Merrill, l.c.). — Sarawak. *S 18730*. — Indonesian Borneo. Eastern Div. (mainly Nunukan): *bb 19054, 20030* (fr.), *26245; Kostermans 8727 & A* (fr.), *8790; Meijer 2176* (not seen). Western Division: *bb 26433* (not seen). Southern Div.: *bb 10527; Jaheri s.n. 1895* (both not seen).

PHILIPPINES. Luzon. Tayabas Prov., *FB 21635 Lopez* (K).

Notes. Kostermans (1958, l.c. 6) added to his synonymy — from which to my surprise he excluded the Philippine *Erythrophleum densiflorum* (Elm.) Merr. — some notes on the variability of the leaves. He said that leaves vary from 1-pinnate to 2-pinnate (1- or 2-jugate) and that he could find at Nunukan 1-pinnate leaves not only under the inflorescence, where leaves always tend to be less developed, but also on sterile branchlets which are less vigorously developed. Furthermore, he observed that 1-jugate and 2-jugate leaves occur commonly on the same tree. He doubtless stressed this point to defend the widening of his concept of *S. borneensis* which is still only known to have 1-pinnate leaves.

All material cited above possesses always 2-pinnate leaves, but 1-pinnate leaves do occur. This information I thank to Mr. E. de Vogel, who on my request kindly examined the two juvenile trees in Hortus Bogoriensis, which are raised from seed brought by Kostermans from Nunukan, viz. the numbers IX-D-183 and VIII-G-146a. On both (sterile) trees 2-pinnate leaves are found on all twigs, but occasionally 1-pinnate leaves are found, without clear sequence, though with a tendency that the lower leaves on a shoot are 1-pinnate.

Also the number of jugae is variable. Though in almost all cited specimens there is one pair of jugae, it is peculiar that in *Kostermans 8727A* and *bb 20030* — the source of the living specimens — there are two jugae, or even three. It must be added that also in the Philippine *Erythrophleum densiflorum* Merrill noted the occurrence of one, two, or three jugae. However, judging the entire material, it appears that the usual state in the Bornean specimens is 1-jugate and in the Philippine specimens of *Sympetalandra* 2-jugate, in comparable flowering material.

Another controversial point has been the statement by Kostermans (1958) that the pods are not dehiscent. Of this species there are six fruiting collections known and none has dehisced fruits. However, some are distinctly immature as seeds were badly shrivelled in the herbarium, unlike ripe seeds. Still, I believe that the pod does dehisce when fully mature and dried, be it tardily, for two reasons. One reason is that the very thick, woody valves are tightly compressed to each other between the cavities containing the seeds and, although these cavities are no true compartments as in septate pods, their coherence will retard splitting which possibly only takes place during a dry spell. The second reason is, that in the Philippines (cf. also Merrill, Philip. J. Sc. 4 (1909) Bot. 267) in all three *Sympetalandra* collections with fruit I have, the pods are dehisced and similarly so in the collection

from the Flores species the pods are finally split. Furthermore, it is a well-known experience in several *Leguminosae* that seed may be ripe and capable of germination before the valves of dehiscent pods have fully dried out and have actually separated. Though field observations are desirable, I do not doubt that the pod of *Sympetalandra* is of the dehiscent type. Further field observations are needed to clarify whether dehiscence takes finally place in the pods of *S. unijuga*.

S. unijuga and *S. densiflora* are certainly closely allied and I would have regarded them as (replacing) subspecies were it not for the occurrence of *S. unijuga* in Luzon, be it a specimen with 1-pinnate leaves. For this reason I keep them tentatively separate, especially because a large number of old Philippine specimens could not be found in the herbaria I consulted; see for this under *S. densiflora*. Differences are as follows:

- 1a. Flowers sessile. Calyx ciliate. Leaves usually 2-jugate. Pods as far as known not constricted between the seeds, dehiscent, 10—18 by 3—4.5 cm. Valves *c.* 1 mm thick (sutures of course thicker) ***S. densiflora***
- b. Flowers pedicelled, articulated at apex, leaving a hard knob-like pedicel. Calyx not ciliate. Leaves usually 1-jugate. Pods as far as known not dehiscent, constricted between the seeds, 15—36 by 3.5—4(—5) cm. Valves *c.* 2 mm thick ***S. unijuga***

The precise distribution cannot be given with certainty as sterile and fruiting material is difficult to place, notably the specimens from Sumatra. I can not well distinguish *S. hildebrandii* from *S. unijuga* in the sterile state: the only specimen of *S. hildebrandii* has indeed larger leaflets.

3. *Sympetalandra densiflora* (Elm.) Steen., *comb. nov.*

Cynometra densiflora Elm., Leaf. Philip. Bot. 1 (1907) 222. — *Erythrophleum densiflorum* Merr., Philip. J. Sc. 4 (1909) Bot. 267; *ibid.* 5 (1910) Bot. 35; L. Planchon, Ann. Col. Mus. Marseille 19 (1911) 304, t. 3, 4 & fig.; Merr., En. Philip. 2 (1923) 253. — T y p e; *Elmer 9014* (isotype in L).

Tree, 15—25 m; bole 40—85 cm diam. Leaves 2-pinnate, jugae (1) 2 (3) pairs; leaflets 3—5, usually 4 pairs, 5—11 by 1.8—4 cm. Calyx ciliate. Pod compressed, woody, dehiscent, often obovate-oblong, and slightly oblique, prominently reticulate-striate with some parallel veins along the sutures, 10—18 by 3—4.5 cm, the valves *c.* 1 mm thick. Ovules *c.* 4. Seeds 1—4, \pm orbicular, compressed, *c.* 3 cm diam. (immature).

PHILIPPINES. L u z o n. Tayabas Prov., Lucban, *Elmer 9014*; *FB 10272 Curran* (fr.); *BS 13080 Ramos* (fr.); Sorsogon Prov., Irosin (Mt Bulusan), *Elmer 16686* (fr.); Cagayan Prov., *FB 21831 Barros*, 21910; Rizal Prov., Oriud, *Loher 6056*; *For. Prod. Res. Inst. Herb. 395 Lagrimas*; Maquiling National Park, *PNH 22898*, *culta*. — S a m a r. Mt Mahagna, Oquendo, *PNH 14499 Sulit*. — M i n d a n a o. Lanao Distr., *FB 23369 Ponce* (fr.).

N o t e s. Though Planchon, l.c., described the morphology and anatomy in detail, and observed the pellucid glands in the leaves, and the opposite leaflets, he did not draw the conclusion that because of these two characters it could not belong to the genus *Erythrophleum*.

The flower colour seems to vary, Sulit (14499) mentioning 'pink, sweet odour', but also (PNH 22898) 'white, odourless'.

Four of the cited collections carry fruit and these fruits are rather uniform.

The tree is said to be common in the Philippines and many more collections were cited by Merrill: *FB 9163*, 10154, 10215, 11513, 12507, 17198, 20476, 24260, 26262, but whether they all belong to *S. densiflora* is not certain; there could also be *S. unijuga* among them.

4. *Sympetalandra hildebrandii* Steen., *sp. nov.*

Holotype: *SF 31984 Kiah* (L; buds only).

S. borneensis auct. non Stapf: Whitmore, Mal. For. 32 (1969) 71; Tree Fl. Malaya 1 (1972) 274, *pro specim.*

Folia 2-pinnata, 1-jugata; foliola 3-aria, opposita, elliptico-oblonga, acuminata, glabra, pellucido-punctata, 8—15 cm longa, 3—6 cm lata. *Panicula* parce ramosa, terminalis, dense brevopilosa, usque ad 40 cm longa, ramis lateralibus spiciformibus 10—15 cm longis. *Flores* numerosi, ex axilla bracteae cito caducae orti, in statu nondum bene evoluto tantum cogniti; bracteolae nullae. Pedicelli basi articulati, c. 1 mm longi, crassiusculi, sursum in calycem transeuntes. Calyx 1.5 mm longus, basi laxe puberulus, lobis ciliatis 0.5 mm longis, 1 mm latis. Petala late elliptica, concava, distincte imbricata, 2.5—3 mm longa, 1.5—1.75 mm lata. Ovarium sessile, lineari-cylindricum, glabrum, glanduliferum, 1.5 mm longum; styles crassiusculus, obliquus, 0.5 mm longus; stigma concavum, minute 2-lobum.

Tree 15 m. *Leaflets* chartaceous; petiolules 0.2—1 cm. Bracts ovate-triangular, acute, patent, dorsally densely short crispy puberulous as the rachis, 1 mm long. Buds dark pink (*ex coll.*). Anthers narrow-oblong, 1.2 mm, the acutish connective very dark and superseding the cells. Ovary (in bud) narrow-elliptic, 1.2 by hardly 0.5 mm; style oblique, 0.5 mm; stigma slightly widened, minutely bilobed. *Pods* ± straight, 2- or 3-seeded, 18 by 4 cm, contracted between the roundish bulging seeds c. 3.5 cm diam. and 1.5 cm thick; with a flattish empty apex 4—6 cm long; pericarp hard and woody almost 3 mm thick, dehiscent at least along one suture.

MALAY PENINSULA. Johore. Sg. Kayu, E. of Johore, bud dark pink, on hill, 18—10—1936, *SF 31984 Kiah Hj. Salleh* (A, K, L, LAE, P, PNH, SING, distributed as *Crudia* sp.).

Notes. Whitmore, l.c., noted that the type collection 'differs from all other collections seen (assumedly of *S. borneensis sens. lat.* in SING) in having one ramiflorous panicle; and the leaflets are not an exact match'. This I cannot quite follow, as in two sheets of it (L, SING) the panicle is clearly terminal.

One sheet Whitmore cited (*FRI 15696*) I have not seen; also an other sheet mentioned by Whitmore on his label of *SF 31984* but not mentioned by him in the Flora (*KEP 55084*) I have not seen; of this one he said (in sched.) 'merges to the rest of the sheets'; according to Mr. Kochummen they could not be located in the Kepong Herbarium.

The fruit described above is made after the only one known (*E. J. H. Corner s.n.*, Johore, Oct. 1935, sheet in SING; one and a half pod without leaves or flowers). I assume they belong to the new species; they differ in size and shape from those of *S. unijuga*, the seeds being more regularly arranged, without stipe, with few prominent veins, and a sterile flat apex.

Unfortunately the type carries only buds, with the anthers still on short straight filaments as is usual in the genus, with alternately longer and shorter filaments which will later expand and become tortuous in ripe buds. The ovary in these buds is sessile, but whether this is maintained in anthesis must still be checked. But it is glabrous and glandular, and much longer than the style, characters which are both not found in any of the other species which all have stipitate, spindle-shaped woolly ovaries.

The specific name is chosen in honour of Mr. F. H. Hildebrand, formerly attached to the Forest Research Station at Bogor, in commemoration of his most excellent and devoted work for the naming of Malesian trees.

5. *Sympetalandra schmutzii* Steen., *sp. nov.*

Holotype: *E. Schmutz 2740* (L).

A species of the genus *ceteris* differs in the 5-crenate intrastaminal disc, articulated pedicels of the basally articulated, glabrous, 2.5–3 mm long corolla, 5 mm long legume, and the large lignous pod up to 67 cm long; valves with c. 20 parallel prominent veins. Leaves 2-pinnate, jugal 3–2-paired, jugal also foliolar 3–6-paired opposite pellucid-punctate.

Large tree. *Leaves* 2-pinnate; jugal 3 or 2 pairs, each with 3–6 pairs of opposite, pellucid-punctate leaflets. Petiole 7–22 cm, thickened at the base; rachis c. 6–8 cm; stalk of pinnae 4–10 cm; petiolules thickish, dark, 3–5 mm. Blades oblong-elliptic, ± equal or unequal-sided at the base, acuminate, 10–15 by 3.5–6 cm, pale brown *in sicco*; nerves 5 pairs and some intermediate ones, ascending. Flowers in dense, terminal and axillary, simple or little-branched *racemes*, the stem apex, rachis, and bracts appressed puberulous; peduncle 4–6 cm, rachis up to 20 cm, not thickened, not nigrescent. Bracts triangular, acute, patent, with a few dorsal hairs and ciliate, early caducous. *Flowers* patent, except the ovary glabrous; pedicel slender, 2.5–3 mm long, articulate at the base. Calyx glabrous, the tube campanulate, c. 1 mm high, the lobes imbricate in bud, ovate-triangular, acute, c. 0.8 mm long. Petals connate at base and adnate with the staminal bases, the inside of which is lined by a 1 mm high, 5-crenate disk; corolla 5 mm long, the lobes obovate-oblong, 2 mm wide, with 3–5 parallel darker veins in the centre. Stamens 8 mm long, equal, exserted; anthers dorsifixed, introrse, the wide connective dark brown and slightly exceeding the pale anther cells. Stipe of ovary thin, 2 mm long; ovary densely long-woolly, spindle-shaped, 1.5 mm long; style straight, 3.5 mm long, thin; stigma punctate. Ovules 3 or 4. *Pod* very woody, ± linear, blunt, c. 30 up to 67 cm long, 5 cm wide, the margins almost parallel, the valves lengthwise striated by c. 20 prominent veins, 6–8 mm thick, curling up when dry. *Seeds* roundish to broad elliptic, 4.5–5.5 by 3–3.5 cm, 1.5 cm thick, obviously exalbuminous, the two large cotyledons at the tip concealing the 4 mm long plumule in a cavity; testa dark, smooth, hard-cartilaginous, the hilum running as a dark line along one side of the seed.

LESSER SUNDA ISLANDS. West Flores. Paku, 400–500 m alt., *E. Schmutz 1686*, fl. fr. 5–9–1967, vern. *nareb*, the bark used as fish poison, pod dehiscent, very woody, to 30 cm long with a few very large seeds; same place, fl., fr. 15–10–1971, *E. Schmutz 2740*, large tree, very local, but tending to be gregarious, flowers greenish, slightly fragrant, pod up to 67 cm long, seeds used for primitive illumination purposes.