Flora of Koh Chang.

Contributions to the knowledge of the vegetation in the Gulf of Siam.

By

Johs. Schmidt.

Part V.

(C. B. Clarke: Compositae, Umbelliferae. — Johs. Schmidt: Rhizophoraceae. — Ove Paulsen: Fagaceae. — F. K. Ravn: Loranthaceae. — Eug. Warming: Podostemaceae. — C. H. Ostenfeld: Hydrocharitaceae, Lemnaceae, Pontederiaceae, Potamogetonaceae, Gentianaceae (Limnanthemum), Nymphaeaceae. — H. Harms: Leguminosae. — K. Schumann: Scitamineae. — A. Engler: Araceae. — F. Stephani: Hepaticae.)

Compositae (= Asteraceae, Lindley)

by **C. B. Clarke** — Kew.

The Compositae sent me collected in Koh Chang by the Danish Expedition to Siam (1899—1900) are 19; and are all known from the Eastern part of British India, at elevations 0—400 metr. above the sea. The plant enumerated below as *Blumea subracemosa* is no real exception, as it might be almost, if not exactly, matched out of the innumerable forms of *Blumea lacera* in the Indian collections.

The low-level Compositae of Eastern British India consist of wide-spread tropical plants that accompany cultivation, of a few maritime plants, and of the universal *Blumea*, — the *Hieracium* of Bengal.

Sphaeromorphaea Russeliana is a rare plant, known to me only as a weed in cultivated land.

Wedelia scandens, Roxb., is known to me only as a strictly maritime plant, in the Mangrove swamps and Soondreeboom. Its distribution in Bombay is (fide Dr Cooke) similar. It appears to be very widely spread quite close to the sea in the tropics.

As all the plants in the collection have been lately treated by Sir Joseph D. Hooker in the Flora of British India v. 3 [1881], I have given a reference for each species to that book, instead of copying out all the synonymy. To shew the local geographic distribution, I have added references to

Miq. Fl. Ind. Bat. v. 2 [1856]
Vidal Pl. Vasc. Filip.
Hemsley Known Pl. of China
(in Journ. Linn. Soc. v. 23 [1886—8]).

The principal genus is *Blumea*, 6 „species" or forms (besides *Laggera*). In dealing with these, I have only attempted to match the examples of the Danish Expedition, stating where the match appears to me exact; and, if not exact, in what particular it does not quite agree. I have not made any attempt to revise the genus critically or to improve on Sir J. D. Hooker's sorting and characters. Such a revision would occupy months, nor do I feel sure that the results would be an improvement. Similarly, as regards *Wedelia scandens* [Roxb. sub *Verbesina*], I have not sorted afresh the numerous examples of it in Kew, from Malaya, North Australia, Polynesia, mixed under numerous other names but nearly all of it included under the name *Wedelia biflora* by Bentham.

The present 19 species may possibly include nearly all the indigenous Compositae of the Island of Koh Chang; but there is a considerable number of rice-field Compositae, any other of which might turn up in cultivation; or, if carried to Koh Chang, become plentiful there.

Vernonia Schreb.

[Benth. et Hook. f. Gen. Pl. v. 2, p. 227.]

1. **V. cinerea** Less. in Linnaea v. 4 [1829], p. 291; DC. Prod. v. 5, p. 24; Miq. Fl. Ind. Bat. v. 2, p. 11; Hook. f. Fl. Brit. Ind. v. 3, p. 233; Vidal Pl. Vasc. Filip. p. 160; Hemsl. in Journ. Linn. Soc. v. 23 [1886—8], p. 401.

Conyza cinerea Linn. Sp. Pl. [ed. 2], p. 1208.

Exemplum n. 18 est forma typica *C. cinereae*, species communis, cui varietates numerosae junctae sunt.

Lem Dan, common in cultivated ground.
Area: In calidis Orbis Veteris, communis.

2. **V. elliptica** DC. in Wight Contrib. [1834], p. 5; DC. Prod. v. 5, p. 22.

V. elaeagnifolia DC. Prodr. v. 5 [1836], p. 22; Hook. f. Fl. Brit. Ind. v. 3, p. 237.

Conyza elaeagnifolia Wallich ms. [List. n. 3041].

Wight Nr. 1377 (*V. ellipticae* origo) in herb. Wight sine habitat est ex mea sententia *V. elaeagnifoliae* (a Griffith in Mergui lectae) exemplum alterum. Griffith Wightio plantas plurimas dederat.

Mouth of Klong Munsé, climbing on trees near the sea.

Area: Malay Peninsula; Siam (Schomburgk n. 116).

Elephantopus Linn.

[Benth. et Hook. f. Gen. Pl. v. 2, p. 237.]

3. **E. scaber** Linn. Sp. Pl. [ed. 2], p. 1313, syn. quibusdam excl.; DC. Prod. v. 5, p. 86; Wight Ic. Pl. Ind. Or. t. 1086; Miq. Fl. Ind. Bat. v. 2, p. 21; Hook. f. Fl. Ind. Or. v. 3, p. 242; Vidal Pl. Vasc. Filip. p. 160; Hemsl. in Journ. Linn. Soc. v. 23 [1886—8], p. 402.

Common everywhere, in cultivated ground.

Area: In calidis utriusque Orbis, communis.

Adenostemma Forst.

[Benth. et Hook. f. Gen. Pl. v. 2, p. 239].

4. **A. viscosum**, J. R. et G. Forst. Gen. Pl. [1776], p. 90, t. 45; DC. Prod. v. 5, p. 111; Miq. Fl. Ind. Bat. v. 2, p. 23; Hook. f. Fl. Brit. Ind. v. 3, p. 242 cum syn.; Vidal Pl. Vasc. Filip. p. 160; Hemsl. in Journ. Linn. Soc. v. 23 [1886—8], p. 403.

A. latifolium, D. Don Prod. Fl. Nepal p. 181; Wight Ic. Pl. Ind. Or. t. 1087.

A. angustifolium, Arnott in Nova Acta Nat. Cur. v. 18, pars. 1 [1836], p. 347.

Verbesina Lavenia, Linn. Sp. Pl. ed. 2, p. 1271.

Var. *α* **latifolia** (sp.) D. Don; foliis ovatis.

Lem Dan, in rice-field.

Area: In calidis [et temperatis] utriusque Orbis.

Var. *β* **angustifolia** (sp.) Arnott; foliis lanceolatis, imo interdum linearilanceolatis.

Klong Munsé, Klong Son: on river-banks.

Area: India; quam in Zeylanca tam in Himalaya Occidentali. Hujus Var. formâ foliis linearilanceolatis antea e Malaya non visa.

Ageratum Linn.

[Benth. et Hook. f. Gen. Pl. v. 2, p. 241.]

5. **A. conyzoides**, Linn. p. Pl. eSd. 2, p. 1175; DC. Prod. v. 5, p. 108;

Miq. Fl. Ind. Bat. v. 2, p. 28; Hook. f. Brit. Ind. v. 3, p. 243; Hemsl. in Journ. Linn. Soc. v. 23 [1886—8], p. 403.

Common in cultivated ground near Lem Dan.
Area: In omnibus regionibus calidis sparsa.

Erigeron Linn.

[Benth. et Hook. f. Gen. Pl. v. 2, p. 279].

6. **E. Canadensis** Linn. Sp. Pl. ed. 2, p. 1210; DC. Prod. v. 5, p. 289, Oederi tab. excl.; Bentl. et Trim. Medic. Pl. t. 149; Hook. f. Fl. Brit. Ind. v. 2, p. 254; Hemsl. in Journ. Linn. Soc. v. 23 [1886—8], p. 418.

Klong Sarlakpet, edge of the jungle.
Area: In omni fere Orbe Terrarum sparsa; ex America Boreali forsan orta.

Blumea DC.

[Benth. et Hook. f. Gen. Pl. v. 2, p. 289].

7. **B. glomerata** DC. in Wight Contrib. [1834], p. 15, Prod. v. 5, p. 443; Hook. f. Fl. Brit. Ind. v. 3, p. 262; Vidal Pl. Vasc. Filip. p. 162; Hemsl. in Journ. Linn. Soc. v. 23 [1886—8], p. 420.

B. fasciculata DC. Prod. v. 5, p. 442.
Conyza glomerata Wallich ms. [List n. 3055]; Miq. Fl. Ind. Bat. v. 2, p. 45.
C. fasciculata Wallich ms. [List n. 3094]; nec Wallich ms. [List n. 3017], nec Miquel.
Exempl. n. 80 b cum Hookeri fil. exemplis (in Chittagong lectis), et Wallichii exemplis (in Malaya Peninsulari lectis) exacte quadrat.

Lem Dan.
Area: India, China, Malaya, Philippines.

8. **B. lacera** DC. in Wight Contrib. [1834], p. 14, Prod. v. 5, p. 436; Hook. f. Fl. Brit. Ind. v. 3, p. 263; Vidal Pl. Vasc. Filip. p. 162.

Conyza lacera herb. Roxb.; Wallich List n. 3082 scheda prima.
Exemplum n. 21 est Var. *α* C. B. Clarke [Comp. Ind. p. 76] „foliis parum incisis subtus villosis, inflorescentia oblonga dense sericea; var. in Bengalia et Pegu vulgatissima.
Formae aut varietates, „foliis magis incisis minus sericeis, paniculâ laxiore magis cinerea", sunt —
Conyza lacera Roxb. Fl. Ind. v. 3, p. 428 et Ic. Ined. t. 429 in herb. Kew; Miq. Fl. Ind. Bat. v. 2, p. 42 partim; [forsan ?Burm. Fl. Ind. p. 180. t. 59, fig. 3?] = *Blumea lacera* Hemsl. in Journ. Linn. Soc. v. 23 [1886—8], p. 421.

Lem Dan, in open country.
Area: India, China, Malaya, Philippines, Africa.

9. **B. hymenophylla** DC. Prod. v. 5 [1836], p. 440.

B. lacera Var. *γ hymenophylla* C. B. Clarke Comp. Ind. p. 77.

B. membranacea Hook f. Fl. Brit. Ind. v. 3, p. 266 partim.
Conyza hymenophylla Wallich ms. [List n. 3038].
In Wallich n. 3038, phyllaria sunt fere (neque omnino) glabra. In Koh Chang exemplis phyllaria admodum pilosa videntur.

Lem Dan, in open country; Klong Sarlakpet. on rocks in the jungle.
Area: Pegu, Malaya, Philippines.

10. **B. oxyodonta** DC. in Wight Contrib. [1834], p. 15, Prod. v. 5, p. 444 partim; C. B. Clarke Comp. Ind. p. 85 partim.

B. virens herb. Wight partim; Hook. f. Fl. Brit. Ind. v. 264 partim.
B. spinellosa C. B. Clarke Comp. Ind. p. 84 partim, non DC.
Conyza oxyodonta Wallich ms. [List n. 3015]; Miq. Fl. Ind. Bat. v. 2, p. 45 partim.
In Wallich List n. 3015 (*Conyza oxyodonta* Wallich) rami basi decumbentes, suberecti, longi videntur; fere = Koh Chang n. 161. DC. in Wight Contrib. p. 15, Wightii plantam Negapatensem descripsit; Wallichii planta Malayana autem parum differt.
B. oxyodonta Hook. f. Fl. Ind. v. 2, p. 266 „prostrata" est planta minor = *Conyza tenera*, Wallich List n. 3023 = *B. oxyodonta* Var. DC. Prod. v. 5, p. 444.

Lem Dan, in dry, open places.
Area: India Australis, Malay Peninsula.

11. **B. subracemosa** C. B. Clarke.

Conyza subracemosa Miq. Fl. Ind. Bat. v. 2 [1856], p. 41.
Blumeae bifoliae DC. (in Wight Contrib. p. 14, Prod. v. 5, p. 434) forsan quasi Var. *aestimanda*; ob pedunculos breves diversa. A *Blumea oxyodonta*, praeter folia latiora longius petiolata, parum diversa.

Klong Sarlakpet, in humid places.
Area: Java.

12. **B. balsamifera** DC. Prod. v. 5 [1836], p. 447; Hook. f. Fl. Brit. Ind. v. 3, p. 270; Vidal Pl. Vasc. Filip. p. 161; Hemsl. in Journ. Linn. Soc. v. 23 [1886—8], p. 420; Hook. Ic. Pl. t. 1957.

Conyza balsamifera Linn. Sp. Pl. ed. 2, p. 1203; Miq. Fl. Ind. Bat. v. 2, p. 55 cum syn.
C. appendiculata Blume Bijd. p. 895 non Lam.

In dry open country near Lem Dan.
Area: India, Malaya, Cochin China, Ins. Philippinae, Formosa, Hainan, vulgaris, in cultis derelictis pestis, 1—3 metr. alt.

Pluchea Cass.

13. **P. indica** (L.) Lessing in Linnaea v. 6 [1831], p. 150; Hook. f. Fl. Brit. Ind. v. 111, p. 272; Hemsl. in Journ. Linn. Soc. v. 23 [1886—8], p. 422.

Lem Ngob, Klong Sarlakpet, in mangrove-swamps.
Area: Malaya, China.

Laggera Schultz-Bip.

[Benth. et Hook. f. Gen. Pl. v. 2, p. 190.]

14. **L. flava** Benth. in Benth. et Hook. f. Gen. Pl. v. 2 [1873], p. 290; Hook. f. Fl. Brit. Ind. v. 3, p. 270.

Blumea flava DC. Prod. v. 5, p. 439.
Conyza fasciculata Wallich ms. [List n. 3017 nec n. 3094]; Miq. Fl. Ind. Bat. v. 2, p. 49.

Lem Dan, in grassy spots.
Area: India Borealis, Peninsula Malayana, frequens.

Sphaeranthus Linn.

[Benth. et Hook. f. Gen. Pl. v. 2, p. 294.]

15. **S. Africanus** Linn. Sp. Pl. ed. 2, p. 1314; Hook. f. Fl. Brit. Ind. v. 3, p. 275; Vidal Pl. Vasc. Filip. p. 162; Hemsl. in Journ. Linn. Soc. v. 23 [1886—8], p. 423.

S. microcephalus Willd. Sp. Pl. v. 3, p. 2395; DC. Prod. v. 5, p. 369; Miq. Fl. Ind. Bat. v. 2, p. 36.

In rice-fields near Klong Munsè.
Area: In calidioribus Africae, Asiae, Australiae.

Wedelia Jacq.

[Benth. et Hook. f. Gen. Pl. v. 3, p. 370].

16. **W. scandens** C. B. Clarke Comp. Ind. [1876], p. 136, in Proc. Linn. Soc. [1894—5], p. 23.

W. biflora Hook. f. Fl. Brit. Ind. v. 3, p. 306 partim; Benth. Fl. Hongk. p. 183; Hemsl. in Journ. Linn. Soc. v. 23 [1886—8], p. 433.
W. strigulosa K. Schum. in Engl. Jahrb. v. 9 [1887—8], p. 223.
Verbesina strigulosa Gaud. in Freycinet Voy. [1826], p. 463?
V. scandens Roxb. Fl. Ind. v. 3, p. 441.

Frutex 2—4-metralis et ultra; sequitur descriptio Roxburghii abbreviata:

„Perennial. Stem long, straggling or climbing, often as thick as the little finger. Leaves 2—4 in long, petioled, cordate, serrate, 3-nerved. Pedunceles terminal, generally 3 fold, erect, the lateral ones 3-flowered, [while that] of the centre has only one. Flowers pretty large, bright yellow."

Errore typographico, Roxburgh habuerat „white, that" pro „while that". Ob hanc causam cl. Hooker f. (in Fl. Brit. Ind.) speciem *Verbesinam scandentem* Roxb. (imo in indice) praeterviserat.

Verbesina biflora Linn. (Sp. Pl. ed. 2, p. 1272, „staturâ Siegesbeckiae") est = Rheede Hort. Mal. v. 10, t. 40, annua, erecta, 2-pedalis [cf. Roxb. Fl. Ind. v. 3, p. 440]. *Wedelia biflora* DC. in Wight Contrib. [1834] p. 18 est planta Linnaei et Rheedei (exemplis *Wed. scandentis* fusis). *Wedelia aristata* Less. in Linnaea v. 6 [1831], p. 160 est fide Lessingii „gracilis"

sed verosimiliter est *V. scandens* e ramulis descripta. *Wedelia scandens*, viva, a caeteris *Wedeliae* speciebus insigniter differt.

Klong Prao, Koh Kahdat, on sandy sea-shores.

Area: In maritimis Asiae Orientalis, Australiae trop., Polynesiae, sat communis.

Cosmos Cav.

[Benth. et Hook. f. Gen. Pl. v. 2, p. 387.]

17. **C. sulphureus** Cav. Ic. v. 1 [1791], p. 56, t. 79; Hook. f. Fl. Brit. Ind. v. 2, p. 310.

Adenolepis calva Schultz-Bip. in Zoll. Verz. Ind. Archip. p. 123; Miq. Fl. Ind. Bat. v. 2, p. 79.

Bidens calva C. B. Clarke Comp. Ind. p. 141.

Lem Dan, Lem Ngob common in dry open places.

Area: Mexico, planta culta; in India, Malaya, non raro efferata.

Sphaeromorphaea DC.

Prod. v. 6 [1837], p. 140.

[Centipeda, Benth. et Hook. f. Gen. Pl. v. 2, p. 430 partim.]

18. **Sph. Russelliana** DC. Prod. v. 6 [1837], p. 140; Deless. Ic. Select. v. 4, t. 49; Hook. f. Fl. Brit. Ind. v. 3, p. 317.

Centipeda orbicularis C. B. Clarke Comp. Ind. p. 151; Kurz in Journ. Asiat. Soc. Bengal. v. 46, pars 2 [1877], p. 179, non Lour.

Cotula Russelliana Wallich ms. List n. 3240.

Exempla in herb. Kew conservata, e Malaya, Tonkin, China, Philippines, sunt *Centipeda orbicularis* Lour.

Klong Son, Klong Sarlakpet, in wet places.

Area: Madras; (Circars) Russell; Bengal, Chota Nagpore, C. B. Clarke n. 31806, Siam; fide Kurz l. c.

Emilia Cass.

[Benth. et Hook. f. Gen. Pl. v. 2, p. 583.]

19. **E. sonchifolia** DC. in Wight Contrib. Bot. Ind. p. 24, Prod. v. 6, p. 302; Miq. Fl. Ind. Bat. v. 2, p. 101; Hook. f. Fl. Brit. Ind. v. 3, p. 336; Vidal Pl. Vasc. Filip. p. 164; Hemsl. in Journ. Linn. Soc. v. 23 [1886—8], p. 449.

Cacalia sonchifolia Linn. Sp. Pl. ed. 2, p. 1169.

Exemplum Koh Chang est forma „glabra" Wallich ms. List n. 3145.

Klong Son in a pool.

Area: In calidioribus Orbis Veteris communis, Orbis Novi inquilina.

Umbelliferae

by **C. B. Clarke** — Kew.

Hydrocotyle Linn.

1. **H. Asiatica** Linn. Sp. Pl. ed. 1, p. 234, ed. 2, p. 338; Hook. f. Fl. Brit. Ind. v. 2, p. 669 cum syn.

Centella Asiatica Urban in Mart. Fl. Brasil v. 11, p. 1, p. 287, t. 78, fig. 1.

Klong Son, in pools.

Area: In tropical and warm regions both of the New and Old World.

Eryngium Linn.

2. **E. foetidum** Linn. Sp. Pl. ed. 1, p. 232, ed. 2, p. 336; Urban in Mart. Fl. Brasil. v. 11, pars 1, p. 302, t. 79, fig. 2; Hemsl. in Journ. Linn. Soc. v. 34 [1898—1900], p. 475.

This plant has been received from Singapore where it was introduced, and from Yunnan. It has been cultivated as of medicinal value; and Hemsley l. c. shews that it was introduced into the Dutch East Indies, and is satisfied that none of Asian collection is indigenous.

Koh Kong; in dry, sandy spots near the sea.

Area: Trop. America In South-East Asia, introduced.

Carum Linn.

3. **C. Roxburghianum** Benth. in Benth. et Hook. f. Gen. Pl. v. 1 [1867], p. 891; Hook. f. Fl. Brit. Ind. v. 2, p. 682 cum syn.

Lem Dan, in dry grassy spots, probably escaped from cultivation.

Area: Throughout India extensively cultivated. Not known to me wild; it may be a cultivated form of one of the closely-allied wild species of *Carum*.

Rhizophoraceae

by **Johs. Schmidt.**

The Rhizophoraceae of our area are 8 and except one species, *Carallia integerrima*, which grows in the inland jungle, confined to the sea-shores and estuaries of rivers, forming the bulk of the mangroves or tidal-forests so characteristic to Eastern tropical coasts. Along the shores of the Gulf of Siam the mangrove is very luxuriant and nearly all the species generally recorded from the tropics of the Old World occur here. Of the *Rhizophoraceae*[1]) only one or two species (*Kandelia Rheedii* W. and Arn. and *Bruguiera parviflora* W. and Arn., see below) are wanting in the Siamese mangrove. As to *Kandelia Rheedii* it is said by Schimper (in Engler und Prantl Nat. Pflanzenfam. III, 7, p. 52) to occur from India to Hongkong and it is also quoted from the Malay Archipelago[2]); so we might expect to find it in the Gulf of Siam, but although I looked for it with great attention I was not fortunate enough to find it. It is widely distributed along the shores of the Bay of Bengal and is common in some places e. g. near Calcutta (according to a private communication by Mr. C. B. Clarke); but East of the Malay Peninsula it seems to be a rare plant and neither Schimper[3]) nor Karsten[4]), who lately studied the Indo-Malayan mangroves, have found it. In a letter to me Mr. H. N. Ridley from Singapore writes: „Kandelia Rheedii seems to be very rare in our region. I have never been able to find it but once, in one of the rivers in Johore". This is the nearest locality, that I know.

I have examined the specimens of *Kandelia Rheedii* contained in the Kew and Copenhagen herbaria. Those specimens doubtful

[1]) As to the circumscription of species I follow Schimper in his excellent work, Die Indo-Malayische Strandflora, Jena 1891.

[2]) Henslow in Hook. f. Fl. Brit. India II, p. 437.

[3]) Indo-Malayische Strandflora.

[4]) G. Karsten: Über die Mangrove-Vegetation im Malayischen Archipel, Bibliotheca Botanica Heft 22, 1891.

as to locality being excluded the geographic range of the species is to be seen from the following data:

Indian Ocean: Quilon (Herb. Wight propr. 1042). Travenocore (Herb. Wight). Mangalore near Madras (Herb. Wight n. 992). Soondreeboon (Herb. of the late East India Company n. 2204, C. B. Clarke n. 2176 b (Koolna); Calcutta, cultivated in the Botanical Garden). Tenasserim and Andamans (Herb. Helfer); Mergui (Herb. of the late East India Company n. 2219). Singapore (according to Ridley).

Pacific Ocean: Borneo, Sarawak (Beccari), (Haviland n. 2097). Tonkin, Haïphong (Balansa n. 1135). Hongkong (Champion), Lantao Island (Herb. Hongkong Bot. Gard. n. 144). Formosa, Tamsuy (Oldham).

Rhizophora L.

1. **R. mucronata** Lam. Encycl. VI, p. 89, Ill. t. 396; Hooker f. Fl. Brit. India II, p. 435; Theobald in Mason Burma its people and productions, vol. II (1883), p. 480; Miq. Fl. Ind. Bat. I, 1, p. 583; G. Karsten in Bibliotheca Botanica Heft 22 (1891), t. I, IV, IX; Schimper Indo-Malayische Strandflora (1891) p. 92, t. V (fig. bona) et in Engler und Prantl Nat. Pflanzenfam. III, 7, p. 52; Wight Ill. I, p. 209 et Icon. t. 238; Kurz For. Fl. Burma I, p. 447; Brandis For. Fl. p. 217; Koorders en Valeton Boomsoorten van Java, Bijdrage n. 4 (1896), p. 278. — *R. latifolia* Miq. Suppl. Fl. Ind. Bat. p. 324; *R. macrorhiza* Griff. in Transact. Med. Phys. Soc. Calcutta VII 2; *R. candelaria* W. et Arn. Prod. I, 310; *R. mangle* Roxb. Fl. Ind. II, p. 459; — Rheede Hort. Mal. VI, t. 34.

Var. *α* **typica** Schimper Indo-Malay. Strandflora p. 92 (1891).

In estuaries and swamps, far less common than the next species, but in some places (Klong Wen, Lem Ngob) forming large dense mangrove forests. In Koh Chang this species is rather rare. A moderate sized tree, which sends down stout aërial roots.

Area: Eastern tropical coasts (also in Africa).

2. **R. conjugata** L.; D. C. Prodrom. III, p. 33; Hooker f. Fl. Brit. India II, p. 436; Theobald in Mason, Burma its people and productions, vol. II, p. 480 (1883); Schimper Indo-Malay. Strandflora p. 92, t. 5 et in Engl. und Prantl Nat. Pflanzenfam. III, 7, p. 52; G. Karsten in Bibliotheca Botanica Heft 22 (1891), t. II, fig. 1 (fig. bona); Koorders en Valeton Boomsorten van Java, Bijdrage n. 4 (1896), p. 282; *R. candelaria* D. C.

Prodrom. III, p. 32; Trimen Flora of Ceylon II, 1894, p. 151; *R. apiculata* Bl. Fl. Jav. I, 91 et Mus. Bot. 134; Wight Ill. I, 209; Kurz For. Fl. Brit. Burm. I, p. 447.

Abundant everywhere over the explored area forming with *R. mucronata*, *Bruguiera gymnorhiza* and *Aricennia officinalis* the bulk of the mangroves or tidal-forests of the coasts. In Koh Chang it is the most common species of the mangroves and seems to be very indifferent to the quality (rocks, mud, sand) and salinity of the ground on which it grows. A moderate sized tree (smaller than *R. mucronata*) with flowers and fruit in December, January, February, March.

Area: All Eastern tropical coasts (not in Africa).

Ceriops Arn.

3. **C. Candolleana** Arn. in Annals of Nat. Hist. I, p. 353; Bl. Mus. bot. 143; Wight Icon. t. 240; Bedd. Flor. Sylv. Anal. Gen. t. 13, fig. 5; Miq. Fl. Ind. Bat. I, p. 590; Brandis For. Fl. 218, I, 448; Hooker f. Fl. Brit. India II, p. 438; Theobald in Mason: Burma, its people and productions, vol. II (1883), p. 481; Schimper Indo-Malay. Strandflora p. 94, t. IV, V, et in Engl. und Prantl Nat. Pflanzenfam. III, 7, p. 52; G. Karsten in Bibliotheca Botanica Heft 22 (1891) p. 10, t. III (fig. bona), IV, IX; Koorders en Valeton, Boomsorten van Java, Bijdrage n. 4 (1896), p. 284. — *C. timoriensis* D. C. Prodr. III; *C. lucida* Miq. Suppl. Fl. Ind. Bat. 325; Boerlage in Teysmannia VI, 165.

Schimper l. c. p. 36 and Pflanzengeographie (1898, p. 431) states the occurrence of negative geotropical aërial roots in *Ceriops Candolleana* like those of *Sonneratia acida* and *Aricennia officinalis*. I have examined a great number of specimens of this species, which is very common in the Gulf of Siam, but I was never able to find even a trace of such aërial roots.

Abundant in the tidal-forests throughout the explored area (all round Koh Chang; Klung; Koh Chick; Lem Ngob; Koh Kong) with the mangroves on muddy and stony ground; a small or moderate-sized tree or a shrub, which bears flowers and fruit in December, January, February and March.

Area: Tropical shores of the Old World.

4. **C. Roxburghiana** Arn. in Annals of Nat. History I, p. 363; Miq. Fl. Ind. Bat. I, 1, p. 591; Kurz Fl. Br. Burma I, p. 448; Hooker f. Fl. Brit. India II, 436; Schimper Indo-Malay. Strandflora (1891), p. 94 et in Engl. und Prantl Nat. Pflanzenfam. III, 7, p. 52; G. Karsten in Bibliotheca Botanica Heft 22 (1891), p. 10, t. III (fig. bona); Koorders et Valeton Boomsoorten van Java, Bijdrage n. 4 (1896), p. 287. — *C. Zippeliana* Bl. Mus. bot. 143; *C. decandra* Theobald in Mason: Burma, its people and productions vol. II (1883), p. 480; *Rhizophora decandra* Roxb. Hort. Beng. 36; Wall. Cat. 4875; *Rh. glomerulata* Herb. Zipp.

C. Candolleana and *Roxburghiana* are closely allied. The most im-

portant distinguishing character is found in the petals, as it has already been sufficiently pointed out by Arnott l. c. p. 364: „In the first species (*C. Candolleana*) the petals are only furnished towards the apex with about three stout bristles of equal thickness on each side giving to them a palmate appearance". But in *C. Roxburghiana* the petals are setoso-ciliate above towards their apex (fringed by numerous small bristles). Karsten states another good discriminating character in the position and direction of the sepals; l. c. p. 10 he says: „Die Kelchblätter der ersteren Art (*C. Candolleana*) bleiben ganz am Rande der Frucht inserirt und stehen ab, diejenigen der *Ceriops Roxburghiana* rücken weit auf die Fruchtwand selbst hinauf und legen sich derselben an."

Lem Dan, tidal-forest on stony ground; a small shrub, which appears to be far less common than the preceding larger species. Flowering in January.

Area: Tropical shores of the Old World.

Bruguiera Lam.

5. **B. gymnorhiza** Lam.

Miq Fl. Ind. Bat. I, p. 586; Kurz Fl. Burma I, 450; Brandis For. Fl. 219; Blume Mus. bot. 136; Hook. f. Fl. Brit. Ind. II, p. 437; G. Karsten in Bibliotheca Botanica Heft 22 (1891) t. II, X; Schimper Indo-Malayische Strandflora (1891) p. 95, t. II, IV, V et in Engl. und Prantl Nat. Pflanzenfam. III, 7 p. 54; Koorders en Valeton Boomsoorten van Java, Bijdrage n. 4 (1896) p. 292. — *B. Rheedii* Baill. Hist. Pl. 287; Wight Icon. t. 239; Miq. Fl. Ind. Bat. I, 587; Benth. Flor aust. non Blume; *B. rheedii* Hemsley in Voyage of H. M. S. Challenger, Botany, p. 237; *B. Rumphii* Bl. Mus. bot. 137 non Hook. f. Fl. Brit. Ind. II, 438; *B. Wightii* Bl. et *B. Zippelii* Bl Mus. bot. 138, 139; *B. gymnorhiza* p. p. Theobald in Mason: Burma, its people and productions, vol. II (1883), p. 481; *Rhizophora gymnorhiza* Roxb. Fl. Ind. II, 460; Loureiro Fl. Cochinchin. tom. I, p. 297; Griff. Ic. Pl. As. t. 645.

In foliage this species resembles *Rhizophora conjugata* and though easily distinguished when flowering sterile branches of the two species have often been confounded, However the leaves of *Rhizophora* are dotted beneath with minute black spots, which are not to be found in *Bruguiera*.

Common everywhere throughout the explored area with the mangroves, especially in the interior of the tidal-forests on swampy muddy ground (more seldom on rocky and sandy ground). A handsome, large tree, taller than any other in the mangrove [1]). Flowers and fruit found in December, January, February and March.

Area: East Africa, Tropical Asia, Australia and Pacific.

6. **B. eriopetala** W. et Arn. in Wight Ill. I, p. 210; Icon. t. 239 B; Hook. f. Flor. Brit. India II, p. 438; Schimper Indo-Malay. Strandflora (1891),

[1]) Up to 28 metr. according to Koorders en Valeton l. c. p. 293.

p. 95, t. V et in Engl. und Prantl Nat. Pflanzenfam. III, 7, p. 54, fig. 27 H-L; G. Karsten in Bibliotheca Botanica Heft 22 (1891), t. V, VIII, IX, XI. Koorders en Valeton Boomsoorten van Java, Bijdrage n. 4 (1896), p. 295. — *B. Rheedii* Bl. in Herb. Lugd. Bat. non auct.; Mus. bot. 138; *B. parietosa* Griff. Not. IV, 670; Icon. t. 641; *B. Rumphii* Hook. f. Fl. Brit. Ind. non Blume; *B. gymnorhiza* Benth. in Fl. austral. non Lam.; *B. cylindrica* Bl. Mus. bot. 137; *B. oxyphylla* Miq. Fl. Sumatr. 324; *B. gymnorhiza* p. p. Theobald in Mason: Burma, its people and productions, vol. II (1883), p. 481.

In the explored area this is less common than the preceding larger species[1]). I have found it only on muddy ground in the interior of the tidal-forest (Klong Prao, Lem Dan, Lem Ngob). A rather small tree or a shrub with flowers in January, February and March.

Area: Malaya, China.

7. **B. caryophylloides** Bl. Mus. bot. I, p. 141; Hook. f. Fl. Brit. India II, 438; Kurz For. Fl. Burma I, 450; Theobald in Mason: Burma, its people and productions, vol. II (1883), p. 481; Schimper Indo-Malay. Strandflora (1891), p. 96, t. V et in Engl. und Prantl Nat. Pflanzenfam. III, 7, p. 54, fig. 27 M, N; G. Karsten in Bibliotheca Botanica Heft 22 (1891), t. II (fig. bona), V; Koorders en Valeton Boomsoorten van Java, Bijdrage n. 4 (1896), p. 298. — *Kandelia caryophylloides* Bl. Mus. bot. 141; *Rhizophora caryophylloides* Jack. Mal. Misc. I, 39; Wight Ill. t. 210; Griff. Icon. t. 642. — Rheede Hort. Mal. VI. t. 33; Rumph. Herb. Amboin. III. t. 69 A, B.

Rather common within our area in the tidal-forests with *B. gymnorhiza*, on muddy ground (Klong Wen, Koh Chick, Lem Ngob, Klong Sarlakpet). A small or moderate-sized tree or a shrub. Flowers and fruit met with in January and February.

Area: India from Malabar to Malacca, Ceylon, Malaya.

B. parviflora W. & Arn. Prodr. I, p. 311. Sterile branches of a *Bruguiera*, which may possibly belong to this species, have been collected in the mangrove at Lem Ngob; but the specimens cannot be determined with certainty.

Carallia Roxb.

8. **C. integerrima** D. C. Prodr. III, p. 33; Hook. f. Fl. Brit. India II, p. 439 c. synon.; Wight Illustr. t. 90, non Icon. t. 605; G. Karsten in Bibliotheca Botanica Heft 22 (1891), t. V. f. 36—41; Trimen, Flora of Ceylon II, 1894, p. 155; Koorders en Valeton Bijdrage n. 4 (1896), p. 301; *C. lucida* Kurz For. Flor. Brit. Burma I, 451, non Roxb. Cor. pl. t. 211.

The leaves of this widely spread species vary exceedingly. In all my

[1]) In Java, *B. eriopetala* appears to be more common than *B. gymnorhiza* according to Koorders en Valeton l. c. p. 296.

Siamese specimens they are broadly obovate and very obtuse (as in Cingalese specimens) and always quite entire; but my material is not very large and Koorders en Valeton state l. c. p. 304 that they have found (in Java) specimens with entire (or nearly so) and dentate-serrulate leaves in the very same tree. It is not quite correct when Henslow (in Flora Brit. India p. 439) says that „the petals are not embracing the filaments"; I have examined good flower material and found that the filaments were always enclosed by the small petals; see also Koorders en Valeton l. c. p. 304 „Petala ....., incunte anthesi stamina involventia".

A rather large tree with slender bare trunk and wide-spreading top, common on riverbanks in the jungle near Klong Munsé. Flowering in February and March.

Area: Ceylon, India, Burma, Malay Peninsula, China, Malaya, Tropical Australia.

Fagaceae

by **Ove Paulsen** — Copenhagen.

Quercus L.

1. **Q.** (*Cyclobalanopsis*) **semiserrata** Roxb. Fl. Ind. III, 641; Hooker f. Fl. Brit. Ind. V, 604; Geo. King: Ind.-Mal. sp. Quercus a. Castanopsis p. 28, pl. 22 (Ann. roy. bot. Garden Calcutta II, 1889).

A form with globose-ovoid velutine glands, 2 cm. long.

Klong Munsé; Klong Son, in the jungle.

Area: Assam, Silhet, Cachar, Khasia hills, Tenasserim, Sumatra, Banka.

2. **Q.** (*Pasania*) **lanceæfolia** Roxb. Fl. Ind. III, 634; Hooker f. Fl. Brit. Ind. V, 616; King l. c. p. 79, pl. 74.

Klong Munsé; north-end of Koh Chang; Lem Dan, in the jungle.

Area: Sikkim, Bhotan, Assam, Munipore, Chittagong Upper Burma.

Castanopsis Spach.

3. **C. armata** (Roxb.) Spach Hist. Veg. Fan. XI, 185; Roxb. Fl. Ind. III, 640. Hooker f. Fl. Brit. Ind. V, 622. King l. c. p. 101, pl. 93.

Having no example of this species for comparison I refer to the description and figure of King, with which the Koh-Chang-specimens agree.

Jungle near Klong Majum.

Area: Sikkim, Bhotan, Assam, Cachar, Burma, Khasia hills, Chittagong.

Loranthaceae

by **F. Kolpin Ravn** — Copenhagen.

Elytranthe (Bl.) Engl.

1. **E. ampullacea** (Roxb.) Engl.

Loranthus ampullaceus Roxb. et *L. globosus* Roxb. in Hooker; Flora of British India V, p. 220; *L. subumbellatus* Bl. in Flora Javae Fasc. 40—41, tab. XVIII; *L. sphærocarpus* Bl. ibd. tab. XVII; *L. Cochinchinensis* Willd. (?) in Loureiro: Flora Cochinchinensis tom. I, p. 241.

Klong Prao; riverbank.

Area: North-East India, Burma, Malacca, Penang, Singapore, Java; Cochinchina (?).

Loranthus (L.) Engl.

2. **L. heteranthus** Wall.

Hooker l. c. p. 208.

Lem Dan, on *Mangifera indica*.

Area: Burma, Malay Peninsula (Ridley), Java, Borneo.

3. **L. pentapetalus** Roxb.

Hooker l. c. p. 206; Blume l. c. p. 39, tab. XIV et XXIII, fig. A. *Helixanthera parasitica* Loureiro (?) l. c. p. 176.

Lem Dan, on a tall tree near the village.

Area: Nepal, Assam, Yunnan, Burma, Malacca, Penang, Singapore, Java, Sumatra, Borneo; Cochinchina (?).

4. **L. chrysanthus** (G. Don) Bl.

Blume l. c. p. 25, tab. V. *Dendrophthoë chrysantha* G. Don. in Miquel: Flora Indiae Batavae vol. I, pars I, p. 812.

The specimens differ from the type in the straight corolla-tube with well-marked longitudinal furrows.

Lem Dan, riverbank, on *Ficus fistulosa*.

Area: Penang (according to specimens in the Botanical Museum of Copenhagen, collected by Mr. Rink), Sumatra, Java.

5. **L. pentandrus** L.

Hooker l. c. p. 216; Blume l. c. p. 33, tab. X—XI.

Some of the specimens collected differ from the type in the smaller, elliptic to lanceolate, acute to acuminate leaves.

Koh Kahdat, sea-shore on *Hernandia peltata*; Klong Munsé, riverbank; Lem Dan, mangrove on *Bruguiera eriopetala* W. et Arn.

Area: Burma, Malacca, Penang, Singapore, Sumatra, Java, Borneo.

Viscum (L.) Engl.

6. **V. orientale** Willd.

Var. **obtusatum** (Wall.) Miq.

Miquel l. c. p. 805. • *V. obtusatum* Wall. in De Candolle: Prodromus t. IV, p. 279.

Lem Dan on *Ficus consociata* Bl. var. *Martoni* King: Koh Kahdat, sea-shore.

Area: Ceylon, India, Burma, Malacca, China, Malay Islands, New Guinea, North Australia. The var. *obtusatum* is only observed in Asia.

Podostemaceae

by **Eug. Warming** — Copenhagen.

The Danish Expedition has been so fortunate as to find a new *Podostemacea*, the first known from Siam. As far as I can see it is a new species. In habit, size, the structure of stem, form of leaf and more particularly in the flower having only one stamen it much resembles the *Podostemon metzgerioïdes* published by Trimen in 1892 (Handbook of the Flora of Ceylon, part III, p. 419, pl. 76), which latter, however, differs widely from it in other respects and is now (1900) placed under a new genus *Farmeria* by Dr. John Willis (see Trimen's Handbook part V, Additions p. 286). Strangely enough during the last few years there has been found a third monandrous *Podostemacea* in Asia (Java), viz. *Cladopus Nymani* Hj. Möller, and in some points the Siamese *Podostemacea* approaches close to this species also.

I have named the new Siamese species *Polypleurum Schmidtianum* in honour of the finder.

Regarding the reasons why I prefer recording Hooker and Bentham's subgenus *Polypleurum* as a distinct genus and prefer placing the new Siamese species under it I beg to refer to my 6th paper on the order *Podostemaceae* in the „Kgl. Danske Videnskabernes Selskabs Skrifter" 1901, where both *Polypleurum Schmidtianum* and *Cladopus Nymani* are figured.

I give the following diagnosis of it: —

Polypleurum.

P. Schmidt'anum Warmg. n. sp.

Radices in rupibus repentes, iisdem arcte adpressæ, late lineares, planæ, irregulariter subdistiche ramosæ. Caules in facie superiore radicum prope margines nascentes brevissimi, foliis paucis (ad 5—6) instructi. Folia disticha simplicia, linearia, obtusa. Flos in caulibus solitarius terminalis, primum inter folia duo ad basin in vagina ampliata occultus, dein emergens longe pedicellatus. Spathella

rupta ad basin pedicelli relicta. Stamen unicum, basi in utroque latere squamula perigoniali anguste lineari, filamento fere æquilonga, munitum.

Radices c. 2—4(—6) mm. latæ. Folia 5—8 mm. longa, $^1/_3$—$^1/_2$ mm. lata. Pedicelli fructiferi 6—10 mm. long. Squamulæ perigoniales c. 1 mm. longæ. Stamina c. 1,2 mm. longa. Styli duo, rarius 3, longiusculi, lineares acuti. Capsula matura non visa; immatura c. 1,5 mm. longa.

With regard to figures and a more exhaustive description I beg to refer to my 6th paper on the order *Podostemaceæ* in the „Kgl. Danske Videnskabernes Selskabs Skrifter" 1901.

On rocks in quickly flowing water. Only met with in two localities, both in Koh Chang, viz. Klong Majum alt. 700 ft. and Klong Sarlakpet alt. 600 ft. in small waterfalls in the jungle; it does not grow where the stream is less rapid. The specimens from Klong Majum were collected on February 23rd and were sterile, whereas those from Klong Sarlakpet found on March 15th bore flowers and unripe fruit which extended above the surface of the running water.

Hydrocharitaceæ, Lemnaceæ, Pontederiaceæ, Potamogetonaceæ, Gentianaceæ (Limnanthemum), Nymphæaceæ

by **C. H. Ostenfeld** — Copenhagen.

Hydrocharitaceæ.

Blyxa Thouars.

1. **B.** sp. (*octandra* (Roxb.) Planch.?).

It is impossible to determine the collected specimens of *Blyxa* because they are sterile.

Rice-field near Lem Dan.

Area (of *B. octandra*): Tropical Asia and Australia.

Halophila Thouars.

2. **H. ovalis** (R. Br.) Hook. fil., Fl. Tasman. II, p. 45; B. Balfour, On the Genus Halophila, Transact. and Proc. of the R. Soc. Edinburgh vol. XIII, 1879, p. 290; *Caulinia ovalis* R. Br., Prodr. Fl. Nov. Hollandiæ p. 339; *H. orata* Gaud., in Freycinet, Voy. Bot. p. 429, t. 40, f. 1; Hook. f., Fl. of British India V, p. 663.

The few present specimens which are sterile, belong to f. *minor* (Zoll.) Aschs., Linnæa 1867, p. 174 (*Lemnopsis minor* Zollinger, Verzeichn. 1854, p. 75).

Between Koh Riat and Koh Mesan, in 3—5 fathoms water (coral-sand).

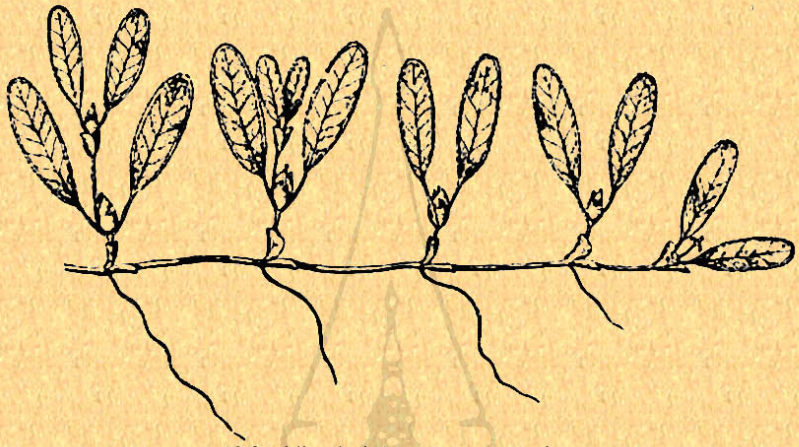
Area: Shores of the Indian, Malayan, Australian and Pacific Oceans (from the Canal of Suez to Luchnan Islands (Japan)).

3. **H. decipiens** Ostf., n. sp.

Leaves oblong-elliptic, their ventral surfaces hairless, but their dorsal surfaces and the margins covered with very fine, short, unicellular star hairs or teeth; the same hairs are found on the outside of the scale- and spathe-leaves; from the midvein of the foliage leaves 6—9 lateral veins pass on each side outwards to the intramarginal vein; the petioles ½—1 time as long as the laminæ.

Plants monœcious, flowers unisexual, 1 male and 1 female flower enclosed in the spathe-leaves, corresponding in regard to structure etc. very closely with those of *H. Baillonis* (see: Theo.

Holm: Recherches anatomiques et morphologiques sur deux monocotylédones submergées (Halophila Baillonii Aschs. et Elodea densa Casp.); Bih. till k. Svenska Vet.-Akad. Handl. Bd. 9, No. 13, 1885).



Halophila decipiens Ostf.; nat. size.

The Expedition has brought home a large material of this new *Halophila*, as well flowering as fruitbearing specimens preserved in alcohol. It resembles very much the Westindian *H. Baillonis*. I have examined for comparison a very large alcohol material of the latter (amongst other the same specimens as Mr. Theo. Holm has used for his above mentioned carefull treatise), and I have found but a slight difference between this and the new species; the main difference consists in the absence of the short hairs on the ventral surfaces of the leaves in the new species, while *H. Baillonis* has short hairs on both sides. If the geographical distribution was not so quite different, I should prefer to regard it as a variety of *H. Baillonis*, but it is not probable to suppose such a connection as the sea-phanerogams generally have very natural and limited areas and *H. Baillonis* is confined to the shores of the Westindian Archipelago.

From *H. ovalis* which is common along the shores of the Indian Ocean, the new species is very different; the monœcious flowers, the small teeth in the margins and the short hairs on the surfaces of the leaves, the few lateral veins etc. remove it far from this.

Off Koh Kahdat, in 5 fathoms water (coral-sand).

Lemnaceæ.

Lemna L.

4. **L. paucicostata** Hegelm., Die Lemnaceen, 1868, p. 139; Hook. f., Fl. of British India VI, p. 556.

Only sterile specimens have been collected.

Koh Kong, in a pool.

Area: Tropical Africa, Asia, Australia and Polynesia; (tropical America?).

Pontederiaceæ.

Monochoria Presl.

5. **M. hastata** (L.) Solms in De Candolle, Monographia Phanerog. IV, 1883, p. 523; *M. hastæfolia* Presl, Reliq. Hænk. II, p. 128; Hook. f., Fl. of British India VI, p. 362; *Pontederia hastata* L., Fl. Zeyl. p. 129.

Abundant in pools at the mouth of Klong Sarlakpet.

Area: Ceylon, India, Malaya, China.

6. **M. vaginalis** Presl, Reliq. Hænk. II, p. 128.

var. **plantaginea** (Roxb.) Solms, l. c. p. 524; Hook. f., Fl. of British India VI, p. 363; *Pontederia plantaginea* Roxb., Fl. Ind. II, p. 123.

Abundant in pools near Lem Dan; Klong Sarlakpet.

Area of the variety: India, Java; of the main species: Tropical Africa, India, Malaya, China, Japan.

Potamogetonaceæ.

Halodule Endl.

7. **H. uninervis** (Forsk.) Aschs. in Boissier, Fl. Orientalis V, 1882, p. 24; *H. australis* Miquel, Flora v. Nederl. Indië III, p. 227; *Zostera uninervis* Forskål, Fl. Ægypt.-Arab. CXX and 157, 1775; *Cymodocea australis* Hook. f., Fl. of British India XI, p. 570.

The collected specimens are sterile, the leaves very narrow, those from Koh Kong 1 mm., those from Koh Chang 0,5 mm. broad.

Ascherson[1]) and Sauvageau[2]) mention a difference in the structure of the leaf-end between the two existing species of *Halodule*, viz. that *H. uninervis* has a tooth in the middle of the leaf-end besides the two marginal teeth, while the West-indian *H. Wrightii* instead of the middle tooth has a kerf, but this difference does not really exist according to my researches. I have examined specimens of both species (*H. Wrightii* preserved in alcohol, from the Danish Westindian Islands), and found that the young leaves have three teeth (two marginal besides the middle-tooth), but the fullgrown ones have only the two marginal, the cells which have formed the middle tooth being destroyed and having fallen out, such as Sauvageau[3]) has pointed out with respect to various other *Potamogetonaceæ*. — On the whole it is not possible to distinguish the two species when sterile, except using their quite different geographical distribution as criterion.

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[1]) Ascherson, P., l. c. and: Die geographische Verbreitung der Seegräser in Neumayer, Anleit. zu wissensch. Beobacht. auf Reisen, Berlin, 1875, p. 364.

[2]) Sauvageau, C.: Sur la structure de la feuille des genres *Halodule* et *Phyllospadix*. Journ. de Botanique IV, 1890, p. 321.

[3]) Sauvageau, C.: Sur la structure des feuilles des plantes aquatiques. Ibid. p. 46.

Koh Kong and Koh Saket, cast ashore or floating in the surface of the water; Koh Chang near Lem Dan growing in shallow water on muddy ground.

Area: Red Sea, Indian and Pacific Oceans.

Gentianaceæ.

Limnanthemum Gmel.

1. **L. indicum** (L.) Griseb., Genera et Species Gentianearum 1839; Hook. f., Fl. of British India IV, p. 131.

var. **siamensis** Ostf., nov. var.

Leaves smaller, 2—5 cm. long, broadly obovate, deeply cordate with obtuse lobes and a triangular sinus, rather thin; flowers few (2—3) in the umbel; pedicels 3—4 cm. long; bracts ovate, obtuse, about 5 mm. long; lobes of the corolla 5, oblong, 10—15 mm. long, covered in the margins and above with numerous long cottony papillose hairs, white with a yellow base; capsule?, seeds?.

According to the above description it will be easy to see that this little pretty *Limnanthemum* differs in some important points from the ordinary *L. indicum*; but having only few flowers and no fruit at my disposal I prefer to regard it as a variety of *L. indicum* hoping that future investigations will settle this point.

Lem Ngob, in a small pond.

Area: of the main species: from the Mascarene Islands throughout India, Malaya, Australia to Fiji Islands.

Nymphæaceæ.

Nymphæa L.

9. **N. stellata** Willd. Spec. II, 1799, p. 1152; Hook. f., Fl. of British India I, p. 114.

The collected specimens belong to var. I. *punctata* Caspary, Annales Musei Botan. Lugdano-Batavi vol. II, 1865—66, p. 244, A, *maculata* Casp., ibid., a, *coerulea* Casp., ibid.

Abundant in pools near Lem Dan.

Area: Egypt, Cordofan, Senegambia, Guinea, East Africa, Madagascar, India, Malaya.

Nelumbo Adans.

10. **N. nucifera** Gaertn., De Fructibus 1788 I, p. 73; *N. speciosum* Willd., Spec. II, 1799, p. 1258, Hook. f., Fl. of British India I, p. 116; *Nymphæa Nelumbo* Linné, Spec. Plant. 1753.

Cultivated everywhere throughout the area explored.

Area: Persia, India, Malay Archipelago, Japan, China to Amur-river, Australia.

Leguminosae

by **H. Harms** — Berlin.

Mimosoideae.

Mimosa L.

1. **M. pudica** L. Spec. pl. 518.

Lem Dan in dry grassy spots.
Area: In den tropischen und subtropischen Gebieten weit verbreitet.

Neptunia Lour.

2. **N. oleracea** Lour. Fl. cochinch. 654.

Lem Ngob, Lem Dan, in pools.
Area: In den tropischen Gebieten weit verbreitet.

Adenanthera L.

3. **A. pavonina** L. Spec. pl. 384.

Koh Kahdat, in sandy sea-shore.
Area: Trop. Asien, in den Tropen weit verbreitet.

Parkia R. Br.

4. **P. sp.**

Jungle near Lem Dan.

Caesalpinioideae.

Tamarindus L.

5. **T. indica** L. Spec. pl. 34.

Cultivated all over the area explored.
Area: In den Tropen weit verbreitete Kulturpflanze.

Bauhinia L.

6. **B. sp.**

Woody climbing *Bauhiniae* are very common in the jungle of Koh Chang, but I was never fortunate enough to secure flowers of any.

Cassia L.

7. **C. alata** L. Spec. pl. 378.

In dry plains near Klong Munsé.
Area: In den Tropen weit verbreitet.

8. **C. occidentalis** L. Spec. pl. 377.

Klong Prao, in dry grassy spots.
Area: In den Tropen weit verbreitet.

Pterolobium R. Br.

9. **P. Schmidtianum** Harms n. sp.

Ramulis angulatis, puberulis, ad foliorum basin aculeis geminis instructis; foliis circ. 10—13-jugis, petiolo communi aculeato, puberulo, pinnis circ. 20—25-jugis, puberulis, foliolis linearibus, apice leviter emarginulatis vel obtusis, subtus glaucis; panicula terminali, ampla, axi et ramis breviter ferrugineo-velutinis vel puberulis; floribus ignotis; pedicellis in statu fructifero satis brevibus, tenuibus, puberulis vel parce puberulis; leguminis ala oblique oblonga.

Foliorum petiolus communis 20—25 cm. longus, pinnae 4—6 cm. longae, foliola circ. 6 mm. longa, 1—1½ mm. lata. Pedicelli 4—6 mm. longi. Legumen 4—5 cm. longum.

Species foliolis parvis satis angustis subtus glaucis bene distinguenda.

A woody climber in the jungle near Klong Munsé with ripe fruit in February.

Caesalpinia L.

10. **C. Bonducella** Fleming in As. Res. XI (1810), 150.

A woody climber; Lem Ngob in the sandy sea-shore.
Area: In den Tropen weit verbreitet.

Peltophorum Vog.

11. **P. dasyrhachis** Kurz ex Baker in Hook. f. Fl. Brit. India II, 257.

Common in dry plains near Lem Dan; Koh Chang Noi.
Area: Malayische Halbinsel.

Papilionatae.

Sophora L.

12. **S. tomentosa** L. Spec. pl. 373.

Kok Kahdat, very common on the sandy sea-shore.
Area: In den Tropen weit verbreitet.

Sesbania Pers.

13. **S. grandiflora** Pers. Synops. II, 316.

Lem Dan, in humid spots.
Area: Trop. Asien.

Geissaspis W. et Arn.

14. **G. cristata** W. et Arn. Prodr. 217.

Lem Dan in humid spots.
Area: Trop. Asien.

Desmodium Desv.

15. **D. umbellatum** D. C. Prodr. II, 325.

Koh Kahdat, Koh Saket, in sandy sea-shores.
Area: Trop. Asien.

16. **D. triquetrum** D. C. Prodr. II, 326.

Lem Dan, in dry plains.
Area: Trop. Asien.

17. **D. sp.**

On rocks in the jungle near Klong Munsé; a very minute species with ripe seeds in February.

18. **D. polycarpum** D. C. Prodr. II, 334.

Lem Dan, in dry plains.
Area: In den Tropen der alten Welt weit verbreitet.

Derris Lour.

19. **D. scandens** Benth. in Journ. Linn. Soc. IV. Suppl. 103.

Lem Dan, a climber on trees in the sandy sea-shore.
Area: Trop. Asien und Australien.

Clitoria L.

20. **C. ternatea** L. Spec. pl. 753.

Lem Dan, in dry grassy spots; not climbing.
Area: In den Tropen weit verbreitet.

Erythrina L.

21. **E. indica** Lam. Encycl. II, 391.

A very common tree all over the area explored in sea-shores. Also commonly planted near villages.
Area: Trop. Asien und Australien.

Canavalia Adans.

22. **C. ensiformis** D. C. Prodr. II, 404.

Lem Dan, Koh Kahdat, a twiner in sandy sea-shores.
Area: In den Tropen weit verbreitet.

23. **C. obtusifolia** D. C. Prodr. II, 404.

Klong Prao. Mouth of Klong Wen, sandy sea-shores (a prostrate perennial herb).

Area: In den Tropen weit verbreitet.

Cajanus D. C.

23. **C. indicus** Spreng. Syst. III, 248.

A shrub or a small tree in dry plains near Klong Munsé and Klong Sarlakpet.

Area: In den Tropen weit verbreitete Kulturpflanze.

Phaseolus L.

24. **Ph. adenanthus** G. F. Mey. Prim. fl. esseq. 239.

Sandy sea-shore near Lem Dan, a twiner.

Area: In den Tropen weit verbreitet.

Scitamineae[1])

by **K. Schumann** — Berlin.

Zingiberaceae.

Curcuma Linn.

1. **C. aromatica** Salisb. Parad. londin. t. 96.

Plains near Klong Sarlakpet.

Area: The plant is cultivated throughout India and the greater part of the Malayan Archipelago on account of the hot aromatic rhizome. In India it is very often found as a wild plant.

Alpinia Linn.

2. **A. oxymitra** K. Sch. n. sp.

Herba perennis, probabiliter elata caulibus erectis glabris. Folia sessilia elongato-linearia longe attenuato-acuminata et longissime caudata basi angustata utrinque glabra ad 40 cm. longa et 3 cm. lata; ligula 3 mm. longa rotundata glabra. Racemus ad 16 cm. longus pendulus vel rectangulus, rhachis angulata subtomentosa. Flores breviter (vix 2 mm. longe) pedicellati solitarii; bracteae 18 mm. longae cucullatae longe apiculatae tomentellae. Ovarium ut calyx et corolla sericeum 2 mm. longum. Calyx 10 mm. longus late tubulosus irregulariter trilobus, unilateraliter fissus. Corollae albae tubus 1,2 cm. longus, lobi oblongi obtusi 1,3 cm. metientes. Labellum 1,5 cm. longum obovatum subtrilobum; staminodia lateralia late obovata 5 mm. longa subtriloba. Filamentum parce pilosulum 8 mm. longum; anthera glabra 5 mm. longa, connectivi appendicula elliptica obtusa 2,5 mm. longa.

This very remarkable and peculiar species is recognised on the first look by its caplike very long pointed bracts and its large exterior staminods. I know no species with which is could be compared.

Jungle near Klong Munsé. Flowers yellowish white, with pink spots.

3. **A. macroura** K. Sch. n. sp.

Herba perennis rhizomate repente. Caules metrales graciles. Folia longe (ad 3,5 cm.) petiolata, petiolus minutissime puberulus,

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[1]) Bananas (*Musa sapientium* L.) are commonly cultivated in the villages. Also wild bananas are said to occur in Koh Chang in the jungle. But I have never seen any of them.

lanceolata vel lineari-lanceolata attenuato-acuminata et longe caudata basi acuta vel angustata apice utrinque et mediano subtus minute pilosula margine dense puberula; vagina et ligula 4 mm. longa rotundata minute puberula. Pannicula ad 11 cm. longa, rhachis validiuscula chryseo-tomentosa. Flores geminati brevissime pedicellati, pedunculo communi ad 8 mm. longo suffulti. Bracteae conchiformes ad 25 cm. longae longe apiculatae apice villosae. Ovarium sericeo-villosum. Calyx 2 cm. longus triente superiore in lobos acuminatissimos divisus unilateraliter fissus. Corollae tubus 1,5 cm. longus, lobi oblongi obtusi 2,5 cm. metientes, dorsalis apice villosus. Labellum 4 cm. longum subtrilobum apice bilobatum; staminodia lateralia subulata 4 mm. longa. Filamentum 12 mm., anthera 13 mm. longa.

This species is near *A. formosana* K. Sch. but it differs by the apiculate bracts, the smaller stature and foliage.

Klong Son, Klog Sarlakpet, in dense jungle. Labellum yellow, with pink base.

Amomum Linn.

4. **A. hirticalyx** K. Sch. n. sp.

Herba perennis cum foliis ad 90 cm. alta. Folia breviter ad 10 mm. longe petiolata linearia vel lineari-oblanceolata attenuato-acuminata basi longe angustata utrinque glabra ad 25 cm. longa et 3,5 cm. lata; ligula vix 2 mm. longa obtusa ciliolata. Spica anguste ellipsoidea cum floribus 7 cm. longa pleiantha, pedunculo subaequilongo squamis brevibus velato subtomentoso suffulta; bracteae exteriores oblongae apiculatae puberulae apice barbellatae florentes paulo majores. Bracteola biloba puberula vel subtomentosa 3,2 cm. longa. Ovarium sericeum. Calyx 4,5 cm. longus quadrante fissus trilobulatus puberulus. Corollae tubus 3,5 cm., lobi 2 cm. metientes. Labellum basi dilatatum apice integrum 3,5 cm. longum. Anthera subglabra 6 mm. longa; filamentum hoc aequans.

This species is related to *A. linguiforme* Roxb. but by the much smaller leaves, by the entire anterior part of the lip very distinct from it; n. 685 is probably the same plant but the flowers already faded are not fit for examination.

Jungle near Klong Son. Flowers red. The rhizome has an aromatic smell.

Elettariopsis Bak.

5. **E. Schmidtii** K. Sch. n. sp.

Caules ad 80 cm. alti e rhizomate longe lateque repente. Folia ad 1,5 cm. longe petiolata lanceolata vel lineari-oblanceolata attenuato-acuminata et caudata basi longe angustata supra ad medianum tantum minute puberula subtus tomentosa mollia ad 25 cm. longa et 4,5 cm. lata; ligula vix 2 mm. longa rotundata subvillosa. Spica e rhizomate quadriflora pedunculo 1 cm. vix attingente glabro suffulta; bracteae exteriores oblongae acutae minute puberulae ad 3 cm.

longae, florentes breviores; bracteolae turbinatae oblique fissae 1,8 cm. longae. Ovarium sericeum. Calycis tubus 4,2 cm. longus, lobi 1 cm. longi lanceolati. Corollae tubus 5,2 cm., lobi lanceolati 1,8 cm. longi. Anthera 3 mm. longa glabra connectivi appendicula triloba aequilonga superata. Labellum 3 cm. longum apice obovatum crispatum emarginatum antice bicallosum.

This species can only be compared with *E. Kandariensis* K. Sch. which I formerly put with the other species of the genus *Elettariopsis* in the genus *Amomum*, Sect. *Mastigamomum* (*Amomum Kandariense* K. Sch. in Engl. Jahrb. XXVII, 323). It is conspicuously different from the latter by the much smaller leaves and the longer tomentum on the underside of the leaves.

Jungle near Klong Sarlakpet. Flowers white, labellum with an yellow spot.

Cannaceae.

Canna L.

6. **C. Warszewiczii** Dietr. in Allgem. Gartenzeit. XIX (1851), 289.

Klong Sarlakpet, on vaste ground near the village.

Area: It has been introduced to Europe by the renowned Warszewicz from Central-America and is now very often cultivated in the warmer parts of the globe.

Note. Another plant of the same genus is not complete enough to be clearly defined.

Marantaceae.

Clinogyne Salisb.

In Transact. Hort. Soc. I, 276.

7. **C. grandis** (Miq.) Benth. in Benth. et Hook. fil. Gen. pl. III, 651. *Maranta grandis* Miq. Fl. ind.-bat. Suppl. 616.

Klong Son, in dense jungle.

Area: It has a very large area from Java to New Guinea and still farther to the Polynesia Archipelago; I did not see it before from Siam or Indo-China. I have not cited Baker in the Flora of British India because I think, that the plant from Malacca cited there is an other species.

Phrynium Willd.

8. **P. capitatum** Willd. Spec. pl. I, 17; Baker in Hook. fil. Fl. Brit. Ind. VII (1898), 258.

Klong Sarlakpet, in dense jungle. Flowers white, fruit pink.

Area: Largely distributed from the Eastern Himalaya to Southern China and the Philippines over the Malayan Peninsula to Sumatra and Java.

9. **P. minus** K. Schum. n. sp.

Acaulis rhizomate repente tuberculoso vaginis flavicantibus 5 mm.

longis munitus. Vaginae basales aphyllae 3, folia bina ad 6 cm. longe petiolata, petioli pars summa 5 mm. longa callosa teres supra subtomentosa, lanceolata acuta vel subacuminata basi acuta utrinque glabra supra sicc. obscure subtus pallidius viridia ad 12 cm. longa et 3 cm. lata; vagina glabra haud ampla, ligula subnulla. Racemus terminalis vix 5 mm. longe pedunculatus; bracteae 3 lanceolatae acutae ad 2,5 cm. longae glabrae. Paria florum subsessilium solitaria rudimento alterius inferiore prophyllo adossato donato comitata. Ovarium glabrum submuriculatum 1,5 mm. longum. Sepala lanceolata 3 mm. longa. Tubus corollae 1,7 cm. longus, lobi 7 mm. metientes. Capsula pallida 8 mm. longa monosperma subcylindrica. Semina pallide castanea 5 mm. longa transverse subsulcata arillo bilobo munita.

The habit of this very peculiar plant goes far from what is generally known in the genus. Nearly all the other species are pretty large plants, this however is a dwarfy herb very similar to the species of *Haplochorema* from the *Zingiberaceae*. Indeed one may be uncertain to what family it belongs if not the swollen petiolus leads on the right place. It is a true *Phrynium* in the common sense of the genus up to date with a three celled ovary and solitary ovules in each cell. Two of the latter however perfectly disappear when the fruit ripens. It is related to *P. spicatum* Roxb. but I think it would be better to make a new genus consisting of 4 species of the same region.

Klong Munsé and Klong Sarlakpet, in dense jungle. Flowers pale yellowish.

Araceae

by **A. Engler** — Berlin.

Pothos L.

1. **P. scandens** L. Spec. ed. I, 968.

forma **angustior** Engl.

Foliorum lamina quam petiolus paullo latiore et breviore.

Eadem forma in Malaccae provincia Perak e collectore cli. Kingii collecta in herbario regio Berolinensi adest. Forma juvencula.

Jungle near Klong Munsé, a climber on trees.

Area of the type: India orientalis tropica.

Anadendron Scott.

2. **A. angustifolium** Engl. n. sp.

Caule tenui; foliis remotis; petiolo quam lamina circ. duplo breviore, ad geniculum longum usque anguste vaginato, lamina oblique et anguste lanceolata subfalcata, nervis lateralibus I. utrinque 4—5 adscendentibus; venis tenuibus reticulatis; pedunculis quam petioli longioribus tenuibus (spatha in speciminibus nostris deficiente); spadice stipite triplo breviore suffulto; cupula perigoniali brevi; baccis ovoideis monospermis.

Caulis internodia 2—3 cm. longa. Foliorum petiolus 4,5—7 cm. longus, lamina 0,8—1,5 dm. longa, ima tertia parte 2,5—3,5 cm. lata, valde inaequilatera. Pedunculi usque 1 dm. longi. Spadix stipite 7 mm. longo suffultus. Cupula perigonialis circ. 1 mm. alta. Staminum filamenta brevissima, antherae 1 mm. longae. Baccae 6 mm. longae, 4 mm. crassae.

Species affinis *Anadendro montano* (Blume) Schott differt foliis brevius petiolatis, angustioribus, a triente inferiore sursum versus angustatis.

Klong Munsé and Klong Prao in the jungle, a climber on trees.

3. **A. montanum** (Blume) Schott in Bonpl. V (1857), p. 45; Engl. in D. C. Suites au Prodr. II, 97.

Jungle near Lem Dan, climbing on trees.

Area: Malacca, Java, Sumatra, Borneo, Celebes.

Raphidophora Hassk.

4. **R. peepla** (Roxb.) Schott in Bonpl. V (1857), p. 45; Engl. in D. C. Suites au Prodr. II, 242.

Jungle near Lem Dan, a climber on trees.
Area: India orientalis, Java.

Scindapsus Schott.

5. **S. siamensis** Engl. n. sp.

Scandens, ramosus, internodiis quam petioli duplo vel magis brevioribus; cataphyllis lineari-lanceolatis; foliorum inferiorum petiolo ad laminae basin usque, superiorum ad geniculum usque late alato, quam lamina $1^1/_2$—3-plo breviore, lamina rigido membranacea, anguste lanceolata inaequilatera, basi subacuta, apice acuminata subfalcata, nervis lateralibus numerosis adscendentibus; pedunculo petiolum superante; spatha convoluta oblonga, acuminata; spadice oblongo, acuto; pistillis obpyramidatis truncatis subhexagonis, stigmate in directione spadicis longitudinali lineari; baccis prismaticis; semine majusculo reniformi brunneo.

Ramulorum internodia 2—3 cm. longa. Cataphylla 4—5 cm. longa, inferne fere 1 cm. lata. Foliorum petiolus 5—7 cm. longus, superiorum geniculum 2—3 mm. longum, lamina 1,3—1,7 dm. longa 2—3 cm. lata, nervis lateralibus inter se circ. 2 mm. distantibus. Pedunculus 7—8 cm. longus. Spatha cum accumine 5 mm. longo 3—3,5 cm. longa. Spadix florifer circ. 3 cm. longus, 1 cm. crassus, fructifer 4 cm. longus, 1,5 cm. crassus. Pistilla vertice fere 3 mm. diametientia. Baccae vertice 5 mm. diametientes. Semen 5 mm. longum, 4 mm. latum, 2,5 mm. crassum.

A *Scindapso hederaceo* (Zoll.) Schott, cui haec species magis quam alteri accedit, differt foliis duplo angustioribus, longius petiolatis.

Jungle near Klong Munsé, a climber on trees.

Pseudodracontium N. E. Brown.

6. **P. Harmandii** Engl. in Bot. Jahrb. XXV, p. 15.

var. **Schmidtii** Engl.

Folii segmentis anguste lanceolatis, sursum longius angustatis usque 1,2 dm. longis, 4 cm. latis; spatha usque 1,5 dm. longa.

Klong Majum, on rocks in the jungle.
Area of type: Cambodia.

Hydrosme Schott.

7. **H. longituberosa** Engl. n. sp.

Tubere cylindrico valde elongato, crasso; folii petiolo viridi immaculato, lamina trisecta, segmentis I, bipinnatisectis, segmentis II et III lanceolatis acuminatis, infimis quam reliqua multoties brevioribus; nervis lateralibus segmentorum a costa fere horizontaliter

patentibus in nervum collectivum a margine distantem conjunctis; pedunculo quam spatha 3—4-plo longiore; spatha oblonga, spadicem aequante vel superante, intus basi verrucosa et atropurpurea; spadice sessili; inflorescentia feminea quam mascula fertilis duplo breviore eique contigua, appendice inflorescentiae masculae contigua conoidea quam ea 1½-plo longiore; pistillis (floribus femineis) circ. 4-seriatis; ovario depresso incomplete 3—4-loculari; ovulis in loculis solitariis basi in angulo sessilibus breviter ovoideis; stilo brevi adscendente; stigmate 3—4-lobo lobis erectis; floribus masculis 3—4-andris; staminibus subtetragonis claviformibus, thecis rimula verticali aperientibus; appendice basi vestigia distincta florum sterilium eam componentium monstrante, baccis subglobosis 3—4-spermis; seminibus ovoideis testa brunnea nitida instructis.

Tuber juvenculum napiforme, circ. 5 cm. longum, 2 cm. crassum, adultum elongatum 1 dm. et ultra longum, internodiis inter turiones 5—6 cm. longis, 1,5—2 cm. crassis. Folii petiolus circ. 3 dm. longus, segmenta 1 usque 1,5 dm. longa, ultima majora usque 1 dm. longa, 4 cm. lata, acumine 1 cm. longo instructa. Pedunculus circ. 3 dm. longus. Spatha usque 1 dm. longa, 4 cm. lata. Spadicis inflorescentia feminea 1,5 cm. longa, mascula fertilis 2 cm. longa, 8 mm. crassa, appendix 4 cm. longa, inferne 1,2 cm. crassa. Ovaria 2 mm. diametientia, stilo 1,5—2 mm. longo instructa; stigmatis lobis fere 1 mm longis. Flores masculi stipite 1 mm. longa instructi; stamina 1,5 mm. longa et crassa. Baccae 5 mm. diametientes. Semina 4 mm. longa, 3 mm. crassa.

Species valde insignis et ab omnibus tubere longo diversa.

Koh Kahdat, on sandy ground near the Sea.

Homalomena Schott.

8. **H. brevispatha** Engl. n. sp.

Caudiculi internodiis brevissimis; foliorum petiolo laminae aequilongo vel ea duplo longiore, lamina membranacea, oblonga basi obtusiuscula, acuminata, acuta, nervis lateralibus utrinque circ. 7 arcuatim adscendentibus; cataphyllis pedunculi dimidium inferius involucrantibus 2—3 gradatim longioribus; pedunculo petioli dimidium haud aequante; spatha ovata obtusa; spadice stipiti triplo breviori insidente et spatham superante crasse cylindrico, obtuso; inflorescentia feminea pauciflora; pistillis vix 10 ovario ovoideo, loculis 2-ovulatis stigmate lato peltato; staminodiis raris claviformibus; floribus masculis 2—3-andris, staminibus tetragonis compressis.

Caudiculi circ. 4—5 mm. crassi. Foliorum petiolus 1,5—2 dm. longus, lamina 1—1,7 dm. longa, 4,5—7,5 cm. lata, acumine 2 cm. longo instructa. Pedunculus 7 cm. longus. Spatha 1,8 cm. longa, 1 cm. lata. Spadix stipite 5 mm. longo suffultus, fere 2 cm. longus, inflorescentia mascula 7—8 mm. crassa.

Species valde insignis pedunculo solitario et spatha brevi obtusa, insuper foliorum lamina oblonga basi obtusiuscula, petiolo longo.

Jungle near Klong Son, alt. 500 ft., terrestrial.

9. **H. truncata** (Schott) Hook. f. Fl. Brit. Ind. VI, 535.

Jungle near Klong Munsé, on wet rocks near a waterfall: also a very common terrestrial jungle-herb.

Area: Malacca, Borneo.

Aglaonema Schott.

10. **A. siamense** Engl. n. sp.

Caudiculo alto superne dense foliato; foliorum petiolo laminae subaequilongo subtereto, superne antice leviter canaliculato, ultra medium late vaginato, lamina crassiuscula, ovato-oblonga, basi obtusa vel leviter cordata, acuminata, costa semiterete et nervis lateralibus I arcuatim adscendentibus subtus prominentibus, nervis lateralibus I supra insculptis; pedunculis 2—3 petioli circ. ⅓ aequantibus; spatha ovata; spadicis stipite inflorescentiae femineae subaequilongo, baccis ovoideis leviter compressis.

Caudiculus usque 4 dm. longus inferne 2 cm. crassus. Foliorum superiorum petiolus vagina 8—10 cm. longa utrinque 3—5 mm. lata instructus, circ. 1,5 dm. longus, superne 4 mm. crassus, lamina 2—2,5 dm. longa, 2,5 cm. lata. Spadix stipite 5—7 mm. longo suffultus, inflorescentia feminea 7 mm. longa et crassa, mascula deficiens. Baccae 8 mm. longae, 6 mm. crassae.

Haec species *Aglaonemati marantifolio* affinis est, at differt foliis majoribus, latioribus, basi leviter cordatis.

Jungle near Lem Dan, terrestrial.

11. **A. tenuipes** Engl. n. sp.

Caudiculo tenui; foliis approximatis; petiolo tenui quam lamina breviore, vix ad tertiam partem usque vaginato, lamina membranacea, oblique lanceolata, inaequilatera, basi subacuta, apice leviter curvato acuminato acuto, nervis lateralibus I utrinque 4—5 leviter arcuatis adscendentibus; cataphyllis pedunculum brevem et spatham involventibus; spatha oblonga acuminata, spadicis stipite quam inflorescentia feminea pauciflora longiore; ovariis breviter ovoideis, stigmate crasso discoideo coronatis; inflorescentia mascula cylindrica subobtusa.

Caudiculi internodia circ. 5 mm. longa. Foliorum petiolus circ. 1 dm. longus, ad 3—4 cm. longitudinis vaginatus, lamina circ. 1,7—1,8 dm. longa, 5—6 cm. lata. Cataphylla 2—4 cm. longa. Pedunculus 2,5 cm. longus. Spatha circ. 1,8 cm. longa, convoluta 8 mm. lata. Spadicis stipes 3 mm. longus, inflorescentia feminea 2 mm., mascula 7 mm. longa, 3 mm. crassa.

Species habitu paullum ad *Aglaonema simplex* accedit sed differt petiolis tenuioribus et longioribus, brevius vaginatis, deinde inflorescentia parva.

Jungle near Lem Dan, terrestrial.

Alocasia Schott.

12. **A. indica** (Roxb.) Schott in Oest. Bot. Wochenbl. 1854, p. 410; Engl. in D. C. Suites au Prodr. II, 501.

Jungle near Klong Munsé, Koh Kahdat.
Area: India orientalis, Java.

13. **A. fornicata** (Roxb.) Schott in Oest. Bot. Wochenbl. 1854, p. 410; Engl. in D. C. Suites au Prodr. II, 505.

Lem Ngob.
Area: India orientalis: Bengalia, Assam, Chittagong.

14. **A. longiloba** Miq. Fl. Ind. batav. III, 207 et Bot. Zeit. 1856, p. 564; Engl. in D. C. Suites au Prodr. II, 506.

Jungle near Lem Dan, terrestrial.
Area: Malacca, Java, Borneo.

Pistia L.

15 **P. Stratiotes** L. [1])

Klong Wen, Menam, common.
Area: Tropics of both hemispheres.

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[1]) Named by Johs. Schmidt.

Hepaticae

by **F. Stephani** — Leipzig.

Metzgerioideae.

Aneura Dum.

1. **A. multifidioides** (Schffn.) St. Spec. Hep. I, p. 215.

Jungle near Klong Munsé and Klong Sarlakpet, on wet rocks in riverbeds.
Area: Java.

Hymenophytum Mitt.

2. **H. malaccense** St. Hedwig. 1875, p. 46.

Klong Munsé and Klong Son, on wet rocks in the jungle.
Area: Singapore, Nova Caledonia.

Epigoniantheae.

Plagiochila Dum.

3. **P. singularis** Schffn. Acad. Vindob. 1900, vol. 70, p. 187.

Jungle near Klong Majum, on stems.
Area: Java.

Trigonantheae.

Mastigobryum Nees.

4. **M. ceylanicum** Mitt. Proc. Linn. Soc. V, p. 105.

Klong Munsé and Klong Majum, on dry rocks in the jungle.
Area: Ceylon, Nepal, Sikkim, Java, Amboina, Japan, Viti, Samoa.

5. **M. inaequitextum** St. Hedwig. 1893, p. 208.

Klong Munsé, on rocks in the jungle.
Area: Nova Guinea.

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[1]) A considerable number of the collected specimens were sterile (species of *Frullania, Jungermannia, Lejeunea, Notoscyphus, Pallavicinius, Drepanolejeunea*) and therefore it was impossible to name them to species.

6. **M. oblongum** Mitt. Proc. Linn. Soc. V, p. 106.

Klong Munsé and Klong Son, on rocks in the jungle.
Area: Ceylon, Sikkim, Hongkong.

Jubuloideae.

Acrolejeunea Spruce.

7. **A. aulacophora** (Mont.) St. Hedwig. 1890, p. 133.

Koh Kahdat, epiphytic on trees near the Sea.
Area: Borneo, Nicobarae, Andaman, India orientalis.

Archilejeunea Spruce.

8. **A. caramuensis** St. Hedwig. 1895, p. 59.

Lem Dan, epiphytic on trees.
Area: Luzon.

Caudalejeunea Steph.

9. **C. Stephanii** Spruce, ms.

Jungle near Klong Son, on leaves.
Area: Nova Guinea, Andaman, Luzon, Tonkin.

Ceratolejeunea Spruce.

10. **C. emarginatula** Steph. n. sp.

Dioica, mediocris, brunnea, gracilis, dense depresso-caespitosa. Caulis ad 3 cm. longus, vage ramosus. Folia caulina imbricata, oblique a caule patentia, valde concava apiceque decurva, in plano falcato-ovata vel falcato-elliptica, apice rotundata, brevissime mucronata, integerrima, dorso caulem parum superantia. Cellulae foliorum apicales 12 μ, medio 20 μ, basi 27×32 μ, trigonis subnullis. Lobulus folii majusculus, folio 3-plo brevior, ovato-oblongus, apice oblique truncatus, angulo acuto; carina leniter arcuata, levi sinu in folii marginem excurrens. Amphigastria foliis aequimagna, imbricata, reniformia, caule multoties latiora, exciso-inserta, margine infero late truncata, supero late rotundata apiceque breviter emarginatula, lobis obtusatis. Flores fem. steriles axillares. Folia floralia caulinis multo majora, ovata acuta, sub apice denticulata, lobulo magno acuto integerrimo. plus minus longe soluto, basi longe attenuato. Amph. florale maximum, totam inflorescentiam tegens, in pano subrotundum, ad medium fere acute incisum, lobis late triangulatis breviter cuspidatis. Reliqua desunt.

Amphigastriis bidentulis facile cognoscenda.

Klong Majum, on dry rocks in the jungle.

Cololejeunea Spruce.

11. **C. Schmidtii** St. n. sp.

Sterilis, minor, in foliis vivis arcte repens. Caulis multiramosus, ramis late divergentibus. Folia parva, contigua nusquam imbricata nisi in apice ramorum, oblique — interdum subrecte patula, plana, optime ovata, dorso ampliata caulemque superantia, ibidem conico-denticulata, ceterum margine integerrima, apice obtusa. Cellulae foliorum 9 μ, basales 18×27 μ, parietibus validis, antice papillis globosis asperae. Lobulus folii majusculus, folio suo triplo brevior, ambitu obovato-triangulatus i. e. ex angusta basi valde ampliatus, apice truncatus ibidemque spina mediana magna valida et stricta armatus; carina curvata, in folii marginem sine ullo sinu excurrens, papillis altis grosse obtuseque dentata. Stylo nullo.

Jungle near Klong Munsé and Nipple (alt. 2000 ft.), on leaves of herbs and small shrubs.

12. **C. siamensis** St. n. sp.

Sterilis, minor, subhyalina, in foliis vivis arcte repens. Caulis ad 10 mm. longus, validus, simplex vel pauciramosus, ramis late divergentibus. Folia imbricata, pro planta magna, subcircularia, plano et recte patula, dorso usque ad basin soluta, dein brevissime inserta, integerrima, cellulis digitiformibus limbata, limbo in apice folii latissimo versus basin folii sensim decrescente sub basi desinente, cellulis hyalinis papuloso-prominulis formato. Reliquae folii cellulae hexagonae, alte minuteque sexpapillatae, subapicales 8 μ, medianae 8 × 12 μ; basi adsunt ocella oleifera 4, aggregata (18×36 μ). Lobulus parvus, valde rudimentarius (semper?) plicaeformis, angulo grosse spinoso; stylo nullo.

Jungle near Klong Munsé, on leaves.

Lopholejeunea Spruce.

13. **L. sundaica** Steph. Hedwig. 1896, p. 112.

Jungle near Lem Dan, on trees.
Area: Java, Philippinae Insulae.

Mastigolejeunea Spruce.

14. **M. humilis** (G.) Steph. Hedwigia 1890, p. 139.

Jungle near Klong Munsé, on trees.
Area: Common in the Sunda Islands.

Pycnolejeunea Spruce.

15. **P. grandiocellata** St. n. sp.

Sterilis, mediocris, pauca frustula in folio vivo repens. Caulis ad 15 mm. longus, simplex, validus. Folia conferta, recte patula, subplana, ambitu late ligulata, apice truncato-rotundata, dorso cauli incumbentia similiter truncata. Cellulae optime hexagonae, apice 15 μ, medio 18 μ, basales 18×36 μ, trigonis parvis. Ocella magna (27×45 μ) 6—8 aggregata, medio folii inserta, lobulo tamen ap-

proximata. Lobulus a caule recte patulus, magnus, oblongus, apice angustatus, ore oblique truncato angulo dentiformi; carina stricta apice abrupte arcuata, sinu parvo profundo in folii marginem excurrens. Amphig. contigua, transverse inserta, caule duplo latiora, medio infero optime obcuneata, medio supero abrupte angustata, utroque latere dein angulata, angulis obtusis vel in dentem solutis, apice ad medium bilobo, sinu recto acuto, lobis acutis.

Jungle near Klong Munsé, on trees.

Thysanolejeunea Spruce.

16. **T. spathulistipa** (Ldbg.) Spruce Ed. Bot. Soc. 1884, p. 106.

Lem Dan, on trees near the Sea.

Area: Common in all the islands of the Sunda Archipelago; Viti, Madagascar, Kamerun.

Leptolejeunea Spruce.

17. **L. Balansae** St. Hedwig. 1896, p. 105.

Jungle near Klong Munsé and Klong Son, on leaves.

Area: Tonkin, Andaman.