

# Flora of Koh Chang.

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

By

**Johs. Schmidt.**

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## Part III.

(**C. B. Clarke**: Cyperaceae. — **E. Haëkel**: Gramineae. — **H. Christ**: Pteridophyta.  
(*Selaginella* auctore G. Hieronymus.) — **V. F. Brotherus**: Bryales.)

## Cyperaceae

by **C. B. Clarke** — Kew.

I have prepared a list of the Cyperaceae collected in Koh Chang, 24 species — of these 14 are maritime species, 5 are rice-field weeds; *Rynchospora aurea* Vahl is widely scattered; *Fimbristylis Hookeriana* Boeck. has been hitherto known only from 2 localities 300 miles apart. Of the maritime species, a few are strictly maritime; a few re-appear in the lower hills, while they are absent from the plains; the greater number while common on the sea-coast occasionally occur inland. As to *Fimbristylis Hookeriana* Boeck. it grows in large quantity in its two known habitats; and it may be expected to be met with hereafter between Khasia and Koh Chang.

The 24 Cyperaceae of Koh Chang all occur in British India, except *Fimbristylis cymosa* R. Br., a species common in Malaya and Polynesia. They are arranged diagnosed and described in Sir J. D. Hooker's Flora of British India. I have therefore not copied over again what is printed there, but have given a reference to it, and to the Journ. Linn. Soc. v. 34 [1898] which gives the localities of the species in British India.

The Flora of British India, being a local Flora, does not in general cite synonyms or localities foreign to India. I have given below as „Additional synonymy“ and „Additional Geography“ the synonymy and geography referring to plants collected in and round Siam; and also, in a slighter degree, some of the general synonymy and geography.

I have added no „species inquirendae“; there are several hundred species of Cyperaceae collected in Eastern India, China, Malaya; it would cause no surprise for any one of these to be met with in Siam. It is better, therefore, for the present, to confine the Koh Chang list to the *Primitiae* of the Flora collected there.

## Kyllinga Rottb.

### 1. *K. monocephala* Rottb.

Hook. f. Fl. Brit. Ind. v. 6, p. 588; C. B. Clarke in Journ. Linn. Soc. v. 34 [1898], p. 11.

Additional synonymy:

*K. monocephala*, Forst. Ins. Austral. Prod. p. 6; R. Br. Prod. Fl. Austral. p. 219; Presl Rel. Haenk. v. 1, p. 182 pl. Mexic. excl.; Decaisne in Nouv. Ann. Mus. v. 3 [1834], p. 360; Moritzi Verz. Zoll. Pfl. p. 95 partim; Stend in Zoll. Verz. Ind. Archip. heft 2, p. 63 partim; Benth. Fl. Hongk. p. 388 partim, et Fl. Austral. v. 7, p. 251 partim; Ridley in Forbes Eastern Archip. [1885], p. 521, et in Journ. Singapore Asiat. Soc. n. 23 [1891], p. 9.

*K. brevifolia*, Moritzi Verz. Zoll. Pfl. p. 95, non Rottb.

*K. pumila*, Kunth Enum. v. 2, p. 132 partim.

*K. monocephala* Var. *subtriceps*, Kunth Enum. v. 2, p. 129.

*Schoenus niveus*, Linn.! Syst. Veget. (ed. XIII Murray) p. 81, fide tab. Jacquin citatae, et Linn. herb. propr.

*Thryocephalon nemorale* J. R. et G. Forster Gen. p. 130, t. 65.

*Cyperus leucocephalus*, Hassk. Pl. Jav. Rar. p. 87 non Retz.

*C. monocephalus*, F. Muell. Fragm. Phyt. Austral. v. 8, p. 271.

*K. monocephala* is especially a maritime and island species; it is carried to seacoasts as to Portugal, to Bahia and to Monte-video. But, all the American plants called by authors *Kyll. monocephala* are some other species — mostly they are *K. brevifolia* Rottb.

Klong Sarlakpet, in humid plains.

Additional Geography:

Trop. Africa — Ins. Prince, N. L. 2° 1'; Welwitsch n. 6988. Ins. S. Helena; Burchell.

Mascarenia — in omnibus insulis vulgaris.

China Australis — Formosa; Henry nn. 352, 1329. Hainan; Henry n. 30.

Pakhoi; Playfair n. 202; &c. &c.

Malaya -- Sumatra; Horsfield n. 965, Zollinger nn. 368, 465, Goering n. 148, Leschenault n. 621. Siam; Schomburgk n. 327. Cambodia; Lebœuf. Cochinchina; Gaudichaud n. 72, Germain n. 106; Turong, O. Kuntze. Borneo; Motley n. 93.

Ins. Philippine; Cuming n. 1558. Manila; Wichura n. 1860; &c.

Australia — Queensland; Dallachy.

Oceania — In omni Polynesia tropicali, vulgaris.

Ins. Sandwich; Barclay.

## Pycreus Beauv.

### 2. *P. polystachyus* Beauv.

Hook. f. Fl. Brit. Ind. v. 6, p. 592; C. B. Clarke in Journ. Linn. Soc. v. 34 [1898], p. 16.

Additional synonymy:

*P. polystachyus*, Nees in Nova Acta Nat. Cur. v. 19 [1843], Suppl. 1, p. 55.

*Cyperus polystachyus*, Benth. Fl. Hongk. p. 385, et Fl. Austral. v. 7, p. 261; Hassk. Pl. Jav. Rar. p. 74; Munro in Seem. Voy. Herald p. 422; Miq. Fl. Ind. Bat. v. 3, p. 258, Suppl. p. 260; Ridley in Journ. Singapore Asiat. Soc. n. 23 [1891], p. 4; Drake Fl. Ins. Pacif. p. 330.

*C. caespitosus*, Hook. et Arn. Beechey Voy. p. 99, non Poir.

*C. brunneus*, Hook. et Arn. Beechey Voy. p. 99, non Swartz.

*Pycreus polystachyus* is one of the most wide-spread and abundant Cyperaceae in the globe; it is especially common near the sea.

The above localities refer to the type form only. The Var.  $\beta$  *laxiflora* Benth. is equally wide spread; and the doubtfully distinct *Pycreus ferrugineus* C. B. Clarke is still commoner in North America. It is impossible to give the synonymy or the geography completely; for no one knows where the species ends.

Throughout the island, in rice-fields.

Additional Geography:

Africa Borealis — Algeria; Lefranc n. 487, Kralik nn. 92, 147, Billot n. 3924. Ischia; Tenore.

Africa Tropica — Senegambia; Hendelot n. 444. Niger Flum.: Vogel nn. 11, 35. Africa Centralis; Gazelle Flum., Schweinfurth n. 1152. Libya; Ascherson nn. 534, 2303. Ins. S. Helena; Burchell nn. 8, 9, J. D. Hooker n. 42. Angola; Welwitsch nn. 7041, 6890, 6891, &c. Zanzibar; Hildebrandt n. 1069. Usambara, Holst n. 2029 &c. Caput Bonae spei; Drège nn. 4403, 4404, 4405 &c.

Mascarenia — Mauritius; Sieber n. 10 — &c. &c.

China — Hongkong; Hance n. 1230. Formosa; Henry nn. 1047, 1050 — &c. &c.

Japan — Wichura n. 723 — &c.

Malaya — Tonkin; Balansa nn. 200, 2849. Cochinchina; Germain nn. 15, 92.

Java; Zollinger n. 456, Kurz n. 1854. Borneo; Motley n. 67, Beccari n. 3685.

Manila; Chamisso n. 196, Wichura n. 1870.

Australia — R. Brown n. 5908 &c. &c.

Oceania — Amboyna; Barclay. New-Caledonia; Vieillard n. 1431. Isle of

Pines; Milne n. 169. Ins. Sandwich, Hillebrand n. 564; &c.

America — Florida; Rugel n. 109, 114. Nicaragua; Tate n. 503, Lévy n. 258.

West Indies; ubique vulgaris (Martinique, Sieber nn. 13, 360).

### 3. *P. sulcinux* C. B. Clarke.

Hook. f. Fl. Brit. Ind. v. 6, p. 593; C. B. Clarke in Journ. Linn. Soc. v. 34 [1898], p. 16.

This „species“ is only a split-off from *Pycurus polystachyus*; it is I think a little better separated than the numerous split-off species in North America — admitted as species there.

Lem Dan, in dry sandy soil.

Additional Geography:

Africa Trop. — Nyasa-land; L. Scott. Zomba Mt., Whyte.

Malaya — Borneo Borealis; Burbidge. Ins. Philippine; Moseley.

## Cyperus Linn.

### 4. *C. Haspan*, Linn. partim nec Linn. Herb.

Hook. f. Fl. Brit. Ind. v. 6, p. 600; C. B. Clarke in Journ. Linn. Soc. v. 34 [1898], p. 22.

Additional synonymy:

*C. Haspan*, Moritzi Verz. Zoll. Pfl. p. 96; Hook. et Arn. Beechey Voy. p. 221; Benth. Fl. Hongk. p. 386 et Fl. Austral. v. 7. p. 27; Steud. in Zoll. Verz. Ind. Archip. heft 2, p. 63; Miq. Fl. Ind. Bat. v. 3, p. 267 et Suppl. p. 260; Ridley in Journ. Singapore Asiat. Soc. n. 23 [1891], p. 6.

*C. platyculmis*, R. Br. Prod. Fl. Austral. p. 214.

*C. laticulmis*, Spreng. Syst. v. 1, p. 228.

This is a pest in rice-fields, in warm countries nearly throughout the World. — I do not know that is it more prevalent near the sea than elsewhere.

Throughout the island, in rice-fields.

Additional Geography:

Trop. Africa; vulgaris — Senegambia; Heudelot n. 833. Djur; Schweinfurth n. 2054. Angola; Welwitsch nn. 7097, 6908, 6932, 7086, 7035 b. Mombasa; Hildebrandt n. 2045; Nyasaland, Lugard n. 10.

Mascarenia; frequens.

China; vulgaris — Hongkong; Wright n. 557, Wilford n. 48, Schottmueller n. 499.

Canton; Sampson n. 260. Pakhoi; Playfair n. 108.

Japan; frequens.

Malaya — Sumatra; herb. Miquel. Java; Horsfield nn. 268, 269, Ploem nn. 121, 258. Tonkin; Balansa n. 2850. Cochinchina; Lebœuf, Germain nn. 93, 94.

Borneo; Barber n. 194, Mottley n. 98. Ins. Philippine; Wichura n. 1999.

Australia; sat communis — Carpentaria Sinus, R. Brown n 5911.

America Borealis — North Carolina, Georgia, Florida, Alabama, Louisiana, Texas.

America Centralis — Mexico, Guatemala, West Indies.

America Australis Trop.; vulgaris.

Argentina — Entre-rios; Niederlein nn. 212, 2130, 2155.

## Mariscus Vahl.

### 5. *M. albescens* Gaud.

Hook. f. Fl. Brit. Ind. v. 6, p. 623; C. B. Clarke in Journ. Linn. Soc. v. 34 [1898], p. 46.

Additional synonymy:

*Cyperus stuppeus*, Forst. Ins. Austral. Prod. 1786 p. 89 [i. e. *C. stipens*, Forster! ms]; Guillemain in Ann. Sc. Nat. ser. 2, v. 6 [1836], p. 317.

*Cyp. pennatus*, Decaisne in Nouv. Ann. Mus. v. 3 [1834] p. 359; Miq. Fl. Ind. Bat. v. 3, p. 281; Benth. Fl. Hongk. p. 387; Vidal. Fl. Filip. p. 283; Ridley in H. O. Forbes Eastern Archip. p. 355, et in Journ. Singapore Asiat. Soc. n. 23 [1891], p. 8; Hillebr. Fl. Hawai p. 463; Drake Fl. Ins. Pacific. p. 330; non Boeck.

*Cyp. canescens*, Nees in Nova Acta Nat. Cur. v. 19, Suppl. 4 [1843], p. 61; Hook. et Arn. Beechey Voy. p. 222.

*Cyp. holciflorus*, Presl. Rel. Haenk. v. 1, p. 171.

*Cyp. anomalus*, Stend. Cyp. p. 37.

*Cyp. ovatus*, Llanos Fragm. p. 15.

*Cyp. imbricatus*, Llanos Fragm. p. 17, fide Naves et Vill.

*Cyp. fucatus* Boeck. in Flora v. 65 [1882], p. 13.

*Cyp. nitidulus*, Vidal Pl. Vasc. Filip. p. 283.

This species is a common maritime tropical plant.

*Cyperus ventricosus*, R. Br. Prod. Fl. Austral. p. 217

= *C. caricifolius*, Hook. et Arn. Beechey Voy. p. 99

= *C. stigmatosus* Steud. in Zoll. Verz. Ind. Archip. heft 2, p. 62

= *C. Tongatabuensis*, Boeck. in Flora v. 58 [1875], p. 85.

I reckon only a Var. of *Mariscus albescens*, Gaud., and it lies within the area of *M. albescens*.

Throughout the island near the sea, in rocks as in swamps.

Additional Geography:

Africa orient. — Taita; Hildebrandt n. 2437.

Mascarenia — Nossibé; Boivin n. 2003. Seychelles; Horne nn. 219, 648.

China — Hongkong; Wright n. 563, Seemann n. 556. Formosa; Playfair n. 107, Henry nn. 763, 783, 1007, 1032.

Malaya — Java; Horsfield, H. O. Forbes. Borneo; Barber n. 383, Beccari n. 3681, &c. Ins. Philippine; Cuming nn. 436, 1636, &c. CochinChina; Finlayson, Germain n. 24.

Australia — Queensland; Amalia Dietrich n. 634.

Polynesia; vulgaris — Aru Ins.; Warburg. Aneiteum; Mac Gillivray n. 921, Milne n. 287. Ins. Sandwich; Seemann n. 1707, Hillebrand n. 559.

#### 6. *M. microcephalus* Presl.

Hook. f. Fl. Brit. Ind. v. 6, p. 624; C. B. Clarke in Journ. Linn. Soc. v. 34 [1898], p. 46.

Additional synonymy:

*Mariscus dilutus*, Ridley in Journ. Singapore Asiat. Soc. n. 23 [1891], p. 8.

*Cyperus dilutus*, Nees in Nova Acta Nat. Cur. v. 19, Suppl. 1 [1843], p. 65; Miq. Fl. Ind. Bat. v. 3, p. 285; Vidal Pl. Filip. p. 283.

*Cyp. Haenkeanus*, Kunth Enum. v. 2, p. 93.

*Cyp. septatus*, Steud. in Zoll. Verz. Ind. Archip. heft 2, p. 62; Miq. Fl. Ind. Bat. v. 3, p. 284 et Suppl. p. 260.

*Cyp. cuadriflorus*, Llanos Fragm. Filip. p. 18.

*Cyp. microcephalus*, Naves in Blanco Fl. Filip. Append. p. 304, non R. Br.

*Cyp. Grabowskianus*, Boeck. in Engl. Jahrb. v. 5 [1884], p. 502.

This is essentially a maritime or archipelago plant; but is found (not abundantly) in the central parts of India.

Klong Munsé, in plains near the sea.

Additional Geography:

Mascarenia — Rara, Commerson.

China — Canton; Sampson n. 1612, Hance n. 1367.

Malaya — Sumatra; Martens. Java; Zollinger, Jagor n. 594, Ploem n. 432; &c.  
Borneo; Barber n. 330, Motley n. 443; &c.

Tonkin; Balansa n. 2764; Saigon, Lebeuf.

Ins. Philippine; Cuming nn. 538, 1656, Vidal n. 3983, Wichura n. 2000.

Jagor n. 869; &c.

## Eleocharis R. Br.

### 7. *E. capitata* R. Br.

Hook. f. Fl. Brit. Ind. v. 6. p. 527; C. B. Clarke in Journ. Linn. Soc. v. 34 [1898], p. 50.

Additional synonymy:

*Eleocharis capitata*, Kunth Enum. v. 2. p. 150, syn. quibusdam excl.; Ridley in Journ. Singapore Asiat. Soc. n. 23 [1891] p. 14.

*Eleocharis setacea*, R. Br. Prod. Fl. Austral. p. 225 neque homonyma p. 224; Kunth Enum. v. 2. p. 156.

*Scirpus capitatus*, Linn. Herb. propr. partim; Benth. Fl. Hongk. p. 394.

*Sc. Caribaens*, Rottb. Descr. et Ic. p. 46, t. 15, fig. 3.

*Eleocharis capitata*, Benth. Fl. Austral. v. 7, p. 296.

*Eleocharis setacea*, Benth. Fl. Austral. v. 7, p. 296.

Lem Dan, in rice-fields.

Additional Geography:

Trop. Africa — Senegal; Heudelot n. 549, Perrottet nn. 198, 820, 830. Caput Palmas; Vogel n. 7. Congo Flumen; Christ. Smith. Somali Terra; Revoicé n. 137.

Ins. Socotra; Balfour n. 730, Schweinfurth n. 693.

Ins. Bourbon; Bory.

Arabia — Sinai; Ehrenberg n. 372; Yemen; Botta, Benth.

China — Hongkong; Wright n. 593. Formosa; Playfair n. 134, Henry nn. 704, 1042.

Malaya — Java; Leschenault. Tonkin; Balansa n. 217.

Ins. Philippine; Blanco. Manila; Barthe.

Australia; R. Brown n. 5930, Cunningham n. 354; &c.

Polynesia; late sparsa.

America; vulgatissima; ab Alabama usque ad Argentinam.

### 8. *E. Chaetaria* Roem. et Sch.

Hook. f. Fl. Brit. Ind. v. 6. p. 629; C. B. Clarke in Journ. Linn. Soc. v. 34 [1898], p. 51.

## Additional synonymy:

- Eleocharis Chaetaria*, Moritzi Verz. Zoll. Pfl. p. 96; Staud. in Zoll. Verz. Ind. Archip. heft 2, p. 62; Ridley in Journ. Singapore Asiat. Soc. n. 23 [1891], p. 14.  
*E. depauperata*, Kunth Enum v. 2. p. 140.  
*Scirpus Chaetarius*, Spreng. Syst. v. 1, p. 203.  
*Heleocharis setacea*, Palla in Engler Jahrb. 10 [1888], p. 299.

Throughout the island, usually in rice-fields.

## Additional Geography:

- Africa Tropica; Rara — Angola; Huilla, Welwitsch n. 6964. Djur; Schweinfurth n. 2583.  
 Malaya — Java; Zollinger nn. 339, 636; Buitenzorg, Kurz fl. 1845. Tonkin; Balansa n. 182. Cambodia; Lebaeuf n. 362.  
 Ins. Philippine; Loher.  
 America Calidior; vulgaris — a Mexico et Cuba usque ad Paraguay.

9. *E. equisetina* Presl.

- Hook. f. Fl. Brit. Ind. v. 6, p. 629; C. B. Clarke in Journ. Linn. Soc. v. 34 [1898], p. 48.

## Additional synonymy:

- E. equisetina*, Ridley in Journ. Singapore Asiat. Soc. n. 23 [1891] p. 14.  
*E. esculenta*, Vieillard! in Ann. Sc. Nat. ser. 4, v. 16 [1832] p. 37; Paill. et Boiss. in Bull. Soc. Acclimat. ser. 4, v. 1 [1884] p. 905.  
*Heleocharis equisetina*, Naves in Append. Blanco Philipp. 1880, p. 306.  
*H. plantaginea*, Vidal Pl. Vasc. Filip. p. 284.

Lem Dan, in rice-fields.

## Additional Geography:

- Madagascar — Nossibé; Hildebrandt n. 2949 b.  
 Philippines — Luzon; Guming n. 1255.  
 New-Caledonia; Vieillard n. 1496.

**Fimbristylis** Vahl.10. *F. diphylla* Vahl.

- Hook. f. Fl. Brit. Ind. v. 6, p. 636; C. B. Clarke in Journ. Linn. Soc. v. 34 [1898], p. 57.

## Additional Synonymy:

- F. diphylla*, Nees in Nov. Acta Nat. Cur. v. 19, Suppl. 1 [1843], p. 81; Benth. Fl. Hongk. p. 392, et Fl. Austral. v. 7. p. 311 partim; Miquel in Ann. Mus. Lugd. Bat. v. 2 [1865—6], pp. 144, 211; Vidal Pl. Vasc. Filip. p. 284; Drake Fl. Ins. Pacifici p. 332; Ridley in Journ. Singapore Asiat. Soc. n. 23 [1891], p. 10.  
*F. laxa*, Kunth Enum, v. 2, p. 232.  
*F. gracilis*, R. Br. Prod. Fl. Austral. p. 227.  
*F. paviflora*, R. Br. Prod. Fl. Austral. p. 227.  
*F. stricta*, R. Br. Prod. Fl. Austral. p. 228.  
*F. variabilis*, R. Br. Prod. Fl. Austral. p. 228.  
*F. elongata*, R. Br. Prod. Fl. Austral. p. 228.  
*F. Marianna*, Gaud. in Freycinet Voy. p. 413 (Var.  $\beta$  excl.).

- F. podocarpa*, Benth. Fl. Hongk. p. 391.  
*F. communis*, Miq. Fl. Ind. Bat. v. 3, p. 323.  
*F. ciliolata*, Zoll. Verz. Ind. Archip. heft 2, p. 61.  
*F. ambigua*, Steud. in Zoll. Verz. Ind. Archip. heft 2, p. 61; Miq. Fl. Ind. Bat. v. 3, p. 324.  
*F. Goeringiana*, Steud. Cyp. p. 118.  
*F. circinnata*, Steud. Cyp. p. 116; Miq. Fl. Ind. Bat. v. 3, p. 324.  
*F. calocarpa*, Steud. Cyp. p. 117; Miq. Fl. Ind. Bat. v. 3, p. 325.

Taking *Fimbristylis diphylla* Vahl in the narrow sense (i. e. making it a narrower species than do Kunth and Boeckeler), it is perhaps the most widely-spread and the most abundant Cyperacea in the World — and has 150 names.

Lem Dan, in dry clayey soil near the sea.

Additional Geography:

- Europa — Valais; Schleicher. Meran; Thomas. Treviso, Reichenbach n. 2306; &c.  
 Asia Occid. — Lazistan; Balansa n. 970 &c., usque ad Turkestan et Cabul.  
 Africa Trop.; vulgarissima.  
 Africa Australis — Frequens, Drège n. 4371, 4373 &c.  
 Mascarenia; ubique vulgaris.  
 China; vulgaris.  
 Japonia; vulgaris.  
 Malaya — Tonkin; Balansa nn. 214, 2775. Anam; Turong, O. Kuntze. Cochinchina; Germain nn. 16, 96, 100, 102. Java; Zollinger n. 181, Horsfield n. 1072. &c. &c. Banca; Teysmann. Sumatra; Martens. Borneo; Motley nn. 66, 69, 87, &c. &c. Timor, Lombok, &c.  
 Ins. Philippine; Cuming n. 558, Wichura nn. 1854, 2001.  
 Australia; vulgaris.  
 Polynesia; vulgaris.  
 Sandwich Ins.; vulgaris.  
 America = United States; frequens.  
 America Centralis cum West Indies; vulgarissima.  
 America Australis Tropica; vulgarissima.  
 Argentine et Monte Video; frequens.

#### 11. *F. sericea* R. Br.

Hook. f. Fl. Brit. Ind. v. 6. p. 641; C. B. Clarke in Journ. Linn. Soc. v. 34 [1898], p. 63.

Additional synonymy:

- F. sericea*, Kunth Enum. v. 2, p. 244; Benth Fl. Austral v. 7, p. 319; Ridley in Journ. Singapore Asiat. Soc. n. 13 [1891], p. 10.  
*F. decora*, Nees in Hook. et Arn. Beechey Voy. p. 225, in Nova Acta Nat. Cur. v. 19, Suppl. 1 [1843], p. 83; Kunth Enum. v. 2, p. 240  
*Scirpus sericeus*, Poir. Encycl. Suppl. v. 5, p. 99.

As yet received (by me) only from the sea-coasts.

Klong Prao, on the sandy sea-shore.

Additional Geography:

- Malay Peninsula — Singapore; Ridley n. 4.  
 China — Amoy; Didrichsen n. 3044. Macao; Hance n. 10131. Hainan; A.



Henry n. 8195. Formosa; A. Henry nn. 1007, 1008. Pakhoi; Playfair n. 86. Canton; Yvan; &c.  
 Japan; Faurie nn. 412, 6482, 11882 — Hakone et Nagasaki, Maximowicz.  
 Malaya — Java; Junghuhn. Pulu Condor; Staunton. Cochinchina; Gaudichaud n. 74, Lebœuf n. 824, Germain n. 19.  
 Australia Borealis; R. Brown n. 5960. Portus Darwin; Schultz n. 602. Ins. Goulburn; Cunningham.

12. **F. Hookeriana** Boeck.

Hook. f. Fl. Brit. Ind. v. 6, p. 641. C. B. Clarke in Journ. Linn. Soc. v. 34 [1898], p. 62.

There are various collectors in India, but only 2 localities, 300 miles apart. In the Khasi locality, the plant is in large quantity, in the Chota Nagpore it is in considerable quantity.

In both localities, it grows in chinks in hard rocks that have got filled with sand. Several plants that grow in this habitat are also known from the ocean-margin.

On rocks in the jungle near Klong Munsé.

Additional Geography: Only Koh Chang.

13. **F. spathacea** Roth.

Hook. f. Fl. Brit. Ind. v. 6, p. 640; C. B. Clarke in Journ. Linn. Soc. v. 34 [1898], p. 62.

Additional synonymy:

*F. spathacea*, Kunth Enum. v. 2, p. 246.

*F. Wightiana*, Knuth Enum. v. 2, p. 241; Benth. Fl. Hongk. p. 392.

*F. glomerata*, Kunth Enum. v. 2, p. 246; Benth. Fl. Austral. v. 7, p. 318 in nota<sup>1</sup>; Ridley in H. O. Forbes Eastern Archipelago [1885], pp. 43, 521.

*F. rigida*, Moritzi Verz. Zoll. Pfl. p. 97; Steud. in Zoll. Verz. Ind. Archip. heft 2, p. 61; Miq. Fl. Ind. Bat. v. 3, p. 327.

*F. ciliolata*, Steud. in Zoll. Verz. Ind. Archip. heft 2, p. 61; Miq. Fl. Ind. Bat. v. 3, p. 317.

*F. lacvissima*, Steud. in Zoll. Verz. Ind. Archip. heft 2, p. 61; Miq. Fl. Ind. Bat. v. 3, p. 324.

*Isolepis glomerata*, Schrader in Roem. et Sch. Syst. v. 2, Mant. p. 67.

This is an abundant species, but I have received it only from the Sea coasts.

Klong Sarlakpet, in humid plains.

Additional Geography:

Africa, Insul. Occident. — Socotra; Balfour nn. 33, 310. Schweinfurth n. 620.

Mauritius, Sieber n. 21; &c. &c. Réunion; de l'Isle n. 129, Boivin n. 1003; &c.

Seychelles; Horne nn. 210, 211, &c. &c.

China — Hongkong; Seemann n. 542; &c. Ins. Samtong; Wright n. 589. Formosa; Playfair n. 136, Henry nn. 1071, 1071 A, 1834, 1860.

Malaya — Sumatra; Heyne. Java; Zollinger n. 2446, Schottmueller n. 496; &c. Borneo; Motley nn. 42, 190; &c. &c.

Ins. Philippine; Wichura n. 1857 bis; &c.

America; a West Indies usque ad Brasiliam Australem (São Paulo) in oris maritimis communis.

14. **F. polytrichoides** Vahl.

Hook. f. Fl. Brit. Ind. v. 6, p. 632; C. B. Clarke in Journ. Linn. Soc. v. 34 [1898], p. 54.

Additional synonymy:

*F. polytrichoides*, R. Br. Prod. Fl. Austral. p. 226; Miq. Fl. Ind. Bat. v. 3, p. 315 syn. excl.; Benth. Fl. Austral. v. 7, p. 304; Hance in Journ. Bot. v. 16 [London 1878], p. 112.

*F. albescens*, Steud. in Zoll. Verz. Ind. Archip. heft 2, p. 61; Miq. Fl. Ind. Bat. v. 3, p. 316.

*Abildgaardia Javanica*, Steud. in Zoll. Verz. Ind. Archip. heft 2, p. 63, et Cyper p. 72; Miq. Fl. Ind. Bat. v. 3, p. 297, non Nees.

This is essentially a maritime plant, and I never collected it myself except near the sea. But there are a few inland specimens, both in Africa and in India.

Throughout the island, in rice-fields and also in more dry places.

Additional Geography:

Africa Trop. — Zanzibar; Boivin. Usambara; Holst n. 2123.

China — Formosa; Henry n. 1100. Fokien et Amoy; Hance n. 10153.

Ins. Chusan; Didrichsen n. 3569.

Malaya — Java; Zollinger n. 3237.

Ins. Philippine; Chamisso n. 129, Loher.

Australia Trop. — Carpentaria Sinus; R. Brown n. 5939.

15. **F. ferruginea** Vahl.

Hook. f. Fl. Brit. Ind. v. 6, p. 638; C. B. Clarke in Journ. Linn. Soc. v. 34 [1898], p. 60.

Additional synonymy:

*F. ferruginea*, Decaisne in Nouv. Ann. Mus. v. 3 [1834], p. 362; Kunth Enum. v. 2, p. 236; Nees in Hook. et Arn. Beechey Voy. p. 312; Benth. Fl. Hongk. p. 391, Fl. Austral. v. 7, p. 312; Miq. in Ann. Mus. Lugd. Bat. v. 2 [1865—6], p. 144; Ridley in H. O. Forbes Eastern Archip. [1885], p. 521.

*F. tristachya*, R. Br. Prod. Fl. Austral. p. 266; Kunth Enum. v. 2, p. 242; Nees in Nova Acta Nat. Cur. v. 19, Suppl. 1 [1843], p. 76.

*F. brevifolia*, R. Br. Prod. Fl. Austral. p. 228.

*F. cylindrostachya*, Steud. Cyp. p. 119 partim.

*Isolepis ferruginea*, Link Hort. Berol. v. 2, p. 315.

*Campylostachys abbreviata*, Drège Zwei Pfl. Docum. p. 82; E. Meyer ms.

A very common species near the sea-coast; very much less common inland.

Throughout the island, in rice-fields and in swamps.

Additional Geography:

Mediterranea — Madeira; Lowe. Teneriffe; Delessert. Egypt; Bové, Schweinfurth n. 646, Acherson nn. 558, 2346.

Oriens — Arabia; Schweinfurth nn. 184, 199, Aucher-Eloy n. 5480. Palestine;

Bové n. 387, Postian n. 2288.

Susan; Haussknecht.

Cabul; Griffith Kew n. 6325.

Africa; in oris omnibus, usque ad Caput Bonae Spei -- Djur; Schweinfurth n. 2121. Soudan; Oudney n. 4. Gallabat; Schweinfurth nn. 2035, 2037. Usambara; Holst n. 2122.

Mascarenia; frequens.

China -- Hongkong; Hance nn. 1260, 7491, Harland n. 679. Pakhoi; Playfair n. 206. Formosa; Henry nn. 712, 733, 773, 1066.

Malaya -- Java; Junghuhn, Martens. Borneo; Barber nn. 251, 362; &c.

Ins. Philippine; Chamisso n. 127, Loher.

Australia -- Carpentaria Sinus; R. Brown n. 5941; &c.

America -- Ins. Bahama; Eggers n. 4357.

West Indies; vulgaris.

America Australis; a Panama usque ad Bahia.

#### 16. *F. miliacea* Vahl.

Hook. f. Fl. Brit. Ind. v. 6, p. 644; C. B. Clarke in Journ. Linn. Soc. v. 34 [1898], p. 65.

Additional synonymy:

*F. miliacea*, Kunth Enum., v. 2, p. 230; Steud. in Zoll. Verz. Ind. Archip. heft 2, p. 61; Hassk. Pl. Jav. Rar. p. 67; Benth. Fl. Hongk. p. 393, et Fl. Austral. v. 7, p. 316; Miq. in Ann. Mus. Lugd. Bat. v. 2 [1865-6], pp. 145, 211; Boiss. Fl. Orient. v. 5, p. 390; Vidal Pl. Vasc. Filip. p. 284; Ridley in Forbes Eastern Archip. [1885], p. 521, in Journ. Singapore Asiat. Soc. n. 23 [1891], p. 11.

*Scirpus miliaceus*, Lour. Fl. Cochinch. [ed. Willd.] p. 55.

*S. Niloticus*, Blanco Fl. Filip. p. 33.

*Trichelostylis miliacea*, Nees in Hook. et Arn. Beechey Voy. p. 226, et in Nova Acta Nat. Cur. v. 19, Suppl. 1 [1843], p. 84.

A rice-field weed.

Klong Munsé, in rice-fields.

Additional Geography:

Orient -- Susan; Haussknecht.

Africa Trop. -- Senegambia; Heudelot n. 212. Zanzibar; Boivin.

Mascarenia; vulgaris; Sieber nn. 25, 141; &c.

China; vulgaris -- Canton; Sampson n. 272, Hance n. 1393. Hongkong; Wilford n. 368; &c. Pakhoi; Playfair n. 122. Ins. Formosa; Henry nn. 249, 786, 786 B, 1113; &c. Ins. Chusan; Yvan.

Japonia; vulgaris; Oldham nn. 841, 912; &c.

Malaya -- Tonkin; Balansa nn. 206, 2755. Cambodia; Lebeuf. Anam; O. Kuntze. Cochinchina; Germain nn. 99, 109. Java; Zollinger nn. 8, 73, 193, 451; &c. Borneo; Motley nn. 92, 991; &c.

Ins. Philippine; Cuming n. 564, Chamisso n. 130; &c.

Australia Trop.; frequens -- Queensland; Amalia Dietrich nn. 651, 719; &c. Polynesia -- Timor; Gaudichaud, Leschenault. Amboina; Labillardière.

Bourou, Lahaie.

America Centralis; sparsa; Cuba, C. Wright n. 3772. Guatemala; Bernouilli n. 435.

Guiana Anglica; Jenman nn. 2169, 4413, 4456; &c.

#### 17. *F. cymosa* R. Brown.

Prod. Fl. Austral. [1810], p. 228; Decaisne in Nouv. Ann. Mus. v. 3 [1834],

p. 361; Nees in Hook. et Ann. Beechey Voy. p. 98; Miq. Fl. Ind. Bat. v. 3, p. 328; Benth. Fl. Austral. v. 7, p. 318; Hillebr. Fl. Hawaii p. 473; Drake Fl. Ins. Pacifici p. 332.

*F. Marianna*, Gaud. in Freycinet Voy. p. 413 partim.

*F. multifolia*, Boeck. in Linnaea v. 38 [1874], p. 397; Benth. Fl. Austral. v. 7, p. 319.

*Scirpus cymosus*, Lam. Ill. v. 1, p. 141.

Altogether a maritime, especially an insular species.

Koh Kahdat, sandy sea-shore.

Area:  $\epsilon$

Japonia — Ins. Liu Kiu; C. Wright n. 358.

Malaya — Java; hb. Buitenzorg. Christmas Ins.: Lister.

Australia Trop.; frequens; R. Brown n. 5959; &c.

Polynesia; frequens — Samoa; Powell n. 55; &c.

Sandwich Isles: Beechey, Hillebrand nn. 525, 526.

Var.  $\beta$  **subcapitata** C. B. Clarke ms. i. e.

*F. umbellato-capitata*, H. Mann in Proc. Amer. Acad. v. 7 [1867] p. 209: non Steud.

*F. cymosa* Var. *umbellato-capitata*, Hillebr. Fl. Hawai p. 473.

*F. pycnocephala*, Hillebr. Fl. Hawai p. 473; Drake Fl. Ins. Pacifici p. 333.

*F. Faulensis* Guenth. in Ann. Naturhist. Hofmus. Wien p. 3, p. 252.

Area:

Ins. Philippine: Cuming n. 1433.

Polynesia; frequens — New-Caledonia; Vieillard nn. 3326, 3327.

Sandwich Isles — H. Mann n. 321; &c.

## Fuirena Rottb.

### 18. *F. glomerata* Lam.

Hook. f. Fl. Brit. Ind. v. 6, p. 666; C. B. Clarke in Journ. Linn. Soc. v. 34 [1898], p. 86.

Additional synonymy:

*F. glomerata*, R. Br. Prod. Fl. Austral. p. 220; Decaisne in Nouv. Ann. Mus. v. 3 [1834], p. 360; Kunth Enum. v. 2, p. 184; Benth. Fl. Hongk. p. 396, et Fl. Austral. v. 7, p. 338; Ridley in Forbes Eastern Archip. [1885], p. 521, in Journ. Singapore Asiat. Soc. n. 23 [1891], p. 13.

*F. arenosa*, R. Br. Prod. Fl. Austral. p. 220.

*F. Rottboelli*, Nees in Hook. et Arn. Beechey Voy. p. 224; Steud. in Zoll. Verz. Ind. Archip. heft 2, p. 61.

*F. striata* Llanos Frag. Filip. p. 21.

*F. Hildebrandtii*, Boeck. in Flora v. 65 [1882], p. 15.

*Scirpus ciliaris*, Linn. Mant. p. 182 et herb. propr.

*Scirpus* n. 73, Rottb. Descr. et Ic. p. 55, t. 17, fig. 1.

— Pluk. Alm. t. 417, fig. 6.

A rice-field weed in the Old World.

Klong Munsé, in humid plains.

## Additional Geography:

Africa Trop.; late sparsa — Senegal; Heudelot n<sup>o</sup>556. Niger; Barter n. 2224. Socotra; Balfour n. 389. Loanda; Welwitsch n. 7107. Usambara; Holst nn. 2040, 2737.  
 Madagascar; Hildebrandt n. 3303.  
 China; frequens — Hongkong; Wilford n. 274, C. Wright n. 570. Macao; da Silva. Pakhoi; Playfair n. 121. Formosa; Henry n. 1084.  
 Japonia; in hb. Kew.  
 Malaya — Cochinchina; Lebœuf. Java; Horsfield n. 1024, Junghuhn. Ins. Philippine; Jagor n. 566, Gaudichaud n. 96. Macassar; Zollinger n. 3285.  
 Australia Galidior; frequens; R. Brown n. 5987; &c.

**Rynchospora Vahl.**19. **R. aurea** Vahl.

Hook. f. Fl. Brit. Ind. v. 6, p. 670; C. B. Clarke in Journ. Linn. Soc. v. 34 [1898], p. 89.

## Additional synonymy:

*R. aurea*, Beauv. Fl. d'Owar v. 2, p. 39, t. 81, fig. 2.  
*R. corymbosa*, Britton in Trans. New York Acad. v. 41 [1892], p. 84.  
*Rhync. aurea* R. Br. Prod. Fl. Austral. p. 220; Kunth Enum. v. 2, p. 293; Benth. Fl. Hongk. p. 39, et Fl. Austral. v. 7, p. 349; Miq. Fl. Ind. Batav. v. 3, p. 336, et Suppl. p. 262; Boeck in Linnaea v. 37 [1873], p. 626; Vidal Pl. Vasc. Filip. p. 285; Drake Fl. Ins. Pacifici p. 334.  
*R. articulata* Kunth Enum. v. 2, p. 393; Moritzi Verz. Zoll. Pfl. p. 98; Steud. in Zoll. Verz. Ind. Archip. heft 2, p. 61.  
*Cladium occidentale*, Schrad. Fl. Germ. v. 1, p. 76 in Obs.: non Nees.  
*Chaetospora aurea*, H. B. K. Nov. Gen. et Sp. v. 1, p. 231.

A common tropical weed, both in the Old and New World; not specially maritime, but widely scattered.

Klong Son, in a waterhole.

## Additional Geography:

Africa Trop.; sat vulgaris — Senegambia; Heudelot nn. 343, 687. Soudan; Schweinfurth nn. 1360, 3495. Angola; Welwitsch nn. 6844, 6845. Zanzibar; Hildebrandt n. 1232 &c. &c.  
 Natal; herb. Schinz.  
 Mascarenia; Bojer, Bory, &c.  
 China — Hongkong; Harland. Hainan; Henry n. 8551. Formosa; Henry n. 1843.  
 Malaya; sat frequens — Cochinchina; Germain nn. 111, 112. Tonkin; Balansa n. 2779. Sumatra; Beccari n. 851. Java; Zollinger n. 270, Kurz n. 1864; Borneo; Motley nn. 310, 1299; &c.  
 Ins. Philippine; Cuming n. 1763.  
 Australia; Sir J. Banks; &c.  
 Polynesia; vulgaris — New-Caledonia; Vieillard n. 1441. Tahiti; Forster n. 266.  
 America Centralis cum West Indies; frequens.  
 America Australis Tropica; vulgaris.  
 America Australis Temperata; usque ad Buenos Ayres.

**Remirea Aublet.****20. R. maritima Aublet.**

Hook. f. Fl. Brit. Ind. v. 6, p. 678; C. B. Clarke in Journ. Linn. Soc. v. 34 [1898], p. 93.

Additional synonymy:

*Remirea maritima* Kunth Enum., v. 2, p. 139; Benth. Fl. Austral. v. 7, p. 347; Ridley in Journ. Singapore Asiat. Soc. n. 23 [1891], p. 15.; Vidal Pl. Vasc. Filip. p. 285.

*Miegia maritima*, Willd. Sp. Pl. v. 1, p. 311.

*Mariscus pungens* Steud. Cyp. p. 60; Miq. Fl. Ind. Bat. v. 3, p. 288.

*Mar. maritimus*, Miq. Fl. Ind. Bat. Suppl. p. 600.

*Cyperus Kegelianus*, Steud. Cyp. p. 60.

I believe this to be altogether a maritime species.

Baron n. 2601 is ticketed „Central Madagascar“; if this means the centre of the country, I suspect it to be erroneous.

Throughout the Island, on sandy sea-shores.

Additional Geography:

Africa Trop — Sierra Leone; G. Don. Guinea; Thonning n. 377; &c. Nun Flumen; G. Mann n. 534. Congo (Ostia); Welwitsch n. 6990.

Madagascar Centralis; Baron n. 2601.

China; Millett. Canton; Yvan.

Malaya — Java; Zollinger n. 2703. Bangka; Kurz n. 2735. Borneo; Motley n. 58, Beccari n. 2298. Cochinchina; Leboeuf n. 836.

Ins. Philippine; Chamisso n. 168, Cuming n. 867.

Australia; in ora orientali; Sir J. Banks; &c. Ins. Northumberland; R. Brown n. 5992.

New-Guinea; Holtrung n. 506.

America Centralis — Tate n. 18, Fendler n. 339, Kegel n. 12682.

America Australis Tropica; sat frequens; in ora orientali.

**Hypolytrum L. C. Rich.****21. H. latifolium L. C. Rich.**

Hook. f. Fl. Brit. Ind. v. 6, p. 678; C. B. Clarke in Journ. Linn. Soc. v. 34 [1898], p. 93.

Additional synonymy:

*H. latifolium*, Kunth Enum., v. 2, p. 271; Benth. Fl. Hongk. p. 389, et Fl. Austral. v. 7, p. 339; Miq. Fl. Ind. Bat. v. 3, p. 333, et Illustr. Fl. Archip. Ind. p. 58; Hook. Bot. Mag. t. 6282; Ridley in Journ. Singapore Asiat. Soc. n. 23 [1891], p. 15; vix. Boeck.

*H. schoenoides*, Moritzi Verz. Zoll. Pfl. p. 97; Steud. in Zoll. Verz. Ind. Archip. heft 2, p. 61.

*H. diandrum*, Dietr. Sp. Pl. v. 2, p. 365.

*H. latifolium*, Dietr. Sv. Pl. v. 2, p. 365.

This is primarily a maritime plant. It is frequent on the sea coast; then for 250 miles inland it is not collected; then, when we reach the lower ranges of the outer mountains, it reappears.

In this case as in many others, there are half-a-dozen species admitted, which are so closely allied to *Hypol. latifolium* that they might be sunk in it (some have been so sunk by some authors); to do this would of course widen considerably the geographic range of the species.

Klong Munsé and Klong Majum, riverbanks in the jungle.

Additional Geography:

China — Canton; Hance n. 1368. Hongkong; Harland n. 1031. C. Wright n. 569; &c. Formosa; Oldham n. 562.

Malaya — Sumatra; Marsden, Beccari n. 945. Java; Zollinger nn. 313, 380, 686; &c. Sunda Strait; Macartney. Tonkin; Balansa nn. 2759, 2760. Cochinchina; Germain n. 4.

Australia Boreal.-Orient.; Fitzalan, Dallachy.

Polynesia — Amboina; Forster. Ins. Admiralty; Mosely. Ins. Viti; Graeffe n. 1232, Wilkes.

### **Scleria** Berg.

#### 22. **S. multifoliata** Boeck.

Hook. f. Fl. Brit. Ind. v. 6, p. 693; C. B. Clarke in Journ. Linn. Soc. v. 34 [1898], p. 102.

Additional synonymy:

*S. multifoliata*, Ridley in Journ. Singapore Asiat. Soc. n. 23 [1891], p. 18.

*S. tessellata*, Brongn. in Duperrey Voy. Coquille pars 2 [1829], p. 164.

*S. scrobiculata*, Zollinger ms. (partim).

*Carex Ambonica*, Rumph. Herb. Amb. v. 6, p. 20, t. 8, fig. 1.

This appears a maritime species — i. e. so far as known.

Klong Munsé, riverbanks in the jungle.

Additional Geography:

Malaya — Java; Zollinger n. 470 partim, King. Borneo Borealis; Burbidge. Manila; Gaudichaud n. 83. Timor Laut; Riedel.

#### 23. **S. levis** Retz.

Hook. f. Fl. Brit. Ind. v. 6, p. 694; C. B. Clarke in Journ. Linn. Soc. v. 34 [1898], p. 103.

Additional synonymy:

*S. laevis*, Moritzi Verz. Zoll. Pfl. p. 98; Steud. in Zoll. Verz. Ind. Archip. heft 2, p. 61; Benth. Fl. Hongk. p. 400; Hance in Ann. Sc. Nat. Ser. 4, v. 18 [1862], p. 232; Miq. Fl. Ind. Bat. v. 3, p. 341; Ridley in Journ. Singapore Asiat. Soc. n. 23 [1891], p. 18.

This species is largely maritime; but, like *Hypolytrum latifolium* (& others), is reappears at the base of the Mountains, 250 miles from the sea.

*Scleria levis* Retz belongs to the group of *Scleria* which has (Hook. f. Fl. Brit. Ind. v. 6, p. 692) „Leaves (that is those next below the bracts) imperfectly opposite or ternate“. In the Koh Chang plants the uppermost leaves below the bracts are not imperfectly ternate. This leaf-character I consider as of small importance — except for a first sorting of *Scleria*. As to these plants, I have the same form from Borneo (Haviland n. 1917).

Plains near Klong Munsé.

Additional Geography:

China — Hongkong; Hance n. 2985.

Malaya — Cochinchina; Germain. Java; Horsfield, Zollinger n. 469 partim, Ploem.

### Carex Linn.

#### 24. *C. Indica* Linn.

Hook. f. Fl. Brit. Ind. v. 6, p. 714; G. B. Clarke in Journ. Linn. Soc. v. 34 [1898], p. 114.

Additional synonymy:

I can give none. Because I have not worked up the Sect. „Indicae“ of *Carex* except as to the British India material.

I may state, however, that very few of the plants I see about in Herbaria marked *C. Indica* are the *C. Indica* Linn. (mihi); and that consequently the references to *C. Indica* Linn. in books are mostly wrong (unless the name be widened to include many of the allied species).

A species, primarily maritime, reappears in the lower hills, 250 miles from the sea.

Klong Munsé, Klong Majum (200 ft.), in the jungle.

Additional Geography:

Malaya — Cochinchina; Cay Ninh, Pierre n. 1881. Java; Zollinger n. 313. Borneo; Beccari nn. 2741, 3873 (= Var. Milnei). Borneo Borealis; Creagh (= Var. Milnei).

Polynesia — Timor; Macan, F. Newton (= Var. Milnei). Fiji, Ovolau, Milne nn. 274, 23, 16, 216, 173 (= Var. Milnei).

New-Caledonia; Gutope, Lenormand n. 3336 (= Var. Milnei). Kamala, Vieillard n. 3339 (= Var. Milnei).



## Gramineae

by E. Hackel — St. Pölten.

### Coix L.

1. **C. Lacryma Iobi** L. Spec. ed. I. 972.

Plains near Lem Dan.

Area: Tropisches Asien, in Afrika u. Amerika kultiviert.

### Dimeria Brown.

2. **D. ornithopoda** Trin. var. **tenera** Hack. in Mon. Androp. 81.

*D. tenera* Trin. Mém. Acad. St. Pétersb. Sér. 6, 2, 335.

Rice-field near Lem Dan.

Area: Vorder- und Hinter-Indien, Malay. Archipel, Japan, trop. Australien.

### Imperata Cyr.

3. **I. arundinacea** Cyr. var. **Koenigii** Benth. Fl. Hongk. 419, cfr. Hack. Mon. Androp. 94.

*I. Koenigii* Beauv. Agrost. 165.

Common in plains throughout the island, Koh Kahdat on the sea-shores.

Area: Indien, S. Afrika, Malay. Inseln, China, Japan, Australien; andere Varietäten in Europa, Amerika etc.

### Pogonatherum Beauv.

4. **P. saccharoideum**  $\beta$ . **monandrum** Hack. Monog. Androp. 193.

*P. crinitum* Trin. Fund. 166; *Pollinia monandra* Spreng. Syst. 1, 288.  
*Andropogon crinitus* Thunb. Fl. Jap. 40, t. 7. *A. monandrus* Roxb. Fl. Ind. I, 260.

Common on rocks in the jungle near Klong Munsé ascending to 700 feet.

Area: Indien, Malayische Halbinsel, Malay. Archipel, China, Japan, Austral.

### Ischaemum L.

5. **I. muticum** L. Spec. pl. ed. I, p. 1049.

Klong Prao, Koh Kahdat on sandy sea-shores.

Area: Indien, Malay. Halbinsel, China, Australien.

### Andropogon L.

6. **A. Sorghum** var. **vulgaris** Hack. Monogr. Androp. 515.

*Sorghum vulgare* Pers. Syn. 1, 101.

Klong Sarlakpet; in open places near the jungle; specimens 6—8 feet high.

Area: Cultiviert in allen wärmeren Ländern.

### Thysanolaena Nees.

7. **T. acarifera** Arn. & Nees in Nov. Act. Nat. Cur. XIX, Suppl. 1, 187.

*Panicum acariferum* Trin. Spec. Gram. t. 87, *Melica latifolia* Roxb. Fl. Ind. I, 328.

Lem Dan, in the edge of the jungle; specimens about 10 feet high.

Area: Vorder- und Hinter-Indien, Malay. Halbinsel, Malay. Archipel, östl. bis New Guinea.

### Paspalum L.

8. **P. scrobiculatum** L. Mant. 1, 29.

In sandy places near the village at Lem Dan.

Area: In allen warmen Ländern.

9. **P. longifolium** Roxb. Fl. Ind. I, 280.

*P. Thunbergii* Kunth ex Steud. Syn. I, 28.

Plains at Lem Dan.

Area: Indien, Malayischer Archipel, Japan.

10. **P. distichum** L. Am. Acad. V, 391.

Abundant along the east coast of Koh Chang near the sea, in sandy shores or in mangrove swamps; Klong Prao, Lem Ngob. It has long rhizomes, creeping on the ground.

Area: In allen warmen Ländern.

### Isachne Brown.

11. **I. miliacea** Roth. Nov. Pl. 58.

*I. Meneritana* Poir. Encycl. Suppl. III, 185. *I. polygonoides* Doell. in Mart. Fl. Bras. II, 2, 273.

Plains at Lem Dan.

Area: Vorder- und Hinter-Indien, China, Malayische u. australische Inseln, Süd-Amerika.

var. **dispar**.

*I. dispar* Trin. Spec. Gram. t. 6.

In moist places near Lem Dan.

Area: Vorder-Indien.

12. ***I. Schmidtii*** Hack. n. sp.

Perennis. Culmi humiles, repentes, ad nōdos radicanes, denique ascendentes, parte erecta vix ultra 6 cm. alti, filiformes, subcompressi glabri, ad apicem usque foliosi, basi ramosi. Foliorum vaginæ appressæ, internodia plerumque superantes, superne longe ciliatæ; ligula obsoleta, ciliata; laminae lanceolatae v. ovato-lanceolatae, acutæ, 2—3 cm. longæ, ad 6 mm. latae, rigidulae, patentes, margine subincrassato albido scabro saepius plus minusve undulatae, subtus scabrae, supra laeves v. setulis paucis adpersæ. Panicula parva (1—1,5 cm. lg.) pauper, lineari-oblonga; contracta, fere subspiciformis, densiuscula, ramis paucis stricte erectis rhachi subappressis laevibus basi breviter nudis, apice 1—3-spiculatis, spicularum pedicellis inaequalibus, subterminalibus brevissimis, omnibus crassiusculis, apice dilatatis. Spiculae ovatae, 3—3,5 mm. longæ, viridulae v. apice subcoloratae. Glumæ steriles subaequales (inferior paullo longior), ovatae obtusae, nervis 7 tenuibus haud prominulis percursae, toto dorso setulis rigidis hispidae. Glumæ fertiles aequales, quam steriles fere duplo breviores, (gl. I. 3,5 mm, III. 1,8 mm.), late ovales, obtusae, pallide flavo-virentes, dorso glabrae laevesque vel superne punctis sparsis setulisve paucis exasperatae, marginibus involutis superne molliter ciliolatae. Flores ambo hermaphroditii, antheris 1 mm. longis.

Species singularis, propter glumas steriles magnas (fertilibus fere duplo longiores), habitu humili et repente nulli nisi *I. Lisboaë* Hook. f. Fl. of Brit. Ind. VII, 22 affinis, quae autem differt (ex descriptione) paniculae ramis horizontaliter patentibus hispidis setulosis, glumis sterilibus hemisphaericis apice obtuse cuspidatis 5-nerviis, foliis ciliatis.

Klong Munsé, on riverbanks in the jungle.

***Panicum* L.**13. ***P. sanguinale*** L. var. ***timorense***.

*P. timorense* Kunth Syn. I, 83.

Klong Prao; on sandy sea-shores.

Area: Vidi ex insulis Timor (hb. Paris.), Amboina (Doleschall in h. Vindob.), Luzon (Chamisso in hb. berol.), Banca (Teysm.), Java (hb. Nees), Ceylon (Thwait. 861), Bourbon (Boivin 939), Isle au Tonnelier (Bory d. Vincent.).

14. ***P. heteranthum*** Nees et Mey. in Nov. Act. Nat. Cur. XIX, suppl. 1, 174.

*Paspalum heteranthum* Hook. f. Fl. Brit. Ind. VII, 16, excl. syn.

Rayong, in sandy sea-shores.

Area: Halbinsel Malacca, China.

15. ***P. Colonum*** L. Syst. ed. X, 870.

Koh Kong, in dry sandy places.

Area: In allen wärmeren Ländern.

16. **P. indicum** L. Mant. 2, 184.

Lem Dan, in moist places.

Area: Tropisches Asien und Australien.

17. **P. interruptum** Willd. Sp. pl. 1, 341.

In pools and ditches at Lem Dan.

Area: Indien, Malayische Halbinsel, trop. Afrika.

18. **P. Ridleyi** Hack. in Trans. Linn. Soc. Ser. 2, Bot. III, 401 (nomen).*P. latifolium* Hook. f. Fl. Brit. Ind. VII, 39 non L. (ex parte).

Differt a *P. latifolio* L. (*P. oryzoide* Sw.) culmi nodis dense barbatis (in *latifolio* glabris) laminis lanceolato-linearibus (nec late lanceolatis) basi rotundatis haud amplexicaulibus manifestius albo-marginatis, spiculis acutiusculis, gluma 1<sup>ma</sup> spiculae  $\frac{2}{3}$  vel  $\frac{3}{4}$  (in *latifolio* medium) aequantibus, glumis III et IV sensim acutatis nec abrupte acuminatis.

Diese Art wurde von mir auf Grund der von Ridley bei Pulau Besar (Malacca) gesammelten Exemplare unterschieden, mit denen das auf Koli Chang gefundene ganz identisch ist. Später sendete mir Ridley auch Exemplare von Pekan, welche ich ihm als eine „forma minor“ des *P. Ridleyi* bestimmte; ich sehe jedoch jetzt, dass sie besser zu *P. latifolium* u. zw. zu der in Indien verbreiteten Form dieser Art, die vielleicht als Varietät abzutrennen sein wird, gehören. Vielleicht lagen dem Verfasser der Flora of Brit. India eben solche Exemplare aus Malacca vor, wesshalb er die Art mit *P. latifolium* L. identifizierte. Letzterer Name, der vielfach theils für *P. divaricatum* L., theils für *P. Walteri* Poir. in Gebrauch stand, ist wohl mit Recht von Hooker für *P. oryzoide* Sw. (*P. zizanioides* H. B. K.) vorgezogen worden, denn Linné betont schon in der ersten Ausgabe der Sp. plant. die „flores majusculi“, welche dem *P. Walteri* Poir. (*P. latifolium* Asa Gray etc.) nicht zukommen. Auf *P. divaricatum* passt seine Diagnose nicht im mindesten, und die Anwesenheit eines Exemplares desselben im Herb. Linné unter *P. latifolium* berechtigt nicht zur Übertragung des Namens, denn auch *P. oryzoide* Sw. befindet sich als *P. latifolium* in Linné's Herbar. und nur auf dieses passt seine Beschreibung vollständig.

Jungle near Klong Munsé.

19. **P. ovalifolium** Poir. Encycl. Suppl. IV, 279.

Ausser typischen Exemplaren wurde auch eine Form mit steiferen, beim Trocknen längs des Mittelnerves etwas zusammengefalteten Blättern gesammelt.

Abundant in the jungle near Klong Munsé.

Area: Vorder-Indien, Malacca, Malayischer Archipel, China, trop. Afrika.

20. **P. sarmentosum** Roxb. Fl. Ind. I, 308 ex Hook. Fl. Brit. Ind. VII, 54.*P. concinnum* Nees, *P. incomptum* Trin. Spec. Gram. Ic. t. 232.

On riverbank near Lem Dan.

Area: Assam, Khasia Berge, Burma, Malayische Halbinsel, Mal. Inseln, Tongkin, China.

21. **P. trigonum** Retz. Obs. III, 9.

Klong Majum, alt. 600 feet; in a dry riverbed.

Area: Vorder-Indien, Malacca, Java.

22. **P. pilipes** Nees & Arn. in Miqu. Pl. Jungh. III, 376.

Klong Son, jungle.

Area: Vorder- und Hinter-Indien, Malayischer Archipel, Australien, Madagascar.

23. **P. Schmidtii** Hack. n. sp. e sect. VIII. Gibbosarum Hook. f. Fl. of Brit. Ind. VII, 56.

Culmus repens, deinde adscendens, gracilis, glaberrimus. Foliorum vaginæ arctæ, internodia plerumque superantes, superne pilis basi tuberculatis plus minusve hirsutæ, margine ciliatæ; ligula membranacea, brevissima; laminae lanceolatae, acuminatae, basi rotundatae, utrinque (sed supra parcius) pilis appressis basi tuberculatis hirtulæ. Panicula oblonga, laxa, rhachi ramisque glaberrimis, his patulis capillaribus semel v. bis divisis, spicularum pedicellis (etiam subterminalibus) quam spicula 2—3-plo longioribus. Spiculae parvae (1,5 mm. longae) oblique trigonae a latere compressae, gibbosae, obtusae, livide brunneae: gluma I spiculae medium aequans, ovata, obtusa, 3-nervis, laevis; II spiculae  $\frac{2}{3}$  aequans, obovata, obtusa, 3-nervis, verrucis paucis glabris conspersa; III spiculam aequans, ovalis, obtusa, 5-nervis, verrucis crebris elevatis breviter piliferis obsita, vacua; IV<sup>a</sup> spiculam aequans, trigona, valde gibbosa, laevis, albida.

Affine *P. patenti* L. (*P. radicans* Retz., *P. obliquo* Roth), quod differt laminis basi subangustatis, spiculis glabris. Gluma III verrucosa nostram speciem etiam a *P. pilipede* Nees distinguit, ceterum spiculis breviter pedicellatis diverso.

Plains near Klong Munsé.

**Ichnanthus** Beauv.

24. **I. pallens** Munro in Benth. Fl. Hongk. 414.

Panicum pallens Sw. Prodr. 23.

Klong Majum, alt. 600 feet, in riverbed.

Area: In allen tropischen Ländern.

**Oplismenus** Beauv.

25. **O. compositus** Beauv. Agrost. 54.

Panicum compositum L. Spec. Pl. 57.

Jungle near Klong Munsé.

Area: In den meisten Tropenländern (excl. Austral.).

**Spinifex** L.

26. **Sp. squarrosus** L. Mant. II, 300.

On sandy sea-shores. Klong Prao; Rayong.

Area: Vorder- und Hinter-Indien, Java, China.

**Leptaspis** Brown.

27. **L. urceolata** Brown in Benn. Pl. Jav. rar. 23, t. 6.

*Pharus urceolatus* Roxb. Fl. Ind. III, 611.

Klong Son, alt. 500 feet, in dense jungle.

Area: Penang, Johore, Ceylon, Sumatra, Java.

**Oryza** L.

28. **O. sativa** L. Spec. Pl. 333.

Cultivated in all inhabited places within the area explored.

Area: In Vorder-Indien und Pegu einheimisch, in allen Welttheilen cultiviert.

**Coelachne** Brown.

29. **C. pulchella** Brown Prodr. 187.

Klong Son, in river-bed.

Area: Tropisches Asien, Australien und Madagascar.

Var. **simpliciuscula** Hook. f. Fl. of Brit. Ind. VII, 271.

*C. simpliciuscula* Munro ex Benth. in Journ. Linn. Soc. XIX, 93.

Klong Prao, in river-bed.

Area: Nilgherries, Ceylon, Khasia Berge, Java, Tonkin, China, Madagascar.

**Cynodon** Pers.

30. **C. dactylon** Pers. Syn. I, 85.

In dry places near Lem Dan.

Area: In allen wärmeren Ländern.

**Eleusine** Gaertn.

31. **E. indica** Gaertn.

In sandy places near Lem Dan.

Area: Tropenländer der alten Welt. sonst auch eingeschleppt.

**Arundo** L.

32. **A. madagascariensis** Kunth, Revis. Gram. I, 273, t. 48.

*Neyraudia madagasc.* Hook. f. Fl. Brit. Ind. VII, 305.

Abundant in plains all over the island. Specimens up to 12 feet high.

Area: Tropisches Afrika, Madagascar, tropischer Himalaya, Khasia Berge, Assam, Penang, Burma, Malayische Inseln.

**Eragrostis** Beauv.

33. **E. unioloides** Nees ex Steud. Synops. I, 264.

*Poa unioloides* Retz., Obs. V, 19; *Eragrostis amabilis* Wight & Arn.

Abundant in moist low places near Klong Munsé.

Area: Im tropischen Asien verbreitet.

**Lophatherum** Brongn.

34. **L. gracile** Brongn. in Duperr. Voy. 50, t. 8.

Riverbank in the jungle near Klong Munsé.

Area: Vom tropischen Himalaya, den Khasia Bergen, Burma, Ceylon, die Malayische Halbinsel, China, Japan bis Neu Guinea.

**Centotheca** Desv.

35. **C. lappacea** Desv. in Nouv. Bull. Soc. Philom. II, 189.

*Cenchrus lappaceus* L. Spec. pl. ed. 2, 1448.

Common in the jungle throughout the island, especially in wet places.

Area: Vorder- und Hinter-Indien, Malayischer Archipel, China, Polynesien, tropisches Afrika.

**Lepturus** Brown.

36. **L. repens** Brown, Prodr. 207.

On sandy or rocky sea-shores; Klong Prao, Koh Lom.

Area: Ceylon, Malayische und pacifische Inseln, Australien.

Appendix: **Bambuseae.**

Es sind 2 Arten von Bambuseen in der Sammlung vorhanden; davon gehört die eine zur Gattung *Bambusa*, doch kann die Species nicht sicher bestimmt werden, da bloss Blüten und keine Blätter vorhanden sind; die andere ist auch inbezug auf die Gattung zweifelhaft geblieben, da ausser Blättern nur sehr unentwickelte Ährchen, an denen noch gar keine Blüten-theile entwickelt sind, vorlagen.

Several species of Bamboo occur in Koh Chang often forming dense thickets.

## Pteridophyta<sup>1)</sup>

by H. Christ — Basel.

Ferns from Siam are rather scarce in the collections, and this Empire, between well known Burma and pretty well explored Tonkin, forms a blank, which the Danish Expedition has diminished in a very satisfactory manner.

On account of the small size of Koh Chang and its short distance from the mainland, I think we are right in supposing that the present fern-collection will be only a scanty extract of the flora of the Continent. Notwithstanding, it characterizes very well this region as a transitory one between the Malayan Peninsula and the most Eastern shores of Asia, in other terms: between the Monsoon flora and the Chinese flora.

On the whole the ferns of Koh Chang belong decidedly to the former, but some species will clearly show the influence of the latter: *Alsophila podophylla*, known from Hongkong, S. W. China and Tonkin (Père Bon), *Brainea insignis*, from S. W. China (Henry), Tonkin (Billet) to Assam are of this number.

As to rarities or endemic forms in an island of so small a size we might not expect many surprises. Nevertheless, the fern-flora of Koh Chang is by no means a poor one. Among the usual Malayan species we meet with *Adiantum Bonii* Chr., a native plant of Tonkin (Père Bon) and closely allied to *A. Levingei* Baker, Summary 27, of Sikkim, to *A. Celebicum* Chr., Ann. Buitenzorg XV, 1, of Celebes and to *A. Hosei* Bak. Journ. bot., 1888, 324, of Borneo; a subspecies of *Gleichenia linearis* Burm.: *G. subpectinata* n. sp., a new *Trichomanes Siamense*, of the group of *T. rigidum* Sw., the curious var. *undulata* (Wall.) of *Gymnopteris costata* (Wall.) rather rare in India, and var. *Schmidtii* of the common *Acrostichum aureum* L. with very cuspidated leaves.

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<sup>1)</sup> *Selaginella* determined by Professor G. Hieronymus, Berlin.



## Hymenophyllaceae.

### Trichomanes.

1. **T. Javanicum** Blume Enum. Pl. Jav. Fil. 224.

Plentiful on riverbanks in the jungle near Klong Munsé.

Area: A rather common terrestrial species throughout Malaya from Assam to Polynesia; also in Madagascar.

2. **T. rigidum** Sw.

Our plant is very typical, with very thin segments.

Riverbanks in the jungle by Klong Munsé and Klong Majum (700 ft.).

Area: A common terrestrial fern of tropical forests in Asia, Africa and America, also in Japan, N. Zealand and the Cape Colony.

3. **T. Siamense** Christ n. sp.

Differt a *T. rigido* fronde non deltoidea, sed lanceolato-ovata, pinnis pinnulisque abbreviatis, pinnulis remotis, irregulariter et breviter lobatis 2½ mill. latis, lobis vix 1 mill. longis obscure denticulatis, dentibus brevissimis subaristatis. Lamina crispata, textura coriacea, colore nigro. Urceolis paucis, liberis nec immersis, minimis, anguste cylindricis, margine angustissimo patente, receptaculo exserto.

Stipitibus fasciculatis rigidis flexuosis, 6 cent. longis, lamina vix 1 dec. longa, 4 cent. lata.

A subspecies of *T. rigidum*, but habit very different, like *Hymenophyllum australe* Spreng. (*H. Javanicum* Bl.).

Riverbanks in the jungle near Klong Munsé (200 ft.).

4. **T. pyxidiferum** L.

Besides typical specimens a very small form is met with.

Klong Sarlakpet, on damp rocks in the jungle near a waterfall (400 feet), Klong Majum, epiphytic (500 ft.).

Area: A common epiphytic fern among mosses in all tropical countries.

5. **T. Filicula** Bory. Van Den Bosch Tab. 26, 27, 28.

Jungle near Klong Son epiphytic on low trees, Klong Sarlakpet on rocks.

Area: Widely spread throughout the tropics of both hemispheres and further in S. Africa and Japan. Epiphytic among mosses.

6. **T. nanum** Van Den Bosch 2 Suppl. 122 sub *Crepidomanes*.

*T. Kurzii* Beddome Handb. 40, Fig. 2.

Jungle. Klong Munsé, on stones in a riverbed.

Area: This very minute species is indicated from S. W. India and the Andamans, Assam and Tonkin (Père Bon), but surely passed over in many other regions.

7. **T. muscoides** Sw.

Very typical, with flabellate cuneiform fronds and 3 to 5 sori.

Nipple (500 ft.) and Klong Son, epiphytic on low trees.

Area: Widely spread in all tropical regions. A small epiphyte on branches.

I am rather puzzled by the wanting of all *Hymenophylla* in the collection.

## Polypodiaceae.

### **Chrysodium** Fée.

8. **C. aureum** (L.) Fée.

This species is represented from Koh Chang by a characteristic variety:

Var. **Schmidtii** Christ n. var.

Well distinguished by the barren pinnae which are cuspidated i. e. tapering into a long linear very acute apex (long: 3 cent., large: hardly 2 mill.) of the shape called „Träufelspitze“ by Stahl.

I never saw this apparatus (a protection against overflowing rainfall) in this species so developed as here. The fertile pinnae have only the short mucro very common in this plant.

Abundant throughout the island, most commonly in brackish water in the interior of mangrove-swamps.

Area: The species is nearly universal in brackish waters and estuaries of the tropics and farther to Florida.

### **Vittaria** Sw.

9. **V. elongata** Sw.

On trees and rocks near the Sea, Lem Dan and more southward off Koh Sarlak.

Area: Epiphytic on trees from S. W. and N. W. India to S. China, not yet found in America.

### **Anthrophyum** Kaulfs.

10. **A. reticulatum** Klfs.

Klong Sarlakpet, on rocks in the jungle near a waterfall.

Area: Epiphytic on trees throughout the monsoon-region from N. India and Ceylon to Polynesia and N. Australia.

### **Taenitis** Smith.

11. **T. blechnoides** Sw.

Terrestrial in the jungle near Klong Munsé.

Area: A Monsoon-plant from Ceylon and N. India to Polynesia. Earth-fern.

### **Drymoglossum** Presl.

12. **D. piloselloides** Presl. Tert. Pterid. 227, Tab. 10.

Abundant throughout the island, on trees, especially near the Sea.

Area: An epiphytic creeper on trees, from N. and S. W. India to the Sunda-Islands (Java, l. Raciborski).

### **Polypodium** L.

13. **P. nigrescens** Blume Enum. fil. Jav. 127.

Klong Sarlakpet (500 ft.), on rocks in the jungle.

Area: A Monsoon-species from N. India and Ceylon to Eastern Polynesia.

14. **P. sinuosum** Wall. Catal. 2231.

Mouth of Klong Majum, Koh Saket, on low trees.

Area: One of the most interesting species, whose ample rhizome is inhabited by ants like *Myrmecodium*, creeping on trees, from Perak and the Malacca-States to Java and Western Polynesia, not common. It is not really allied to *P. longifolium* Mett. nor to the other simple *Polypodia* of the Lineare-group, but to the pinnatifid species with „myrmecophile“ rhizomes and often with large peltate scales: *P. Sarcopus* De Vriese and Teysm. Hook. Synops. Ed. II, 514. *P. lomarioides* Kunze, *Lecanopteris carnosus* Blume, *L. pumila* Blume fil. Jav. Tab. 94 B. *P. sinuosum* also, occasionally, has lobed and even pinnatifid leaves.

15. **P. punctatum** (L. Spec. Plant. 1524 sub *Acrosticho*).

*P. ireoides* Lamarck Hook. Synops. Ed. II, 360.

Klong Munsé, Klong Sarlakpet, Koh Kong; on rocks in the jungle.

Area: Tropical forests of E. and W. Africa and India to N. Australia and Polynesia, frequent, on trees.

### **Niphobolus** Kaulfs.

16. **N. acrostichoides** (Sw. Syn. fil. 29, 225 sub *Polypodio*).

On trees in the jungle near Klong Munsé, Koh Saket.

Area: Malayan shores from Ceylon and Malacca to N. Australia and the Philippines. Epiphytic.

17. **N. adnascens** (Sw. cit. 25, 228 sub *Polypodio*).

Abundant throughout the island, usually on low trees, more rarely on rocks.

Area: Very common throughout the Malayan region from N. India and Ceylon to W. Polynesia; also in Réunion and W. Africa. Epiphytic.

### **Platyserium** Desv.

18. **P. biforme** Bl.

Throughout the island in the jungle on tall trees.<sup>1)</sup>

Area: Malay Peninsula through the larger Sunda-Islds. to the Philippines.

### **Drynaria** Bory.

19. **D. Linnaei** Bory Ann. Sc. Nat. 1, 5, 464, Tab. 12.

Abundant throughout the island, epiphytic.

Area: Epiphytic on large trees. Malayan region from Ceylon to N. Australia and E. Polynesia. Scattered and rather difficult to distinguish from the more common *D. quercifolia* (L.).

### **Adiantum** L.

20. **A. Bonii** Christ in Journ. de Botanique 16. Apr. 1894.

Nipple, on rocks in the jungle, ascending to 2000 ft.

Area: A species of rather weak characters, allied to some other species of E. Asia; gathered in Tonkin by Père Bon.

### **Onychium** Kaulfs.

21. **O. auratum** Klfs.

Terrestrial in open jungle near Lem Dan.

Area: An earth-fern of open grounds from N. India, S. China and the Malayan region to the Philippines.

### **Pteris** L.

22. **P. quadriaurita** Retz.

Our plant is the *lusus bicolor*, with a white area along the rachises. Klong Sarlakpet, dry riverbed in the jungle.

Area: Tropical regions of the World, common, earth-fern of open grounds.

var. **biaurita** (L. as a species).

Plains at Lem Dan, in dry, clayey soil.

Area. With the precedent.

var. **Grevilleana** (Wall. Catal. 2680 as a species).

Differing from the type by a short deltoid and 5-partite barren frond and an elongated almost normal fertile one.

Terrestrial in open ground near Lem Dan.

Area: Scattered through the Monsoon-region.

23. **P. longifolia** L.

Lem Dan, terrestrial in the edge of the jungle.

Area: Very frequent in all tropical, subtropical and warmer regions of the world to the S. shores of the Mediterranean. Earth-fern.

<sup>1)</sup> Specimens named by Johs. Schmidt.

24. **P. asperula** J. Smith Enum. fil. Philipp. n. 115 in J. W. Hook. Journ. bot. 1841.

Klong Son, terrestrial in damp jungle.

Area: Scattered and rather rare from Assam to the Philippines. Earth-fern.

25. **P. tripartita** Sw.

*P. marginata* Bory.

Koh Kahdat, terrestrial in the jungle.

Area: Frequent from S. India and S. China to Polynesia and N. Australia. Also in E. and W. trop. Africa. Earth-fern in forests.

### **Blechnum** L.

26. **B. orientale** L.

Klong Munsé, along riverbanks in the edge of the jungle.

Area: Very common from India and S. China throughout the Malayan region to N. Australia and Polynesia. A large earth-fern of open grounds.

### **Brainea** J. Sm.

27. **B. insignis** Hook. Synops. Ed. II, 390.

Nipple, about 2000 ft., in open jungle. A small (1—2<sup>m</sup>), handsome fern-tree.

Area: A small fern-tree from Assam (Chittagong) to Tonkin (Bon, Billet), S. China: Hongkong, Yunnan (Henry). Our Siamlocality is a good connecting link between the older stations of this curious fern, whose relation to *Blechnum* is well determined.

### **Stenochlaena** J. Smith.

28. **S. palustris** (L. sub *Polyypodio*).

Lem Dan, Koh Lom, climbing on trees in open jungle and also in the sea-shore on rocks or sandy ground.

Area: A frequent gigantic creeper on trees in the forests from N. and S. India, S. China throughout the Malayan region to N. Australia and Polynesia.

### **Lomariopsis** Fée.

28. **L. sorbifolia** (L. Spec. plant. 1526 sub *Acrosticho*).

Climbing on trees in the jungle, Klong Munsé, Koh Chang Noi.

Area: A very frequent large creeper of nearly all tropical countries.

### **Asplenium** L.

30. **A. laserpitifolium** Lamarek Encycl. II, 310.

Koh Kahdat, epiphytic in open jungle.

Area: A earth-fern of the whole Malayan region from Assam to N. Australia and Polynesia.

31. **A. pellucidum** Lamarck Encyclop. II, 306. *A. hirtum* Kaulf. Enum. fil. 169.

Lem Dan, on rocks near the Sea.

Area: A Malayan plant from Malacca to S. China, the Philippines and W. Polynesia, and also in Madagascar and its Satellites.

32. **A. vulcanicum** Blume Enum. fil. Jav. 176.

A specimen with very short sori, otherwise typical.

Terrestrial; jungle near Klong Munsé.

Area: Sunda-Islands, earth-fern and epiphytic.

33. **A. Grevillei** Wall., Hook. Sp. III, 80.

Jungle near Klong Munsé on tall trees. *Asplenium Nidus*-like epiphytic ferns are very common throughout Koh Chang and adjacent islands.

Area: Epiphytic on trees. Scattered within the area of *A. Nidus* L. and perhaps a mere variety of it with narrow and decurrent leaves.

### Diplazium Sw.

34. **D. Bantamense** Blume Enum. 191.

Jungle near Klong Munsé, terrestrial.

Area: Malayan region from N. India and S. China to W. Polynesia.

35. **D. silvaticum** Prsl. Reliq. Haenk. I, 12.

Klong Munsé, terrestrial.

Area: Common in India and the whole Malayan region; also in trop. America and trop. Africa.

### Aspidium Sw.

36. **A. (Sagenia) variolosum** Wall. Cat. 378. Beddome Handbook Tab. 111.

North-end of Koh Chang, on rocks near the Sea; Klong Majum (alt. 700 ft.) on rocks in the jungle.

Area: Scattered through the Malayan region from Assam eastward.

37. **A. (Lastrea) sagenioides** Metten. Asp. 113.

Klong Munsé and Lem Dan, on rocks.

Area: From Perak and Malacca to the Sunda-Islands.

38. **A. (Lastrea) setigerum** Blume Enum. 138 sub *Cheilanthe*. *A. tenericaule* Hook. Sp. IV, Tab. 169. *A. uliginosum* Kunze Mett.

Jungle near Lem Dan, terrestrial.

Area: Rather frequent throughout the Malayan region to W. Polynesia, China and Japan.

39. **A. (Nephrodium) pennigerum** Beddome Suppl. 74 non Blume nec Hook. v. *malayense* Bedd. cit.

One of the present specimens is a form with very short pinnae.

Klong Munsé and Klong Sarlakpet, on rocks in the jungle.

Area: Malayan shores (no exact information about the distribution).

40. **A. (Nephrodium) parasiticum** (L. sub *Polypodio*). *A. molle* Sw. Syn. fil. 49.

Jungle near Klong Munsé, terrestrial.

Area: Very common throughout all tropical regions to Algeria and the Canary Islands. Earth-fern of moist ground.

41. **A. (Nephrodium) extensum** Blume Enum. Jav. fil. 156.

Jungle near Lem Dan, terrestrial.

Area: Malayan region from N. India and Ceylon to the Philippines. A large earth-fern.

#### **Meniscium** Schreb.

42. **M. triphyllum** Sw. Syn. fil. 19. 206.

Klong Son, on riverbanks in the jungle.

Area: Malaya from N. and S. India to China and the Philippines.

#### **Gymnopteris** Bernh.

43. **G. costata** (Wall. Cat. 26 sub *Acrosticho*) Beddome Handb. 438. var. **undulata** (Wall. Cat. 26 sub *Notholaena*).

Klong Sarlakpet, riverbed in the jungle.

Area: The type grows in N. India, Nepal, Chittogong to Burma, the variety is only quoted from Burma. Earth-fern.

#### **Polybotrya** H. B. Kth.

44. **P. (Egenolfia) appendiculata** Willd. Spec. Plant. 114.

Jungle near Klong Munsé, terrestrial.

Area: Malayan region from India to S. China and the Philippines. Earth-fern.

var. **Helferiana** Kunze. Hook. synops. Ed. II, 415.

Small, the fertile frond with beadlike very short pinnae; the setaceous bristle between each crenature of the barren pinnae almost wanting.

North-end of Koh Kong.

#### **Nephrolepis** Schott.

45. **N. exaltata** (L. Spec. Plant. 1548 sub *Polypodio*).

Koh Kahdat, in damp jungle, terrestrial.

Area: Tropics of both hemispheres.

46. **N. acutifolia** (Desv. Mem. Soc. Linn. 2, 312 sub. *Lindsaya*). *Lindsaya lanuginosa* Wall.

North-end of Koh Chang in the jungle, terrestrial.

Area: Epiphytic upon trees of the Malayan region from the Peninsula to N. Australia, also in trop. Africa.

### **Lindsaya** Dryand.

47. **L. ensifolia** Sw.

Jungle near Klong Munsé (700 ft.), and north-end of Koh Chang, on rocks.

Area: The whole Monsoon-region from India and S. China to N. Australia and W. Polynesia, and in trop. W. and E. Africa including Madagascar.

48. **L. orbiculata** (Lamarck sub *Adiantum*) Hook. Spec. fil. 1, 211. *L. flabellulata* Dry. Hook. synops. Ed. II, 167.

Some of the present specimens are seedlings with very inciso-crenate pinnae.

Klong Munsé in the jungle, growing in chinks in the rocks.

Area: From N. India, S. China and Ceylon through Malaya to N. Australia.

49. **L. heterophylla** Dryand. Beddome fil. South Ind. Tab. 25.

Nipple, 2000 ft.

Area: Malaya from Ceylon, S. India and S. China to the Sunda-Islands.

50. **L. cultrata** Sw. Synops. fil. 119.

Terrestrial, in the jungle near Klong Munsé.

Area: N. and S. India to the Philippines and N. Australia; Madagascar and Réunion.

### **Stenoloma** Fée.

51. **S. tenuifolia** Sw. sub *Davallia*.

Jungle near Klong Son, on rocky riverbanks.

Area: A very common terrestrial fern in trop. Asia to China, Japan and Polynesia. Also in Madagascar and its satellites.

### **Davallia** Smith.

52. **D. elegans** Sw.

Jungle near Klong Munsé, on low trees.

Area: Common in the Eastern Monsoon-region to Polynesia and N. Australia, but not in the Western Indian Peninsula; also in trop. W. Africa and Madagascar. Epiphytic, chiefly on palms.

53. **D. solida** Sw.

Jungle near Klong Sarlakpet, epiphytic.

Area: Frequent throughout Malaya from the Peninsula to Polynesia. Epiphytic.



54. **D. repens** (L. suppl. sub *Adianto*). *D. pedata* Smith act. Taur. 5. 414.

Nipple (1200 ft.), epiphyte on low trees in the jungle; Klong Munsé on rocks in the jungle.

Area: N. India throughout Malaya to Japan, N. Australia and the Mascarene-Islands. A creeper on branches.

### **Microlepia** Prsl.

55. **M. pinnata** (Cav. praelect. 689 sub *Davallia*)

Jungle near Klong Munsé, on rocks in riverbed.

Area: Malaya from the Peninsula to Polynesia.

## Cyatheaceae.

### **Cibotium** Link.

56. **C. Barometz** Link fil. Sp. 166.

Specimens with only two (seldom more) sori at the base of each segment.

Klong Majun and Klong Munsé, on riverbanks in the jungle.

Area: Fern-tree from N. E. India and S. China to the Philippines and Sunda-Islands. According to a photograph kindly sent me, this fern grows in Koh Chang up to a splendid size.

### **Alsophila** R. Br.

57. **A. podophylla** Hook. II Cent. ferns Tab. 66.

Klong Munsé, plentiful on riverbanks in the jungle.

Area: S. China and Tonkin (l. Bon). Stem very short or none.

## Gleicheniaceae.

### **Gleichenia** Sm.

58. **G. linearis** (Burm. Fil. Ind. 235, Tab. 67 sub *Polypodio*). *G. dichotoma* (Thunbg. Japan, Tab. 37 sub *Polypodio*).

Nipple (2000 ft.) in open jungle, Klong Sarlakpet in dry spots near the Sea.

Area: Very common throughout the tropics of the globe and in Japan, S. America and the Pacific. Earth-fern often forming large masses.

59. **G. subpectinata** Chfist n. sp.

Magna, rhizomate late repente, stipite valido, 1 metr. et ultra longo digiti minoris crassitie, laevi, polito, brunneo-rufo, dichotomo, duobus ramis valde elongatis flexuosis, pinnis petiolatis geminatis, petiolis 8 cent. longis, ad insertionem aut haud procul ab insertione petioli duabus pinnulis minoribus adventiciis instructis, versus basin

et apicem attenuatis late lanceolatis 8—10 cent. longis  $1\frac{1}{2}$  cent. latis, lobis usque ad rachim incisus lineari-lanceolatis obtusiusculis saepe retusis recte patentibus glabris, margine integris, planis supra atroviridibus infra valde coeruleo-glaucis, textura tenuiter herbacea, soris numerosis luteis aut fuscis, sporangiis 10 ad 20.

A subspecies of the former, resembling *G. pectinata* Prsl. as to the pairs of small attenuate pinnae, and the zigzag-branched very strong stipes.

*G. linearis* has larger coriaceous pinnae with a dilated base of the pinnae, whose lowest lobi are increased and often deeply cut.

Klong Majum (alt. 500 ft.) and Klong Munsé, on riverbanks in the jungle.

60. **G. laevigata** Willd. *G. flagellaris* Spr.

Nipple (2000 ft.) in open jungle.

Area: A Malayan fern from Madagascar and its satellites to Polynesia.

**Schizaea** Smith.

61. **S. digitata** Sw. Syn. fil. 150, 380.

Open jungle near Klong Son (1200 ft.).

Area: Scattered from India to W. Polynesia. Earth-fern of grassy spots.

62. **S. dichotoma** Sw.

Klong Prao in sandy spots near the mouth.

Area: S. India, Malaya to Australia, New-Zealand, Polynesia and the Mascarenes.

**Lygodium** Sw.

63. **L. microphyllum** R. Br. Prodr. fl. Nov. Holl. 162.

Common at Lem Dan, in open grassy country.

Area: A large climber, frequent from N. India and S. China to N. Australia. Also in W. Africa.

64. **L. flexuosum** Sw. Syn. fil. 153.

Lem Ngob, Lem Dan, common in open grassy country.

Area: A very large climber of the same area.

65. **L. circinatum** Sw. Syn. fil. 153.

On rocks in the jungle near Klong Munsé.

Area: A gigantic climber of about the same region (not African).

**Marattiaceae.**

**Angiopteris** Hoffm.

66. **A. evecta** Hoffm.

Hills near Klung.

Area: A very large earth-fern of the whole Malayan region from E. Polynesia and M. Australia to N. India, S. China, Japan, Ceylon and Madagascar.

## Parkeriaceae.

### *Ceratopteris* Brongniart.

67. *C. thalictroides* (L. Spec. Plant. 1527 sub *Aerosticho*).

Common in pools and rice-fields throughout the area explored.

Area: Water fern, universal in tropical regions in ponds, tanks etc.

## Lycopodiaceae.

### *Lycopodium* L.

68. *L. cernuum* L.

Lem Dan, Klung Son, in open grassy country.

Area: Universal throughout the warmer regions of the globe to the Azores, Japan, the temperate Pacific islands, and S. Africa. Earth-fern.

69. *L. carinatum* Desv. Encycl. bot. suppl. III, 559.

258 g is a very elongated form with rather obscure carina.

Koh Kong and Koh Kahdat on low trees in the jungle.

Area: The Monsoon-region from S. India to Polynesia. Epiphytic.

## Selaginellaceae

by G. Hieronymus — Berlin.

### *Selaginella*.

70. *S. argentea* (Wall.) var. *rubescens* Hieron. non var.

Differt a forma typica caulibus foliisque rubescentibus.

Klung Majum, alt. 700 ft., on rocks in the jungle.

Area: Indochina.

71. *S. siamensis* Hieron. n. sp.

E subsectione *Microphyllarum* sectionis *Heterophyllarum*; caulibus longe et late repentibus, subteretibus, parum compressis, radiciferos teretes rubescentes ramosos usque ad 2 dm. longos gerentibus, remote foliosis; foliis parum heteromorphis; lateralibus e basi cordata utrinque auriculata (auriculis rotundatis) ovatis, longe cuspidatis (cuspidate integro usque ad 1 mm. longo), inaequilateralibus; semifacie apicem caulis versus spectante latiore, margine ciliis numerosis usque ad 0,08 mm. longis ornata; semifacie altera basin caulis ver-

sus spectante angustiore, basi solum et in auricula ciliis similibus ornata; foliis lateralibus maximis caulis c. 3 mm. longis (cuspe incluso, auriculis vix  $\frac{1}{2}$  mm. longis exclusis); foliis intermediis basi infera (externa) late auriculatis (auricula truncata pilis paucis brevibus dentiformibus margine ornata), basi supera (interna) brevius auriculatis (auricula rotundata), margine supero ubique ciliolis vix usque ad 0,06 mm. longis ornatis, apice longe cuspidatis (cuspe usque ad 0,75 mm. longo); foliis intermediis maximis c.  $2\frac{1}{4}$  mm. longis (cuspe incluso, auricula externa exclusa); ramis primariis vix ultra 6 cm. longis parce pinnatim ramosis; ramis secundariis utrinque 2—3 repetito dichotome ramosis, ambitu ovato-rotundatis; ramulis ultimis (foliis lateralibus inclusis) c. 2 mm. latis; foliis ramorum ramulorumque omnium caulinis similibus, sed valde approximatis imbricatisque et multo minoribus; foliis intermediis margine externa saepe ciliatis. Spicae desiderantur.

Obgleich an den Exemplaren keine Ähren vorhanden sind, so dürfte doch die Stellung dieser neuen Art in der Gruppe der *Microphyllae* gesichert sein. Im Habitus ist dieselbe der *S. Yemensis* (Sw.) Spring non Baker (syn. *S. somaliensis* Baker) ähnlich, sowie auch der *S. mongholica* Rupr., sie unterscheidet sich von denselben, durch die etwas plattgedrückten Hauptstengel, die langen oft roth gefärbten Wurzelträger, die nicht mit weissem sclerenchymatischem Rande, aber mit langer Spitze versehenen Blätter und noch andere Kennzeichen.

Nipple, alt. 2000 ft., on rocks in open jungle.

72. **S. plumea** Spring Monogr. II, p. 136.

Abundant in riverbanks in the jungle near Kloug Munsé.

Area: Malay Peninsula.

73. **S. caulescens** (Wall.) Spring Monogr. II, p. 158 f. **minor**.

Klong Sarlakpet (alt. 700 ft.), Kloug Son (alt. 1000 ft.), on rocks in the jungle.

Area: Himalaya, Indochina, Malesia.

# Bryales

by V. F. Brotherus — Helsingfors.

## Dicranaceae.

### *Leucoloma* Brid.

1. *L. siamense* Broth. n. sp.

Dioicum; gracile, caespitosum, caespitibus densiusculis, late extensis, laete viridibus, aetate fusciscenti-viridibus, nitidis; caulis 1—2 cm. altus, adscendens, tenuis, niger, inferne fusco-radiculosus, densiuscule foliosus, superne dichotomus vel simplex; folia falcata, sicca vix mutata, canaliculato-concava, e basi anguste lanceolata sensum longe et tenuiter subulata, usque ad 5 mm. longa, basi c. 0,4 mm. lata, marginibus erectis, summo apice minute serrulatis, limbata, limbo hyalino, angusto, superne sensim tenuiore, usque ad apicem continuo, nervo angusto, cum apice evanido, dorso laevi, cellulis minutis, quadratis, chlorophyllosis, laevibus, basin versus sensim longioribus, basilaribus anguste linearibus, alaribus magnis, numerosis, fusco-aureis. Caetera ignota.

Species distinctissima, pulchra, quoad foliorum areolatione cum *L. Renaudii* Broth. comparanda, sed statura paulum robustiore, caespitibus nitidis foliisque falcatis facilliter dignoscenda.

Klong Munsé, common in the jungle on rocks exposed to the sun.

### *Garckea* C. Müll.

2. *G. phascoides* (Hook.) C. Müll. in Bot. Ztg. 1845, p. 865.

Jungle near Lem Dan, on riverbank.

Area: From British India to Tonkin, Sumatra and Java.

## Leucobryaceae.

### *Leucobryum* Hamp.

3. *L. Bowringii* Mitt. Musc. Ind. or. p. 26.

Klong Munsé, Klong Son, common on rocks and also on trees, ascending to 700 ft.

Area: Hongkong, Khasia, Ceylon and Sumatra.

4. *L. sauctum* (Brid.) Hamp.

Klong Munsé, on rocks in the jungle.

Area: Nepal, Singapore, Sumatra, Java, Banca, Borneo and Celebes.

5. **L. brachyphyllum** Hamp. in *Linnaea* XIII, p. 42.

Klong Munsé, on rocks in the jungle, alt. 700 ft.

Area: Queensland and New South Wales.

#### **Ochrobryum** Mitt.

6. **O. Kurziaum** Hamp., Besch. in *Journ. de Bot.* 1897.

Jungle near Klong Munsé, on rocks, forming small orbiculate, circumscribed tussocks.

Area: Burma and Pegu.

#### **Octoblepharum** Hedw.

7. **O. albidum** (L.) Hedw. *Musc. Frond.* III, p. 15.

Koh Sarlak, on rocks; Lem Dan on cultivated *Artocarpus*; Klong Sarlakpet, on trees in the jungle.

Area: Widely distributed in all tropical parts of the World.

#### **Arthrocormus** Doz. et Molk.

8. **A. Schimperi** Doz. et Molk. *M. frond. inedit. Archip. ind.* p. 76.

Jungle near Klong Munsé, on trees.

Area: Java, Borneo, Amboina and Philippines.

#### **Leucophanes** Brid.

9. **L. glaucescens** C. Müll.

Jungle near Lem Dan, on dry stones.

Area: Philippines.

### Fissidentaceae.

#### **Fissidens** Hedw.

10. **F. silvaticus** Griff. *Not.* p. 429. — *F. javanicus* Doz. et Molk. *Bryol. jav.* t. 3.

Jungle near Klong Son.

Area: Himalaya, Khasia, Madras, Java.

11. **F. Mittenii** Par. *Ind. bryol.* p. 477. *F. crassinervis* Thw. et Mitt. in *Journ. Linn. Soc.* 1872, p. 323 nec Lac. *Sp. nov. M. Archip. Ind.* p. 3.

Jungle near Klong Munsé, on dry rocks.

Area: Ceylon.

12. **F. Zippelianus** *Bryol. jav.* I, p. 2.

Jungle near Lem Dan, on rocks.

Area: Hongkong, Java and Sumatra.

13. *F. (Eufissidens) siamensis* Broth. n. sp.

Tenellus, caespitosus, caespitibus densiusculis, late extensis, viridissimis, haud nitidis; caulis vix ultra 5 mm. altus, cum foliis c. 1 mm. latus, basi fusco-radiculosus, dense foliosus, simplex; folia sicca falcata, humida stricta, erecto-patentia, infima minuta, superiora oblongo-ligulata, obtusiuscula, mucronata, integerrima, lamina vera ultra medium folii producta, limbata, limbo saepe superne dissoluto, lamina dorsali ad basin nervi enata ibidemque rotundata, climbata, nervo pellucido, lutescente, breviter excedente, cellulis minutis, c. 0,007 mm., rotundatis, chlorophyllosis, papillosis, obscuris. Caetera ignota.

Species pulchra, cum *F. Holliano* Doz. et Molk. comparanda, sed minutie, foliis densioribus, brevioribus, obtusiusculis, mucronatis optime diversa.

Jungle near Klong Munsé. on rocks.

14. *F. (Eufissidens) papillosus* Broth. n. sp.

Dioicus; pusillus, gregarius, pallide viridis, haud nitidus; caulis 2—3 mm. altus, basi fusco-radiculosus, laxiuscule foliosus, simplex; folia 5-juga, sicca homomalla, humida erecto-patentia, infima minuta, superiora lanceolata, acuta, usque ad 1,2 mm. longa et 0,3 mm. lata, superne minutissimi serrulata, lamina vera ad medium folii producta, limbata, limbo angusto, lamina dorsali ad basin nervi enata, nervo crassiusculo, lutescente, cum apice evanido vel brevissime excedente, cellulis angulato-rotundatis, c. 0,007 mm., minute papillosis, pellucidis; seta 2—3 mm. alta, tenuis, rubra, laevissima; theca suberecta vel inclinata, minuta, ovalis. Caetera ignota.

Species *F. axilliflora* Thw. et Mitt. affinis, sed inflorescentia folisque angustius limbatis, cellulis minutius papillosis ideoque pellucidis dignoscenda.

On limestone-rocks in open country at Lem Dan.

## Syrrophodontaceae.

*Syrrophodon* Schwaegr.15. *S. subconfertus* Broth. n. sp.

Dioicus; gracilis, caespitosus, caespitibus densis, lutescentibus, inferne albicantibus; caulis vix ultra 1 cm. altus, erectus, inferne parce radiculosus, dense foliosus, simplex vel plus minusve ramosus, ramis erectis, fastigiatis; folia erecto-patentia, e basi elongate elliptico-oblonga breviter linearia, acuta, 1,9—2,1 mm. longa, basi 0,19—0,3 mm. lata, marginibus ubique erectis, in parte vaginante integris, in parte laminali minute serrulatis, limbata, limbo hyalino vel lutescente, superne tenuiore, nervo breviter excedente, in parte laminali dorso dense aculeato, cellulis basilaribus laxis, hyalinis, ultra vaginam adscendentibus, laminalibus parvis, rotundato-quadratis, chlorophyllosis, papillosis. Caetera ignota.

Species *S. conferto* Lac. simillima, sed foliis nervo dorso dense aculeato optime diversa.

Jungle near Klong Munsé, on trees.

16. **S. spiculosus** Hook. et Grev. in Brewst. Edinb. Journ. of Sc. III, p. 226.

Jungle near Lem Dan, on trees.

Area: Singapore, Sumatra, Banca, Labuan and Borneo.

### **Calymperes** Sw.

**A.** Cancellinae rectangulares. — **Aa.** Teniolae ultra vaginam productae. — **Aa a.** Folia acuta: *C. acuminatum*. — **Aa β.** Folia obtusa — **Aa β I.** Folia lamellata: *C. robustiusculum*. — **Aa β II.** Folia clamellata: *C. brachycaulon*. — **Ab.** Teniolae nullae. — **Ab a.** Folia obtusa: *C. Schmidtii*. — **Ab β.** Folia late rotundato-acuminata: *C. subtenerum*. — **B.** Cancellinae obovatae: *C. gracilescens*. — **C.** Cancellinae scalariformes: *C. subintegrum*.

17. **C. (Hyophilina) robustiusculum** Broth. n. sp.

Dioicum; robustiusculum, caespitosum, caespitibus densis, fusciscenti-viridibus; caulis 1—2 cm. altus, erectus, tomentosus, dense foliosus, simplex vel parce ramosus; folia sicca adpressa, apice incurva, humida erecto-patentia, stricta, canaliculato-concava, e basi brevi, superne paulum dilatata sensim lineari-ligulata, obtusa, plerumque apiculo obtusiusculo terminata, rarius in processum styloideum protracta, c. 3 mm. longa, in parte dilatata basis c. 0,70 mm. lata, marginibus erectis, in parte basilari serrulatis, in parte laminali lamellatis, lamellis minute et obtuse serrulatis, nervo crasso, infra summum apicem evanido, dorso scabro, cellulis subrotundis, 0,007—0,010 mm., pellucidis, papillosis, cancellinae rectangularis, vaginam subaequantis breviter rectangularibus, ad costam maximis, teniolae intra-marginalis, infra apicem evanidae lutescentibus, angustissimis, in parte superiore vaginae c. 4-seriatis, in parte laminali c. 2-seriatis. Caetera ignota.

Species e robustioribus, *C. fasciculato* Doz. et Molk. admodum similis, sed foliorum forma et structura longe diversa.

Lem Dan, on the swelled base of Cocoa-palms; Koh Sarlak. on rocks.

18. **C. (Hyophilina) acuminatum** Broth. n. sp.

Dioicum; robustiusculum, laxe caespitosum, caespitibus lutescenti-viridibus; caulis 1 cm. vel paulum ultra altus, erectus, parce radiculosus, dense foliosus, simplex vel parce ramosus; folia sicca adpressa, apice incurva, humida erecto-patentia, stricta, canaliculato-concava, e basi albescente, longiuscula, superne paulum dilatata sensim lanceolato-acuminata, acuta, c. 5 mm. longa, in parte dilatata basis 0,95—1,1 mm. lata, marginibus erectis, in parte basilari superne minute serrulatis, in parte superiore laminae inaequaliter serrulatis, nervo crasso, infra summum apicem evanido, dorso scabro, cellulis



subrotundis, 0,007—0,010 mm., subpellucidis, papillosis, cancellinae rectangularis, vaginam subaequantis breviter rectangularibus, ad nervum maximis, teniolae intramarginalis, infra apicem evanidae lutescentibus, angustissimis, 2—3 seriatis. Caetera ignota.

Species praecedenti similis, sed foliorum forma et structura longe diversa.

Jungle near Lem Dan, on stones.

19. **C. (Hyophilina) subintegrum** Broth. n. sp.

Dioicum; gracile, caespitosum, caespitibus densis, laete viridibus; caulis 1 cm. altus, erectus, basi fusco-radiculosus, densiuscule foliosus, superne furcatus; folia sicca suberecta, apice incurva, humida patentia, stricta, canaliculato-concava, e basi brevi, superne haud dilatata oblongo-ligulata, obtusa, rarius in processum styloideum, elongatum protracta, c. 3 mm. longa, 0,47—0,57 mm. lata, marginibus erectis, in parte superiore basilari minute serrulatis, in parte laminali subintegris, nervo crasso, infra summum apicem evanido, dorso sublaevi, cellulis rotundato-angulatis, c. 0,010 mm., chlorophyllosis, alte papillosis, cancellinae scalariformis, vaginam superantis breviter rectangularibus, ad costam majoribus, teniolae marginalis, in parte inferiore laminae evanidae c. 4-seriatis, in parte laminali 2-seriatis. Caetera ignota.

Species *C. stenogastro* Besch. habitu similis, sed foliis subintegris jam dignoscenda.

Lem Dan, on rocks and trees near the Sea.

20. **C. (Hyophilina) Schmidtii** Broth. n. sp.

Dioicum; gracile, caespitosum, caespitibus densis, fusciscenti-viridibus; caulis usque ad 2 cm. altus, erectus, basi fusco-radiculosus, laxiuscule foliosus, simplex vel furcatus; folia sicca suberecta, apice incurvo, humida erecto-patentia, canaliculato-concava, e basi brevi, superne haud dilatata oblongo-ligulata, obtusa, rarius in processum styloideum, elongatum protracta, c. 3 mm. longa et c. 0,47 mm. lata, marginibus erectis, ubique integerrimis, nervo crasso, infra summum apicem evanido, dorso plus minusve scabro, cellulis subrotundis, c. 0,010 mm., pellucidis, minute papillosis, cancellinae rectangularis, vaginam aequantis breviter rectangularibus, ad costam majoribus, teniola nulla, vaginalibus extra cancellinam minutis, subquadratis, c. 10-seriatis, marginalibus tenerrimis, hyalinis. Caetera ignota.

Species praecedenti habitu simillima, sed foliorum structura longe diversa.

Jungle near Kloug Majum, on trees.

21. **C. (Hyophilina) subtenerum** Broth. n. sp.

Dioicum; pusillum, gregarie crescens, viridissimum; caulis brevissimus, vix ultra 2 mm. altus, basi fusco-radiculosus, dense foliosus, simplex; folia sicca horride incurva, humida patentia, e basi

brevissima, angustiore late spathulata, late rotundato-acuminata, saepe in processum brevem subito contracta, vix ultra 2 mm. longa, superne usque ad 0,76 mm. lata, marginibus erectis, integerrimis, nervo crasso, infra summum apicem evanido, dorso nitido, cellulis subquadratis. c. 0,010 mm., valde chlorophyllosis, superioribus minute papillois, usque ad insertionem folii descendentibus ibidemque c. 7-seriatis, cancellinae rectangularis, vaginam subaequantis subquadratis, ad nervum majoribus, teniolis nullis. Caetera ignota.

Species *C. tenero* C. Müll., mihi e descriptione tantum cognita, sine dubio proxima, sed foliis cellulis superioribus papillois dignoscenda.

Lem Ngob, mañgrove, on Rhizophora conjugata.

22. *C. (Hyophilina) brachycaulon* Broth. n. sp.

Dioicum; robustiusculum, caespitosum, caespitibus humilibus, parvis, nigrescentibus; caulis vix ultra 5 mm. altus, adscendens, basi dense fusco-radiculosus, dense foliosus, plerumque in ramos 2—3 divisus; folia sicca adpressa, apice incurva, humida patentia, canaliculato-concava, e basi brevi, superne paulum dilatata sensim lineari-ligulata, obtusa, rarius in processum styloideum protracta, c. 3 mm. longa, in parte dilatata basis c. 0,57 mm., in parte laminali c. 0,38 mm. lata, marginibus erectis, in parte basilari serrulatis, in parte laminali integerrimis, nervo crasso, infra summum apicem evanido, dorso scaberulo, cellulis subrotundis, c. 0,010 mm., pellucidis, papillois, cancellinae rectangularis, vaginam subaequantis internis laxis, breviter rectangularibus, c. 5-seriatis, externis subito multo angustioribus, rectangularibus, c. 6-seriatis, teniolae intramarginalis, infra apicem evanidae lutescentibus, angustissimis, 2—3-seriatis, extra teniolam in parte vaginali 3-seriatis, rhomboideis, hyalinis. Caetera ignota.

Species caespitibus parvis, humilibus, nigrescentibus oculo nudo jam diagnoscenda.

Klong Munsé, on rocks in the jungle, alt. 700 ft.; Koh Kahdat, on trees.

23. *C. (Hyophilina) gracilescens* Broth. n. sp.

Dioicum; gracile, caespitosum, caespitibus laxiusculis, fuscescentibus; caulis ad 2 cm. usque altus, adscendens, infima basi fusco-radiculosus, laxiuscule foliosus, simplex; folia sicca laxe adpressa, apice incurva, humida patentia, stricta, canaliculato-concava, e basi brevi, superne dilatata sensim lineari-ligulata, obtusa, rarius in processum styloideum protracta, c. 3 mm. longa, in parte dilatata basis 0,57—0,7 mm. lata, marginibus erectis, in parte basilari superne serrulatis, in parte laminali integerrimis, nervo crasso, infra summum apicem evanido, dorso scaberulo, cellulis subrotundis, c. 0,075 mm., pellucidis, papillois, cancellinae obovatae, vaginam subaequantis internis laxis, breviter rectangularibus, externis subito multo angustioribus, rectangularibus, c. 6-seriatis, teniolae intramarginalis, in parte inferiore laminae evanidae lutescentibus, angustissimis, inferne 4—5-seriatis, extra teniolam in parte vaginali 4-seriatis, rhomboideis,

hyalinis; seta c. 3 mm. alta, erecta, tenuis, fuscescens; calyptra carinis superne vix asperula, apice fusca.

Species ex affinitate *C. Hampei* Doz. et Molk., sed colore, foliis patentioribus, integerrimis, teniulis brevioribus jam dignoscenda.

24. **C. Hampei** Doz. et Molk. Bryol. jav. I, p. 48.

Lem Dan, on rocks near the Sea.

Area: Java.

25. **C. Motleyi** Mitt. in Bryol. jav. I, p. 48.

Koh Kahdat, on trees in the sea-shore,

Area: Ceylon, Labuan and Borneo.

### Tortulaceae.

#### **Hyophila** Brid.

26. **H. cylindrica** (Hook.) Jaeg. Adumbr. I, p. 204.

Klong Sarlakpet; on wet rocks in the jungle, near a water fall, alt. 700 ft.

Area: British India.

### Bryaceae.

#### **Bryum** L.

27. **B. doliolum** Duby in Moritzi Syst. Verz. p. 133.

Lem Dan, in dry clayey soil.

Area: Widely distributed from India to Malay- and Sunda Islands.

### Mniaceae.

#### **Rhizogonium** Brid.

28. **Rh. spiniforme** (L.) Bruch in Flora 1846, p. 134.

Jungle near Klong Munsé, on rocks in a stream-bed.

Area: Widely distributed thorough the tropical and subtropical parts of the World.

### Polytrichaceae.

#### **Racelopus** Doz. et Molk.

29. **R. pilifer** Doz. et Molk. Bryol. jav. I, p. 37.

Jungle near Lem Dan on riverbank.

Area: Tonkin, Malacca, Java, Borneo and New Guinea.

### Neckeraceae.

#### **Neckera** Hedw.

30. **N. nigrescens** Broth. n. sp.

Dioica; robusta, nigrescens, nitidiuscula; caulis elongatus, repens, per totam longitudinem dense ramosus, ramis erectis, complanatis, 1—2 cm. altis, cum foliis c. 3 mm. latis, dense foliosis, simplicibus, obtusis; folia ramea horizontalia, transverse valde undulata, e basi pulchre auriculata, uno latere inflexa ovato-ligulata, obtusa, marginibus ubique minutissime denticulatis, nervo crassiusculo, longe infra apicem evanido, cellulis superioribus ellipticis, dein angustioribus, basilaribus linearibus, omnibus laevissimis. Caetera ignota.

Species pulcherrima, colore, ramificatione foliisque auriculatis, ovato-ligulatis facilliter dignoscenda.

Klong Majum, on rocks in the jungle.

## Hookeriaceae.

### *Distichophyllum* Doz. et Molk.

#### 31. *D. Schmidtii* Broth. n. sp.

Dioicum; robustiusculum, caespitosum, caespitibus laxis, mollibus, pallide viridibus; caulis usque ad 2 cm. altus, complanatus, cum foliis c. 4 mm. latus, parce radiculosus, laxiuscule foliosus, dichotome ramosus; folia sicca vix mutata, facilliter emollita, lateraliter patentia, e basi angusta spathulata, rotundata, apiculata, limbata, limbo integerrimo, e duabus seriebus cellularum composito, nervo tenui, longe ultra medium folii producto, cellulis superioribus rotundato-hexagonis, dein multo majoribus, ovali-hexagonis, basilaribus oblongo-hexagonis, media breviora; bracteae perichaetii minutae, ovatae, internae majores, magis cuspidatae; seta c. 6 mm. alta, e basi geniculata adscendens, ubique scaberrima, purpurea; theca subhorizontalis, minuta, obovata, fusca; peristomium duplex; exostomii dentes lanceolato-acuminati, inflexi, rufo-flavi, medio sulco longitudinali albo exarati, dense et alte lamellati; endostomium sordide albidum, papillosum; processus dentium longitudinem aequantes; operculum rostratum, rostro subulato, thecam longitudine adaequans. Calyptra ignota.

Species *D. acuminato* Bryol. jav. affinis, sed statura paulum minore, inflorescentia nec non foliis breviapiculatis dignoscenda.

On riverbank in the jungle near Lem Dan.

## Stereodontaceae.

### *Taxithelium* Spruc.

#### 32. *T. Schmidtii* Broth. n. sp.

Dioicum; robustiusculum, caespitosum, caespitibus laxiusculis, sordide viridibus, nitidiusculis; caulis elongatus, repens, densiuscule pinnatim ramosus, ramis vix ultra 1 cm. longis, arcuatis, complanatis, dense foliosis, simplicibus, obtusis; folia suberecta, valde con-

cava, oblonga, obtusiuscule acuta, marginibus erectis, ubique minute serrulatis, enervia, cellulis elongatis, angustis, unipapillosis, basilaribus infimis brevioribus, laevibus, alaribus ternis, majusculis, vesiculosis hyalinis. Caetera ignota.

Species *T. prostrato* (Doz. et Molk.) affinis, sed statura robustiore, ramificatione nec non foliis acutiusculis, cellulis alaribus multo majoribus prima fronte dignoscenda.

Klong Munsé, on wet rocks in the jungle near a waterfall.

33. **T. instratum** (Brid.). — *Trichosteleum* Jaeg. Adumbr. II, p. 478.

Jungle near Lem Dan, on rocks; Koh Kahdat, on trees.

Area: From Java to New Guinea.

34. **T. papillatum** (Harv.). — *Trichosteleum* Par. Ind. p. 1313.

Klong Munsé, on trees in the jungle.

Area: From Sumatra to New Guinea. Malacca.

35. **T. distichophyllum** (Hamp.). — *Trichosteleum* Jaeg. Adumbr. II, p. 482.

Klong Munsé, on trees in the jungle.

Area: Java, Celebes and Luzon.

36. **T. isocladum** (Bryol. jav.). — *Trichosteleum* Jaeg. Adumbr. II, p. 478.

Jungle near Klong Munsé, creeping on thin branches.

Area: Banca.

### **Isopterygium** Mitt.

37. **I. albescens** (Schwaegr.) Jaeg. Adumbr. II, p. 499.

Jungle near Lem Dan and Klong Son, on riverbanks.

Area: British India and Sunda Islands.

## **Sematophyllaceae.**

### **Sematophyllum** Mitt.

38. **S. subrevolutum** Broth. n. sp.

Gracile, caespitosum, caespitibus laxiusculis, depressis, lutescenti-viridibus, nitidis; caulis elongatus, repens, per totam longitudinem fusco-radiculosus, pinnatim ramosus, ramis suberectis, vix ultra 5 mm. longis, dense foliosis, simplicibus; folia erecto-patentia, concava, lanceolata, anguste cuspidata, marginibus fera ad apicem folii late revolutis, summo apice erectis, integerrimis, enervia, cellulis elongatis angustissimis, basilaribus infimis laxis, aureis, alaribus magnis, oblongis, vesiculiformibus, supra alaribus paucis, minutis, omnibus laevissimis. Caetera ignota.

Species *S. revoluto* Broth. et Geh. simillima, sed caule laxius pinnato, foliis anguste cuspidatis, integerrimis dignoscenda.

Klong Majum, on rocks in the jungle, alt. 400 ft.

### **Rhaphidostegium** Schimp.

#### 39. **Rh. parvulum** Broth. n. sp.

Autoicum; subgracile, caespitosum, caespitibus mollibus, parvis, pallide lutescentibus, sericeis; caulis repens, per totam longitudinem fusco-radiculosus, vage ramosus, ramis dense subpinnatim ramulosis, ramulis brevibus, complanatulis, patentibus, densiuscule foliosis, obtusis; folia erecto-patentia, concava, anguste oblongo-lanceolata, longe et anguste acuminata, marginibus erectis vel parce revolutis, ubique vel superne minutissime serrulatis, enervia, cellulis elongatis, angustissimis, flexuosulis, basilaribus infimis aureis, laxioribus et brevioribus, alaribus 3—5, magnis, oblongis, vesiculiformibus, fuscis, omnibus laevissimis; bracteae perichaetii e basi oblongo-lanceolata longius acuminatae; seta 1 cm. alta, flexuosula, tenuis, lutescenti-rubra, laevissima; theca pendula, minuta, ovalis, sicca deoperculata sub ore constricta, fusca. Caetera ignota.

Species pulchella, caespitibus parvis, pallidis, mollibus, sericeis, ramulis complanatulis, foliis anguste oblongo-lanceolatis, longe acuminatis dignoscenda.

Lem Dan, on rocks and trees near the Sea.

#### 40. **Rh. subconnivens** Broth. n. sp.

Autoicum; robustiusculum, caespitosum, caespitibus densis, lutescenti-vel fuscescenti-viridibus, nitidis; caulis elongatus, repens, dense pinnatim ramosus, ramis brevibus, erectis vel adscendentibus, teretibus, dense foliosis, simplicibus, obtusis; folia sicca suberecta, humida erecto-patentia, concava, oblonga, anguste acuminata, marginibus late revolutis, apice incurvis, subconniventibus, integerrimis, enervia, cellulis elongatis, angustis, basilaribus infimis abbreviatis, aureis, alaribus c. 5, oblongis, vesiculiformibus, fusco-aureis, omnibus laevissimis; bracteae perichaetii erectae, intimae ovato-lanceolatae, acuminatae, acumine serrulato; seta 1,5 cm. alta, sicca flexuosula, tenuis, fuscescenti-rubra, laevissima; theca horizontalis vel subpendula, minuta, ovalis, fusca. Caetera ignota.

Species ex affinitate *Rh. tristiculi* (Mitt.) Jaeg., sed foliis marginibus late revolutis, apice incurvis, subconniventibus jam dignoscenda.

Klong Munsé, on rocks in the jungle.

### **Trichosteleum** Mitt.

#### 41. **T. leptocarpoides** Broth. n. sp.

Autoicum; robustum, caespitosum, caespitibus depressis, densiusculis, pallide lutescentibus, nitidis; caulis elongatus repens,

ramosus, ramivagis vel subpinnatim dispositis, brevibus, complanatis, laxe foliosis, strictis, obtusis; folia sicca laxe imbricata, humida patula, valde concava, oblonga, in acumen elongatum, loriforme contracta, marginibus erectis, integris, enervia, cellulis elongatis, angustissimis, papillois, basilaribus infimis abbreviatis, aureis, alaribus c. 5, magnis, vesiculaeformibus, fusco-aureis; seta 2 cm. alta, crassiuscula, flexuosula, rubra, laevis; theca maxime pendula, ad setam fere adpressa, oblongo-clavata, fuscidula, grosse pustulosa, collo laevi. Caetera ignota.

Species insignis *T. leptocarpo* (Schwaegr.) affinis, sed foliis integris, theca brevior, grosse pustulosa, collo laevi, facillime dignoscenda.

Koh Kahdat, on mouldering trees.

42. **T. Boschii** (Doz. et Molk.) Jaeg. Adumbr. II, p. 487.

Jungle near Klong Munsé, on mouldering trees.

Area: Sunda Islands.

43. **T. trachycystis** Broth. n. sp.

Autoicum; robustiusculum, caespitosum, caespitibus densis, pallide viridibus, haud nitidis; caulis repens, subpinnatim ramosus, ramis uncinatis, densifoliis, simplicibus; folia falcata, concava, late oblongo- vel ovato-lanceolata, anguste acuminata, marginibus erectis, superne serrulatis, enervia, cellulis elongatis, angustissimis, papillis elevatis seriatim punctulatis, basilaribus infimis abbreviatis, aureis, alaribus c. 5, oblongis, vesiculiformibus, hyalinis vel fusco-aureis; bracteae perichaetii internae e basi oblongo-lanceolata longe acuminatae, acumine serrulato, cellulis laevissimis; seta 1 cm. alta, flexuosula, tenuis, fusciscenti-rubra, superne scaberula; theca nutans, minuta, ovalis, sicca deoperculata sub ore constricta, fusca. Caetera ignota.

Species *T. hamato* (Doz. et Molk.) Jaeg. affinis, sed statura robustiore, foliis latioribus, cellulis scaberrimis optime diversa.

Lem Dan, on rocks and trees near the Sea.

## Leskeaceae.

### **Pelekium** Mitt.

44. **P. velatum** Mitt. in Journ. of the Linn. Soc. 1868, p. 176.

Koh Kahdat, on mouldering trees in the interior of the island.

Area: From Java to Samoa.