

A List of the Mosses of the Malay Peninsula

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INTRODUCTORY NOTE

Up to the present time no attempt has been made to publish a conspectus of the Moss-flora of the Malay Peninsula. Mitten's *Musci Ind. Or.* (*Journ. Linn. Soc., Bot.*, Vol. iii, Suppl.) contains some half-dozen records, the only data for which are "Malacca, Griffith." Fleischer has collected a considerable number of mosses, mostly in and around Singapore; these are recorded in the four volumes of his *Musci der Flora von Buitenzorg* (1900-1922). A short list is also given by Hj. Moeller of Straits Settlements mosses in *Hedwigia*, lx, 313, comprising some thirty species. Finally the present writer published descriptions of forty new species from the peninsula in *Bull. Torr. Bot. Club*, 51; pp. 225-259 (1924).

The great majority of entries, therefore, in the following list are unpublished records, and are based on collections made by various botanists, principally H. N. Ridley (R in the list), I. H. Burkill, R. E. Holttum, and C. H. Binstead, with other collectors from the Singapore Botanic Gardens.

The system I have followed is very largely that of Brotherus, in Engler and Prantl, *Pflanzenfamilien, Musci*, Ed. I.

The general character and relationships of the Moss-flora follow naturally very closely on the lines of the higher plants. The endemic species are comparatively few, and I think are not likely to be greatly increased; for while undescribed species are constantly collected, this is pretty well counterbalanced by the discovery of the extension of the range of supposed endemics (of Malaya) to neighbouring areas. On the other hand a very large percentage of the species have a remarkably narrow range of distribution beyond the peninsula itself, especially the Malay-Burma-Assam, Malay-Borneo, Malay-Philippines, and Malay-Java areas. It would be of some interest to give lists of these species, but it is preferable to wait till the distribution of the mosses in the peninsula itself is more completely known; the present list gives a basis for

such a conspectus, but it is only a beginning. Several of the States have been little more than sampled, for mosses, and nearly every collection that is made still contains some new record, either for the State, the Peninsula or for science. This may be illustrated by the fact that since the publication of my paper already referred to, in 1924, thirty undescribed species have come into my hands, and these appear, perforce, as "ined." in the present list.

Among special features of interest in the moss flora may be mentioned the prevalence of species of Calymperaceae (Syrrhopodon and Calymperes) a most interesting and striking Family, having a peculiar distribution mostly to tropical regions, and rarely found at any great distance from the sea, though in no sense maritime plants. This is curiously contrasted with the poor representation of some of the larger genera. Thus of Bryum (between 800 and 900 species) six are recorded from the peninsula; of Campylopus (about 500 species), three; of Macromitrium (415 species) ten; while of Syrrhopodon (235 species), there are thirty-one in the following list, and of Calymperes (200 species), twenty-four.

A further genus which is highly represented here is Acroporium (Sematophyllum Mitt. p.p.). Of about 90 known species (as the genus is understood in Brotherus, *Musci*, Ed. i), 33 are recorded for the peninsula. Here however we have to do with a genus which clearly has its principal centre of distribution in the Indo-Malay region; whereas this can scarcely be said of the Calymperaceae, which have an equally high distribution in tropical Africa, Madagascar and the Mascarene Is., tropical America, and Polynesia.

The total number of species in the following list is about 340, compared with 650 recorded from Java; and with more systematic collecting the number is certain to be very largely increased.

SPHAGNACEAE.

Sphagnum kelantanense Dixon sp. nov. ined.

Kelantan: Gunong Sitong, or ridge, circa 2600 ft. (Nur 12244).

Sphagnum cuspidatum C. M. var. **malaccense** Warnst.

Perak: Summit of G. Batu Puteh, 6900 ft. (Wray 902; type gathering).

Pahang: Cameron's Highlands (Henderson 22781); G. Tahan (R. 1026).

Kedah: Kedah Peak, common (Holttum 14881).

Sphagnum junghuhnianum Doz. and Molk.

Selangor: Ulu Semangkok (R. 277).

Pahang: G. Tahan (R. 1038).

Kelantan: Gunong Sitong (Nur 12243).

Kedah: Kedah Peak, 3000 ft. (Holttum 14882 a).

Malacca: Gunong Ledang (Mt. Ophir) (R. 221).

Sphagnum magellanicum Brid.

Kedah: Kedah Peak, 3000 ft. (Holttum 14882 b).

The Asiatic distribution hitherto if this almost cosmopolitan species is Bhotan and Japan.

DICRANACEAE.**Wilsoniella pellucida** (Wils.) C. M.

Selangor: Batu Caves (R. 644). I have not seen this, and do not know by whom it was determined. It would seem likely that it was the same plant as the following.

DISTR. Ceylon, Java.

Wilsoniella acutifolia Broth. ined.

Selangor: Batu Caves (R. 481).

Garckea phascoides (Hook.) C. M.

"Malay Halb-insel" (Fleischer).

Singapore: Penang: (Binstead 2, 6, 11).

Kedah: Kedah Peak, 2000 ft. (Holttum 15108).

Ditrichum flexifolium (Hook.) Hampe.

Perak: Gunong Keledang (R. 701).

[*Ceratodon purpureus* (L.) Brid. It is rather curious that this peculiarly cosmopolitan species does not appear to have been collected in the Malay Peninsula].

Microdus Miquelianus (Mont.) Besch.

Perak: Tapah (R. 160).

Negri Sembilan: Perhentian Tinggi (R. 739).

Singapore: Bukit Timah (R. 300, 304); Gardens (R. 599), a small form with very narrow leaves: Singapore (Binstead 76).

Penang: Crag Hill (Binstead 4, 7).

Selangor: 15th mile, Pahang Track (Semangkok Pass) (R. 484).

Microdus macromorphus Fleisch.

Perak: Tapah (R. 160).

DISTR. Java; Borneo.

Dicranella coarctata (C. M.) Bry. jav.

Selangor: Bukit Kutu (R. 396).

Penang: Penang Hill (Chipp 4692).

Kedah: Kedah Peak 1000 ft. (Holttum 15109).

Campylopodium euphorocladum (C. M.) Besch.

Kedah: Kedah Peak, 3000 ft. (Holttum 15027).

Braunfelsia dicranoides (Doz. and Molk.) Broth.

Pahang: Gunong Tahan, 5500-7000 ft. (Haniff and Nur 7915 b).

DISTR. Java.

Braunfelsia enervis (Doz. and Molk.) Par.

Pahang: Fraser Hill, 4000-4370 ft., on tree trunk (Burkill and Holttum 8838); Gunong Tahan (Robinson).

DISTR. Java.

A very densely foliate, julaceous form. Neither the figure given by Dozy and Molkenboer nor that of Fleischer gives a good idea of the habit of the plant, which, judging by the specimens in our national collections, is usually much more densely foliate, with more robust branches than as depicted by these authors. The present plant is so markedly different, indeed, from these figures, that I had no doubt at all of its being a new species, prior to examining specimens of the Java plant.

Braunfelsia longipes Dixon in *Bull. Torr. Bot. Club* 51: 225 (1924).

Pahang: Gunong Tahan, 7000 ft. (Haniff and Nur 7905).

Braunfelsia plicata (Lac.) Fleisch.

Kedah: Kedah Peak, 3800 ft., on ground, in thick jungle, just below summit (Holttum 14869) c.fr.

This has hitherto been found only in a single locality in Java.

Dicranoloma Blumii (Nees) Par.

Pahang: Gunong Tahan (R. 1021); Gunong Berumban (Wray's) (Wray 1562).

Perak: Gunong Batu Puteh, 4500 ft. (Wray 300).

A rather widely distributed species, but not hitherto recorded from continental Asia.

Selangor: Ulu Semangkok (R. 281 a). There is some doubt about this specimen, which is sterile, and may possibly belong to *D. brevisetum*.

Dicranoloma Braunii (C. M.) Par.

Singapore: Herb. Mitten. Two sterile and doubtful plants, which I incline to place under this species.

Perak: leg. Curtis; herb. Singapore Bot. Garden. This specimen is labelled "*Dicranum piliferum* Mitt. MS. in sched.", but I am inclined to think that Mitten wrote "filiferum," in reference to the long, stout, brown articulate brood-filaments in the leaf axils, characteristic of this species. It is new to continental Asia.

DISTR. Malay Archipelago to New Caledonia and New Hebrides.

Dicranoloma reflexifolium (C. M.) Par.

Pahang: Fraser Hill (R. 283).

Kedah: Kedah Peak, 3500 ft., on ground and tree bases in dwarf forest (Holttum 14867).

DISTR. Java; Sumatra.

Dicranoloma assimile (Hampe) Par.

Pahang: Gunong Tahan (R. 1036).

The fruiting plant, so that there is no doubt of its identity.

Perak: Gunong Hijau, 4700 ft. (Wray 648).

DISTR. Java; Borneo; Mindanao; Celebes (Everett 664, in herb. H. N. Dixon).

Dicranoloma leucophyllum (Hampe) Par.

Malacca: Mt. Ophir (R. 712). This is sterile, and may possibly belong to *D. assimile*.

Perak: Gunong Hijau, Taiping Hills (Anderson 314A; Burkill 12636).

Dicranoloma sumatranum Broth. ined.

Selangor: Semangkok Pass (R. 284).

DISTR. Sumatra.

Dicranoloma perintegrum Dixon in *Bull. Torr. Club* 51: 226 (1924).

Malacca: Mt. Ophir (R. 780).

Dicranoloma brevicapsulare Dixon *op. et loc. cit.*

Pahang: Gunong Tahan, 5500-7000 ft. (Haniff and Nur 7915a).

Leucoloma molle (C. M.) Mitt. var. **longipilum** Fleisch.

Selangor: Bukit Hitam (R. 390).

Perak: Batang Padang (Stresemann 99).

Dindings: Lumut (R. 818a).

Penang: Penang Hill (R. 512, 574).

Leucoloma Walkeri Broth.

Kedah: Rawei I. (R. 293). A robust form, only differing in the size from the Indian and Burmese plant.

DISTR. India; Burma.

Leucoloma malayanum Dixon.

Penang: Crag Hill, on shaded granite rock (Binstead 13).

Leucoloma pallidum Dixon.

Kelantan: Gunong Sitong (Nur 12237b, 12272c).

Campylopus comosus (Hornsch. and Reinw.) Bry. jav.

Penang: Crag Hill (Binstead 8, 10, 12; Pinwell, in herb. Mitt.)

Kedah: Kedah Peak, 3000 ft., frequent on rocks and ground, usually sterile (Holttum 14896).

Campylopus serratus Lac. (*C. singaporensis* Fleisch.)

Singapore: Gardens (Larminat, in herb. Paris; Fleischer, M. Fr. Arch. Ind. et Polynes., 403; R. 611; Binstead 73, &c.). Bukit Timah (Holttum 13070).

Pahang: between Pekan and Ayer Tawar; abundant on the sandy promontory which the bridle path follows. Apparently the species used here for stuffing mattresses. (Burkill 17256); Kuantan, at base of tree (Burkill 17333b).

Kedah: Kedah Peak, on ground by path (Holttum 15028).
Form with unusually narrow upper cells.

This very marked plant must I think without doubt be Lacoste's species; it agrees exactly with the description and figures; I have also seen it from Borneo; I think that Fleischer must have overlooked this in giving it a new name. It seems to be a very characteristic plant in the Gardens at Singapore, as every collector of mosses who has visited the Gardens appears to have brought it away!

The very large genus *Campylopus* is poorly represented in the peninsula, only three species having been recorded.

Campylopus calodictyon Broth. ined.

Pahang: Gunong Berumban (R. 132).

I have not seen an authentic specimen of Brotherus' plant; but Ridley's moss agrees exactly with a Bornean gathering of Binstead's, which Fleischer determined (so far as possible from the gametophyte alone) as *C. calodictyon*.

Dicranodontium nitidum (Doz. and Molk.) Fleisch.

Kelantan: Gunong Sitong, on ridge, 2600 ft. (Nur 12247).

DISTR. Java; Celebes; Borneo; Philippines. Mitten records it from Ceylon. I have not examined Gardner's specimens; but a plant so named from Mitten's herbarium "Nuwara Eliya, T. W. N. Beckett" belongs to *Campylopus Nietneri* (C. M.), which throws doubt on the correctness of Mitten's determination of the earlier specimens.

Thysanomitrium exasperatum (Brid.) Nees.

Malacca: Mt. Ophir (R. 228).

Pahang: Gunong Tahan (R. 1011, 1019; Haniff and Nur 7908, a very slender form, perhaps worth varietal rank).

Kedah: Kedah Peak (R. 246).

Thysanomitrium umbellatum W-Arn. (*T. Blumei* Doz. and Molk.).

Selangor: Pahang track, 15th mile (R. 488).

Thysanomitrium Ridleyi Dixon in *Bull. Torr. Bot. Club*, 51: 227 (1924).

Pahang: Gunong Tahan (R. 1019b).

Thysanomitrium abbreviatum Dixon *op. et loc. cit.*

Pahang: Gunong Tahan, c. 7000 ft. (R. 1012).

LEUCOBRYACEAE.

Leucobryum chlorophyllosum C. M.

Pahang: Gunong Tahan (Robinson).

f. **minor** Fleisch.

Penang: Crag Hill (Binstead 14).

The species has not been recorded from continental Asia.

Leucobryum sanctum (Brid.) Hampe.

Common. I have records from at least seven States.

Leucobryum Bowringii Mitt.

Johore: Gunong Belumut, 3000 ft. (Holttum 10850).

Malacca: Mt. Ophir (R. 755).

Pahang: Gunong Tahan, 5500-7000 ft. (Haniff and Nur 7973a).

Leucobryum aduncum Doz. and Molk.

Singapore: on coconut palms (Fleischer, M. Frond. Arch. Ind. 5).

Malacca: Mt. Ophir (Griffith) herb. Mitten.

Leucobryum scalare C. M.

Singapore: Bukit Timah (Fleischer).

Penang: Crag Hill (Binstead 16, 18).

Leucobryum javense (Brid.) Mitt.

Singapore: Chan Chu Kang (R. 247).

Johore: one of the abundant ground mosses in the mossy forest of Gunong Belumut (Holttum 10696).

Pahang: Telom (R. 90); Pekan (Ridley).

Kedah: journey to Kedah Peak (Haniff 1).

Not recorded hitherto from continental Asia except from Annam, but one of the common species under certain conditions, and widely spread in Malaysia, and reaching to New Guinea.

Leucobryum sumatranum Broth. ined.

Pahang: Gunong Berumban, 5000 ft. (Henderson 11740).

A very fine species, resembling *L. javense* in habit, but of quite different structure. Only known otherwise from Sumatra.

Leucobryum stellatum Dixon.

Malacca: Mt. Ophir (R. 724).

[*Cladopodanthus speciosus* (Doz. and Molk.) Fleisch. (*Spirula speciosa* Doz. and Molk.). The only authority for this as a Malayan plant is a record by Mitten "Among moss sent with orchids to Dr. Wallace," and even the locality is not, I believe, specified. As the plant is a particularly striking one, at present only known from Java, I hesitate to include it on this vague record alone. It is quite possible that orchids, sent from the Singapore Gardens to Dr. Wallace, may have been packed in moss originally received with orchids from Java.]

[*Ochrobryum microphyllum* Card. Herzog in *Hedwig*. lxi, 295, records this as collected in Perak by Stresemann, No. 86. But as *O. microphyllum* is a South American species (*O. Gardnerianum* var. *microphyllum* Besch.), and as this group in the sterile state is a highly difficult and critical one, it appears to me that the identification must be very doubtful.].

Schistomitrium mucronifolium (A. Br.) Fleisch.

Pahang: Gunong Tahan (R. 1003). c. fr.

Kedah: Kedah Peak, 3000 ft., on a small trunk in dwarf forest, 3 ft. from the ground (Holttum 14890).

This and the preceding have leaves not falcate, thus differing from the type form; they are much too robust for *S. apiculatum*. The seta is more or less highly rugulose in both. It is quite probably a distinct species.

Schistomitrium apiculatum Doz. and Molk.

Perak: Gunong Batu Puteh, 3400 ft. (Wray 1085).

Leucophanes candidum (Hornsch.) Lindb.

Singapore: Kranji (R. 119, 256); Pasir Panjang (R. 249): no loc. (St. V. B. Down 60); etc.

Selangor: Gua Batu (R. 643); Rawang (R. 383).

Kelantan: Kuala Kalak, foot of G. Sitong (Nur 12263).

Leucophanes aciculare C. M. ined.

Singapore: Bajau, on tree at sea level, a very elongate form, in tufts 5-6 cm. high (Holttum 12277); Serangoon road (R. 206).

Leucophanes densifolium Mitt.

Singapore: Fleischer, *M. Frond. Arch. Ind. et Polynes.* 304; etc.

Johore: Tanjong Bunga (R. 338).

DISTR. Fiji and Admiralty Is.

Leucophanes albescens C. M.

Singapore: Pulau Ubin (det. Fleischer); Bot. Gardens (Holttum 16333); beim Friedhof an Baumrinde (H. Moeller).

Trengganu: Kuala Trengganu (Holttum 15188).

Kedah: Pulau Lankawi (Holttum 17478).

Leucophanes octoblepharoides Brid.

Singapore: on palms in Gardens (R. 46, 330, 593, 761); etc.

Selangor: Kuala Lumpur (R. 257).

Negri Sembilan: Ulu Bendul, on wet rocks by stream (Holttum 9830).

Penang: Richmond Pool, Government Hill (Haniff and Kadir 15018).

Leucophanes pugioniforme Fleisch. ined.

Singapore: bei Tandjong Katong (Fleischer).

Octoblepharum albidum (L.) Hedw.

Widely distributed; common in the north of the Peninsula, but not collected in the southern part.

Arthrocormus Schimperii Doz. and Molk.

Selangor: Telok Reserve, Klang (Burkill 5991, 6554).

Perak: Tapah (R. 156).

Kelantan: Sungei Keteh (Nur 11991 a).

Exodictyon Blumii (Nees) Fleisch.

Perak: Tapah (R. 819).

FISSIDENTACEAE.**Fissidens ceylonensis** Doz. and Molk.

Singapore: ad fossas (Kurz 1203; *F. abbreviatus* Mitt. MS in herb.).

Fleischer also records it from Singapore without further locality.

Malacca: Ayer Kurau (R. 702).

Penang: Crag Hill (Binstead 26, 40, 45). Government Hill (R. 749). Gardens (Holtum 17373, 17375).

Fissidens Hollianus Doz. and Molk.

Perak: Tapah (R. 819 b).

Trengganu: Kuala Telumong (Holtum 15310).

Penang: in botanischen Garten an Baumaesten, c.fr. (Moeller).

Kedah: Pulau Lankawi, on rock and small stems by stream (Holtum 17438).

DISTR. Java.

Fissidens Zollingeri Mont.

Trengganu: Kuala Telumong (Holtum 15310 p.p.)

A very little, mixed with *F. Hollianus*.

Fissidens javanicus Doz. and Molk. nov. var. **integrifolius**

Dixon ined.

Trengganu: Kuala Berang (Holtum 15334).

Kedah: Pulau Lankawi (Holtum 17447).

DISTR. (of type) Java, Andamans.

Fissidens siamensis Broth.

Kedah: Pulau Lankawi (Holtum 17479).

DISTR. Siam.

Fissidens crassinervis Lac.

Singapore: Bukit Timah (Fleischer, *M. Frond. Arch. Ind.* 17); Gaylang (R. 626); Gardens (R. 603); Reservoir jungle (Holtum 15366).

Perak: Tapah (R. 148).

Penang; rocks and stones in Botanic Gardens (Binstead 17, 74); Waterfall Gardens (Holtum 17377).

Kedah: Pulau Lankawi (Holtum 17446).

Fissidens Mittenii Par.

Singapore: (Fleischer); Gardens (Holttum 10492).

Fleischer also records the var. *javensis* from the Gardens.
I have only seen the type.

Fissidens subdiscolor Dixon in *Bull. Torr. Bot. Club* 51: 228 (1924).

Negri Sembilan: on root in a boggy hollow, Gemas (Burkill 6388).

Fissidens Zippelianus Doz. and Molk.

Singapore: Singapore (Fleischer); Gardens (Holttum 15368).

Penang: im botanischen Garten auf Erde (Moeller).

Kedah: Pulau Lankawi (Holttum 17444).

Fissidens asplenioides (Sw.) Hedw.

Penang: Penara Bukit (R. 572).

This widely distributed species in the tropics and subtropical regions has not been recorded from the Asiatic continent.

Fissidens amblyotis Dixon in *Bull. Torr. Bot. Club* 51: 229 (1924).

Johore: on wet rock by stream. 700 ft., Gunong Lambak (Holttum 9456).

Fissidens nobilis Griff.

Pahang: Tahan (Ridley).

Perak: Temengoh (R. 194, 214).

Fissidens areolatus Griff.

Pahang: Gunong Tahan, 5500-7000 ft. (Haniff and Nur 7980).

Ava, Burma, is the most southerly station hitherto.

CALYMPERACEAE.**SYRRHOPODON** Schwaegr.

Subgenus *Leucophanella*.

Syrrhodon revolutus Doz. and Molk.

Singapore: Tanjong Ru (R. 255); Gardens (Holttum 15351).

Perak: Krian road, Taiping (Haniff 13287).

Penang: (Fleischer).

Syrrhodon borneënsis (Hampe) Jaeg.

Johore: Gunong Belumut, 3000 ft. (Holttum 10753, 10765).

Pahang: Gunong Tahan (R. 1002); a robust form with lanuna cells smooth and back of nerve only slightly roughened.

Kedah: Kedah Peak, 3000 ft. (Holttum 14883).

Penang: Crag Hill (Binstead 24); Penang Hill (R. 748).

DISTR. Borneo, Java.

Syrrhopodon rufescens Hook. and Grev.

Singapore: Gardens (R. 780); Bukit Timah (Fleischer, *M. Frond. Arch. Ind.* 103); Singapore (Wallich; fide Mitten. *Musc. Ind. Or.*). Gardens, on *Platynerium* (Holttum 17385).

Syrrhopodon confertus Lac.

Singapore: Chan Chu Kang (R. 263). I have not seen this; it was determined by Brotherus, I believe.

Syrrhopodon Ridleyi Broth. & Dixon in *Bull. Torr. Bot. Club* 51: 229 (1924).

Singapore: Bukit Timah, on a *Platynerium* (R. 38, 731).

Penang: Government Hill, on lower side of large *Platynerium* (Burkill 763).

Subgenus *Eu-Syrrhopodon*.

Syrrhopodon albidus Thw. and Mitt.

Johore: Gunong Belumut, 3000 ft. (Holttum 10809).

DISTR. Ceylon.

Syrrhopodon tristichus Nees.

Pahang: Gunong Berumban, 5000 ft. (Henderson 11767);

Fraser Hill, 4000 ft., (Holttum 11372).

New to the mainland of Asia.

Syrrhopodon albo-vaginatus Schwaegr.

Singapore: Brotherus gives the distribution of this species as including Singapore; Reservoir jungle (Holttum 15363).

Pahang: Kuala Lipis (Burkill 15667c).

Perak: Sungei Siput (Haniff and Nur 6955).

Syrrhopodon involutus Schwaegr.

Singapore: Gardens (R. 29); Singapore (Fleischer).

Malacca: Mt. Ophir (Griffith; fide Mitten).

[Syrrhopodon pseudo-involutus Broth. ined.

Singapore: Tanjong Katong, on coconut trees (R. 210).

This is a MS. name of Brotherus; the species has not been described, and I have not been able to see specimens.]

Syrrhopodon spiculosus Hook. and Grev.

Singapore: (Wallich; Fleischer); Kranji (Ridley); Bukit Timah (Burkill AB); Carimon Is. (Fox 581); &c.

Penang: Crag Hill (Binstead 22), two very different forms in habit and direction of leaves when dry.

Syrrhopodon elimbatus Dixon in *Bull. Torr. Bot. Club* 51: 230 (1924).

Malacca: Mt. Ophir (Ridley).

Syrrhopodon horridulus Fleisch. *Musc. der Fl. von Buit.* 1, 208, and corrigenda.

Singapore: Singapore, 1898 (Fleischer).

Syrrhopodon Griffithii Mitt.

Singapore: "Singapore (Griffith)." So Mitten in the *Musci Ind. Orientalis*; but Ridley points out that this should probably read Malacca, as Griffith did not visit Singapore.

Fleischer, it may be remarked (*op. cit.* 1,208) speaks of the leaf as having "an der Scheide einsele, lange, wimperartige Zaehne"; but this is in direct contradiction to the description, where the margins are distinctly stated to be "integerrimis," and without the basal spines of *S. trachyphyllus*.

Syrrhopodon ligulifolius Dixon in *Bull. Torr. Bot. Club* 51: 230 (1924).

Penang: Penara Bukit (R. 576).

Syrrhopodon trachyphyllus Mont.

Singapore: Singapore (Gaudichaud) fide Mitten, *Musc. Ind. Or.*; ibidem (Fleischer).

Syrrhopodon cavifolius Lac.

Trengganu: Kuala Trengganu (Holttum 15189).

DISTR. Banca, Borneo.

Syrrhopodon ciliatus (Hook.) Schwaegr.

Singapore: on sago palm, gardens (R. 459, 465); Fleischer, *M. frond. Arch. Ind.* 26. Seletar (R. 739).

Pahang: Kuantan (Burkill 16125).

The forma *pseudopodianus* Fleisch. occurs in both the above localities.

Syrrhopodon perakensis Dixon in *Bull. Torr. Bot. Club* 51; 231 (1924).

Dindings: Lumut (R. 449).

Subgenus *Thyridium*.

Syrrhopodon Wallisii C. M.

Singapore: (Fleischer).

Johore: Gunong Pulai, on fallen tree trunk (Holttum 16339).

Syrrhopodon repens Harv.

Singapore: Gardens (R. 45): Chan Chu Kang (R. 262); Pasir Panjang (R. 55); Bukit Timah (R. 309); Bukit Mandai (R. 706); Kranji (R. 11275).

Penang: Crag Hill (Binstead 29, 32).

It is rather curious that this species should appear to be common about Singapore, while apparently scarcely elsewhere in the Peninsula. It occurs in Ceylon and Banca.

Syrrhopodon Manii C. M.

Singapore: Tanjong Katong, f. *minor* (Fleischer, *M. Frond. Arch. Ind.* 71); Gardens (R. 315, 592); Seletar (R. 459); Pulau Ubin (R. 729); Galang (R. 357).

Penang: Crag Hill (Binstead 27 a).

Syrrhopodon fasciculatus Hook. and Grev.

Singapore: (St. V. B. Down 56); Kranji (Moeller); Gardens (Holtum 15352).

Trengganu: Kuala Trengganu, base of palm stem (Holtum 15309).

Syrrhopodon undulatus (Doz. and Molk.) Lindb.

Singapore: Reservoir jungle (Holtum 15364).

Perak: Temengoh (R. 217); Taiping (R. 204).

Kedah: Lankawi Is. (Haniff and Nur 7526); Kedah Peak, 3000 ft. (Holtum 14891).

Syrrhopodon undulatus Broth. and Geh.

Singapore: (Fleischer); on trunk of tree, Reservoir jungle (Holtum 15358).

Penang: (Schiffner).

These records and that of *S. Wallisii* are found in Fleischer, *Musci der Fl. von. Buit. I*, 236.

Syrrhopodon flavus C. M.

Singapore: Gardens (Holtum 15356, 15357).

DISTR. Java.

Syrrhopodon pungens Dixon in *Bull. Torr. Bot. Club* 51: 231 (1924).

Selangor: Pataling (R. 772).

Subgenus *Calymperopsis*.

[*Syrrhopodon semiliber* (Mitt.) Besch. Brotherus (*Musci*) records this from "Malacca" only. Mitten's record in the *Musci Ind. Or.* p. 41 ("in peninsula Malayana, ad Tavoy") refers to Burma, and does not come within our area.]

Subgenus *Calymperidium*.

Syrrhopodon Muelleri (Doz. and Molk.) Bry. jav.

Singapore: Bajau (R. 242).

Johore: Gunong Pulai (Best 7708).

Perak: Temengoh (R. 186); Gunong Batu Puteh, 3400 ft. (Wray 1211 p. p.)

Penang: Penang Hill (R. 579).

Syrrhopodon fallax Lac.

Malacca: Mt. Ophir (R. 736).

Perak: Gunong Batu Puteh (Wray 1211 p. p.).

DISTR. Borneo; Banca.

No. 1211 Wray was received as *Syrrhopodon Wrayi* Broth. MS. It contained two species of *Syrrhopodon*, one of which is certainly a form of *S. Muelleri*, and the other *S. fallax*.

***Syrrhopodon croceus* Mitt.**

Singapore: (Wallich); (St. V. B. Down 54); Reservoir jungle (Holtum 15361, 15362).

Johore: Gunong Belumut, 3000 ft. (Holtum 10819); Gunong Panti (Holtum 15043); Gunong Pulai (Holtum 16337).

Kelantan: Sungei Ketah (Nur 11991 b).

Kedah: Kedah Peak, 1000 ft. (Holtum 15110). A beautiful form, the whole plant purple-red.

Penang: Crag Hill (Binstead 19); Richmond Pool (Haniff and Kadir 15022).

***Syrrhopodon rectifolius* Dixon ined.**

Kedah: Kedah Peak, 3500 ft. (Holtum 14861).

***Calymperes Dozyanum* Mitt. (Syn. *C. Boulayi* Besch.).**

Singapore: Gardens (Abdul Kadir 10494); ibidem, an Alleebaumen (Fleischer, *M. Frond. Arch. Ind.* 66); Kranji (R. 205).

Penang: on tree (Binstead 23).

C. eutrichostomum C. M. from Singapore is according to Fleischer only a narrow leaved form of *C. Dozyanum* Mitt.

***Calymperes Delessertii* Besch.**

Singapore: (fide Brotherus).

Pahang: Pekan, Garden of H. H. the Sultan (Burkill 17130).

Burkill notes that this is used for stuffing mattresses. It seems rather surprising that it should occur in sufficient quantity.

***Calymperes subintegrum* Broth.**

Johore: Gunong Pulai, on tree trunk in jungle (Holtum 16335).

DISTR. Siam, Borneo.

A very distinct species in the structure of the leaf cells; cf. *Journ. Linn. Soc., Bot.*, xliii, 305.

***Calymperes nitidiusculum* Broth. e Roth in *Hedwigia* li, 128 (nomen nudum).**

Johore: Gunong Pulai, on tree trunk in jungle (Holtum 16355).

DISTR. South Kanara, India.

This agrees well with an original specimen kindly sent me by Dr. Brotherus. It is extremely near to *C. subintegrum* Broth. and has the peculiar *Timmia* like cells of that species, but differs in one or two characters.

Calymperes Vriesi Besch.

Penang: Ayer Itam; nov. var. **robustum** Dixon. (Binstead 20).

DISTR. (of type) Celebes.

Calymperes stenophyllum Dixon in *Bull. Torr. Bot. Club* 51: 233 (1924).

Dindings: Lumut (R. 777).

Calymperes nicobarense Hampe.

Singapore: Gardens (R. 355); Bajau (R. 218, 219); Pasir Panjang (R. 250); Woodlands (R. 12603); Kranji (R. 260); Keppel Harbour (Holttum 17480).

Kedah: Pulau Lankawi (Holttum 17417).

This is another case of a species being apparently frequent about Singapore while detected scarcely elsewhere in the peninsula. Otherwise it is known only from the Nicobar Is. It is a fairly marked species, the Singapore plants agreeing well with Hampe's type, differing from *C. Hampei* in the very rigid leaves and teniole scarcely reaching above the shoulder.

Calymperes punctulatum Hampe.

Singapore: Singapore (Fleischer).

Penang: Crag Hill (Binstead 21, 38); Ayer Itam (Binstead 36); Richmond Pool, Government Hill (Haniff and Kadir 15011, 15017), a tall form.

This also occurs elsewhere only in the Nicobar Is. A specimen exists in the Brit. Museum collection labelled "H. 1250, Singapore, leg. ? Wallich," determined by Bescherelle.

Calymperes Hampei Doz. and Molk.

Singapore: bei Serangoon auf Mangrove (Moeller). Gardens, on Albizzia (Holttum 15112).

Johore: Ulu Kahang, 250 ft. (Holttum 10894).

Penang: Ayer Itam (Binstead 25); rock, Botanical Gardens (Binstead 28); Ibidem (Holttum 17382).

Kedah: Pulau Lankawi (Holttum 17477).

Calymperes Fordii Besch.

Penang: Ayer Itam (Binstead 33, 35).

So far as it goes this seems to agree better with *C. Fordii* than with *C. Hampei*, but the differences are very slight, and I believe inconstant, some of the characters given by Fleischer for *C. Fordii* (e.g. basal hyaline cells quadrate) are not supported by Bescherelle's type, in which, too, the outline of the cancelline is very variable.

Calymperes tenerum C. M.

Singapore: Singapore (Schiffner, Fleischer).

Calymperes Bescherellei Fleisch. (Syn. *C. anisodictyon* Besch. in sched., fide Fleischer).

Singapore: Bukit Timah road (Schiffner).

Calymperes serratum A. Br.

Singapore: Bukit Timah (R. 317); Singapore (St. V. B. Down, herb. Binstead); Kranji (Moeller).

Calymperes recurvifolium Besch.

Singapore: Bukit Timah (R. 598; and Fleischer, *M. Frond. Arch. Ind.* 67).

Johore: Gunong Pulai (Holtum 16336).

Penang: im bot. Garten auf erde und Wurzeln (Moeller).

Calymperes heterophyllum (Mitt.) Besch.

Penang: shaded granite rock, Crag Hill (Binstead 13a).

A stem or two picked out of *Leucoloma*. It agrees exactly with Gardner's plant at Kew.

DISTR. Ceylon; Banca.

Calymperes orientale Mitt. var. **polytrichoides** Fleisch. (*C. subfasciculatum* Broth.)

Singapore: Chan Chu Kang (R. 277).

Fleischer reduces this to a var. of *C. orientale*.

Calymperes setifolium Hampe (*C. angustatum* Broth.).

Perak: Tapah (R. 149).

This, the type of *C. angustatum* Broth. MS. in sched., is certainly identical with *C. setifolium*.

DISTR. Philippines.

Calymperes fasciculatum Doz. and Molk.

Johore: foot of Gunong Pulai, on exposed rock (Holtum 16334).

DISTR. Java.

Calymperes longifolium Mitt. (*C. cristatum* Hampe).

Singapore: Chan Chu Kang (R. 440).

Pahang: Gunong Berumban, 5500 ft. (Henderson 11743).

Penang: Penang Hill (R. 533).

Kedah: Pulau Dayang Bunting, Lankawi Is. (Holtum 15132).

C. cristatum Hampe, as I have shewn elsewhere, is identical with *C. longifolium*. I am much inclined to believe that several of the species of *Macrhimanta* are but forms of a variable type, perhaps all to be included under *C. serratum*.

Calymperes constrictum Dixon in *Bull. Torr. Bot. Club* 51: 233 (1924).

Selangor: Klang watercatchment forest; on rotten bark on the ground (Burkill 6836).

***Calymperes salakense* Besch.**

Singapore: Bukit Timah (Fleischer).

Penang: Waterfall Gardens (Holttum 17381, 17384).

[*Calymperes squarrosus* Broth. MS. was founded on a plant of Ridley's, St. Paul's Hill, Malacca (333); unfortunately no material is available; the specimen in the Singapore Bot. Gardens collection consists entirely of *Barbula indica* and *Bryum coronatum*, two terrestrial species which can hardly have formed part of the same gathering as a *Calymperes*].

[*Calymperes molluccense* Schwaegr. is recorded by Mitten as having been collected by Wallich in Singapore; but so many plants have been put under that name that it is scarcely possible to decide on its identity].

POTTIACEAE.***Hymenostomum edentulum* (Mitt.) Besch.**

Kedah: Pulau Lankawi (Holttum 15099).

***Hymenostomum malayense* Fleisch., *M. der Fl. von Buit.* 1,315.**

Singapore: (Fleischer.).

***Trichostomum sarawakense* Dixon in *Journ. Linn. Soc., Bot.*, xliii, 308.**

Perak: Gunong Lanoh, 350 ft., in crevices in limestone (Henderson 15063).

DISTR. Sarawak.

***Hyophila commutata* Broth.**

Singapore: c. fr. (Moeller).

***Hyophila javanica* (Nees) Brid.**

Singapore: auf dem Friedhof an Mauersteinen &c., c. fr. (Moeller).

***Hyophila Micholitzii* Broth.**

Singapore: same localities as the preceding species (Moeller).

***Chionoloma latifolium* Dixon ined.**

Kedah: Pulau Dayang Bunting, Lankawi Is., on limestone rocks (Holttum 15130).

Barbula comosa* Doz. and Molk.**Singapore: (Griffith) fide Mitten, *Musc. Ind. Or.* p. 35; but see note on *Syrrhopodon Griffithii*.Barbula indica* Brid.**

Singapore: (Fleischer); in bot. Garten, &c. (Moeller).

Penang: im bot. Garten, (Moeller); Crag Hill, &c. (Binstead, 3, 34); Penang Hill (R. 747).

***Barbula consanguinea* Thw. and Mitt.**

Singapore: (Fleischer).

Barbula lousiadum Broth.

Penang: Crag Hill (Binstead 30).

Gymnostomiella vernicosa (Hook.) Fleisch.

Singapore: an Mauern, c. fr. (Moeller).

Splachnobryum Oorschotii (Lac.) C. M.

Singapore: am Reservoir an feuchten Steinen (Fleisch.)

ORTHOTRICHACEAE.**Desmotheca apiculata** (Doz. and Molk.) Lindb.

Singapore: Bukit Timah (R. 801).

DISTR. Amboina, Borneo, Java, Sumatra, Philippines, Burma (Mergui, leg. Meebold, 16618, herb. Hort. Bot. Calcutta).

Macromitrium minutum Mitt.

Perak: Gunong Batu Puteh, 3400 ft. (L. Wray Jr. 929), as *M. pilosum* Broth. MS. I cannot however separate it from *M. minutum*, from which it only differs in the reddish colour.

DISTR. Ceylon, Java.

[*Macromitrium nepalense* (Hook. and Grev.) Schwaegr.

Singapore: "Bukit Timah?" (R. 806). A plant with the leaves generally but not always incurved at apex, but agreeing with *M. nepalense* in other respects. The specimen is however poor, and the determination doubtful; the short, papillose basal cells distinguish it at once from *M. incurvifolium* (Hook. and Grev.). In all probability it is identical with the following species.]

Macromitrium brevirete Dixon.

Pahang: Jerantut, on upper branches of tree, about 60 ft. from the ground (Burkill 17467).

Macromitrium goniorrhynchum Doz. and Molk.

Singapore: im botanischen Garten (Moeller).

Macromitrium Zollingeri Mitt.

Kedah: Kedah Peak, 3000 ft., on dead tree trunk (Holtum 14862). This has the seta quite smooth, as in *M. Zollingeri*, but that species, *M. Blumei* and *M. concinnum* must be very close to one another.

Macromitrium ochraceum (Doz. and Molk.) C. M.

Kedah: Kedah Peak, 3800 ft., on ground, just below summit (Holtum 14871). New to the mainland of Asia.

DISTR. Java, Sumatra, Borneo.

Macromitrium Blumii Nees.

Malacca: Mt. Ophir (R. 231).

Pahang: Gunong Tahan (R. 1009).

DISTR. Java, Sumatra, Borneo.

Macromitrium magnirete Dixon in *Bull. Torr. Bot. Club* 51: 234 (1924).

Pahang: Gunong Tahan, 7000 ft. (Haniff and Nur 7907).

Macromitrium semipellucidum Doz. and Molk.

Singapore: Kranji (R. 308); Sungei Buloh (R. 244).

Negri Sembilan: Pantai (R. 749).

Selangor: Telok Reserve, Klang (Burkill 6613).

Perak: Temengok (R. 178); Kuala Kenering (R. 208).

Trengganu: Kuala Berang (Holttum 15333).

Macromitrium incurvifolium (Hook and Grev.) Schwaegr.

Singapore: Kranji (R. 261); Chua Chu Kang (R. 402).

Macromitrium sp.

Johore: Castlewood, on coffee trees, Apr. 1903 (R. 11622).

A sterile plant which appears to have some rather marked characters, but in absence of fruit and the somewhat doubtful normal habit (many branches are globose while others are several centimetres in length) it is best left undetermined.

[*Macromitrium orthostichum* Nees is recorded for Malacca by Brotherus (*Musci*, i, 479), but I do not know on what authority, and am inclined to question its authenticity. Fleischer does not cite it.]

FUNARIACEAE.

Funaria hygrometrica (L.) Sibth.

Frequent in clearings, on ashes etc. (fide H. N. Ridley). Pahang: G. Tahan (R. 1006).

DREPANOPHYLLACEAE.

Mniomalia semilimbata (Mitt.) C. M.

Penang: on granite rock, Ayer Itam (Binstead 37).

DISTR. Sumatra, Borneo, New Guinea, Samoa.

BRYACEAE.

Bryum argenteum L.

var. **australe** Rehm.

Penang: on granite rock, 2000 ft. (Binstead 39).

Bryum coronatum Schwaegr.

Common.

Bryum gedeanum Bry. jav.

Malacca: Mt. Ophir (R. 282).

Penang: Ayer Itam (Binstead 41). This is a somewhat larger plant, with more Bryoid, less Pohlioid areolation than in the Javan specimen issued by Fleischer (*M. Frond. Arch. Ind.* 365); but it agrees quite well with a small specimen in the British Museum collection "Java, Lacoste."

DISTR. Java.

Bryum ambiguum Duby.

Pahang: Gunong Tahan, 5500-7000 ft. (Haniff and Nur 8004).

Penang: Crag Hill (Binstead 42).

Binstead's plant is sterile; the Pahang specimen has abundant but immature fruit; the determination is therefore not quite certain, but I have little doubt that it is correct.

DISTR. Java, Sumatra, Philippines, Tonkin.

Bryum nitens Hook.

Johore: Ratoe (Moeller).

Bryum porphyroneuron C. M.

Penang: Penang Hill (R. 751).

Rhodobryum giganteum (Hook.) Schimp.

Pahang: Telom (R. 129); ibidem, 4000 ft. (Wray 1613).

MNIACEAE.**Mnium integrum** Bry. jav.

Pahang: Fraser Hill, in shade near stream, circa 3900 ft. (Holttum 11479).

Perak: (Ridley, in herb. D. Lillie, as *M. succulentum* Mitt.).

This is certainly the plant of the *Bry. jav.*, and the plant described by Fleischer (*M. der Fl. von Buitenzorg* II, 581), but it is not identical—as Fleischer makes it—with *M. succulentum* Mitt., which is a quite different plant with much larger cells.

It appears to me doubtful whether *M. integrum* be anything more than a diocious form of *M. rostratum*.

DISTR. Java, Sumatra.

RHIZOGONIACEAE.**Rhizogonium spiniforme** (L.) Br.

Common.

Rhizogonium latifolium Bry. jav.

Singapore: Kranji (R. 106); Chan Chu Kang (R. 113).

Johore: Gunong Belumut, 3000 ft. (Holttum 10697).

Pahang: Gunong Tahan: (Ridley, without number).

Penang: Penang Hill (R. 526); Richmond Pool, Government Hill (Haniff and Kadir 15003).

Rhizogonium novae-hollandiae Brid.

Pahang: Gunong Tahan, 5500-7000 ft. (Haniff and Nur. 7976). Sterile.

DISTR. South Australia, Patagonia.

A remarkable extension of the range of this species. The Pahang plant is a slightly more rigid form than the Australasian, with the leaves not at all altered when dry, but in all other respects agrees exactly. *R. salakanum* Broth. differs at once in the nerve not excurrent.

BARTRAMIACEAE.

Philonotis laxissima (C. M.) Bry. jav.

Penang: Crag Hill, 2000 ft. (Binstead 44); Penang (Haniff 300); im botanischen Garten (Moeller).

Philonotis secunda Doz. and Molk.

Perak: Maxwell's Hill (Burkill 12779, 12814); Taiping Hills (R. 11641).

WEBERACEAE.

Diphyscium rupestre Doz. and Molk.

Singapore; rare, on a rock, Bukit Timah (R. 618).

Perak: Gunong Keledang (R. 702).

DISTR. Java, Borneo.

POLYTRICHACEAE.

Rhacelopus pilifer Bry. jav.

Negri Sembilan: Gunong Tampin, on exposed rocks and earth, 900-1800 ft. (Burkill 2861, 2865).

Selangor: Ginting Peras (R. 420); Weld Hill Reserve, Kuala Lumpur (Nur 4766); Semangkok (Ridley).

Pahang: Fraser Hill, 4000-4370 ft. (Burkill and Holttum 8772).

Perak: Lenggong (R. 175); Taiping (R. 198); Maxwell's Hill (R. 281; Burkill 13216); Bujong Malacca (R. 743); Tapah (R. 169).

Kelantan: Kuala Kerai (Haniff and Nur 10145).

Pogonatum Neesii C. M.

Pahang: very abundant on freshly cleared ground on hill top, Fraser Hill (Burkill and Holttum 8458).

Fleischer, *M. der Fl. von Buit.* IV, 1583, 1590, describes the capsule as smooth; but C. Mueller in the original description describes it as "sexies callosa," and the ribbed capsule, plicate when empty, is distinct in the Neilgherries plant. It may, I think, be doubted whether *P. Junghuhnianum* really differs.

Pogonatum Junghuhnianum (Doz. and Molk.) var. **incurvum** Bry. jav.

Pahang: Telom (R. 103).

Pogonatum cirratum (Sw.) Brid.

Negri Sembilan: Gunong Angsi, abundant above 2000 ft. (Holttum 9933).

Pahang: Fraser Hill, 4000-4370 ft. (Burkill and Holttum 8469).

Perak: Batang Padang (Stresemann, 79); Maxwell's Hill, 3600 ft. (Burkill 12910).

Penang: Western Hill (Burkill 765); Moniot's Rd. (Burkill 2586).

Pogonatum Teysmannianum (Doz. and Molk.) Bry. jav.; forma foliis longioribus, siccitate valde contortis.

Penang: Richmond Pool, Government Hill (Haniff and Kadir 15021).

Kedah: Kedah Peak, 3000 ft. (Holtum 15025).

DISTR. Java, Sumatra, Borneo, Amboina: (of type).

Pogonatum macrophyllum (Doz. and Molk.) Bry. jav.
(Syn. *P. flexicaule* Mitt.)

This magnificent species, which may attain a height of 35 cm., is not infrequent. I have records from Malacca, Selangor, Pahang, Perak, and Penang.

Elaborate attempts have been made to maintain the distinction between the Javan *P. macrophyllum* and the continental *P. flexicaule* Mitt., based entirely on the presence of lamellae of one row of cells in the latter, while in *P. macrophyllum* they are supposed to be absent, or the leaves are described as "fast lamellenlos." There is no reason I believe to suppose that the latter form is confined to Java, or that the continental plant is always the lamellate form; Fleischer indeed (who does not refer to *P. flexicaule*) records *P. macrophyllum* from Perak.

In my opinion they are but slight forms of the same plant, the Javan form exhibiting a slightly more hygrophytic condition. This view is I think not only supported but demonstrated by the fact that in cutting sections of *P. macrophyllum* (Fleisch., M. Fr. Arch. Ind. et Polyn. 499) I have found leaves which show the lamellae as fully developed as those of typical *P. flexicaule*.

Pogonatum sp.

Perak: Maxwell's Hill (Curtis 847).

A curious plant with habit of *P. contortum* (Menz.), but the capsule is quite different. The lamellae are very low, probably 1-seriate, but the leaves are strongly curled and very fragile, and do not moisten out, so that it is impossible to get a satisfactory section; and it is difficult to know whether it is a normal or a pathological condition. It is probable that it is a new species.

MYURIACEAE.

Myurium rufescens (Hornsch. and Reinw.) Fleisch.

Singapore: Gardens (R. 50).

Myurium subnitens Dixon in *Bull. Torr. Bot. Club* 51: 234 (1924).

Pahang: Fraser Hill (R. 282).

NECKERACEAE.

Endotrichella elegans (Doz. and Molk.) Fleisch.

Pahang: Fraser Hill, 4000-4370 ft. (Burkill and Holttum 8821); Robinson's Falls, Cameron's Highlands, 4800 ft. (Henderson 11727); Gunong Berumban, 6000 ft. (Henderson 11750); Telom (R. 113).

Perak: Gunong Kerbau (Haniff 243); Batang Padang (Stresemann 96).

Endotrichella plano-marginata Dixon in *Bull. Torr. Bot. Club* 51: 235 (1924).

Selangor: Gua Batu (R. 472).

Garovaglia aristata Bry. jav.

Selangor: Gua Batu (R. 640); Kuala Lumpur (R. 259).

DISTR. Burma.

Garovaglia polythrix Dixon ined.

Penang: Government Hill, 2500 ft. (Holttum 17374).

Symphysodon neckeroides Doz. and Molk.

Kedah: Gunong Raya, Lankawi Is. (Haniff and Nur 7109).

DISTR. Java, Sumatra, Borneo.

Papillaria fuscescens (Hook.) Jaeg. var. **rigidicaulis** Fleisch.

Pahang: Gunong Tahan (R. 1017).

Kedah: Kedah Peak, 3000 ft. (Holttum 14886). A form with shortly pointed, very plicate leaves.

Meteorium Miquelianum (C. M.) Fleisch.

Pahang: Gunong Berumban (R. 118).

Selangor; Batu Caves (R. 843).

Floribundaria floribunda (Doz. and Molk.) Fleisch.

Selangor: Gua Batu (R. 495).

Perak: Temengoh (R. 225, 230).

Penang: Crag Hill (Binstead 46).

Aerobryopsis longissima (Doz. and Molk.) Fleisch.

Frequent, and very variable.

var. **condensatum** Dixon.

Penang: Crag Hill, on gritty soil on ground (Binstead 64).

A very dense and very small form, with short branches and very small leaves.

Orthorrhynchium philippense C. M.

Perlis: Kanga (R. 305).

DISTR. Philippines.

Neckeropsis gracilentia (Bry. jav.) Fleisch.

Singapore: Chua Chu Kang (R. 357).

Selangor: Gua Batu (R. 479).

Dindings: Gunong Tungul (R. 502).; Bruas (R. 500).

Neckeropsis lepineana (Mont.) Fleisch.

Perak: Gunong Kerbau (Haniff 844).

Penang: (Curtis 4).

Neckeropsis penicillata Herzog in *Hedwigia* lvii, 242 (1916).

In der Bergen des Sakai-Gebietes (Inner-Malakka) von Dr. E. Werner gesammelt.

Neckeropsis andamana (C. M.) Fleisch.

Kedah: Pulau Dayang Bunting, Lankawi Is. (Holtum 15131). The determination is not quite certain. The leaves are a little more pointed than usual.

Himantocladium plumula (Nees) Fleisch.

Malacca: Bukit Tampin (Goodenough 1950).

Selangor: Ginting Bidai (R. 412).

Trengganu: (R. 280).

Penang: fide Fleischer (*Musci der Flora von Buit.* iii, 892) as *H. arbuscula* (Hampe). I have no hesitation however in following Mitten in reducing *H. arbuscula* to *H. plumula*.**Himantocladium rugulosum** (Mitt.) Fleisch.

Penang: (R. 559); im botanisch. Garten (Moeller).

Himantocladium loriforme (Bry. jav.) Fleisch.

Johore: Pulau Tinggi, on rocks by stream (Burkill 941).

Himantocladium exsertum (Hook.) Fleisch.

Malacca: fide Fleischer (op. cit. p. 887).

Homaliodendron flabellatum (Dicks.) Fleisch.

Malacca: fide Fleischer.

Kedah: Lankawi Is. (Haniff and Nur 7116).

Homaliodendron javanicum (C. M.) Fleisch.

Pahang: Gunong Berumban, Cameron's Highlands, 5000 ft. (Henderson 11769).

Homaliodendron microdendron (Mont.) Fleisch.Malacca: (R. 722). This is recorded in Ridley's list as *H. flabellatum*, but I have no doubt it is a lapsus calami of Brotherus for *H. microdendron*; my specimen is clearly that and there is no apparent mixture.**Homaliodendron scalpellifolium** (Bry. Jav.) Fleisch.

Perak: Gunong Hijau, on trees (Wray 107).

Homaliodendron pinnatelloides Herzog in *Hedwig.* lxi, 296 (1919).

Perak: Batang Padang: (Stresemann 91).

Homaliodendron intermedium Herzog op. et loc. cit.

Perak: Batang Padang: (Stresemann 84).

Homaliodendron exiguum (Bry. jav.) Fleisch.

Perak: Batang Padang (Stresemann 88).

Homaliodendron glossophyllum (Mitt.) Fleisch.

Perak: Taiping (R.); Temengoh (R.).

Pinnatella anacamptolepis (C. M.) Broth.Selangor: Gua Batu (R. 638); Mitten determined this as *P. mucronata*, but it is certainly this species.

Perak: Tapah (R. 166).

Pinnatella mucronata (Bry. jav.) Fleisch.

Singapore: (Geach 39, herb. Mitt.); Stagmount (R. 140).

Johore: Kota Tinggi (Holttum 15046).

Pahang: Gunong Tahan: (R. 824).

Perak: Tapah: (R. 146) as *P. complanata* Broth. MS., but I can find no difference from *P. mucronata*.**Pinnatella Kuehliana** (Bry. jav.). Fleisch.

Singapore: (Herb. Mitten).

Selangor: Gua Batu (R. 639).

Pahang: River Tahan (R. 211).

Pinnatella microptera (C. M.) Fleisch.

Singapore: Palms at Tanjong Katong (Fleischer).

Perak: Kati, Kuala Kangsar (Haniff 14937).

Pinnatella lingulata Dixon in *Bull. Torr. Bot. Club*, 51: 236 (1924).

Negri Sembilan: Gunong Tampin, 1800 ft., horizontal on upright trunks (Burkill 2864).

Perak: Gunong Batu Puteh 3400 ft. (L. Wray Jr. 1042). This was received as *Neckera plumuloides* Broth. M.S., but it had already been published under the present name.

ENTODONTACEAE.

Entodon Bandongiae (C. M.) Jaeg.

Selangor: Rawang (R. 403).

Pahang: Telom (R. 89).

Perak: Batang Padang Valley (L. Wray Jr. 1465). As *Entodon subpallidisetus* Broth. M.S. I cannot however separate it from this.**Campylodontium flavescens** (Hook.) Bry. jav.

Pahang: Telom (R. 109).

Penang: (Curtis).

Cribrodontium Werner Herz. nov. gen. et sp. in *Hedwig*. lvii, 242 (1916).

Malacca: In dem Bergland der Sakai (Inner-Malakka) (Werner).

NEMATOCACEAE.

Ephemeropsis tjibodensis Goeb.

Penang: Penang Hill (R. 782).

Ridley lists this as determined, seemingly, by Brotherus. I have not seen Malayan specimens; it has hitherto been recorded only from Java, but I have recently detected it among other mosses on twigs of a Melastomaceous plant from Toko Rattan, Bencoolen, Sumatra, coll. C. J. Brooks, in herb Kew. It grows in very damp situations, and has quite probably been overlooked, owing to its minuteness and brown colour.

HOOKERIACEAE.

Distichophyllum nigricaula Mitt.

Pahang: Fraser Hill, 4000 ft., on log in jungle (Holttum 11376a).

DISTR. Java.

Distichophyllum sinuosulum Dixon.

Perak: Birch's Hill, 3800 ft., on rock (Burkill 12606).

Distichophyllum cuspidatum Doz. and Molk.

Penang: Penara Bukit (R. 571); Penang Hill (R. 770); Moniot's Rd., 2300 ft., on branches near the ground (Burkill 2584).

Distichophyllum undulatum Doz. and Molk.

Perak: Gunong Batu Puteh (Wray 945). The locality is not actually stated, but the collecting number defines it without doubt.

Distichophyllum Mittenii Bry. jav.

Johore: Kukub (R. 4).

Pahang: Fraser Hill, on fallen tree trunk, 4000 ft. (Burkill and Holttum 8708, 8712); Gunong Berumban, Cameron's Highlands, 6000 ft. (Henderson 11729, 11752).

Perak: Temengoh (R. 187); Sungei Mengkoro, Taiping Hills (Anderson 313).

Kelantan: Gunong Sitong (Nur 12250); a form with obtuse leaves, without apiculus, and the border almost failing above, as in *D. Osterwaldii*, but it appears to belong here.

Distichophyllum spathulatum Doz. and Molk.

Pahang: Telom (R. 104, 135); Cameron's Highlands, 5000 ft. (Henderson 11752b); circa 6000 ft. (Henderson 11779).

Perak: Gunong Batu Puteh, 3400 ft. (Wray 1039).

Distichophyllum pterygophylloides Dixon ined.

Pahang: Gunong Tahan (R. 1024).

DISTR. Java, Sumatra.

Distichophyllum Schmidtii Broth.

Kedah: Pulau Lankawi, on earth bank by stream (Holttum 17445).

DISTR. Siam.

Eriopus remotifolius C. M.

Pahang: Cameron's Highlands circa 4500 ft., on roots of an epiphytic orchid, Sept. 1925 (Kinder). Two small scraps of what is clearly this species, and represents almost the same undeveloped state as the plant described as *Cyathophorum limbatulum* Ren. and Card. Fleischer (*Musci der Flora von Buit.* iii, 1011) expresses the opinion that this is probably a state of *E. remotifolius*, and the present plant confirms that view, as with exactly the same size and habit it has a broader border and longer points.

DISTR. Sumatra, Borneo, New Guinea.

Callicostella prabaktiana (C. M.)

Singapore: Bukit Panjang (R. 1); Bukit Timah (R. 360, 624); Gardens (R. 620).

Negri Sembilan: Gemas, on root in boggy hollow (Burkill 6388 p.p.); Perhentian Tinggi (R. 754).

Penang: Penang Hill (R. 513).

Callicostella papillata (Mont.) Jaeg.

Singapore: Bukit Timah (R. 36).

Pahang: Fraser Hill, 4000 ft. (Nur 11069, 11376).

Perak: Temengoh (R. 210); Birch's Hill, 3800 ft., on stones (Burkill 12601); Batang-Padang, forma (Stresemann 100).

Penang: Moniot's Rd., 2300 ft. (Burkill 2670), on upper surface of a plank bridge.

Callicostella Beccariana (Hampe) Jaeg.

Singapore: Bukit Timah (Ridley).

Selangor: Telok Reserve, Klang, on fallen log (Burkill 6566).

Chaetomitrium papillifolium Bry. jav.

Selangor: Ulu Gombak Reserve (Burkill 9964);

Perak: Tapah, on trunk of tree by river (Burkill 13513).

DISTR. Java, Ceylon, Andaman Is.

Chaetomitrium leptopoma (Schwaegr.) Doz. and Molk.

Selangor: Bukit Hitam (R. 417).

Perak: Birch's Hill, 4200 ft. (Burkill 13025).

Chaetomitrium muricatum Bry. jav.

Selangor: Ginting Bidai (R. 405, 411).

DISTR. Java.

C. leptopoma, *C. muricatum*, and *C. orthorrhynchum* are, as pointed out by Fleischer, three very closely related species, and perhaps more correctly considered as together forming a single species. Ridley's 405 and 411 are indeed intermediate between *C. leptopoma* and *C. muricatum*; and 405 is exactly the same thing as *C. cygneum* C. M. from New Guinea.

Chaetomitrium orthorrhynchum (Doz. and Molk.) Bry. jav.
Selangor: Gua Batu (R. 474).

DISTR. Java, Sumatra, Borneo, Celebes.

Chaetomitrium elongatum Doz. and Molk.

Pahang: Sungei Perting, Bentong (Burkill 16569).
Dindings: (R. 373).

This specimen, from the New York Bot. Garden, was named by Mitten *C. ciliatum* Doz. and Molk., but it is certainly not that species. It agrees well with Bornean specimens of *C. elongatum*, the calyptra and rather long seta being characteristic.

DISTR. Java, Borneo, Moluccas.

Chaetomitrium borneense Mitt.

Selangor:: Ginting Bidai (R. 422).

Perak: Upper Perak, 300 ft., on trees (L. Wray Jr., 3636);
as *Pilotrichella perakensis* Broth. MS.

DISTR. Borneo.

Chaetomitrium perakense Broth. e Dixon in *Bull. Torr. Bot. Club* 51: 237 (1924).

Perak: Bidor, Tapah (R. 159, 164).

Chaetomitrium setosum Broth. *op. et loc. cit.*

Perak: Tapah (R. 169).

Chaetomitrium nematosum Broth. (*Chaetomitrium serratum* Broth. n. sp. in sched.)

Perak: Kuala Kenering (R. 205).

Distr. Queensland.

This was actually written *Chaetobryum serratum*, but clearly by a lapsus calami. It is quite distinct from any of the Malayan species of *Chaetomitrium*, but is indetical with the Queensland species, of which it has the peculiar brood-filaments, the rather curious dichroic colouring etc. The leaves are slightly less spreading than in the Queensland plant.

HYOPTERYGIACEAE.

Hypopterygium javanicum (Hampe) Jaeg.

Singapore: Bukit Timah (Ridley).

Negri Sembilan: Tampin (Goodenough 300).

Pahang: Telom (R. 127).

RHACOPILACEAE.

Rhacopilum spectabile Reinw. and Hornsch.

Pahang: Telom (R. 92, 93, 106, 122, 124, 133, 138, 828);
Fraser Hill, 4000 ft. (Nur 11206).

Perak: Batang Padang (Stresemann 97); Jor (Haniff 14220a).

Rhacopilum cuspidigerum Schwaegr.

Pahang: Jerantut, on branch of tree circa 60 ft. above ground (Burkill 17466). A moss with a wide insular Malayan and Pacific distribution, but not hitherto recorded from continental Asia.

Pelekium velatum Mitt.

Singapore: Gardens, on coral in rockeries. (Holttum 15353).

Johore: Bukit soja (R. 240).

Selangor: Gua Batu (R. 60, 61, 62,); Telok Forest Reserve,
Klang (Burkill 7021, 7022, 6561).

Negri Sembilan: Gunong Tampin, 1800 ft. (Burkill 2853).

Pahang: Telom (R. 111); Pekan, on coral (Burkill 17132).

Perak: Temengoh (R. 188, 189, 215, 220).

Thuidium Meyenianum (Hampe) Bry. jav. (*T. trachypodium* (Mitt.) Lac.).

Johore: Tempayan R., Kukub (Ridley).

Selangor: Ginting Bidai (R. 421).

Pahang: Telom (R. 100, 101).

Kedah: Pulau Lankawi (Holttum 17405).

Perlis: Kanga (R. 236).

Fleischer (*M. der Flora von Buit.* iv, 1521) reduces *T. trachypodium* (Mitt.) and *T. faulense* (Reichh.) to *T. Meyenianum* (Hampe). In *Journ. of Bot.* 1913, p. 326, I had already pointed out the indentivity of *T. faulense* and *T. Meyenianum*. At the time I was inclined to consider the Pacific *T. erosulum* Mitt. distinct from *T. Meyenianum*, on account of the laxer, more complanate, more obtuse ramuline leaves of the former. I have later come to the conclusion, however, that *T. erosulum* is certainly inseparable from *T. trachypodium*, and the view is no doubt correct that all these plants belong to one species, showing a slight variation in the leaf arrangement and the form of the ramuline leaves. If this view is maintained, *T. erosulum* Mitt. must be added to the synonymy given by Fleischer.

T. Meyenianum is easily confused with *Pelekium velatum*, indeed, unless with fruit, or at least perichaetia, is difficult to separate from it.

Thuidium bifarium (Doz. and Molk.) Bry. jav.

Singapore: Chan Chu Kang: (R. 278).

Selangor: Gua Batu (R. 65, 470, 635).

Perak: Temengoh (R. 183).

Perlis: Kanga (R. 304).

Thuidium plumulosum (Doz. and Molk.) Bry. jav.

Selangor: Ulu Gombak (Ridley); Bukit Kutu (R. 413);
Ginting Peras (R. 410);
Pahang: Kota Glanggi (R. 212).

Thuidium glaucinoides Broth.

Selangor: Ulu Gombak (Ridley).
Penang: Crag Hill (Binstead 72).

Thuidium orientale Mitt.

Penang: Penang Hill (Curtis, in herb. Mitten, type); Penara
Bukit (R. 567).

Thuidium cymbifolium (Doz. and Molk.) Bry. jav.

Pahang: Telom (R. 114).
Perak: Temengoh (R. 179); Ulu Batang Padang (R. 95).

HYPNACEAE.

Ctenidium falcifolium Dixon in *Bull. Torr. Bot. Club* 51: 238 (1924).

Perak: Taiping Hills (R. 817).

ECTROPOTHECIUM. This large and very difficult genus is rather well represented in the peninsula. I believe the following determinations to be correct, but I feel myself at a disadvantage from want of knowledge of the plants in the field. Fleischer's treatment in the *Flora von Buitenzorg* is in many ways helpful; but there are certain points which I find difficult to grasp, and certain relationships made which are not easy to follow.

Ectropothecium buitenzorgii (Bél.) Jaeg.

Common and well distributed.

"*Cupressina malaccana* C. Muell. sp. n., type, Government Hill, Pulau Penang," Curtis in sched., appears to me to be only a robust, closely pinnate form of *E. buitenzorgii*. I am also unable to see anything else in *E. falciculatum* Broth. MS. (Perak, L. Wray Jr. 957).

Ectropothecium singaporense Dixon in *Bull. Torr. Bot. Club* 51: 239 (1924).

Singapore: Gardens, in grass in open (Binstead 78).

Ectropothecium sparsipilum (Bry. jav.) Jaeg.

Pahang: Gunong Berumban, Cameron's Highlands, 5500 ft.,
on tree trunk (Henderson 11746).

DISTR. Java.

This appears to be a critical and much misunderstood plant, and rare; the Pahang plant agrees well with the description given by Fleischer, having the habit, the seta about 2 cm. long, the calyptra slightly hairy, the perichaetial leaves strongly toothed and occasionally lacerate.

Ectropothecium ichnotocladum (C. M.) Jaeg.

Johore: Gunong Belumut, 3000 ft. (Holttum 10851).

Pahang: Telom (R. 112).

Fleischer, following the *Bry. jav.*, describes this as "fast glanzlos"; his no. 342, *M. Fr. Arch. Ind.*, is however markedly glossy, and fertile specimens from Sumatra agreeing in every way with the *Bry. jav.* figures and description are very highly so. It appears to be one of the rare cases in which the younger leaves show a gloss which is not retained in the older ones.

Ectropothecium eleganti-pinnatum (C. M.) Jaeg. (*E. callichroides* (C. M.) Jaeg. var. *elongatum* Dixon in *Bull. Torr. Bot. Club* 51: 239).

Selangor: Rawang (R. 382).

Perak: Temengoh (R. 184).

Kedah: Gunong Raya, Lankawi Is. (Haniff and Nur 7134);

Kedah Peak, 3000 ft., (Holttum 14898).

DISTR. Philippines.

Ectropothecium Moritzii (C. M.) Jaeg.

This species, which is stated by Fleischer to be rare in Java, is common and widely distributed in the Peninsula. I have received it from numerous localities ranging from Penang and Kelantan to Singapore.

var. **stereodontoides** Dixon in *Bull. Torr. Bot. Club* 51: 241 (1924).

Pahang: Fraser Hill, 4000 ft. (Burkill and Holttum 8715d);
ibidem (Holttum 11375).

For notes on this species see my article cited above.

Ectropothecium serratum Herzog in *Hedwig*. lxi, 297 (1919).

Perak: Batang-Padang (Stresemann 80).

Herzog compares this with *E. Moritzii*, stating that it differs in the sharply serrulate leaves and the habit; but in view of the great variability in that species, in which the leaves are commonly sharply toothed, the specific value of the present plant seems to me very doubtful.

Ectropothecium dealbatum (Hornsch. and Reinw.) Jaeg.

Negri Sembilan: Gunong Tampin, 1800 ft., on fallen log
(Burkill 1175).

Pahang: Raub; iron water-pipes in forest (Burkill 17155b).

Perak: Maxwell's Hill, 3800 ft. (Burkill 13198).

Penang: Waterfall Gardens (Holttum 17380).

Ectropothecium incubans (Hornsch. and Reinw.) Jaeg.

Singapore: Chan Chu Kang (R. 271, as *E. malaccense* Broth.
sp. nov. in sched.). This appears to me undoubtedly *E.*
incubans.

Negri Sembilan: Perhentian Tinggi (R. 737).

Perak: Telom (R. 112, as *E. malaccense* Broth. sp. nov. in sched.)

f. scaberula Fleisch. (*E. scaberulum* Broth.) Selangor: Gua Batu (R. 494).

Ectropothecium penangense Fleisch. *M. der Flora von Buit.* iv, 1410.

Penang: im botanischen Garten an Palmen (Fleischer).

Ectropothecium monumentorum (Duby) Jaeg.

Singapore: Gardens (R. 319, 329, 613); Bukit Timah (R. 307).

Ectropothecium Chamissonis (Hornsch.) Jaeg.

Pahang: Fraser Hill, circa 4000 ft., on tree in jungle (Holtum 11366a).

Ectropothecium Zollingeri (C. M.) Jaeg.

Singapore: Gardens; in the tank in Plant House; fruiting only when left dry (Burkill 3258). This is no doubt a form of *E. Zollingeri*, which is a distinctly hygrophytic species.

[*Ectropothecium singapurianum* Broth. MS. is a *Vesicularia*, which I do not think can be separated from *V. reticulata*.]

Trachythecium calcicolum Fleisch. *M. der Flora von Buit.* iv, 1417.

Selangor: "Malacca; bei Gualalumpur in Kalksteinhoehlen, 200m. (detex. Fleisch. 1909.)"

Allied to *Ectropothecium verrucosum* (Hampe) Jaeg., a species which should occur in Malaya.

Stereodon malayanus Dixon.

Perak: Birch's Hill, 3800 ft., on stump (Burkill 12602a).

The only species of this large and widely spread genus known from the peninsula.

Isopterygium Textori (Bry. jav.) Mitt.

Perak: Maxwell's Hill, 3800 ft., on stone in shade (Burkill 12647a).

DISTR. Japan, Annam, Borneo, South India.

Isopterygium arquifolium (Bry. jav.) Jaeg.

Kedah: Gunong Bintang, June 1917 (C. B. Kloss); in herb. Kew.

DISTR. Java, Amboina, Sumatra, Ceylon.

Isopterygium minutiramem (C. M.) Jaeg.

Singapore: Garden jungle (R. 328, 366).

Johore: Kukub (R. 301).

Pahang: Kuantan (Burkill 16126, 16703).

Perak: Birch's Hill, 3800 ft. (Burkill 12604).

Isopterygium albescent (Schwaegr.) Jaeg.

Singapore: Gardens, on Palm stem (Binstead 77).

Selangor: Gua Batu (R. 58, 406, 637). These appear as *Ectropothecium leiophyllum* Mitten MS. in Mitten's herbarium.

Pahang: Fraser Hill, 4000-4370 ft. (Burkill and Holttum 9181).

Perak: Maxwell's Hill, 3800 ft, on stone in shade (Burkill 12647b).

Isopterygium subalbescent Broth.

Singapore: (Fleischer).

Isopterygium laxissimum Card.

Selangor: Gua Batu (R. 641).

DISTR. Formosa.

This agrees perfectly with Cardot's description of the Formosan plant.

Isopterygium bancanum (Bry. Jav.) Jaeg.

Selangor: Gua Batu, on the ground (Burkill 6371); ibidem (R. 645).

Penang: Crag Hill (Binstead 55).

Isopterygium constrictum Broth. ined.

Perak: Lower Camp, Gunong Batu Puteh, 3400 ft. (L. Wray Jr. 1403).

Plagiothecium Miquelii (Bry. jav.) Broth.

Common and widely distributed; somewhat variable in habit, size, gloss, &c., but retaining its structural characters very constantly. Fleischer places it in *Vesicularia*, and it is certainly closely allied to *V. Kurzii*. It occurs under various names in herbaria; e.g. *Taxithelium albifolium* Mitt. MS., *Taxithelium Ridleyi* Broth. MS.

TAXITHELIUM. A very complex and difficult genus, grading in different directions into *Isopterygium*, *Trichosteleum*, *Acanthocladium*, and even to other genera. The genus, as understood by Brotherus, is distributed by Fleischer among a number of new genera, some of which, at least, I think will certainly stand. I have however, adopted Brotherus's arrangement here.

Taxithelium instratum (Brid.) Broth.

Singapore: Bot. Garden (Fleischer; Moeller); Jurong Road (Burkill 1410).

Negri Sembilan: Gunong Tampin (Holttum 9590).

Pahang: Jerantut (Burkill 17469).

Perak: Jor (Haniff 14249). Upper Perak, 300 ft. (L. Wray Jr. 3732), as *Trichosteleum pseudoinstratum* Broth.

Kelantan: Kuala Rek (Haniff and Nur 10178).

There is a peculiarity of the papillae in this species, which appears to have passed unnoticed. They are most frequently either bi-tri-fid at apex, or very often are geminate and side by side from the base, so that with a comparatively low magnifying power they appear often to be transversely elongate; and this is sometimes so regular that the whole line of papillae on a cell surface is "two deep," not as usual in "indian file." I have found this constant in plants from all parts including *Sigmatella trichochaete* C. M. from the Andamans, and its presence in Wray's *Trichosteleum pseudo-instratum* Broth. stamps it at once as belonging here.

Taxithelium nepalense (Harv.) Jaeg.

Singapore: Im botanisch. Garten (Moeller); Kranji (R. 695); Bukit Timah (R. 692, 693).

Pahang: 8 miles south of Kuala Lipis on sandstone rocks (Burkill 17200); Raub, on iron waterpipes (Burkill 17155a).

Penang: rocks, rotting wood, &c. (Binstead 49, 54, 61); ibidem (Fleischer).

Fleischer now unites *T. turgidellum* (C. M.) with *T. nepalense*, a reduction with which I am quite in agreement, as I have never been able to grasp the distinguishing characters. He also gives as a synonym *Trichosteleum trochalophyllum* (Hampe) Jaeg., (nomen solum) which I published (as *Tax. trachaelophyllum*) in *Bull. Torr. Bot. Club* 51: 243 (1924). Looking upon *T. nepalense* as a wide-spread species in the Indo-Malayan region, with a considerable range of variation in the form of leaf, the degree of obtuseness of the apex, and the distinctness of the papillae, this is I think quite a sound view, and at the same time my *T. subtrachaelophyllum* (op. cit.) and also *T. Gottscheanum* (Hampe) Broth. must fall into the same synonymy.

Taxithelium capillipes (Bry. jav.) Broth.

Singapore: Pulau Serapu (R. 733); Bukit Timah (R. 318).

Selangor: Port Swettenham (Burkill 845, 1276, 2698).

Pahang: Fraser Hill, 4000-4370 ft. (Burkill and Holttum 8454).

Penang: Moniot's Rd., 2000 ft. (Burkill 2679).

Taxithelium isocladum (Bry. jav.) Ren. and Card.

Frequent. I have it from practically all the States. *T. singaporense* Broth. MS. is certainly this.

Taxithelium isocladioides Dixon in *Bull. Torr. Bot. Club* 51: 243 (1924).

Perak: Bujong Malacca (R. 737).

Taxithelium Deningeri Herz. in *Hedwig*. lxi, 298 (1919).

Perak: Batang Padang (Stresemann 89).

Apparently much like my *T. isocladioides*, but differing at once from its allies in the large, hyaline or orange cells.

Taxithelium kerianum (Broth.) Broth.

Negri Sembilan: Perhentian Tinggi (R. 738, 740).

Selangor: Klang: (Fox 833).

Perak: Temok, Tapah (R. 164). This was determined by Brotherus as *T. perakense* n.sp., but it certainly belongs here.

DISTR. Queensland, New Guinea, Java.

Taxithelium Lindbergii (Bry. jav.) Ren. and Card.

Malacca: Mt. Ophir (R. 707 p.p.).

Selangor: Semangkok, 1500 ft. (R. 482).

Penang: Penang Hill (R. 517).

Kedah: Kedah Peak (R. 245).

Widely distributed in the Malayan Islands, and known also from Tahiti, but only recorded from Annam in continental Asia.

Taxithelium papillatum (Harv.) Broth.

Common and well distributed. Very variable in form and acumination of leaf, &c. I cannot think *T. acanthocladioides* Broth. MS. any more than a form of this. *T. stigmatosum* (Mitt.) is I think undoubtedly the same. Two of the extreme forms I incline to separate as varieties, var. *angustum* Dixon and var. *brevifolium* Dixon (both ined.).

Taxithelium decrescens (Doz. and Molk.) Broth.

Malacca: Kuala Lumpur, near Gua Batu (Fleischer). (This should be credited to Selangor; Fleischer uses "Malacca" evidently as a general term for the district).

Taxithelium Plumularia (C. M.) Broth.

Singapore: Bukit Timah (R. 317).

Negri Sembilan: Gemas, forming horizontal lines on a trunk (Burkill 4484).

DISTR. Only known hitherto from a single unlocalized spot in Java, coll. Blume.

Taxithelium magnum Fleisch. var. **majus** Fleisch.

Pahang: Gunong Benom, 5000 ft. (Collector 17481).

DISTR. Java, Sumatra.

A very fine and distinct species.

Taxithelium bilobatum Dixon in *Bull. Torr. Bot. Club* 51: 244 (1924).

Perak: Bujong Malacca (R. 739); Birch's Hill, 3800 ft., on stone in forest (Burkill 13007), nov. var. *scabrifolium* Dixon.

This remarkable plant, unique among mosses in having its leaves bifid or bi-lobed, was described from Ridley's No. 739, which has the leaves quite smooth. Most remarkably, within a few weeks of its publication I received the Birch's Hill specimen, which while

agreeing with the type in every other way has the apices of the cells highly prominent, so that the leaves are strongly scabrous at back. The upper marginal denticulations here, as in the type, are frequently bigeminate, a character which was overlooked in the diagnosis of the species.

Vesicularia reticulata (Doz. and Molk.) Broth.

Singapore: Bukit Panjang (R. 268); Singapore (Binstead 79); Bukit Timah (R. 630); Gardens (R. 586).

Selangor: Gua Batu (R. 493).

Perak: Maxwell's Hill (Burkill 13186).

Penang: (R. 562b).

Perlis: Kanga (R. 814).

Vesicularia Montagnei (Bel.) Broth.

Singapore: Gardens (Moeller).

Selangor: Gua Batu (R. 59).

Vesicularia Dubyana (C. M.) Broth.

Singapore: Gardens (R. 627); ibidem (Binstead 81; Moeller).

Selangor: Gua Batu (R. 63, 66).

Perak: Temengoh (R. 193, 211).

Penang: Government Hill, 2500 ft. (Burkill 2885, 2887).

Vesicularia Kurzii (Bry. jav.) Broth.

Singapore: Bukit Timah (R. 435).

Perak: Tanjong Malim (Burkill 13484).

LEUCOMIACEAE.

Leucomium aneurodictyon (C. M.) Jaeg.

Pahang: Telom (R. 98).

SEMATOPHYLLACEAE.

Mastopoma impolitum Dixon.

Johore: Gunong Belumut, 3000 ft. (Holtum 10694a).

Mastopoma papillatum Dixon.

Kelantan: Gunong Sitong, circa 2600 ft. (Nur 12234).

Acanthocladium scabrifolium Broth.

Pahang: Fraser Hill, 4800 ft., on tree trunk in low mossy forest (Burkill and Holtum 8730). Fruiting well. The fruit had up to now not been seen.

DISTR. Java.

Acanthocladium tenuisetum Dixon.

Pahang: Robinson Falls, Cameron's Highlands, 4800 ft. (Henderson 11719).

Trismegistia lancifolia (Harv.) Broth.

Singapore: Bukit Timah (R. 315, 331); Gardens (R. 606).

Johore: Gunong Panti (R. 265); Gunong Pulai (Nur 7772).

Pahang: Telom (R. 123); Gunong Tahan (Haniff and Nur 8075).

Perak: Bujong Malacca (R. 738); Batang Padang (Stresemann 90).

Penang: (Curtis, in herb. Mitten); near Crag Hotel (Burkill 756.)

var. **Korthalsii** (Doz. and Molk.) Fleisch.

Selangor: Bukit Hitam (Kelsall 209).

Perak: Gunong Berumban (R. 115, 130).

Trismegistia rigida (Reinw. and Hornsch.) Broth.

Common and widely distributed.

Trismegistia Brauniana (Bry. jav.) Fleisch.

Kelantan: Gunong Sitong, circa 2600 ft. (Nur 12233a).

Trismegistia calderensis (Sull.) Broth.

Pahang: Gunong Tahan (R. 31).

DISTR. Philippines.

Meiothecium microcarpum (Harv.) Mitt.

Singapore: common.

Selangor: Gua Batu (R. 633); Ginting Bidai (R. 409).

Penang: common.

var. **lineolatum** (Duby) Bry. jav.

Singapore: (Fleischer).

Malacca: (Fleischer).

Meiothecium Jagori (C. M.) Broth.

Fleischer records this from "Malacca" (the original gathering), and Singapore. I must confess that I am quite unable to grasp the difference between this and *M. microcarpum*. The characters given by different authors are slight, elusive, and sometimes contradictory, and the distribution of the two—a wide one—is practically identical.

Meiothecium scaberulum Dixon.

Kelantan: Gunong Sitong, circa 2600 ft. (Nur 12237).

Rhaphidostegium complanatum Dixon.

Perak: Reservoir, Padang Rengas (Haniff 14981).

Rhaphidostegium coespitosum (Sw.) Jaeg. (*R. tristiculum* (Mitt.) Jaeg.).

Singapore: Gardens (Moeller).

Malacca: (Fleischer) (See note on *Taxithelium decrescens*).

Perak: Tapah (R. 163).

Penang: (Fleischer).

Setul: (Ridley 235).

Rhaphidostegium tristiculum is exactly identical with the S. American and African plant which has passed under so many names.

Rhaphidostegium microcladum (Doz. and Molk.) Jaeg.

Singapore: Woodlands (R. 259); Kranji (R. 270); Sungei Jurong (R. 363).

Rhaphidostegium saproxylophilum (C. M.) Jaeg.

Singapore: Selitar (R. 805); Bukit Timah (R. 457).

Johore: Gunong Belumut (Holttum 10816).

Trengganu: Kuala Trengganu (Holttum 15187).

Kelantan: Foot of Gunong Sitong (Nur 12259).

Rhaphidostegium sp.

Penang: Penang Hill (R. 551).

Unnamed in herb. Mitten. A scrap or two of a plant unknown to me, possibly a *Rhaphidostegium* very near to *R. capilliferum* Thw. and Mitt., but also possibly a *Stereodon* (Pseudo-*Rhaphidostegium*).

Rhaphidostegium densirameum Dixon.

Penang: Crag Hill (Binstead 62).

Trichosteleum hamatum (Doz. and Molk.) Jaeg.

Pahang: Fraser Hill, 4000-4370 ft. (Burkill and Holttum 8709).

Perak: Batang Padang (Stresemann 94). Gunong Batu Puteh, 3400 ft. (L. Wray Jr. 1212), as *Trichosteleum Wrayi* Broth. It appears to me to be one of the forms of this species.

Penang: Gardens (Binstead 53; Moeller; R. 647).

Herzog (*Hedwig*. lxi, 298) says of this "Eines der verbreitetsten Moose der Malaya." This is no doubt true of the general distribution, which is a very wide one in the coastal and insular regions at least of the tropical old world; but its occurrence in the peninsula appears to be rather local. I have not seen it from many localities.

Trichosteleum laciniatum Dixon ined.

Kedah: Pulau Lankawi (Holttum 17420).

The following group is a very perplexing one; *T. Boschii*, *T. singapurens*, *T. monostictum*, and *T. brachypelma* appear to me very closely allied and indeed intergrading species, differing from one another practically only in the length and degree of acumination of the leaf-point, and the length and degree of papillosity of the seta; all characters which vary greatly and are not always, to say the least, correlated with one another. The degree of papillosity of the cells, also varies very greatly, and this too seems scarcely to be correlated with any of the other characters.

Trichosteleum Boschii (Doz. and Molk.) Jaeg.

Common and widely distributed.

(*T. laxirete* Broth. MS. appears to me inseparable from *T. Boschii*).

Trichosteleum singaporense Fleisch.

Singapore: Gardens (Fleischer, Ridley, and others); the type is Fleisch, *M. Frond. Arch. Ind.* 383.

Malacca: Mt. Ophir (R. 730).

Negri Sembilan: Gunong Tampin (Burkill 3091); Perhentian Tinggi (R. 764).

Selangor: Rawang (R. 401).

Perak: Bujong Malacca (R. 737).

Dindings: Lumut (R. 776).

The main character of this species appears to be the seta smooth or practically so at apex, and the leaves less papillose. Fleischer describes it as having the leaves somewhat more broadly and shortly pointed than in *T. Boschii*; but my specimen of his No. 383 has them decidedly more gradually and longly acuminate than e.g. as figured for *T. Boschii* in the *Bry. javanica*.

Trichosteleum monostictum Thw. and Mitt. var. **laevius** Dixon.

Singapore: Bukit Timah (R. 588, 589).

Perak: Grik (Burkill 12389).

These plants agree with the South Indian plant which I described in the *Records of Bot. Survey of India* vi, 86; but I greatly doubt whether it be anything more than a form of *T. Boschii*. *T. monostictum* (type) differs from that species only, as Fleischer points out, in having the leaf acumen longly subulate and flexuose, and it is quite probable that many of the records of *T. Boschii* should really be placed here if the species is to be retained. My own view is that all the above plants as well as *T. brachypelma* are but forms or varieties—and by no means well defined ones—of *T. Boschii*.

Trichosteleum brachypelma (C. M.) Jaeg.

Singapore: Gardens (R. 47, 597); Bukit Timah (R. 588).

Negri Sembilan: Ulu Bendul (Holtum 9885).

The plants I have referred here agree very well with the original specimens I have seen of *T. brachypelma*. They differ from *T. Boschii* in the often very short, almost smooth seta, and the papillae of the leaves very low. They are at times, however very difficult to separate from *T. Boschii*. The perichaetial leaves are occasionally somewhat lacerated at the base of the acumen, in which case the plant may be taken for a small form of *T. luxurians*.

Trichosteleum mammosum (C. M.) Jaeg.

Penang: Moniot's Rd., 2300 ft., on tree trunks (Burkill 2587); Richmond Pool, Government Hill (Haniff and Kadir 15023).

Vegetatively this is very near *T. Boschii*, though usually, I believe, somewhat more robust, and of a yellower colour; but the fruiting characters are striking.

DISTR. Java, Sumatra.

Trichosteleum albifolium Dixon in *Bull. Torr. Bot. Club* 51: 246 (1924).

Johore: 7th mile from Kluang, on fallen tree in forest (Holttum 9296b).

Perak: Tanjong Malim (Burkill 13487).

Trichosteleum luxurians (Doz. and Molk.) Broth.

Singapore: Chan Chu Kang (R. 802).

Malacca: Mt. Ophir (R. 239).

Penang: Penang Hill (R. 578; Binstead 63, 66, 70); Moniot's Rd., 2300 ft. (Burkill 2589).

This at its best is a very fine and beautiful moss; but several of the above plants are smaller and less distinct, and when this is the case it may be difficult to separate from *T. Boschii* (see note on that species).

Fleischer remarks that he has not seen Javan specimens, and his figures are no doubt drawn from the Sumatran plant; it will be noticed that they differ very widely in leaf-form from those of the *Bry. javanica*. The Malayan specimens all agree with the latter. It is a species that evidently needs further study, and one or two of the records given above, viz. R. 578, and Binstead 66, 70, may have to be transferred.

Trichosteleum Bruchii (Doz. and Molk.) Broth.

Singapore: Chan Chu Kang (R. 439) (*Acanthocladium bifarium* Mitt. MS. in herb.); Sungei Jurong (R. 369).

Johore: Gunong Panti, on small shrub (Holttum 15039).

Selangor: Petaling (R. 834); Petaling, 10th mile, a form with very long, flexuose, microphyllous flagella (R. 845).

Pahang: Tahan Woods (R. 825); Kuala Lipis (Burkill 17088).

Perak: Tapah (R. 145); Gunong Keledang (R. 715, 718, 745).

Penang: Richmond Pool, Government Hill (Haniff and Kadir 15009).

Several of the above plants are in fruit.

DISTR. Sumatra, Borneo.

Trichosteleum leptocarpon (Schwaegr.) Fleisch.

Singapore: Bukit Timah (R. 358).

DISTR. Java, Sumatra, Borneo, Ceylon.

ACROPORIUM Mitt. 1868 (*Sematophyllum* Mitt. 1864 p.p.).

See my note on this genus in *Bull. Torr. Bot Club* 51; 247-8.

Acroporium asperifolium (*Sematophyllum asperifolium* Thw. and Mitt.) Dixon comb. nov.
Singapore: Selitar (Ridley, sine numero, det. Broth.).
DISTR. Ceylon.

Acroporium ruficaule (*Sematophyllum ruficaule* Thw. and Mitt.)
Dixon comb. nov. (Syn. *A. serrulatum* Dixon in *Bull. Torr. Bot. Club* 51. 249).
Malacca: Mt. Ophir (R. 745).
Penang: Penang Hill (R. 547, 750).
DISTR. Ceylon.

Since the publication of *A. serrulatum* I have ascertained that it is identical with the Ceylonese species of Thwaites and Mitten.

Acroporium leucophyllum Dixon *op. cit.* p. 250 (1924).
Pahang: Gunong Tahan, on wood (R. 1032).

Acroporium bogoricum (Bry. jav.) Dixon comb. nov. (*Hypnum bogoricum* Bry. jav.).
Perak: Batang Padang (Stresemann 95).
DISTR. Java, Borneo.

Acroporium clastobryelloides Dixon.
Penang: Crag Hill (Binstead 50).

Acroporium perangustifolium Dixon.
Kelantan: Gunong Sitong, 2600 ft. (Nur 12246a).

Acroporium punctuliferum (Thw. and Mitt.) Fleisch.
Pahang: Fraser Hill (R. 280).
Perak: Gunong Hijau 4700 ft. (Burkill 12637).
Penang: Penang Hill (R. 552).
DISTR. Ceylon.

A. punctuliferum is in habit and indeed in many other points much like the smallest forms of *A. rufum*; as I understand it, it may best be distinguished by the cuspidate, penicillate tips of the branches.

Acroporium lamprophyllum (Mitt.) Fleisch.
Malacca: Mt. Ophir (R. 765).
Pahang: Gunong Tahan (Robinson).
Kelantan: Gunong Sitong, circa 2600 ft. (Nur 12232a).

Acroporium subulatum (Hampe) Dixon comb. nov. (*Hypnum subulatum* Hampe).
Pahang: Telom (R. 139).

Fleischer states that the *H. subulatum* of the *Bry. jav.* is not Hampe's plant, but a fertile form of *A. diminutivum* (Brid) Fleisch. (*H. gracilicaule* Bry. jav.). I am unable to say to which of the two the Pahang plant—which was determined by Brotherus—belongs.

Acroporium decipiens (Dixon) Dixon comb. nov. (*Sematophyllum decipiens* Dixon in *Journ. of Bot.* lvii, 77).

Selangor: Bukit Hitam (R. 418).

DISTR. Borneo.

Acroporium convolutum (Bry. jav.) Fleisch.

Johore: Gunong Pantl (R. 260).

Perak: Taiping (R. 197); Temengoh (R. 212) *f. papillosa* (*Sematophyllum perpapilliferum* Broth. MS.); Tanjong Malim (Burkill 13480).

Kedah: Gunong Raya, Lankawi Is. (Haniff and Nur 7123).

Acroporium rufum (Hornsch. and Reinw.) Fleisch. (*Sematophyllum Braunii* (C. M.) Jaeg.

Malacca: Mt. Ophir (R. 226).

Johore: Gunong Belumut, 3000 ft. (Holttum 10694, 10699, 10701, 10702, 10760).

Pahang: Gunong Tahan, 5500-7000 ft. (Haniff and Nur 7904); *ibidem* (R. 1025b).

Perak: Gunong Hijau, 4700 ft. (Burkill 12262).

Penang: (Ridley, sine numero, herb. Mitten).

Kedah: Kedah Peak, 3000 ft. (Holttum 14899).

A common and highly variable moss, simulating at times several and very diverse species. It may generally be known when in fruit by the highly papillose seta, but I have forms with almost smooth setae which I can place nowhere else.

Acroporium rigens Broth.

Johore: Gunong Belumut, 3000 ft. (Holttum 10998).

Malacca: Mt. Ophir (R. 237, 722).

var. **dicranolomoides** (Broth.) Dixon.

Pahang: Gunong Berumban (R. 131).

Perak: Gunong Batu Puteh (Wray 394), as *Eucamptodon Wrayi* Broth. in sched. in Herb. Kew.

Acroporium obscurum Broth. e Dixon in *Bull. Torr. Bot. Club* 51: 251 (1924).

Johore: Sedenak (R. 76).

Perak: Gunong Batu Puteh, 3400 ft. (L. Wray Jr., 977).

This was labelled *Sematophyllum Wrayi* Broth., but it has already been published under the above name.

Penang: Penang Hill (R. 538).

Acroporium secundum (Hornsch. and Reinw.) Fleisch.

Common and very variable.

The more important varieties are vars. *latifolium* (Bry. jav.) Fleisch. and *angustifolium* Fleisch., which intergrade with the type and are difficult to define, but which in their extreme forms are

very marked; and var. *minus* Ren. and Card., which is very marked and well defined, and may possibly be a distinct species. I have localities for these as follows:—

var. **latifolium** (Bry. jav.) Fleisch.

Selangor: Bukit Hitam (R. 381, 430).

Pahang: Kuala Tembeling (R. 823).

var. **angustifolium** Fleisch.

Selangor: Semangkok Pass (R. 279, 289).

Pahang: Fraser Hill (Burkill and Holttum 8398, 3741, 8910); Telom (R. 134, 141, as *Sem. spurio-obscurum* Broth. MS.).

Perak: Gunong Hijau, 4700 ft. (Burkill 12638).

Kelantan: Sungei Keteh (Nur 11989).

Penang: Penang Hill (R. 524).

Kedah: Gunong Raya, Lankawi Is. (Haniff and Nur 7124);

Kedah Peak (Holttum 14892).

var. **minus** Ren. and Card.

Pahang: Gunong Tahan (R. 1005, 1008a, 1022, 1027).

Kelantan: Gunong Sitong, 2600 ft. (Nur 12232c, 12246a).

var. nov. **longisetum** Dixon. Seta ad 4 cm. alta, supreme tuberculis humillimis numerosis praedita.

Kelantan: Gunong Sitong, circa 2600 ft. (Nur 12233 a).

A striking plant, robust, and similar to var. *latifolium* vegetatively; but with a very long seta, densely "platytuberculous" above.

A form with the leaves remarkably strongly and regularly falcate-secund was collected by Holttum on Kedah Peak (14842).

A plant from Kelantan, Ulu Sungei Keteh (Nur 12272), has the perichaetial leaves (the inner ones) with very short, erect points, not flexuose as usual, and the upper cells remarkably narrow, the walls being 2-3 times as wide as the extremely narrow, sinuose lumen. In other respects it seems to agree with *A. secundum*.

A further plant, which I have seen from two localities—Malacca, Mt. Ophir (R. 714), and Penang Hill (R. 543), presents considerable difficulty, the seta being about 1.5 cm. high, and rather strongly papillose above. The only perichaetium dissected was clearly female only; this and the length of the seta appears to exclude *A. sigmatodontium*, which it otherwise resembles. It is possible that it may belong to var. *latifolium*, and that the seta is characteristic of that var., which according to Fleischer has only been found sterile.

Acroporium longicuspis (Broth.) e Dixon in *Bull. Torr. Bot. Club* 51: 254 (1924).

Selangor: Bukit Hitam (R. 391).

Pahang: Fraser Hill, 4000-4370 ft. (Burkill 8711); Gunong Berumban, 5000 ft. (Henderson 11766).

Perak: Taiping (R. 200).

Acroporium albidissimum Dixon *op. cit.* p. 255.

Pahang: Gunong Tahan (R. 1023b).

Kelantan: Ulu Sungei Ketch (Nur 12272a).

Acroporium Ridleyi Dixon *op. cit.*, p. 256.

Pahang: Gunong Tahan (R. 1039).

Acroporium hamulatum (Fleisch) Fleisch., f. *procumbens* Fleisch.

Perak: Gunong Hijau, 4000 ft. (Burkill 12635); do. 4700 ft. (L. Wray Jr. 1883).

DISTR. Java.

Acroporium falcifolium Fleisch.

Pahang: Gunong Tahan (R. 1025a).

Kedah: Journey to Kedah Peak (Haniff).

DISTR. Java, Sumatra, Borneo, Celebes, Philippines.

Acroporium sigmatodontium (C. M.) Fleisch.

Penang: North of the Crag Hotel (Burkill 754).

Acroporium oxyporon (Bry. jav.) Fleisch.

Penang: Penang Hill (R. 521).

DISTR. Java, New Guinea, ? Ceylon.

Acroporium denticulatum Dixon in *Bull. Torr. Bot. Club* 51: 252 (1924).

Pahang: Fraser Hill, 4000-4370 ft. (Burkill and Holttum 8715a).

Acroporium hermaphroditum (C. M.) Fleisch.

Pahang: Gunong Tahan (R. 1008).

Acroporium monoicum (Bry. jav.) Fleisch.

Perak: Taiping Hills (Anderson 311).

Penang: Penang Hill, 2400 ft. (Burkill 2614; R. 746, 771, 786).

Acroporium aciphyllum Dixon *op. cit.*, p. 253 (1924).

Pahang: Gunong Tahan (R. 1017, 1029); ibidem, a form with leaves spreading, not falcate (R. 1037).

Acroporium stramineum (Hornsch. and Reinw.) Fleisch. (*Sematophyllum hyalinum* (Reinw.) Jaeg.).

Kedah: Kedah Peak 3000 ft., on rock (Holttum 14893); on shrub, Holttum (15111).

Acroporium procerum (C. M.) Fleisch.

Pahang: Gunong Tahan (R. 1013; Haniff and Nur 8000).

This magnificent species has hitherto been known from a few localities in Java and Sumatra, and there only known sterile. Both the above gatherings are in fruit, though in both cases only setae are present.

Acroporium pycnophyllum (C. M.) Dixon.

Dindings: Lumut (R. 774).

DISTR. Java; a single locality only.

Acroporium malayanum Dixon *op. cit.*, p. 257 (1924).

Penang: Bot. Gardens (Binstead 57).

Acroporium complanatum Dixon *op. cit.*, p. 256.

Malacca: base of Gunung Ledang (R. 236).

Acroporium surculare Dixon *op. cit.*, p. 258.

Perak: on twigs, Bidor Rd., Tapah (R. 153).

Penang: Penang Hill (R. 551).

Piloecium pseudo-rufescens (Hampe) C. M.

Singapore: (St. V. B. Down, herb. Binstead; Fleischer).

Johore: Sungei Bau (R. 321).

Perak: Gunong Keledang (Ridley, sine numero, herb. Mitten).

Kelantan: Ulu Sungei Keteh (Nur 12272b).

RHEGMATODONTACEAE.**Macrohymenium Muelleri** Doz. and Molk.

Pahang: Gunong Tahan (R. 1035).

DISTR. Java, Sumatra, Borneo.

BRACHYTHECIACEAE.**Rhynchostegium javanicum** (Bél.) Besch.

Perak: Temengoh (Ridley, sine numero, det. Brotherus).

HYPNODENDRACEAE.**Hypnodendron arborescens** (Mitt.) Lindb.

Singapore: Gardens jungle (Ridley 704); Chan Chu Kang (R. 438).

Pahang: Tahan R., (R. 234); Fraser Hill, 3900 ft. (Holttum 11373). Hill 3 miles from summit of Gunong Benom, 5000 ft. (Barnes).

Perak: (Wray, fide Fleischer).

Penang: (Curtis); Penara Bukit (R. 575); Penang Hill (R. 507, 511, 755); Balik Pulau (R. 754).

Hypnodendron Junghuhnii (C. M.) Lindb.

Selangor: Petaling (R. 483).

Pahang: Gunong Tahan (Robinson, R. 1014, 1034); Fraser Hill, circa 3800 ft. Holttum 11497); Telom (R. 128).

Perak: Gunong Berumban (R. 86, 106); Gunong Ulu Kali (Ridley).

DISTR. Java, Sumatra ?Celebes.

Hypnodendron Wrayi Broth. MS. Perak: On ground, Gunong Batu Puteh, 4500 ft. (L. Wray Jr. 301).**Mniodendron divaricatum** (Hornsch. and Reinw.) Lindb.

Malacca: Mt. Ophir (Ridley, sine numero, dt. Brotherus).

Pahang: Gunong Tahan (Robinson); ibidem (R. 1010); Kluang Terbang (Barnes).

Perak: Summit of Gunong Batu Puteh (Wray 892).

Penang: Penang Hill (Curtis 2733; R. 230, 516); Richmond Pool (Burkill 2601). (Curtis record may be based on the plant which is really *M. Mittenii*; v. infra).

Kedah: Kedah Peak (Ridley; Haniff 2; Holttum 14864).

Kelantan: Gunong Sitong, circa 2600 ft. (Nur 12238).

In continental Asia only known elsewhere from Annam.

Mniodendron Mittenii Salmon.

Selangor: Bukit Hitam (R. 429).

Pahang: Gunong Tahan, 7000 ft. (Haniff and Nur 7906; R. 15, 1004, 1031).

Perak: Bujong Malacca (R. 721).

Penang: Government Hill (Curtis), as *Mniodendron Curtisii* C. M. n. sp., Herb. Binstead, but it is quite inseparable from *M. Mittenii*.



Dixon, H. N. 1926. "A list of Mosses of the Malay Peninsula." *The Gardens' bulletin; Straits Settlements* 4(1), 1-46.

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