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FURTHER CONTRIBUTIONS TO THE MOSS FLORA OF SIAM.

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Since the earlier publication, On the Moss Flora of Siam (Journ. Siam. Soc., Nat. Hist. Suppl., Vol. IX, No. 1, 1932), further collections have been received, principally made by Dr. Kerr. These contained material of sufficient interest to warrant a supplementary paper.

The present list adds some twenty species new to science, as well as about sixty species hitherto unrecorded for Siam, bringing the total number of known species to 300, about one-fourth of which are—as at present known—endemic.

I have not included some fresh records of the more common species.

When no collector's name is given it is understood to be Dr. Kerr.

SPHAGNACEAE.

Sphagnum siamense Dix.

Udawn. Lôi, Kao Krading, circa 1200 m., 11 Feb., 1931 (568).

Sphagnum densirameum Dix.

Udawn. Lôi, Kao Krading, c. 1200 m., on rock in light evergreen forest, 13 Feb., 1931 (577).

This scarcely adds a fresh locality for the species, as it is the same as the original gathering; it shows however that the species maintains its characters well.

Sphagnum cuspidatum Ehrh.

Rāchasimā. Pū Kio, Chaiyapūm, on swampy ground, c. 1000 m., 23 Feb., 1931 (585).

Sphagnum ovatum Hampe.

Pāyap. Chiangmai, Doi Lang Kā, 4 Nov., 1930; coll. Put (3264a).

New to Siam. *Distr.* Sikkim.

A very interesting extension of the range of this rare and pretty little species. It agrees well with Hampe's plant.

FISSIDENTACEAE.

Fissidens semperfalcatus Dix. sp. nov.

§ Semilimbium. Gracilis, terrestris: dense gregarius, flavo-viridis. Caules circa 3 mm. longi, plurijugi, pulchre plumosi. Folia sat laxe disposita, sicca *fortiter falcata*, madida quidem plus minusve *falcata, anguste oblongo-lanceolata, breviter acute acutata*; costa sat valida, fusca vel flava, *pellucida*, percurrens vel breviter excedens. Lamina vaginans limbidio valido cartilagineo circumdata, reliquo margines *fortiter crenulati*, immarginati; lamina dorsalis basin folii vix attingens, ibidemque rotundata. Cellulae minutae, leniter incrassatae, opacae sed non obscurae, *papilla unica praealta acuta* quaeque praedita; versus marginem seriebus pluribus *saepe minores*, obscurae.

Autoicus. Flos ♂ aut axillaris aut ramulo basilari vel sub-basilari apicalis, nonnunquam terminalis. Fructus aut terminalis aut lateralis. Seta 3-4 mm. longa, tenuis; theca minutissima, elliptica, erecta, leptodermica; operculum magnum, curvirostrum.

Hab. *Rāchasimā*. Pū Kio, Chaiyapūm, on rock in ever-green forest, c. 1000 m., 23 Feb., 1931; coll. Kerr (584).

The leaves, often falcate even when moist, with strong border,

the cells not obscure as often in this Section, but opaque with the acute, high papillae, and usually distinctly smaller in two or three rows at margin of dorsal lamina, together with great variability in the position of both ♂ and ♀ flowers, are marked characters.

Fissidens crassinervis Lac.

Pūket. Trang, Kaw Libong, on ant-hill in evergreen forest, c. 50 m., 21 Apr., 1930 (528).

New to Siam. *Distr.* fairly wide in the Indo-Malayan region.

Fissidens sylvaticus Griff.

In one or two localities.

Fissidens javanicus Doz. & Molk.

In one or two localities, sparingly.

Fissidens nobilis Griff.

In one or two gatherings.

Fissidens areolatus Griff.

Pūket. Krabī, Panom Bēncha, on trees, etc., in light evergreen forest, c. 1300 m., 28 Mar., 1930 (511d).

New to Siam. *Distr.* Sikkim; Khasia; Birma; Malay Penins.; Sumatra.

DICRANACEAE.

Wilsoniella tonkinensis Besch.

Rāchaburī. Prachūap, Pāk Tawān, on ground in evergreen forest, c. 20 m., 30 July, 1931 (594).

New to Siam. *Distr.* Tonkin; Borneo.

Holomitrium Griffithianum Mitt.

Pāyap. Doi Angkā, on roots of orchids, Feb. 1932; coll. A. Aagaard, Feb., 1932 (b).

New to Siam. *Distr.* wide in South-eastern Asia; Ceylon; Formosa.

Leucoloma molle (C. M.) Mitt.

In several gatherings.

Leucoloma Walkeri Broth. var. **stenocarpum** Card. & Dix.

Udawn. Kawnkên, Pū Wieng, on rotting log in bamboo forest, c. 400 m., 16 Feb., 1931 (582).

Species and variety new to Siam. *Distr.* of species, South India; Birma; Malay Penins. Of variety, Birma.

Dicranum fragile Hook.

Udawn. Lôi, Kao Krading, on rock in light forest, c. 1200 m. 13 Feb., 1931 (575).

New to Siam. *Distr.* North and South India.

Campylopus serratus Lac.

Pūket. Ranawng, Kaw Payām, on sandy ground in open forest, c. 5 m., 12 Jan., 1929 (390).

Rāchasimā. Pū Kio, Chaiyapūm, on rock in evergreen forest, c. 1000 m., 23 Feb., 1931 (586), c. fr. The fruit has not been recorded. The capsule appears normal, the calyptra is fringed at the base.

LEUCOBRYACEAE.**Leucobryum scalare** C. M.

Udawn. Lôi, Kao Krading, on tree trunk in open forest, c. 1200 m., 11 Feb., 1931 (567). *Pāyap.* Kun Tān Mts., 1200 m., May 1933; coll. Hugh M. Smith (584).

New to Siam. *Distr.* wide.

Leucobryum scabrum Lac.

Pūket. Pang-ngā, Kao Katakwm, on trees in evergreen forest, c. 900 m., 9 Mar., 1930 (498b).

New to Siam. *Distr.* China; Formosa.

Leucobryum Bowringii var. **sericeum** (Broth.) Dix.

Surāt. Kiensā, on log in evergreen forest, c. 50 m., 19 Feb., 1930 (460). Variety new to Siam.

Arthrocormus Schimperii Doz. & Molk.

Pūket. Kraburī, Klawng Wa, on tree trunk, evergreen forest, 650 m., 24 Dec., 1928 (372).

Ochrobryum Kurzii Hampe.

Pūket. Krabī, on rotting stump in light evergreen forest, under 50 m., 22 Mar., 1930 (503).

Leucophanes candidum Brid.

Pūket. Krabī, Tambon Kao Panom, on limestone rocks, c. 400 m., 30 Mar., 1930 (518). A form somewhat approaching var. *densifolium* (Mitt.).

Leucobryum octoblepharoides Brid.

Pūket. Kraburī, Klawng Wa, on bamboo in evergreen forest, c. 50 m., 24 Dec., 1928 (373). New to Siam. *Distr.* wide in Indo-Malaya and Pacific.

CALYMPERACEAE.**Syrrhopodon revolutus** Doz. & Molk.

Prāchinburī. Krabin, Bān Kêng, on tree in light evergreen forest, c. 25 m., 9 Nov., 1930 (559).

New to Siam. *Distr.* wide in the Indo-Malayan region.

Syrrhopodon subconfertus Broth.

Pūket. Ranawng, Lam Lieng, on tree trunk in evergreen forest, c. 50 m., 28 Dec., 1928 (381).

Syrrhopodon spiculosus Hook. & Grev.

Surāt. Bān Nā, on ground in evergreen forest, c. 50 m., 18 Feb., 1930 (456).

Syrrhopodon trachyphyllus Mont.

Prāchinburī. Krabin, Bān Kêng, on trunk of palm in evergreen forest, c. 25 m., 10 Nov., 1930 (554). A form with the nerve very hispid at back above; in fact it is intermediate between the Borneo form of the species and *S. cavifolius* Lac.

New to Siam. *Distr.* Malaya; Malay Penins.; Borneo.

Syrrhopodon repens Harv.

Sūrat. King Panom, on tree in evergreen forest, c. 200 m., 20 Feb., 1930 (475).

Syrrhopodon fasciculatus Hook. & Grev.

Pūket. Ranawng, Kapôr, on damp stones in shady stream, c. 10 m., 17 Jan., 1929 (397).

Syrrhopodon cuspidatus Besch.

Pūket. Trang, Kaw Libong, on tree in evergreen forest, c. 100 m., 21 Apr., 1930 (527).

New to Siam. *Distr.* Java; Malay Penins.; Saigon.

Syrrhopodon croceus Mitt.

Pūket. Pang-ngā, Kao Katakwm, on trees in evergreen forest, c. 900 m., 8 Mar., 1930 (496).

New to Siam. *Distr.* wide.

Syrrhopodon Mülleri Lac.

Pūket. Pang-ngā, Kao Katakwm, on tree in evergreen forest, c. 200 m., 10 Mar., 1930 (500).

Calymperes hyophilaceum C. M.

Pūket. Ranawng, La-un, on shrub in evergreen forest, c. 10 m., 30 Dec., 1928 (384), c. fr.

Rāchaburī. Prachūap, Pāk Tawān, on tree trunk in light evergreen forest, c. 50 m., 29 July, 1931 (593).

New to Siam. *Distr.* Java; Sumatra; Philippines; Borneo.

Calymperes subbrachycaulon Dix. sp. nov.

Hyophilina. Eurycycla. Humile; dense caespitosum, subrobustum, olivaceum. *C. brachycaulon* Broth. affine. Differt ab illo folii basi et cancellina *multo latiore*, cellulis *multo minoribus*, 4-5 μ latis, obscuris, (ibi 10 μ , pellucidis); teniola *haud partem vaginantem folii excedente* (ibi infra folii apicem evanida); cellulis marginalibus partis vaginantis superioris 1-seriatis, raro 2-seriatis (ibi 3-seriatis). Cellulae cancellinae hyalinae versus marginem circa dimidia parte cancellinae latitudinis *abrupte angustatis*, inde ad marginem sensim perangustatis, difficiliter a cellulis teniolae distinguendis. Cellulae superiores alte unipapillosae.

Fructus ignotus.

Hab. *Surāt*. Yānyāo, on tree trunk in evergreen forest, c. 50 m., 21 Feb., 1930; coll. Kerr (465).

Of the Siamese species this is nearest to *C. brachycaulon* Broth. but that belongs to *Stenocycla*, with much narrower leaf base, and also differs in other characters, as emphasized above. It is also near *C. Motleyi* C. M., but that too has narrow leaf base, smooth cells, etc.

The cancelline cells are usually very marked in the sudden diminution in width from the nerve outwards; for about three to four (vertical) series they remain very wide, not much longer than wide; at that point there is an abrupt transition to very narrow (and proportionally longer) cells, which continue in numerous rows to near the margin, where they merge into the 2-3-seriate teniole cells, and these again into the thinner-walled marginal cells, which are shorter, and very pellucid.

***Calymperes Beccarii* Hampe.**

Pūket. Pang-ngā, Kao Katakwan, on tree in evergreen forest, c. 600 m., 9 Mar., 1930 (499).

POTTIACEAE.

***Tortella cyrtobasis* Dix. sp. nov.**

Humilis, gracilis, tenera. Caulis pauca mm. tantum altus. Folia *tenerrima, fragillima*, 3-4 mm. longa, sicca arcte crispata, e basi *brevissima, haud vel minime latiore, elongate linearia*, apice *latiusculo, breviter obtuse acuto vel obtuso et apiculato*. Costa pro folii latitudine valida, *in apiculum excurrentis*, dorso superne muriculata. Margines plani, integri vel leniter crenulati. Cellulae parvae, plerumque subquadratae, subobscurae; basillares sat paucae hyalinae, parietibus tenuibus, ad margines altiuscule oblique adscendentes.

Dioica videtur. Fructus haud visus.

Hab. *Udawn*. Lōi, Kao Krading, on rock in light evergreen forest, c. 1200 m., 13 Feb., 1931; coll. Kerr (576b).

Growing with *Bryum siamense* n. sp. Easily known by the small size, very delicate, fragile leaves, very short base, etc. *T. himantina* (Besch.) has recurved margins, non-excurrent nerve, etc.

Hyophila siamensis Dix. sp. nov.

Gregaria videtur. Caulis brevissimus, folia dense conferta, rosulata. A plurimis speciebus differt foliis *facillime emolliendis, integris, late oblongo-spathulatis, apice rotundato inde fortiter apiculato-cuspidato, saepe recurvulo*. Costa validiusecula, in apiculum percurrans, nonnunquam apice supremo *propagulifera*, superne dorso *muriculata*. Margines basilares usque ad dimidiam partem vel ultra anguste *recurvi*. Cellulae parvae, 8-10 μ , haud incrassatae, sat distinctae, humiliter papillosae.

Seta brevis; folia perichaetialia vix dissimilia. Theca *sine collo*. Annulus bene evolutus.

Hab. *Udawn*. Lôi, Sitân, on rock in dry stream bed in deciduous forest, c. 200 m., 9 Feb., 1931; coll. Kerr (564), type. Ibidem, c. 300 m., 15 Feb., 1931 (580).

Distinct in the entire, rather broadly oblong-spathulate leaves, with strong, recurved apiculus, the recurved margin, small, almost smooth cells, the muriculate back of costa, capsule without collum, etc. *H. comosa* Dix. & Varde is much more robust, with longer leaves, gradually though broadly narrowed above, denticulate at apex, etc.

Barbula inflexa Brid.

Pūket. Ranawng, La-un, on stones in shingle bed by stream, c. 10 m., 3 Jan., 1931 (387).

New to Siam. *Distr.* Wide in Indo-Malaya, to Hongkong.

ORTHOTRICHACEAE.

Macromitrium Zollingeri Mitt.

Chantaburī. Krät, Kao Kūap, on tree, May 1930; coll. Put (3264).

New to Siam. *Distr.* Java; Lombok; Philippines; Malay Penins.

Macromitrium goniorrhynchum (Doz. & Molk.) Mitt. nov. var. denticulatum Dix. Limbidium basilare hyalinum remote, obtuse, sed distincte denticulatum.

Pāyap. Doi Angkā, on roots of orchids, Feb., 1932; coll. A. Aagaard (a), c. fr., type. Doi Chiengdāo, on orchid roots, Dec., 1931.

The type has the basal marginal border occasionally slightly denticulate, indeed Fleischer figures it so, but does not so describe it; here it is a quite marked character. The fruit, which is rare, is present in the Doi Angkā plant.

Macromitrium brevissimum Dix.

Udawn. Kumpawā, on trees in deciduous forest, c. 100 m., 19 Mar., 1932 (463). Kawnkên, Pū Wieng, on tree trunk in deciduous forest, c. 100 m., 16 Mar., 1932 (461). Lôi, Sītān, on branch of lofty tree, c. 200 m., 9 Feb., 1931 (563). *Prāchinburi.* Aran Pratēt, on tree in open deciduous forest, c. 50 m., 9 Aug., 1930 (546).

It is rather noticeable that this endemic and widely distributed species in Siam seems nearly always to grow in open deciduous forest, not in the shaded evergreen growth.

Macromitrium nepalense (Hook.) Schwaegr.

Udawn. Kawnkên, Pū Wieng, on tree in deciduous forest, c. 300 m., 7 Feb., 1931 (562).

Macromitrium semipellucidum Doz. & Molk.

In one or two localities.

Macromitrium turgidum Dix.

Pūket. Pang-ngā, Kao Bāngto, on tree in evergreen forest, c. 800 m., 23 Feb., 1929 (423). This has been found, in a slightly differing form, in Assam.

Schlotheimia Grevilleana Mitt.

This occurred in one gathering, of which I omitted to take the particulars. It is new to Siam. *Distr.* wide.

Desmotheca apiculata (Doz. & Molk.) Lindb.

Surāt. Chumpawn, Siepyuan, in open forest, c. 20 m., 21

Dec., 1928 (365). New to Siam. *Distr.* fairly wide in Indo-Malaya ; Birma.

FUNARIACEAE.

PHYSCOMITRIUM HEMISPHAERICUM Thér. & Varde.

Udawn. Nawngkâi, Chaiyaburî, on clay bank, circa 200 m., 24 Mar., 1932 (530).

Distr. China.

BRYACEAE.

Bryum siamense Dix. sp. nov.

§ Apalodictyon. Humile, gracile, inter alios muscos gregarium. Caulis perbrevis, circa 2 mm. altus, innovationibus 3 mm. Folia parva, suberecta, sicca erecta, leniter flexuosa, anguste ovata, vix acuminata, acuta, costa excurrente breviter cuspidata; marginibus *plerumque planis*, integris vel apice indistincte denticulatis; areolatio *laxa*, cellulae hexagonae, latiusculae, parietibus *tenuibus*; marginales circa 2-seriatae, angustissimae, limbum *angustum bene definitum, fusciscentem instruentes*.

Dioicum videtur. Seta 1-1.5 cm. longa, tenuis. Theca parva, circa 2 mm. longa, fusco-rubra, clavata, collo subaequilonga; operculum conicum. Spori minuti, 10-13 μ . Peristomium flavum; dentes *pellucidi*, minutissime, tenerrime papillosae; linea media angulata, lamellae intus prominentes; endostomii membrana *pellucida, fere hyalina*, laevis, *dimidiam partem vel ultra* dentium aequans; processus breves, carinati, hiantes, abrupte tenuiter cuspidati; cilia irregularia, brevia, nodosa.

Hab. *Udawn.* Lôi, Kao Krading, on rocks in evergreen forest, circa 1200 m., 13 Feb., 1931; coll. Kerr (576a).

Quite distinct from *B. ambiguum* Duby in the smaller size, scarcely acuminate leaves, and distinct though narrow border. The Bornean *B. weberaeforme* Dix. has weaker, scarcely excurrent nerve unbordered leaves, etc. The Javan *B. javense* Fleisch., which Fleischer places in *Erythrocarpa*, but which might perhaps equally be put here, differs in the nerve not excurrent, reddish-brown peristome, and larger spores.

MNIACEAE.

ORTHOMNION TRICHOMITRIUM Wils.

Pāyap. Doi Angkā, on roots of orchid, Feb., 1932; coll. A. Aagaard (c).

HYPNODENDRACEAE.

HYPNODENDRON REINWARDTHI (Hornsch.) Lindb.

Pūket. Pang-ngā, Kao Katakwan, c. 900 m., on trees in evergreen forest, 8 Mar., 1930 (493), Krabī, Panom Bēncha, c. 1200 m., on shrubs and trees in light evergreen forest, 28 Mar., 1930 (514). Mostly in not very good condition.

Distr. Wide.

MNIODENDRON DIVARICATUM (Hornsch. & Reinw.) Lindb.

Pūket. Krabī, Panom Bēncha, Mar. 1930; (506).

Distr. Wide.

HEDWIGIACEAE.

CLEISTOSTOMA AMBIGUUM (Hook.) Brid.

Pāyap. Doi Chiengdāo, on orchid roots, Dec., 1931; coll. Put. The fruiting plant.

LEUCODONTACEAE.

Leucodontopsis siamensis Dix. sp. nov.

L. cameruniae (Broth.) Broth. similis et affinis; differt foliis *confertioribus*, *siccitate magis imbricatis*, minus nitidis. Rami plerumque *stricte, breviter attenuati subcaudiformes*. Costa tenuis, supra medium folium attingens, saepe propter folii plicam recondita. Cellulae superiores lineares, dorso tuberculatae.

Fructus ignotus.

Hab. *Prāchinburī*, Krabin, Bān Kêng, on Bauhinia, in savannah, circa 25 m., 8 Nov., 1930; coll. Kerr (551b).

The disjunctive distribution of this very distinct genus is remarkable. Of the four hitherto known species one is widely distributed in the Central American zone, a second is Brazilian, while

of the remaining two one is from Cameroons, the other from Niam Niam. All are closely allied, and in all probability should be considered to belong to a single specific type. Thériot (Bull. Soc. bot. Genève, XVII, 255) has given good reason for considering this to be the case with the two American species, while there is certainly nothing in the descriptions of the two African ones to suggest any difference. The Siamese plant shows only very slight distinguishing characters. Fruit has, I believe, only been found in the Brazilian plant, on one occasion.

TRACHYPODACEAE.

TRACHYPODOPSIS CRISPATULA (Hook.) Fleisch.

In one or two localities, mostly rather poor.

PTEROBRYACEAE.

Garovaglia rigida Dix. sp. nov.

Elata; rigida; folia *perdense conferta, imbricatula, patula, sicca nitida*; e basi paullo angustata late oblongo-ovata, *hard rugosa, leniter plicata*, apice rotundato inde *robuste striete cuspidato*; margines plani, superne fortiter argute denticulati; costae nullae; cellulae anguste rhomboideae, parietibus firmis nec incrassatis; alares magnae, numerosae. Phyllautoica. Planta ♂ foliis superioribus sita. Perichaetium paullo exsertum; theca omnino immersa; perichaetii folia breviter, robuste cuspidata, subdenticulata. Peristomium parvum, fragile, pallidum; processus *tenerime filiformes, nodosi*.

Hab. *Udawn, Lôi, Kao Krading*, on trees in evergreen forest, circa 1200 m., Mar., 1924; coll. Kerr (86).

Very distinct from most species in the very densely foliate, rigid stems, comparatively narrow in outline owing to the dense imbrication of the scarcely spreading leaves, which are variably but not deeply plicate.

The only nearly allied species appears to be the Tonkinese *G. latifolia* Broth. & Par., which I have not seen; but the leaves

there appear from the description to be more spreading, and decidedly wider in outline; the width is given as 2.5 mm., while here they are usually under, rarely reaching 2 mm. The fruit there is undescribed. I think the differences are sufficient to warrant separation.

***Symphysodontella siamensis* Dix. sp. nov.**

S. involutae (Thw. & Mitt.) ceylonensi similis et affinis. Differt foliis paullo laxioribus, minus involutis, costa *gemella brevissima*, vix ulla, seta brevissima, bracteis perichaetii *aequilongis*. Peristomium generis.

Hab. *Pūket*. Krabī, Panom Bēncha, in evergreen forest, circa 800 m., 29 Mar., 1930; coll. Kerr (521a).

S. involuta is with one exception the only species hitherto described with exserted capsule. Here also it is well exserted, but while there the seta is some three or four mm. long, so that the capsule is far above the perichaetial leaves, here it is much shorter, the bracts reaching to the base of the capsule. The form of the capsule is similar. In *S. involuta* the nerve is single, reaching half-way, as is also the case in *S. attenuatula* Fleisch., where the capsule is situated as in the present species; here it is short and double or frequently wanting.

PTEROBRYOPSIS NEMATOSA (C. M.) Dix.

Surāt. Chumpawn, Tāsān, circa 50 m., 22 Dec., 1928 (367).

PTEROBRYOPSIS CUSPIDATA Dix.

Pūket. Ranawng, Kraburī, on branches, circa 10 m., 26 Dec., 1928 (379).

METEORACEAE.

METEORIOPSIS SQUARROSA (Hook.) Fleisch.

Surāt. Surāt, Yānyāo, circa 400 m., on stems of *Pandanus* sp. (470).

NECKEROPSIS NIGRESCENS (Broth.) Broth.

Surāt. Chumpawn, Tāsān, on tree in evergreen forest, circa 50 m., 22 Dec., 1928 (367b), c. fr.

Brotherus describes it as dioicous, from a sterile plant. The present plant is however certainly autoicous. The capsule is well immersed in the longly loriform perichaetial leaves. Lid with a conico-rostellate straight lid. It belongs to the Section Paraphysanthus.

HIMANTOCLADIUM PLUMULA (Nees) Fleisch.

Two or three gatherings, with a little fruit.

HIMANTOCLADIUM FLACCIDUM (C. M.) Fleisch.

Pūket, Pang-ngā, Kao Katakwan, on rocks by stream in evergreen forest, circa 800 m., 8 Mar., 1930 (488b).

Chantaburī. Kao Sabāp, 600 m., Nov., 1933; coll. Hugh M. Smith (605). A form with little branched stems, and very acute, robust points to the leaves.

HIMANTOCLADIUM CYCLOPHYLLUM (C. M.) Fleisch.

Pūket. Kraburī, Klawng Wa, on tree trunk in evergreen forest, circa 50 m., 24 Dec., 1928 (370), c. fr.

Distr. Wide.

PINNATELLA AMBIGUA (Bry. jav.) Fleisch.

Pūket. Pang-ngā, Tap-put. on limestone rocks, circa 200 m., 5 Mar., 1930 (480).

NEMATACEAE.

EPHEMEROPSIS TJIBODENSIS Goeb.

Surāt. Chumpawn, Tāsān, on small tree in evergreen forest, circa 50 m., 22 Dec., 1928 (374).

Pūket. Ranawng, Klawng Kampūam, on leaf, and on Hepatic on a twig, tree in evergreen forest, 30 Jan., 1929 (410c). Trang, Kao Soi Dāo, on shrub in evergreen forest, circa 400 m., 27 Apr., 1930 (530). This was growing on the leaflets and twigs of a compound leaved shrub, a situation in which I have not hitherto seen it growing.

Nakawn Srūtamarāt. Patalung, Kao Soi Dāo, on trees and shrubs in evergreen forest, circa 600 m., 29 Oct., 1930 (540).

HOOKERIAACEAE.***Distichophyllum sinuosulum* Dix. sp. nov.**

Sat gracile, flavescens. Folia *seca madidaque valde sinuosa seu undulata*, oblongo-spathulata vix .8 mm. lata, apice rotundato, plus minusve robuste apiculato. Limbus folii *ubique validus* cartilagineus; costa tenella, sinuosa, usque fere apicem attingens. Cellulae medianae superiores inanes, 18-20 μ , versus marginem *sensim decrescentes*, marginales 10-12 μ .

Seta 1 cm. longa, *tenuis, laevis*, nisi prope apicem ubi paullo crassior et rugulosa fit. Calyptra fere *laevis*, vix infra operculum descendens.

Hab. Birch's Hill, Perak, Malay Penins., 1100 m., on rock, 3 Mar., 1924; coll. I. H. Burkill (12606), type. On wet rocks, Cameron's Highlands, Pahang, 1500 m., 17 Nov., 1925; coll. M. R. Henderson (17743). G. Tahan, Pahang, circa 1200 m., 29 Aug., 1928; coll. R. E. Holttum (20919). G. Muntahak, Johore, on rock by stream, 250 m., 2 Mar., 1928; coll. Holttum. Fraser Hill, Pahang, 21 Mar., 1929; coll. Holttum. Sibejak, Sumatra, Feb., 1931; coll. O. Renner (304). *Puket*. Trang, Kao Soi Dão, circa 700 m., trees and shrubs in evergreen forest, 28 Apr., 1930; coll. Kerr (535d). Nearly all sterile.

One of the smaller species, marked by the very undulate leaves, especially when dry, the small cells, long nerve, stout border, and almost smooth seta. *D. Montagneanum* has much longer leaf points, acuminate leaves, and hairy calyptra. *D. gracilicaule* Fleisch. has cells not decreasing in size at the margins, and *D. brevicuspes* Fleisch. differs in the same way and has much larger cells.

DISTICHOPHYLLUM CUSPIDATUM Doz. & Molk.

Puket. Krabī, Panom Bēncha, on trees in evergreen forest, circa 1100 m., 28 Mar., 1930 (512). Trang, Kao Soi Dão, on trees in evergreen forest, circa 700 m., 28 Apr., 1930 (535e).

Distr. Wide.

This species seems to be constantly epiphytic, contrary to the usual habit of the genus, which is generally on wet rocks in or near running water.

DISTICHOPHYLLUM MITTENII Bry. jav.

One or two gatherings.

CHAETOMITRIUM NEMATOSUM Broth.

Pūket. Ranawng, La-un, on shrub in evergreen forest, circa 20 m., 1 Jan., 1929 (385).

Surāt. Chumpawn, Siepyuan, on branches in deciduous forest, circa 10 m., 20 Dec., 1928 (362). *Ibidem*, on shrub in deciduous forest (363), c. fr. The fruit has not hitherto been described. Perichaetii folia erecta, ciliato-denticulata. Seta fere 1 cm. longa, crassiuscula, inferne laevis, superne papillosa. Theca e collo turgido oblonga, inclinata, leniter curvata. Operculum et calyptra haud visa.

CHAETOMITRIUM PAPILLIFOLIUM Bry. jav.

Prāchinburī. Krabin, Bān Kēng, on Bauhinia, in savannah, circa 25 m., 8 Nov., 1930 (551a).

Probably this, but not quite certain, as the seta is, though highly papillose, scarcely hispidulose as described. If correct, it is new to Siam.

CHAETOMITRIUM PHILIPPINENSE (Mont.) Bry. jav.

Nakawn Svītamārāt. Patalung, Kao Soi Dāo, on trees and shrubs in evergreen forest, circa 600 m., 29 Apr., 1930 (538).

Pūket. Pang-ngā, Tap-put, on shrub in scrub, circa 100 m., 4 Mar., 1933 (478).

Surāt. Surāt, Bān Krūt, on trunk in evergreen forest, circa 50 m., 10 Feb., 1930 (464).

CHAETOMITRIUM ELONGATUM Doz. & Molk.

Surāt. Kiensā, on twigs of small trees in evergreen forest, circa 50 m., 19 Feb., 1930 (459).

Distr. Java ; Moluccas ; Borneo ; Malay Penins.

CHAETOMITRIUM TORQUESCENS Bry. jav.

Pūket. Pang-ngā, Kao Bāngto, on leaf of palm, circa 900 m. 22 Feb., 1929.

CHAETOMITRIUM LEPTOPOMA (Schwaegr.) Lac.

Pūket. Trang, Kao Soi Dāo, on tree in evergreen forest, circa 400 m., 27 Apr., 1930 (532).

Distr. Java; Malay Penins.; Borneo.

CHAETOMITRIUM ORTHORRHYNCHUM (Doz. & Molk.) Bry. jav.

Pūket. Ranawng, Klawng Kampūam, on tree in evergreen forest, circa 50 m., 30 Jan., 1929 (410).

Distr. Java; Sumatra; Celebes; Borneo; Philippines; Malay Penins.

CHAETOMITRIUM CUCULLATUM Dix.

Pūket. Krabī, Panom Bēncha, in evergreen forest, circa 800 m., 29 Mar., 1930 (521c).

Distr. Borneo.

Chaetomitrium nervosum Dix. sp. nov.

Sat robustum; flavescens, nitidum. Habitus et statura fere *C. nematosi*. Rami aequae ac folia complanati. Folia sicca *undulata*, 2 mm. longa, oblonga, breviter late acutata, subobtusa, sub apice saepe leniter constricta, paullo concava, *uno margine inferiore reflexo*; costae binae, *sat robustae, tertiam vel dimidiam partem* folii attingentes. Cellulae angustissimae, dorso *laeves*.

Fructus ignotus.

Hab. *Pūket*, Krabī, Panom Bēncha, on bamboo, circa 1300 m., 28 Mar., 1930; coll. Kerr (509).

Distinct in the rather robust habit, complanate, glossy, broadly pointed leaves little constricted below the apex, quite smooth cells and well developed nerves,

DIMORPHOCLADON BORNEËNSE Dix.

Surāt. Chumpawn, Tāsān, in evergreen forest, circa 50 m., 23 Dec., 1928 (369).

LESKEACEAE.

PSEUDOLESKEOPSIS ANNAMENSIS Broth. & Par.

Pūket. Ranawng, Klawng Kampūam, on boulder by stream, circa 50 m., 29 Jan., 1929 (408).

Distr. Annam.

THUIDIACEAE.

CLAOPODIUM NERVOSUM (Harv.) Fleisch.

Pūket. Pang-ngā, Kao Katakwm, on rocks by stream in forest, circa 100 m., 8 Mar., 1930 (488c).

Distr. Wide.

CLAOPODIUM ASSURGENS (Sull. & Lesq.) Card.

Udawn. Lôi, Kao Krading, on tree trunk in evergreen forest, circa 1200 m., 11 Feb., 1931 (570).

Distr. Corea; Japan; Formosa; China; Laos; Java; Sumatra.

THUIDIUM MEYENIANUM (Hampe) Jaeg.

Udawn. Kawnkên, Pū Wieng, on rotting log, circa 300 m., 15 Feb., 1931 (579).

THUIDIUM BIFARIUM (Bry. jav.) Jaeg.

Surāt. Surāt, Kao Wong, on earthy bank in light evergreen forest, circa 100 m., 25 Feb., 1930 (473).

Distr. Sumatra; Java; Amboina; Philippines; Malay Penins.

THUIDIUM ORIENTALE Mitt.

Udawn. Lôi, Kao Krading, on tree trunk in forest, circa 1200 m., 11 Feb., 1931 (570b).

Distr. Malay Penins.; Laos; China; Japan; Sumatra.

BRACHYTHECIACEAE.

RHYNCHOSTEGIELLA OVALIFOLIA Dix.

Surāt. Surāt, Kiensā, on tree trunk in evergreen forest, circa 50 m., 19 Feb., 1930.

SEMATOPHYLLACEAE.

Acanthocladium filipendulum Dix. sp. nov.

Epiphyllum et corticolum, *pendulum*, *gracillimum*, *molle*, *flexuosum*, flavo-aurantiacum, nitescens. Caules *filiformes*, 5 cm. vel ultra longi, *laxe subpinnatim* ramosi. Rami variabiles, nunc perbreves, foliis patentibus, complanatis, nunc filiformes, elongati, attenuati,

microphylli. Folia ramorum normalium circa 1 mm. longa, lanceolata, plus minusve longe tenui-acuminata, ecostata, a medio folio superne argute, sat remote denticulata; cellulae laeves, angustissimae, tenerimae, alares *intense aurantiacae, numerosae, rectangulares*, valde conspicuae sed vix vesiculosae. Folia ramorum filiformium parva, subpiliformi-attenuata. Fructus ignotus.

Hab. *Pūket*, Krabi, Panom Bēncha, circa 1100 m., on fern leaves in evergreen forest, 28 Mar., 1930; coll. Kerr (515), type. Ibidem, on trees, circa 1300 m., (509b). Ranawng, Kao Pawtā Chōng-dōng, circa 990 m., on trees in evergreen forest, 21 Mar., 1929 (404e).

With almost exactly the habit of a *Barbella*, e.g. *B. compressiramea* or *B. Levieri*, but quite distinct in the leaf structure, particularly the alar cells, and the acute though not coarse denticulation; and very far removed from any other species of the genus.

TRISMEGISTIA LANCIFOLIA (Harv.) Broth.

Several gatherings.

It is rather noticeable that the distribution of this and *T. rigida*, while they overlap, is in the present species distinctly more northerly while that of *T. rigida* is markedly more southern.

CLASTOBRYUM BREVIFOLIUM Dix.

Pāyap. Chiengmai, Doi Lang Kā, on branches, 1 Dec., 1930; coll. Put (3264f).

FOREAUPELLA INDICA Dix. & Varde.

Udawn. Lôi, Kao Krading, log in evergreen forest, circa 1000 m., 10 Feb., 1931 (565).

MEIOTHECIUM TURGIDELLUM Fleisch.

Pūket. Ranawng, La-un, on shrub in scrub, circa 10 m., 2 Jan. 1929 (386). Ibidem, on trunk of areca palm, 30 Dec., 1928 (383).

Distr. Java.

CHIONOSTOMUM LATIFOLIUM Thér. & Henry.

Pāyap. Chiengmai, Doi Lang Kā, on branches, 1 Dec., 1930; coll. Put (3264e).

Rāchasimā. Chaiyapūm, Pū Kio, on bamboo, circa 1000 m.,
23 Feb., 1931 (589).

Distr. Tonkin.

This species has not been published. Mons. Thériot informs me that there is not at present a prospect of the publication of the paper in which it is included, and he has furnished me with a short diagnosis in order that it may be published here. I give the diagnosis in Latin.

CHIONOSTOMUM LATIFOLIUM Thér. & Henry.

C. rostrato (Griff.) peraffine. Differt foliis majoribus, prae-
cipue latioribus, sat raptim in acumen breve, latum, contractis,
perconcavis; atque areolatione laxiore, cellulis 7-8 μ latis, nec ut in
C. rostrato, 5 μ .

Hab. Tonkin, Chapa; sur bois du poulailler de la villa Imbert;
1500 m., alt., Sept., 1927; coll. A. Petelot. Type in herb. I.
Thériot.

SEMATOPHYLLUM MICROCLADUM (Doz. & Molk.) Broth.

Pūket. Ranawng, Lam Lieng, on tree in open forest, circa
10 m., 29 Dec. 1928 (382). Kapôr, on tree in bamboo forest, 25 Jan.,
1929 (407).

SEMATOPHYLLUM SAPROXYLOPHILUM (C. M.) Fleisch.

Pūket. Ranawng, Kao Pawtā Chōngdōng, on shrub in ever-
green forest, circa 900 m., 30 Dec., 1928 (404f).

Distr. Java; Philippines; Malay Penins.

CLASTOBRYELLA CUCULLIGERA (Bry. jav.) Fleisch.

Pūket. Ranawng, Kao Pawtā Chōngdōng, circa 900 m., 21
Mar., 1929, on trees in evergreen forest (404b).

Distr. Java; Malay Penins.; Sumatra; Philippines; Ceylon;
New Hebrides; Fiji.

CLASTOBRYELLA RUFICAULIS (Thw. & Mitt.) Fleisch.

Nakawn Srītamarāt. Patalung, Kao Soi Dāo, on shrub in
evergreen forest, 600 m., 29 Apr., 1930 (540c).

Distr. Ceylon; Malay Penins.; Borneo; New Caledonia.

ACROPORIUM BOGORICUM (Bry. jav.) Dix.

Pūket. Krabī. Lantā, on tree in evergreen forest, circa 400 m., 15 Apr., 1930 (524).

Distr. Sumatra; Java; Borneo; Malay Penins.

ACROPORIUM SUBULATUM (Hampe) Fleisch.

Nakawn Srītamārāt. Songklā, Kao Kêo, on shrub in evergreen forest. 27 July, 1928 (319).

ACROPORIUM LAMPROPHYLLUM (Mitt.) Fleisch.

Pūket. Pang-ngā, Kao Bāngto, on tree trunk in evergreen forest, circa 900 m., 22 Feb., 1929 (421).

Chantaburī. Krāt, on tree in evergreen forest, Kao Kūap, circa 600 m., 27 Dec., 1929 (436).

ACROPORIUM DECIPIENS Dix.

Pūket. Takūapā. On bamboo, 14 Feb., 1929. (416). Talāng, on bamboo culms, circa 100 m., 11 Mar., 1929 (425).

Distr. Malay Penins.; Celebes; Borneo.

ACROPORIUM CONVOLUTUM (Bry. jav.) Fleisch.

Pūket. Kraburī, Klawng Wa, on bamboo, circa 50 m., 24 Dec., 1928 (371).

Distr. Sumatra; Java; Borneo; Malay Penins.

Acroporium convolutifolium Dix. sp. nov.

A. albidissimo (Dix.) peraffine; differt statura minore, colore magis viride, foliis minoribus, brevioribus, strictis, *e basi ad apicem anguste convoluto-tubulosis*, propter *papillas medio lumine dense histicosis*.

Hab. Pūket. Takūapā, Kapong, circa 100 m., on leaves of *Eugenia*, by stream in evergreen forest, 17 Feb., 1929; coll. Kerr (417b).

Possibly a delicate form of *A. albidissimum*, but it has not the whitish colour of that, the leaves are smaller, shorter, very strict and subtubulose, and the cells are not rugulose-papillose, but with a distinct central acute papilla on the lumen of each cell. This also, with the larger, more broadly pointed, strict leaves, distinguishes it

from *A. convolutum*. *A. longicuspis* Broth. has longer, more finely pointed leaves, and is a larger plant.

ACROPORIUM SECUNDUM (Hornsch. & Reinw.) Fleisch. nov. var. **siamense** Dix.

Seta inferne laevis, dimidia parte superiore papillosa.

Pūket, Ranawng, Kao Pawtā Lūang Kêo, on tree in evergreen forest, circa 1300 m., 1 Feb., 1929 (412). *Ibidem*, Kao Pawtā Chōngdōng, circa 900 m., 20 Jan., 1929 (400b). Pang-ngā, Kao Katakam, on shrubs in open ground of peak, circa 1000 m., 8 Mar., 1930. Trang, Kao Soi Dāo, on trees and shrubs in evergreen forest, circa 700 m., 29 Apr., 1930 (536b).

This is apparently exactly similar to the type in all respects except the seta, which is papillose in the upper half, quite constantly. The type was collected on one or two occasions, but apparently the variety is the more common form.

ACROPORIUM HAMULATUM Fleisch. var. *procumbens* Fleisch.

Pūket. Ranawng, Kao Pawtā Chōngdōng, on trees in evergreen forest, circa 900 m., 21 Jan., 1929 (402).

ACROPORIUM STRAMINEUM (Hornsch. & Reinw.) Fleisch.

Pūket. Kao Pawtā Lūang Kêo, on rocky slope, circa 1200 m., 1 Feb., 1929 (411a).

Distr. Wide, from the Philippines to New Guinea; Malay Penins.; Ceylon.

ACROPORIUM LAOSIANUM (Broth. & Par.)

Rāchasimā. Chaiyapūm, Pū Kio, on fallen trunk in evergreen forest, circa 1000 m., 22 Feb., 1931 (583).

Udawn. Lôi, Kao Krading, on tree trunk in forest, circa 1200 m., 11 Feb., 1931 (570c).

Distr. Laos.

ACROPORIUM ALBIDISSIMUM Dix.

Pūket. Trang, Kao Soi Dāo, on trees in evergreen forest, circa 700 m., 29 Apr., 1930 (536d).

ACROPORIUM TUBULOSUM (Broth.) Broth.

Pūket. Trang, Kao Soi Dāo, on trees and shrubs in evergreen forest, circa 700 m., 28 Apr., 1930 (535e).

Distr. Philippines; Borneo.

TRICHOSTELEUM MAMMOSUM (C. M.) Jaeg.

Pūket. Ranawng, Klawng Kampūam, on tree in evergreen forest, circa 50 m., 30 Jan., 1929 (410b).

A slightly different form from the usual one. Less yellowish, and with the leaf points much shorter and broader.

Distr. Sumatra; Java; Malay Penins.

Trichosteleum superserrulatum Dix. sp. nov.

T. pinnato Dix. siamensi affine et caulibus pinnatis simile. Differt habitū paullo robustiore, foliis *majoribus*, magis concavis, *late explicatis*, *strictioribus*, marginibus dorso *fortius papillois*, *e medio folio fere e basi arctissime denticulatis*.

Dioicum videtur. Flores ♂ tantum visi.

Hab. Pūket. Takūapā, Kapong, circa 100 m., on leaves of *Eugenia*, by stream in evergreen forest, 17 Feb., 1929; coll. Kerr (417a).

The lax, pinnate habit, with branches 5 mm. and more long, strict, not complanate, not glossy leaves, narrowly oblong, subtubular with broadly explicate margins, make this a fairly distinct species. The apparently dioicous inflorescence suggests the question whether it be an *Acroporium*; but the leaf base, the highly papillose cells, and dense serrulation are all in favour of *Trichosteleum*.

Trichosteleum chaetomitriopsis Dix. sp. nov.

Ramicolum. *Densissime confertum*, habitu specierum nonnullarum *Chaetomitrii*, e. g. *C. leptopoma* et *C. orhorrhynchum*. Folia subcomplanata, e basi paullo angustiore *latissime oblonga*, superne *cochleariformia*, inde *in apiculum vel cuspidem brevissime obtusissime explicata*; ecostata; margines plani, superne minute conferte denticulati. Cellulae *parvae*, angustae, *alte* spiculose unipillosae.

Autoicum. Flos ♂ minutus, antheridiis paucis. Folia perichætii pauca, brevia, *brevissime late cuspidata*, grosse denticulata. Seta circa 1 cm., apice leniter, indistincte rugulosa; theca majuscula, subhorizontalis, oblonga vel obconica, atro-fusca. Operculum longe aciculare.

Hab. Laos, Chieng Kwang, Pū Mutên, circa 1500 m., in evergreen forest, 20 Apr. 1932; coll. Kerr (511a, 528d), type. Ibidem, (491). *Udawn*, Lôi, Kao Krading, on shrub in evergreen forest, circa 1200 m., 11 Feb., 1931; coll. Kerr (569).

A striking and distinct species, with much the growth of several species of *Chaetomitrium*. It is very distinct from all described species of *Trichosteleum* in the form of the leaves, very broad, in fact broader above than below, deeply concave, almost saccate in the upper part, then flattened out into a broad, short, obtuse or sub-obtuse point. It is nearly allied only to *T. subeucullifolium* Broth. & Par. from Tonkin, which I have not seen. That however is described as with leaves "acuta vel late acuminata," which does not apply here, while the cells are there papillose only in the upper part of the leaf; here they are acutely papillose to well below the middle.

RHAPHIDOSTICHUM LUXURIANS (Doz. & Mol.) Fleisch.

Nakawn Srîtamarât. Songklā, Kao Kêo, on dead wood in evergreen forest, circa 300 m., 28 July, 1928 (320).

RHAPHIDOSTICHUM COMPLANATUM (Dix.) Broth.

Udawn. Lôi, Kao Krading, on rock in evergreen forest, circa 1200 m., 11 Feb., 1931 (571).

Distr. Malay Penins.

Taxithelium epapillosum Dix. sp. nov.

§ *Polystigma vera*. Corticola. Caules dense *arcte compressi*, complanati, sordide flavescentes, subnitidi. Folia *complanata*, concava, ovato-oblonga, vel ovato-lanceolata, *breviter late acutata*, superne denticulata; ecostata; cellulæ angustissimæ, *omnino laeves*; alares 2-3 *magnæ, hyalinae, rectangulares*, supra-alares *subquadratae, numerosae, pellucidae*,

Autoicum. Folia perichaetii erecta, *sensim substricta lori-formi-attenuata*, denticulata. Seta 1.5–1.75 cm. longa, tenuis; theca parva, brevis, gibboso-curvata, Operculum haud visum.

Hab. *Surāt*, Chumpawn, Tāsān, circa 50 m., on stems of shrub in river, 22 Dec., 1928; coll. Kerr (368).

This has the alar cells of *T. alare* Broth., but broadly and shortly pointed leaves, and quite smooth cells. It belongs, without doubt, to the group of *Polystigma vera* Fleisch., and closely resembles some of the tropical African species, e. g. *T. Pobegwini* Broth. & Par., and *T. compressicaule* (C.M.)

TAXITHELIUM NEPALENSE (Schwaegr.) Broth.

In several gatherings, usually on mud by streams.

Distr. Wide.

TAXITHELIUM ALARE Broth.

Pūket. Krabi, Tambon Kao Panom, circa 100 m., on shrub in evergreen forest, 31 Mar., 1930 (520).

Nakawn Srītamarāt. Patalung, Kao Soi Dāo, on trees in evergreen forest, circa 600 m., 29 Apr., 1930 (540).

TAXITHELIUM LINDBERGII (Bry. jav.) Ren. & Card.

Udawn. Lōi, Kao Krading, on shrub in evergreen forest, circa 1200 m., 11 Feb., 1931 (569b).

Distr. Wide. To the distribution given by Brotherus in the 2nd Ed. of the "Musci" may be added Ceylon; Sumatra; Malay Penins.

TAXITHELIUM SUMATRANUM (Bry. jav.) Broth.

Pūket. Ranawng, Kapôr, on shady ground by tidal creek, 15 Jan., 1929 (393).

Distr. Sumatra; Borneo.

TAXITHELIUM MAGNUM Fleisch.

Pūket. Pang-ngā, Kao Bāngto, on shrub in evergreen forest, circa 900 m., 22 Feb., 1929 (419, 422). *Ibidem*, Kao Katakwan, circa 1000 m., 8 Mar., 1930 (492). Krabi, Panom Bēncha, on trees and shrub in evergreen forest, circa 1100 m., 28 Mar., 1930 (513b).

Distr. Sumatra; Java; Borneo; Malay Penins.

Taxithelium clastobryoides Dix. sp. nov.

Pallide stramineum, subnitidum, corticolum, densissime caespitosum, parvum, habitu Clastobryorum nonnullorum robustiorum, *T. isoclado* forsan affine, sed foliis *haud complanatis, concavis, densius dispositis*. Cellulae angustae, papillis *seriatis distinctis*; alares *paucae, sat distinctae, hyalinae*, supra-alares nullae.

Folia perichaetialia pallida, erecto-flexuosa, tenuiter acuminata, *grosse denticulata*. Fructus valde immaturus tantum visus.

Hab. *Pūket*. Krabī, Panom Bēncha, circa 1100 m., on trees in evergreen forest, 28 Mar., 1930; coll. Kerr (512b).

Fairly distinct in the dense habit, pale straw colour, non-complanate leaves, acuminate or acute, with distinct papillae. *T. Robinsonii* Broth. from the Philippines is a little like it in habit, but more flexuose, with much narrower, finely acuminate leaves, and very faint papillae.

Taxithelium spathulifolium Dix. sp. nov.

§ Glossadelphus. Caules *subdendroidei, lignosi, duri*, ramis *bis terque ramosis, complanatis, saepe flagellaceis*, caespites densos sed facile separabiles, circa 2–3 cm. altos, *olivaceos, nitidos*, instruentibus. Folia inferiora subsquamosa, pallida, ramorum *percomplanata*, e basi paullo angustiore *oblongo-vel ovato-spathulata, brevissime late acuta*, non acuminata, breviter bicostata, marginibus *planis*, e medio folio argute sat distanter denticulatis, denticulis *erectis, haud patentibus*. Cellulae *latiuscule lineares, sigmoideae, obtusae, pellucidae, laeves*, apud apicem breviores, ad insertionem paullo latiores, parietibus *incrassatis, porosis*; alares nullae.

Fructus ignotus.

Hab. *Pūket*. Krabī, Panom Bēncha, circa 1300 m., on trees and shrubs in evergreen forest, 28 Mar., 1930; coll. Kerr (511b).

This has somewhat the habit of *T. vivicolor* Broth. & Dix., but the leaves are not concave, but very flat, acute, strongly denticulate. The habit is that of very delicate species of *Thamnium*,

MYURIACEAE.

MYURIUM RUFESCENS (Hornsch. & Reinw.) Fleisch.

Pūket. Ranawng, Kao Pawtā Lūang Kèo, on ground on ridge in shady spot, circa 1300 m., 2 Feb., 1929 (413).

ENTODONTACEAE.

TRACHYPHYLLUM INFLEXUM (Harv.) Gepp.

Udawn. Kawnkên, Pū Wieng, on rock in deciduous forest, circa 200 m., Mar., 1932 (458).

Distr. North and South India; Birma; Pegu; Philippines; New Caledonia; Ceylon.

STEREOPHYLLUM ANCEPS (Bry. jav.) Broth.

Udawn. Kawnkên, Pū Wieng, on tree trunk, circa 100 m., 16 Mar., 1932 (459).

Pitsanulōk. Petchabūn, Nāyom, on shrub in stream bed, circa 100 m., 8 Mar., 1931 (591).

Distr. South India; Ceylon; Java; Philippines; Birma.

HYPNACEAE.

ISOPTERYGIUM TEXTORI (Lac.) Mitt. (*I. arquifolium* (Bry. jav.) Jaeg.).

Pūket. Krabī, Panom Bēncha, on fern in evergreen forest, circa 1100 m., 28 Mar., 1930 (508). An unusual habitat for this plant.

Distr. Wide.

I. arquifolium and *I. Textori* are certainly the same thing. It does not appear to have occurred to anyone to compare them. The fact that one was described from Japan and the other from Java probably accounts for Lacoste not having suspected their identity; though in view of the marked and peculiar colouring it is rather surprising that it should not have done. *Rhynchostegium Textori* Lac. was published in Miq. Ann. Mus. bot., Lugdun. Batav. II, p. 299 (1866). *Hypnum arquifolium* Bry. jav. dates from Nov., 1868.

If any doubt occurred on account of the divergent stations of the two it is quite dispelled by the present knowledge of their distribution, which is practically continuous; I know the species from Japan; China; Annam; Siam; Malay Penins.; Borneo; Amboina; Java; Sumatra; Ceylon; South India. Moreover the Japanese and South Indian plants show a good deal of variation, and the variations are similar in both the regions.

ISOPTERYGIUM MINUTIRAMEUM (C. M.) Jaeg.

In one or two gatherings.

Plagiothecium entodontella Broth. in sched., Bryoth. E. Levier.

Habitus aequae ac folia omnino fere Entodontis, sed folia sicca paullo contracta. Nitidum, robustiusculum. Folia circa 1.5 mm. longa, concava, e basi late ovata brevissime late obtuse acutata, apice subacuto, tenerrime denticulato. Margines plani, vel uno alterove inflexo; costa bina, brevissima vel nulla. Cellulae anguste rhomboideo-lineares, breviusculae, circa 5 μ latae, sat opacae, marginales versus apicem saepe 1-seriatim pellucidae; basilares laxae, ad alas plurimae quadratae, magnae, chlorophyllosae, medianae rectangulares, magnae.

Seta tenuis, flexuosa, 1.5 cm. alta. Theca (immatura) parva, plus minusve inclinata, curvata, collo longo defluente. Laevis videtur. Operculum majusculum, conico-rostellatum, fere rostratum, decurvum, subobtusum.

Hab. Sikkim Himalaya, prope Kurseong, 6000 ped., coll. Decoly and Schaul, Bryotheca E. Levier, det. Brotherus, No. 3349. Ibidem, 6000 ped., Apr.-May, 1913, coll. G. Foreau (Herb. H. N. Dixon). Udawn. Kawnkên, Pū Wieng, circa 400 m., rotting log in bamboo forest, 16 Feb., 1931; coll. Kerr (582).

The Siamese plant is exactly identical with the Himalayan. From the habit, the form of leaf, and especially the basal areolation, this, in the sterile state at least has very much the character of an Entodon.

ECTROPOTHECIUM SPARSIPILUM (Bry. jav.) Jaeg.

Pūket. Ranawng, Kao Pawtā Lūang Kéo, on ground on ridge in shady spot, circa 1300 m., 2 Feb., 1929 (414). (Probably at foot

of tree, since this is not normally a terrestrial plant). Krabī, Panom Bēncha, on trees in light evergreen forest, circa 1300 m., 28 Mar., 1930 (511a).

Distr. Java; Malay Penins.

ECTROPOTHECIUM DIXONI Fleisch.

Pūket. Ranawng, Kao Pawtā Lūang Kêo, on decaying log in forest, circa 500 m., 30 Jan., 1929 (409).

ECTROPOTHECIUM COMPRESSIFOLIUM (Mitt.) Broth.

Rāchaburī. Prān, Pāk Tawān, on river bank, circa 30 m., 29 July 1931; coll. A. Marcan (2685).

Distr. Khasia; Assam; Sikkim; South India.

ECTROPOTHECIUM HYALINUM (Hornsch. & Reinw.) Fleisch.

Pūket. Krabī, Panom Bēncha, on trees in evergreen forest, circa 1100 m., 28 Mar., 1930 (510b). A remarkable form with almost all the branches longly flagelliform. It has in fact the structure of *E. hyalinum* with the habit of *E. epiphytum* Fleisch., and it seems not unlikely that the latter is but a variety of *E. hyalinum*.

Distr. Java.

ECTROPOTHECIUM CHAMISSONIS (Hornsch.) Jaeg.

Surāt, Bān Nā, on log in evergreen forest, circa 50 m., 18 Feb., 1930 (457).

Distr. Moluccas; Banca.

Ectropothecium vesicularioides Dix. sp. nov.

Sat robustum, flavescens, subnitidum. Caules prostrati, 3–5 cm. longi, subpinnatim vel irregulariter ramosi, ramis *inaequalibus*, *flexuosis*, habitu Vesiculariae. Folia variabilia ut in Vesicularia, nunc late ovalia, leniter asymmetrica, brevissime acutata, nunc angustiora, falcutula, acuminata, *argute denticulata*; ecostata, marginibus planis. Cellulae *pellucidae*, *laxae*, parietibus tenuibus, elongate rhomboideae, nunc circa 8 μ , nunc 13–14 μ latae, basilares latiores, alares sensim laxiores, rectangulares.

Diocum. Perichaetii folia e basi lata longe squarrose tenui-acuminata, argute denticulata. Seta 1.5–2 cm. longa, theca majuscula, turgide ovata, pendula.

Hab. *Pūket* Pang-ngā, Tap-put, circa 100 m., rock in dry stream bed, 4 Mar., 1930; coll. Kerr (479).

This is so like a *Vesicularia* in habit, in the dimorphous leaves, lax cells, etc., that I should have placed it there but for the dioicous inflorescence. It is indeed extremely near to *V. Dubyana*, and possibly may prove to be a dioicous form of it.

VESICULARIA MONTAGNEI (Bél.) Broth.

In one or two localities.

VESICULARIA KURZII (Lac.) Broth.

Pūket. Ranawng, Kapôr, on damp stones in shady stream, circa 10 m., 17 Jan., 1929 (396).

Distr. Banca; Siantan I.; Malay Penins.

VESICULARIA IMMUTATA Dix.

Krungtēp. Bangkok, on dry mud on edge of ditch by fruit gardens, 9 Feb., 1930 (544).

Distr. Celebes.

HYLOCOMIACEAE.

CTENIDIUM MALACOBOLUM (C. M.) Broth.

Pūket. Krabī, Panom Bēncha, in evergreen forest, 27 Mar., 1930 (507).

Distr. Wide in the Malay Archipelago.

POLYTRICHACEAE.

POGONATUM TEYSMANNIANUM (Doz. & Molk.) Bry. jav.

In one or two gatherings.

POGONATUM JUNGHUHNIANUM (Doz. & Molk.) Bry. jav.

In several gatherings.

POGONATUM ALBO-MARGINATUM (C. M.) Jaeg.

Pūket. Ranawng, Kao Pawtā Lūang Kêo, on exposed rocky slope, circa 1200 m. 1 Feb., 1929 (411b).

Distr. Philippines.