

**CHECKLIST OF THE MOSS COLLECTION
IN THE FOREST HERBARIUM,
ROYAL FOREST DEPARTMENT, BANGKOK.**

by

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The senior author, being awarded the SEATO Fellowship to study the agro-ecology of highlands in relation with bryophytes in Pakistan and Thailand, spent nearly 4 months between March-June 1965 in Thailand collecting some 2000 numbers of mosses and hepatics with the co-operation of the Forest Herbarium. During the excursion he paid visits to Doi Suthep, Doi Chiengdao, and Fang in Chiangmai; Phu Mieng in Phitsanuloke; Khao Yai National Parks and Phu Khieo in Nakhorn Rachasima; Khao Sabap in Chantaburi; Koh Chang in Trat; Khun Thale Forest in Surat; all of these visits were accompanied by Mr. Chamlawng PHENGKHLAI, Chief of the Section of Botany and Zoology, Forest Products Research Division.

The collection has been deposited in the National Museum of Natural History, Paris and a set of duplicates will be provided for the Forest Herbarium, Bangkok after proper determination.

While working on the moss collection in the Forest Herbarium, he came across some species not hitherto reported from this country, and thus kindly prepared a checklist aiming at a wider circulation.

The moss collection of the Forest Herbarium has successively been determined by the late Drs. P. ARENS of Hilversum, Holland; G.O.K. SAINSBURY of Wairoa, New Zealand; E.B. BARTRAM of Buskill, U.S.A. It is most unfortunate that these specialists did not live long enough to have a thorough study of the Bryology of Thailand. To commemorate their kind and sincere co-operation, their names are being cited with the specimens they have worked on.

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Recently an identification list has been received from Dr. A. TOUW of the Rijksherbarium, Leiden, Holland reporting other new finds; he has also kindly sent a small collection made by the Kwae Noi Basin Expedition in 1946. In 1958 Dr. P.W. RICHARDS of the University of North Wales, Bangor has kindly sent duplicates of his moss collection made during his trip to Thailand in 1957; the collection was determined by Dr. R.M. GIESY and himself. All these have been advertently included in the present list.

A brief history of the study of Thai Bryology has been given by HORIKAWA and ANDO (1964); it is worthwhile to make a note here that in 1963 Dr. R.G. ROBBINS of the School of Pacific Studies, Australian National University, Canberra, accompanied by the junior author, spent a period between November–December collecting mosses in Northern Thailand (Doi Inthanond, Doi Suthep and Doi Chiangdao), and Central Thailand (Khao Yai National Park). The collection amounts to 145 numbers which was sent to the Rijksherbarium and kindly identified by Dr. A. TOUW. It is with the consent of Drs. ROBBINS & TOUW that this collection be added to this paper.

1965 seems to be a bryological year for Thailand as after the departure of the senior author, Dr. A. TOUW arrived in the early part of November and spent some 3 months on collecting trips all over the country. Almost at the same time a Japanese team lead by Dr. TAGAWA of the Kyoto University arrived, with him came a young Japanese bryologist, Mr. NAOFUMI KITAGAWA of the Biological Laboratory, Nara Gakugei University; the Japanese team worked on the same route as the Netherlands. It is therefore to be expected that after their thorough studies the Moss Flora of Thailand will come to its completion in the near future.

The arrangement of this list follows V.F. BROTHERUS' conception [1924 and (1925) 1960].

One asterisk (*) denotes the plant is being recorded for the first time, whereas two asterisks (**) marks additional localities.

SPHAGNACEAE

Sphagnum cuspidatum C. MUELL.

Northern. Chiangmai, Doi Inthanond, 2850 m., along edge of swampy ground, 15 Apr. 1960 [SMITINAND & ALSTERLUND 6678 (in part) 6679, 6686 (in part), det. B. HANSEN]; ibidem, 8500 ft., Lower Montane forest, summit bog, terrestrial, 30 Oct. 1962 (ROBBINS 3642, 3643, 3644).

Geographical distribution: India, Burma, Philippines (Luzon), Sabah [Kinabalu, SMITINAND 8950, (HANSEN 1966)]; Thailand (DIXON 1932: Doi Suthep, Doi Inthanond; HORIKAWA & ANDO 1964: Doi Inthanond).

Sphagnum cuspidatum EHRH.

Northern. Chiangmai, Doi Inthanond, 2850 m., gregarious along edge of swampy ground, 15 Apr. 1960 [SMITINAND & ALSTERLUND 6678 (in part), 6686 (in part), det. B. HANSEN].

Northeastern. Loei, Phu Krading, Huay Hin Kawng, 1300 m., on wet rocks under shades in stream bed, 12 Mar. 1952 (SMITINAND 1168A, det. P. ARENS); ibidem, 1200 m., 28 Nov. 1960 (TDBS 6445, 7470).

Geographical distribution: Japan, Sabah [Kinabalu, SMITINAND 8948, 8949, (HANSEN 1966)]; Thailand (DIXON 1932: Nakhorn Srithamarat; 1935: Phu Khio; HANSEN 1964: Phu Krading).

Sphagnum erythrocalyx HAMPE *apud* C. MUELL.

Northeastern. Loei, Phu Krading, occurs on extremely dry localities (TDBS 2288, 6403, 6406, 6440, 6441, 7400, 7478, 7480).

Geographical distribution: Cambodia [Sihanoukville, SMITINAND & ABBE S.N. (BKF 26281); Bogor, SMITINAND & ABBE 6499, det. B. HANSEN]; Sarawak [Bako, SMITINAND 8953, Santubong, SMITINAND 8951A, 8952A, 8954 (HANSEN 1966)]; Thailand (HANSEN 1964: Phu Krading).

Sphagnum junghuhnianum DOZ. & MOLK.

Northeastern. Loei, Phu Krading, 1250 m. (TDBS 6434, 6453, 6454, 6455, 6457).

Geographical distribution: Himalaya, Yunnan, Philippines, Java, Sabah [Kinabalu, SMITINAND 8944, 8945, 8946, 8947 (HANSEN 1966)], Sarawak [Santubong, SMITINAND 8951 (partly), 8952 (HANSEN 1966)]; Taiwan, Japan; Thailand (DIXON 1932: Khao Riyai, Syn. *Sph. gedeanum* Doz. & Molk.; HANSEN 1964: Phu Krading)].

Sphagnum luzonense WARNST.

Northeastern. Loei, Phu Krading, 1200 m., common in wet localities in dense mats, often aquatic (TDBS 2372, 2375, 6405, 6408, 6410, 6411, 6429, 6430, 6431, 6432, 6443, 6446, 6447, 6448, 6452, 7348).

Geographical distribution : Philippines (Luzon); Thailand (DIXON 1935 : Phu Krading, Syn. *Sph. densirameum* DIX.; HANSEN 1964 : Phu Krading).

Sphagnum palustre LINN.

Northeastern. Loei, Phu Krading, 1200 m., very common in bogs, tufts and mats on moist sands, all over the plateau (TDBS 2306, 2371, 6401, 6402, 6407, 6434, 6460, 7341, 7349, 7437, 7470).

Geographical distribution : Cosmopolitan, except Africa; Thailand (DIXON 1932 : Phu Krading, Syn. *Sph. siamense* DIX.; HANSEN 1964 : Phu Krading).

Sphagnum subsecundum NEES in STURM.

Northeastern. Loei, Phu Krading, 1200 m., on moist soil near stream (TDBS 6435).

Geographical distribution : Burma; Thailand (HANSEN 1964 : Phu-Krading).

Sphagnum thailandense B. HANSEN

Northeastern. Loei, Phu Krading, 1200 m., in small tufts on extremely dry localities apparently associated with *Sph. erythrocalyx* [TDBS 2376A, 6404A, 6442 (iso-type), 6450].

Geographical distribution : Endemic to Thailand (HANSEN 1964, Syn. *Sph. personatum* B. HANS.).

FISSIDENTACEAE

Fissidens anomalus MUTT.

Northern. Chiangmai, Doi Inthanond, 5100 ft., Lower Montane forest, 29 Oct. 1962 (ROBBINS 3584).

Geographical distribution : Sikkim, Khasia, Nilghiries, Ceylon, Vietnam, Japan; Thailand (HORI-KAWA & ANDO 1964 : Doi Inthanond).

** *Fissidens areolatus* GRIFF.

Northern. Chiangmai, Doi Chiangdao, 4900 ft., Lower Montane forest, 9 Nov. 1962 (ROBBINS 3660).

Geographical distribution : Sikkim, Khasia, Burma, Malay Peninsular, Sumatra; Thailand (DIXON 1935 : Krabi).

Fissidens exceedens BROTH.

Northern. Chiangmai, Chiangdao, on soil in a secondary forest, 8 Dec. 1957 (RICHARDS 5490).

Geographical distribution : South India (Ghates); Thailand (GIESY & RICHARDS 1959).

* *Fissidens hollianus* DOZ. & MOLK.

Northeastern. Khawn Kaen, Chumphae, Dong Lan, 300 m., common on stems of low shrubs in Evergreen forest, 27 Mar. 1952 (SMITINAND 1232, det. P. ARENS).

Peninsular. Nakhorn Srithamarat, Khao Luang, Tham Suea, 600 m., on stems of shrubs near ground in Evergreen forest (SMITINAND 1296, det. G.O.K. SAINSBURY).

Geographical distribution: Java, Sumatra; Thailand, not recorded by DIXON (1932, 1935).

Fissidens nobilis GRIFF.

Northern. Chiangmai, slopes of Doi Inthanond, 5000 ft., Lower Montane forest, 29 Oct. 1962 (ROBBINS 3575).

Geographical distribution: Nepal, Sikkim, Khasia, Ceylon, Java, Hong Kong; Thailand (DIXON 1932 : Phu Thong, Lang Suan; 1935; HORIKAWA & ANDO 1964 : Doi Inthanond).

** *Fissidens* cf. *papillosus* BROTH.

Northern. Chiangmai, on track from Tat Noi to Pha Mawn, 2500 ft., on earth from ants nest, 28 Oct. 1962 (ROBBINS 3554).

Geographical distribution: Endemic to Thailand (BROTHERUS 1901 : Koh Chang; DIXON 1932 : Koh Tao).

** *Fissidens semperfalcatus* DIX.

Southeastern. Chanburi, Makham, Khao Mai Khaew, 120 m., on ant hill (SANGKHACHAND 258, det. E.B. BARTRAM).

Geographical distribution: Endemic to Thailand (DIXON 1935 : Phu Khio).

Fissidens sylvaticus GRIFF.

Northern. Chiangmai, valley of Pha Mawn, on track to summit of Doi Inthanond, 3700 ft., grove of pine trees, on rocks, terrestrial (ROBBINS 3563); Doi Suthep, on bank by path in shade, c. 915 m; 6 Dec. 1957 (RICHARDS 5505).

Geographical distribution: All South East Asia, from India to Hong Kong, Java, Celebes, Borneo, Luzon and Batan island; Thailand (BROTHERUS 1901, Koh Chang; DIXON, 1932; Chanburi, Trang).

Fissidens sylvaticus GRIFF. var. *fontanus* (FLEISCH.) GIESY & RICHARDS. f. *minor*.

Central. Nakhorn Nayok, Nang Rawng, on stones among trees and boulders near river, 500 ft., 24 Nov. 1957 (RICHARDS 5450).

Geographical distribution: Endemic to Thailand (GIESY & RICHARDS),

* *Fissidens zollingeri* MONT.

Northern. Chiangmai, near Tat Noi on track to summit of Doi-Inthanond, 2075 ft., Evergreen Gallery forest, corticolous (ROBBINS 3556).

Geographical distribution: Java, Sumatra, Andamans, Tahiti; Thailand, not recorded by DIXON (1932, 1935).

DITRICHACEAE

** *Garckea phascoides* (HOOK.) C. MUELL.

Eastern. Ubol, Ban Nawng Phuc, 150 m., 27 Aug. 1964 (SUARNASORN 50, 54, 55, det. A. TOUW, *G. comosa* (DOZ. & MOLK.) WIJK & MARG.).

Southeastern. Chanburi, Makham, 120 m., on exposed embankment (SMITINAND 1830, det. E.B. BARTRAM).

Geographical distribution: Widespread in SE. Asia; Thailand (BROTHERUS 1901 : Koh Chang; DIXON 1932).

DICRANACEAE

Campylopus ericoides (GRIFF.) JAEG.

Northern. Chiangmai, Chiengdao, on old fallen logs in clearings, 6 Dec. 1957 (RICHARDS 5474).

Geographical distribution: Nepal, Khasia, Vietnam, Ceylon, Java Philippines; Thailand (GIESY & RICHARDS 1959).

Campylopus gracilis (MITT.) JAEG.

Northern. Chiangmai, Doi Suthep, Montane forest, on trees, 1650 m., 6 Dec. 1957 (RICHARDS 5508); Doi Inthanond, 5500 ft., Lower Montane forest, terrestrial, 29 Oct. 1962 (ROBBINS 3594).

Geographical distribution: S. China, Burma, Himalaya; Thailand (DIXON 1932 : Doi Suthep; GIESY & RICHARDS 1959; HORIKAWA & ANDO 1964 : Doi Inthanond).

** *Campylopus* cf. *serratus* LAC.

Northeastern. Loei, Phu Krading, Huay Hin Kawng, 1300 m., massing on rocks along edge of precipice (SMITINAND 1156, det. P. ARENS).

Geographical distribution: Banka, Malay Peninsula, Sumatra, Borneo; Thailand (DIXON 1932 : Surat; 1935 : Koh Phayam, Phu Khio).

Campylopus siamensis DIX.

Northeastern. Loei, Phu Krading, Huay Hin Kawng, 1300 m., on rocks along edges of precipice, 12 Mar. 1952 (SMITINAND 1156, det. G.O.K. SAINSBURY).

Geographical distribution: Endemic to Thailand (DIXON 1932: Phu Krading, Phu Thong, Khao Kuap, Koh Adang).

* *Dicranodontium nitidum* (DOZ. & MOLK.) FLEISCH.

Northeastern. Loei, Phu Krading, Tham Saw, 1300 m., 10 Mar. 1952 (SMITINAND 1111, det. A. TOUW.).

Geographical distribution: Java, Borneo, Celebes, Ceylon; Thailand, new record.

Dicranodontium uncinatum (HARV.) JAEG.

Northern. Chiangmai, Doi Suthep, near summit, 5500 ft., branch of trees on edge of forest in large light green cushions, 6 Dec. 1957 (RICHARDS 5467); Doi Inthanond, 7600-8500 ft., slopes to summit, Lower Montane forest, corticolous, 30 Oct. 1962 (ROBBINS 3621, 3622, 3640, 3646).

Geographical distribution: East of India, Vietnam, Philippines, Moluccas; Thailand (GIESY & RICHARDS 1959; HORIKAWA & ANDO 1964: Doi Inthanond).

* *Symblepharis reinwardtii* (DOZ. & MOLK.) LAC.

Northern. Chiangmai, summit of Doi Inthanond, 8100 ft., Lower Montane forest, epixylic, 30 Oct. 1962 (ROBBINS 3635).

Geographical distribution: Sikkim, Burma, Java, Borneo; Thailand, new record, and only species of the genus represented.

Holomitrium griffithianum MITT.

Northern. Chiangmai, Doi Suthep, near summit 5500 ft., branch of trees on edge of forest, 6 Dec. 1957 (RICHARDS 5463); Doi Chiengdao, 6100 ft., exposed ridge vegetation, corticolous, 10 Nov. 1962 (ROBBINS 3677).

Geographical distribution: Bhutan, Khasia, Assam, Taiwan; Thailand (DIXON 1935: Doi Inthanond; GIESY & RICHARDS 1959; HORIKAWA & ANDO 1964: Doi Suthep and Doi Inthanond).

** *Leucoloma molle* (C. MUELL.) MITT.

Southeastern. Chanburi, Pong Namrawn, Khao Soidao, 1700 m., on tree trunks in Hill Evergreen forest, 23 Jan. 1956 (SMITINAND 3227, det. P.P. TIXIER).

Geographical distribution: Indo-Malaysia, Vietnam, Cambodia (Kampot, Mt. Bokor, in earth, SMITINAND & ABBE 6522, det. P.P. TIXIER); Thailand (DIXON 1932 and 1935: Prachuap Khirikhand).

LEUCOBRYACEAE

** *Ochrobryum kurzianum* HAMPE

Northern. Chiangmai, near Tat Noi on track to Doi Inthanond, lower valleys, 1500 ft., Evergreen Gallery forest, corticolous, 27 Oct. 1962 (ROBBINS 3540).

Eastern. Ubol, Ban Nawng Phue, 150 m., 27 Aug. 1964 (SUARNASORN 52, det. A. TOUW).

Geographical distribution: Burma (Pegu); Thailand (BROTHERUS 1901: Koh Chang; DIXON 1932 and 1935: Chanburi, Kanburi, Krabi and Satul).

** *Leucobryum aduncum* DOZ. & MOLK.

Southwestern. Trat, Koh Chang, Khao Nang Aen, 190 m., (SANGKHACHAND 375, det. E.B. BARTRAM).

Geographical distribution: Nepal, Singapore, Sumatra, Banka, Java, Kalimantan, Moluccas; Thailand (DIXON 1932: Chumphorn, Surat, and Nakhorn Srithamarat).

** *Leucobryum bowringii* MITT.

Northeastern. Loei, Phu Krading, 1300 m., on tree trunks in Oak forest (SMITINAND 2001, det. E.B. BARTRAM).

Geographical distribution: Ceylon, Malaysia, Vietnam, Sunda Islands, Philippines, Taiwan, Japan; Thailand (BROTHERUS 1901 and DIXON 1932: Koh Chang).

** *Leucobryum bowringii* MITT. var. *sericeum* (BROTH.) DIX.

Northeastern. Loei, Phu Krading, Dawn Pawai, 1300 m., on root of trees in Hill Evergreen forest, 8 Mar. 1952 (SMITINAND 1098, det. G.O.K. SAINSBURY).

Geographical distribution: Kalimantan, Great Natuna; Thailand (DIXON 1935: Surat).

** *Leucobryum javense* (BRID.) MITT.

Northern. Chiangmai, near valley of Pha Mawn, 2600 ft., Evergreen Gallery forest, epixylic, 28 Oct. 1962 (ROBBINS 3567).

Northeastern. Loei, Phu Krading, Tham Saw, 1300 m., on dry rocks by stream, along edge of pine forest, 9 Mar. 1952 (SMITINAND 1109, det. P. ARENS); *ibidem*, 1300 m., 24 Nov. 1958 (SMITINAND 4947, det. A. TOUW); Than Sawan, 1200 m., 29 Oct. 1955 (SMITINAND 3107, det. A. TOUW).

Southeastern. Chanburi, Pong Namrawn, Khao Soidao, 1700 m., on earth in Hill Evergreen forest, 23 Jan. 1956 (SMITINAND 3228, det. E.B. BARTRAM).

Geographical distribution: Himalaya, Assam, Ceylon, Vietnam, Laos, Malaysia, New Guinea, Japan; Thailand (BROTHERUS 1911, and DIXON 1932: Doi Suthep).

** *Leucobryum neilgherrense* C. MUELL.

Northeastern. Loei, Phu Krading, 1300 m., 30 Oct. 1955 (SMITINAND 3144, det. A. TOUW).

Geographical distribution: Japan, Korea, Taiwan, China, Vietnam, Burma, India, Ceylon, Philippines, Celebes, Borneo, Java, Sumatra; Thailand (HORIKAWA & ANDO 1964: Doi Inthanond).

Leucobryum scalare C. MUELL.

Northern. Chiangmai, valley of Pha Mawn, 3700 ft., grove of pine trees, 28 Oct. 1962 (ROBBINS 3564); Doi Suthep, 5000 ft., Dry Evergreen forest, (ROBBINS 3648).

Northeastern. Loei, Phu Krading, Tham Saw, 1300 m., on bark of oak trees in Oak and Pine forest (SMITINAND 1112, det. P. ARENS).

Eastern. Nakhorn Rachasima, Khao Khio Range, 3800 ft., Lower Montane forest, 19 Nov. 1962 (ROBBINS 3686).

Geographical distribution: Nepal, South India, Burma, Malaysia; Philippines, Indonesia, Fiji; Thailand (DIXON 1935: Phu Krading, Khun Tan, HORIKAWA & ANDO 1964: Doi Inthanond, Doi Suthep).

** *Leucophanes octoblepharioides* BRID.

Peninsular: Nakhorn Srithamarat, Khiriwong, Thap Chang, 400 m., on roots of *Areca catechu* (SUARNAKOSES 263, det. G.O.K. SAINSBURY).

Geographical distribution: Nepal to islands of the Pacific Ocean; Thailand (DIXON 1935: Krabi).

** *Octoblepharum albidum* (LINN.) HEDW.

Northern. Chiangmai, from Tat Noi to Pha Mawn, 2450 ft., Evergreen Gallery forest, 28 Oct. 1962 (ROBBINS 3555).

Northeastern. Loei, Phu Krading, Tham Saw, 1300 m., on bark of oak trees in Oak forest, 10 Mar. 1952 (SMITINAND 1113, det. G.O.K. SAINSBURY).

Central. Nakhorn Nayok, Sarika Falls, 100 m., common on rocks by stream in Evergreen forest, 23 Oct. 1960 (SMITINAND 2507, det. P.P. TIXIER).

Southeastern. Chanburi, Makhm, 120 m., on decaying Yang logs 10 Oct. 1954 (SANGKHACHAND 262, det. P.P. TIXIER).

Southwestern. Kanburi, near Neeckey (near Wangka), 150 m., on living branches in dense forest, 16 May 1946 [Khwae Noi Basin Expedition 569 (DEN HOED)].

Geographical distribution: Pantropical; Thailand (DIXON 1932: Chanburi; HORIKAWA & ANDO 1964: Doi Inthanond, Doi Suthep).

CALYMPERACEAE

* *Syrrhopodon albovaginatus* SCHWAEGR.

Peninsular. Surat, Bangbao, under 100 m., on wet logs in Evergreen forest (SMITINAND 2823, det. E.B. BARTRAM).

Geographical distribution: Singapore, Kalimantan, Philippines, Moluccas, New Guinea; Thailand, not recorded by DIXON (1932 and 1935).

** *Syrrhopodon* cf. *gardneri* (HOOK.) SCHWAEGR.

Northern. Chiangmai, lower slopes of Doi Inthanond, 5100 ft., Lower Montane forest, corticolous, 29 Oct. 1962 (ROBBINS 3598).

Geographical distribution: Himalayas, Assam, Ceylon, Java; Thailand (DIXON 1932: Khao Luang in Nakhorn Srithamarat).

** *Syrrhopodon elimbatus* DIX.

Northeastern. Loei, Phu Krading, Huay Hin Kawng, 1300 m., on wet rocks underside in Evergreen forest (SMITINAND 1157 det. G.O.K. SAINSBURY).

Geographical distribution: Endemic (DIXON 1932)

* *Syrrhopodon* cf. *strictus* THWAIT. & MITT.

Northeastern. Loei, Phu Krading, Than Sawan, 1300 m., 29 Oct. 1955 (SMITINAND 3109, det. A. TOUW).

Geographical distribution: Ceylon (BROTHERUS 1924); Thailand.

** *Thyridium fasciculatum* (HOOK. & GREV.) FLEISCH.

Southeastern. Trat, Huay Raeng, Dong Maduea, under 50 m.; on trees in Evergreen forest, 19 June, 1962 (SMITINAND 1317, det. G.O.K. SAINSBURY); Klawng Phread, under 50 m., on trees in Evergreen forest, 28 June, 1952 (SMITINAND 1356, det. G.O.K. SAINSBURY).

Geographical distribution: Ceylon, Malaya, Queensland, New Guinea and in the archipelagoes to Samoa, Mauritius and Chile; Thailand (DIXON 1932, 1935, *Syrrhopodon fasciculatus* HOOK. & GREV.: Surat, Ranong, and Satul).

** *Calymperes brachycaulon* BROTH.

Southeastern. Trat, Huay Raeng, Dong Maduea, under 50 m.; epiphytic on tree trunk in Evergreen forest, 19 June, 1952 (SMITINAND 1318, det. G.O.K. SAINSBURY).

Geographical distribution: Endemic (BROTHERUS 1901; DIXON 1932: Koh Chang).

** *Calymperes subbrachycaulon* DIX.

Southeastern. Trat, Koh Chang, Klawng Makawk, 100 m., on fallen twig, 17 Feb. 1955 (SMITINAND 2188, det. E.B. BARTRAM).

Peninsular. Surat, Bangbao, under 100 m., on tree trunk in Evergreen forest, 6 Aug. 1955 (SMITINAND 2821, det. E.B. BARTRAM).

Geographical distribution: Endemic (DIXON 1935: Surat).

Barbula consanguinea THWAIT. & MITT.

Northern. Chiangmai, Chiengdao, above hill station, on bare soil in secondary forest, 12 Dec. 1957 (RICHARDS 5491).

Geographical distribution: Ceylon, Java, Singapore; Thailand (GIESY & RICHARDS 1959).

** *Barbula obscuriretis* DIX.

Central. Bangkok, Wat Buranasiri, 2 m.; on wet wall, 29 Aug. 1964 (SUARNASORN 57, 58, 59, det. A. TOUW).

Geographical distribution: Philippines (Luzon); Thailand. (DIXON 1932: Chiangmai, Kanburi, Surat).

* *Hyophila apiculata* FLEISCH.

Northern. Chiengrai, Pong, Phu Langka, 1000 m., 28 June, 1954 (SMITINAND 1698, det. A. TOUW).

Geographical distribution: Java (BROTHERUS 1924); Thailand, a new record.

Hyophila comosa DIX. & P. D. V.

Central. Nakhorn Nayok, Nang Rawng, boulder near waterfall, 4 Nov. 1957 (RICHARDS 5454).

Geographical distribution: South India; Thailand (GIESY & RICHARDS 1959).

** *Hyophila involuta* (HOOK.) JAEG.

Northern. Chiengrai, Phayao, 400 m., 12 Aug. 1964 (SUARNASORN 49, det. A. TOUW); Chiangmai, on track to Tat Noi, 1000-3000 ft., on rock in stream, partly submerged, Evergreen Gallery forest (ROBBINS 3536, 3538, 3560); Doi Chiengdao, 4600 ft., Lower Montane forest on rock, 9 Nov. 1962 (ROBBINS 3658).

Central. Bangkok, Wat Buranasiri, 2 m., on wet wall, 29 Aug. 1964 (SUARNASORN 56, det. A. TOUW).

Southeastern. Chanburi, Khlung, Makawk, 130 m., on rock in moist localities (SANGKHACHAND 291, det. E.B. BARTRAM); Pong Namrawn, Khao Soidao, 700 m., on rocks in stream (SMITINAND 3252, det. E.B. BARTRAM).

Geographical distribution. Indo-Malaysia; Thailand (BROTHERUS 1901: Koh Chang; DIXON 1932: Bangkok).

FUNARIACEAE

Funaria calvescens FLEISCH.

Northeastern. Loei, Phu Krading, 1300 m., on earth in Pine forest, Oct. 1954 (SMITINAND 1997, det. E.B. BARTRAM).

Geographical distribution: Java; Thailand [(DIXON 1932, *Funaria hygrometrica* var. *calvescens* (SCHWAEGR.))]

Funaria dozyana (C. MUELL.) BROTH.

Northern. Chiangmai, Chiengdao, above hill station, loamy bank on ridge in secondary Montane forest, 5000 ft., 12 Dec. 1957 (RICHARDS 5473).

Geographical distribution: Java; Thailand (DIXON 1932; Chiangmai; GIESY & RICHARDS 1959).

** *Funaria hygrometrica* HEDW.

Northern. Chiangmai, Doi Suthep, 3200 ft., site of fire in forest, 6 Dec. 1957 (RICHARDS 5492); Chiengdao, 1100 m., 1 Dec. 1955 (SUARNAKOSES 917, det. A. TOUW); Phetchabun, Lomkao, Namnao, 600 m., in earth along edge of Evergreen forest, 22 May, 1951 (SMITINAND 505, det. P. ARENS).

Peninsular. Nakhorn Srithamarat, Khao Luang, 1700 m., 25 June 1953 (SUARNAKOSES 586, det. A. TOUW).

Geographical distribution: Cosmopolitan; Thailand (GIESY & RICHARDS 1959).

* *Funaria luzonensis* BROTH.

Northern. Chiangmai, Doi Inthanond, 5775 ft., Lower Montane forest, 29 Oct. 1962 (ROBBINS 3596).

Geographical distribution: Philippines (BROTHERUS 1924); Thailand, new record.

SPLACHNACEAE

** *Tayloria indica* MITT.

Northern. Chiangmai, Chiengdao, above hill station in open Montane forest, 3000 ft., 3 Dec. 1957 (RICHARDS 5475); Doi Inthanond, 5100-6000 ft., Lower Montane forest, epixylic, 29 Oct. 1962 (ROBBINS 3579, 3599).

Geographical distribution: Himalaya, Ceylon, Thailand (DIXON 1932; Chiangmai, Lamphun; GIESY & RICHARDS 1959).

BRYACEAE

Brachymenium nepalense HOOK.

Northern. Chiangmai, Doi Suthep, 5500 ft., branches of tree mixed with other bryophytes, Montane forest, 6 Dec. 1957 (RICHARDS 5507); *ibid.*,

1200 m., 21 Mar. 1951, on trees in open hill forest (SMITINAND 169, det. G.O.K. SAINSBURY); Head of Pha Mawn Valley, base of Doi Inthanond, 4000 ft., secondary woody vegetation, corticolous, 29 Oct. 1962 (ROBBINS 3573).

Geographical distribution: Japan, Korea, Formosa, China, Vietnam, Laos, Burma, India, Philippines, Malaysia, Indonesia and New Guinea; Thailand (DIXON 1932; GIESY & RICHARDS 1959; HORIKAWA & ANDO 1964: Doi Suthep).

* *Bryum argenteum* HEDW.

Northeastern. Loei, Phu Krading, 1300 m., in earth, 4 Sept. 1954 (SMITINAND 1904, det. E.B. BARTRAM); *ibid.*, 8 Jul. 1959 (SMITINAND 5855).

Geographical distribution: Cosmopolitan; Thailand, new record.

** *Bryum coronatum* SCHWAEGR.

Northern. Lampang, Ngao, Mae Huat, 600 m., 25 May, 1954 (SMITINAND 1604, det. A. TOUW).

Northeastern. Khawnkaen, Chumphae, Dong Lan, 300 m., on log in Mixed Deciduous forest, 25 Mar. 1952 (SMITINAND 6632, det. P. ARENS).

Southeastern. Chanburi, Makham, 130 m., on rocks in moist localities (SANGKHACHAND 9507, det. E.B. BARTRAM).

Geographical distribution: Very wide spread; Thailand (BROTHERUS 1901: Koh Chang, *B. doliolum* DUBY).

Rhodobryum giganteum (HOOK.) PAR.

Northern. Chiangmai, Doi Inthanond, 2550 m., gregarious in wet localities, April 1960 (SMITINAND & ALSTERLUND 6689, det. P.P. TIXIER); *ibid.*, 8500 ft., Lower Montane forest, terrestrial on edge of Sphagnum bog, 30 Oct. 1962 (ROBBINS 3639); *ibid.*, 5100 ft., Lower Montane forest, epixylic, 29 Oct. 1962 (ROBBINS 3581).

Geographical distribution: Nepal, Sikkim, Khasia, Ceylon, Sumatra, Java, Kalimantan, China, Vietnam, Japan, and Reunion; Thailand (DIXON 1932: Doi Suthep; HORIKAWA & ANDO 1964: Doi Inthanond, *Bryum giganteum* Hook.)

Rhodobryum roseum (HEDW.) LIMPR.

Northeastern. Loei, Phu Krading, Sam Khae, 1100 m., on rocks in Hill Evergreen forest, 30 Mar. 1952 (SMITINAND 1256, det. G.O.K. SAINSBURY); *ibid.*, 1200 m., rocky slopes near summit in Hill Evergreen forest, 6 May, 1951 (SMITINAND 302, det. G.O.K. SAINSBURY).

Geographical distribution: Subalpine Europe to Japan; Thailand (DIXON 1932: Phu Krading).

MNIACEAE

***Orthomnion bryoides* (GRIFF.) NORKETT

Northern. Chiengmai, Doi Suthep, 4000-5000 ft., on trunk of trees in mountain grassland, 6 Dec. 1957 (RICHARDS 5510a); Chiengrai, Pong, Phu Langka, 1300 m., 29 June, 1954 (SMITINAND 1752, det. A. TOUW).

Geographical distribution: Laos, Burma; Thailand (BROTHERUS 1911, and DIXON 1932: Doi Suthep, *O. trichomitrum*; GIESY & RICHARDS 1959, *O. trichomitrum*; HORIKAWA & ANDO 1964: Doi Suthep, Doi Inthanond).

Mnium integrum FLEISCH.

Northern. Chiengmai, Chiengdao, on shaded granite boulders in stream, 3000 ft., 8 Dec. 1957 (RICHARDS 5470).

Geographical distribution: Java, Sumatra, Vietnam; Thailand (GIESY & RICHARDS 1959).

Mnium maximoviczii LIND.

Northern. Chiengmai, on track to summit of Doi Inthanond near base, 3200 ft., in Pine grove, on rock, 29 Oct. 1962 (ROBBINS 3566); Doi Inthanond, summit area, 7500 ft., Lower Montane forest, epixylic, 30 Oct. 1962 (ROBBINS 3630).

Geographical distribution: China, Korea, Japan, Pakistan, India, Ceylon, and Philippines; Thailand (HORIKAWA & ANDO 1964: Doi Inthanond).

RHIZOGONIACEAE

Rhizogonium spiniforme (HEDW.) BRUCH.

Northeastern. Loei, Phu Krading, below Samkhae, 1100 m., on tree trunk in Evergreen forest, 18 Aug. 1954 (SMITINAND 1856, det. E.B. BARTRAM); *ibid.*, on rocks in Hill Evergreen forest (SMITINAND 1070, det. P. ARENS); *ibid.*, Than Sawan, 1300 m., 30 Oct. 1955 (SMITINAND 3119, det. A. TOUW); *ibid.*, 10 Oct. 1957 (BUNPHENG 940, det. A. TOUW); *ibid.*, 24 Nov. 1958 (SMITINAND 4946, det. A. TOUW); *ibid.*, 7 May, 1951 (SMITINAND 330, det. P. ARENS).

Eastern. Nakorn Rachasima, Khao Yai National Park, 11 Dec. 1962 (PENGKLAI 458, det. P.P. TIXIER); Khao Khieo Range, 3850 ft., Lower Montane forest, epixylic, 19 Nov. 1962 (ROBBINS 3688).

Peninsular. Nakorn Srithamarat, Khiriwong, Thapchang, 400 m., on granitic rocks in the shade, 29 Feb. 1951 (SMITINAND, 783, det. P. ARENS); *ibid.*, on rocks by stream in Evergreen forest, 19 Jan. 1951 (SUARNAKOSES 244, det. P. ARENS); *ibid.*, 31 Aug. 1952 (SUARNAKOSES 414, det. E.B. BARTRAM); Surat, Bangbao, under 100 m., on wet log in Evergreen forest, 6 Aug. 1955 (SMITINAND 2824, det. A. TOUW).

Geographical distribution: Pantropic; Thailand (DIXON 1932).

BARTRAMIACEAE

* *Bartramidula* aff. *roylei* (HK. F.) B.S.G.

Northern. Chiangmai, upper slopes of Doi Inthanond, 7200 ft., Lower Montane forest, terrestrial; 30 Oct. 1962 (ROBBINS 3613).

Geographical distribution: Himalaya, Nilghiri, Bhotan, Ceylon (BROTHERUS 1924); Thailand, new record.

Only representative of the genus, Dr. TOUW has the opinion that it may be a new species.

Philonotis angusta MITT.

Northern. Chiangmai, Chiengdao, path to hill station, loamy bank by path in shades, 2000-3000 ft., 7 Dec. 1957 (RICHARDS 5460).

Geographical distribution: Ceylon; Thailand (GIESY & RICHARDS 1959).

** *Philonotis laxissima* (C. MUELL.) FLEISCH.

Peninsular. Trang, Chawng, Ton Nam Pliu, 100 m., gregarious on rocks in stream, 22 Aug. 1955 (SMITINAND 2992, det. E.B. BARTRAM).

Geographical distribution: Java, Sumatra, Borneo, Hawaii, Luzon, Cebu; Thailand (DIXON 1932: Chumphorn, and Khao Kalakhiri).

ORTHOTRICHACEAE

* *Zygodon intermedius* BR. & SCHIMP.

Northern. Chiangmai, slopes of Doi Inthanond, 7500 ft., Lower Montane forest, corticolous, 30 Oct., 1962 (ROBBINS 3620).

Geographical distribution: Very widespread from Africa through Ceylon and Australia to Patagonia [(BROTHERUS (1925) 1960)]; Thailand—new record, this genus is being reported for the first time.

* *Zygodon obtusifolius* HOOK.

Northern. Chiangmai, summit of Doi Inthanond, 8500 ft., Lower Montane forest, terrestrial and corticolous, 30 Oct. 1962 (ROBBINS 3645).

Geographical distribution: Himalaya, Ceylon [(BROTHERUS (1925) 1960)], Vietnam; Thailand—new record.

** *Macromitrium nepalense* (HOOK. & GREV.) SCHWAEGR.

Northern. Chiangmai, Doi Suthep, 4000-5000 ft., on trunk of trees in Mountain grassland, 6 Dec. 1957 (RICHARDS 5510); track from Tat Noi to Pha Mawn, 3000 ft., Evergreen Gallery forest, corticolous, 28 Oct. 1962 (ROBBINS 3549); Doi Chiengdao, 5800 ft., open ridge vegetation, corticolous, 10 Nov. 1962 (ROBBINS 3671).

Geographical distribution: Nepal, Sikkim, Burma, China, Malaya, Vietnam, Philippines; Thailand (DIXON 1932: Loei; 1935: Khawn Kaen; GIESY & RICHARDS 1959).

** *Macromitrium sulcatum* (HOOK.) BRID.

Northern. Chiangmai, Doi Suthep, Pui, 1600 m., 22 Mar. 1951 (SMITINAND 172, det. G.O.K. SAINSBURY); Doi Inthanond, summit, 8100 ft., Lower Montane forest, corticolous, 30 Oct. 1962 (ROBBINS 3634).

Northeastern. Loei, Phu Krading, Samkhae, 1100 m., on *Carpinus viminea* in Hill Evergreen forest, 6 Mar. 1952 (SMITINAND 1066, det. P. ARENS, G.O.K. SAINSBURY).

Geographical distribution: Malay Peninsula, Burma, E. and S. India, Ceylon, Philippines, Borneo; Thailand (HORIKAWA & ANDO 1964: Doi Inthanond).

** *Macromitrium turgidum* DIX.

Southeastern. Chanburi, Pong Namrawn, Khao Soidao, 1700 m., on trees in hill evergreen forest on the ridge, 23 Jan. 1956 (SMITINAND 3225, det. E.B. BARTRAM).

Geographical distribution: Endemic to Thailand (DIXON 1932: Trat; 1935: Prachuap Khirikhan, Phang-nga).

** *Macromitrium zollingeri* MITT.

Peninsular. Nakhorn Srithamarat, Khao Luang, 600 m., on tall trees in hill evergreen forest, 28 Oct. 1951 (SMITINAND 1015, det. P. ARENS).

Geographical distribution: Central Vietnam, Malay Peninsula, Indonesia; Thailand (DIXON 1935: Trat).

RHACOPIACEAE

Rhacopilum cuspidigerum (SCHWAEGR.) MITT. var. *demissum* FLEISCH.

Northern. Chiangmai, Chiengdao, above hill station, tree trunks in montane forest, 5000 ft., 8 Dec. 1957 (RICHARDS 3472).

Geographical distribution: Indonesia, New Caledonia; Thailand (DIXON 1932: Loei; GIESY & RICHARDS 1959).

** *Rhacopilum schmidii* (C. MUELL.) JAEG.

Northeastern. Loei, Phu Krading, Sam Khae, 1100 m. (SMITINAND 2000, det. E.B. BARTRAM).

Geographical distribution: South India, Burma, Indonesia, Philippines; Thailand (DIXON 1932: Doi Suthep; HORIKAWA & ANDO 1964: Doi Suthep).

HEDWIGIACEAE

Cleistostoma ambigua (HOOK.) BRID.

Northern. Chiangmai, Chiengdao, above hill station, tree trunks on ridge in Montane forest, 4000-5000 ft., 8 Dec. 1957 (RICHARDS 5483); Doi Chiengdao, North slope, 1900 m., on rocks on the ridge, 17 Feb. 1958 (SMITINAND 4226, det. E.B. BARTRAM); lower slopes of Doi Inthanond, 5100 ft., Lower Montane forest (Mixed Oak) forest, corticolous, 29 Oct. 1962 (ROBBINS 3586).

Geographical distribution : Nepal, Sikkim, Bhotan, Yunnan, Setchwan, Tonkin, Assam, Burma; Thailand (DIXON 1932 : Doi Suthep, Doi Chiengdao; 1935 : Doi Chiengdao; GIESY & RICHARDS 1959; HORIKAWA & ANDO 1964: Doi Inthanond).

TRACHYPODACEAE

** *Trachypus bicolor* REINW. & HORNSH.

Northern. Chiangmai, Doi Suthep, near summit, 5500 ft., branches of tree on edge of forest, 6 Dec. 1957 (RICHARDS 5468B); Chiengdao, above hill station, tree trunk in montane forest, 4000 ft., 8 Dec. 1957 (RICHARDS 5479); lower slopes of Doi Inthanond, 5300 ft., Lower Montane Oak forest, corticolous, 2 Nov. 1962 (ROBBINS 3647); summit of Doi Inthanond, 8500 ft., corticolous, 30 Oct. 1962 (ROBBINS 3647, 3641); slopes of Doi Inthanond, 5200 ft., Lower Montane forest, corticolous, 29 Oct. 1962 (ROBBINS 3591); *ibid.* 7600 ft., Lower Montane forest, corticolous, 30 Oct. 1962 (ROBBINS 3624).

Geographical distribution : Sikkim, Nilghiri, Nepal, Southern India, Ceylon, Java, Philippines, Lombok, Borneo, Hawaii, China, Taiwan, Japan, Vietnam; Thailand (DIXON 1932 : Trang; GIESY & RICHARDS 1959).

Trachypodopsis serrulata (P.B.) FLEISCH. var. *crispatula* (HOOK.) ZANT.

Northern. Chiangmai, Chiengdao, granite boulders and tree trunks in Montane forest, 8 Aug. 1957 (RICHARDS 5489); lower slopes of Doi Inthanond, 5200 ft., Lower Montane (Mixed Oak) forest, on rock, 29 Oct. 1962 (ROBBINS 3587); Doi Chiengdao, 4500 ft., on limestone rocks, 9 Nov. 1962 (ROBBINS 3654).

Geographical distribution : Himalaya, Nepal, Ceylon, Burma, China, Laos, Taiwan, Luzon, Java, Sumatra, Lombok, Mexico; Thailand (DIXON 1932 : Chanburi; *T. crispatula* (HOOK.) FLEISCH.; GIESY & RICHARDS 1959; HORIKAWA & ANDO 1964: Doi Inthanond).

MYURIACEAE

Myurium rufescens (REINW. & HORNSH.) FLEISCH. f. *ramosum* FLEISCH.

Northern. Chiangmai, Doi Suthep, 3000-3500 ft., fallen logs in forest, 6 Dec. 1957 (RICHARDS 5496, 5501).

Geographical distribution: Java for the *forma*, and for the species: Khasia, Ceylon, Vietnam, Malaya, Indonesia, Philippines, Queensland, Aneityum, New Caledonia; Thailand (DIXON 1932; Doi Suthep, Khao Riyai; 1935: Ranong; GIESY & RICHARDS 1959; HORIKAWA & ANDO 1964: Doi Suthep, under family *Pterobryaceae*).

PTEROBRYACEAE

Penzigiella cordata (HARV.) FLEISCH.

Northern. Chiangmai, Doi Chiengdao, 4900 ft., Lower Montane forest, corticolous, 9 Nov. 1962 (ROBBINS 3663); *ibid.*, 550 ft., corticolous, 10 Nov. 1962 (ROBBINS 3668); lower slopes of Doi Inthanond, 5300 ft., Lower Montane (Mixed Oak) forest, corticolous, 29 Oct. 1962 (ROBBINS 3590).

Geographical distribution: Burma, Khasia, Sikkim, Nepal; Thailand (DIXON 1932: Doi Suthep; HORIKAWA & ANDO 1964: Doi Inthanond).

* *Pterobryopsis auriculata* BROTH.

Southwestern. Near Wangka, 50 m., on vines and living trunks in dense moist forest, 21 May, 1946 [Kwae Noi Basin Exped. 659 (DEN HOED)].

Geographical distribution: Nilghiries, Sikkim, Burma (Bhamo); Thailand, new record.

Pterobryopsis orientalis (C. MUELL.) FLEISCH.

Northern. Chiangmai, Chiengdao, tree trunk in Montane forest, 8 Dec. 1957 (RICHARDS 5473).

Geographical distribution: Yunnan, Himalaya, Nilghiri, Assam, Central Vietnam; Thailand (GIESY & RICHARDS 1959).

SYMPHYODONTACEAE

Symphyodon umasaoi HORIK. & ANDO

Northern. Chiangmai, slopes of Doi Inthanond, 6800 ft., Lower Montane forest, corticolous, 30 Oct. 1962 (ROBBINS 3607); summit of Doi Inthanond, 8100 ft., Lower Montane forest, corticolous, 30 Oct. 1962 (ROBBINS 3631).

Geographical distribution: Endemic to Thailand (HORIKAWA & ANDO 1964: Doi Inthanond).

* *Symphyodon echinatus* (MITT.) JAEG.

Northern. Chiangmai, summit of Doi Inthanond, 8100 ft., Lower Montane forest, corticolous, 2 Nov. 1962 (ROBBINS 3636).

Geographical distribution: Sikkim; Thailand, new record.

* *Symphiodon perrotteti* MONT.

Southeastern. Chanburi, Pong Namrawn, Khao Soidao, 1700 m., on low shrub in Evergreen forest (SMITINAND 3215, det. E.B. BARTRAM).

Geographical distribution: Nilghiri, Ceylon, Vietnam, Java, Japan, Ceram; Thailand, new record.

METEORIACEAE

Papillaria auriculata BARTR.

Northern. Chiangmai, Doi Suthep, ca 1100 m., in Oak forest; 28 Aug. 1948 (SINGHASTHIT 127, det. E.B. BARTRAM); lower southeast slopes of Doi Inthanond, 5500 ft., Lower Montane forest corticolous, 29 Oct. 1962 (ROBBINS 3582).

Geographical distribution: Burma; Thailand (HORIKAWA & ANDO 1964: Doi Inthanond, Doi Suthep).

* *Papillaria auriculata* BARTR. var. *gracilis* BARTR. in SCHED.

Northern. Chiangmai, Chiengdao, North slope, 1800 m., pendulous on trees in Evergreen forest, 17 Feb., 1958 (SMITINAND 230, det. E.B. BARTRAM).

Geographical distribution: Burma; Thailand, new record!

Papillaria fuscescens HOOK.

Northern. Chiangmai, 5000-5500 ft., trees on edge of Montane forest, 6 Dec. 1957 (RICHARDS 5495); Doi Chiengdao, exposed ridge, 6100 ft., corticolous, pendant, 10 Nov. 1962 (ROBBINS 3675); slopes of Doi Inthanond, 7300 ft., Lower Montane forest, pendant, 30 Oct. 1962 (ROBBINS 3615).

Geographical distribution: Nepal, Sikkim, Khasia, Nilghiri, Coorg, Ceylon, Sumatra, Java, Sumbawa, Sulawesi, Philippines, Vietnam, Yunnan; Thailand (DIXON 1932: Doi Suthep, Khun Tan, Doi Inthanond, and Khao Sabap).

* *Papillaria lanosa* BARTR.

Northern. Chiangmai, Doi Chiengdao, open ridge, 6000 ft., on rocks, 10 Nov. 1962 (ROBBINS 3678).

Geographical distribution: Burma; Thailand, new record!

* *Papillaria semitorta* (C. MUELL.) JAEG.

Northern. Chiangmai, slopes of Doi Inthanond, 6700 ft., Lower Montane forest, corticolous, pendant (ROBBINS 3604).

Geographical distribution: Nepal, Sikkim, Khasia, Bhutan, Ceylon, Java, Celebes, Ternate, Halmahera; Thailand, new record!

** *Aerobryidium aureonitens* (HOOK.) BROTH.

Northern. Chiangmai, Doi Suthep, on tree, 6 Dec. 1957 (RICHARDS 5502).

Northeastern. Loei, Phu Krading, Sam Khae, 1100 m., on branches of tree in Evergreen forest (SMITINAND 1255, det. G.O.K. SAINSBURY).

Geographical distribution: Himalaya, Khasia, Nilghiri; Thailand (DIXON, 1932: Doi Suthep).

Aerobryidium filamentosum (HOOK.) FLEISCH.

Northern. Chiangmai, from Tat Noi to Pha Mawn, 2600 ft., secondary forest growth, corticolous, 28 Oct. 1962 (ROBBINS 3557, 3561).

Geographical distribution: Himalaya, Nilghiri, Ceylon, Vietnam, S. China, Java, Sumatra, Philippines; Thailand (HORIKAWA & ANDO 1964: Doi Suthep, Doi Inthanond).

* *Meteorium miquelianum* (C. MUELL.) FLEISCH.

Southwestern. Kanburi, near Wangka, 150 m., moist bush under high trees, 30 Apr. 1946 [Kwae Noi Basin Exped. 231 (DENHOED)].

Geographical distribution: East Indian Archipelagoes, New Guinea, Japan, China, Ceylon, Nilghiri, Fiji; Thailand, new record.

* *Barbella bombycina* (REN. & CARD.) FLEISCH.

Southwestern. Kanburi, south of Ka Tha Lai in Pan Paung River Valley, 400-800 m., 13th-16th June, 1966 [Kwae Noi Basin Exped. 1002 (BLOEMBERGEN)].

Geographical distribution: Himalaya; Thailand, not recorded by DIXON 1932, 1935.

** *Barbella enervis* (THWAIT. & MITT.) FLEISCH.

Northeastern. Loei, Phu Krading, Tharn Sawan, 1300 m., 30 Oct. 1955 (SMITINAND 3124, det. A. TOUW).

Southwestern. Kanburi, South of Ka Tha Lai, in Pan Paung River Valley, 400-800 m., 13-16 Apr. 1946 [Kwae Noi Basin Exped. 1003 (BLOEMBERGEN)].

Geographical distribution: Himalaya (Abor Hills), Ceylon, Luzon, Mindoro, Queensland, Eastern Australia, Lord Howe Isl., New Caledonia; Thailand (DIXON 1932, Chiangmai).

Meteoropsis reclinata (C. MUELL.) FLEISCH.

Northern. Chiangmai, from Tat Noi to Pha Mawn, 2700 ft., Evergreen Gallery forest, corticolous on shrubs, 28 Oct. 1962 (ROBBINS 3552).

Geographical distribution: Very wide spread; Thailand (HORIKAWA & ANDO 1964: Doi Inthanond).

***Meteoriopsis squarrosa* (HOOK.) FLEISCH.

Northern. Chiengmai, Chiengdao, above hill station, tree trunks in Montane forest, 4500 ft., 6 Dec. 1957 (RICHARDS 5482); Doi Chiengdao, 3600 ft., Lower Montane forest, on rock, 9 Nov. 1962 (ROBBINS 3653); Head of Pha Mawn Valley base of Doi Inthanond, 4000 ft., secondary woody vegetation, corticolous, 28 Oct. 1962 (ROBBINS 3572).

Southwestern. Kanburi, near Koeng Chada Village in Ranti River Valley, 200 m., on tree, June 1946 [Kwae Noi Basin Exped. 1001 (BLOEMBERGEN)].

Geographical distribution: Himalaya, Khasia, South India, Ceylon, Pegu, Malaysia, Vietnam, Sumatra, Java; Thailand (DIXON 1932: Doi-Chiengdao; 1935: Takua Pah).

* *Floribundaria floribunda* (DOZ. & MOLK.) FLEISCH.

Northern. Chiengmai, Doi Chiengdao, 4900 ft., Lower Montane forest, epixylic, 9 Nov. 1962 (ROBBINS 3661), *ibid.*, on ridge, 5800 ft., corticolous, 10 Nov. 1962 (ROBBINS 3670).

Geographical distribution: Japan, wide spread in Southwest Asia, New Guinea, Pacific Islands, Africa, Madagascar; Thailand (DIXON 1932: Chumphorn; HORIKAWA & ANDO 1964: Doi Inthanond).

* *Floribundaria pseudo-floribunda* FLEISCH.

Southwestern. Kanburi, South of Kha Thalai in Pan Paung River Valley, 400-800 m., 13-16 June, 1946 [Kwae Noi Basin Exped. 1002 (BLOEMBERGEN)].

Geographical distribution: Japan to Madagascar, Philippines, Java, Queensland, New Hebrides, New-Guinea; Thailand, not recorded by DIXON 1932, 1935.

* *Floribundaria thuidioides* FLEISCH.

Southwestern. Kanburi, South of Kha Thalai in Pan Paung River Valley, 400-800 m., 13-16 June, 1946 [Kwae Noi Basin Exped. 1002C (BLOEMBERGEN)].

Geographical distribution: Java, Philippines; Thailand, not recorded by DIXON 1932, 1935.

NECKERACEAE

* *Calyptothecium nematosum* (C. MUELL.) FLEISCH.

Southeastern. Trat, Huay Raeng, Chang Kluea, under 50 m., on base of *Mangifera indica* in village (SMITINAND 1452, det. G.O.K. SAINSBURY).

Peninsular. Nakhorn Srithamarat, Khiriwong, 100 m., on tree trunk in plantation, 15 April 1952 (SMITINAND 1291, det. G.O.K. SAINSBURY).

Geographical distribution: Pegu; Thailand, new record!

Calyptothecium hookeri (MITT.) BROTH.

Northern. Chiangmai, slopes of Doi Inthanond, 5300 ft., Lower Montane forest, corticolous, 29 Oct. 1962 (ROBBINS 3585, 3592).

Geographical distribution: South China, Himalaya; Thailand (HORIKAWA & ANDO 1964 : Doi Inthanond).

* *Calyptothecium luzonense* (WILLIAMS) BROTH.

Northern. Chiangmai, Doi Chiengdao, 4900 ft., Lower Montane forest, corticolous, 9 Nov. 1962 (ROBBINS 3664).

Geographical distribution: Tonkin, Philippines (Luzon); Thailand, new record.

** *Neckeropsis fimbriata* (HARV.) FLEISCH.

Central. Nakhorn Nayok, Nang Rawng, 500 ft., large boulders near water falls, 24 Dec. 1957 (RICHARDS 5453).

Eastern. Nakhorn Rachasima, Khao Yai National Park, 2500 ft., Evergreen Hill Dipterocarps forest, on dry rock in stream bed, 18 Nov. 1962 (ROBBINS 3682).

Southwestern. Kanburi, near Neeckey (near Wangka), 150 m., 10 May, 1946 [Kwae Noi Basin Exped. 460 (DENHOED)].

Geographical distribution: Nepal, Sikkim, Khasia, Burma, Vietnam, Malay Peninsula; Thailand (TOUW 1962; DIXON 1929, *N. nigrescens* BROTH., *N. auriculata* DIX., Chanburi, Trat, Surat; GIESY & RICHARDS 1959, Nakhorn Nayok).

Himantocladium cf. *elegantulum* NOG.

Northern. Chiangmai, slopes of Doi Inthanond, 5300 ft., Lower Montane forest, corticolous, 29 Oct. 1962 (ROBBINS 3593).

Geographical distribution: Formosa; Thailand (HORIKAWA & ANDO 1964 : Doi Inthanond).

Himantocladium strictum DIX.

Northern. Chiangmai, Doi Suthep, 4500 ft., trees in Montane forest, 12 Dec. 1957 (RICHARDS 5503).

Geographical distribution: Endemic to Thailand (DIXON 1932 : Doi Suthep; GIESY & RICHARDS 1959).

** *Homaliodendron exiguum* (LAC.) FLEISCH.

Southwestern. Kanburi, near Neeckey (near Wangka), 150 m., on steep rocks very moist, 16 May, 1946 [Kwae Noi Basin Exped. 570 (DENHOED)].

Geographical distribution: Very wide spread; Thailand (DIXON 1932, 1935 : Koh Tao, *Homalia exigua* BRYL. JAV.; HORIKAWA & ANDO 1964 : Doi Inthanond).

* *Homaliodendron intermedium* (MONT.) FLEISCH.

Northern. Chiangmai, lower slopes of Doi Inthanond, 5000 ft., Lower Montane forest, corticolous on twigs, 29 Oct. 1962 (ROBBINS 3580).

Geographical distribution: Malacca; Thailand, new record.

** *Homaliodendron microdendron* (MONT.) FLEISCH.

Northern. Chiangmai, Doi Chiengdao, 5400 ft., Lower Montane forest, corticolous, 10 Nov. 1962 (ROBBINS 3667).

Northeastern. Loei, Phu Krading, Sam Khae, 1100 m., on rocks and base of tree trunks in Evergreen forest, 30 Mar. 1952 (SMITHAND 1254, det. P. ARENS).

Geographical distribution: Sikkim, Khasia, Bhotan, Yunnan, Central Vietnam, Kalimantan, Mindoro, Luzon, Negros, Mindanao, Taiwan; Thailand (DIXON 1932: Doi Chiengdao; HORIKAWA & ANDO 1964: Doi Inthanond).

* *Homaliodendron montagneanum* (C. MUELL.) FLEISCH.

Northern. Chiangmai, slopes of Doi Inthanond, 700 m., Lower Montane forest, epixylic, 30 Oct. 1962 (ROBBINS 3611).

Geographical distribution: Nilghiri Hills, South China; Thailand, new record. Dr. A. TOUW has the opinion that this species may be conspecific with *H. homoideum* HORIK. & ANDO.

** *Homaliodendron scalpellifolium* (MITT.) FLEISCH.

Northern. Chiangmai, lower slopes of Doi Inthanond, 5000-5300 ft., Lower Montane forest, corticolous, 29 Oct. 1962 (ROBBINS 3574, 3602).

Geographical distribution: Ceylon, Malay Peninsula, Indonesia, Philippines, New Guinea, South China, Tonkin, Japan; Thailand (DIXON 1932: Prachuap Khirikhand).

** *Pinatella intralimbata* FLEISCH.

Northern. Chiangmai, Doi Chiengdao, 3600-4900 ft., Lower Montane forest, on limestone rocks, 9 Nov. 1962 (ROBBINS 3649, 3662); slopes of Doi Inthanond, 5300 ft., Lower Montane forest, corticolous, 29 Oct. 1962 (ROBBINS 3601).

Southwestern. Kanburi, near Neeckey (near Wangka), 150 m., in dense moist forest, on living trees, 21 May, 1964 [Kwae Noi Basin Exped. 658 (DENHOED)].

Geographical distribution: Vietnam, Laos, Java, Queensland; Thailand (HORIKAWA & ANDO 1964: Doi Inthanond).

Thamnum siamense HORIK. & ANDO.

Northern. Chiangmai, Doi Inthanond, 7000 ft., Lower Montane forest, corticolous, 30 Oct. 1962 (ROBBINS 3612).

Geographical distribution: Endemic to Thailand (HORIKAWA & ANDO 1964: Doi Inthanond).

HOOKERIACEAE

** *Callicostella papillata* (MONT.) MITT.

Southeastern. Chanburi, Pong Namrawn, Pratrong, 700 m., on rocks in stream (SMITINAND 3260, det. E.B. BARTRAM).

Geographical distribution: Bengal, Sumatra, Java, Kalimantan, Pacific Islands; Thailand [DIXON 1932: Chumphorn, Nakhorn Srithamarat (Khao Luang)].

* *Hookeriopsis utacamundiana* (MONTH.) BROTH.

Northern. Chiangmai, slopes of Doi Inthanond, 6700 ft., Lower Montane forest, corticolous, 30 Nov. 1962 (ROBBINS 3603).

Geographical distribution: Madura, Nilghiri, Ceylon, Vietnam, Sumatra, New Guinea; Thailand, first record of the genus.

* *Chaetomitriopsis glaucocarpa* (REINW.) FLEISCH.

Northeastern. Loei, Phu Krading, Dawn Pawai, 1300 m., on small shrubs in Hill Evergreen forest, 8 Mar. 1952 (SMITINAND 1087, det. P. ARENS).

Southeastern. Chanburi, Pong Namrawn, Khao Kadak, 800 m., on logs and rocks by stream in Evergreen forest (SMITINAND 3342, det. E.B. BARTRAM).

Geographical distribution: Sikkim, Vietnam, Laos, Java, Philippines, Celebes, Taiwan; Thailand, not recorded by DIXON 1932 and 1935.

HYOPTERYGIACEAE

Hypopterygium tenellum C. MUELL.

Northern. Chiangmai, slopes of Doi Inthanond, 5500 ft., Lower Montane Oak forest, on rock in stream, 29 Oct. 1962 (ROBBINS 3600).

Geographical distribution: Nilghiri, Ceylon, Sumatra, Java, New Guinea; Thailand (DIXON 1932).

* *Hypopterygium apiculatum* THWAIT. & MITT.

Northern. Chiangmai, Doi Chiengdao, 5600 ft., Lower Montane forest, on limestone rocks, 11 Nov. 1962 (ROBBINS 3680).

Geographical distribution: Ceylon; Thailand, new record.

THUIDIACEAE

Claopodium assurgens (SULL. & LESQ.) CARD.

Northern. Chiangmai, Tat Noi to Pha Mawn, 2600 ft., Evergreen Gallery forest, corticolous on shrubs, 28 Oct. 1962 (ROBBINS 3557).

Northeastern. Loei, Phu Krading, Dawn Pawai, 1300 m., on bark of tree in Hill Evergreen forest, 8 Mar. 1952 (SMITINAND 1099, det. P. ARENS); Sam Khae, 1100 m., on stumps in Hill Evergreen forest, 6 Mar. 1952 (SMITINAND 1068, det. P. ARENS).

Geographical distribution: Himalaya, Java, Hunan, Taiwan, Japan, Korea; Thailand (DIXON 1935: Phu Krading; HORIKAWA & ANDO 1964: Doi Inthanond).

***Pelekium velatum* MITT.**

Northeastern. Khawnkaen, Chumphae, Dong Lan, 300 m., on stems of low shrubs in Evergreen forest (SMITINAND S.N. det. P. ARENS).

Southeastern. Chanburi, Khao Sabap, 200 m., on tree trunks in Evergreen forest (SMITINAND 1823, det. E.B. BARTRAM).

Peninsular. Nakhorn Srithamarat, Khiriwong, Thap Chang, 400 m., on liana in Evergreen forest (SUARNAKOSES 219, det. P. ARENS).

Geographical distribution: Very widely distributed; Thailand (DIXON 1932).

**** *Thuidium cymbifolium* (DOZ. & MOLK.) V.D. BOSCH. & LAC.**

Northern. Chiangmai, Doi Chiengdao, 5300 ft., Lower Montane forest, epixylic, 30 Oct. 1962 (ROBBINS 3632); Pha Mawn, 4000 ft., secondary forest, epixylic, 29 Oct. 1962 (ROBBINS 3569); summit of Doi Inthanond, 8000 ft., Lower Montane forest, epixylic, 30 Oct. 1962 (ROBBINS 3632).

Northeastern. Loei, Phu Krading, Sam Khae, 1100 m., on rocks in Hill Evergreen forest, 6 Mar. 1952 (SMITINAND 1069, det. P. ARENS).

Geographical distribution: Very widely distributed; Thailand (DIXON 1932: Doi Khu Tan, Doi Inthanond, Koh Tao; HORIKAWA & ANDO 1964: Doi Inthanond).

*** *Thuidium glaucinoides* BROTH.**

Northern. Chiangmai, lower slopes of Doi Inthanond, 5100 ft., Lower Montane forest, epixylic, 29 Oct. 1962 (ROBBINS 3583).

Geographical distribution: Very widely distributed; Thailand, new record.

** *Thuidium glaucinum* (MITT.) MITT.

Northeastern. Loei, Phu Krading, 1300 m., on wet roots of ferns in Evergreen forest, 7 Mar. 1951 (SMITINAND 323, det. G.O.K. SAINSBURY).

Geographical distribution: South India, Ceylon, Assam, Vietnam, Japan; Thailand (DIXON 1932: Ranong; HORIKAWA & ANDO 1964: Doi Inthanond).

** *Thuidium meyenianum* (HPE.) DOZ. & MOLK.

Northern. Chiangmai, between Ban Mae Hoi and Tat Noi, 1700 ft., Evergreen Gallery forest, corticolous, 27 Oct. 1962 (ROBBINS 3542); *ibid.*, lower valley, Klang river, 1000 ft., Evergreen Gallery valleys, terrestrial on moist stream bank, 27 Oct. 1962 (ROBBINS 3539).

Northeastern. Khawнкаen, Chumphae, Dong Lan, 300 m., on log in Deciduous forest, 25 Mar. 1952 (SMITINAND 1225, det. P. ARENS).

Southwestern. Kanburi, near Neeckey (near Wangka), 150 m., in very moist forest on living trees [Kwae Noi Basin Exped. 468 (DENHOED)].

Geographical distribution: Nepal, Sikkim, Ceylon, Assam, Vietnam, Sumatra, Java, Banda, Philippines, New Guinea, Solomon Islands; Thailand (DIXON 1932: Loei, Surat, Koh Tao; 1935: Khawнкаen, Phu Wieng).

BRACHYTHECIACEAE

Rhynchostegium vagans (HARV.) JAEG.

Southwestern. Kanburi, South of Ka Thalai in Pan Paung River Valley, 400-600 m., 13-16 June, 1946 [Kwae Noi Basin Exped. 1000 (BLOEMBERGEN)].

Geographical distribution: Formosa, Himalaya, South India, Ceylon, Laos, Philippines, Ceram, Borneo, Java, Hawaii; Thailand [DIXON 1932: Chiengdao; HORIKAWA & ANDO 1964: Doi Inthanond, *Eurhynchium vagans* (JAEG.) BARTR.]

ENTODONTACEAE

** *Eurythrodontium julaceum* (SCHWAEGR.) PAR.

Northern. Chiangmai, Doi Chiengdao, 4600 ft., Lower Montane forest, epixylic, 9 Nov. 1962 (ROBBINS 3547); Pha Mawn, 4000 ft., secondary vegetation, on rocks, 28 Oct. 1962 (ROBBINS 3562).

Northeastern. Loei, Phu Krading, Samkhae, 1000 m., on twigs of lofty trees in Evergreen forest (SMITINAND 1998, det. E.B. BARTRAM).

Geographical distribution: Nilghiri, Mysore, Nepal, Sikkim, Khasia, Assam, Vietnam, Yunnan, Ceylon, Sumatra, Java, Philippines, Sulawesi; Thailand (DIXON 1932 : Surat).

** *Trachyphyllum inflexum* (HARV.) GEPP.

Northern. Chiangmai, between Ban Mae Hoi and Tat Noi, 1700-2000 m., Evergreen Gallery forest, corticolous, 27 Oct. 1962 (ROBBINS 3543, 3546); Lampang, Huay Tak, 400 m., on bark of logs (SUARNASORN 35, det. P.P. TIXIER).

Geographical distribution: Nepal, North India (Dehra Dun, SMITINAND 1499, det. P.P. TIXIER), Sikkim, Ceylon, Ava, Pegu, Vietnam, Philippines, New Caledonia; Thailand [DIXON 1935 : Khawnkaen, (Phu Wieng)]

Campylodontium flavescens (HOOK.) BOSCH & LAC.

Northern. Chiangmai, Doi Suthep, on trees in Oak forest (SINGHASTHIT 140, det. E.B. BARTRAM); near Tat Noi, 2075 ft., Evergreen Gallery forest, corticolous, 28 Oct. 1962 (ROBBINS 3558); Pha Mawn, 4000 ft., secondary growth, corticolous, 29 Oct. 1962 (ROBBINS 3571).

Geographical distribution: Very wide spread in Southeast Asia also in Queensland; Thailand (DIXON 1932 : Doi Suthep; HORIKAWA & ANDO 1964 : Doi Inthanond).

** *Entodon plicatus* C. MUELL.

Northern. Doi Chiengdao, East slope, 1000 m., on limestone rocks, Upper Mixed Deciduous forest, 16 Feb. 1958 (SMITINAND 4202, det. E.B. BARTRAM); *ibid.*, 5900 ft., open ridges vegetation, on rocks, 10 Nov. 1962 (ROBBINS).

Geographical distribution: Nepal, Sikkim, Khasia, Nilghiri, Madras, Ceylon, Assam, Vietnam; Thailand (DIXON 1932 : Doi Suthep).

PLAGIOTHECIACEAE

** *Stereophyllum anceps* (BOSCH & LAC.) BROTH.

Northern. Lampang, Huay Tak, 400 m., on *Oroxylum indicum*, 8 Aug. 1964 (SUARNASORN 41, det. A. TOUW).

Geographical distribution: South India, Ceylon, Java, Philippines, Burma; Thailand (DIXON 1935 : Phetchabun, Khawnkaen).

SEMATOPHYLLACEAE

Clastobryum brevifolium DIX.

Northern. Chiangmai, Doi Suthep, 6 Dec. 1957 (RICHARDS 5504).

Geographical distribution: Sikkim (Kurseong); Thailand (DIXON 1932: Doi Suthep; 1935: Doi Inthanond; GIESY & RICHARDS 1959).

Mastopoma perundulatum (DIX.) HORIK. & ANDO

Northern. Chiangmai, Summit of Doi Inthanond, 8100 ft., Lower Montane forest, corticolous, 30 Oct. 1962 (ROBBINS 3628).

Geographical distribution: Taiwan, Laos; Thailand (HORIKAWA & ANDO 1964: Doi Inthanond).

** *Acanthocladium laxum* DIX.

Northern. Chiangmai, Doi Suthep, 4000-5000 ft., fallen log in Montane forest, 6 Dec. 1957 (RICHARDS 5487).

Northeastern. Loei, Phu Krading, Dawn Pawai, 1300 m., 8 Mar. 1952 (SMITINAND 1101, det. G.O.K. SAINSBURY).

Geographical distribution: Tonkin; Thailand [DIXON 1932: Doi Suthep, Chanburi (Khao Soidao)].

Acanthocladium surculare (MITT.) BROTH.

Northern. Chiangmai, Chiangdao, above hill station, fallen tree in Montane forest, 4500 ft., 8 Dec. 1957 (RICHARDS 5481); Doi Chiangdao 5600 ft., Lower Montane forest, corticolous, 11 Nov. 1962 (ROBBINS 3679); Doi Suthep, 1100 m., Oak forest on tree trunks (SMITINAND 147, det. G.O.K. SAINSBURY); lower slopes of Doi Inthanond, 5200-6000 ft. Lower Montane forest, corticolous, 29 Oct. 1962 (ROBBINS 3589, 3597); *ibid.*, 6800 ft., epixylic, 30 Oct. 1962 (ROBBINS 3609); *ibid.*, summit, 8100 ft., corticolous (ROBBINS 3628).

Geographical distribution: Burma, Assam, Sikkim; Thailand (DIXON 1932: Doi Suthep; GIESY & RICHARDS 1959; HORIKAWA & ANDO 1964: Doi Suthep, Doi Inthanond).

Trismegista rigida (HORNSH. & REINW.) BROTH.

Peninsular. Nakhorn Srithamarat, Khao Luang, 1000 m., on rocks and logs in Hill Evergreen forest, 20 Nov. 1952 (SMITINAND 1292, det. G.O.K. SAINSBURY).

Geographical distribution: Malaysia, Sumatra, Java, Kalimantan, Central Vietnam, New Guinea, New Caledonia; Thailand (DIXON 1932: Nakhorn Srithamarat).

** *Meiothecium* cf. *turgidellum* FLEISCH.

Northern. Chiangmai, between Tat Noi and Pha Mawn, 2600 ft., Evergreen Gallery forest, 28 Oct. 1962 (ROBBINS 3548).

Geographical distribution: Java; Thailand (DIXON 1935: Ranawng).

Brotherella falcata (DOZ. & MOLK.) FLEISCH.

Northern. Chiangmai, summit of Doi Inthanond, 8500 ft., Lower Montane forest, epixylic, 30 Oct. 1962 (ROBBINS 3638).

Geographical distribution: Taiwan, Laos, Assam, Sikkim, Ceram, Celebes, Borneo, Java; Thailand (HORIKAWA & ANDO 1964 : Doi Inthanond).

**Sematophyllum caespitosum* (HEDW.) MITT.

Southeastern. Chanburi, Pong Namrawn, Pratrung, 220 m., gregarious on rocks in stream (SMITINAND 3195, det. E.B. BARTRAM).

Geographical distribution: Cosmopolitan; Thailand, not recorded by DIXON (1932, 1935).

***Sematophyllum microcladum* (DOZ. & MOLK.) BROTH.

Northern. Chiangmai, Doi Suthep, Pui, 1600 m., on trees in open Hill Evergreen forest, 21 Mar. 1951 (SMITINAND 162, det. G.O.K. SAINSBURY).

Geographical distribution: Malay Peninsula, Kalimantan, Sulawesi, New Guinea; Thailand (DIXON 1932 : Surat; 1935 : Ranawng).

**Sematophyllum saproxylophilum* (C. MUELL.) FLEISCH.

Southeastern. Trat, Huay Raeng, Dong Maduea, under 50 m., on wet log in Evergreen forest, 19 June, 1952 (SMITINAND 1321, det. G.O.K. SAINSBURY).

Geographical distribution: Malay Peninsula (DIXON 1926); Thailand, first record.

**Acroporium brevipes* (BROTH.) BROTH.

Northeastern. Loei, Phu Krading, Tham Saw, 1300 m., on bark of trees in Oak forest, 10 Mar. 1952 (SMITINAND 1114, det. G.O.K. SAINSBURY).

Geographical distribution: Philippines (Luzon); Thailand, not previously recorded.

***Trichosteleum boschii* (DOZ. & MOLK.) JAEG.

Peninsular. Nakhorn Srithamarat, Khao Luang, 1700 m., on twigs of shrub in Evergreen forest (SUARNAKOSES 614, det. E.B. BARTRAM).

Geographical distribution: Malaysia, Vietnam, Sumatra, Java, Kalimantan, Banka, Panay; Thailand (DIXON 1932 : Koh Chang, Khao Sabap).

***Trichosteleum chaetomitriopsis* DIX.

Southeastern. Chanburi, Pong Namrawn, Khao Soidao, 1700 m., on low shrub in Hill Evergreen forest on ridge (SMITINAND 3214, det. E.B. BARTRAM).

Geographical distribution: Laos; Thailand (DIXON 1935 : Phu Krading).

* *Trichosteleum pseudo-mammosum* FLEISCH.

Eastern. Nakhorn Rachasima, Khao Yai National Park, 2500 ft., Evergreen Hill Dipterocarps forest, epixylic, 18 Nov. 1962 (ROBBINS 3683).

Geographical distribution: Java; Thailand, new record.

** *Acanthorrhynchium papillatum* (HARV.) FLEISCH.

Southeastern. Chanburi, Khao Sabap, 220 m., on wet logs in Evergreen forest (SMITINAND 1821, det. E.B. BARTRAM); Trat, Huay Raeng, Dong Maduea, under 50 m., on trunk of an *Anisoptera*, near ground in Evergreen forest, 19 June, 1952 (SMITINAND 1320, det. G.O.K. SAINSBURY); *ibid.*, under 50 m., on trunk of a *Shorea* in Evergreen forest, 20 June, 1952 (SMITINAND 1347, det. G.O.K. SAINSBURY); Pak Phreed, under 50 m., on wet logs in Evergreen forest, 22 June, 1952 (SMITINAND 1420, det. G.O.K. SAINSBURY); Chang Kluea, 40 m., on roots of trees in Evergreen forest, 27 June, 1952 (SMITINAND 1453a, det. G.O.K. SAINSBURY).

Peninsular. Surat, Bangbao, under 100 m., on wet logs in Evergreen forest, 7 Aug. 1955 (SMITINAND 2862, det. A. TOUW).

Geographical distribution: Nepal, Malaya, Sunda Islands, Philippines, Borneo, Vietnam, New Guinea, Fiji and Samoa Islands; Thailand (DIXON 1932: Koh Chang, Khao Kuap, Chumphorn, *Taxithelium papillatum* (HARV.) BROTH.).

* *Foreauella orthothecia* (SCHWAEGR.) DIX. & VARDE

Northern. Chiangmai, Doi Chiengdao, 3600-5000 ft., Lower Montane forest and open ridge vegetation, corticolous, epixylic, and on limestone rocks (ROBBINS 3652, 3655, 3657); valley of Pha Mawn on track to summit of Doi Inthanond, 2700 ft., Mixed Evergreen forest, 28 Oct. 1962 (ROBBINS 3568).

Northeastern. Loei, Phu Krading, Samkhae, 1100 m., on wet logs, Hill Evergreen forest, 6 Mar. 1952 (SMITINAND 1067, det. P. ARENS).

Geographical distribution: India, Laos; Thailand, neither recorded by DIXON (1932, 1935) nor HORIKAWA & ANDO (1964).

** *Taxithelium clastobryoides* DIX.

Peninsular. Nakhorn Srithamarat, Khao Luang, 600 m., on twigs in Evergreen forest, 21 Nov. 1951 (SUARNAKOSES 149, det. P. ARENS).

Geographical distribution: Endemic to Thailand (DIXON 1935: Krabi).

** *Taxithelium instratum* (DOZ. & MOLK.) BRID.

Southeastern. Trat, Huay Raeng, Khao Mai Si, 100 m., on wet logs in Evergreen forest, 21 June, 1952 (SMITINAND 1417, 1418, det. G.O.K. SAINSBURY); Dong Maduea, under 50 m., on roots of tree in Evergreen forest,

19 June, 1952 (SMITINAND 1306, det. G.O.K. SAINSBURY); *ibid.*, under 50 m., epiphytic on tree trunk in Evergreen forest 19 June, 1952 (SMITINAND 1350, det. G.O.K. SAINSBURY).

Northeastern. Khawnkaen, Chumphae, Dong Lan, 1300 m., on wet logs in Evergreen forest, 27 Mar. 1952 (SMITINAND 1234, det. G.O.K. SAINSBURY).

Geographical distribution: Sunda Islands, Philippines, New Guinea; Thailand (DIXON 1932: Koh Chang, Khao Saming).

***Taxithelium isocladum* (FLEISCH.) REN. & CARD.

Southeastern. Chanburi, Khao Sabap, 200 m., on tree trunks in Evergreen forest, 3 Aug. 1954 (SMITINAND 1822, det. E.B. BARTRAM).

Geographical distribution: Vietnam, Kalimantan, Banka, New Guinea; Thailand (DIXON 1932: Koh Chang, Ranawng).

***Taxithelium magnum* FLEISCH.

Peninsular. Nakhorn Srithamarat, Khao Luang, 800 m., on stem of shrubs in Evergreen forest, 20 Apr. 1952 (SMITINAND 1293, det. G.O.K. SAINSBURY).

Geographical distribution: Malay Peninsula, Sumatra, Java, Borneo; Thailand (DIXON 1932: Phang-nga, Krabi).

Taxithelium nepalense (SCHWAEGR.) BROTH.

Southeastern. Trat, Huay Raeng, Chang Kluea, 30 m., on roots of *Artocarpus integrus*, 21 June, 1952 (SMITINAND 1376, det. G.O.K. SAINSBURY).

Peninsular. Surat, Bangbao, under 100 m., on undershrub in Evergreen forest, 8 Aug. 1955 (SMITINAND 2903, det. E.B. BARTRAM); *ibid.*, under 100 m., on logs in Evergreen forest, 9 Aug. 1955 (SMITINAND 2924, det. E.B. BARTRAM).

Geographical distribution: Nepal, Bengal, Kanara, Ceylon, Penang, Burma, Assam, Vietnam, Sumatra, Java, Kalimantan, Amboine, Philippines; Thailand (DIXON 1932, 1935).

HYPNACEAE

Ectropothecium siamense DIX.

Peninsular. Nakhorn Srithamarat, Khao Luang, 600 m., massing on logs in Evergreen forest, 5 Nov. 1957 (SMITINAND 1028, det. G.O.K. SAINSBURY).

Geographical distribution: Sumatra; Thailand (DIXON 1932: Nakhorn Srithamarat, Satul).

***Ectropothecium dealbatum* (HORNSCH. & REINW.) JAEG.

Peninsular. Surat, Bangbao, under 100 m., on wet logs in Evergreen forest, 8 Aug. 1955 (SMITINAND 2893, det. E.B. BARTRAM).

Geographical distribution: Sumatra, Java, Kalimantan, Philippines; Thailand (DIXON 1932 : Nakhorn Srithamarat).

** *Isopterygium albescens* (SCHWAEGR.) JAEG.

Eastern. Nakhorn Rachasima, Khao Khio Range, 3850 ft., Lower Montane forest, epixylic, 19 Nov. 1962 (ROBBINS 3689).

Southeastern. Trat, Huay Raeng, Dong Maduea, under 50 m., epiphytic on lianas in Evergreen forest, 20 June, 1952 (SMITINAND 1351, det. G.O.K. SAINSBURY).

Geographical distribution: Nepal, Sikkim, Khasia, Assam, Nilghiri, Ceylon, Java, Kalimantan, Sulawesi, Japan; Thailand (BROTHERUS 1901; DIXON 1932 : Koh Chang; HORIKAWA & ANDO 1964 : Doi Inthanond).

* *Isopterygium bancanum* (BOSCH & LAC.) JAEG.

Southeastern. Trat, Huay Raeng, Pak Phreed, under 50 m., on small shrubs in Evergreen forest, 22 June, 1952 (SMITINAND 1422, det. G.O.K. SAINSBURY).

Geographical distribution: Java, Banka; Thailand, not recorded by DIXON (1932, 1935).

** *Isopterygium minutirameum* (C. MUELL.) JAEG.

Peninsular. Nakhorn Srithamarat, Khao Khinaw, by stream, 19 Aug. 1952 (SUARNAKOSES 376, det. E.B. BARTRAM); Thap Chang, 400 m., on roots of *Areca catechu*, 25 Dec. 1951 (SUARNAKOSES 263, det. G.O.K. SAINSBURY).

Geographical distribution: Ceylon, Malaya, Sumatra, Banka, Kalimantan, Philippines, Queensland; Thailand (DIXON 1932 : Bangkok).

Isopterygium subalbescens BROTH.

Northern. Chiangmai, Doi Suthep, 3000-3500 ft., fallen logs in forest, 6 Dec. 1957 (RICHARDS 5494).

Geographical distribution: Assam, Burma, Singapore; Thailand (GIESY & RICHARDS 1959).

Isopterygium textori (LAC.) MITT.

Northern. Chiangmai, Doi Suthep, 3100 ft., on shaded bank by path, 12 Dec. 1957 (RICHARDS 5493).

Geographical distribution: Very wide; Thailand (DIXON 1935 : Krabi; GIESY & RICHARDS 1959).

** *Vesicularia miquelii* (BOSCH & LAC.) FLEISCH.

Peninsular. Surat, Bangbao, under 100 m., on wet logs in Evergreen forest, 6 Aug. 1955 (SMITINAND 2882, det. E.B. BARTRAM).

Geographical distribution: Malaya, Sumatra, Java, Kalimantan, Philippines, New Guinea; Thailand (DIXON 1932 : Pattani).

**Vesicularia reticulata* (DOZ. & MOLK.) BROTH.

Southeastern. Chanburi, Pong Namrawn, Pratrang, 700 m., on rocks in stream (SMITINAND 3260, det. E.B. BARTRAM).

Geographical distribution: Nepal, Sikkim, Khasia, Singapore, Sumatra, Java, Sulawesi, Philippines; Thailand, not recorded by DIXON (1932, 1935).

HYLOCOMIACEAE

***Leptothymenium tenue* (HOOK.) SCHWAEGR.

Northern. Chiengmai, Doi Chiengdao, 5800 ft., Lower Montane forest, exposed ridge, on limestone rocks, 10 Nov. 1962 (ROBBINS 3669).

Geographical distribution: South China, Burma, Assam, Nepal, N.W. Himalaya, Philippines; Thailand (HORIKAWA & ANDO 1964 : Doi Inthanond).

Macrothamnium macrocarpum (HORNSCH. & REINW.) FLEISCH.

Chiengmai. Doi Suthep, 4500-5500 ft., on trees, 6 Dec. 1952 (RICHARDS 5499); lower slopes of Doi Inthanond, 5000 ft., Lower Montane Oak forest, corticolous, 29 Oct. 1962 (ROBBINS 3577); summit of Doi Inthanond, 8100 ft., 30 Oct. 1962 (ROBBINS 3629); Doi Chiengdao, 5300 ft. epixylic, 10 Nov. 1962 (ROBBINS 3666).

Geographical distribution: East India, Ceylon, Sunda Islands, Philippines, Vietnam; Thailand (DIXON 1932 : Doi Suthep; HORIKAWA & ANDO 1964 : Doi Suthep, Doi Inthanond).

POLYTRICHACEAE

Atrichum henryi (SALM.) GIESY & RICHARDS

Northern. Chiengmai, Chiengdao, above hill station, on banks and moss, and by tree roots in open Montane forest, 4500-5000 ft., 8 Dec. 1957 (RICHARDS 5469).

Geographical distribution: Yunnan; Thailand (GIESY & RICHARDS 1959).

***Rhacelopus pilifer* DOZ. & MOLK.

Southeastern. Chanburi, Makham, Thung Khui, 130 m., on ant hill, 10 Sept. 1954 (SANGKHACHAND 306, det. E.B. BARTRAM).

Geographical distribution: North Vietnam, Perak, Java, Kalimantan, Batjan, Amboina, Philippines, Moluccas, New Guinea; Thailand (DIXON 1932 : Koh Chang, Kraburi).

** *Pogonatum cirrhatum* (SCHWAEGR.) BRID.

Northeastern. Loei, Phu Krading, Dawn Pawai, 1300 m., on wet rocks by stream in Hill Evergreen forest, 8 Mar. 1952 (SMITINAND 1102, det. G.O.K. SAINSBURY).

Geographical distribution: China, Malaya, Java, Kalimantan, Sulawesi, Amboina; Thailand (HORIKAWA & ANDO 1964: Doi Inthanond).

** *Pogonatum gymnophyllum* MITT.

Northern. Chiangmai, summit of Doi Inthanond, 8100 ft., Lower Montane forest, terrestrial, 30 Oct. 1962 (ROBBINS 3627, det. J. COENEN).

Peninsular. Nakhorn Srithamarat, Khao Luang, 600 m., on rocks in Evergreen forest, 30 Aug. 1952 (SUARNAKOSES 411, det. E.B. BARTRAM).

Geographical distribution: Sikkim, Khasia, Yunnan, Taiwan; Thailand (DIXON 1932: Doi Inthanond; HORIKAWA & ANDO 1964: Doi Inthanond).

** *Pogonatum junghuhnianum* (DOZ. & MOLK.) BOSCH & LAC.

Northern. Chiangmai, Doi Suthep, Buak Ha, 1200 m., on rocks in open Hill Evergreen forest, 21 Mar. 1951 (SMITINAND 201, det. G.O.K. SAINSBURY).

Northeastern. Loei, Phu Krading, Huay Pah Dawkmai, 1300 m., gregarious by stream in Evergreen forest, 20 Mar. 1958 (SMITINAND 4498, det. E.B. BARTRAM); Huay Tham Yai, 1300 m., on rocky stream banks in Evergreen forest, 11 May, 1951 (SMITINAND 380, det. P. ARENS).

Geographical distribution: Malay Peninsula, Burma, Sikkim, South India, Philippines, Celebes, Borneo, Java; Thailand (DIXON 1932: Chanburi; 1935).

* *Pogonatum macrophyllum* (DOZ. & MOLK.) BOSCH & LAC.

Northeastern. Loei, Phu Krading, Dawn Pawai, 1300 m., on wet rocks by stream in Hill Evergreen forest, 8 Mar. 1952 (SMITINAND 1102, det. P. ARENS).

Peninsular. Nakhorn Srithamarat, Khao Luang, 1200 m., massing on rocks in Hill Evergreen forest, 20 Feb. 1952 (SMITINAND 1290, det. G.O.K. SAINSBURY).

Geographical distribution: Malacca, Sumatra, Java, Moluccas, Philippines; Thailand, a new record.

** *Pogonatum neesii* (C. MUELL.) MITT.

Northern. Chiangmai, Chiangdao, path to hill station, loamy bank by path, 12 Dec. 1957 (RICHARDS 5465); valley of Pha Mawn on track to summit

of Doi Inthanond, 3700 ft., pine grove, terrestrial on clay bank, 28 Oct. 1962 (ROBBINS 3565); upper slopes of Doi Inthanond, 7200 ft., Lower Montane forest, terrestrial, 30 October 1962 (ROBBINS 3614, det. J. COENEN).

Geographical distribution: South India, Malay Peninsula, Java, Sumatra; Thailand (GIESY & RICHARDS 1959).

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