

MOSSES RECENTLY FOUND IN FORMOSA

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In recent years some Japanese and American bryologists actively explored Formosa. Satoshi Nakanishi visited the island in the course of the Kobe University Scientific Expedition to Taiwan in 1963. He did fairly extensive exploring in the vicinity of Hohuan Shan and those surrounding areas of Yu Shan (Mt. Morrison). He collected a few significant bryological specimens and found a rich assortment of species. As a consequence, a number of mosses new to Formosa were described from his collections in several issues of the *HIKOBIA*, those of *THE JOURNAL OF JAPANESE BOTANY*, and some of the *MISCELLANEA BRYOLOGICA ET LICHENOLOGICA* in the next year by various authors. Later, Zenoske Iwatsuki and Aaron J. Sharp made a bryological excursion to the north and central Formosa in the course of the Hattroi-Tennessee Cooperative Bryogeographic Expedition to Taiwan, India and the Philippines in 1965. They were in Taiwan about a month. Both of them enjoyed exploring and collecting on the island. The results of their extensive field bryological activity amount to more than 3000 collections. More recently Hiroshi Inoue visited the island on several occasions and collected in various parts of the island.

During this period Akira Noguchi and Z. Iwatsuki also re-examined critically some of the Asiatic species in question. As a consequence, many names of Formosan species are revised and, hence then, the range of these species are extended.

Since it has been noted that Formosa was a very interesting region from the phytogeographical point of view, but the study of the moss flora of the island was still incompletely done, it was felt that the bringing together of the knowledge regarding the moss species recently known to occur on the island for publication might be informative. Naturally, this publication is also meant to supplement the moss flora of Formosa.

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Enumeration of the Species

Fissidentaceae

Fissidens bryoides Hedwig, Spec. Musc. Frond. 153 (1801); Shin, Fissident. Jap. 56 (1964).

Fissidens synoicus Sullivant, Musci Hep. U. S. East Mississippi Riv. Add. Corr. 103 (1856).

Fissidens gymnandru Buse, sensu Bežherelle, Journ. de Bot. 12: 291 (1898).

Fissidens taiwanensis Herzog et Noguchi, Journ. Hattori Bot. Lab. **14**: 57, f. 18 (1955).

Loc. *Hsinchu*: Luchangta Shan, Naoliao-Chingchuan, Wufeng Hsiang, alt. 1300 m. (C. K. Wang-1681, April 2, 1962); *Taichung*: mountainous region, alt. 1200 m.

Hab. On rock in moist shaded place in evergreen hardwood forest.

Distr. China, Ryukyū, Japan, Himalaya, Caucasus, Siberia, Europe, North America.

Fissidens filicinus Dozy et Molkenboer, Musc. Frond. Nov. Spec. ex Archip. Ind. et Jap. 7 (1844) fide Dixon, Bryologist **46**: 131 (1943).

Fissidens japonicus Dozy et Molkenboer, Pl. Jungh. Fasc. **3**: 313 (1854).

Fissidens nobilis Griffith, sensu Sakurai, Bot. Mag. Tokyo **51**: 60 (1937).

Fissidens schismoides Sakurai, Bot. Mag. Tokyo **53**: 60, f. 3 (1939).

Loc. *Taipei*: Hsintien-Wulai; *Hsinchu*: Luchangta Shan, Naoliao-Kuei Shan, Wufeng Hsiang, alt. 1500 m. (C. K. Wang-1539 & 1543, Mar. 31, 1962); *Kaohsiung*: Maya Tsun, Maolin Hsiang, alt. 700 m. (C. K. Wang-993, Mar. 28, 1961); *Ilan*: Tiensungpi, Tuchang.

Hab. On rock in evergreen hardwood forest.

Distr. Botel Tobago, China, Philippines, Ryukyu, Japan, Thailand, Viet-Nam, Malay Pen., Burma, N-India, Ceylon, Sumatra, Borneo, Celebes, Bonins.

Fissidens grandifrons Bridel, Spec. Musc. **1**: 170 (1801); Shin, Fissident. Jap. 127, f. 33-34 (1964).

Fissidens planicaulis Bescherelle, Ann. Sci. Nat. ser. 7, Bot **17**: 335 (1893).

Fissidens diversiretis Brotherus, Symbol. Sinic. **4**: 11 (1929).

Fissidens grandifrons Bridel var. *planicaulis* (Bescherelle) Noguchi, Journ. Hattori Bot. Lab. **7**: 68, f. 8 (1952).

According to Noguchi the dorsal laminae of leaves of the plants from Japan and Formosa have more layers of thick-walled cells, while in those from North America and Asiatic mainland the dorsal laminae are largely composed of two layers of thick-walled cells. Consequently, Noguchi considers the Japanese and Formosan plants as a varietal form of *F. grandifrons*. However, after the critical study of the specimens of *F. grandifrons* from North America, Pakistan and Formosa, together with those of *F. planicaulis* of Japan, Shin is conceived that they are belonging to one and the same species, i. e. *F. grandifrons*. The writer agrees with the opinion of Shin.

Loc. *Taichung*: Li Shan, Hoping Hsiang; *Nantow*: Lolo and Tuikuan, Hsini Hsiang, alt. 1600-2200 m.; *Ilan*: Taiping Shan, Tatung Hsiang, alt. 2000 m.; *Fualien*: Nunkao Shan, Hsiulin Hsiang, alt. 2800 m. and Pilu Shan, Hsiulin Hsiang, alt. 2200 m. (C. K. Wang-10296, Oct. 9, 1966).

Hab. On rocky cliff under water fall and on rock in running water in creek in evergreen hardwood forest.

Distr. China, Japan, NW-Himalayas, Pakistan, Central Asia, Africa, Mediterranean, Europe, North America.

Fissidens gymnogynus Bescherelle, Journ. de Bot. **12**: 292 (1898); Shin, Hikobia **3**(4); 299 (1963).

Fissidens tokubuchii Brotherus, Hedwigia **38**: 209 (1809).

Fissidens rubritheca Sakurai, Bryologist **39**: 4, pl. 2, f. 9-11 (1936).

Fissidens iwasakii Sakurai, Bot. Mag. Tokyo 53: 59, f. 1 (1939).

Loc. *Nantow*: Tungpu-Lolo, alt. 1385 m. and Lolo-Tuikuan, alt. 1700 m., Hsini Hsiang.

Hab. On rock and bark of oak (*Quercus* sp.)

Dister. Japan and Korea.

Fissidens protonemaecola Sakurai, Bot. Mag. Tokyo 47: 741, f. 4 (1933); Mizushima, Journ. Jap. Bot. 32: 29 (1957).

Fissidens gemmaceus Herzog et Poiter de la Varde, Journ. Hattori Bot. Lab. 14: 55, f. 17 (1955).

Loc. *Taipei*: Karobetsu, alt. 250 m.

Hab. On soil in shaded place.

Distr. Japan.

Fissidens taxifolia (Linnaeus) Hedwig, Spec. Musc. Frond. 155, pl. 39, f. 1-5 (1801); Nakanishi, Hikobia 3(4): 319 (1963).

Hypnum taxifolium Linnaeus, Spec. pl. 2: 1122 (1753).

Fuscina taxifolia Schrank, Baiers, Fl. 2: 451 (1789).

Dicranum taxifolium Sibth, Fl. Oxon. 279 (1794).

Skitophyllum taxifolium La Pyl, in, Desv. Journ. Bot. 60, t. 35, f. 10 (1813).

Fissidens nipponensis Sakurai, Bot. Mag. Tokyo 47: 743 (1933).

Schistophyllum taxifolium Bridel, mss.

Loc. *Nantow*: Ho She, Hsini Hsiang, alt. 1200 m.

Hab. On soil in moist shaded place in evergreen hardwood forest.

Distr. Ryuku, Japan, Korea, Sakhalin, Himalayas, Nepal, Sikkim, NW-India, Persia, Caucasus, Europe, Canary Isl., Madeira, North America.

Bryoxiphiaceae

Bryoxiphium norvegicum (Bridel) Mitten subsp. *japonicum* (Berggren) Löve et Löve, Bryologist 56: 197 (1953); Nakanishi, Hikobia 4(1-2): 23 & 25, f. 1 (1964).

Eustichia japonica Berggren, in Geheeb, Flora 64: 290 (1881).

Eustichia savatieri Husnot, Revue Bryol. 10: 85 (1883).

Bryoxiphium savatieri Mitten, Trans. Linn. Soc. Lond. ser. 2, Bot. 3: 153 (1891).

Bryoxiphium japonicum (Berggren) Löve ex Lee, Acta Phytotax. Sinica 7: 254 (1958).

The plant is known to be of wide occurrence in eastern Asia. At present it has been reported from several localities from Lombok and Luzon Island in the south, to Sakhalin island, Amur, and Kamchatka in the north. As is known, sporophytes are lacking in the Philippine and Formosan collections, although the materials collected are all female plants with mature archegonia. In the Formosan plant, however, the perichaetial leaves are less serrate than those in Philippine and Japanese plants.

Loc. *Kaohsiung*: Yu Shan*, upstream area of Lonung Chi, Taoyuan Hsiang, alt. 2630 m. & 2660 m.

Hab. In dense glossy masses on over-hanging shale cliffs by the stream.

*Known also as Mt. Morrison.

Distr. China, Philippines, Japan, Korea, Amur, Sakhalin, Kamchatka, Lombok.

Dicranaceae

Dicranodontium uncinatum (Harvey) Jaeger, Ber. S. Gall. Naturw. Ges. 1877-78: 380 (1880); Noguchi, Journ. Jap. Bot. 35(10): 304 (1960).

Thysanomitrium uncinatum Harvey, in Hooker, Ic. Pl. rar. pl. 22, f. 5 (1837).

Loc. Chiai: Ali Shan, Wufeng Hsiang, alt. 2300 m., and Yu Shan, Yushankou—Yushan Peak; **Ilan:** Taiping Shan, Tatung Hsiang

Hab. On humus and decayed logs.

Distr. Philippines, Japan, Viet-Nam, Laos, Thailand, Malay Pen., Manipur, Moluccas, Java, E-India, Himalayas, Burma, Nepal.

Brothera leana (Sullivant) C. Mueller, Gen. Musc. 259 (1901); Nakanishi, Hikobia 3(4): 321 (1963).

Campylopus leanus Sullivant, A. Gray Man. ed. 2, 619 (1856).

Loc. Nantow: Yu Shan, near Tuikuan, Hsini Hsiang, alt. 2050 m.

Hab. On decayed log in evergreen hardwood forest.

Distr. China, Philippines, Japan, Himalaya, Pakistan, Amur, North America.

Dicranum fragilifolium Lindberg, Bot. Not. 1857: 147 (1857); Nakanishi, Hikobia 3(4): 324 (1963).

Dicranum yezomontanum Noguchi, Journ. Hattori Bot. Lab. 8: 18, f. 9 (1952).

Loc. Nantow: Yu Shan, Hsini Hsiang, alt. 3200 m.

Hab. On basal portion of trunk of tree in fir forest.

Distr. Japan, Siberia, North Europe, Scotland, Arctic North America, Labrador and Alaska.

Dicranum japonicum Mitten, Trans. Linn. Soc. ser. 2, Bot. 3: 155 (1891); Nakanishi, Hikobia 3(4): 321 (1963).

Dicranum japonicum Mitten var. *aomoriense* Bescherelle, Ann. Sci. Nat. ser. 7, Bot. 17: 332 (1893).

Dicranum curvipes Sakurai, Jap. Bot. 27: 154, f. g (1952).

Dicranum curvipes Sakurai var. *majus* Sakurai, Jap. Bot. 27: 155 (1952).

Dicranum eurydictyon Bescherelle var. *pallidum* Sakurai, Journ. Jap. Bot. 27: 153 (1952).

Loc. Nantow: Tuikuan, Hsini Hsiang, alt. 2300 m.

Hab. On forest floor in hardwood and conifer mixed forest.

Distr. China, Japan, Korea, Manchuria, Sakhalin.

Dicranum majus Turner, Hib. 59 (1804); Nakanishi, Hikobia 3(4): 324 (1963).

Dicranum polysetum Bridel, Spec. Musc. 1: 174 (1806).

Dicranum scoparium var. *a. majus* Hooker et Taylor, Musc. Br. 58, t. 18 (1818).

Dicranum scoparium Taylor, Ann. Mag. Nat. Hist. 12: 129 (1843).

Dicranum takakii Sakurai, Journ. Jap. Bot. 27: 153 (1952).

Loc. Nantow: Yu Shan, near Patungkuan, Hsini Hsiang, alt. 3170 m.

Hab. On soil rich in humus and rarely on decaying logs.

Distr. China, Japan, Korea, Sakhalin, Siberia, Caucasus, Europe, North America.

Dicranum mayrii Brotherus, Hedwigia **38**: 207 (1899); Takaki, Journ. Hattori Bot. Lab. **27**: 76 & 77, f. 1, a-t (1964).

Dicranum eushistodon Cardot, Bull. Herb. Boiss. ser. 2, **8**: 331 (1908).

Dicranum formosicum Brotherus, Rev. Bryol. n. ser. **2**: 1 (1929).

Holomitrium nodosum Dixon et Sakurai, Bot. Mag. Tokyo **54**: 5, f. 1 (1940).

Loc. Hsinchu: Yulo Shan, Chienshih Hsiang; **Chiai**: Ali Shan, wufeng Hsiang, alt. 2500 m. (T. S. Wang-1476, April 21, 1962).

Hab On decayed log in *Cryptomeria* plantation.

Distr. Japan, Korea, and Sakhalin.

Dicranum muehlenbeckii B.S.G., Bryol. Eur. **1**: 142, Fasc. 37-40, Mon. 38, 20 (1847); Nakanishi, Hikobia **3**(4): 325 (1963).

Dicranum blyttii Schimper, Bryol. Eur. **1**: 142, Fasc. 37-40, Mon. 38, 20 (1847).

Kiaeria blyttii (Schimper) Brotherus var. *secundifolia* Sakurai, Bot. Mag. Tokyo **65**: 254 (1952).

Loc. Nantow: Yu Shan, Hsini Hsiang, alt. 3450 m.

Hab. On forest floor in fir forest.

Distr. Japan, Siberia, Caucasus, Europe, and North America.

Dicranum nipponense Bescherele, Ann. Sci. Nat. ser. 7, Bot. **17**: 332 (1893); Nakanishi, Hikobia **3**(4): 321 (1963).

Dicranum eurydictyon Bescherele, Ann. Sci. Nat. ser. 7, Bot. **17**: 333 (1893).

Dicranum nipponense Bescherele var. *lacustre* Bescherele, Ann. Sci. Nat. ser. 7, Bot. **17**: 333 (1893).

Dicranum nipponense Bescherele var. *mucronatum* Bescherele, Ann. Sci. Nat. ser. 7, Bot. **17**: 333 (1893).

Dicranum braunsii C. Mueller ex Brotherus, Hedwigia **38**: 206 (1899).

Dicranum rufescens Schimper ex Paris, Bull. Herb. Boiss. ser. 2, **2**: 921 (1902).

Dicranum ikegamii Sakurai, Journ. Jap. Bot. **27**: 157, f. h (1952).

Dicranum ikegamii Sakurai var. *subreflexifolium* Sakurai, Journ. Jap. Bot. **27**: 157 (1952).

Dicranum nipponense Bescherele var. *pygmaeum* Sakurai, Journ. Jap. Bot. **27**: 156 (1952).

Dicranum osadae Sakurai, Journ. Journ. Jap. Bot. **27**: 156, f. c (1952).

Dicranum otii Sakurai, Journ. Jap. Bot. **27**: 157 (1952).

Dicranum pogonatooides Sakurai, Journ. Jap. Bot. **27**: 156 (1952).

Dicranum recurvicaule Sakurai, Journ. Jap. Bot. **27**: 155, f. b (1952).

Dicranum satsumense Sakurai, Journ. Jap. Bot. **27**: 153, f. e (1952).

Loc. Nantow: Tuikuan, Hsini Hsiang, alt. 2300 m.

Hab. On forest floor in hardwood and conifer mixed forest.

Distr. Japan and Korea.

Dicranum scoparium Hedwig, Spec. Musc. Frond. 126 (1801); Nakanishi, Hikobia **3**(4): 321 (1963).

Bryum scoparium Linnaeus, Spec. Plant. 1117 (1753).

Hypnum scoparium Weiss, Cr. Goett. 71 (1770).

Fuscinia scoparia Schrank, Baiers. Fl. **2**: 452 (1789).

- Mnium scoparium* Gmelin, Syst. 2: 1328 (1791).
Cecalyphum scoparium P. Beauvois, Prodr. 51 (1805).
Dicranum dillenii Taylor, Ann. Mag. Nat. Hist. 12: 129 (1843).
Dicranum pallidum C. Mueller, Synops. Musc. 1: 359 (1848).
Dicranum mexicanum auct. non Schimper: Bescherelle, Mem. Soc. Nat. Cherbourg 16: 164 (1872).
Dicranum howellii Renauld et Cardot, Bot. Gaz. 14: 93, pl. 12 B (1889).
Dicranum angustifolium Kindberg, in Macoun, Bull. Torr. Club 17: 86 (1890).
Dicranum canadense Kindberg, in Macoun, Bull. Torr. Club 17: 87 (1890).
Dicranum kindbergii Paris, Index Bryol. ed. 1, 356 (1895).
Dicranum scopariiforme Kindberg, Eur. and N. Am. Bryin. 193 (1897).
Dicranum rigidifolium Sakurai, Journ. Jap. Bot. 27: 154, f. f (1952).
Dicranum rigidifolium Sakurai var. *rugulosum* Sakurai, Journ. Jap. Bot. 27: 154 (1952).
Dicranum yakushimense Sakurai, Journ. Jap. Bot. 27: 155, f. a (1952).

Loc. **Taichung:** Anma Shan, Hoping Hsiang, alt. 2300 m. (C. K. Wang-643, Feb. 15, 1960); **Nantow:** Tuikuan, Hsini Hsiang, alt. 2300 m.

Hab. On rotten wood on forest floor in hardwood and conifer mixed forest.

Distr. China, Japan, Nepal, Kashmir, Korea, Soviet Far East, Caucasus, Europe, Azores, Madeira, Canaries, North America, New Zealand.

Grimmiaceae

Glyphomitrium formosanum Iwatsuki, Journ. Jap. Bot. 39(6): 179, f. 1, a-o (1964).

Loc. **Taichung:** Tahsueh Shan—Touying Shan, Hoping Hsiang, alt. 3100 m. (C. K. Wang-1322, May 10, 1961).

Hab. On trunk of fir tree in fir forest with luxuriant undergrowth of alpine bamboo.

Distr. Endemic.

Rhacomitrium canescens var. *ericoides* (Weber) Bruch et Schimper, Bryol. Eur. Fasc. 25-28, 12 (1845); Nakanishi, Hikobia 3(4): 322 (1963).

Bryum hypnoides var. *r.* Linnaeus, Spec. Plant. 2: 1120 (1753).

Bryum hypnoides var. *L.* Linnaeus, Fl. Suec. ed. 2, 392 (1755).

Bryum hypnoides Pollich, Pl. Palat 3: 106.

Hypnum canescens var. *r. ericoides* Weber, Spic. Fl. Goett. 82 (1778).

Bryum hypnoides var. *L. barbatum* Retzer, Fl. Scand. Prodr. 2, 2: 214 (1779).

Bryum ericoides Schrader, in Gmelin, Syst. Nat. ed. 13, 2: 1332 (1791).

Trichostomum elongatum Ehrhart, Pl. Exsic. n. 233.

Trichostomum canescens var. *ericoides* Hedwig, Stirp. 3: 7, in nota.

Trichostomum ericoides Schrader, Spic. Fl. Germ. 62 (1794).

Bryum elongatum Hoffmann, Deutsch. Fl. 2: 41 (1796).

Rhacomitrium ericoides. Bridel, Mant. 78 (1819).

Rhacomitrium canescens form. *localis* Huebener, Musc. Germ. 206 (1833).

Grimmia canescens var. *B. ericoides* C. Mueller, Synops. Musc. 1: 807 (1849).

Grimmia ericoides Lindberg, Musc. Scand. 29 (1879),

Rhacomitrium canescens var. *C. intermedium* Venture et Bottini, Soc. Critt. Ital. 3: 214 (1884).

- . **Loc.** **Taichung:** Tahsueh Shan, Hoping Hsiang, alt. 3100 m. (C.K. Wang-1260, May 9, 1961);
Nantow: Kuankao, Hsini Hsiang, alt. 2650 m.
Hab. On rock in fir forest with luxuriant undergrowth of alpine bamboo.
Distr. China, Japan, Ceylon, Sikkim, Siberia, Caucasus, Europe, North Africa, Madeira, North America.

Bryaceae

Pohlia crudoides (Sullivant et Lesquereux) Brotherus var. **revolvens**, (Cardot) Ochi, Bry. Jap. 13 (1959); Ochi Misc. Bryol. Lichenol. 3 (8): 118 (1964).

Webera revolvens Cardot, Bull. Soc. Bot. Geneve, ser. 2, 1: 125 (1909).

Pohlia longibracteata Brotherus, sensu Noguchi, Journ. Jap. Bot. 28: 78, f. 57, 9-13 (1953).

Pohlia revolvens Noguchi, Journ. Jap. Bot. 28: 77, f. 57, 1-7, excl. sporophyte (1953).

Pohlia crudoides (Sullivant et Lesquereux) Brotherus, sensu Ochi, Journ. Jap. Bot. 29: 208, f. 1 (1954).

Pohlia saprophiloides Brotherus, mss.

Loc. **Nantow:** Yu Shan, Hsini Hsiang, alt. 3820 m.

Hab. On soil in rock crevices.

Distr. Japan, Europe, Alaska-Yukon.

Pohlia longicolla (Hedwig) Lindberg, Musc. Scand. 17 (1879); Ochi, Bry. Jap. 17-19, f. 4 (1959).

Bryum longicollum Swartz, Musc. Suec. 49 (1798).

Webera longicolla (Swartz) Hedwig, Spec. Musc. 169, pl. 41, f. 1-5 (1801).

Pohlia revolvens Noguchi, sensu Noguchi, Journ. Jap. Bot. 28: 77, f. 57, 8, sporophyte only (1953).

Pholia patentissima Ochi, Jap. Bot. 29: 264, f. 2 (1954).

Webera amplifolia Dixon et Theriot, mss.

Webera formosana Dixon, mss.

Webera laticuspioides Sasaoka, mss.

Loc. **Taichung:** Hsueh Shan; **Chiai:** Yushankou-Yushan Peak and Yu Shan; **Taitung:** Tawu Shan.

Hab. On soil or sometimes on rocks.

Distr. China, Japan, Nepal; circumboreal.

Pohlia wahlenbergii (Weber et Mohr) Andrews, in Grout, Moss Fl. N. Amer. 2: 203 (1935); Ochi, Bry. Jap. 42-44 (1959).

Bryum albicans Wahlenberg, in Weber et Mohr, Ind. Musc. pl. cr. (1803).

Hypnum wahlenbergii Weber et Mohr, Bot. Tasch. 280 (1807).

Mnium albicans Wahlenberg, Fl. Lapp. 353 (1812).

Bryum wahlenbergii Schwaegrichen, Suppl. 1, P. 2, 92, t. 70 (1816).

Webera albicans Schimper, Coroll. 67 (1856).

Lamprophyllum albicans Lindberg, Oefv. Finsk. Vet. Akad. Foerhandl. (1867).

Pohlia albicans Lindberg, Musc. Scand. 17 (1879).

Mniobryum albicans Limpricht, in Rabenhorst, Deutsch. Krypt. Fl. Laubm. 2: 277 (1892).

Mniobryum albicans var. *elongatum* Sakurai, Bot. Mag. Tokyo 51: 795 (1937).

Loc. *Nantow*: Yu Shan, Hsini Hsiang, alt. 3000 m.

Hab. On soil or moist rocks.

Distr. China, Japan, Pakistan; nearly cosmopolitan, not common.

Brachymenium nepalense Hooker, in Schwaegrichen, Spec. Musc. Suppl. 2, P. 2, 131, pl. 135 (1826); Ochi, Bry. Jap. 49-50 (1959).

Bryum orthopelma C. Mueller, Linnaea 38: 550 (1874).

Brachymenium clavariaeforme (C. Mueller) Jaeger, Ber. S. Gall. Naturw. Ges. 1873-74: 119 (1875).

Brachymenium nordenskioldii Bescherelle, sensu Horikawa, Hikobia 1: 65 (1951).

Brachymenium nordenskioldii Bescherelle form. *kiiense* Horikawa et Ochi, in Ochi, Journ. Jap. Bot. 28: 338, f. 4 (1953).

Brachymenium clavulum Mitten, sensu Noguchi, Journ. Hattori Bot. Lab 13: 42 (1955).

Loc. *Nantow*: Wu She, Jenai Hsiang, alt. 1000 m.

Hab. On bark of tree or decaying wood.

Distr. China, Philippines, Japan, Indonesia, Eastern India, NW-Himalaya, Burma; tropical to warm-temperate areas in southeastern Asia and Far East.

Brachymenium nepalense Hooker var. *clavulum* (Mitten) Ochi, Bry. Jap. 50, f. 13 (1959); Nakanishi, Hikobia 3(4): 319 (1963).

Brachymenium clavulum Mitten, Trans. Linn. Soc. 8: 165 (1891).

Brachymenium nordenskioldii Bescherelle, Oefv. Finsk. Vet.-Akad. Foerhandl. 2: 291 (1900).

Brachymenium clavulum Mitten var. *pyriforme* Sakurai, Bot. Mag. Tokyo 50: 262 (1936).

Loc. *Nantow*: Tungpu, Hsini Hsiang, alt. 1100 m.

Hab. On trunk of tree in evergreen hardwood forest.

Distr. Japan and Korea.

Bryum argenteum Hedwig var. *lanatum* (P. Beauvois) Hampe, Linnaea 13: 44 (1839); Ochi, Bry. Jap. 105 & 106 (1959).

Mnium lanatum P. Beauvois, Prodr. 75 (1805).

Bryum lanatum Bridel, Spec. Musc. 3: 20 (1817).

Loc. *Chiai*: Ali Shan, Wufeng Hsiang, alt. 2300 m.

Hab. On rocks in open places.

Distr. China, Philippines, Ryukyu, Japan; cosmopolitan, common.

Bryum bicolor Dickson, Pl. Crypt. Brit. Fasc. 4: 16 (1801); Ochi, Bry. Jap. 101 & 102 (1959).

Bryum dichotomum Hedwig, Spec. Musc. 183, t. 42 (1801).

Mnium bicolor P. Beauvois, Beauvois, Prodr. 74 (1805).

Mnium dichotomum P. Beauvois, Prodr. 74 (1805).

Bryum atropurpureum Weber et Mohr, Ind. Musc. in Wahlenberg, Fl. Lapp. 390 (1812).

Bryum pulchellum B. *atropurpureum* Wahlenberg, Fl. Lapp. 360 (1812).

Bryum erythrocarpon auct. non Schwaegrichen: Bridel, Spec. Musc. 3: 18 (1817).

Bryum caespiticium Hooker et Taylor, Musc. Brit. 121 (1818).

Bryum carneum B. *pusillum* Schultz, Suppl. Fl. Starg. 84 (1819).

Bryum bulbillosum Montagne, Ann. Sci. Nat. ser. 2, Bot. 16: 268 (1841).

Bryum sasaokae Brotherus, nom. nud.

Loc. *Hsinchu*: Litung Shan, Chienshih Hsiang, alt. 1900 m.

Hab. On moist soil.

Distr. Japan; tropical to temperate areas all over the world, very rare.

Bryum caespiticium Hedwig, Spec. Musc. Frond. 180 (1801); Ochi, Bry. Jap. 86, f. 28 (1959).

Mnium caespiticium Hedwig, Fund. 2: 94 (1782).

Hyponum caespiticium Schrank, Baiers. Fl. 2: 473 (1789).

Bryum caespiticium Linnaeus, in Brotherus, Hedwigia 38: 218 (1899).

Bryum arenicola Cardot, Bull. Soc. Bot. Geneve, ser. 2, 1: 126 (1909).

Bryum symblepharum Cardot, Bull. Soc. Bot. Geneve, ser. 2, 1: 127 (1909).

Bryum crassicuspidatum Dixon, mss.

Bryum nano-caespiticium Brotherus et Paris, mss.

Loc. *Chiai* Yushankou-Yushan Peak, Wufeng Hsiang; *Nantow*: Yu Shan, Hsini Hsiang, alt. 2300 m.

Hab. On soil or rock.

Distr. China, Japan, Sakhalin, Nepal, Pakistan, New Zealand, Hawaii, Europe; widespread, common.

Bryum capillare Hedwig var. *rubrolimbatum* (Brotherus) Bartram, Philip. Journ. Sci. 68: 142 (1939); Ochi, Bry. Jap. 88 & 89 (1959).

Bryum capillare Hedwig, sensu Mitten, Journ. Linn. Soc. Bot. 8: 152 (1864).

Bryum nagasakense Brotherus, Hedwigia 38: 219 (1899).

Bryum (?) *taitumense* Cardot, Beih. Bot. Centralbl. 19: 110, f. 11 (1905).

Bryum tosanum Cardot, Bull. Soc. Bot. Geneve, ser. 2, 1: 128 (1909).

Bryum rubrolimbatum Brotherus, Philip. Journ. Sci. Bot. 5: 146 (1910).

Bryum capillare Linnaeus, sensu Horikawa, n Asahina, Nippon Inkashokubutsu Zukan 907, pl. 436, 1-5 (1939).

Bryum pallens Swartz, sensu Sakurai, Bot. Mag. Tokyo 54: 7 (1940).

Bryum capillare f. 56. *tosanum* Podp., Acta Acad. Sci. Nat. Moravo-Sil. 22, Fasc. 13. 427 (1950).

Bryum torquescens Bry. Eur., sensu Horikawa, Hikobia 1: 27 (1950).

Bryum capillare var. *nagasakense* (Brotherus) Ochi, Journ. Jap. Bot. 31: 364 (1956).

Loc. *Taichung* Shaolai Shan, Hoping Hsiang, alt. 2300 m.; *Chiai*: Ali Shan, Tzechung, Wufeng Hsiang, alt. 2600 m.; *Nantow*: Yu Shan, Hsini Hsiang.

Hab. On rocks, bark of trees, rotten logs, etc.

Distr. China, Philippines, Japan, Korea.

Bryum erythrocarpum Schwaegrichen, Spec. Musc. Suppl. 1, P. 2, 100, pl. 70 (1816); Ochi, Bry. Jap. 89-92 (1959).

Loc. *Taichung*: Onoe.

Hab. On soil of banks or on rocks.

Distr. Japan, Europe, and Africa.

Bryum julaceum Smith, Fl. Brit. **3**: 1357 (1804); Ochi, Bry. Jap. 95 (1959).

Bryum filiforme Dickson, Pl. Crypt. Fasc. 4, 16, excl. syn. (1801).

Anomobryum julaceum Schimper, Synops. **1**: 382 (1860).

Webera julacea De Notaris, Epil. Bri. Ital. 416 (1869).

Bryum (Anomobryum) filiforme Schimper, Syn. ed. 2; 465 (1876).

Anomobryum filiforme Husnot, Musc. Gall. **1**: 222, t. 60 (1888).

Pohlia filiformis Andrews, in Grout, Moss Fl. N. Am. **2**: 205, pl. 83, C (1935).

Loc. **Chiai:** Ali Shan, Wufeng Hsiang, alt. 2300 m.

Hab. On soil.

Distr. China, Ryukyu, Japan; widespread over the world, very rare.

Bryum julaceum Smith var. ***concinatum*** (Spruce) Weiss, Bryol. Brit. 246 (1855); Ochi, Bry. Jap. 95 & 96 (1959).

Bryum concinatum Spruce, Trans. Bot. Soc. Edinburgh **3**: 155 (1849).

Bryum nitidum Mitten, Journ. Linn. Soc. Bot. Suppl. **1**, 67 (1859).

Anomobryum concinatum Lindberg, Oefv. Finsk. Vet.-Akad. Foerhandl. **18**: 277 (1862).

Anomobryum julaceum var. *B. concinatum* Zett., Musc. Pyr. 34 (1866).

Anomobryum nitidum (Mitten) Jaeger, Adumb. **1**: 604 (1873-74).

Anomobryum gemmigerum Brotherus, Philip. Journ. Sci. Bot. **5**: 146 (1910).

Anomobryum japonicum Brotherus, Oefv. Finck. Vet.-Soc. Foerhandl. **62**: 16 (1919-20).

Bryum rubridens Dixon et Sakurai, in Sakurai, Bot. Mag. Tokyo **51**: 11 (1937).

Anomobryum filiforme var. *juliforme* (Solms.) Husnot, sensu Noguchi, Journ. Hattori Bot. Lab. **12**: 29 (1954).

Bryum japonico-gemmigerum Brotherus et Yasuda, mss.

Loc. **Taipei:** Chüchih, Hsintien County, alt. 300 m.; **Hsinchu:** Smahsien Shan, Chienshih Hsiang (?); **Taichung:** Hsiaohsueh Shan, Hoping Hsiang, alt. 2800 m. (C. K. Wang-678 & 679, Feb. 17, 1960); **Chiai:** Yushankou—Yu Shan Peak, Wufeng Hsiang; **Kaohsiung:** Yu Shan, upstream area of Lonung Chi, Taoyuan Hsiang, alt. 2700 m.; **Hualien:** Tailuko Shan.

Hab. On rock under pine trees in alpine grassland and on moist rock near creek.

Distr. China, Ryukyu, Japan, Manchuria; widespread over the world, not common.

Bryum noguchii Ochi, Journ. Jap. Bot. **31**: 364, f. 5 (1956); Ochi, Misc. Bryol. Lichenol. **2**(10): 155 (1962).

The Formosan plant was collected by Syogo Okamoto in 1938 and since then the specimen has been deposited in the Kyoto University herbarium where it was found and studied by Harumi Ochi in 1961.

Loc. **Taitung:** Kuan Shan, Haijui Hsiang.

Hab. On rock in evergreen hardwood forest.

Distr. Ryuku and Japan; rare.

Bryum pallescens Schleichten, in Schwaegrichen, Spec. Musc. Suppl. **1**, P. 2, 107, pl. 75 (1816); Nakanishi, Hikobia **3**(4): 326 (1963).

Bryum pallescens var. *quelpartense* Cardot, Bull. Soc. Bot. Geneve, ser. 2, 1: 127 (1909).

Bryum pendulum var. *longisetum* Warnstorf, sensu Sakurai, Bot. Mag. Tokyo 66: 162 (1953).

Bryum pallescens var. *boreale* (schwaegrichen) Bry. Eur., sensu Ochi, Journ. Jap. Bot. 29: 267, f. 5 (1954).

Loc. *Kaohsiung*: Yu Shan, upstream area of Lonung Chi, Taoyuan Hsiang, alt. 2655 m.

Hab. On moist soil in rock crevice.

Distr. Japan, Korea, Pakistan, Kashmir; circumboreal, not common.

Bryum porphyroneuron C. Mueller, Bot. Zeit. 22 (1853); Ochi, Bry. Jap. 93-95, f. 30 (1959).

Bryum ambiguum Duby, sensu Sasaoka, Trans. Nat. Hist. Soc. Formosa 18: 87 (1928).

Loc. *Hsinchu*: Yulo Shan, chienshih Hsiang; *Nantow*: Chilaichu Shan, Jenai Hsiang;

Hualien Panpien, Hsiulin Hsiang.

Hab. On rocks or bark of trees.

Distr. Ryukyu, Japan, India, Sikkim, Ceylon, Sumatra, Java; very rare.

Bryum pseudo-alpinum Renauld et Cardot, Bull. Soc. Bot. Belg. 34: 62 (1895); Ochi, Bry. Jap. 99 & 100 (1959).

Bryum poeciloblepharum Cardot, Bull. Soc. Bot. Geneve, ser. 2, 1: 126 (1909).

Bryum nano-alpinum Brotherus, Oefv. Finsk. Vet.-Soc. Foerh. 62: 20 (1919-20).

Bryum pseudo-alpinum Bescherelle, in Sakurai, Musc. Jap. 77 (1954).

Loc. *Chiai*: Ali Shan, Wufeng Hsiang.

Hab. On rocks or soil nearby rocky or soil banks.

Distr. China, Ryukyu, Japan, NW-Himalaya, Sikkim, India, Pakistan, Kashmir, and Korea; not common.

Bryum pseudotriquetrum (Hedwig) Schwaegrichen, Spec. Musc. Suppl. 1, P. 2, 110 (1816); Ochi, Bry. Jap. 78-81, f. 25, A-G (1959).

Mnium pseudotriquetrum Hedwig, Spec. Musc. 190 (1801).

Mnium bimum Bridel, Musc. Rec. 3: 93 (1803).

Hypnum pseudotriquetrum Weber et Mohr, Bot. Taschenb. 288 (1807).

Bryum subobliquum Lindgr., Bot. Not. 18 (1842).

Bryum neodamense Itzigsohn, in C. Mueller, Syn. 1: 258 (1848).

Bryum haematocarpum C. Mueller et Kindberg, in Macoun, Cat. Can. Pl. 6: 125 (1829).

Bryum euryloma Cardot et Theriot, Bot. Gaz. 30: 20 (1900).

Bryum crispulum Hampe, in Hagen, Musc. Norv. Bot. 205 (1901).

Bryum cylindrico-arcuatum Philib., Proc. Wash. Acad. Sci. 4: 319, pl. 18, f. 2 (1902).

Bryum brevicuspis Cardot et Theriot, Bot. Gaz. 37: 373, pl. 22, f. 3 (1904).

Bryum dimorphophyllum Cardot et Theriot, Bot. Gaz. 37: 375 (1904).

Bryum ventricosum var. *angustatum* Cardot, Beih. Bot. Centralbl. 17: 19 (1904).

Bryum subpercurrinetinerve Kindberg, Rev. Bryol. 32: 37 (1905).

Bryum pseudotriquetrum var. *obtusomucronatum* Cardot, Bull. Soc. Bot. Geneve, ser. 2, 1: 127 (1909).

Bryum ventricosum var. *vestitum* Brotherus, Oefv. Finsk. Vet.-Soc. Foerh. 62: 19 (1919-20).

Bryum pseudotriquetrum var. *elatum* Noguchi, Journ. Jap. Bot 28: 80, f. 58 (1853).

Bryum turbinatum (Hedwig) Schwaegrichen, sensu Sakurai, Bot. Mag. Tokyo 66: 162 (1953).

Bryum purpurascens (R. Brown) Bry. Eur., sensu Sakurai, Musc. Jap. 75 (1954).

Bryum ventricosum var. *latifolium* Linderg, sensu Sakurai, Musc. Jap. 76 (1954).

Bryum suzukii Brotherus, nom. nud.

Bryum ventricosum var. *tobae* Sasaoka, mss.

Loc. *Chiai*: Ali Shan, Tzechung, Wufeng Hsiang, alt. 2600 m.; *Ilan*: Taiping Shan, Tatung Hsiang.

Hab. On moist rocks or soil, often partly submerged in water.

Distr. Japan, Korea, Kashmir, and Pakistan; almost cosmopolitan.

Bryum pseudotriquetrum (Hedwig) Schwaegrichen var. *gracilens* (Cardot) Ochi, Bry. Jap. 81 (1959); Shin, Hikobia 4: 131 (1964).

Bryum gracilens Cardot. Bull. Soc. Bot. Geneve, ser. 2, 1: 128 (1909).

Loc. *Chiai*: Ali Shan—Yushankou, Wufeng Hsiang; *Nantow*: Patungkuan, Hsini Hsiang, alt. 3000 m., and Yu Shan.

Hab. On soil and rock in shaded place.

Distr. Japan.

Bryum pulchro-alare Brotherus, Rev. Bryol. 56: 5 (1929); Ochi, Bry. Jap. 98 & 99 (1959).

Loc. *Nantow*: Patungkuan, Hsini Hsiang; *Taitung*: Peiyuan Tsun, Tungho Hsiang, alt. 400 m. (C. K. Wang-911, Mar. 24, 1961).

Hab. On rock submerged in water in evergreen hardwood forest.

Distr. Japan.

Bryum yasudae Ochi, Bry. Jap. 97 & 98 (1959).

Anomobryum yasudae Brotherus, Oefv. Finsk. Vet.-Soc. Foerhandll. 62: 16 (1919-20).

Anomobryum patulifolium Dixon, mss.

Loc. *Nantow*: Lolo, Hsini Hsiang; *Kaohsiung*: Yu Shan, upstream area of Lonung Chi, Taoyuan Hsiang, alt. 2670 m.

Hab. On moist rock near stream in evergreen hardwood and conifer forest.

Distr. Japan.

Intergeneric hybrid [*Bryum argenteum* var. *lanatum* (P. Beauvois) B.S.G. × *Brachymenium exile* (Dozy et Molkenboer) Bosch et Lacoste] Ochi, Journ. Jap. Bot. 29: 49, f. 1 (1954); Shin, Hikobia 4: 131 (1964).

Loc. *Chiai*: Ail Shan—Yushankou, Wufeng Hsiang; *Nantow*: Yu Shan, Hsini Hsiang.

Hab. On soil.

Distr. Japan and Viet-Nam.

Mniaceae

Mnium striatulum Mitten, Trans. Linn. Soc. Lond. ser. 2, Bot. 3: 166 (1891); Nakanishi, Hikobia 3(4): 326 (1963).

Mnium glabrescens Kindberg, Notes on Canada Bryol. (1893).

Loc. *Kaohsiung*: Yu Shan, upstream area of Lonung Chi, Taoyuan Hsiang, alt. 2670 m.

Hab. On moist rock near stream.

Distr. Japan and North America.

Hypnodendraceae

Hypnodendron vitense Mitten, in Seemann, Fl. Vit. 401 (1865-73); Noguchi, Sci. Rep. Tohoku Univ. ser. 4, Bio. 29(3-4): 146 (1963).

Hypnodendron formosicum Cardot, Beih. Bot. Centralbl. 19: 147, f. 39 (1905).

Having examined several collections of the plant from the Ryukyu Islands and that from the Philippines, Noguchi concludes that *H. formosicum* is identical with *H. vitense*.

Loc. *Taipei*: Tatun Shan, Sanchih Hsiang, alt. 500 m.; *Miaoli*: Chunghsueh Shan, Taian Hsiang, alt. 2400 m. (C. K. Wang-799, Oct. 18, 1960).

Hab. On soil rich in humus in hemlock, pine, and cedar mixed forest.

Distr. Philippines, Ryukyu, Fiji, and Solomon Islands.

Bartramiaceae

Bartramia halleriana Hedwig, Spec. Musc. Frond. 164 (1801); Nakanishi. Hikobia 3(4): 321 (1963).

Bryum norvegicum Gunnerus, Fl. Norveg. 2: 138 (1772).

Bryum laterale Lightf., Fl. Scot. 2: 727 (1777).

Bryum pendulum Oeder, Fl. Dan. 5, t. 823 (1780).

Webera halleriana Hedwig, Fund. 2: 95 (1782).

Webera clandestina Hedwig, Fund. 2: 104, t. 6, f. 30 (1782).

Bryum pomiforme *B. halleri* Villare, Pl. Dauph. 3: 878 (1786).

Bryum recurvum Wulfenius, in Jacquin, Collect. 2: 224 (1788).

Bryum alpinum Wulfenius, Berlin Schrift. 3(1): 156

Bryum bartramia Gmelin, in Linnaeus, Syst. Nat. 2: 1335 (1791).

Mnium laterale Hoffmann, Deutsch. Fl. 2: 54 (1796).

Bartramia lateralis Clairv.

Bartramia norvegica Lindberg, Oefv. Finsk. Vet.-Akad. Foerhandl. 20(7): 389 (1863).

Bartramia alpicola Noguchi, Journ. Jap. Bot. 14: 401, f. 9 (1938) fide Noguchi, Journ. Jap. Bot. 35: 307 (1960).

Loc. *Hsinchu*: Kuei Shan, Wufeng Hsiang, alt. 2300 m. (C. K. Wang-1661, April 1, 1962) and alt. 2400 m. (C. K. Wang-1646, April 1, 1962); *Taichung*: Anma Shan, Hoping Hsiang, alt. 2200 m. (C. K. Wang-6, Dec. 3, 1958); *Miaoli*: Chunghsueh Shan, Taian Hsiang, alt. 2500 m. (C. K. Wang-791, Oct. 17, 1960); *Chiai*: Yushankou-Yushan Peak, Wufeng Hsiang; *Nantow*: Tuikuan, Hsini Hsiang, alt. 2130 m.

Hab. On soil rich in humus and on rotten wood in hardwood and conifer mixed forest, on trunk of fir tree in hemlock, pine, cedar, and fir mixed forest, and on gravel soil in alpine grassland.

Distr. China, Japan, Asia, Europe, Africa, Kilimandjaro, southern part of South America, North America, Hawaii, Tasmania, New Zealand.

Bartramia ithyphylla Bridel, Musc. Recent. 2(3): 132, t. 1, f. 6 (1803); Ochi, Nov. Hedwigia 4(1-2): 90 (1962).

Bartramia pomiformis non Linnaeus: Swartz, Musc. Suec. 75 (1799).

Bartramia deciduaefolia Brotherus et Yasuda, Bot. Mag. Tokyo 29: 23, pl. 3 (1915).

Bartramia morrisonensis Noguchi, Journ. Jap. Bot. 14: 403, f. 10 (1938).

Loc. **Taichung:** Hsiaohsueh Shan, Hoping Hsiang, alt. 2600 m. (C. K. Wang-722, Oct. 14, 1960); **Chiayi:** Ali Shan, Yushankou-Yushan Peak, and Lulin Shan, Wufeng Hsiang; **Nantow:** Tuikuan, Hsini Hsiang, alt. 2100 m.

Hab. On soil rich in humus in hardwood or in conifer and hardwood mixed forest, or sometimes on sandy soil and rotten wood.

Distr. China, Japan, Nepal, NW-Himalayas, Siberia, Caucasus, Czechoslovakia, Norway, Sweden, North America, Alaska, and Kamchatka.

Philonotis falcata (Hooker f.) Mitten var. ***carinata*** (Mitten) Ochi, Nov. Hedwigia 4: 100-102 (1962).

Philonotis carinata Mitten, Trans. Linn. Soc. Bot. 3: 164 (1891).

Philonotis laxiretis Cardot, Bull. Soc. Geneve, ser. 2, 1: 122 (1909).

Philonotis falcata (Hooker f.) Mitten, pro parte in Kabiersch, Hedwigia 77: 108 (1938).

Philonotis tenuissima Cardot, sensu Noguchi, in Osada, Journ. Hattori Bot. Lab. 19: 63 (1958).

Loc. **Taipei:** Tatun Shan, Sanchih Hsiang, and Chuchih, Hsintien County.

Hab. On moist rock in shaded place.

Distr. Ryukyu, Japan, and Korea.

Philonotis fontana (Hedwig) Bridel, Bry. Univ. 2: 18 (1827); Ochi, Nova Hedwigia 4: 102 (1962).

Mnium fontanum Hedwig, Spec. Musc. Frond. 195 (1801).

Philonotis lutea Mitten, Journ. Proc. Linn. Soc. Suppl. 1, 63 (1859).

Didymodon mollis Schimper, Synops. ed. 2, 167 (1876).

Loc. Without definite locality.

Hab. On soil in wet place.

Distr. Japan, Korea, NW-Himalaya, India, Pakistan, Kashmir, Sikkim, Nepal, Scotland, France, Czechoslovakia, California, North Carolina.

Philonotis hastata (Duby) Wijk et Margadant, Taxon 8: 74 (1959); Ochi, Nova Hedwigia 4: 98 (1962).

Bartramia glomerata Wilson, in sched.

Bartramia laxissima C. Mueller, Synops. Musc. 1: 480 (1849).

Philonotis glomerata (Wilson) Mitten, Journ. Linn. Soc. Bot. Suppl. 1, 60 (1859).

Philonotis laxissima (C. Mueller) Bosch et Lacoste, Bryol. Jav. 1: 154, t. 124 (1861).

Bartramia wallisi C. Mueller, Linnaea 38: 554 (1874).

Loc. **Taoyuan:** Fuhsing Hsiang; **Taichung:** Pahsien Shan, Hoping Hsiang.

Hab. On damp rock.

Distr. Philippines, Ryukyu, Celebes, Borneo, Java, Sumatra, Himalaya, India, Sikkim, Amboyna, Samoa, Hawaii, Madagascar.

Philonotis revoluta Bosch et Lacoste, Bryol. Jav. **1**: 158 (1861); Ochi, Nova Hedwigia **5**: 96 (1963).

Philonotis setchuanica (C. Mueller) Paris, Ind. Bryol. Suppl. **1**, 168 (1900).

Philonotis plumulosa Cardot et Theriot, Bull. Acad. Int. Geogr. Bot. **271** (1911).

Philonotis setchuannica (C. Mueller) Paris form. *laxifolia* Dixon, mss.

Loc. **Taipei:** Chüchih, Hsintien County; **Hsinchu:** Luchangta Shan, Naoliao-Chingchuan, Wufeng Hsiang, alt. 1500 m. (C. K. Wang-1674, April 2, 1962); **Chiai:** Tungtzechiao, Chungpu Hsiang, alt. 350 m. (C. K. Wang-457, July 13, 1960); **Nantow:** Chitou, Luku Hsiang; **Ilan:** Taiping Shan and Tayuan Shan, Tatung Hsiang, alt. 900 m. (C. K. Wang-393, Aug. 14, 1959) and alt. 1780 m. (C. K. Wang-310, Aug. 7, 1959).

Hab. On wet rock and moist soil rich in humus covering rock in evergreen hardwood forest.

Distr. China, Philippines, Ryukyu, Japan, Viet-Nam, India, Sumatra, Java, Lombok, Borneo.

Breutelia chrysocoma (Dickson) Lindberg, Oefv. Finsk. Vet.-Akad. Foerhandl. **7** (1863); Yang & Lee, Bot. Bull. Acad. Sinica, n. ser. **5** (2): 183 (1964).

Hypnum chrysocomum Dickson, Pl. Crypt. Brit. Fasc. **2**, 12 (1790).

Mnium arcuatum Dickson, Pl. Crypt. Brit. Fasc. **3**, **2**, t. **7**, f. **3** (1793).

Bryum arcuatum Hull, Br. Fl. P. **2**, 255 (1799).

Mnium chrysocomum Hedwig, Spec. Musc. Frond. **74** (1801).

Bartramia arcuata Swartz, in Schrader, Journ. Bot. **2**: 182 (1801).

Breutelia arcuata Schimper, Coroll. **85** (1856).

Loc. **Nantow:** Chitou, Luku Hsiang, alt. 1600m.

Hab. On decaying log.

Distr. Great Britten, Norway, W-Finland, Swiss, Pyrenees, Corsica

Orthotrichaceae

Macrocoma hymenostomum (Montagne) Grout, N. Am. Flora **15**(A): 42 (1946) fide Iwatsuki, Journ. Hattori Bot. Lab. **20**: 324 (1958).

Macromitrium hymenostomum Montagne, Ann. Sci. Nat. Bot. **4**: 190 (1845).

Macromitrium dregei auct. non Hornschuch: Sullivant, Moss. U. S. **31** (1856).

Macromitrium sullivanii C. Mueller, Bot. Zeit. **20**: 361 (1862).

Macromitrium mexicanum Mitten, Journ. Linn. Soc. Bot. **12**: 198 (1869).

Macromitrium paraphysatum Mitten, Journ. Linn. Soc. Bot. **12**: 198 (1869).

Macromitrium leiboldtii Hampe, Bot. Zeit. **28**: 50 (1870).

Macromitrium ghiesbreghtii Bescherelle, Mem. Soc. Sci. Nat. Cherbourg **16**: 188 (1872).

Macromitrium fitzgeraldi Lesquereux et James, Man. **178** (1884).

Macromitrium bolivianum C. Mueller, Nuov. Giorn. Bot. Ital. n. ser. **4**: 126 (1897).

Macromitrium (Macrocoma) consanguineum Cardot, Beih. Bot. Centralbl. **17**: **11**, f. **6** (1904).

Macromitrium okamurae Brotherus, Oefv. Finsk. Vet.-Soc. Foerhandl. **62**: 13 (1920) fide Iwatsuki Journ. Hattori Bot. Lab. **20**: 324 (1958).

Macrocoma sullivantii (C. Mueller) Grout, Bryologist 47(1): 5 (1944).

Loc. **Taichung:** Hsiaohsueh Shan—Tahsueh Shan, Hoping Hsiang, alt. 2600 m. (C. K. Wang-1220, May 8, 1961).

Hab. On bark of hemlock tree in pine and hemlock mixed forest.

Distr. China, Japan, North America and South America.

Trachypodaceae

Trachypus bicolor Reinwardt et Hornschuch, Nov. Act. Acad. Leop. Carol. 14, P. 2, Suppl. 708, t. 39 (1826); Horikawa & Ando, Nature & Life in Southeast Asia 3: 13 (1964).

Trachypus haleakalae Brotherus, Bull. Soc. Bot. Ital. 24 (1904).

Loc. **Hsinchu:** Kuei Shan, Wufeng Hsiang, alt. 2300m. (C. K. Wang-1594 & 1622a, April 1, 1962); **Taichung:** Anma Shan, Hopng Hsiang, alt. 2300 m. (C. K. Wang-639, Feb. 15, 1960) and Tahsueh Shan—Touying Shan, Hoping Hsiang, alt. 3200 m. (C. K. Wang-1301, May 10, 1961).

Hab. On trunk of tree and on soil covering rock in hardwood and conifer mixed forest, and on rock in fir forest with luxuriant undergrowth of alpine bamboo.

Distr. China, Philippines, Japan, Ceylon, India, Nepal, Thailand, Java, Sumatra, Celebes, New Guinea, Fiji, Hawaii.

Duthiella flaccida (Cardot) Brotherus var. **media** (Noguchi) Zanten, Blumea 9: 569 (1959).

Duthiella media Noguchi, Journ. Hattori Bot. Lab. 2: 61, f. 14 (1947).

Loc. **Taipei:** Ayu Shan, Wulai Hsiang, alt. 1400m.

Hab. On rock.

Distr. Endemic.

Meteoriaceae

Chrysocladium phaeum (Mitten) Fleischer, Musc. Fl. Buit. 3: 830 (1908); Noguchi, Journ. Hattori Bot. Lab. 28: 152, f. 4 (1965).

[†] *Meteorium phaeum* Mitten, Journ. Proc. Linn. Soc. Bot. Suppl. 1, 87 (1859).

Meteorium infuscatum Mitten, Journ. Proc. Linn. Soc. Bot. Suppl. 1, 91 (1859).

Papillaria tumido-aurea (C. Mueller) Renauld et Cardot, Bull. Soc. Roy. Bot. Belgique 71 (1902-03).

Chrysocladium robustum Noguchi, Trans. Nat. Hist. Soc. Formosa 24: 120 (1934).

Loc. **Chiai:** Ali Shan, Tsechung, Wufeng Hsiang, alt. 2600 m.

Hab. Hanging from trunk of tree in conifer forest.

Distr. Sikkim.

Barbella enervis (Thwaites et Mitten) Fleischer, in E. & P., Nat. pflanzenfam. ed. 1, 3: 824 (1906); Noguchi, Journ. Hattori Bot. Lab. 28: 149, f. 2, 1-2 (1965).

Meteorium enerve Thwaites et Mitten, Journ. Linn. Soc. Bot. 13: 317 (1873).

Meteorium determesii Renauld et Cardot, Bull. Soc. Roy. Bot. Belgique 25 (1900).

Barbella determesii (Renauld et Crdot) Fleischer, in E. & P., Nat. Pflanzenfam. ed. 1, 3: 824 (1906).

Barbellopsis sinensis Brotherus, Symb. Sin. 4: 83 (1929).

Barbella densiramea Brotherus, Rev. Bryol. n. ser. 2: 8 (1929).

Aptychopsis uii Sakurai, Bot. Mag. Tokyo 57: 471, f. 4 (1938).

Loc. **Taoyuan:** Fuwu Shan, Fuhsing Hsiang: **Hsinchu:** Luchangta Shan, Naoliao—Kuei Shan, Wufeng Hsiang, alt. 1700 m. (C. K. Wang-1548, Mar. 31, 1962) and alt. 1800 m. (C. K. Wang-1555, Mar. 31, 1962); **Kaohsiung:** Nanfeng Shan, Maolin Hsiang, alt. 1400 m. (C. K. Wang-1022, Mar. 29, 1961).

Hab. Hanging from branch and trunk of broad-leaved tree and on log in evergreen hardwood forest.

Distr. Philippines, Japan, Himalayas, Nilghiris, Ceylon, Lord Howe Island, New Caledonia, Australia.

Meteoriopsis squarrosa (Hooker) Fleischer, in E. & P., Nat. Pflanzenfam. ed. 1, 3: 826 (1906); Yang & Lee, Bot. Bull. Acad. Sinica, n. ser. 5(2): 183 (1964).

Neckera squarrosa Hooker, Ic. Pl. Rar. pl. 22, f. 3 (1837).

Meteorium squarrosulum Mitten, Journ. Linn. Soc. Bot. Suppl. 1, 87 (1859).

According to Iwatsuki both Horikawa's specimens (1935 & 1939) are identical with *M. formosana* Nog.

Loc. **Nantow:** Chitou, Luku Hsiang.

Hab. On cliff.

Distr. China, Philippines, Ceylon, India, Himalayas, Nepal, Malay Pen., Thailand, Indonesia. Malacca, Sumatra, Java.

Floribundaria sparsa (Mitten) Brotherus, in E. & P., Nat. Pflanzenfam. ed. 1, 3: 822 (1906); Noguchi, Journ. Hattori Bot. Lab. 28: 150 & 151, f. 3, 1-6 (1965).

Meteorium sparsum Mitten, Journ. Proc. Linn. Soc. Bot. Suppl. 1, 158 (1859).

Meteorium hookeri Mitten, Journ. Linn. Soc. Bot. Suppl. 1, 89 (1859).

Papillaria formosana Noguchi, Trans. Nat. Soc. Formosa 24: 119 (1934).

Loc. **Hsinchu.** Litung Shan, Chienshih Hsiang, and Luchangta Shan, Naoliao—Kuei Shan, Wufeng Hsiang, alt. 1700 m. (C. K. Wang-1548a, Mar. 31, 1962).

Hab. Hanging from branch and trunk of tree in evergreen hardwood forest.

Distr. India, Nepal, Himalayas.

Neckeraceae

Calyptothecium hookeri (Mitten) Brotherus, in E. & P., Nat. Pflanzenfam. ed. 1, 3: 839 (1906); Noguchi, Bot. Mag. Tokyo 78: 63 & 64, f. 1-3 (1965).

Meteorium hookeri Mitten, Journ. Linn. Soc. Bot. Suppl. 1, 86, pro parte (1859).

Meteoriella cuspidata Okamura, Journ. Coll. Sci. Imp. Univ. Tokyo 38(4): 34, f. (1916).

Calyptothecium sikkimense Brotherus, in sched.

Loc. **Hsinchu:** Yulo Shan, Chienshih Hsiang.

Hab. Hanging from branch of tree in evergreen hardwood forest.

Distr. China, Japan, Thailand, Himalayas, Khasia, Sikkim, and Burma.

Calyptothecium urvilleanum (C. Mueller) Brotherus, in E. & P., Nat. Pflanzenfam. ed. 1, 3: 839 (1906); Noguchi, Bot. Mag. Tokyo 78: 66 (1965).

Neckera urvilleanum C. Mueller, Synops. Musc. 2: 52 (1851).

Calyptothecium praelongum Mitten, Journ. Linn. Soc. Bot. 12: 190 (1869).

Calyptothecium philippinse Brotherus, Monsunia 1: 48 (1900).

Calyptothecium japonicum Theriot, Le Monde des Plantes 9: 22 (1907).

Calyptothecium densirameum Brotoerus, Rev. Bryol. 56: 9 (1929).

Loc. **Taipei:** Wulai, Wulai Hsiang; **Hsinchu:** Luchangta Shan, Naoliao—chingchuan, Wufeng Hsiang, alt. 1300 m. (C. K. Wang-1676, April 2, 1962); **Kaohsiung:** Nanfeng Shan, Maolin Hsiang, alt. 1200 m. (C. K. Wang-1053, Mar. 29, 1961); **Pingtung:** Laii Hsiang; **Ilan:** Taiping Shan and Tuchang Tsun, Tatung Hsiang; **Taitung:** upstream area of Luming Chi, Hungyeh Tsun, Yenping Hsiang, alt. 1100 m. (C. K. Wang-955, Mar. 26, 1961), and Wutou Shan, Peinan Hsiang.

Hab. Hanging from moist rock and trunk of tree in evergreen hardwood forest.

Distr. Philippines and Ryukyu.

Calyptothecium wightii (Mitten) Fleischer, Hedwigia 45: 62 (1905); Noguchi, Bot. Mag. Tokyo 78: 65, f. 7-8 (1965).

Meteorium wightii Mitten, Journ. Linn. Soc. Bot. Suppl. 1, 85 (1859).

Pterobryopsis subacuminata Brotherus et Paris, Rev. Bryol 34: 45 (907).

Calyptothecium formosanum Brotherus, Oefv. Finsk. Vet.-Soc. Foerhandl. 62: 23 (1919-20)

Loc. **Pingtung:** Laii Hsiang.

Hab. Hanging from rock and branch of tree in evergreen hardwood forest.

Distr. China, Burma, and Nepal.

Neckera crenulata Harvey, in Hooker, Icon. Plant. Rar. t. 21, f. 6 (1836); Noguchi, Journ. Hattori Bot. Lab. 28: 154 (1965).

Neckera luzonensis Williams, Bull. N. Y. Bot. Gard. 8: 358 (1914).

Himantocladium strictum Dixon, Journ. Siam Soc. Nat. Hist. Suppl. 9(1): 30 (1932).

Himantocladium scabrisetum Dixon, Journ. Bombay Nat. Hist. Soc. 39(4): 784 (1937).

Calyptothecium luzonense (Williams) Bartram, Philip. Journ. Sci. 68: 235 (1939).

Loc. Without definite locality.

Hab. On trunk of tree.

Distr. China, Philippines, Thailand, Burma, Assam, Nepal, Himalayas.

Neckera konoii Brotherus ex Cardot, Bull. Soc. Bot. Geneve, ser. 2, 3: 277 (1911); Nakanishi, Hikobia 3(4): 322 (1963).

Loc. **Nantow:** Kuankao, Hsini Hsiang, alt. 2400 m.

Hab. On trunk of tree.

Distr. Japan.

Hookeriaceae

Distichophyllum collenchymatosum Cardot, Bull. Soc. Bot. Geneve, ser. 2, 3: 278 (1911); Yang & Lee, Taiwaniana 10: 79 (1964).

Distichophyllum gracilicaule auct. non Fleischer; Sakurai, Bot. Mag. Tokyo 47: 337 (1933).

Distichophyllum sinense Dixon, Hong Kong Natur. Suppl. 2, 22 (1933).

Distichophyllum tutigae Ihsiba, Trans. Sapporo Nat. Hist. Soc. **13**: 395 (1934).

Distichophyllum sikokuense Dixon, Bryol. n. ser. **13**: 14 (1942).

Distichophyllum acutifolium Dixon, Rev. Bryol. n. ser. **13**: 15 (1942).

Loc. *Han*: Chiao-chi, Chiaochi Hsiang.

Hab. On wet rock near waterfall.

Distr. China, Ryukyu, Japan, and Hongkong.

Distichophyllum nigricaulis Mitten, Bryol. Jav. **2**: 19 (1891); Yang & Lee, Taiwania **10**: 80 (1964).

Distichophyllum elmeri Brotherus, Leaf. Philip. Bot. **2**: 656 (1909).

Loc. *Taipei*: Kankou, Wanli Hsiang.

Hab. On soil.

Distr. Philippines and Java.

Eriopus parviretus Fleischer, Laubmfl. Java **3**: 1008 (1908); Yang & Lee, Taiwania **10**: 81 (1964).

Eriopus microblastus Brotherus, Philip. Journ. Sci. Bot. **8**: 82 (1913).

Loc. *Taipei*: Wen Shan, Wulai Hsiang, alt. 950 m.

Hab. On soil.

Distr. Philippines, Ryukyu, and Java.

Hookeriopsis sumatrana (Bosch et Lacoste) Brotherus, in E. & P., Nat. Pflanzenfam. ed. 1, **3**: 942 (1907); Yang & Lee, Taiwania **10**: 84 (1964).

Pterygophyllum sumatranum Bosch et Lacoste, Bryol. Jav. **2**: 38 (1861).

Loc. *Taichung*: Anma Shan, Hoping Hsiang, alt. 2000 m; *Kaohsiung*: Nanfeng Shan, Maolin Hsiang, alt. 1200 m. (C. K. Wang-1082, Mar. 30, 1961).

Hab. On rotten wood and rock in evergreen hardwood forest.

Distr. Sumatra and Java.

Actinodontium raphidostegum (C. Mueller) Bosch et Lacoste, Bryol. Jav. **2**: 37, pl. 160 (1862); Iwatsuki, Journ. Jap. Bot. **39**(6): 180 (1964).

Hookeria raphidostega C. Mueller, Syn. **2**: 677 (1851).

Lepidopilum raphidostegum Brotherus, in E. & P., Nat. Pflanzenfam. ed. 1, **3**: 959 (1907).

Loc. *Nantow*: Chitou, Luku Hsiang, alt. 1200 m. (C. K. Wang-203, April 2, 1959), and Yu Shan, Hsini Hsiang.

Hab. On rock and on soil rich in humus.

Distr. Philippines, Celebes, Borneo, and Java.

Chaetomitrium acanthocarpum Bosch et Lacoste, Bryol. Jav. **2**: 44 (1862); Yang & Lee, Taiwania **10**: 75 (1964).

Loc. *Chiai*: Ali Shan, Wufeng Hsiang, alt. 2400 m.

Hab. On rock.

Distr. Java.

Chaetomitrium orthorrhynchum (Dozy et Molkenboer) Bosch et Lacoste, Bryol. Jav. **2**: 45 (1862); Yang & Lee, Taiwania **10**: 76 (1964).

Hookeria orthorrhyncha Dozy et Molkenboer, Ann. Sci. Nat. Bot **2**: 305 (1844).

Loc. Taitung: Changyuan, Changping Hsiang.

Hab. On branch of tree.

Distr. Philippines, Celebes, Borneo, Sumatra, Java.

Symphyodontaceae

Symphyodon perrottetii Montagne, Ann. Sci. Nat. Bot. 279 (1841); Ando et Seki, Hikobia 3 (2): 80-84, f. 1-3 (1962).

Glossadelphus recurvo-marginatus Dixon et Sakurai, Bot. Mag. Tokyo 50: 620, f. 10 (1936).

Sakurai noted a collection of the plant from Formosa in 1941.

Loc. Taitung: Tawu Shan, Chinshan Hsiang.

Hab. On bark of tree.

Distr. Ryukyu, Japan, Viet-Nam, Laos, Ceram, Halmahera, Java, S-India, Ceylon.

Theliaceae

Myurella julacea (Villars) B.S.G., Bryol. Eur. Fasc. 46-47, Mon. (1851); Nakanishi, Hikobia 3(4): 325 (1963).

Hypnum julaceum Villars, Hist. Pl. Dauph. 3: 909 (1789).

Leskea julacea Schwaegrichen. Schultes Reise auf d. Glockner 2: 363 (1804).

Loc. Nantow: Yu Shan, Hsini Hsiang, alt. 3850 m.

Hab. On soil in crevice of rock in sheltered place.

Distr. China and Japan, Europe, North America; circumboreal.

Fabroniaceae

Habrodon leuchotrichus (Mitten) Persson, Svensk. Bot. Tidskr. 40: 319 (1946); Nakanishi Hikobia 3(4): 325 (1963).

Heterocladium leuchotrichus Mitten, Trans. Linn. Soc. Bot. 3, 3: 176 (1891).

The genus is a new addition to the flora of Formosa.

Loc. Nantow: Yu Shan, Hsini Hsiang, alt. 3600 m.

Hab. On bark of *Rhododendron pseudochrysanthum* in scrub covering the rocky lower slope of the peak of Yu Shan.

Distr. Asia, Europe, North America; circumboreal.

Leskeaceae

Pseudoleskeopsis japonica (Sullivant et Lesquereux) Iwatsuki, Journ. Hattori Bot. Lab. 29: 58 (1966).

Hypnum japonicum Sullivant, in Perry, Narr. Exp. China Japan 2: 330 (1857).

Hypnum orbiculatum Mitten, Journ. Linn. Soc. Bot. Suppl. 1, 84 (1859).

Leskea orbiculata Mitten, Journ. Linn. Soc. Bot. 8: 154 (1864).

Lasia fruticella Mitten, Trans. Linn. Soc. Bot. 3, 3: 175 (1891).

Pseudoleskeopsis orbiculata (Mitten) Brotherus, in E. & P., Nat. Pflanzenfam. ed. 1, 3: 1003 (1908).

Pseudoleskeopsis fauriei Brotherus, Philip. Journ. Sci. Bot. 13: 214 (1918).

Pseudoleskeopsis tsunodae Brotherus, mss.

Loc. **Taipei:** Karobetz, alt. 300 m.; **Hsinchu:** Luchangta Shan, Chingchuan—Naoliao, Wufeng Hsiang, alt. 1000 m. (C. K. Wang-1513, Mar. 30, 1962); **Taitung:** Hsinhua Tsun, Tajen Hsiang, alt. 750 m. (C. K. Wang-807, Aug. 4, 1960).

Hab. On rock in evergreen hardwood forest.

Distr. Japan and Khasia.

Thuidiaceae

Haplohymenium longinerve (Brotherus) Brotherus, in E. & P., Nat. Pflanzenfam. ed. 1, **3**: 986 (1907); Watanabe, Journ. Jap. Bot. **39**(9): 272 (1964).

Anomodon longinervis Brotherus, Hedwigia **38**: 243 (1899).

Anomodon aculeatus Paris et Brotherus, Rev. Bryol. **31**: 56 (1904).

Haplohymenium biforme Brotherus, Bull. Soc. Bot. Geneve **3**: 281 (1911).

Haplohymenium crassum Sakurai, Bot. Mag. Tokyo **47**: 337 (1933).

Haplohymenium spinosum Noguchi, Journ. Jap. Bot. **13**: 789 (1937).

Loc. **Nantow:** Hohuan Shan, Jenai Hsiang, alt. 2985 m.

Hab. On trunk of *Buxus* sp.

Distr. Japan and Korea.

Claopodium gracillimum (Cardot et Theriot) Noguchi, Journ. Hattori Bot. Lab. **27**: 33 (1964); Watanabe, Journ. Jap. Bot. **39**(9): 272 (1964).

Diaphanodon? gracillimus Cardot et Theriot, Acad. Geogr. Bot. **18**: 2 (1908).

Loc. **Nantow:** Tuikuan, Hsini Hsiang, alt. 1760 m.

Hab. On trunk of tree.

Distr. Ryukyu and Japan.

Thuidium lepidoziaecum Sakurai, Bot. Mag. Tokyo **60**: 88 (1947); Watanabe, Journ. Jap. Bot. **39**(9): 273 (1964).

Loc. **Kaohsiung:** Yu Shan, upstream area of Lonung Chi, Taoyuan Hsiang, alt. 2630 m.

Hab. On rock.

Distr. Japan.

Amblystegiaceae

Cratoneuron filicinum (Hedwig) Spruce, Cat. Musc. Amaz. And. 21 (1867); Nakanishi Hikobia **3**(4): 319, 320 & 326 (1963).

Hypnum dubium Necker, Meth. Musc. 161 (1771).

Hypnum affine Hoffmann, Deutsch. Fl. **2**: 61 (1795).

Hypnum extricatum Hoffmann, Deutsch. Fl. **2**: 61 (1795).

Hypnum compressum Bridel, Musc. Rec. 2, P. 2, 58 (1801).

Hypnum filicinum Hedwig, Spec. Musc. Frond. 285, t. 76, f. 5-10 (1801).

Amblystegium filicinum De Notaris, Epilogo 150 (1869).

Loc. **Nantow:** Tungpu, Hsini Hsiang, alt. 1100 m., and Lolo, Hsini Hsiang, alt. 1600 m.; **Kaohsiung:** Yu Shan, upstream area of Lonung Chi, Taoyuan Hsiang, alt. 2670 m.

Hab. On wet rock near stream or on rock submerged in running water in creek.

Distr. China, Japan, Nepal, Pakistan, Europe, North America; almost cosmopolitan.

Drepanocladus uncinatus (Hedwig) Warnstorf, Beih. Bot. Centralbl. **13**: 397 (1903); Noguchi Journ. Jap. Bot. **35**(10): 304 (1960).

Hypnum aduncum Linnaeus, Spec. Plant 1126 (1753).

Hypnum uncinatum Hedwig, Spec. Musc. Musc. Frond. 289 (1801).

Amblystegium uncinatum De Notaris, Epilogo 141 (1869).

Amblystegium aduncum (Linnaeus) Lindberg, Musc. Scand. 33 (1879).

Loc. **Chiai:** Ali Shan, Yushankou—Yushan Peak, Wufeng Hsiang; **Nantow:** Yu Shan, Hsini Hsiang, alt. 3600 m.; **Han:** Taiping Shan, Tatung Hsiang.

Hab. On humus and decayed log and on bark of *Rhododendron pseudochrysanthum* in scrub covering the rocky lower slope of the peak of Yu Shan.

Distr. China, Japan, Central, Northern, and East Asia, Pakistan, Himalayas, Caucasus, Europe, Spitzbergen, North America, South America, Australia, New Zealand, Kerguelen; almost cosmopolitan.

Hygrohypnum sp. Nakanishi, Hikobia **3**(4): 326 (1963).

This genus is a new addition to the flora of Formosa.

Loc. **Kaohsiung:** Yu Shan, upstream area of Lonung Chi, Taoyuan Hsiang, alt. 2670 m.

Hab. On wet rock near stream in shaded place.

Brachytheciaceae

Brachythecium pinnatum Takaki, Journ. Hattori Böt. Lab. **15**: 6, f. 9, 9-19 (1955); Nakanishi, Hikobia **3**(4): 321 (1963).

Loc. **Nantow:** Lolo-Tuikuan, Hsini Hsiang, alt. 1920 m.

Hab. On wet rock in evergreen hardwood forest.

Distr. Japan.

Brachythecium procumbens (Mitten) Jaeger, Adumbr. **2**: 409 (1876-77); Nakanishi, Hikobia **3**(4): 319 (1963).

Hypnum (Brachythecium) procumbens Mitten, Journ. Linn. Soc. Bot. Suppl. 1, 79 (1859).

Loc. **Nantow:** Tungpu, Hsini Hsiang, alt. 1100 m.

Hab. On wet rock near stream in shaded place.

Distr. Japan, Korea, Nepal, and Kashmir.

Brachythecium sakuraii Brotherus, Ann. Bryol. **1**: 24 (1928); Nakanishi, Hikobia **3**(4): 321 (1963).

Loc. **Nantow:** Lolo-Tuikuan, Hsini Hsiang, alt. 1920 m.

Hab. On wet rock in evergreen hardwood forest.

Distr. Japan.

Brachythecium sapporense (Bescherelle) Takaki, Journ. Hattori Bot. Lab. **15**: 45, f.23, 19-23 (1955); Nakanishi, Hikobia **3**(4): 321 (1963).

Brachythecium collinum Schleichten var. *sapporense* Bescherelle, Ann. Sci. Nat. ser. 7, Bot. **17**: 373 (1893).

Loc. *Nantow*: Lolo-Tuikuan, Hsini Hsiang, alt. 1920 m.

Hab. On rotten wood on forest floor in evergreen hardwood forest.

Distr. Japan.

Brachythecium wichurae (Brotherus) Paris, Bull. Herb. Boiss. ser. 2, **2**: 931 (1902); Nakanishi, Hikobia **3**(4): 319 (1963).

Hypnum (Brachythecium) wichurae Brotherus, Hedwigia **38**: 239 (1899).

Brachythecium wichurae Brotherus var. *robusta* Brotherus, Mazzet, Symb. Sinic. **4**: 106 (1929).

Brachythecium kiusianum Sakurai, Bot. Mag. Tokyo **46**: 381 (1932).

Loc. *Nantow*: Tungpu, Hsini Hsiang, alt. 1100 m.

Hab. On wet rock near stream in shaded place.

Distr. China and Japan.

Eurhynchium celebicum (Bosch et Lacoste) Bartram, B. P. Bishop Mus. Bull. **101**: 217, f. 161 (1933); Yang & Lee, Bot. Bull. Acad. Sinic. n. ser. **5**(2): 184 (1964).

Hypnum celebicum Bosch et Lacoste, Byrol. Jav. **2**: 159 (1867).

Rhynchostegiium celebicum (Bosch et Lacoste) Jaeger, Adumbr. **2**: 440 (1876-77).

Loc. *Nantow*: Chitou, Luku Hsiang, alt. 1100 m.

Hab. On decaying wood.

Distr. Philippines, Thailand, Viet-Nam, Celebes, Java, Sumatra, New Guinea, Hawaii.

Plagiotheciaceae

Stereophyllum ligulatum (C. Mueller) Jaeger, Adumbr. **2**: 541 (1877-78); Iwatsuki, Journ. Jap. Bot. **39**(6): 180 (1964).

Hypnum ligulatum C. Mueller, Bot. Zeit. **438** (1856).

Stereophyllum pygmaeum Paris et Brotherus, Rev. Bryol. **34**: 48 (1907).

Stereophyllum formosanum Iwatsuki, in herb.

Loc. *Nantow*: upstream area of Aliputang Chi, Wangmei Tsun, Hsini Hsiang, alt. 1200 m. (C. K. Wang-1452 & 1445*, Aug. 16, 1961).

Hab. On large branches of broad-leaved tree and on liana in evergreen hardwood forest.

Distr. Viet-Nam and India.

Plagiothecium neckeroideum B.S.G., Bryol. Eur. Fasc. 48, Mon. 16, pl. 506 (1851); Nakanishi, Hikobia **3**(4): 324 (1963).

Loc. *Nantow*: Patungkuan-Yushan Peak, Hsini Hsiang, alt. 3200 m.

Hab. On forest floor in subalpine conifer forest.

Distr. Japan, Nepal, Sikkim, Europe.

Sematophyllaceae

Clastobryum glomerato-propaguliferum Toyama, Acta Phytotax. Geobot. **4**: 214 (1935);

* The number of the Formosan specimen in question was published by Iwatsuki as "1455" which is actually wrong and has to be noted and corrected here.

Nakanishi, *Hikobia* 3(4): 325 (1963).

Loc. *Nantow*: Yu Shan, Hsini Hsiang, alt. 3500 m.

Hab. On bark or stem of *Rhododendron pseudochrysanthum* in scrub covering the rocky lower slope of the peak of Yu Shan.

Distr. Japan.

Clastobryella kusatsuensis (Bescherelle) Iwatsuki, Journ. Hattori Bot. Lab. 26: 72 & 73, f. 4 (1963).

Isopterygium kusatsuense Bescherelle, Oefv. Kongl. Vet.-Soc. Foerhandl. 2: 294 (1900).

Clastobryum tsunodae Brotherus et Yasuda, Oefv. Finsk. Vet.-Soc. Foerhandl. 62: 26 (1921).

Clastobryella tsunodae (Brotherus et Yasuda) Brotherus, in E. & P., Nat. Pflanzenfam. ed. 2, 11: 407 (1952).

Loc. *Taichung*: mountainous region; *Nantow*: Lolo-Tuikuan, Hsini Hsiang, alt. 1900 m.

Hab. On trunk of deciduous tree in evergreen hardwood forest.

Distr. Japan.

Mastopoma perundulatum (Dixon) Horikawa et Ando, Nature & Life in Southeast Asia 3: 34-35, f. 7 (1964).

Trismegistia undulata Brotherus et Yasuda, Rev. Bryol. 53: 4 (1926).

Trismegistia perundulata Dixon, Ann. Bryol. 9: 69 (1936)

This genus is a new addition to the flora of Formosa.

Loc. *Chiai*: Ali Shan, Wufeng Hsiang, alt. 2300 m., and Tzechung, Wufeng Hsiang, alt. 2500 m.; *Nantow*: Patungkuan, Hsini Hsiang, alt. 2800 m.; *Pingtung*: Tawu Shan, Taiwu Hsiang.

Hab. On decaying log.

Distr. Thailand and Laos.

Chionostomum rostratum (Griffith) C. Mueller, Linnaea 36: 21 (1870-71); Nakanishi, *Hikobia* 3(4): 325 (1963).

Neckera rostrata Griffith, Not. 456 (1849).

Loc. *Nantow*: Yu Shan, Hsini Hsiang, alt. 3600 m.

Hab. On branch of *Rhododendron pseudochrysanthum* in scrub covering the rocky lower slope of the peak of Yu Shan.

Distr. Philippines, Sikkim, Khasia, Coorg, Ceylon.

Brotherella fauriei (Cardot) Brotherus, in E. & P., Nat. Pflanzenfam. ed. 2, 11: 425 (1925); Nakanishi, *Hikobia* 3(4): 321 (1963).

Acanthocladium fauriei Cardot, Bull. Soc. Bot. Geneve 4: 382 (1912).

Brotherella aurea Sakurai, Bot. Mag. Tokyo 60: 86 (1947).

Loc. *Nantow*: Tuikuan, Hsini Hsiang, alt. 2300 m.

Hab. On forest floor in hardwood and conifer mixed forest.

Distr. Japan.

Brotherella herbacea Sakurai, Bot. Mag. Tokyo 63: 82 (1950); Nakanishi, *Hikobia* 3(4): 321, 323, & 326 (1963).

Loc. *Nantow*: Tuikuan, Hsini Hsiang, alt. 2300 m.; *Kaohsiung*: Yu Shan, upstream area of Lonung Chi, Taoyuan Hsiang, alt. 2600 m.

Hab. On culm of alpine bamboo near stream in conifer forest and on rock in shaded place.

Distr. Japan.

Brotherella recurvans (Michaux) Fleischer, Nova Guinea 12: 120 (1914); Nakanishi, Misc. Bryol. Lichenol. 3(5): 71 (1964).

Loc. Nantow: Yu Shan, Hsini Hsiang, alt. 3500 m.

Hab. On basal part of stem of *Rhododendron pseudochrysanthum* in scrub covering the rocky lower slope of the peak of Yu Shan.

Distr. Eastern North America.

Brotherella yokohamae (Brotherus) Brotherus, in E. & P., Nat. Pflanzenfam. ed. 2, 11: 425 (1925); Nakanishi, Hikobia 3(4): 321 & 323 (1963).

Stereodon yokohamae Brotherus, Hedwigia 38: 232 (1899).

Loc. Nantow: Lolo-Tuikuan, Hsini Hsiang, alt. 1920 m., and Patungkuan, Hsini Hsiang, alt. 3000 m.

Hab. On wet rock, humus, as well as rotten wood in forest,

Distr. Japan.

Acroporium diminutum (Bridel) Fleischer, Laubmfl. Java 4: 1274 (1918); Nakanishi, Hikobia 3(4): 326 (1963).

Dicranum diminutum Bridel, Bryol. Univ. 1: 814 (1826).

Hypnum subulatum Hampe, Ic. Musc. 1, pl. 9 (1844).

Loc. Kaohsiung: Yu Shan, upstream area of Lonung Chi, Taoyuan Hsiang, alt. 2600 m.

Hab. On culm of alpine bamboo near stream in conifer forest.

Distr. Philippines, Japan, Sumatra, Java, Moluccas Islands.

Hypnaceae

Hypnum reptile Richard et Michaux, Fl. Amer. Boreal. 2: 315 (1803); Nakanishi, Hikobia 3(4): 324 & 325 (1963).

Loc. Nantow: Yu Shan, Hsini Hsiang, alt. 3200-3500 m.

Hab. On trunk of tree in fir forest and on basal portion of stem of *Rhododendron pseudochrysanthum* in scrub covering the rocky lower slope of the peak of Yu Shan.

Distr. China, Japan, Europe, North America; circumboreal.

Isopterygium pohliaecarpum (Sullivant et Lesquereux) Mitten, Trans. Linn. Soc. Bot. 3: 176 (1891); Iwatsuki, Journ. Hattori Bot. Lab. 26: 71, 72, & 73 (1963),

Hypnum pohliaecarpum Sullivant et Lesquereux, Proc. Amer. Acad. Arts Sci. 4: 280 (1859).

Rhynchostegium textori Lacoste, Ann. Mus. Bot. Lugd.-Batavi 2: 299 (1865-66).

Isopterygium textori (Lacoste) Mitten, Trans. Linn. Soc. Bot. 3: 176 (1891).

Isopterygium perchlorosum Brotherus, in Mazzetti, Symb. Sinic. 4: 125 (1929).

Loc. Taipei: Karobetsu, alt. 300 m.

Hab. On wet ledge or on rock in shaded place.

Distr. China, Philippines, Japan, Viet-Nam, Malay Pen., Borneo.

Taxiphyllum pilosum (Brotherus et Yasuda) Iwatsuki, Journ. Hattori Bot. Lab. 26: 67 (1963).

Plagiothecium pilosum Brotherus et Yasuda, Rev. Bryol. Lichenol. **53**: 3 (1926).

Loc. Hualien Kang.

Hab. Unknown.

Distr. Japan.

Taxiphyllum subarcuatum (Brotherus) Iwatsuki, Journ. Hattori Bot. Lab. **26**: 67 (1963).

Homalia subarcuata Brotherus, Hedwigia **38**: 299 (1899).

Isopterygium subarcuatum (Brotherus) Noguchi, Journ. Jap. Bot. **20**: 148, f. 3 (1944).

Loc. *Taipei*: Wulai, Wulai Hsiang.

Hab. On trunk of tree in evergreen hardwood forest.

Distr. Japan.

Ctenidium lychnites (Mitten) Brotherus, in E. & P., Pflanzenfam. ed. 1, **3**: 1048 (1908); Yang & Lee, Bot. Bull. Acad. Sinica, n. ser. **5**(2): 184 (1964).

Stereodon lychnites Mitten, Journ. Linn. Soc. Bot. Suppl. **1**, 114 (1859).

Loc. *Nantow*: Fenghuang Shan (Mt. Phenix), Chitou, Luku Hsiang, alt. 1650 m.

Hab. On rocks and trees in evergreen hardwood forest.

Distr. Philippines, Khasia, Nilghiris, and Ceylon.

Hylocomiaceae

Neodolichomitra robusta (Brotherus) Noguchi, Bryologist **69**: 232, f. 1-6 (1966).

Penzigiella (?) *robusta* Brotherus, Sitzungsber. Akad. Wiss. Wien, Abt. **1**, **131**: 216 (1912).

Neodolichomitra gigantea Noguchi, Journ. Jap. Bot. **13**: 92, f. 4 (1937).

Loc. *Han*: Taiping Shan, Tatung Hsiang, alt. 2200 m.

Hab. On humus in forest.

Distr. China.

Gollania philippinensis (Brotherus) Noguchi, Acta Phytotax. Geobot. **20**: 241 (1962); Nakanishi, Hikobia **3**(4): 319, 321, & 326 (1963).

Elmeriobryum assimile Brotherus, Leaf. Philip. Bot. **6**: 1975 (1913).

Elmeriobryum philippinense Brotherus, Leaf. Philip. Bot. **6**: 1974 (1913).

Elmeriobryum brotheri Williams, Bull. N. Y. Bot. Garden **8**: 366 (1914).

Loc. *Nantow*: Tungpu—Patungkuan, Hsini Hsiang, alt. 1100-2300 m.; *Kaohsiung*: Yu Shan, upstream area of Lonung Chi, Taoyuan Hsiang, alt. 2670 m.

Hab. On soil in evergreen hardwood forest or on forest floor in hardwood and conifer mixed forest, and on wet rock near stream in conifer forest.

Distr. Philippines.

Gollania ruginosa (Mitten) Brotherus, in E. & P., Nat. Pflanzenfam. ed. 1, **3**: 1055 (1908); Nakanishi, Hikobia **3**(4): 321 (1963).

Hyocomium ruginosa Mitten, Trans. Linn. Soc. Lond. ser. 2, Bot. **3**: 182 (1891).

Gollania perundulata Dixon, in Dixon et Theriot, Rev. Bryol. **13**: 17 (1942).

Loc. *Nantow*: Patungkuan, Hsini Hsiang alt. 2300 m.

Hab. On forest floor in hardwood and conifer mixed forest.

Distr. Japan and Himalaya.

Polytrichaceae

Oligotrichum aligerum Mitten, Journ. Linn. Soc. Lond. Bot. 8: 48, pl. 8 (1865); Osada, Journ. Hattori Bot. Lab. 29: 33, f. 16 (1966).

Pogonatum suzukii Brotherus, Ann. Bryol. 1: 26 (1928).

Oligotrichum formosanum Noguchi, Trans. Nat. Hist. Soc. Formosa 24: 294, f. 1 (1934).

Loc. Taichung: Anma Shan, Hoping Hsiang, alt. 2500 m. (C. K. Wang-693a, Feb. 17, 1960);

Ilan: Tayuan Shan, Tatung Hsiang, alt. 2000 m. (C. K. Wang-318, Aug. 7, 1959).

Hab. On rock in shaded place and on forest floor in hemlock forest with undergrowth of alpine bamboo.

Distr. Philippines, Japan, North America and Mexico.

Pogonatum nudiusculum Mitten, Journ. Linn. Soc. Bot. Suppl. 1, 153 (1859); Yang & Lee, Bot. Bull. Acad. Sinica, n. ser. 5(2): 182 (1964).

Loc. Nantow: Chitou, Luku Hsiang, alt. 1300-1600 m.

Hab. On sandy soil.

Distr. Philippines, Sikkim and Bhutan.

Pogonatum wallisi (C. Mueller) Jaeger, Adumbr. 1: 722 (1873-74); Yang & Lee, Bot. Bull. Acad. Sinica, n. ser. 5(2): 182 (1964).

Polytrichum wallisi C. Mueller, Linnaea 37: 171 (1872).

Loc. Nantow: Chitou, Luku Hsiang, alt. 1800 m.

Hab. On wet ground.

Distr. Philippines and Borneo.

Polytrichum commune Hedwig var. ***swartzii*** (Hartmann) Moenk., in Rabenhorst, Krypt. Fl. ed. 2, 4: 914 & 919 (1927); Osada, Journ. Hattori Bot. Lab. 29: 14-16, f. 7 (1966).

Polytrichum swartzii Hartmann, Handb. Skand. Fl. ed. 5, 361 (1849).

Polytrichum commune Hedwig subsp. *swartzii* Hartmann, Handb. Skand. Fl. ed. 9, 2: 43 (1864).

Polytrichum paludicola Cardot, Bull. Soc. Bot. Geneve, ser. 2, 1: 131 (1909).

The writer has no way of knowing the locality and the habitat of the Formosan plant.

Distr. Japan, Europe, Greenland, and North America.

Polytrichum formosum Hedwig var. ***densifolium*** (Mitten) Osada, Journ. Hattori Bot. Lab. 29: 19-21, f. 10 (1966).

Polytrichum densifolium Mitten, Journ. Linn. Soc. Bot. Suppl. 1, 155 (1859).

Loc. Miaoli: Touying Shan—Huoshih Shan, Taian Hsiang, alt. 3100 m. (C. K. Wang-1336, May 11, 1961); **Taichung:** Anma Shan, Hoping Hsiang, alt. 2200 m. (C. K. Wang-1431, May 16, 1961), Tahsueh Shan—Hsiaohsueh Shan, Hoping Hsiang, alt. 2800 m. (C. K. Wang-1425, May 16, 1961), Houshih Shan—Hsueh Shan*, Hoping Hsiang, alt. 3100 m. (C. K. Wang-1340, May 12, 1961); **Ilan:** Taiping Shan, Tatung Hsiang; **Hualien:** Tailuko Shan, Hsiulin Hsiang.

Hab. On soil in shaded place, on humus in hemlock forest with luxuriant undergrowth of alpine bamboo or on border of alpine grassland dominated by alpine bamboo, and on rock in

* Known also as Mt. Sylvia.

hemlock and fir mixed forest with luxuriant undergrowth of alpine bamboo.

Distr. Japan and Himalayas.

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臺灣近年發現之苔類植物新記錄種

王 忠 魁

近年曾有日本與美國蘚苔植物學者先後專程來臺採集蘚苔植物標本，收穫頗多。因之國內方面對之亦漸感興趣，或從事採集，或着手專題研究。結果促成本島多數新記錄種之發現。惟此等新記錄種係由多數苔類植物學者於近年在不同之植物學雜誌或期刊中零星發表，一時難窺全豹，且其資料亦欠完整。筆者有見及此，爰就個人所知並根據個人實地採集調查所獲有關資料，撰就此文，藉行補充臺灣苔類植物目錄，俾供同好參攷。

MOSSSES RECENTLY FOUND IN FORMOSA

Chung K'uei Wang

In recent years a number of bryologists made some important contributions to the knowledge of the bryophyte flora of Formosa. Among the mosses reported recently from this area 107 species in 59 genera or 25 families had not previously been known to occur in Formosa. The present publication, as a supplement of the moss flora of Formosa, is primarily to bring together the knowledge resulting from many scattered and fragmentary sources.