

# NOTES ON FORMOSAN MOSS FLORA I

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During the last ten years the writer has enjoyed exploring and collecting bryophytes in the more or less unexplored mountain regions of the island of Formosa. As a consequence, quite extensive moss collections have been made, which in reality have added a number of significant species to the island moss flora. Most of these species were published last year and others are here placed on record.

In the following list of 32 species, two are mosses previously unrecorded from the island, the remainder is important from the standpoint of local distribution. Five of them, however, were recently made known to occur on the island by some of the Japanese bryologists. The previously unrecorded species in the following list certainly suggest that further explorations will expand the moss flora of Formosa to a considerable extent. The various parts of the island will continue to produce new records and the relatively extensive unexplored areas in Formosa surely add appreciably to this rich and complex local flora.

## Ditrichaceae

***Ditrichum flexicaule*** (Schleicher) Hampe, Flora 50: 182 (1867).

*Didymodon flexicaule* Schleicher, Pl. Cr. Helv. Cent. 4, n. 9 (1807).

*Cynodontium flexicaule* Schwaegrichen, Suppl. 1, 1: 115, t. 29 (1811).

*Trichostomum flexicaule* Bruch et Schimper, Bryol. Eur. fasc. 18-20, 15, t. 11 (1843).

*Leptotrichum flexicaula* Hampe, Linnaea 74 (1847).

The occurrence of this species in Formosa was reported by Noguchi (1964) without any reference to its locality and habitat there.

**Distr.** China, Japan, Middle Asia, Siberia, Caucasus, Europe, Algeria, Canary Islands, North America.

***Ditrichum pallidum*** (Schreber) Hampe, Flora 50: 182 (1867).

*Bryum pallidum* Schreber Spic. El. Lips. 80 (1771).

*Trichomum pallidum* Hedwig, Spec. Musc. frond. 108 (1801).

*Leptotrichum pallidum* Hampe, Linnaea 74 (1847).

*Diaphanophyllum pallidum* Lindberg, Oefv. K. Vet.-Akad. Foerhandl. 605 (1862).

*Ditrichum rhynchostegium* Kindberg, Rev. Bryol. 37: 14 (1910).

**Loc.** *Hsinchu*: Kuei Shan, Wufeng Hsiang, alt. 2400 m. (C. K. Wang-1626, April 1, 1962); *Taitung*: Upstream area of Luming Chi, Chulu Tsun, Peinan Hsiang, alt. 700 m. (C. K. Wang-0923, Mar. 26, 1961).

**Hab.** On soil in sunny place in alpine grassland and in hardwood forest.

**Distr.** China, Ryukyu, Japan, Caucasus, East Europe, North America.

### Dicranaceae

**Dicranella heteromalla** (Hedwig) Schimper, Coroll. Bryol. Eur. 13 (1855).

*Muscus trichoides, foliis capillaceis, capitulis minoribus* Doody et Ray, Syn. Stirp. Brit. App. 243 (1690).

*Bryum trichoides, reclinatis cauliculis, capitulis erectis acutis* Dillenius, in Ray, Synops. ed. 3, 96, n. 23 (1724).

*Bryum heteromallum* Dillenius, Hist. Musc. 375, t. 47, 37 (1741).

*Hypnum heteromallum* Weiss, Cr. Goett. 215 (1770).

*Fuscina heteromalla* Schrank, Baiers. Fl. 2: 454 (1789).

*Dicranum heteromallum* Hedwig, Spec. Musc. Frond. 128 (1801).

*Aongstroemia heteromalla* C. Mueller, Synops. Musc. 1: 433 (1849).

*Campylopus herrici* Renrud et Crrdot, Bot. Grz. 13: 197 (1888).

*Bartramia perangustata* Dixon et Teeriot, Rev. Bryol. Lichenol. 13: 11 (1942).

**Loc.** *Taichung*: Anma Shan, Hoping Hsiang, alt. 2300 m. (C. K. Wang-0013, Dec. 5, 1958).

**Hab.** On decayed wood in evergreen hardwood forest.

**Distr.** Japan, Europe, North America, South America, Fuegia.

**Campylopus schwarzii** Schimper, Musc. Eur. Nov. Bryol. Eur. Suppl. fasc. 1-2, 2: 1 (1864).

The occurrence of this species in Formosa was reported by Takaki (1967) without any reference to its locality and habitat there.

**Distr.** Japan, Korea, Nepal, Europe, North America.

**Oncophorus wahlenbergii** Bridel var. *wahlenbergii* Bryol. Univ. 1: 400 (1826).

*Dicranum virens wahlenbergii*, Fl. Lrpp. 308 (1812).

*Dicranum microcarpum* Hooker, in Drummond, Musc. Amer. 105 (1828)

*Dicranum richardsoni* Hooker, in Drummond, Musc. Amer. 104 (1828).

*Dicranum wahlenbergii* Syllog. Ratisb. 149 (1828).

*Dicranum virens* var. *wahlenbergii* Huebener, Musc. Ger. 231 (1833).

*Aongstroemia wahlenbergii* C. Mueller, Musc. 2: 610 (1851).

*Cynodontium virens* var. *wahlenbergii* Schimper, Coroll. Bryol. Eur. 12 (1855).

*Cynodontium wahlenbergii* Hartmann, Skand. Fl. ed. 10, 2: 113 (1871).

*Dicranum demetrii* Renaud et Cardot, Bot. Gaz. 22: 1 (1896).

**Loc.** *Taichung*: Hsiaohsueh Shan, Hoping Hsiang, alt. 2994 m. (C. K. Wang-0671, Feb. 17, 1960) and alt. 2600 m. (C. K. Wang-0686, Feb. 17, 1960) and Tahsueh Shan, Hoping Hsiang, alt. 3100 m. (C. K. Wang-1250 & 1254, May 9, 1961).

**Hab.** Usually on rock in alpine grassland and fir forest with luxuriant undergrowth of alpine bamboo or rarely on hemlock trunk or fir log.

**Distr.** China, Korea, Japan, Kashmir, Sikkim, Nepal, Northeast Asia, Europe, North America.

## Leucobryaceae

**Leucobryum bowringii** Mitten form. **bowringii** Journ. Linn. Soc. Bot. Suppl. 1, 26 (1859)

*Leucobryum angustifolium* Wilson, Kew Journ. Bot. 9: 292 (1857).

*Leucobryum yamatense* Beschereille, Journ. de Bot. 12: 288 (1898).

*Leucobryum nagasakense* Brotherus, Hedwigia 38: 208 (1899).

*Leucobryum pycnophyllum* C. Muelleer, Gen. Musc. 82

*Leucobryum brotheri* Cardot, Bull. Soc. Bot. 41: 361 (1902).

**Loc.** *Kaohsiung*: Nanfeng Shan, Maolin Hsiang, alt. 1400 m. (C. K. Wang-1008, Mar. 29, 1961); *Taitung*: Hsinhwa Tsun, Tajen Hsiang, alt. 800 m. (C. K. Wang-0497, Aug. 4, 1960 & C. K. Wang-0816, Aug. 5, 1960).

**Hab.** On rock, log and decayed wood in evergreen hardwood forests.

**Distr.** China, Ryukyu, Japan, Philippines, Malaysia, Ceylon.

## Pottiaceae

**Weisia longidens** Cardot, Bull. Herb. Boiss. 7: 217 (1907).

**Loc.** *Hsinchu*: Luchangta Shan, Chingchuan-Naoliao, Wufeng Hsiang, alt. 1000 m. (C. K. Wang-1517, Mar. 30, 1962) and alt. 1100 m. (C. K. Wang-1520, Mar. 30, 1962) and Naoliao-Kuei Shan, Wufeng Hsiang, alt. 1800 m. (C. K. Wang-1571, Mar. 31, 1962).

**Hab.** On rock, humus soil and decayed wood in evergreen hardwood forests.

**Distr.** Japan.

**Pleurochaete squarrosa** (Bridel) Lindberg, De Tort. 253 (1864)

*Barbula squarrosa* Bridel, Bryol. Univ. 1: 833 (1827).

*Tortula squarrosa* De Notaris, Mem. Ac. Lorin. 11: 321 (1828).

*Barbula tortuosa* Bruch et Schimper, Bryol. Eur. fasc. 13-15, mon. 26, pl. 152 (1842).

*Tortella squarrosa* (Bridel) Limpricht, Laubm. Deutschl. 1: 607 (1890).

**Loc.** *Taichung*: Chunghsueh Shan, Hoping Hsiang, alt. 2500 m. (C. K. Wang-0784, Oct. 17, 1960).

**Hab.** On rock in hemlock-cedar-pine-fir mixed forest.

**Distr.** China, Japan, Himalayas, Pakistan, Iran, Caucasus, Europe, North America.

## Bryaceae

**Pohlia elongata** Hedwig, Spec. Musc. Frond. 171 (1801).

*Bryum trichodes lacte-virens, capiulis cernuis oblongis* Dillenius, in Ray, Synops. ed. 3, 100 (1721).

*Bryum foliis gramineis pellucidis, cauliculo rubente* Dillenius, Hist. Musc. 359, t. 46, f. 17 (1741).

*Bryum elongatum* Dickson, Crypt. fasc. 2. 8 (1790).

*Bryum cylindricum* Dickson, Crypt. fasc. 4, t. 11, f. 4 (1801).

*Mnium elongatum* P. Beauvois, Prodr. 75 (1805).

*Leskea elongata* Weber et Mohr, Bot. Tasch. 243 (1807).

*Pohlia cylindrica* Hornschuch, Flora 93 (1819).

*Webera elongata* Schwaegrichen, in Linnaeus, Spec. Pl. ed. 4, 2: 48, pl. 5 (1830).

*Lamprophyllum elongatum* Lindberg, Revis. Crit. Ic. Fl. Dan. 27 (1871).

*Webera pauperata* Cardot, Bull. Soc. Bot. Geneve, ser. 2, 1: 124 (1909).

*Pohlia nutans* Lindberg, sensu Kamimura et Sawaragi, Journ. Jap. Bot. 30: 156 (1955).

*Webera crassidentiformis* Dixon, mss.

*Webera laticuspis* Theriot et Dixon, mss.

**Loc.** *Taichung*: Hsiaohsueh Shan, Hoping Hsiang, alt. 2600 m. (C. K. Wang-0710, Oct. 14, 1960), Hsiaohsueh Shan-Tahsueh Shan, Hoping Hsiang, alt. 2700 m. (C. K. Wang-1430, May 16, 1961), and Tahsueh Shan-Touying Shan, Hoping Hsiang, alt. 3100 m. (C. K. Wang-1320, May 10, 1961).

**Hab.** On rocky soil in alpine grassland and on humus soil in fir forest.

**Distr.** China, Japan, Philippines, Thailand, Nepal, Himalayas, Europe, North America.

***Bryum plumosum*** Dozy et Molkenboer, Musci Frond. Archip. Ind. 3 (1844).

*Bryum subplumosum* Brotherus et Paris, Rev. Bryol. 27: 77 (1900).

*Bryum rubridens* Dixon et Sakurai, in Sakurai, Bot Mag. Tokyo 51: 10 (1937).

**Loc.** *Taoyuan*: Tzohen Tsun, Fuhsing Hsiang, alt. 500 m. (C. K. Wang-0827, Aug. 24, 1960); *Nantow*: Upstream area of Aliputang Chi, Wangmei Tsun, Hsini Hsiang, alt. 1100 m. (C. K. Wang-1461, Aug. 16, 1961); *Chiai*: Tashihniao, Chungpu Hsiang, alt. 230 m. (C. K. Wang-0433, July 13, 1960); *Kaohsiung*: Liukwei-Shanping, Liukwei Hsiang, alt. 300 m. (C. K. Wang-0976, Mar. 28, 1961).

**Hab.** On rock and soil in evergreen hardwood forests and rarely on brick in open area.

**Distr.** China, Japan, Philippines, Vietnam, Amboina, Celebes, Java, Sumatra, India.

This species is new to Formosa!

## Mniaceae

***Mnium laevinerve*** Cardot, Bull. Soc. Bot. Geneve 1: 128 (1909).

*Mnium sawadai* Cardot, Bull. Soc. Bot. Geneve 1: 129 (1909).

**Loc.** *Taichung*: Tahsueh Shan—Touying Shan, Hoping Hsiang, alt. 3100 m. (C. K. Wang-1329, May 10, 1961).

**Hab.** On rock and trunk of fir trees in fir forest with luxuriant undergrowth of alpine bamboo.

**Distr.** Japan.

***Mnium longirostre*** Bridel, Musc. Recent. 2, P. 3, 106 (1803).

*Bryum pendulum, serpylli folio longiore pellucido, capsulis oblongis cuspidatis* Dillenius, Hist. Musc. 416, t. 53, f. 80 (1741).

*Bryum serpyllifolium* var. *B.* Hudson, Fl. Angl. 492 (1762).

*Mnium rostratum* Schrader, in Linnaeus (Gmelin), Syst. Nat. ed. 13, ed. 2, P. 2, 1330 (1791).

*Bryum rostratum* Schrader, Spic. Fl. Germ. 1: 27 (1794).

*Mnium ellipticum* Hoffmann, Deutsch. Fl. 2: 52 (1795).

*Mnium punctatum* var. 2. Withering, Bot. Arr. ed. 4, 3: 806 (1801).

*Hypnum rostratum* Weber et Mohr, Bot. Tasch. 296 (1807).

*Mnium rostratum* (Schrader) Schwaegrichen, Suppl. 1, P. 2, 136 (1816).

*Bryum longirostre* Bridel, Musc. Recent. Suppl. 4, 119 (1819).

*Bryum* (*Polla*) *rostrata* Bridel, Bryol. Univ. 1: 700 (1826).

*Mnium serpyllium* B. *rostratum* Wahlenberg, Fl. Suec. 2: 723 (1826).

*Mnium rhynchophorum* Hooker, Icones Plant. Assist. 2, tab. 91, f. 3 (1847).

*Astrophyllum rostratum* Lindberg, Musc. Scand. 13 (1879).

*Mnium prorepens* C. Mueller, Flora 82: 437 (1896).

**Loc.** *Hsinchu*: Luchangta Shan, Chingchuan—Naoliao, Wufeng Hsiang, alt. 900 m. (C. K. Wang-1505, Mar. 30, 1962).

**Hab.** On rocky bank of ditch in evergreen hardwood forest.

**Distr.** China, Ryukyu, Japan, Philippines, Kashmir, Europe, Kilimandjaro, North America, South America, Hawaii, New Zealand.

***Mnium punctatum*** Hedwig var. ***punctatum*** Spec. Musc. Frond. 193 (1801).

*Muscus polytrichoides foliis latis subrotundis* Ray, Synops. ed. 2, 35 (1696).

*Bryum nitens, foliis serpylli pellucidis rotundis, capitulis cernuis majusculis, e cauliculis veteribus egredientibus* Dillenius, Cat. Giss. 227 (1718).

*Bryum nitidum, serpylli rotundis et latioribus foliis pellucidis* Dillenius, in Ray, Synops. ed. 3, 103 (1721).

*Bryum pendulum, serpylli folio rotundiore pellucido, capsulis ovatis* Dillenius, Hist. Musc. 416, t. 53, f. 81 (1741).

*Mnium serpyllifolium* a. *M. punctatum* Linnaeus, Spec. Pl. 1113 (1753).

*Bryum serpyllifolium* a. *punctatum* Hudson, Fl. Angl. 417 (1762).

*Mnium serpyllifolium* Necker, Act. Ac. Theod.-Palat. 2: 444 (1770).

*Bryum punctatum* Schreber, Spic. Fl. Lips. 85 (1771).

*Bryum serpyllifolium* Necker, Meth. Musc. 216 (1771).

*Hypnum punctatum* Schrank, Baiersch. Fl. 2:470 (1789).

*Bryum Polla punctata* Bridel, Bryol. Univ. 1: 706 (1826).

*Astrophyllum punctatum* Lindberg, Musc. Scand. 13 (1879).

*Mnium punctatum* Hedwig var. *eupunctatum* Kabiersch, Hedwigia 76: 63 (1936).

**Loc.** *Taichung*: Chunghsueh Shan, Hoping Hsiang, alt. 2500 m. (C. K. Wang-0768, Oct. 17, 1960), Hsiaohsueh Shan-Tahsueh Shan, Hoping Hsiang, alt. 2700 m. (C. K. Wang-1226, May 8, 1961) and alt. 3000 m. (C. K. Wang-1231, May 8, 1961), and Hsueh Shan, Hoping Hsiang, alt. 3400 m. (C. K. Wang-1342, May 12, 1961).

**Hab.** On rock in hemlock-pine-cedar mixed forest and in hemlock as well as in fir forests with luxuriant undergrowth or alpine bamboo, or on humus soil in fir-juniper mixed forest.

**Distr.** China, Japan, Nepal, Siberia, Europe, North America.

***Mnium succulentum*** Mitten var. ***integrum*** Noguchi, Journ. Jap. Bot. 27: 32 (1952).

**Loc.** *Ilan*: Tayuan Shan, Tatung Hsiang, alt. 1100 m. (C. K. Wang-378, Aug. 14, 1959).

**Hab.** On rock along railway side in shady place.

**Distr.** Ryukyu.

## Rhizogoniaceae

**Rhizogonium dozyanum** Lacoste, Ann. Musc. Bot. Lugduno-Batavi **2**: 295, t. 9, f. 1 (1866-67).

**Loc.** *Taichung*: Shaolai Shan, Hoping Hsiang, alt. 2000 m. (C. K. Wang-1212, May 7, 1961).

**Hab.** On exposed root of broad-leaved tree in evergreen hardwood forest.

**Distr.** China, Japan.

## Bartramiaceae

**Philonotis falcata** (Hooker f.) Mitten var. **falcata** Journ. Linn. Soc. Bot. Suppl. 1, 62 (1859).

**Loc.** *Ilan*: Taiping Shan, Tatung Hsiang, alt. 1900 m. (C. K. Wang-10228, July 22, 1936).

**Hab.** On rock in creek in evergreen hardwood forest.

**Distr.** China, Korea, Nepal, India, Union of South Africa.

This species is new to Formosa!

**Fleischerobryum longicolle** (Hampe) Loeske, Studien 127 (1910).

*Bartramia longicollis* Hampe, in C. Mueller, Synops. Musc. **1**: 478 (1849).

*Philonotis longicollis* (Hampe) Mitten, Journ. Linn. Soc. Bot. Suppl. 1, 64 (1859).

*Philonotis yakushimensis* Sakurai, mss.

**Loc.** *Hsinchu*: Kuei Shan, Wufeng Hsiang, alt. 2300 m. (C. K. Wang-1610, Mar. 31, 1932);

*Ilan*: Tayuan Shan, Tatung Hsiang, alt. 1050 m. (C. K. Wang-331, Aug. 8, 1959).

**Hab.** On rock and humus soil covering rock along railway side in evergreen hardwood-conifer mixed forest.

**Distr.** China, Japan, Sikkim, East India, Java.

## Orthotrichaceae

**Macromitrium holomitrioides** Noguchi, Journ. Sci. Hiroshima Univ. B, 2, **3**: 135, pl. 13, f. 1-9 (1938).

**Loc.** *Taichung*: Anma Shan, Hoping Hsiang, alt. 2300 m. (C. K. Wang-0047, Dec. 9, 1958).

**Hab.** On bark of trees in evergreen hardwood forest.

**Distr.** Japan

**Macromitrium reinwardtii** Schwaegrichen, Spec. Musc. Suppl. **2**: 69 (1826).

The occurrence of this species in Formosa was reported by Noguchi (1967) without any reference to its locality and habitat there.

**Distr.** Japan, Philippines, Java.

**Macromitrium rhacomitrioides** Noguchi, Journ. Sci. Hiroshima Univ. B, 2, **3**: 138, f. 2 (1938).

**Loc.** *Taichung*: Anma Shan, Hoping Hsiang, alt. 2300 m. (C. K. Wang-608 & 613, Feb. 13, 1930); *Taitung*: Hsinhwa Tsun, Tajen Hsiang, alt. 800 m. (C. K. Wang-0493, Aug. 4, 1960).

**Hab.** On log and bark of trees in evergreen hardwood forests.

**Distr.** Endemic.

*Macromitrium taiheizanense* Noguchi, Journ. Sci. Hiroshima Univ. B, 2, 3: 11, f. 1 (1936).

**Loc.** Nantow: Fenghwang Shan, Chitou, Luku Hsiang, alt. 1500 m. (C. K. Wang-218, April 3, 1959).

**Hab.** On bark of tree in evergreen hardwood forest.

**Distr.** Endemic.

*Macromitrium taiwanense* Noguchi, Journ. Sci. Hiroshima Univ. B, 2, 3: 131, f. 4 (1938).

**Loc.** Taichung: Anma Shan, Hoping Hsiang, alt. 2350 m. (C. K. Wang-0621, Feb. 13, 1960).

**Hab.** On log of hemlock in coniferous forest.

**Distr.** Endemic.

### Erpodiaceae

*Solmsiella biseriata* (Austin) Steere, Bryologist 37: 100 (1934).

*Lejeunea biseriata* Austin, Proc. Acad. Nat. Sci. Phila. 1869: 225 (1869).

*Erpodium ceylonicum* Thwaites et Mitten, Journ. Linn. Soc. Bot. 13: 306, t. 5 A (1873).

*Erpodium biseriatum* (Austin) Austin, Bot. 2: 142 (1877).

*Solmsiella ceylonica* (Thwaites et Mitten) C. Mueller, Bot. Centralbl. 31:147 (1884).

*Solmsiella javanica* C. Mueller, Bot. Centralbl. 31: 147 (1884).

*Solmsiella kurzii* Steere, Bryologist 37: 97 (1934).

The occurrence of this species in Formosa was reported by Iwatsuki and Sharp (1967).

**Loc.** Nantow: Wangmei Tsun (Hoshe), Hsini Hsiang, alt. 780 m. (S. Nakanishi-92, Mar. 15, 1963).

**Hab.** On deciduous trees.

**Distr.** Thailand, Java, India, Ceylon, Florida, Louisiana, Mexico.

This family is a new addition to the flora of Formosa!

### Neckeraceae

*Homaliodendron scalpellifolium* (Mitten) Fleischer, Hedwigia 45: 74 (1906).

*Neckera scalpellifolia* Mitten, Journ. Linn. Soc. Bot. Suppl. 1, 119 (1859).

*Homalia scalpellifolia* Bosch et Lacoste, Bryol. Jav. 2: 60, t. 180 (1863).

*Porotrichum scalpellifolium* Mitten, Trans. Linn. Soc. Lond. Bot. 3: 175 (1891).

**Loc.** Miaoli: Upstream area of Nankeng Chi, Taian Hsiang, alt. 1800 m. (C. K. Wang-0500, Oct. 23, 1959); Taichung: Anma Shan, Hoping Hsiang, alt. 2200 m. (C. K. Wang-0032 & 0037, Dec. 7, 1958) and alt. 2400 m. (C. K. Wang-0632, Feb. 14, 1960) and Tahsueh Shan, Hoping Hsiang, alt. 3100 m. (C. K. Wang-1246, May 9, 1961); Kaohsiung: Liukwei-Shanping, Maolin Hsiang, alt. 700 m. (C. K. Wang-0994, Mar. 28, 1961); Taitung: Upstream area of Luming Chi, Hungyeh Tsun, Yenping Hsiang, alt. 1100 m. (C. K. Wang-0957, Mar. 26, 1961).

**Hab.** On rock and trunk of trees in evergreen hardwood forests as well as in coniferous forests.

**Distr.** China, Ryukyu, Japan, Philippines, Vietnam, Laos, Malayan islands, India, Ceylon.

### Lembophyllaceae

***Elmeriobryum formosanum*** Brotherus var. ***formosanum*** Ann. Bryol. 1: 21 (1928).

**Loc.** *Chiai*: Tungtzechiao, Chungpu Hsiang, alt. 450 m. (C. K. Wang-0460, July 30, 1960) and Ali Shan, Wufeng Hsiang, alt. 2300 m. (T. S. Wang-1486, April 21, 1962).

**Hab.** On rock in evergreen hardwood forest and Japanese fir plantation.

**Distr.** Endemic.

### Hypopterygiaceae

***Dendroclyathophorum paradoxum*** (Brotherus) Dixon, Journ. Bot. 126 (1937).

*Hypopterygium paradoxum* Brotherus, Bull. Soc. Bot. Geneve 4: 378 (1912).

*Cyathophorella aoyagii* Brotherus, Oefv. Finsk. Vet.-Soc. Foerhandl 62: 31 (1920).

*Dendroclyathophorum assamicum* Dixon, Journ. Bot. 7, pl. 610, f. 5 (1836).

*Eurydictyon paradoxum* (Brotherus) Horikawa et Noguch, Journ. Sci. Hiroshima Univ. B, 2, 3: 22. pl. 1, f. 7 (1936).

**Loc.** *Ilan*: Tayuan Shan, Tatung Hsiang, alt. 1000 m. (C. K. Wang-349, Aug. 10, 1959).

**Hab.** On decayed wood in shady place.

**Distr.** Japan, Assam.

### Thuidiaceae

***Haplohymenium triste*** (Cesati) Kindberg, Rev. Bryol. 25 (1899).

*Leskea tristis* Cesati, in De Notaris, Syllab. Musc. 67 (1838).

*Leskea fragilis* Hooker et Willd., in Drummond, Musc. Am. S. States 101 (1841).

*Anomodon tristis* (Cesati) Sullivant, Moss. U. S. 58 (1856).

*Anomodon sinensi-tristis* C. Mueller, Nuov. Giorn. Bot. Ital. 3: 118 (1896).

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

*Haplohymenium scabrum* Brotherus, Rev. Bryol. 2: 10 (1929).

*Haplohymenium fragiliforme* Noguchi, Journ. Jap. Bot. 13: 410 (1937).

**Loc.** *Hsinchu*: Kuei Shan, Wufeng Hsiang, alt. 2300 m. (C. K. Wang-1586, Mar. 31, 1962).

**Hab.** On decayed stem of small dead tree standing on railway side in evergreen hardwood-conifer mixed forest.

**Distr.** China, Ryukyu, Japan, Korea, Siberia, Europe, North America, Hawaii.

***Haplocladium angustifolium*** (Hampe et C. Mueller) Brotherus, in E. & P., Nat. Pflanzenfam. ed. 1, 3: 1003 (1907).

The occurrence of this species in Formosa was reported by Shin (1967) without any reference to its locality and habitat there.



## Polytrichaceae

***Atrichum undulatum*** (Hedwig) Beauvois, Prodr. 42 (1805).

*Adiantum seu Polytrichum aureum medium* Ray, His. Pl. 1: 124 (1686).

*Muscus capillaris majusculus, foliis longis cum aliqua latitudine, viridibus, acutis rugosis* Ray, Synops. ed. 2, 29, n. 6 (1696).

*Bryum erectum, capitulis oblongis, rubentibus, foliis oblongis, angustis pellucidis rugosis* Dillenius, Cat. Giss. 222 (1719).

*Bryum Phyllitidis folio rugoso acuto, capsulis incurvis* Dillenius, Hist. Musc. 360, n. 18, t. 46, f. 18 (1741).

*Bryum undulatum* Linnaeus, Spec. Pl. 2: 117, n. 10 (1753).

*Bryum phyllitidifolium* Necker, Meth. Musc. 203 (1771).

*Catharinaea callibryon* Ehrhart, Hannov. Mag. 934 (1780).

*Mnium undulatum* Swartz, Meth. Musc. 27 (1781).

*Callibryum polytrichoides* Wibel, Prim. Fl. Werth. 290 (1799).

*Polytrichum undulatum* Hedwig, Spec. Musc. Frond. 98 (1801).

*Catharinaea undulata* Weber et Mohr, Ind. Musc. Pl. Cr. (1803).

*Oligotrichum undulatum* Lamarck et De Candolle, Fl. Franc. ed. 3, 2: 492 (1805).

*Catharinea ehrharti* Voit, Musc. Herbip. 17 (1812).

*Callibryum undulatum* Zenker et Dietrich, Musc. Thur. n. 41 (1822).

**Loc.** *Taoyuan*: Wulai, Isheng Tsun, Fuhsing Hsiang, alt. 370 m' (C. K. Wang-0855, Aug. 25, 1960); *Hsinchu*: Kuei Shan, Wufeng Hsiang, alt. 2300 m. (C. K. Wang-1623 & 1638b, April 1, 1962) and alt. 2400 m. (C. K. Wang-1645, April 1, 1932); *Taichung*: Chunghsueh Shan, Hoping Hsiang, alt. 2200 m (C. K. Wang-0797, Oct. 18, 1930), Hsiao hsueh Shan-Tahsueh Shan, Hoping, alt. 2700 m. (C. K. Wang-1221 & 1222, May 8, 1931), and Huoshih Shan-Hsueh Shan, Hoping Hsiang, alt. 3100 m. (C. K. Wang-1339, May 12, 1931); *Chiai*: Ali Shan, Wufeng Hsiang, alt. 2300 m. (T. S. Wang-1479, April 21, 1962).

**Hab.** On rock, soil and decayed wood in the coniferous forest with luxuriant undergrowth of alpine bamboo as well as in Japanese fir plantation, or rarely on rock in evergreen hardwood forest.

**Distr.** China, Japan, Philippines, Vietnam, Pakistan, Europe, North America.

***Pogonatum contortum*** (Schwaegrichen) Sullivant, Icones Musc. Suppl. 58, pl. 42 (1874).

*Polytrichum contortum* Schwaegrichen, Suppl. 1: (2): 325, pl. 96 (1816).

*Pogonatum laterale* Bryol. Univ. 2: 112 (1827).

*Pogonatum atrovirens* Mitten, Journ. Linn. Soc. Bot. 8: 49 (1865).

*Pogonatum dentatum* Lesquereux, Mem. Cal. Acad. Sci 1: 27 (1868).

*Pogonatum erythrodontium* Kindberg, in Macoun, Cat. Can. Pl. 6: 150 (1892).

*Pogonatum asperrimum* Bescherelle, Ann. Sci. Nat. ser. 7, Bot. 17: 355 (1893).

*Catharinella atrovirens* Kindberg, Rev. Bryol. 21: 35 (1894).

*Catharinella contorta* Kindberg, Rev. Bryol. 21: 35 (1894).

*Catharinella erythrodontia* Kindberg, Rev. Bryol. 21: 36 (1894).

*Pogonatum contortum* (Menzies) Lesquereux var. *elatum* Sakurai, Bot. Mag. Tokyo 49: 132 (1935).

*Pogonatum contortum* (Menzies) Lesquereux var. *pallidum* auct. non Lindberg: Sakurai, Bot. Mag. Tokyo 49: 132 (1935).

**Loc.** *Hsinchu*: Kuei Shan, Wufeng Hsiang, alt. 2400 m. (C. K. Wang-1627, April 1, 1962).

**Hab.** On soil along roadside in alpine grassland.

**Distr.** Japan, Korea, Amur, Sakhalin, Kamchatka, Kuriles, Hongkong, western North America.

***Pogonatum formosanum*** Horikawa, Bot. Mag. Tokyo 49: 59, f. 6 (1935).

**Loc.** *Taichung*: Anma Shan, Hoping Hsiang, alt. 2000 m. (C. K. Wang-0644, Feb. 15, 1960) and alt. 2500 m. (C. K. Wang-0693, Feb. 17, 1960).

**Hab.** On rock in creek and on ground in hemlock forest with luxuriant undergrowth of alpine bamboo.

**Distr.** Endemic.

***Pogonatum urnigerum*** (Hedwig) Beauvois, Prodr. 84 (1805).

*Polytrichum ramosum, setis ex alis urnigeris* Dillenius, Hist. Musc. 427, t. 55, f. 5 (1741).

*Bryum urnigerum* Necker, Delic. Gallo-Belg. 2: 462 (1768).

*Polytrichum dubium* Scopoli, Fl. Garn. ed. 2. 2: 310 (1772).

*Polytrichum axillare* Lamarck, Fl. Franc. 1: 43 (1778).

*Polytrichum pulverulentum* Reyner, Act. Lausan. 2, P. 1, 11 (180).

*Polytrichum urnigeum* Hedwig, Spec. Musc. Frond., 100 t. 5-7 (1801).

*Polytrichum fasciculatum* Michaux, Fl. Bor. Amer. 2: 294 (1803).

*Pogonatum fasciculatum* Beauvois, Prodr. 84 (1805).

*Pogonatum pulverulentum* Beauvois, Prodr. 84 (1805).

*Pogonatum urnigerum* var. *fasciculatum* Bridel, Bridel, Bryol. Univ. 2: 126 (1827).

*Pogonatum urnigerum* var. *pulverulentum* Bridel, Univ. 2: 126 (1827).

*Pogonatum himalayanum* Mitten, Journ. Linn. Soc. Bot. Suppl. 1, 151 (1859).

*Polytrichum higoense* Sakurai, Bot. Mag. Tokyo 50: 373 (1936).

**Loc.** *Hsinchu*: Kuei Shan, Wufeng Hsiang, alt. 2300 m. (C. K. Wang-1622, April 1, 1962); *Taichung*: Tahsueh Shan, Hoping Hsiang, alt. 3100 m. (C. K. Wang-1253, May 9, 1961), alt. 3300 m. (C. K. Wang-1284, May 9, 1961) and alt. 3400 m. (C. K. Wang-1272 & 1275, May 9, 1961) and Hsueh Shan, Hoping Hsiang, alt. 3700 m. (C. K. Wang-1357, May 13, 1961).

**Hab.** On soil and rock in exposed area, alpine grassland, hardwood-conifer mixed forest, and fir forest with luxuriant undergrowth of alpine bamboo.

**Distr.** China, Korea, Japan, Kamchatka, India, Nepal, Iran, Caucasus, Europe, Canary Islands, North America.

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## 臺灣苔類植物雜記 (一)

王忠魁

筆者自公元一九五八年以來曾不斷入山採集蘚苔植物標本。所獲採集品中新記錄種爲數不少，大多數已於去年發表。然其中仍有少數新記錄種，猶待公諸同好。此外其中另有多數標本，係屬臺灣本島已有分佈記錄之種類，而由筆者在其本島原記錄產地以外之多數地區採得者。此等苔類植物既未列入筆者發表之臺灣苔類植物目錄中，且其在本島分佈之新資料又非全無學術研究價值。爰就所得，撰就此文，一則補充臺灣苔類植物目錄，再則提供同好參考。

## NOTES ON FORMOSAN MOSS FLORA I.

Chung K'uei Wang

Here placed on record are 32 species representing 22 genera or 15 families. Among these species two are new additions to the island flora and the others are significant in local distribution.