

MOSES NEW TO FORMOSA

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In spite of the tremendous interest on the most part of professional botanists in the vegetation of Taiwan, with its large number of tropical taxa in all plant groups, and apart from the contributions to the island bryophyte flora made by the earlier European and Japanese bryologists, it is surprising to note that little serious work has been done with the bryophytes until recent years. Nevertheless, it is good to know that various students and members of the faculty or other employees of the National Taiwan University have manifested an interest in the bryophytes. Moreover, during the last ten years the writer has done extensive collecting and field studies throughout the island in connection with his work on the bryogeography of the island of Formosa. Now he has an herbarium numbering about 5000 specimens. Through the generosity of Dr. Z. Iwatsuki and Dr. H. Ando this herbarium has been considerably expanded. Consequently, his collections have added materially to the list of species now known to occur in Formosa and, hence then, have added many range extensions.

The purpose of the present publication is primarily to bring together the knowledge resulting from the writer's collections through many years and to make the results available to future generations of students who may be able to increase the list or base investigations of various kinds upon it. It may also be of interest to botanists of other regions by helping to fill in the gaps in knowledge of the geographical distribution of these plants.

All of the species enumerated below are among the writer's collections and had not previously been found in Formosa. The list is not intended to cover species ever reported before from this area and those not found by the writer. The nomenclature is intended to represent priority, beginning with Hedwig's *Species Muscorum Frondosorum* of 1801; otherwise current names may be used, or included as synonyms, wherever it is botanically significant. The arrangement of species under each genus is alphabetical; but it is first chronological, second alphabetical, in the arrangement of synonyms under each species.

Since it would be inevitable that errors should creep in and facts be overlooked in dealing with a subject of this kind because of the limited facilities and reference literature for attaining accuracy, it is to be assured that any suggestions, corrections or additions will be exceedingly welcome.

*The author is greatly indebted to Dr. Zenoske Iwatsuki, Associate Director of the Hattori Botanical Laboratory; for the examination of the specimens.

ENUMERATION OF THE SPECIES

Dicranaceae

Dicranodontium nitidum (Dozy et Molkenboer) Fleischer, Laubmfl. Java **1**: 87 (1900-1902).

Campylopus nitidus Dozy et Molkenboer, Musc. Frond. Ined. Archip. Ind. 139, pl. 43 (1846).

Loc. Taichung: Tahsueh Shan, Hoping Hsiang, alt. 3000 m. (C. K. Wang-1238, May 8, 1961).

Hab. On exposed root of hemlock stump in fir forest with luxuriant undergrowth of alpine bamboo.

Distr. Japan, Philippines, Celebes, Borneo, Java.

Paraleucobryum longifolium (Ehrhart) Loeske, Hedwigia **47**: 171 (1908).

Dicranum longifolium Ehrhart, Dec. Crypt. n. 114 (1786).

Dicranum albicans var. *denticulatum* Kindberg, in Macoun Cat. Can. Pl. **6**: 261 (1892).

Dicranum serratum Kindberg, Eur. and N. Am. Bryin. 190 (1897).

Campylopus canadensis Kindberg, Rev. Bryol. **32**: 35 (1905).

Dicranum stirtoni Wilson, mss.

Loc. Taichung: Anma Shan, Hoping Hsiang, alt. 2300 m. (C. K. Wang-625, Feb. 14, 1960); Kaohsiung: Nanfeng Shan, Maolin Hsiang, alt. 1200 m. (C. K. Wang-1094, Mar. 30, 1961).

Hab. On rock in shaded place in evergreen hardwood forest and on decayed branch stub on trunk of *Cryptomeria* in the plantation.

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

Oreoweisia serrulata (Funck) De Notaris, Atti Univ. Genova **1**: 489 (1869).

Weisia serrulata Funck, in Bridel, Bryol. Univ. **1**: 804 (1827).

Oreoweisia serrulata var. *tenuior* Kindberg, in Macoun, Cat. Can. Pl. **6**: 15 (1892).

Oreoweisia obtusata Kindberg, Rev. Bryol. **23**: 18 (1896).

Loc. Taichung: Hsiaohsueh Shan, Hoping Hsiang, alt. 2800 m. (C. K. Wang-1025 May 6, 1961).

Hab. On rock in hemlock forest.

Distr. China, Asia, Europe, and North America.

Dicranum flagellare Hedwig, Spec. Musc. Frond. 130 (1801).

Bryum flagellare Hoffmann; Deutsch, Fl. **2**: 37 (1796).

Dicranum miquelonense Renauld et Cardot, Bot. Gaz. **14**: 93 (1889).

Dicranum crispatum Kindberg, Eur. & N. Am. Bryin. 189 (1897).

Orthodicranum flagellare (Hedwig) Loeske, Studien 85 (1910).

Loc. Taichung: Hsiaohsueh Shan, Hoping Hsiang, alt. 2994 m. (C. K. Wang-669, Feb. 17, 1960).

Hab. On trunk of hemlock tree in the forest.

Distr. China, Japan, Korea, Manchuria, Sakhalin, Siberia, Caucasus, Europe, Canary Islands,

and North America.

Dicranum hamulosum Mitten, Trans. Linn. Soc. Lond. Bot. ser. 2, **3**: 156 (1891).

Orthodicranum crispofalcatum Schimper ex Beschereille, Ann. Sci. Nat. ser. 7, Bot **17**: 331 (1893).

Dicranum fauriei Brotherus et Paris; Bull. Herb. Boiss. **2**: 920 (1902).

Dicranum perindutum Cardot, Bull. Herb. Boiss. ser. 2, **7**: 715 (1907).

Orthodicranum hamulosum (Mitten) Brotherus, in E. & P., Nat. Pflanzenfam. ed. 2; **10**: 203 (1924).

Loc. *Hsinchu*: Luchangta Shan, Naoliao, Wufeng Hsiang, alt. 2100 m. (C. K. Wang-1668, April 2, 1962).

Hab. On humus covering exposed root of tree in evergreen hardwood forest.

Distr. Japan and Sakhalin.

Calympereaceae

Syrrhopodon gardneri (Hooker) Schwaegrichen, Suppl. 2, P. 2, 110 (1826).

Calymperes gardneri Hooker, Muse. Exot. pl. 146 (1818).

Syrrhopodon curranii Brotherus, Philip. Journ. Sci. Bot. **5**: 142 (1910).

Loc. *Kaohsiung*: Nanfeng Shan, Maolin Hsiang, alt. 1000 m. (C. K. Wang-1069, Mar. 30, 1961) and alt. 1200 m. (C. K. Wang-1089, Mar. 30, 1961).

Hab. On decayed wood in evergreen hardwood forest and on basal part of trunk of tree in *Cunninghamia* plantation.

Distr. Philippines, Borneo, Java, Ceylon, Himalayas, and Thailand.

Syrrhopodon japonicus (Beschereille) Brotherus, in E. & P., Nat. Pflanzenfam. ed. 2, **10**: 233 (1924).

Calymperes japonicus Beschereille, Ann. Sci. Nat. Bot. 296 (1895).

Loc. *Hsinchu*: Luchangta Shan, Wufeng Hsiang, alt. 1900 m. (C. K. Wang-1578, Mar. 31, 1962), Kuei Shan, Wufeng Hsiang, alt. 2300 m. (C. K. Wang-1604 & 1609, Mar. 31, 1962); *Taichung*: Anma Shan, Hoping Hsiang, alt. 2300 m. (C. K. Wang-610, Feb. 13, 1960), and Hsiaohsueh Shan, Hoping Hsiang, alt. 2500 m. (C. K. Wang-707, Oct. 14, 1960); *Ilan*: Tayuan Shan, Tatung Hsiang, alt. 1100 m. (C. K. Wang-368, Aug. 13, 1959).

Hab. On soil rich in humus in hardwood and conifer mixed forest and on rotten wood in hemlock and pine mixed forest and on rock in evergreen hardwood forest.

Distr. Japan.

Pottiaceae

Tortella tortuosa (Turner) Limpricht, Laubm. Deutschl. **1**: 604 (1890).

Tortula tortuosa Turner, Musc. Hib. 52 (1804).

Tortula incrassata Bridel, Sp. Musc. **1**: 264 (1806).

Barbula tortuosa Weber et Mohr, Bot. Taschen. 205 (1807).

Barbula tortuosa var. *incrassata* Bridel, Bryol. Univ. **1**: 57 (1826).

Mollia tortuosa Lindberg, Musc. Scand. 21 (1876).

Barbulosa subtortuosa C. Mueller, Nuov. Giorn. Bot. Ital. 100 (1896).

Trichostomum tortuosum Dixon; Handb. Brit. Moss. ed. 1, 221 (1896).

Loc. *Kaohsiung*: Nanfeng Shan, Maolin Hsiang, alt. 1200 m. (C. K. Wang-1084, Mar. 30, 1961).

Hab. On rock in evergreen hardwood forest.

Distr. China, Japan, Nepal, Pakistan, Europe and North America.

Hyophila rosea Williams, Bull. N. Y. Bot. Garden 8: 341 (1914).

Loc. *Taoyuan*: Chiaopan Shan, Fuhsing Hsiang, alt. 350 m. (C. K. Wang-837, Aug. 24, 1960); *Pingtung*: Hsiangtsiao Bay, Hengchun Peninsula (C. K. Wang-475, Aug. 1, 1960).

Hab. On rock in shaded place and on coral limestone in virgin coastal forest.

Distr. Philippines.

Grimmiaceae

Grimmia apocarpa Hedwig, Spec. Musc. Frond. 76 (1801).

Grimmia apocaulos Lamarck, Cand. Fl. Frenc. ed. 3, 1: 458 (1805).

Grimmia fasculata Bridel, Mant. 33 (1819).

Grimmia apocarpa a vulgaris Hartmann, Skand. Fl. ed 1, 387 (1820).

Grimmia strigosa Bridel, Bryol. Univ. 1: 171 (1826).

Grimmia fusca Nees, Hornschuch et Sturm, Bryol. Germ. 120 (1827).

Schistidium apocarpum Bruch et Schimper, Bryol. Eur. Fasc. 25-28, p. 7, t. 3 (1845).

Grimmia apocarpa, f. *vulgaris* Zett.; Rev. Grimm. Scand. 52 (1861).

Grimmia platyphylla Stirt., Scott. Nat. 27: 219 (1890).

Schistidium apocarpum subsp. *vulgare*. Loeske, Laubm. Eur. 1: 26 (1913).

Grimmia gracillima Bartram, Bryologist 27: 72 (1924).

Loc. *Taichung*: Tahsueh Shan, Hoping Hsiang, alt. 3500 m. (C. K. Wang-1282, May 9, 1961), and Tahsueh Shan-Touying Shan, Hoping Hsiang, alt. 3200 m. (C. K. Wang-1302, May 10, 1961).

Hab. On rock in open rocky area of the summit of Tahsueh Shan and in hemlock forest with luxuriant undergrowth of alpine bamboo.

Distr. China, Japan, Manchuria, Pakistan; widespread throughout most of the world.

Rhacomitrium anomodontoides Cardot, Bull. Herb. Boiss. 8: 335 (1908).

Loc. *Taichung*: Upstream area of Chihlo Chi, Hoping Hsiang, alt. 3100m. (C. K. Wang-1378, May 13, 1961).

Hab. On rock in fir and hemlock mixed forest with luxuriant undergrowth of alpine bamboo in ravine.

Distr. China, Japan, and Korea.

Rhacomitrium carinatum Cardot, Bull. Herb. Boiss. 8: 335 (1908).

Loc. *Taichung*: Tahsueh Shan—Touying Shan, Hoping Hsiang, alt. 3100 m. (C. K. Wang-1294, May 10, 1961).

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

Distr. Japan and Korea.

Rhacomitrium heterostichum (Hedwig) Bridel, Musc. Recent. Suppl. 4, 76 (1819).

Trichostomum heterostichum Hedwig; Spec. Musc. Frond. 109 (1801).

Dryptodon carnosus Bridel, Bryol. Univ. 206 (1826).

Trichostomum carnosum auct. non Dickson: Bridel, Bryol. Univ. 206 (1826).

Trichostomum stenocarpum Hampe, in Huebener, Musc. Germ. 208 (1833).

Grimmia heterosticha C. Mueller, Synops. Musc. 1: 807 (1849).

Rhacomitrium heterostichum, subsp. *vulgare* Loeske, Laaubm. Eur. 1: 183 (1913).

Loc. *Taichung*: Huoshih Shan (Taian Hsiang, Miaoli) - Touying Shan, Hoping Hsiang, alt. 3100 m. (C. K. Wang-1391, May 14, 1961), and Hsueh Shan*, Hoping Hsiang, alt. 3700 m. (C. K. Wang-1359 & 1372, May 13, 1961).

Hab. On rock in fir forest with luxuriant undergrowth of alpine bamboo and in exposed area of the summit of Hsueh Shan.

Distr. China, Japan, Asia, Europe, Azor, Madeira, North America, Kerguelen, New Zealand, and Tasmania.

Bryaceae

Pohlia tozeri (Greville) Delile, Fl. Crypt. Berg. M. 159 (1844).

Bryum tozeri Greville, Scot. Crypt. Fl. 5, t. 285 (1827).

Bryum marginatum Bruch, Fr. Mull. Musc. Sard. (1827).

Webera tozeri Schimper, Coroll. 67 (1855).

Anisostichium tozeri Mitten, Journ. Linn. Soc. Bot. 7: 119 (1863).

Epipterygium tozeri Lindberg, Oefv. K. Vet.-Akad. Foerh. 577 (1865).

Epipterygium nagasakense Brotherus, Hedwigia 38: 217 (1899).

Mniobryum mayebarae Sakurai, Bot. Mag. Tokyo 51: 794 (1937).

Epipterygium nagasakense var. *pallidum* Horikawa et Ochi, Journ. Jap. Bot. 28: 338, f. 3 (1953).

Epipterygium tozeri var. *rotundifolium* Ochi et Mayebara, in Ochi, Journ. Jap. Bot. 30: 80, f. 4 (1955).

Bryum iseanum Sakurai, mss.

Mniobryum euryloma Dixon, mss.

Loc. *Taichung*: Anma Shan, Hoping Hsiang, alt. 2200 m. (C. K. Wang-48, Dec. 9, 1958).

Hab. On soil in open place.

Distr. China, Japan, Asia, Europe, and North America; almost pan-tropical (eastern part of North America excepted).

Mniaceae

Orthomniopsis japonica Brotherus, Oefv. Finsk. Vet.-Soc. Foerhandl. 49(10): 1 (1905-06).

Loc. *Taitung*: Upstream area of Luming Chi, Hungyeh Tsun, Yenping Hsiang, alt. 1100 m. (C. K. Wang-945, Mar. 26, 1961).

Hab. On hardwood log lying on roadside in damp evergreen hardwood forest.

*Known also as Mt. Sylvia.

Distr. China, Japan, Philippines, New Guinea, and Assam.

Bartramiaceae

Bartramia pomiformis Hedwig, Spec. Musc. Frond. 164 (1801).

Bartramia pomiformis var. *crispa* (Bridel) B.S.G.; Bry. Bur. 4: 43 (1842).

Bartramia vulgaris Lamk De Candolle, Fl. Franc. 1: 509 (1865).

Bartramia crispa B. *pomiformis* Lindberg, Musc. Scand. 15 (1879).

Bartramia crispata Schimper, in Bescherelle, Ann. Sci. Nat ser. 7, Bot 17: 348 (1895).

Bartramia hakonensis Bescherelle, Journ. Bot. 12: 229 (1898).

Bartramia stenophylla Cardot, Beih. Bot. Centralbl. 17: 16 (1904).

Loc. *Hsinchu*: Kuei Shan, Wufeng Hsiang, alt. 2200 m. (C. K. Wang-1583a, Mar. 31, 1962) and alt. 2300 m. (C. K. Wang-1661a, April 1, 1962).

Hab. On soil rich in humus in hardwood and conifer mixed forest.

Distr. China, Japan, Pakistan, Himalaya, Manchuria, Amur, Kamtschatka, Caucasus, Europe, Algier, and North America.

Orthotrichaceae

Zygodon viridissimus (Dickson) Brown, Trans. Linn. Soc. Bot. 12: 575 (1819).

Bryum viridissimum Dickson; Fasc. Pl. Cr. 4: 9, t. 10; f. 18 (1801).

Dicranum viridissimum Smith, Fl. Brit. 1224 (1804).

Gymnostomum viridissimum Smith, Eng. Bot t. 1583 (1805).

Amphoridium viridissimum De Notaris, Epil. 277 (1869).

Loc. *Taichung*: Anma Shan, Hoping Hsiang, alt. 2300 m. (C. K. Wang-611, Feb. 13, 1960), and Hsiaohsueh Shan, Hoping Hsiang, alt. 2994 m. (C. K. Wang-668a, Feb. 17, 1960).

Hab. On bark of hardwood log in conifer and hardwood mixed forest and on basal portion of trunk of old hemlock tree in open area.

Distr. China, Japan, Nepal, Asia, Caucasus, Europe, Mediterranean region, Canary Islands, and North America; circumboreal.

Schlotheimia latifolia Cardot et Theriot, Bull. Acad. Int Geogr. Bot. 17: 250 (1908).

Loc. *Taitung*: Upstream area of Luming Chi, Chulu Tsun, Peinan Hsiang, alt. 700 m. (C. K. Wang-919, Mar. 26, 1961).

Hab. On decaying log in evergreen hardwood forest.

Distr. Ryukyu and Japan.

Macromitrium comatulum Brotherus, Oefv. Finsk. Vet.-Soc. Foerhandl. 62: 14 (1920).

Loc. *Kaohsiung*: Nanfeng Shan, Maolin Hsiang, alt. 1200 m. (C. K. Wang-1095, Mar. 30, 1961).

Hab. On bark of decaying branch on floor in evergreen hardwood forest.

Distr. Japan.

Macromitrium ferriei Cardot et Theriot, Bull. Acad. Intern. Geogr. Bot. 17: 250 (1908).

Loc. *Hsinchu*: Luchangta Shan, Chingchuan-Naoliao, Wufeng Hsiang, alt. 900 m. (C. K. Wang-1500, Mar. 30, 1962).

Hab. On rock near stream in evergreen hardwood forest in ravine.

Distr. Ryukyu.

Rhacopilaceae

Rhacopilum ferriei Theriot, Le Monde des Plantes **9**: 22 (1907).

Loc. *Taoyuan*: Tzohen Tsun, Fuhsing Hsiang, alt. 350 m. (C. K. Wang-836, Aug. 24, 1960); *Chiai*: Tashihniao, Chungpu Hsiang, alt. 220 m. (C. K. Wang-429, July 13, 1960); *Kaohsiung*: Nanfeng Shan, Maolin Hsiang, alt. 1200 m. (C. K. Wang-1083, Mar. 30, 1961) and alt. 1400 m. (C. K. Wang-1027, Mar. 29, 1961); *Pingtung*: Hengchun Tropical Arboretum, Kenting, Hengchun County, alt. 290 m. (C. K. Wang-472, July 31, 1960).

Hab. On wet rock in shaded place and in creek, on decaying oak log and trunk of broad-leaved tree in evergreen hardwood forest, and on coral limestone in coastal areas.

Distr. Ryukyu.

Pterobryaceae

Pterobryum arbuscula Mitten, Trans. Linn. Soc. Lond. Bot. **3**: 171 (1891).

Loc. *Hsinchu*: Kuei Shan, Wufeng Hsiang, alt. 2400 m. (C. K. Wang-1657, April 1, 1962); *Taichung*: Anma Shan, Hoping Hsiang, alt. 2300 m. (C. K. Wang-626, Feb. 14, 1960); *Ilan*: Tayuan Shan, Tatung Hsiang, alt. 1100 m. (C. K. Wang-375, Aug. 13, 1959).

Hab. Hanging from stem of small dead tree on ground in cut-over area of conifer forest, on hemlock log, and on trunk of cedar tree standing on mountain ridge.

Distr. Ryukyu and Japan.

Meteoriaceae

Meteorium papillarioides Noguchi, Journ. Jap. Bot. **13**: 788, f. 2 (1937).

Papillaria nigrescens anct. non Jaeger: Sakurai, Bot. Mag. Tokyo **50**: 618 (1936).

Loc. *Taitung*: Upstream area of Luming Chi, Hungyeh Tsun, Yenping Hsiang, alt. 900 m. (C. K. Wang-960, Mar. 26, 1961) and alt. 1100 m. (C. K. Wang-944, Mar. 26, 1961).

Hab. On hardwood log in evergreen hardwood forest.

Distr. Japan.

Barbella rufifolioides (Brotherus) Brotherus, in E. & P., Nat. Pflanzenfam. ed. 2, **11**: 168 (1925).

Chrysocladium rufifolioides Brotherus, Philip. Journ. Sci. Bot. **5**: 153 (1910).

Loc. *Hsinchu*: Luchangta Shan, Naoliao-Kuei Shan, Wufeng Hsiang, alt. 1800 m. (C. K. Wang-1564, Mar. 31, 1962).

Hab. Hanging from rock in *Cryptomeria* plantation.

Distr. Philippines.

Pseudobarbella kiushiuensis (Brotherus) Noguchi, Journ. Hattori Bot. Lab. **2**: 81 (1947).

Barbella kiushiuensis Brotherus, Rev. Bryol. **2**: 8 (1929).

Aerobryopsis kiushiuensis Noguchi, Journ. Sci. Hiroshima Univ. B, **2**, **3**: 17 (1936).

Meteoriopsis ancistrodes auct. non Brotherus: Sakurai, Bot. Mag. Tokyo **50**: 619 (1936).

Loc. *Kaohsiung*: Shanping, Maya Tsun, Maolin Hsiang, alt. 700 m. (C. K. Wang-999, Mar. 28, 1961).

Hab. On rock in evergreen hardwood forest.

Distr. Ryukyu and Japan.

Floribundaria nipponica Noguchi, Journ. Hattori Bot. Lab. **3**: 96, f. 41 (1948).

Loc. *Hsinchu*: Kuei Shan, Wufeng Hsiang, alt. 2300 m. (C. K. Wang-1688a, April 1, 1962).

Hab. On rotten wood in conifer forest.

Distr. Japan.

Lembophyllaceae

Isothecium subdiversiforme Brotherus var. *filiforme* Noguchi, Journ. Hattori Bot. Lab. **4**: 46 (1950).

Loc. *Taichung*: Tahsueh Shan-Touying Shan, Hoping Hsiang, alt. 3100 m. (C. K. Wang-1323, May 10, 1961).

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

Distr. Ryukyu and Japan.

Hypopterygiaceae

Cyathophorella kyusyuensis Horikawa et Noguchi, Journ. Sci. Hiroshima Univ. B, 2, **3**: 25, pl. 2 (1936).

Loc. *Ilan*: Tayuan Shan, Tatung Hsiang, alt. 1000 m. (C. K. Wang-342, Aug. 9, 1959).

Hab. On rotten small branch on ground nearby railway.

Distr. Japan.

Thuidiaceae

Abietinella abietina (Linnaeus) C. Mueller, Nuov. Giorn. Bot. Ital. **3**: 115 (1896)

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

Thuidium abietinum Schimper, Bryol. Eur. Fasc. 49-51; 9, t. 5 (1852).

Loc. *Taichung*: Hsueh Shan, Hoping Hsiang, alt. 3700 m. (C. K. Wang-1356 and 1367, May 13, 1961).

Hab. On rock and soil rich in humus on open rocky lower slope of the peak of Hsueh Shan.

Distr. China, Japan, Kashmir, Nepal, Manchuria, Amur, Siberia, Central Asia, Caucasus, Spitzbergen, northern part of North America.

Plagiotheciaceae

Plagiothecium silvaticum (Hudson) Bruch et Schimper, Bryol. Eur. Fasc. 48, 14, pl. 11 (1851).

Hypnum silvaticum Hudson, Fl. Angl. 419 (1762).

Hypnum denticulatum var. *silvaticum* Turner, Musc. Hib. 146, t. 13 (1804).

Loc. *Taichung*: Tahsueh Shan-Touying Shan, Hoping Hsiang, alt. 3200 m. (C. K. Wang-1305, May 10, 1961).

Hab. On rock under juniper shrub growing in alpine grassland dominated by alpine bamboo.

Distr. Japan, Sakhalin, Siberia, Punjab, Caucasus, Europe, Madeira, Azoren, and North America.

Plagiothecium splendens Schimper ex Cardot, Bull. Soc. Bot. Geneve, ser. 2, 4: 384 (1912).

Plagiothecium denticulatum auct. non (Hedwig) B. S. G.: Lacoste, Ann. Mus. Bot. Lugd.-Batavi 2: 300 (1865-66).

Plagiothecium neckeroideum auct. non B. S. G.: Beschereille, Ann. Sci. Nat. ser. 7, Bot. 17: 384 (1893).

Plagiothectum matsumurae Okamura, Journ. Sci. Coll. Imp. Univ. Tokyo 36 (7): 39 (1915).

Plagiothecium doii Sakurai, Bot. Mag. Tokyo 62: 114 (1949).

Plagiothecium nemorale auct. non (Mittlen) Jaeger: Noguchi, Journ. Hattori Bot. Lab. 13: 49 (1955).

Loc. *Hsinchu*: Kuei Shan, Wufeng Hsiang, alt. 2600 m. (C. K. Wang-1636a, April 1, 1962).

Hab. On soil of beach of tarn in hemlock forest with undergrowth of alpine bamboo.

Distr. Japan, Philippines, Java, Sikkim, and Europe.

Hypnaceae

Hypnum densirameum Ando, Journ. Sci. Hiroshima Univ. B, 2, 8: 13, f. 13 (1957).

Ectropothecium fissibracteatum Dixon, in sched. Herb. Nat. Sci. Mus. Tokyo.

Hypnum fertile Sendtner, sensu Beschereille, Ann. Sci. Nat. ser. 7, Bot 17: 387 (1893).

Stereodon fertilis Lindberg, sensu Paris, Bull. Herb. Boiss. 2: 990 (1902).

Hypnum reptile Michaux, sensu Yano, Bot. Mag. Tokyo 68: 196 (1955).

Loc. *Taichung*: Tahsueh Shan, Hoping Hsiang, alt. 3100 m. (C. K. Wang-1248, May 9, 1961).

Hab. On decayed wood in fir forest with luxuriant undergrowth of alpine bamboo.

Distr. Japan.

Hypnum pallescens (Hedwig) B.S.G., Bryol. Eur. Fasc. 57-61, pl. 586 (1854).

Leskea pallescens Hedwing, Spec. Musc. Frond. 219, t. 55, f. 1-6 (1801).

Rhynchostegium jamesii Sullivant, Icon. Musc. Suppl. 92, pl 68 (1874).

Hypnum depressulum C. Mueller, Flora 58: 91 (1875).

Loc. *Taichung*: Hsueh Shan, Hoping Hsiang, alt. 3500 m. (C. K. Wang-1352, May 12, 1961).

Hab. On decayed wood in juniper forest.

Distr. China, Japan, and Central Europe.

Vesicularia flaccida (Sullivant et Lesquereux) Iwatsuki, Journ. Hattori Bot. Lab. 26: 70 (1963).

Hypnum flaccidum Sullivant et Lesquereux, Proc. Amer. Acad. Arts Sci. 4: 280 (1860).

Isopterygium flaccidum (Sullivant et Lesquereux) Mitten, Trans. Linn. Soc. Bot. 3: 176 (1891).

Isopterygium yokoskiae Bescherelle, Ann. Sci. Nat. ser. 7; Bot. **17**: 386 (1893).

Plagiothecium delicatulum Bratherus, Oefv. Finsk. Vet.-Soc. Foerhandl. **62**: 47 (1921).

Loc. *Hsinchu*: Luchangta Shan, Naoliao-Kuei Shan, Wufeng Hsiang, alt. 1800 m. (C. K. Wang-1558, Mar. 31, 1962), and Kuei Shan, Wufeng Hsiang, alt. 2300 m. (C. K. Wang-1599 & 1508a, April 1, 1962); *Kaohsiung*: Nanfeng Shan, Maolin Hsiang, alt. 1000 m. (C. K. Wang-1075, Mar. 30, 1961).

Hab. On rotten wood and soil rich in humus in evergreen hardwood forest or in conifer and hardwood mixed forest.

Distr. Japan, Siberia, and Europe.

Sharpiella spinulosa (Sullivant et Lesquereux) Iwatsuki, Journ. Hattori Bot. Lab. **28**: 205, f. 2, k-t (1965).

Hypnum spinulosum Sullivant et Lesquereux, Proc. Amer. Acad. Arts Sci. **4**: 280 (1860).

Isopterygium perrobustum Brotherus ex Cardot, Bull. Soc. Bot. Geneve **4**: 387 (1912).

Isopterygium hisauchii Okamura, Journ. Coll. Sci. Imp. Univ. Tokyo **38**(4): 65 (1916).

Dolichotheca perrobusta (Brotherus) Brotherus, in E. & P., Nat Pflanzenfam. ed. 2; **11**. 465 (1925).

Taxiphyllum hisauchii (Okamura) Sakurai, Bot. Mag. Tokyo **46**: 384 (1932).

Gollania rhynchostegioides Dixon et Theriot, Tra. Bryol. **1**: 18 (1942).

Dolichotheca hisauchii (Okamura) Iwatsuki, Journ. Hattori Bot. Lab. **26**: 67 (1963).

Dolichotheca spinulosa (Sullivant et Lesquereux) Iwatsuki, Journ. Hattori Bot. Lab. **26**: 69 (1963).

Loc. *Hsinchu*: Kuei Shan. Wufeng Hsiang, alt. 2400 m. (C. K. Wang-1655, April 1, 1962)

Hab. On bark of large rotten branch of dead tree lying on ground in cut-over area of conifer forest.

Distr. Japan & Korea.

Hylocomiaceae

Hylocomium himalayanum (Mitten) Jaeger, Adumbr. **2**: 612 (1877-78).

Stereodon himalayanum Mitten, Journ. Linn. Soc. Bot. Suppl. **1**, 113 (1859).

Loc. *Taichung*: Huoshih Shan—Touying Shan, Hoping Hsiang, alt. 3100 m. (C. K. Wang-1398, May 14, 1961).

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

Distr. Japan, Himalayas, Nepal.

Diphysciaceae

Diphyscium involutum Mitten, Journ. Linn. Soc. Bot. Suppl. **1**, 149 (1859).

Webera integerrima Brotherus, Leaf. Philip. Bot **2**: 653 (1909).

Diphyscium ryukyuense Noguchi, Journ. Jap. Bot. **11**: 272 (1953).

Loc. *Kaohsiung*: Nanfeng Shan, Maolin Hsiang, alt. 1200 m. (C. K. Wang-1098, Mar. 30, 1961).

Hab. On rock in evergreen hardwood forest.

Distr. Japan, Ryukyu, Philippines, Ceylon, and Khasia.

Polytrichaceae

Pogonatum akitense Bescherelle var. ***akitense*** Ann. Sci. Nat. ser. 7, Bot. 17: 454 (1893).

Pogonatum pygmaeum Cardot, Bull. Soc. Bot. Geneve, ser. 2, 1: 130 (1909).

Pogonatum inflexum (Lindberg) Paris var. *elatum* auct. non Reimers. Sakurai, Bot. Mag. Tokyo 49: 128 (1935).

Pogonatum kiusiuense Sakurai, Bot. Mag. Tokyo 49: 128 (1935)

Pogonatum shiroumanum Sakurai var. *major* Sakurai, Bot. Mag. Tokyo 49: 133 (1935).

Loc. Taichung: Anma Shan, Hoping Hsiang, alt. 2200 m. (C. K. Wang-41, Dec. 9, 1958).

Hab. On soil along roadside in evergreen hardwood forest.

Distr. Japan and Korea.

Pogonatum alpinum (Hedwig) Roehl., Ann. Wett. Gesell. 3: 226 (1812).

Polytrichum alpinum Hedwig, Spec. Musc. Frond. 92, t. 19, f. 2 & b (1801).

Polytrichum ambiguum Bridel. Spec. Musc. 1: 62 (1806).

Polytrichum ferrugineum Bridel, Spec. Musc. 1: 61 (1806).

Polytrichum furcatum Hornschuch, N. Esen. Hor. Phys. Berol. 67 (1820).

Pogonatum furcatum Hornschuch, Bryol. Univ 2: 133 (1827).

Polytrichum alpinum var. *furcatum* C. Mueller, Synops. Musc. Frond. 1: 211 (1849).

Loc. Taichung: Hsiaohsueh Shan, Hoping Hsiang, alt. 2700 m. (C. K. Wang-655, Feb. 17, 1960) and alt. 2994 m. (C. K. Wang-676, Feb. 17, 1960).

Hab. On rock shaded by pine trees in alpine grassland and on trunk of hemlock tree in hemlock forest.

Distr. China, Japan, Sakhalin, Pakistan, northern to central Asian Continent, Europe, North America, Oceania, and Antarctica.

Pogonatum cirratum (Swartz) Bridel, Bryol. Univ. 2: 110 (1827).

Polytrichum cirratum Swartz, Meth. Musc. 26 (1781).

Loc. Hsinchu: Luchangta Shan, Chingchuan—Naoliao, Wufeng Hsiang, alt. 1200 m. (C. K. Wang-1527, Mar. 30, 1962); Kaohsiung: Nanfeng Shan, Maolin Hsiang, alt. 1200 m. (C. K. Wang-1052, Mar. 29, 1961).

Hab. On soil in evergreen hardwood forest.

Distr. China, Nepal, Thailand, Laos, Malay Peninsula, Celebes, Borneo, Java, Sumatra, Amboina, New Guinea, Sandwich Island.

Pogonatum japonicum Sullivant et Lesquereux, Proc. Am. Acad. Arts Sci. 4: 278 (1859).

Polytrichum grandifolium. Lindberg, Acta Soc. Sci. Fenn. 10: 264 (1872) fide Iwatsuki, Journ. Hattori Bot. Lab. 29: 64 (1966).

Pogonatum grandifolium (Lindberg) Jaeger, Ber. S. Gall. Naturw. Ges. 1876-77: 715 (1878).

Pogonatum grandifolium var. *tosanum* Cardot, Bull. Soc. Bot. Geneve 1: 130 (1909).

Pogonatum grandifolium (Lindberg) Jaeger var. *ramosum* Ihsiba, Zoku Nippon Senrui Sosetsu 100 (1932).

Loc. *Taichung*: Anma Shan, Hoping Shan, alt. 2500 m. (C. K. Wang-688, Feb. 17, 1960).

Hab. On soil in hemlock forest with undergrowth of alpine bamboo.

Distr. Japan, Korea, Amur, Sakhalin, Kurile, and Kamchatka.

Pogonatum junghuhnianum (Dozy et Molkenboer) Bosch et Lacoste, *Bryol. Jav.* **1**: 41 (1856).

Polytrichum junghuhnianum Dozy et Molkenboer, *Pl. Jungh.* 323 (1854).

Polytrichum albo-marginatum C. Mueller, *Linnaea* **37**: 172 (1872).

Loc. *Hsinchu*: Luchangta Shan, Chingchuan—Naoliao, Wufeng Hsiang, alt. 1000 m. (C. K. Wang-1510, Mar. 30, 1962) and alt. 1800 m. (C. K. Wang-1568, Mar. 31, 1962), and Kuei Shan, Wufeng Hsiang, alt. 2300 m. (C. K. Wang-1613, Mar. 31, 1962) and alt. 2400 m. (C. K. Wang-1628, April 1, 1962).

Hab. On soil in evergreen hardwood forest and in hardwood and conifer mixed forest and in alpine grassland.

Distr. Ryukyu, Philippines, Indochina, Thailand, Burma, Sikkim, Nepal, Celebes, Borneo, Java, and South India.

Pogonatum microstomum (R. Brown) Bridel, *Bryol. Univ.* **2**: 745 (1827).

Polytrichum microstomum R. Brown, *Trans. Linn Soc. Bot.* **12**: 569 (1869).

Pogonatum mirabile Horikawa, *Bot. Mag. Tokyo* **49**: 671, f. 26 (1935).

Loc. *Taichung*: Tahsueh Shan—Touying Shan, Hoping Hsiang, alt. 3000 m. (C. K. Wang-1315, May 10, 1961).

Hab. On decayed wood in fir forest with luxuriant undergrowth of alpine bamboo.

Distr. China, Philippines, Himalayas, Nepal, Khasia, Nilghiris, South India, and Ceylon.

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臺灣苔類植物新記錄種

王忠魁

自本世紀初葉以來，臺灣蘚苔植物歷經歐西及東洋學者的採集與研究。已發表的報告皆屬於分類方面，散見於有關的期刊或植物學雜誌中。但由於當初種種的限制，採集範圍未能遍及全島各地山區。加以臺灣植物繁庶，蘚苔種類龐雜，調查未週。因此一切老的文獻往往都是零星片斷的報告，生態記錄多不具備，有時連地區名稱也不完全。筆者有見及此，遂自1958年以來就不斷入山採集蘚苔植物標本。現今已獲標本5000份左右，其中頗多珍品。爰就所得苔類新記錄種撰成此文，以供同好參考。

MOSSSES NEW TO FORMOSA

Chung K'uei Wang

The writer has done extensive collecting of mosses throughout the island of Formosa during the last ten years. 43 species in 31 genera or 19 families among his collections had not been previously recorded as occurring in Formosa.