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財 團 法 人

服 部 植 物 研 究 所

昭 和 27 年 9 月

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# ON THE GENUS FAVOLASCHIA AND CAMPANELLA FROM JAPAN\*

By Yosio KOBAYASI\*\*

小林義雄：日本産 Favolaschia 属其他に就て

In Japan, the bambusaceous species are peculiarly large in number spreading all over the country. In its southern territory, the high bamboo-bushes are commonly found, although in northern half the low bushes are covering on pretty vast area of its lowland and also attaining up to the pretty high mountains. Such bushes seem to offer a particularly fertile field for the tropical elements of fungi, for instance *Dictyophora indusiata* and *Mutinus bambusinus*. The genus *Favolaschia* has long been considered to be confined only in tropical and subtropical region, such as tropical America, Pacific Islands, Malay Archipelago, Philippines, Indochina, Australia and Africa. Recently, in the course of investigations on fungi upon bambusa-culms and on the humous ground among bamboo-bushes, the writer could find several interesting species belonging to the genus *Favolaschia* and its allies. Of five species here enumerated three were collected in highland or mountains, and one of them was found in so far north as Hokkaido. All the species so far discovered are almost confined on living or dead culms of bambusa. One species newly found in Isl. Aosima of Hiuga proved to illuminate from its fruitbodies and mycelia. The writer acknowledges the courtesies of Messrs. Rokuya Imazeki and Daisuke Simizu in sending many valuable specimens to the writer. All type specimens are preserved in the herbarium of Tokyo Science Museum.

1. *Favolaschia nipponica* Y. Kobayasi sp. nov. Fructificationes omnino gelatinosae hemisphaericae aut disciformes 3-6 mm in diam. (plerumque 3-4 mm) candidae vel pallidicinerascens inter dum semipellucidae siccitate ochrascentes sessiles ad substratum later aliter vel raro centraliter adnatae superne laeves non tessellatae paulo farinaceae margine incrassatae rectae vel incurvatae, poris rotundatis numquam polygonis 0.2-0.3 mm in diam. ca 50-100 in singulo pileo ad margine pilei non diminutis parietibus incrassatis; corticibus e hyphis tenuiparietalibus irregulariter percursis contextis, nec dendrophysibus nec pseudo physibus conspectis; textu e hyphis gelatinosis 1.8-3 $\mu$  crassis contexto. Basidia clavata 33-35 $\times$ 5-6 $\mu$ , 4-sterigmatica. Sporae ovoideae vel ellipsoideae hyalinae granulares 6-7 $\times$ 3.4-4.2 $\mu$ . Gloecystidia insignia in textu, trama et circiter marginem porarum immersae cylindrica 3-5 $\mu$  in diam. irregulariter curvata. Pseudophyses raro ex hymenio oriundae. Nom. Jap. Nikawa-anatake Hab. Gregarious on dead or living culms of bambusa. Honsyū: Kurobe-Valley (on *Sasa paniculata*), Kiso (on *Sasa paniculata* var. *ontakensis*), Oze (on *Sasa paniculata*), Mt. Titibu (on *Sasamorpha purpurascens*), Mt. Odaigahara-san (on *Actinidia arguta*) Hokkaidō: Nopporo (on a kind of bambusa)

The present species seems to be commonly found in Japan. In appearance, this has

\*The expense of this study was partly defrayed by the subsidy for the advancement of scientific researches

\*\*National Science Museum, Tokyo

some resemblances to *Laschia pezizaeformis*, differing, however, in the following characters.

*F. nipponica* 1. Long cylindrical gland cell (gloeocystidia) conspicuous under cuticular layer 2. Capitulate cell none on edges of pores 3. Not luminous.

*F. pezizaeformis* 1. Cylindrical cells not observed under cuticular layer 2. Capitulate gland cells with stalk on edges of pores 3. Both mycelia and fruitbodies obviously luminous.

From *F. pezizoidea*, this can be distinguished by the absence of dendrophyses. This is frequently parasitized by *Hymenostilbe mycetophila*, a *Stilbum*-like Dendromycetous fungus.

2. **Favolaschia phyllostachydis** Inazeki et Kobayasi sp. nov. Fructificationes gelatinosae semipellucidae albae stipitatae raro sessiles spathuliformes vel hemisphaericae 1-3.5 mm longae. Pilei hemisphaerici vel paulo applanati inferne porosi margine incrassati: textu e hyphis gelatinosis 1-1.5 $\mu$  crassis composito; poris 7-18 in singulo pileo rotundatis vel elongatis fere aequilongis. Gloeocystidia insignia circiter marginem porarum et infra corticem immersa cylindracea quam 90 $\mu$  longiora 2-3 $\mu$  in diam. apice distincte capitata, capitibus sphaeroideis 6-8 $\mu$  crassis granulatis. Basidia 15-18 $\times$ 4.5 $\mu$ , 4-sterigmatica. Sporae ovoideae 4.5-5 $\times$ 3.7-4 $\mu$ . Nom. Jap. Syamoji-rassitake Hab. Gregarious on the culms of bambusa. Honsyu: Mt. Izugatake (on *Phyllostachys reticulata*)

3. **Favolaschia fujisanensis** Y. Kobayasi sp. nov. Fructificationes primo cupuliformes minutissimae deinde disciformes 1-1.5 mm in diam. (ad 2 mm. attingentes) sessiles albidae externe farinaceae inferne lacunosae. Lacunae irregulares ad margine diminutae; textu e hyphis gelatinosis tenuiparietalibus 2-1 $\mu$  crassis contexto; corticibus obscuris e hyphis contextis, dendrophysibus, pseudophysibus nullis. Gloeocystidis infra corticem numerosa vesiculiformia hyalina 34-45 $\times$ 11-15 $\mu$ . Basidia 20-25 $\times$ 4 $\mu$ , 4-sterigmatica. Sporae ovoideae vel ellipsoideae 6-7 $\times$ 5 $\mu$ . Nom. Jap. Kotubu-rassitake Hab. On culms of bambusa. Foot of Mt. Fuji.

4. **Favolaschia pezizaeformis** (Berk. et Curt.) Sing. in Lloydia VIII p. 199 (1945) et XIII p. 251 (1950). *Laschia pezizaeformis* Berk. et Curt. in Proc. Amer. Ac. Art. Sci. IV p. 123 (1858); Y. Kobayasi in Bull. Biogeogr. Soc. Jap. VI p. 2 cum icon. (1937). *Hologloea pezizaeformis* (Berk. et Curt.) Pat. (1900). Fructifications sessile, attached to substratum by central part of dorsal surface, discoid or hemisphaerical, 1-3 mm. in diameter, white; dorsal surface convex, glabrous, farinaceous, ventral surface almost flat, consisting of 6-23 (commonly 8-15) pores which are oval or polygonal, with rather thick dissopiments. Gland cells on edges of pores capitulate or short clavate with stalk. Basidia clavate, 2 or 4-sterigmate, 25-35 $\times$ 6-8 $\mu$ . Spores ovoid or ellipsoid, smooth, hyaline, short pedicellate, inaequilateral, 4.5-5 $\times$ 7-8 $\mu$ . Nom. Jap. Enasi-rassitake. Hab. Gregarious on floral axis of *Livistona chinensis*, Aosima, Hiuga (Syōiti Hirata -28 Jun. 1951)

This fungus newly collected in Isl. Aosima proved to illuminate brightly from all part of fructifications as the original fungus of Bonin Islands. Colour of light is light blue or paler to white.

5. **Campanella Junghuhnii** (Mont.) Sing. in Lloydia VIII p. 192 (1945); *Cantharellus Junghuhnii* Mont (1841); *Laschia celebensis* Pat. (1887); *Laschia cucullata* Bres. (1910); *Campanella cucullata* (Bres.) Lloyd (1919). Nom. Jap. Amihidatake Hab. Gregarious on dead



culms of bambusa, Tokyo City; Prov. Kōzuke, Honsyu (on *Phyllostachys reticulata*); Micronesia; Isl. Palau, Truck and Ponape. In Japan, the present species is very rarely found. The size of spores seems to be somewhat variable, Japanese being 7-9 $\mu$  and Micronesian being 5-6 $\mu$ .

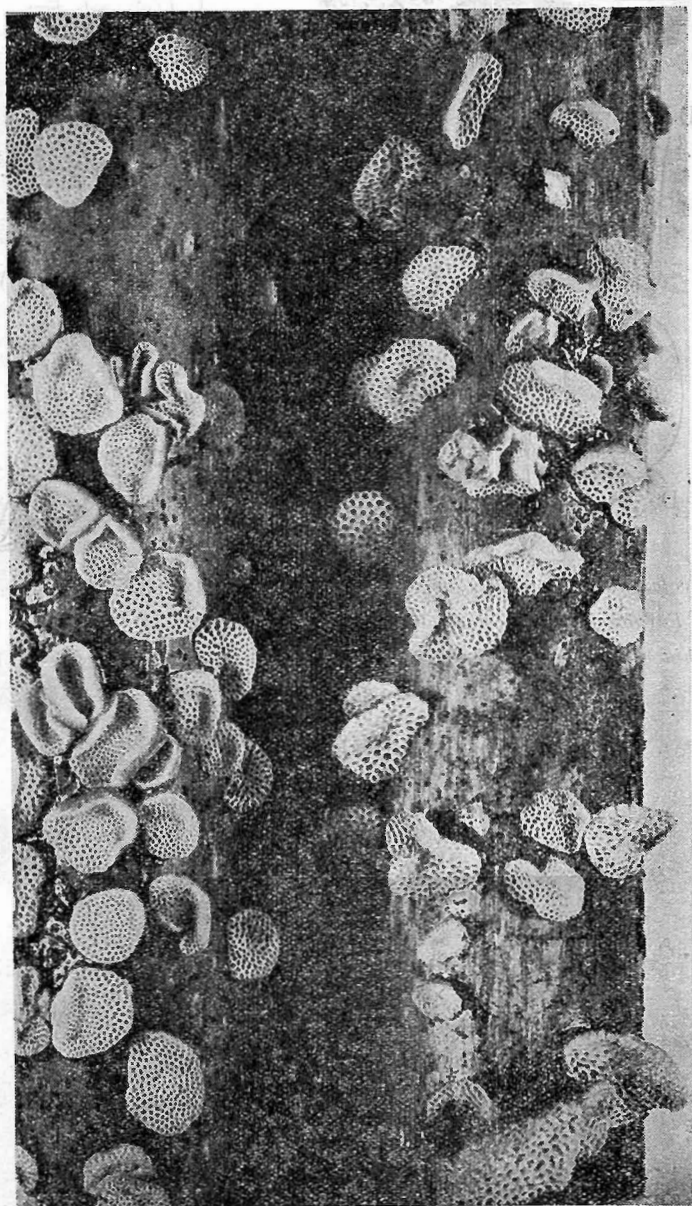


Fig. 1 *Favolaschia nipponica*  $\times 5$

Collected by D. Shimizu in Kurobe-valley (Sept. 5, 1948)

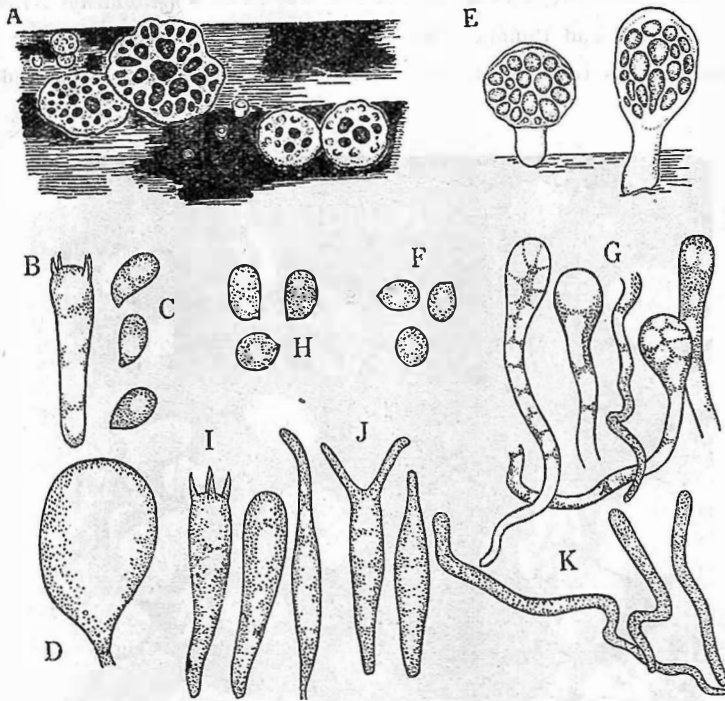


Fig. 2 A-D *Favolaschia fujisanensis* A Habitus  $\times 13$  B Basidia C Spores D Gloeocystidia  
 F-G *Favolaschia phyllostachydis* E Habitus  $\times 6$  F Spores G Gloeocystidia  
 H-K *Favolaschia nipponica* H Spores I Basidium J Pseudophyses K Gloeocystidia

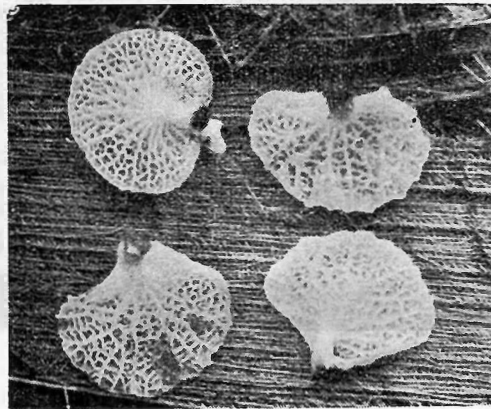


Fig. 3. *Campanella Jungkuhnii* ( $\times 1$ )

# MUSCI JAPONICI II\*

## Erpodiaceae

By Akira NOGUCHI

野口 彰： 日本の蘚類 (二) ヒナノハイゴケ科

### Brief notes on Morphology

Stem.—In most genera of the family *Erpodiaceae* the stem is of the prostrate dorsiventral type and sparing branches. The dorsiventral feature, however, is not represented in the structure of stem. In cross-section the stem shows the usual differentiation into the cortical and the medullary layers. As the cell walls of epidermal layer are thickened, no conspicuous epidermis can be seen. In certain members of *Aulacopilum* (e. g. *A. japonicum*) and *Erpodium* (e. g. *E. domingense*), as seen in the cross-section, the stem shows almost uniform tissue: the morphological differences between the cortical cells and the medullary ones appear very slight. They are both characterized by slightly thickened walls and nearly uniform size of cavities. While, in *Aulacopilum domingense*, there are scattered several large cells. The cortical tissue consists of 1~2 layers of quadrate or rectangular cells with uniformly thickened walls, which are smaller than the medullary cells. The thickness of cell walls varies markedly in different species and may be affected by differences in environmental conditions. The medullary cells are usually much larger in size and have thinner walls than the cortical ones. In *Aulacopilum abbreviatum*, the transition between the cortical and medullary cells is rather gradual; towards the interior the cell size becomes much larger, but the walls gradually decrease thickness. In *Solmsiella ceylonica*, the medullary cells are strongly thin-walled and much larger

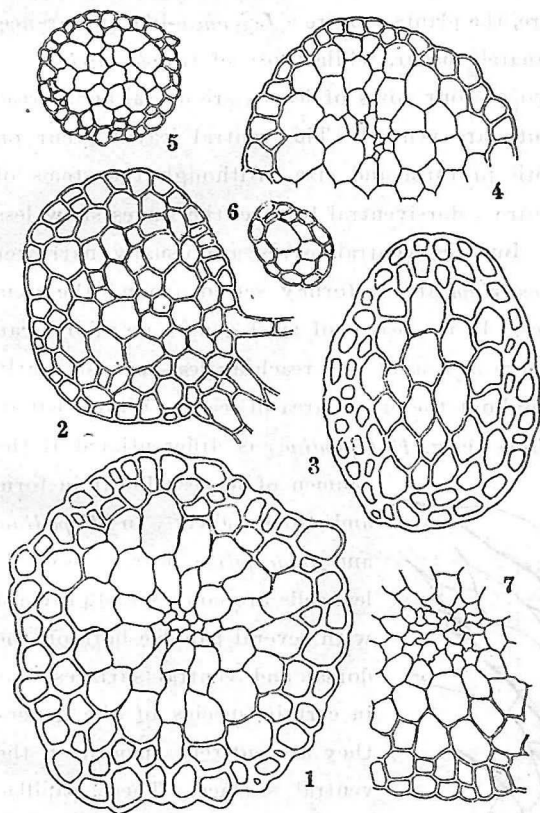


Fig. 1. Cross-sections of stem. 1. *Erpodium Opuntiae*,  $\times 294$ , 2. *E. domingense*,  $\times 156$ , 3. *Aulacopilum abbreviatum*,  $\times 294$ , 4. *Venturiella sinensis*,  $\times 180$ , 5, 6. *Solmsiella ceylonica*,  $\times 156$ .

\* The expenses of the present investigation were partly defrayed by the subsidy for the advancement of scientific researches from the Ministry of Education.

in size than the cortical cells. FLEISCHER shows a stem-section provided with few medullary cells in his figure (Fig. 122).<sup>\*</sup> Such a feature is seen in the section of rather young stems, so far as my materials from Java are concerned. In the older parts of stem, the medullary cells are much more in number. Thus, in *Solmsiella*, the number of medullary cells seems to be inconstant for a species. In the same genus the central strand is not conspicuous, but in rare cases it is slightly developed. The stem of *Venturiella* and certain species of *Erpodium* (e. g. *E. Opuntiae*) and *Glyphomitrium* is traversed by a well defined central strand; its cells are much smaller in size and bear thin and flexuose walls in cross section. The intermediate medullary cells of those species are much larger than those of the cortical cells, and their walls are strongly thin. Those cells of *Glyphomitrium minutissimum*, a xerophytic moss, however, are provided with thick walls as the case with the cortical cells.

Leaves—The gametophyte, with the exception of the genera *Venturiella* and *Glyphomitrium*, is distinctly dorsiventral. Therefore, the plants acquire a *Lejeunea*-like appearance. The leaves of *Venturiella* somewhat complanately occur, while those of *Glyphomitrium* are not the case. In *Solmsiella* and *Wardia*, two of four rows of leaves are dorsal and spread in the same plane, while the third and fourth are ventral. The ventral leaves occur on both sides of stem, and nearly uniform both in form and size. Although the stems of *Aulacopilum*, *Erpodium*, and *Venturiella* acquire a dorsiventral feature, the leaves show less dimorphism but somewhat polymorphism. But the ventral leaves are usually narrower than the dorsal ones. The leaves of *Glyphomitrium* are uniformly setted around the stem like those found in most acrocarpous mosses. In the leaves of most genera no midrib can be seen, while in those of *Glyphomitrium* there is a stout one reaching leaf-apex or nearly so. The areolation is almost uniform throughout the entire area of leaves. While that of *Venturiella* and certain members of *Erpodium* (e. g. *E. Opuntiae*) is differentiated at the

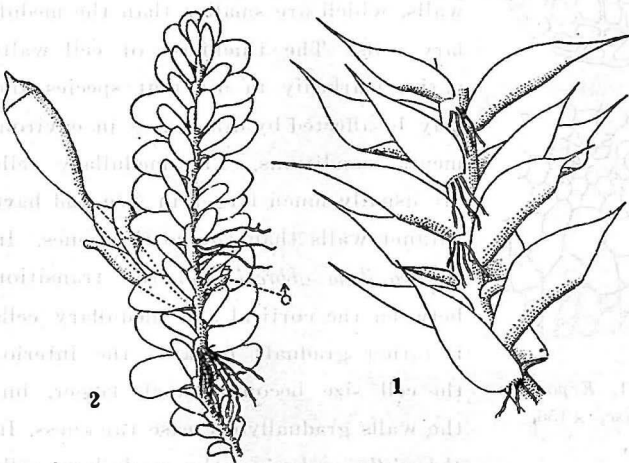


Fig. 2. Parts of stem (ventral view),  $\times 28$ .

1, *Venturiella sinensis*, 2, *Solmsiella ceylonica*.

acumen of leaves: linear in form and thick-walled. In *Erpodium* and *Aulacopilum*, nearly the whole leaf-cells are convex and provided with several papillae both on the dorsal and ventral surfaces, but in certain species of the genera they are entirely smooth on the ventral surface. These papillae are scattered on the surface in most species, while in certain species of *Erpodium* they are somewhat aggregated together. The leaf-cells of *Venturiella* and

\* Musc. Fl. Buit. 3: 648 (1906)

*Glyphomitrium* are entirely smooth.

Sexual organs — The inflorescence in the present family is autoicous. The archegonia are borne at the summit of the female branches, which arise from the ordinary stem, as is the case with *Cryphaea*. In *Glyphomitrium*, the female branches are not differentiated. The antheridia occur on the prostrate stem but near the female branches. The male bracts, as well as the female ones are few in number and usually accompanying with no paraphyses.

Capsule — The annulus of capsule is composed of several rows of small and thick-walled cells. In certain genera, such as *Venturiella* and *Glyphomitrium*, it is well developed, being 7~8 cells high, and pigmented with red or brownish red, while in *Aulacopilum* and *Erpodium*, it is less distinct, being only 2~3 cells high. From the surface view, the cells of annulus in the latter two genera are quadrate, bearing small cavity. In *Glyphomitrium*, the cells are much wider than length and with strongly thickened walls. It may be a question whether it is an annulus or is homologous with the rim of urn. Air chambers are not developed. There are several stomata on the basal part of urn, but in some cases they are wanting.

Peristome — The capsule of such genera as *Erpodium*, *Aulacopilum*, and *Solmsiella* lacks peristome teeth entirely, while that of *Venturiella*, *Wardia*, and *Glyphomitrium* is provided with small but solid peristome. The peristome teeth, being sixteen in number, are arranged in a single row. Each tooth is lanceolate in outline and provided with transverse ridges. In *Venturiella*, the ridges are setted distantly, while those of *Glyphomitrium* are densely occurred, and some of them are bridged together by deposits of an oblique wall on both surfaces (see Fig. 8-14).

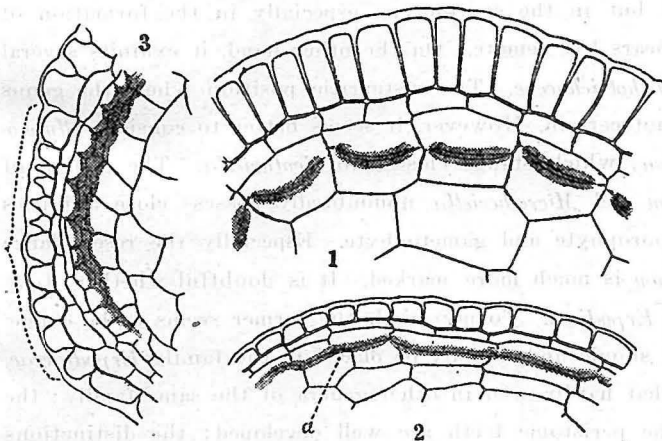


Fig. 3. Sections of young capsule, showing the development of peristome teeth. 1, *Venturiella sinensis*, cross-section,  $\times 294$ , 2, *Glyphomitrium humillimum*, cross-section,  $\times 156$ , 3, ditto, longitudinal section,  $\times 255$ .

layers, a cell of the outer layer lies opposite a cell of the inner layer. It seems to be caused by the absence of a final radial wall which is formed in each cell of the outer

In Diplodontae-type, the inner peristomial layer possesses sixteen cells; each of which lies opposite two cells of the outer layer and they form an outer peristome tooth. In *Venturiella*, the development of the peristome teeth shows a peculiar feature. In the cross-section of rather young capsules, both the inner and outer peristomial layers possess sixteen rectangular cells respectively. In a final condition of development of the peristomial



layer of Diplodonteae-type. Such a feature is also seen in the capsule of *Glyphomitrium*. In this genus, however, some of sixteen cells of both the inner and outer peristomial layers are divided into two unequal cells by an oblique but hardly radial wall (Fig. 3-2, a). The present wall corresponds with an oblique line connecting both ridges on the both surfaces of peristome teeth. In *Venturiella*, each cell of both the outer and inner peristomial layers takes part in the formation of a single peristome tooth. As stated above, however, several parts of a peristome tooth of *Glyphomitrium* on the both surfaces are formed from a group of those three cells, of which two come from the outer layer, one from the inner, or one comes from the outer, two from the inner, respectively. Thus the formation of peristome of *Glyphomitrium* is done in a more or less indefinite manner.

#### Affinities

The genus *Aulacomitrium* was erected by W. MITTEN in 1891 for two species: *A. humillimum* and *Calycinum*, and was placed near *Drummondia* and *Ulotu*. Lately the present genus was reduced to *Glyphomitrium*. In the first edition of Brotherus' "Musci", the genus *Glyphomitrium* was classed in *Grimmiaceae*, in the second edition, however, it was transferred to *Ptychomitriaceae*, newly established in the same volume. Although *Glyphomitrium* seems to like *Ptychomitrium* in the structure of leaves, this treatment, to my mind, is not reasonable. As stated above, in *Glyphomitrium* (e. g. *G. humillimum*) the development of peristome differs essentially from that of *Ptychomitrium*, but is similar to that of *Venturiella*. From a view point of the development of peristome, the resemblance of *Glyphomitrium* to *Venturiella* is much greater than to *Ptychomitrium*, which is believed to be a genus of *Haplodonteae* in its development of peristome. *Glyphomitrium* shows little resemblance in the gametophyte to *Venturiella*, but in the sporophyte, especially in the formation of peristome, as noted above, it appears less remote. On the other hand, it exhibits several resemblances to the genera in *Orthotrichaceae*. The systematic position where the genus under consideration occupies is not certain. However, it seems better to consider *Glyphomitrium* as a genus of *Erpodiaceae*, which stands closest to *Venturiella*. The genera of *Erpodiaceae* except *Glyphomitrium* and *Microtheciella* undoubtedly possess close affinities with each other, both in the sporophyte and gametophyte. Especially the resemblance between *Aulacopilum* and *Erpodium* is much more marked. It is doubtful whether *Aulacopilum* is properly divided from *Erpodium*. To my mind, the former seems to be congeneric with the latter. *Venturiella* should undoubtedly be placed in the family *Erpodiaceae*, but it exhibits several features that hardly seen in other genera of the same family: the leaf-cells are entirely smooth; the peristome teeth are well developed; the distinctions between the female branches and the ordinary ones are less pronounced. In possessing the peristome, *Venturiella* agrees with *Wardia*, otherwise not so close. In 1931, H. N. DIXON published a new monotypic genus *Microtheciella* from Siam. Consulting an authentic specimen from the above country, it seems to be a genus in *Orthotrichaceae*.

#### Geographical distribution

Central and South America are the regions in which the genus *Erpodium* is best represented. More than a dozen of species have been found there, most of which are known nowhere else. No species of the genus has been reported from Japan and its adjacent areas. The genus *Aulacopilum*, which comprises about eight species, occurs in the tropics and the temperate regions, and the ranges of individual species are mostly discontinuous. In Japan, only one species of the genus is known to occur. *Venturiella sinensis*, rather a common moss in western Japan, extends as far as China through Korea and Manchuria, but has not been recorded from the Loo Choo archipelago, Formosa, and the Philippines. The occurrence of this species in North America is an example of discontinuous distribution. Such an example is also found among other groups of mosses, but it is not easy to explain the origin of the geographical extension. The species of *Venturiella* and *Aulacopilum* (e. g. *A. japonicum*) grow on the tree-trunks of various kinds in lowlands, but not in montane regions. *Glyphomitrium* is a small genus, comprising about eight known species, of which two are represented in Japan. Of the two, *G. humillimum* is not rare at low elevations of mountains, forming small tufts on tree-trunks, rarely on rocks, or forming large cushions, while *G. minutissimum* is found only in the highlands, as high as about 1000~1400 m.

#### Classification

***Venturiella sinensis* (VENT.) C. MUELL.** in Linnea, 39: 421 (1875) et Nuov. Giorn. bot. ital. 4: 262 (1897), SALMON in Journ. Linn. Soc. 17: 465 (1900), BROTH. in ENGL. et PRANT. Nat. Pflanz. I-3-II: 710, f. 532 (1909) et 2nd. ed. 11: 4, f. 422 (1925), BARTR. in Bryologist, 37: 46 (1934), HORIK. in ASAHINA's Nippon Inkwasayokubutu Dukan: 927. t. 446, fs. 1~10 (1939).

Syn. *Erpodium sinense* VENT. in RABENH. Bryotheca Europaea, n. 1211 (1873).

*E. japonicum* MITT. in Journ. Linn. Soc. Bot. 22: 314 (1886) et in Trans. Linn. Soc. London, 3-3: 170, t. 51, fs. 14~20 (1891).

*E. Magofukui* SAKURAI in Journ. Jap. Bot. 25: 223, f. 7 (1950) -syn. nov.

*Venturiella japonica* (MITT.) BROTH. in Hedwigia, 38: 225 (1899), OKAM. in MAKINO's Illust. Fl. Nippon: 985, f. 2952 (1940).

Musci Japonici Exsiccati, ser. 3, n. 117 (1949).

(Fig. 4)

Plants small, dark green, forming loose mats. Stems slender, creeping, with fasciculate rhizoids arising from the base of ventral leaves, sparingly branched, densely and complanately leaved, about 2 mm wide including leaves. Branches erect, short, densely leaved, terete. Leaves somewhat dimorphic, appressed when dry, ecostate, fragile, dorsal leaves in almost 2 rows, ovate to ovate-oblong with hyaline acumen, symmetric or slightly asymmetric, concave, reaching  $1.2 \times 0.55$  mm in size, the ventral ovate-oblong to oblong, symmetric, reaching  $1 \times 0.4$  mm, margins plane or slightly convex, entire but with small teeth on the upper regions. Leaf-cells usually hexagonal, with thin walls, convex but smooth on the surface, in the middle of leaf hexagonal,  $35 \times 23 \sim 45 \times 25 \mu$ , at the margin subquadrate to transversely elongate, smaller than the central cells, measuring  $20 \sim 25 \mu$  in diam., at the basal angles subquadrate,  $20 \sim 25 \mu$ , towards leaf apex narrower, rhombic, with thicker walls, in the acumen linear with incrassate walls,

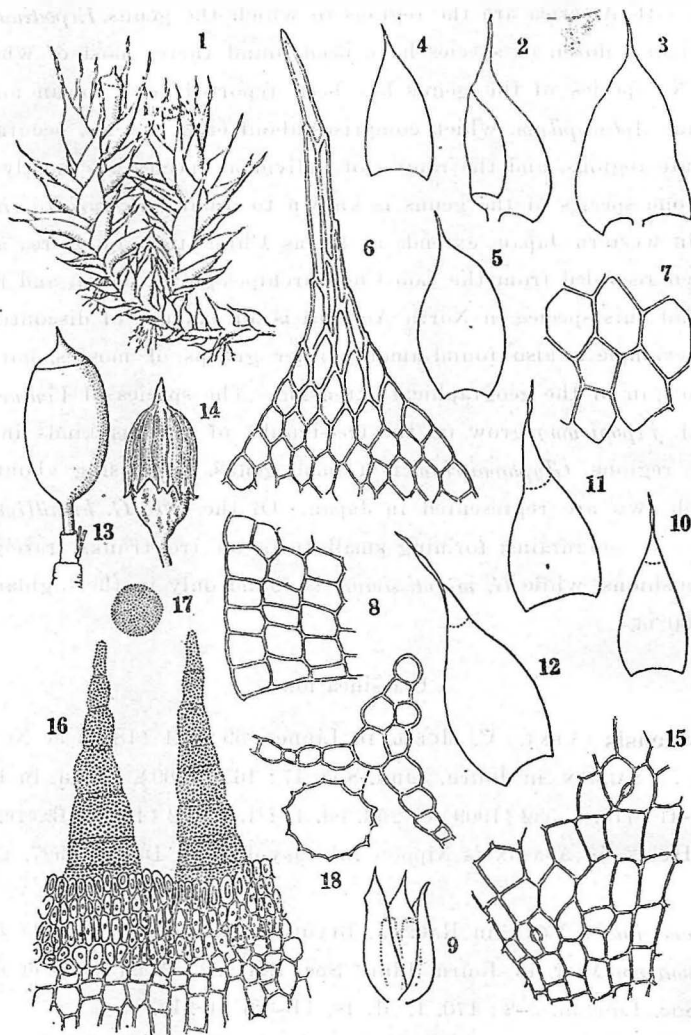


Fig. 4. *Venturiella sinensis* (VENT.) C. MUELL.

1, plant,  $\times 9$ , 2, 3, dorsal leaves,  $\times 30$ , 4, 5, ventral leaves,  $\times 30$ , 6, apical part of leaf,  $\times 180$ , 7, cells from middle of leaf,  $\times 255$ , 8, basal angle of leaf,  $\times 180$ , 9, male bud,  $\times 43$ , 10, 11, 12, branch-leaves,  $\times 14$ , 13, 14, sporophytes,  $\times 14$ , 15, cells from basal part of urn, showing two stomata,  $\times 180$ , 16, peristome and annulus,  $\times 180$ , 17, spore,  $\times 255$ , 18, cross-sections of calyptra,  $\times 34$ ,  $\times 255$ .

hyaline,  $45\text{--}65\mu$  in length. Inflorescence autoicous. Male buds on stem, nearly ovate in general outline, antheridia few, accompanying with no paraphyses, innermost leaves widely ovate, obtuse at apex, cochleariform-concave, about  $0.45 \times 0.25$  mm. Female terminal on branches (or female branches), erect, perichaetial leaves numerous, not complanate, innermost one much larger, ovate-lanceolate, with longer and somewhat tortile acumen, concave, about 2 mm long. Seta erect,  $0.25\text{--}0.35$  mm long, yellowish. Capsule emergent, erect, oblong-cylindric, symmetric, urn inaequalis  $0.9 \times 0.5\text{--}1 \times 0.65\text{--}1.1 \times 0.8\text{--}1.3 \times 0.8$  mm, yellowish, annulus persistent, 7~8 cells



high, red to reddish brown. Peristome single row, teeth lanceolate, gradually narrow, transverse ridges few and distant, red to reddish-brown, densely papillose on both surfaces, about 0.2 mm long, 0.055~0.065 mm wide at base. Spores spherical to ovate, pale, minutely and densely papillose, 20~27~32 $\mu$  in diam. Lid convex, with a short, erect or slightly curved beak, pale, 0.25~0.35 mm high. Calyptra mitriform, lobed at base, distinctly sulcate, pale, apex brown and serrate on the folds, 1.4~1.7 mm long.

Specim. exam. **Honsyu**: prov. Musasi-Hukutori-mura (T. OSADA, Mar. 1931), prov. Mino-Gihu-city (HAMA, Apr. 1911), prov. Ise-Tadoyama (M. MIZUTANI, Jan. 1931), -Tu-city (Y. TUTIGA, Apr. 1934), -Mt. Nonobori (Y. TUT. May 1936), prov. Kii-Tanabe-city (K. MINAKATA, May 1911), prov. Harima-Kawahigasi-mura (E. TATEBE, May 1948), -Anzi-mura (E. TAT. Nov. 1950), prov. Mimasaka-Tuyama-city (T. IKI, Feb. 1951), prov. Aki-Hirosima-city (A. NOGUCHI, Feb. 1929 & Dec. 1931), prov. Suo-Yamaguti-city (S. MATUMOTO, Apr. 1932). **Sikoku**: prov. Tosa-Takaoka-mati (M. KAMAHARA, Jan. 1933). **Kyusyu**: prov. Tikuzen-Kasii-mura (Y. KUWAHARA, June

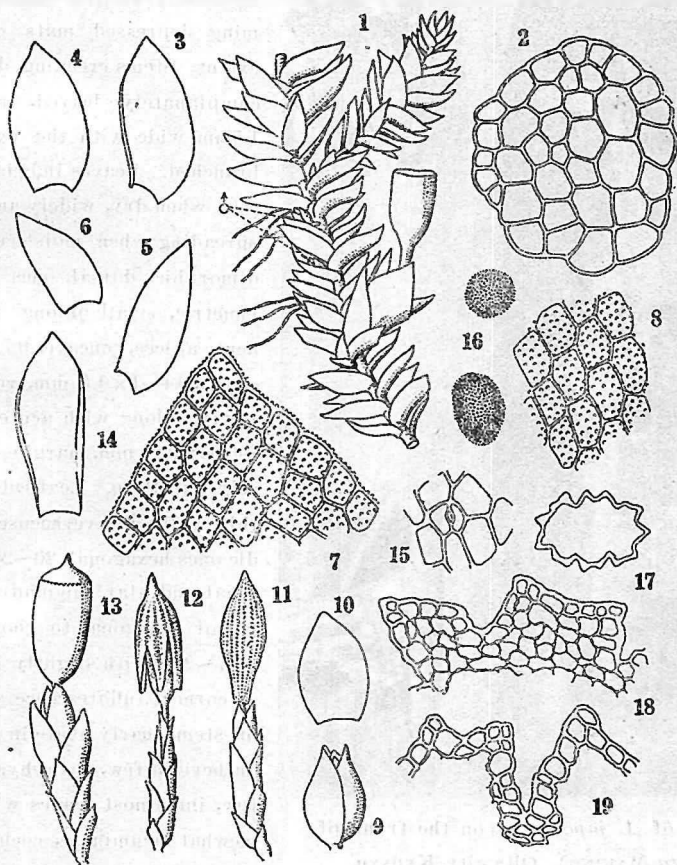


Fig. 5. *Aulacopilum japonicum* BROTH.

1, plant,  $\times 14$ , 2, cross-section of stem,  $\times 255$ , 3, 4, dorsal leaves,  $\times 30$ , 5, 6, ventral leaves,  $\times 30$ , 7, apical part of leaf,  $\times 255$ , 8, cells from middle of leaf,  $\times 255$ , 9, male bud,  $\times 43$ , 10, inner leaf,  $\times 66$ , 11, 12, 13, sporophytes,  $\times 14$  (11, 12, when dry, 13, when moist), 14, inner perichaetial leaf,  $\times 30$ , 15, cells from basal part of urn, showing a stoma,  $\times 180$ , 16, spores,  $\times 255$ , 17, cross-section of calyptra,  $\times 43$ , 18, ditto, superior part,  $\times 255$ , 19, ditto, inferior part,  $\times 255$ ,

1951), prov. Tikugo -Kurume-city (H. SHIMATA, Sept. 1950), prov. Buzen -Niyosui-mura (N. MATSUMOTO, Jan. 1939), prov. Bungo -Kaku-mura (A. NOG. Oct. 1948), -Oita-city (M. KAM. Apr. 1933, A. NOG. Nov. 1942 & Mar. 1940), -Beppu-city (A. NOG. Jan. 1939), prov. Higo -Nisize-mura (K. MAEBARA, Jan. 1936).

Range: N. Am., China, Manchuria, Korea, Hokkaido.

The present species is often accompanied by *Fabronia Matsumurae*.

***Aulacopilum japonicum*** BROTH. in Finsk. Vet.-Soc. Förhandl. 62: 22 (1919-20), CARD. in Bull. Soc. bot. Genève, 1: 131 (1909), OKAM. in MATSUM. Icon. Pl. Koish. 2: 115, t. 142 (1915), THER. in Ann. Crypt. exot. 5: 176 (1932).

Syn. *Erpodium domingense* (non MUELL.) SAKURAI, in Bot. Mag. Tokyo, 53: 291 (1939). Musci Japonici Exsiccati, ser. 4, n. 170 (1950) & ser. 6, n. 251 (1952). (Figs. 5, 6)

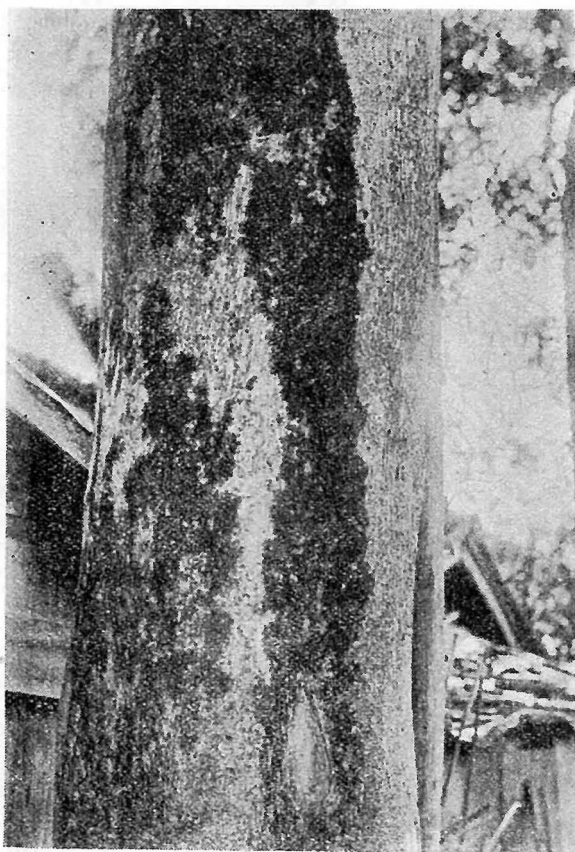


Fig. 6. Habit of *A. japonicum* (on the trunk of *Zelkova serrata* MAKINO) Oita-city, Kyusyu.

Plants very small, dark green, closely appressed to the substratum and forming depressed mats of considerable extent. Stems creeping, densely and very complanately leaved, reaching about 1.5 mm wide with the leaves, sparingly branched. Leaves imbricated and appressed when dry, widely and complanately spreading when moist, ecostate, almost dimorphic, dorsal ones somewhat asymmetric, ovate-oblong to oblong with acute apices, concave,  $0.7 \times 0.3 \sim 0.75 \times 0.35 \sim 0.8 \times 0.4 \sim 1 \times 0.5$  mm, ventral ones narrowly oblong with acute apices,  $0.5 \times 0.2 \sim 0.65 \times 0.25$  mm, margins entire but densely papillose. Leaf-cells convex, with thin walls, all verrucose-papillose, middle ones hexagonal,  $20 \sim 25 \times 13 \sim 17 \mu$ , marginal and alar subquadrate,  $17 \sim 20 \mu$ , superior hexagonal to rhomboidal,  $20 \sim 30 \times 17 \sim 20 \mu$ , with slightly incrassate walls at corner. Inflorescence autoicous. Male on stem, nearly ovate in general outline, antheridia few, paraphyses none or very few, innermost leaves widely ovate, somewhat acuminate, cochleariform-concave, about 0.25 mm long, cells bearing few

papillae. Female branches erect, about 3 mm high including sporophyte, archegonia terminal, perichaetial leaves few, not complanate, innermost one obovate with obtuse apex, concave, reaching 1.2 mm long. Seta  $0.9 \sim 1.2$  mm long, 0.1 mm wide, smooth, pale. Capsule exerted, erect, oblong-cylindric, bearing a somewhat defined neck, pale green,  $0.5 \times 0.4 \sim 0.8 \times 0.5 \sim 1 \times 0.55$  mm, walls leptodermatous, stomata indistinct, annulus about 2-3 cells high, cells small, quadrate, yellowish-brown. Peristome none. Spores spherical or ovate or elliptic, densely and minutely

papillose, green,  $20-26-32\mu$  in diam. Lid shortly apiculate from a convex base,  $0.25-0.35$  mm high. Calyptra mitriform, sulcate, deeply 3-4-lobed, pale yellow, brown above and somewhat scabrous,  $1-1.3$  mm long.

Specim. exam. **Honsyu**: prov. Musasi -Tokyo (T. OSADA, Mar. 1931), prov. Harima -Yamatsuki-mati (E. TAT., July, 1950). **Kyusyu**: prov. Tikuzen -Hukuoka-city (A. NOG. Dec. 1950), prov. Bungo -Oita-city (A. NOG. Apr. 1940), -Aoyama-mura (A. NOG. Sept. 1947), -Nakano-mura (A. NOG. Dec. 1942), prov. Higo -Kumamoto-city (A. NOG. June 1950), -Issyoti (K. MAEBARA, Feb. 1931, May 1936 & May 1947), -Nisinô-mura (K. MAEB. July 1951), -Konose-mura (K. MAEB. May 1945), -Hitoyosi-city (K. MAEB. May 1947 & Mar. 1951). **Sikoku**: prov. Tosa-Suzaki-mati (M. KAMIMURA, Oct. 1933 & Jan. 1934), -Koti-city (S. OKAMURA, Aug. 1905 -one of the original specimens, M. KAMIM. Mar. 1933 & Feb. 1935).

Range: Korea (Quelpaert), China.

This species mostly forms wide and pure mats, but sometimes is accompanied by other mosses, such as *Entodon Challengeri* and *Haplohymenium* spp. This seems to be closely allied

to *A. abbreviatum* Mitt. recorded from the East Indies and Hong Kong, but is definitely segregated from the latter by its larger size of plant, acute leaf-apices, larger leaf-cells bearing much more papillae, and by its shortly apiculate beaks of lid (see Fig. 7.)

**Glyphomitrium humillimum** (MITT.) CARD. BROTH. in ENGL. et PRANT. Nat. Pflanz. 2nd. ed. 11: 10, f. 427 (1925).

Syn. *Aulacomitrium humillimum* MITT. in Trans. Linn. Soc. London, III-3: 161, t. 51, fs. 1-5 (1891), BROTH. l. c. 1st. ed.: 476, f. 325 (1902), OKAM. in MATSUM. Icon. Pl. Koish. 4: 97, t. 261 (1921) et in MAK. Illust. Fl. Nippon: 987, f. 2951 (1940).

*Glyphomitrium elatum* TAKAKI, in Journ. Jap. Bot. 23: 71, f. 5 (1949) -syn. nov.

Musei Japonici Exsiccati, ser. 5, n. 220 (1951). (Fig. 8)

Plants dark green, usually forming small or wide tufts. Stems erect or nearly so, simple or sparingly divided, densely leaved, reaching 5 mm long. Leaves appressed when dry, widely spreading to somewhat arcuate-recur-

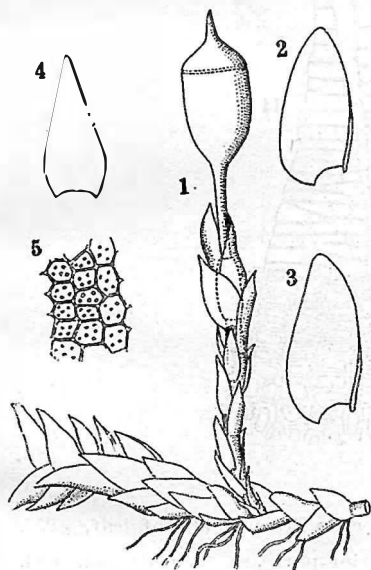


Fig. 7. *Aulacomitrium abbreviatum* MITT. (from Western Ghats, India)

- 1, plant,  $\times 21$ ,
- 2, 3, dorsal leaves,  $\times 43$ ,
- 4, ventral leaf,  $\times 43$ ,
- 5, cells from middle of leaf,  $\times 294$ .

ving, carinate-concave, inferior ones linear, acute at apex, about  $0.8 \times 0.25$  mm in natural condition, superior much larger, linear, acute or acuminate at apex, reaching  $1.8 \times 0.4$  mm, margins entire, slightly revolute, costa rather solid, reaching leaf-apex, sometimes vanishing below the leaf-apex. Leaf-cells pellucid, convex, smooth on the surfaces, in the middle of leaf subquadrate with thin walls,  $4.5-6\mu$ , at the midmargins bistratose, towards leaf base becoming larger,  $35-45 \times 9-11\mu$ , rectangular. Inflorescence autoicous. Male buds on stem, leaves few, innermost ones ovate, cochleariform-concave, about 0.5 mm long, paraphyses none. Perichaetia terminal, innermost leaf strongly involute and enclosing the seta, attaining to the base of urn or shorter,

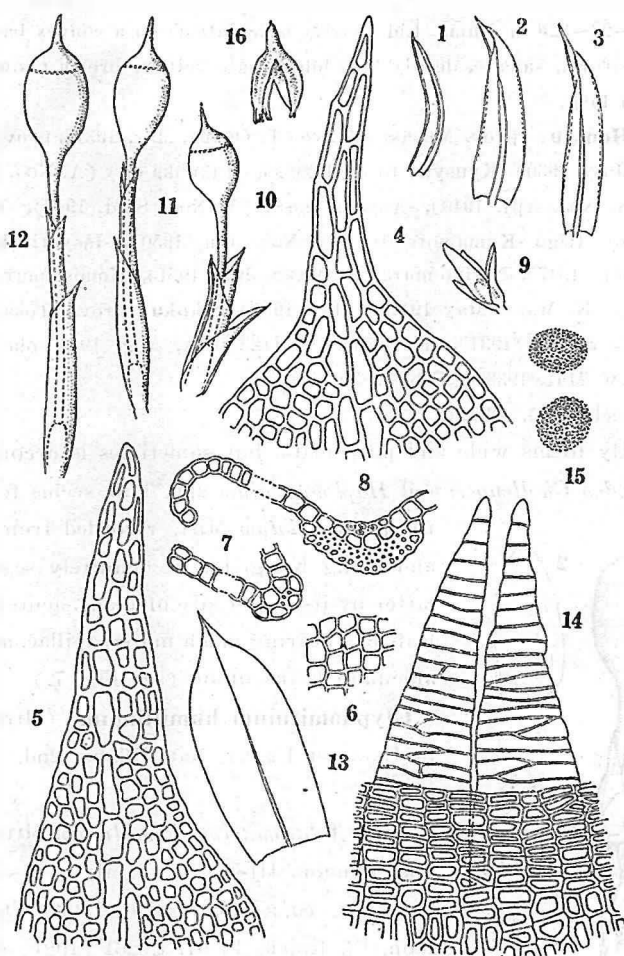


Fig. 8. *Glyphomitrium humillimum* (MITT.) CARD.

1, 2, 3, leaves,  $\times 14$ , 4, 5, apical parts of leaf,  $\times 255$ , 6, cells from middle of leaf,  $\times 255$ , 7, 8, cross-sections of leaf,  $\times 180$ . (7, superior part, 8, inferior part), 9, male bud,  $\times 14$ , 10, 11, 12, sporophytes,  $\times 9$ , 13, inner perichaetial leaf,  $\times 14$ , 14, peristome,  $\times 180$ , 15, spores,  $\times 180$ , 16, calyptra,  $\times 9$ .

about 3 mm long, pale, oblong with acute apex, costa thin, reaching near leaf-apex. Seta pale yellow, 1.5~2~3 mm long, 0.1 mm wide, smooth. Capsule erect, widely obovate to oblong but cylindric when empty, pale yellow, with several stomata at base, very inaequalis  $0.7 \times 0.6 \sim 0.8 \times 0.5 \sim 0.9 \times 0.65 \sim 1 \times 0.7$  mm, annulus 7~8 cells high, yellowish red to orange, the cells transversely elongate with strongly thickened walls. Peristome teeth 16 in numb. lanceolate, thin, recurving when dry, orange, bearing dense ridges, smooth on the surfaces, about 0.35 mm high. Spores green, variable in form, spherical to ovate, with large papillae on the surface, inaequalis  $40 \sim 55 \sim 60 \mu$ . Lid convex, with short and erect beak, 0.5~0.7 mm high. Calyptra mitriform, sulcate, about 4-lobed almost half way up, each lobe lacinate at base, 1.5~1.7 mm long.

Specim. exam. **Hokkaido**: prov. Kusiro -Akkesi (Y. YAMADA, 1930). **Honsyu**: prov. Rikuzen -Sendai-city (A. NOGUCHI, Jan. 1930), prov. Musasi -Tokyo (T. OSADA, Mar. 1931), prov. Sagami

-Kamakura-city (T. OSADA, Feb. 1935), Mt. Korai (T. OSADA, Mar. 1935), prov. Mikawa -Mt. Hongu (N. TAKAKI, n. 4827-typus of *G. elatum*, July 1948), prov. Ise -Yokkaichi-city (K. MURATA, Apr. 1927), -Gozaisyo (M. KURITA, Jan. 1933), -Nisikuwana-mati (Y. TUTIGA, 1936), prov. Kii -Mt. Koya (T. IWASAKI, Aug. 1941), prov. Yamato -Mt. Yosino (E. IHSIBA, Apr. 1934), prov. Omi -Sakamoto-mura (E. IHS. Apr. 1931, K. YAMAMOTO, Apr. 1931), prov. Harima -Mt. Komyozi (T. NAKAHARA, Sept. 1932), -Mt. Seppiko (E. TATEBE, May 1949), prov. Aki -Kure-city (M. INADA, Jan. 1930), -Isl. Miyazima (A. NOG. Jan. 1932), -Mt. Gokurakuzi (A. Nog. June 1927 & May 1928), prov. Suo -Mt. Konomine (S. MATSUMOTO, Apr. 1932), -Yamaguti-city (S. MAT. Apr. 1932). **Sikoku**: prov. Tosa -Mt. Kokuzo (M. KAMIMURA, Oct. 1934), -Mt. Honokawa (M. KAM. Mar. 1936), prov. Iyo -Tenzin-mura (S. OTI, July 1931). **Kyusyu**: prov. Tikuzen -Mt. Homan (A. Nog. Mar. 1933), prov. Tikugo -Mt. Hossin (A. Nog. Mar. 1933), -Kurume-city (H. SIKATA, Apr. 1950), prov. Buzen -Mt. Hikosan (A. Nog. Aug. 1948), prov. Bungo -Oita-city (A. Nog. July 1942), Mt. Katamuki (A. Nog. June 1947), -Hida-city (M. ONO, Mar. 1944), -Nakano-mura (A. Nog. Dec. 1942), -Mt. Ondake (A. Nog. Nov. 1947), prov. Higo -Kumamoto-city (A. Nog. June 1950), Konose-mura (K. MAEBARA, Apr. 1951), -Hitoyosi-city (K. MAEB. Apr. 1951), -Nisino-mura (K. MAEB. July 1951), -Aida-mura (K. MAEB. June 1936), -Itibu-mura (K. MAEB. Mar. 1936), -Mt. Siraga (A. Nog. July 1931), prov. Hyuga -Mitai-mati (A. Nog. Aug. 1939), -Mt. Sobo (A. Nog. Nov. 1931), -Mt. Kirisima (A. Nog. Mar. 1933).

Range: Korea, Yunnan.

The present species is often accompanied by other mosses, such as *Macromitrium incurvum*, *Sematophyllum japonicum*, and *Haplophymenium* spp. It is very variable both in gametophyte

and sporophyte. *G. elatum* is a giant form of this species; measuring 2 cm in height and having more or less divided stems caused by formation of a subapical innovation. The sporophytes of the same form are like those of typical one. Several specimens, such as those from Mt. Homan, Kyusyu, have much larger sporophyte, measuring 3mm length in seta, 1~0.7 mm in urn, and 60 $\mu$  in spore.

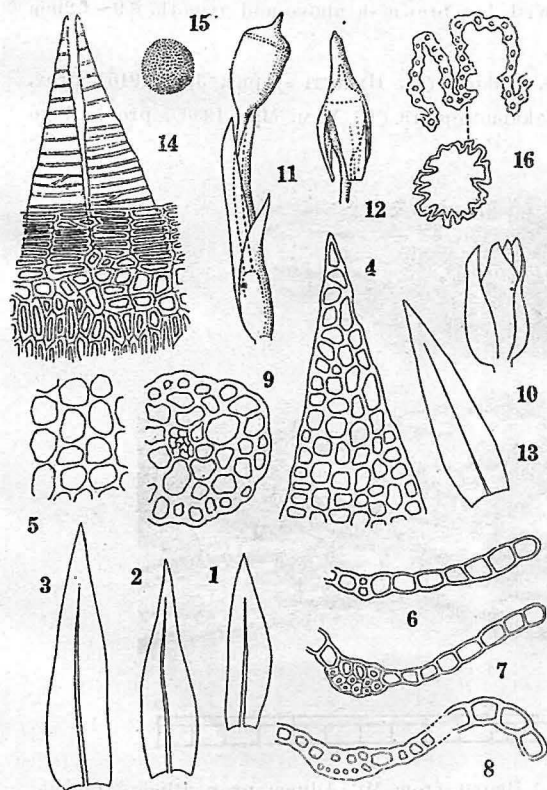


Fig. 9. *Glyptomitrium minutissimum* (OKAM.) BROTH.

- 1, 2, 3, leaves,  $\times 30$ ,
- 4, apical part of leaf,  $\times 255$ ,
- 5, cells from middle of leaf,  $\times 255$ ,
- 6, 7, 8, cross-sections of leaf,  $\times 255$  (6, superior part, 7, middle, 8, inferior),
- 9, cross-section of stem,  $\times 255$ ,
- 10, male bud,  $\times 43$ ,
- 11, 12, sporophytes,  $\times 20$ ,
- 13, inner perichaetial leaf,  $\times 20$ ,
- 14, peristome,  $\times 180$ ,
- 15, spore,  $\times 255$ ,
- 16, cross-sections of calyptra,  $\times 60, \times 255$ .



**Glyphomitrium minutissimum** (OKAM.) BROTH. l. c. 11: 532 (1925), TAKAKI, in Journ. Jap. Bot. 23: 8 (1949).

Syn. *Aulacomitrium minutissimum* OKAM. in Journ. Coll. Sc. Imp. Univ. Tokyo, 38-4: 17, f. 7 (1916). (Figs. 9, 10)

Plants dark green, forming dense tufts on tree-branches or -trunks. Stems erect simple, 3~5 mm high, densely leaved. Leaves appressed when dry, spreading when moist, ovate-oblong to narrowly oblong, tapering to a narrowly acute apex, carinate-concave, inferior ones about  $0.7 \times 0.25$  mm in nat. cond. superior larger reaching  $1.5 \times 0.4$  mm, margins entire, slightly revolute at median portion of leaf, costa slender, vanishing far beneath the leaf-apex, yellowish. Leaf-cells convex, smooth on the surfaces, median and marginal ones subquadrate to rounded quadrate, walls incrassate especially in the cell-corner,  $12\sim17\mu$ , inferior rectangular with rather thin walls,  $20\sim40 \times 10\sim15\mu$ . Inflorescence autoicous. Male buds on stem, nearly oblong in general outline, leaves very few, innermost ones widely ovate, cochleariform-concave, accompanying with few archegonia, without paraphyses. Perichaetia terminal, leaves few, inner ones involute, oblong, reaching or beyond the capsule-neck, about 1.7 mm long, costa vanishing on the half way, leaf-cells rectangular. Seta yellowish, smooth,  $1.2\sim1.7$  mm long, 0.08 mm wide. Capsule erect, obovate, pale yellow, annulus 7~8 cells high, yellowish, the cells transversely elongate,  $0.4 \times 0.3\sim0.5 \times 0.35\sim0.65 \times 0.4$  mm, exothecial cells rectangular with strongly thickened walls. Peristome teeth 16 in numb. lanceolate, about 0.2 mm high, with dense ridges, yellowish, smooth on the surfaces. Spores variable in form subspherical or subquadrate or ovate, with dense and large papillae, inaequalis  $18\sim20\sim25\sim28\mu$ . Lid convex with short apicule, 0.2~0.25 mm high. Calyptra mitriform, sulcate, 3~4-lobed, yellowish but brownish above and smooth, 0.9~1.2 mm long.

Specim. exam. **Honsyu**: prov. Sagami -Mt. Hakone (K. HISAETI -typus, Jan. 1915), prov. Omi -Mt. Hira (K. YAMAMOTO, Apr. 1935), -Sakamoto-mura (K. YAM. May 1936), prov. Bingo

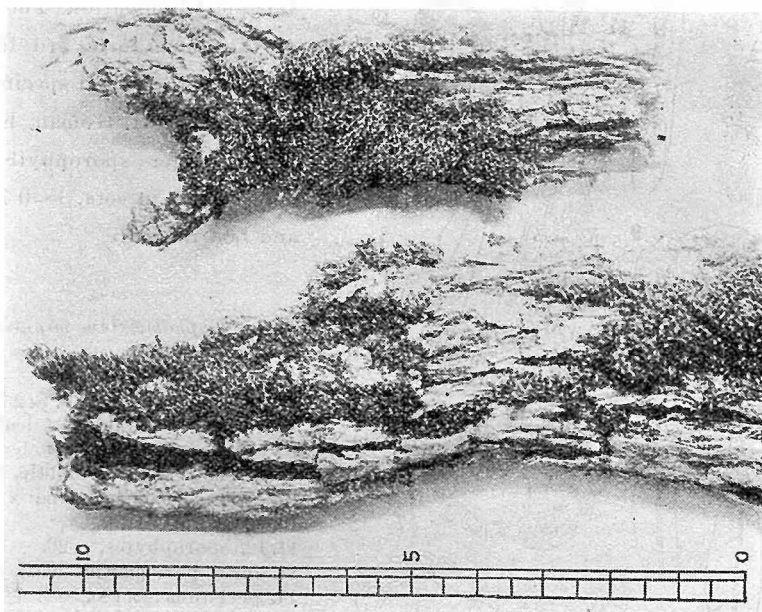


Fig. 10. *Glyphomitrium minutissimum* (OKAM.) BROTH. from Mt. Aduma, prov. Bingo, Honsyu.

-Mt. Aduma (about 1000 m) (A. NOGUCHI, July 1936). **Kyusyu:** prov. Bungo -Mt. Katamuki (about 1400 m) (A. NOG. May 1948). -prov. Higo -Mt. Itihusa (K. MAEBARA, May 1935), prov. Osumi -Mt. Kirisima (about 1400 m) (T. SIN, Nov. 1947 & Aug. 1951), -Isl. Yakusima (T. HASIMOTO, July 1933).

Range: Confined to Japan.

The present species forms usually pure but small tufts on the branches or trunks of various trees, but sometimes is accompanied by *Haplohymerium* spp. OKAMURA describes on leaf-costa as "nervo crassiusculo, apice evanido". The original specimen, however, does not support his description and figures. The costa of leaf, as described above, vanishes far beneath the leaf-apex, even in the original specimen as well as those from other sources.

### 小林義雄：日向青島産發光菌三種

(Three species of illuminous fungi, newly found in Isl. Aosima)

日向青島は熱帯性植物産地として保護せられているが、菌類方面でも珍しい分布をなすものがある。小笠原島のオガサワラビロウの幹に生じ、後にミクロネシアにも分布することが判つたシママンネンタケ (*Ganoderma boninense* Pat.) が青島のビロウにも生ずることは大分以前に知られた。最近、青島のビロウの葉に生ずる変形菌状のものを鑑定した結果、熱帯に広く分布し、専らヤシ科植物に寄生する銹菌類の属 *Graphiola* の一新種であることが判り、*G. cylindrica* Y. Kobayasi (in Nagaoa I p. 36, 1952) として発表した。

昨年末、宮崎大学の平田正一助教授より青島産の發光菌三種の鑑定依頼を受けたが、何れも熱帯に分布する稀菌であることが判つた。菌名は次の如くである。

1. *Mycena cyanophos* Berk. et Curt. ヤコウタケ ビロウ朽幹生 (28 Jun. 1951採) 従来の産地、セイロン、ジャバ、ポリネシア (ラバウル)、ミクロネシア、小笠原島、八丈島、秩父。
2. *Poromyceena Hanedai* Y. Kobayasi アミヒカリタケ モククヂバナ朽幹上 (28 Jun. 1951採) 従来の産地、北ボルネオ (タラウ)、ミクロネシア、宮崎県酒谷村新村。
3. *Favolaschia pezizaeformis* (Berk. et Curt.) Sing. エナシラツシタケ ビロウ花軸生 従来の産地、小笠原島。

## NOTULAE BRYOLOGICAE IV

By Akira NOGUCHI

野口 彰: 蘚苔類小記 (其四)

**20. *Dichodontium pellucidum* (HEDW.) SCHPR. var. *yezoense* NOGUCHI, var. nov.**  
(Fig. 9-1~6)

Planta perminuta, caulibus ad 10 mm longus, densiuscule foliosus. Folia anguste oblonga vel oblongo-lingulata, apice obtusa vel subacuta, marginibus serrulatis vel subintegris, apice serratis. Theca in pedicello pallido 2~3~4 mm longo suberecta, pyriformis vel obovata collo distincto, sicca vel deoperculata companulata medio  $\pm$  constricta, lutescentifusca,  $0.7 \times 0.45 \sim 0.7 \times 0.55 \sim 0.8 \times 0.45 \sim 0.9 \times 0.55$  mm. Operculum elongatum oblique rostratum ca 0.7 mm longum.

Hab. on moist rocks. Hokkaido: prov. Isikari -Sounkyo (A. NOGUCHI, no. 27602-typus, Aug. 1951), -Dyozankei (A. NOG. Aug. 1951).

As it has been pointed out by DIXON and GROUT, *D. pellucidum* shows wide range of variation in both gametophyte and sporophyte. The plants from Hokkaido (Yezo) may be distinguished from the typical form by the obtuse leaf-apices, shorter setae, and pear-shaped capsules.

**21. *Dicranum yezomontanum* NOGUCHI, sp. nov. (Fig. 9-7~10)**

Planta lutescenti-viridis, mollis, densissime caespitosa. Caulis erectus, ad 2 cm longus, simplex vel parce ramosus, densissime foliosus, ca 0.25 mm latus, nigrescenti-fuscus. Folia caulina fragilia, sicca dense appressa non homomalla, madida erecto-patentia, e basi ovato-oblonga longissime subulata, canaliculato-concava, inferiora ca 5 mm longa, superiora longiora ad 7 mm longa, basi luteo-fusca, marginibus involutis, serratis apice spinoso-dentatis, costa tenui sed lata basi ca 0.1 mm lata cum acumine evanida, dorso superne dentato, cellulis rectangularibus, parietibus crassis haud sinuatis, medio  $12 \sim 17 \times 6.5 \sim 8.5 \mu$  in diam., inferioribus elongato-rectangularibus vel sublinearibus parietibus crassis  $\pm$  sinuatis,  $25 \sim 35 \times 4.5 \sim 8.5 \mu$ , alaribus distinctis valde laxis, aureo-fuscis, subquadratis vel rectangularibus parietibus tenuibus,  $30 \sim 35 \sim 50 \times 20 \sim 65 \times 20 \mu$ .

Hab. on decayed logs. Hokkaido: prov. Isikari Mt. Daisetsu-Kurodake (A. NOG. no. 27150-typus, Aug. 1951).

The present species is characterized by its fragile and very long subulate leaves.

**22. *Okamuraea brevipes* BROTH. in Journ. Coll. Sci. Tokyo Imp. Univ. 38-4: 76, f. 33 (1916).**

Syn. *O. pilifera* SAKURAI, in Journ. Jap. Bot. 19: 173, f. 2 (1943) -syn. nov.

Hab. on tree-trunks. Hokkaido: prov. Isikari -Dyozankei (A. NOG. Aug. 1951).

Range: Japan (Honsyu)

The present species, originally published from prov. Etigo, middle Honsyu, is known also in other districts of Honsyu. Yet the occurrence of the species at Dyozankei, a



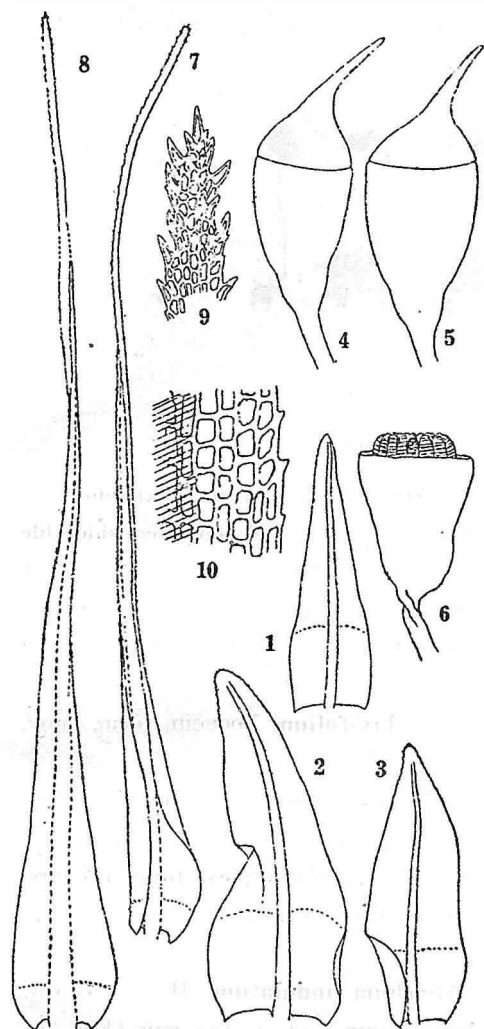


Fig. 9. *Dichodontium pellucidum*, var. *jezoense* (1~6) *Dicranum yezomontanum* (7~10)  
1, 2, 3, 7, 8, leaves,  $\times 28$ . 4, 5, 6, capsules (6 when dry),  $\times 28$ . 9, apex of leaf,  $\times 156$ .  
10, middle part of leaf,  $\times 294$ .

observed numerous plants on Mt. Daisetsu\* at an elevation of about 1800 m. They were growing on sandy soil in the *Picea jezoensis* - *Abies sachalinensis* - *Betula Ermani* forest. There the plants show a wide variation in size: the largest one measures 12 mm long in seta,  $4 \times 3$  mm in capsule, the smallest one 3 mm,  $2 \times 1.5$  mm, respectively, and there are many degrees in size between these two extremes.

**25. *Oligotrichum aligerum* MITT.** in Journ. Linn. Soc. Bot. London, 8: 48, t. 8 (1865).

vicinity of Sapporo city, is the first record for Hokkaido.

**23. *Bryhnia Hultenii* BARTRAM**, in Bot. Not. Lund: 252, f. 1 (1938), var. ***cymbifolia* NOGUCHI**, var. nov.

A typo differt: folia sicca julacea, latissime cordato-ovata, apice obtusa vel late acuta, cymbiformia, eplicata, costa longiore ad  $2/3$  folii producta.

Hab. on decayed logs. Hokkaido: prov. Isikari -Mt. Daisetsu-Kurodake (A. Nog. no. 27029 -typus, Aug. 1951).

The present species, which has hitherto been reported from Alaska, is newly added to our moss flora. The specimen from Mt. Daisetsu, agrees in most respects with the BARTRAM's description, but are characterized by several different features in the leaves. In our plants the stem-leaves are eplicate, strongly concaved (almost cymbiform), and bear longer costa reaching  $2/3$  length of leaf.

**24. *Buxbaumia aphylla* L.** (Fig. 10)

Hab. Hokkaido: prov. Isikari -Mt. Daisetsu-Kurodake (A. Nog. Aug. 1951).

Two species of the genus *Buxbaumia* are represented in Japan, of which *B. Minakatae* OKAM. is restricted in Japan and Korea (new locality)\*, the other species, *B. aphylla*, a wideranged species, occurs not rarely on the subalpine region of Japan. But in rare cases *B. aphylla* has been found in lowland, such as Matue city, prov. Idumo. Last summer I have

\* A specimen of the species collected by U. FAURIE from Pomasa, Korea, but erroneously labelled as *B. aphylla* has been preserved in the Herbarium of Kyoto University.

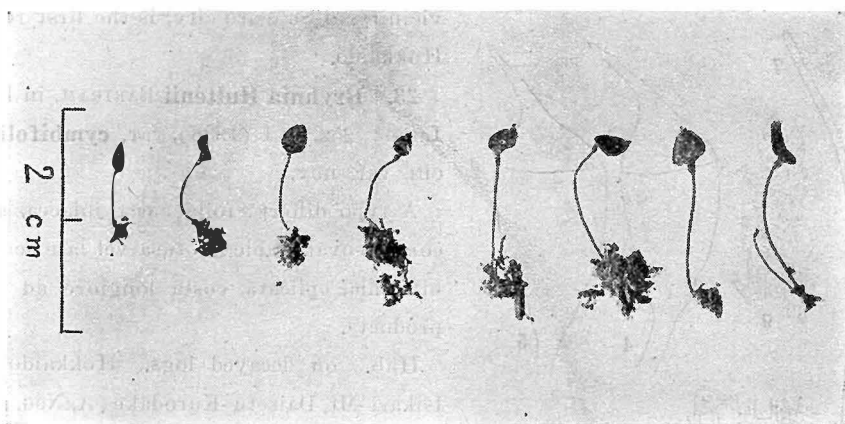


Fig. 10. *Buxbaumia aphylla* from Mt. Daisetu.

Hab. Hokkaido: Mt. Daisetu (ca 1500 m) (A. Nog. Aug. 1951). New to Hokkaido.

This species ranges in the subalpine and alpine regions in Japan, and shows considerable variations caused by environmental factors. The leaf-margins of the abovecited specimen indistinctly toothed, yet the lamellae on dorsal lamina are definitely developed. The plants growing in dry and sunny places bear close affinities to *O. hercynicum* LAM. et DECAND. in their structural features of leaf.

**26. *Oligotrichum parallelum* (MITT.) KINDB. form. *laxifolium* NOGUCHI, form. nov.**  
 Planta valde gracilis et distante foliosa.

Hab. on humus. Hokkaido: prov. Isikari -Mt. Daisetu -Kurodake (A. Nog. no. 27021 -typus, Aug. 1951).

Comparing with the typical form, the present form is very slender and bears distant leaves.

**27. *Atrichum undulatum* (HEDW.) BEAUV. var. *elamellosum* NOGUCHI, var. nov. (Fig. 11)**

Planta minor ad 10 mm alta, folia inferiora minutissima, superiora multo majora, haud undulata, lamellis nullis vel indistinctis e cellulis uniseriatis compositis.

Hab. on rocks. Hokkaido: prov. Isikari -Mt. Daisetu-Kurodake (ca 900 m) (A. Nog. no. 27028-typus, Aug. 1951).

In this material the lamellae are usually wanting or very indistinct. The lamellae, being one cell high, are fragmentary and are restricted near the tip of leaf.

(to be continued)

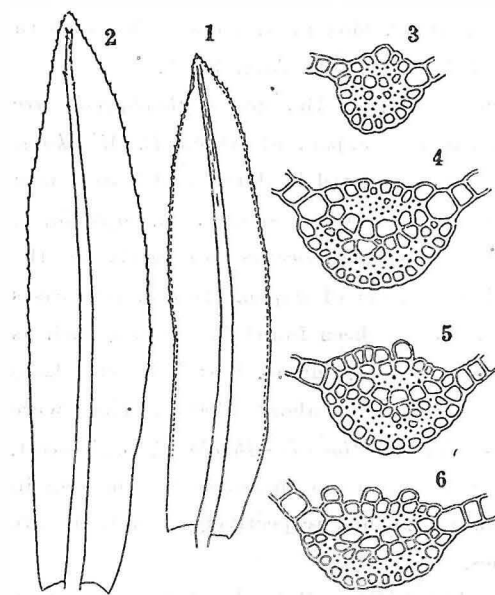


Fig. 11. *Atrichum undulatum* var. *elamellosum*  
 1, 2, leaves (2 dorsal view),  $\times 13$ .  
 3, 4, 5, 6, cross-sections of leaves,  $\times 155$ .

# HEPATICAE OF SHIKOKU AND KYUSHU, SOUTHERN JAPAN (2)

By Sinske HATTORI

服部新佐: 四国, 九州の苔類 (其 二)

## Fam. 7. PLEUROZiaceae

**Pleurozia giganteoides** Horik. 1934a: 229, f. 42; 1939c: 849, pl. 407; 1949: 141; Hatt. 1950c: 64. Found richly on branches of *Rhododendron yakushimensis* in Isl. Yakushima, alt. 1000 m. or more. Range: Yk., Fm. Fine species allied to *P. gigantea* (Web.) Lindb.

## Fam. 8. PLAGIOCHILACEAE

**\*\*Plagiochila asplenioides** (L.) Dum. Stephani (1897: 81) has recorded this from Mt. Tsurugi (Sk.) I suppose, however, this is a form of *P. ovalifolia* (See below).

**\*\*Plagiochila chinensis** St. This also was recorded in Prov. Iyo (Sk.) by Yoshinaga (1901a: 93) and Stephani (1903: 296). But it seems uncertain whether real *P. chinensis* occurs or not in our area (cf. Hatt. 1949c: 150).

**Plagiochila crassitexta** St. 1903: 359; Carl 1931a: 97; Hatt. 1950a: 24, f. 24. Syn. *P. Nakaiana* Hatt. 1944a: 10, f. c-i; 1944c: 58, f. 34. *P. crassitexta* var. *Nakaiana* Hatt. 1947a: 16. Rare. Range: Sk., Ks., Yk., China, Assam, Philippines.

**\*Plagiochila curiosissima** Horik. 1935c: 411, f. 1. Recorded only once in Mt. Honokawa of Prov. Tosa (Sk.) It appears to be merely a form of *P. japonica* or its allies which occasionally give large underleaves.

**Plagiochila fruticosa** Mitt. -Hatt. 1942a: 67, f. 4; 1944c: 53; 1950d: 47; 1951c: 77, pl. 6 (15-16). Syn. *P. tozana* St. Not uncommon. Range: Hn., Sk., Ks., Himalaya. Okamura's record (1916: 2) of this species from Japan was caused by an erroneous identification; he mistook *P. pulcherrima* for this.

**Plagiochila furcifolia** Mitt. 1891: 194; -Hatt. 1951c: 77, pl. 3 (49-50); 1951f: 179-181, 183, f. 59. Restricted in Prov. Higo, often growing on stone-wall. Range: Ks., Hn. (nov.) Since Mitten (l. c.) described it from Japan without definite locality, this remarkable species has remained untouched from any bryologists.

**Plagiochila hakkodensis** St. 1897: 103; Dugas 1929: 166, f. 156a; Hatt. 1950b: 42. Rather rare in our area, only found at Mt. Ishizuchi and few other high mountains. Range: Yz., Hn., Sk. (nov.) -var. **kodukensis** (Hatt.) Hatt. 1950d: 74. Syn. *P. kodukensis* Hatt. 1944c: 160, f. 38. Range: Hn., Sk. (nov.) -var. **dentosa** Hatt. 1950c: 139, f. 59. Range: Hn. (nov.), Sk. The present species lies near *P. ovalifolia*.

**Plagiochila ishizuchiensis** Horik. 1931b: 59, f. 3; Hatt. 1950d: 47. Rare. Range: Hn., Sk. Near a form of *P. ovalifolia*.

**Plagiochila japonica** Sde. Lac. 1863-64: 290; Hatt. 1944c: 54, f. 30-33; 1950a: 25; 1950b: 47; 1951c: 77, pl. 3 (51), 6 (14). Syn. *P. sciophilus* Schiffn. 1899b: 390, -quoad plant. Japon. *P. Ferriana* St. 1902: 288; Dugas 1929: 41, f. 3a. *P. quadriveta* St. 1921: 201. *P. acanthophylla* Herz. in Verh. Hepat. Select. et Critic. (Exsic.) Ser. 7: no. 311; remark

in Ann. Bryol. 8: 154 (1935), -quad. plant. Japon. *P. paucispina* St. in sched. *P. yokohimensis* St. msc. common. Range: Yz., Hn., Sk., Ks., Yk., Lk., Bn. Very closely related to or possibly conspecific with *P. acanthophora* Gott. (Indo-malaya) and *P. sciophila* N. (Himalaya)

**Plagiochila Makinoana** Hatt. 1949c: 153, f. A-M; 1951f: 179. Only found in Prov. Iyo (Sk.) Closely related to or possibly a variety of *P. yokogurensis*. A form of the present species occurs in Honshu (Hatt. 1949b: 42).

\***Plagiochila minima** Horik. 1932a: 78, f. 2. Range: Sk. A very critical species only known from the original description.

**Plagiochila orbicularis** (Hatt.) Hatt. 1950a: 26; 1951c: 78, pl. 1 (32-33). Syn. *P. ovalifolia* var. *orbicularis* Hatt. 1944e: 61, f. 37. Rare, in mountains. Range: Ks., Yk. Probably allied to *P. Biondiana* Mass. 1897: 15, pl. 1 (2) -Hab. Schensi.

**Plagiochila ovalifolia** Mitt. -Horik. 1931b: 60, f. 4; Hatt. 1944e: 162, f. 39; 1944e: 59, f. 35; 1950a: 27; 1950d: 47; 1951c: 78, pl. 3 (52), 5 (22). Syn. *P. nagasakiensis* St. -Dugas 1929: 143, f. 126a-b. *P. odatensis* St. -Dugas 1929: 141, f. 123c. *P. Jishibae* St. *P. thylimanthoides* St. *P. toshoguna* St. Common. Range: Yz., Hn., Sk., Ks., Yk., Lk., Corea. -var. **Fauriana** (St.) Hatt. 1950d: 49. Syn. *P. Fauriana* St. -Dugas 1929: 66, f. 36. *P. campanulata* St. Not rare. Range: Hn., Sk., Ks. -var. **Miyoshiana** (St.) Hatt. 1944e: 60, f. 36; 1950d: 49. Syn. *P. Miyoshiana* St. -Dugas 1929: 166, f. 156b. Rare. Range: Sk., Ks. The present species is very polymorphous one, closely related to (or possibly regarded as a geographical subspecies or variety of) European *P. asplenoides*.

**Plagiochila pulcherrima** Horik. 1931b: 63, f. 5; Hatt. 1942a: 68; 1944e: 62; 1950a: 28. Syn. *P. fruticosa* (non Mitt.) Okam. 1916: 2. Not uncommon, in montane regions. Range: Hn., Sk., Ks., Yk., Fm. This species lies near *P. frondescens* (N.) Lindb. and *P. fruticosa* Mitt.

**Plagiochila rhizophora** Hatt. 1950e: 141, f. 57; 1951c: 78, pl. 1 (30-31). Syn. *P. Otiuma* Hatt. msc. Rare, at high elevations. Range: Sk., Ks.

**Plagiochila semidecurrrens** Lehm. et Lindb. -Herz. 1939c: 238, f. 12; Hatt. 1950a: 29. Syn. *P. Kamuensis* Tayl. *P. robustissima* Horik. 1932a: 78, pl. 10 (1-6); 1934a: 160. Rare in our area. Range: Yk., Fm., China, Himalaya. -var. **grossidens** Herz. 1939c: 241; Hatt. 1944e: 62, f. 38-40; 1950a: 29; 1951c: 78, pl. 1 (34-35). Syn. *P. semidecurrrens* var. *yakushimensis* Hatt. 1950a: 29, f. 37; 1951c: 78. Uncommon, in the montane region. Range of var.: Hn., Sk., Ks., Yk.

**Plagiochila trabeculata** St. -Hatt. 1944e: 64; 1950a: 31; 1950e: 141, f. 58. Syn. *P. Formosae* St. *P. minor* Horik. 1931b: 59, pl. 8 (1-6). *P. trabeculata* var. *bifida* Hatt. 1944e: 64. Not uncommon, mostly on tree-trunks in dense woods. Range: Hn., Sk., Ks., Yk., Lk., Fm., Bn.

\***Plagiochila tridenticulata** Tayl. -Hatt. 1944e: 65. Rare, in montane regions. This seems to be distinct from the European type form.

**Plagiochila yokogurensis** St. -Horik. 1931b: 63, pl. 7 (12-17); Hatt. 1944e: 65; 1950a:

32; 1950c: 142; 1951c: 78, pl. 5 (9). Syn. *P. Okumuraana* St. 1921: 160. *P. yokoguren-sis* var. *kiushiana* Hatt. 1944e: 65, f. 41. Not uncommon, preferably at low elevations. Range: Hn., Sk., Ks., Yk.

**Plagiochila yuwandakensis** Horik. (1935a: 50, f. 1-2) var. **grossedentata** (Hatt.) Hatt. 1950a: 32, f. 28. Syn. *P. yuwandakensis* fo. *grossedentata* Hatt. 1944e: 65. This variety is restricted in Isl. Yakushima (rich in forest) and Osumi Pen. (very scarce) of Kyushu.

**Plagiochilion Braunianus** (Nees) Hatt. 1947b: 4 & 7; 1950a: 33. Syn. *Jungermannia Brauniana* Nees. *Plagiochila Brauniana* Lindb. -Carl 1931a: 40; Horik. 1934a: 159. Rare. Range: Yk., Fm., China, India, Sumatra, Java, Halmahera, N. Guinea.

**Plagiochilion Mayebarae** Hatt. 1950b: 39, f. 34; 1951c: 78, pl. 3 (53-54). Discovered at the summit of Mt. Ichifusa (ca. 1700 m) only. Range: Ks.

**Plagiochilion oppositus** (R. B. N.) Hatt. 1947b: 4 & 7; 1950a: 33, f. 29. Syn. *Jungermannia opposita* Reinw. Bl. et Nees. *Plagiochila opposita* Dum. -Carl 1931a: 40; Horik. 1934a: 159; Hatt. 1942a: 67; 1944e: 59. Rare, in the montane region of warm, damp climate. Range: Ks. (restricted to Osumi Pen.), Hachi., Yk., Fm., China, India, Sumatra, Java, Borneo, Philippines, N. Guinea.

**Chiastocaulon dendroides** (Nees) Carl 1932: 59, f. 1-7; Hatt. 1942a: 66, f. 3; 1944e: 52; Horik. 1950b: 31; Hatt. 1951c: 78, pl. 3 (55-57). Not common. Range: Hn., Sk., Ks., Yk., Java, Sumatra, Borneo, Philippines, Caroline I. Micronesia.

#### Fam. 9. SCAPANIACEAE

**Diplophyllum albicans** (L.) Dum. -Hatt. 1944e: 67; 1950c: 49; 1951c: 78. Not uncommon, at high altitudes. Range: Yz., Hn., Sk., Ks., Yk., Fm., Siberia, Eur., N. Am.

**Diplophyllum obtusifolium** (Hook.) Dum. -St. 1897: 78; Horik. 1934a: 219; Ihsiba 1936: 189; Hatt. 1949b: 42; 1951c: 78. Not common. Range: Hn., Sk., Ks., Fm., Eur., N. Am. Materials collected in our area (at lower altitudes) seem to be distinct from the European form.

**Diplophyllum serrulatum** (K. Muell.) St. -Horik. 1934a: 218; 1939c: 845, pl. 405; Hatt. 1944e: 67; 1951c: 78, pl. 4 (4-7). Syn. *Diplophyllum serrulata* K. Muell. -Not uncommon, at low altitudes. Range: Hn., Sk., Ks., Yk., Fm., Qp.

**Diplophyllum taxifolium** (Wahlenb.) Dum. -Hatt. 1950c: 49; 1951c: 78. Restricted at high altitudes in our area. Range: Sg., Yz., Hn., Sk. (nov.), Ks. (nov.), Yk., Qp., Corea, Siberia, Eur., N. Am.

**\*\*Macrodiplophyllum plicatum** (Lindb.) Perss. 1949: 507-510, f. 3; Hatt. 1951c: 79, pl. 7 (11); 1951g: 362. Syn. *Diplophyllum plicatum* Lindb. 1872: 235; St. 1897: 78; Yoshin. 1898a: 74; 1901b: 180; 1906: 52; St. 1910: 180; Horik. 1934d: 710; 1935b: 215; 1936a: 22; Ihsiba 1936: 189. *Scapania spatulatifolia* (non St.) Warnst. 1915: 67, f. 8; 1921: 96. *S. nipponensis* Warnst. 1921: 96. *Diplophyllum longilobum* St. 1924: 500. *Diplophyllum oblongilobum* St. ex K. Muell. 1903: 37. Range: Kuriles, Sg., Yz., Hn., Sk., Corea, Siberia, N. Am. I have collected this many times at the alpine or subalpine regions in Honshu, but could not in our area.

**Scapania ampliata** St. -Hatt. 1944e: 162, f. 40; 1944e: 68; 1950c: 51; 1951c: 79, pl. 6

(17-18). Syn. *S. iwakiensis* St. 1924: 502 (syn. nov.) Not uncommon, highland.  
Range: Hn., Sk., Ks., Yk.

**Scapania Bolanderi** Aust. -St. 1897: 82; Howe (1899) in Mem Torr. Bot. Cl. 7: 147, pl. 106-107; K. Muell. 1905: 184, pl. 21; Frye & Clark 1946b: 614 cum fig.; Hatt. 1950c: 51; 1951g: 362. Syn. *S. caudata* St. -Hatt. 1944c: 163, f. 40; 1944e: 63. *S. caudata* Tayl. in herb. *S. albescens* St. *S. subnimbosa* St. 1910: 150. *S. densiloba* Horik. 1932a: 82, f. 6, pl. 11 (7-9). *S. robusta* Horik. 1932c: 124, f. 4, pl. 14 (13-15); 1934a: 223; Iwam. 1934: 21. *S. Bolanderi* var. *caudata* Hatt. 1951c: 51. Not uncommon, in montane regions, preferably higher elevations. Range: Yz., Hn., Sk., Ks., Yk., Fm., N. Am.

**Scapania integerrima** St. 1910: 148. Known from Prov. Tosa (Sk.) only. Small species related to *S. Stephania*.

**Scapania ligulata** St. -K. Muell. 1905: 122, pl. 49a; St. 1910: 147; Hatt. 1950c: 52. Syn. *S. javanica* var. *osumiensis* Hatt. 1944e: 70, f. 43. Rare. Range: Ks. (southern part), Yk.

**Scapania ornithopodioides** (Withering) Pears. -Buch 1928: 161, f. 36; Hatt. 1943a: 119, f. 19. Syn. *S. planifolia* Dum. -K. Muell. 1905: 286, pl. 43; Nichols. 1930a: 30. Found only in Prov. Tosa (Sk.); showing disjunctive distribution. Range: Hn., Sk (nov.), Eur., Himalaya, Yunnan, Hawaii.

**Scapania parvidens** St. -K. Muell. 1905: 62, pl. 49b; Yoshin. 1906: 53; St. 1910: 147; Warnst. 1921: 78; Ihsiba 1936: 191; Hatt. 1944d: 3, f. 10. Syn. *S. parvireta* var. *minor* Hatt. 1944e: 71; 1950c: 52; 1951c: 79, pl. 6 (19), -pro parte. Not rare, preferably at high altitudes. Range: Hn., Sk. (nov.), Ks. (nov.), Yk. (nov.)

**Scapania parvireta** St. -K. Muell. 1905: 157, pl. 26b; Evans 1930: 87-111, under *S. granulifera* with figs.; Hatt. 1944e: 165, f. 43-44; 1944e: 71; 1950c: 52. Syn. *S. hirosakiensis* St. -K. Muell. 1905: 120, pl. 11a. *S. japonica* St. ex Yoshin. 1903: 39, nom. nud., nec Gott. in herb. Not uncommon. Range: Yz., Hn., Sk., Ks., Yk. *S. hirosakiensis* may be regarded as a form of the present species.

**Scapania spinosa** St. -K. Muell. 1905: 156, pl. 27a; Horik. 1932c: 124, f. 5, pl. 15 (1-10); Hatt. 1944e: 72; 1950c: 53; 1951c: 79, pl. 5 (10), 6 (20). Syn. *S. Levieri* K. Muell. 1905: 140, pl. 14b; Yoshin. 1906: 54; St. 1910: 139; Nichols. 1930a: 29. ?*S. ciliata* Sde. Lac. -St. 1897: 82 & 87. Not uncommon. Range: Yz., Hn., Sk., Ks., Yk., Lk., Fm., Corea, China, Himalaya.

**Scapania Stephania** K. Muell. 1905: 273, pl. 41 & 50b; Hatt. 1944e: 72; 1951c: 79, pl. 5 (11-12). Syn. *S. subtilis* Warnst. 1916: 65, f. 5; 1921: 79. *S. brevis* St. ex Yoshin. 1901a: 93, nom. nud. *S. japonica* Gott. in herb. -Warnst. 1921: 71 (syn. nov.) *S. japonica* St. ex Yoshin. 1903: 39, nom. nud. *S. javanica* Gott. var. *nipponica* Hatt. 1944e: 70, f. 42 (syn. nov.) Rather common, mostly at lower elevations. Range: Hn., Sk., Ks., Yk. (nov.) This species stands near *S. javanica* Gott.

**Scapania undulata** (L.) Dum. -K. Muell. 1905: 123, pl. 12; Buch 1928: 138, f. 31; K. Muell. 1944: 238-246, f. 1-3; Hatt. 1950c: 54. Syn. *S. dentata* Dum. -K. Muell. 1905: 97, pl. 9; Horik. 1934a: 220. *S. splendens* St. 1897: 107. *S. purpurascens* Pears. ex St.

1897: 82; 1910: 133. *S. alata* St. 1910: 148 (syn. nov.) *S. ozeensis* Warnst. 1916: 67, f. 7; 1921: 80 (syn. nov.) *S. adrata* Warnst. 1916: 66, f. 6; 1921: 97 (syn. nov.) *S. informis* St. 1924: 502 (syn. nov.) *S. nuda* St. 1924: 503 (syn. nov.) *S. gigantea* Horik. 1931a: 15, f. 2, pl. 1 (10-17); 1939c: 847, pl. 406 (syn. nov.) Uncommon in our area, preferably on wet rocks in montane regions (higher altitudes). Range: Sg., Hn., Ks. (nov.), Sk., Hachi., Yk., Qp., Corea, Siberia, Eur., N. Am.

## Fam. 10. MARSUPELLACEAE

**Marsupella parviretexta** St.; -Hatt. 1943c: 352, f. 27; 1944e: 77; 1950c: 63. Uncommon on the summit of high mountains. Range: Hn. (nov.), Sk., Ks., Yk.

**Marsupella pseudofunkii** Hatt. 1950c: 63; 1951c: 79, pl. 6 (23), 7 (12); 1951f: 182, f. 60. Not rare, in the montane region. Range: Hn., Sk., Ks. (nov.), Yk.

**Marsupella tubulosa** St.; -Hatt. 1944e: 78, f. 47; 1950c: 63; 1951c: 79, pl. 3 (45-48), 6 (21). Rather common. Range: Hn., Sk., Ks., Yk. -var. **apertifolia** (St.) Hatt. 1944e: 78, f. 48. Syn. *M. apertifolia* St. 1901: 23. *M. sphacercata* var. *pachyderma* Hatt. 1944h: 266, f. 49 (syn. nov.) Uncommon. Range of var.: Hn., Sk. (nov.), Ks.

**Marsupella yakushimensis** (Horik.) Hatt. 1944e: 80, f. 49; 1950c: 64; 1951c: 79, pl. 6 (22). Syn. *Sphenolobus yakushimensis* Horik. 1934a: 156, f. 18. Rare except Isl. Yakushima (rich), on wet (or submerged) rocks. Range: Sk. (nov.). Ks., Yk.

**Gymnomitrium corallioides** Nees var. **Faurianum** (St.) Hatt. 1949b: 43; 1950c: 62; 1951c: 79, pl. 7 (42). Syn. *Acolea Faurianum* St. 1901: 8. *Lophozia ukayensis* St. 1917: 114. *G. Faurianum* Herz. 1926b: 270. *G. corallioides* Hatt. 1942e: 487. *G. corallioides* var. *asperulum* Hatt. in sched. On the summit of high mountains (ca. 1700m. or more). Range: Hn., Sk. (nov.), Ks. (nov.), Yk., Siberia, Eur., N. Am.

**Gymnomitrium Noguchianum** Hatt. sp. nov.\*) Found at Volcanos Kuju, Yufu and Takachiho, all of them are situated in Ks. Remarkable species having obtuse (not bilobed) leaves. On volcanic rocks (ca. 1400 m. in alt.)

## Fam. 11. RADULACEAE

**Radula acuminata** St. 1910: 230; Castle 1939: 45, f. 10; Hatt. 1942a: 68, f. 5; 1944e: 81, f. 50; 1950c: 65; 1951c: 79, pl. 1 (39-41). Not common, epiphyllous, but sometimes on barks of trees (fo. *corticola*). Range: Sk., Ks., Yk., Lk. (nov.), Indo-china, Java, Borneo, Philippines, N. Guinea.

**Radula amentulosa** Mitt. -Castle 1950: 261-264, f. 3 (1950). Syn. *R. brunnea* St. 1910: 232; Horik. 1933a: 198, f. 2, pl. 25 (3-5); Hatt. 1950b: 46, f. 38. *R. abnormis* St. 1924: 505. In our area only found at more than 1700 m. in height. Range: Sg., Hn., Sk., Ks., Fiji Isl. -remarkable disjunction!

**Radula Boryana** (Web.) Nees -Castle 1936: 21-25, f. 1. Syn. *R. auriculata* St. -Hatt. 1944h: 269, f. 52; 1951c: 80, pl. 7 (13-14). *R. chinensis* St. Rare. Range: Hn., Sk., Ks., China, Mexico, W. Indies, Central & S. Am., Central Africa, Madagascar.

**Radula cavifolia** Hmpe. -Hatt. 1944e: 82; 1950c: 65; 1951c: 80, pl. 6 (24). Syn. *R.*

\* Described in *Notulae de hepaticis Japonicis*, 15 (in press).

*magnilobula* Horik. 1932c: 127, f. 6, pl. 15 (11-15). Uncommon, mostly on the summit of mountains. Range: Hn., Sk., Ks., Yk., Fm., Corea, Java.

**\*\**Radula complanata* (L.) Dum.** -Hatt. 1950c: 65; 1951c: 80. This species has been reported from our area by Stephani (1897: 82), Horikawa (1934a: 228), and by Kamimura (1939a: 68), as well as other regions of Japan (Stephani, l. c.; Horikawa, l. c.; Sande Lacoste 1863-64: 305, without definite locality; Makino 1897: 40; Ihsiba 1907a: 45). However I have not confirmed the occurrence of this in our area as yet, although not uncommon in northern Japan. It does not seem to be distributed not only in our area, but also in the southern flank of Honshu. Already Mitten (1891: 201) says, "*Radula complanata* is mentioned in Sande-Lacoste's list; but it is probably one of the above (*R. japonica*, *R. oyamensis* & *R. tokiensis*), which at that time had not been distinguished."

***Radula constricta* St.** 1924: 506. Syn. *R. Lindbergiana* var. *Onoi* Hatt. 1951c: 80, pl. 1 (43-45), sine descr. (syn. nov.) Not rare. Range: Hn., Sk. (nov.), Ks. Closely related to (or geographical subspecies or variety of) *R. Lindbergiana* Gott.

***Radula gemmulosa* Hatt.** 1950c: 65, f. 33. Very rare, only found in Isl. Yakushima, at lower places. This was collected on the bark of tree, though it is sure to belong into Sect. *Epiphyllae* (Castle 1939).

**\*\**Radula hyalina* St.** 1924: 511. Identical to *R. complanata*! Consulting the type specimen I found that this was collected at Toso in Prov. Rikuzen (Hn.) It might be an error of Stephani (l. c.) to have designated Prov. Tosa for the habitat.

***Radula japonica* Gott. msc.** -Hatt. 1944e: 82; 1950c: 67; 1951c: 80. Syn. *R. physoloba* (non Mont.) Mitt.; Miq. 1867b: 391. Not uncommon. Range: Hn., Sk., Ks., Yk., Corea.

**\*\**Radula javanica* Gott.** This species was recorded from Japan by Stephani (1897: 82) and Yoshinaga (1898a: 74; 1910b: 182). However, it is still a question whether or not the Japanese plant is quite the same species as the Javanese one.

***Radula Kanemaru* Hatt.** 1950c: 67, f. 34; 1951c: 80, pl. 4 (8). Not common. Range: Hn. (nov.), Sk. (nov.), Ks., Yk.

***Radula Kojana* St.** -Hatt. 1944e: 82; 1950c: 68; 1951c: 80, pl. 4 (9), 5 (26-27). Syn. *R. apiculata* St. 1897: 82; Makino 1897: 39, -quoad plant. Japon., nec Sde. Lac. msc. -St. 1884: 150, (syn. nov.) *R. anceps* St. 1910: 150, -quoad plant. Japon., nec Sde. Lac. (syn. nov.) *R. decliviloba* St. 1910: 153. Rather common. Range: Hn., Sk., Ks., Hachi., Yk., Lk., Fm., Qp.

**\*\**Radula Lindbergiana* Gott.** -Besch. 1894: 27; St. 1897: 82; Yoshin. 1901b: 182; 1906: 53; St. 1910: 192; Horik. 1934a: 227; 1950c: 69. Range: Yz., Hn., Sk., Hachi., Yk., Lk., China, India, Caucasus, Eur. It will be a question whether or not the Japanese plant (especially one from southern part) is same as the European type-form. I suppose that most of the above-cited records are caused by mistaking *R. japonica* or *R. constricta* for the present species.

***Radula obiensis* Hatt.** 1944e: 83, f. 51; 1950c: 69. Very rare. Range: Ks., Yk. Closely allied to *R. Boryana* and *R. valida*.

***Radula obtusiloba* St.** 1897: 105; 1910: 183; Castle 1936: 51, f. 14; Hatt. 1951c: 80.



Discovered on high mountains (Sk.) Range: Yz., Hn., Sk. (nov.)

**Radula Okamurana** St. -Hatt. 1944c: 84, f. 52; 1950c: 69; 1951c: 80. Rare; rather low elevations. Range: Hn (nov.), Sk., Ks., Yk. Closely allied to *R. oyamensis*.

**Radula oyamensis** St. ex Evans 1906: 144, pl. 6 (6-10); Hatt. 1944c: 85, f. 53; 1950c: 69; 1951c: 80, pl. 1 (42), with var. *setulosa* Hatt. Rather common. Range: Hn., Sk., Ks., Yk.

**\*\*Radula tokiensis** St. 1884: 150; Mitt. 1891: 201; St. 1897: 82; 1910: 205; Horik. 1932b: 176; Kamim. 1939a: 68. Range: Hn., Sk. I am unable to recognize this as yet.

**Radula valida** St. -Reimers 1931b: 30, f. 5; Castle 1936: 26, f. 3; Hatt. 1944c: 86; 1951c: 80. Syn. *R. gigantea* Horik. 1930a: 636, f. 7. Not rare. Range: Hn., Sk., Ks., Fm., China. Closely related to *R. Boryana* and *R. obiensis*.

**Radula variabilis** Hatt. 1944c: 86, f. 54; 1950c: 70; 1951c: 80. Syn. *R. complanata* Okam. 1916: 3, nec *R. complanata* (L.) Dum., (syn. nov.) Rather common, found at lower altitudes. Range: Hn. (nov.), Sk. (nov.), Ks., Yk., Fm. Closely related to *R. javanica* Gott. Japanese plants referred to *R. javanica* may possibly be attributed to the present species.

#### Fam. 12. PORELLACEAE

**Porella densifolia** (St.) Hatt. 1944b: 109; 1950b: 43; 1951c: 81, pl. 1 (46), 4 (10). Syn. *Madotheca densifolia* St. 1894a: 219; 1897: 80; Makino 1897: 38; Nakan. 1906: 64; St. 1910: 301; Horik. 1930a: 640, f. 9; Reimers 1931b: 32; Kashyap 1932: 41; Horik. 1934a: 41. *Madotheca robusta* St. 1910: 313. Not uncommon, preferably on calcareous rock. Range: Hn., Sk., Ks., Fm., China, Himalaya..

**Porella grandiloba** Lindb. 1872: 234; Hatt. 1944b: 104, f. 30; 1951c: 81. Syn. *Madotheca grandiloba* St. 1910: 300. *M. parvistipula* St. ex Besch. 1894: 26, nom. nud.; Yoshin. 1896: 366, nom. nud.; St. 1897: 96; Yoshin. 1898a: 74; St. 1910: 300; Horik. 1934a: 232. *M. Wakawana* St. 1924: 529 (syn. nov.) *P. Wakawana* Hatt. 1943a: 202 (syn. nov.) *P. parvistipula* Hatt. 1944b: 106, f. 32; 1944c: 90. Rather rare in our area. Range: Sg., Yz., Hn., Sk., Ks., Fm., Bn. Possibly allied to *P. conduplicata* (St.) c. n. (= *Madotheca conduplicata* St. 1910: 298, from Manchuria).

**Porella japonica** (Sde. Lac.) Mitt. -Hatt. 1944c: 88, f. 55-56; 1950c: 70; 1951c: 81, pl. 1 (47). Syn. *Madotheca japonica* Sde. Lac. -Horik. 1930a: 642, f. 10. *Madotheca variabilis* St. in sched. (syn. nov.) *Madotheca tridens* St. in sched. (syn. nov.) Not uncommon, at lower altitudes. Range: Hn., Sk., Ks., Yk., Fm., Sumatra.

**Porella oviloba** (St.) Hatt. 1944b: 105, f. 31. Syn. *Madotheca oviloba* St. 1910: 312. Rare, only known from Mt. Tsurugi (Sk.)

**Porella Perrottetiana** (Mont.) Hatt. 1944d: 5, f. 12; 1944c: 90; 1950c: 70; 1951c: 81, pl. 4 (11). Syn. *Madotheca Perrottetiana* Mont. -Horik. 1934a: 213. *Madotheca ciliaris* N. *P. ciliaris* Mitt. *Madotheca hirta* St. 1924: 523 (syn. nov.) *P. hirta* Hatt. 1944b: 109 (syn. nov.) Not uncommon, at lower altitudes. Range: Hn., Sk., Ks., Yk., Fm., China, India, Birma, Ceylon.

**Porella setigera** (St.) Hatt. 1944b: 107; 1951c: 81, pl. 1 (49-51), 4 (13). Syn. *Mado-*

*thea setigera* St. 1897: 96; Makino 1897: 38; Yoshin. 1906: 53; Ihsiba 1907b: 340; St. 1910: 314; Obin. 1910: 230; Horik. 1934a: 230; 1934c: 601; Kamim. 1939a: 68; Uno & Takah. 1940: 29. *M. ulophylla* Mass. 1897b: 26, pl. 4 (3). *M. fissistipula* St. msc. *M. cordifolia* St. 1910: 315; Reimers 1931b: 33. • *P. setigera* var. *cordifolia* Hatt. 1944b: 107, f. 33. Not rare, mostly on calcareous rock. Range: Yz., Hn., Sk., Ks., Fm., Corea, China (Yunnan, Schensi). -var. **subobtusa** (St.) Hatt., comb. nov. Syn. *Madotheca subobtusa* St. 1910: 315. *Porella subobtusa* Hatt. 1944b: 111. Rare, known from Mt. Tsurugi (Sk. -typ. loc.) and few other mountains. *Madotheca cordifolia* is merely a form of the present species. *Porella koyana* (St.) Hatt. (= *Madotheca koyana* St.) and *P. propinqua* (Mass.) c. n. (= *Madotheca propinqua* Mass. 1897b: 27, pl. 5 (8) seem to be closely allied to *P. setigera*.

**Porella Stephaniana** (Mass.) Hatt. 1950 (Hepat. Japon. Exsic. ser. 3): no. 123; 1951c: 81, pl. 4 (12). Syn. *Madotheca Stephaniana* Mass. 1897b: 23, pl. 2 (5); St. 1910: 309. *Porella calcicola* Hatt. 1944d: 4, f. 11; 1950b: 43. *Madotheca grossidens* St. in sched. Not rare, on limestone. Range: Hn., Sk., Ks., China (Schensi).

**Porella tosana** (St.) Hatt. 1944b: 7; 1944e: 91, f. 57-58. Syn. *Madotheca tosana* St. *M. Pearsoniana* Mass. 1897b: 25, pl. 3 (6), (syn. nov.) *M. ptychanthoides* Horik. 1934a: 232, f. 43. *P. tosana* var. *Mayebarae* Hatt. 1951c: 81, pl. 1 (43). Not rare. Range: Hn., Sk., Ks., Fm., Corea, China (Schensi) (nov).

**Porella vernicosa** Lindb. -Hatt. 1943d: 361, f. 5 (fo. *spinulosa*); 1944e: 94; 1951b: 43; 1951c: 81, pl. 4 (14); Perss. 1950: 174. Syn. *Madotheca Fauriana* St. ex Besch. 1894: 26, nom. nud.; St. 1910: 315 (syn. nov.) *M. nigricans* St. 1910: 314. *M. spinulosa* St. 1924: 529. *Jubula gracilis* St. 1924: 555. *Madotheca kotukensis* Ihsiba 1934: 369. *Porella Fauriana* Hatt. 1944b: 109 (syn. nov.) Common. Range: Sg., Yz., Hn., Sk., Ks., Qp., Corea, Attu Isl. (var. *Sasakii* Hatt. 1951c: 81) (nov). Mitten's *Porella polita* (Mitt. 1891: 202) appears to be a form of the present species (I am not able to see the type). Further, *P. laevigata* var. *killarniensis* recorded from Attu Island by Frye & Clark (1946a: 60-64, f. 1-11; 1947: 954, f. 1-6) seems to be a variety of *P. vernicosa* (Cf. Perss. 1950, Bryologist 53: 174).

**Macvicaria ulophylla** (St.) Hatt. 1951c: 81, f. 45. Syn. *Madotheca ulophylla* St. 1897: 97; Makino 1897: 38; Schiffn. 1899b: 390; Yoshin. 1906: 53; Nakan. 1906: 64; Ihsiba 1907b: 340; St. 1910: 303; Obin. 1910: 230; Horik. 1930a: 638, f. 8; 1934c: 601; 1935g: 764; Knapp 1933: 62-73, f. 1-21; Schiffn. 1934: 119, with many figs. *M. cuculliloba* St. 1924: 520. *M. rikusana* St. 1924: 527 (syn. nov.). *Macvicaria fossombronioides* Nichols. 1930a: 9, f. 2. *Madotheca fossombronioides* Schiffn. l. c. *Porella ulophylla* Hatt. 1944b: 111; 1944e: 92, f. 59. *P. rikusana* Hatt. 1943a: 202; 1944b: 100 (syn. nov.) Common. Range: Hn., Sk., Ks., Corea, Manchuria, China. *Madotheca rikusana* St. is a form having not so undulate leaves. *Macvicaria* is a weak genus, and should be better regarded as a section of *Porella* rather than regarded as a proper genus.

#### Fam. 13. FRULLANIACEAE

**Frullania amplicrania** St. -Hatt. 1944e: 141, f. 87; 1951b: 62; 1951c: 81, pl. 4 (15).

Not uncommon, mostly at lower elevations. Range: Hn. (nov.), Sk., Ks., Yk., Lk.

**Frullania aoshimensis** Horik. 1929a: 64, f. 4; Verd. 1934c: 197; Hatt. 1944e: 142. Syn. *F. tsukushiensis* Horik. 1929a: 65, f. 5. Not rare, preferably in lowland. Range: Hn., Sk., Ks., Yk., Lk., Fm.

**Frullania bidentula** St. -Hatt. 1942b: 406, pl. 129; 1944h: 263, f. 47. Rare, known from the summits of Mts. Ishizuchi, Tsurugi, Ichifusa, and few other high mountains. Range: Hn., Sk., Ks. (nov.) Possibly conspecific with *F. Delavayi* St. (Yunnan, ± 2500 m. alt.)

**Frullania conistipula** St. 1910: 399. Rare in our area. Range: Hn., Sk., Ks. (nov.) Related to *F. muscicola*.

**Frullania densiloba** St. ex Evans 1906: 157, pl. 8 (12-22); Horik. 1929a: 60, f. 3; Verd. 1934c: 197; Hatt. 1944e: 142; 1951b: 62. Rather common. Range: Hn., Hachi., Sk., Ks., Yk., Lk., Fm., BT.

**Frullania diversitexta** St. -Hatt. 1944e: 142, f. 88; 1951b: 64; 1951c: 82. Syn. *F. abducens* St. 1910: 396. *F. tenella* St. 1910: 397. *F. sendaica* St. 1924: 552 (syn. nov.) *F. tosana* Horik. (syn. nov.) Not uncommon. Range: Hn., Sk., Ks., Yk.

**Frullania Fauriana** St. 1894b: 144; Besch. 1894: 26; St. 1897: 78; Makino 1897: 36; Schiffn. 1899b: 391; Yoshin. 1901a: 93; Nakan. 1905: 226; Yoshin. 1906: 52; Ihsiba 1908: 277; St. 1910: 402; Obin. 1910: 230; Horik. 1934a: 241; 1939c: 855, pl. 410; K. Uno & Takah. 1940: 29; Hatt. 1941b: 64. Range: Hn., Sk., Ks., Yk., Lk., Fm., Corea, China, Philippines. In his original description Stephani (1894b: 144) refers two collections, one from Japan and the other from Philippines. I feel very critical whether the two collections fall or not fall into one and the same specific category.

**\*Frullania fragilifolia** Tayl. Reported from Prov. Tosa (Sk.) by Yoshinaga (1898b: 211). However, the occurrence of this in our area is not probable.

**Frullania hamatiloba** St. -Hatt. 1944c: 155, f. 34; 1944e: 143, f. 89; 1951c: 82. Not common. Range: Hn., Sk., Ks., Yk., Fm.

**Frullania Hampeana** Nees -Verd. 1930a: 44, f. 28, & 51-52; Hatt. 1944h: 264; 1951c: 82, pl. 4 (18). Syn. *F. lanciloba* St. 1910: 404. *F. tortuosa* Verd. 1929a: 136, f. 5; Horik. 1934a: 239. Not common. Range: Hn., Sk., Ks., Fm., Bn. (nov.), Java, Sumatra, Ceylon, Australia, N. Caledonia, Tahiti. -var. **osumiensis** Hatt. 1944e: 144, f. 90. Uncommon. Range of var.: Ks.

**Frullania Inuena** St. 1910: 398. Not uncommon. Range: Sk., Hn. (nov.), Ks. (nov.) Closely allied to *F. truncatifolia* and *F. Fauriana*.

**Frullania japonica** Sde. Lac. -Horik. 1934a: 237; 1939c: 855, pl. 410; Hatt. 1951c: 82, pl. 4 (20), 6 (28). Syn. *F. microla* Mass. 1897b: 42-44, pl. 12 (17); St. 1910: 488; Ihsiba 1936: 189. *F. Jishibae* St. 1924: 540. *F. Sawadae* St. 1924: 542. Not uncommon. Range: Yz., Hn., Sk., Ks., Fm., Qp. (nov.), Corea, China. This is closely allied to or conspecific with *F. Jackii* Gott. of Europe.

**Frullania kagoshimensis** St. -Hatt. 1944e: 146; 1951b: 64; 1951c: 82. Not uncommon in the southern part of our area. Range: Sk., Ks., Yk. Related to *F. wamiensis* and

*F. Fauriana.*

**Frullania Makinoana** St. -Horik. 1929a: 68, f. 6; Verd. 1934c: 196; Hatt. 1944e: 146; 1951b: 64; 1951c: 82, pl. 7 (15-16). Rare. Range: Hn., Sk., Ks., Tsu., Yk. Allied to *Fr. moniliata*.

**Frullania Mayebarae** Hatt. 1951c: 82, pl. 7 (17); (Eksiccata) 1950 (ser. 2): no. 125. Rare, on wet rock. Range: Hn. (nov.), Ks.

**Frullania Meyeniana** Lndnb. -Evans 1900b: 402, pl. 45 (8-14); Verd. 1930a: 81, f. 58; Hatt. 1944e: 146, f. 91-92; 1951b: 64; 1951c: 82, pl. 2 (30-32). Syn. *F. tonkinensis* St. 1894b: 168; 1911: 649 (syn. nov.) Not rare in our southern region (lower elevation). Range: Ks., Yk., Java, Philippines, Hawaii, Tonkin (nov.)

**Frullania moniliata** subsp. **obscura** Verd. 1930a: 80, f. 104 & 112-113; 1934c: 194; Hatt. 1944e: 148; 1951c: 82, pl. 4 (21-22), 7 (18); Horik. 1951b: 27. Syn. *F. moniliata* Mont. -Horik. 1934a: 235; 1939c: 853, pl. 409, -quoad plant. Japon. *F. Tamarisci* (non Dum.) Sde. Lac. -quoad plant. Japon. *F. clavellata* Mitt. *F. appendiculata* St. Very common, found in any altitudes (from the lowest land to alpine tops) in our area. Range: Sg., Yz., Hn., Sk., Ks., Yk., Lk., Qp., Fm., Corea, China, India, Ceylon, Sumatra, Java.

**Frullania motoyana** St. -Hatt. 1944e: 149; 1951b: 65, f. 42; 1951c: 83, pl. 2 (33). Syn. *F. minutifolia* St. 1911: 650. Not rare, in mountains. Range: Hn. (nov.), Sk., Ks., Yk. More or less related to *Fr. gracilis* (R. B. N.) Dum. of Indomalaya.

**Frullania muscicola** St. -Hatt. 1944e: 146; 1951b: 66; 1951c: 83. Syn. *F. himalayensis* St. *F. chinensis* St. Not uncommon. Range: Yz., Hn., Sk., Ks., Yk., Corea, Manchuria, China, India.

**Frullania nepalensis** (Sprongel) Lehm. et Lndnb., -Verd. 1930a: 50, f. 59-64; Hatt. 1943d: 363, f. 4 (a-j); 1951b: 66. Rare. Range: Sk., China, Himalaya, Tai, Java, Celebes, Philippines, Batjan. All records of the present species from Japan are not sure so far as reexamined. Recently, however, I have found only one collection referable to this species in Herb. Okamura. This collection came from Mt. Yanaze in Prov. Tosa (Sk.), and was erroneously identified to *F. hamatiloba* by Stephani.

**Frullania nishiyamensis** St. -Horik. 1934a: 234; Hatt. 1949b: 43. Syn. *F. nepalensis* var. *nishiyamensis* Hatt. 1941a: 332, pl. 111; 1943d: 360, f. 4 (k-r); 1944e: 149; 1951b: 67. Uncommon. Range: Hn., Sk., Ks., Yk., Fm., Corea, China. This is closely related to or conspecific with *F. nepalensis*.

**Frullania nodulosa** (Reinw., Bl. et N.) Nees; -Verd. 1930a: 177, f. 290 & 294-303. Syn. *F. nodulosa* var. *nipponica* Hatt. et Kamim. ex Kamim. 1943: 292, f. 1; Yanagita & Kamim. 1951: 88, f. 1 & 2 (a-b), pl. 2 (a-k); (Eksic.) Hatt. 1950 (ser. 3): no. 128. Range: Sk.; -widely distributed in the tropical zone. In Japan and its neighbouring territories this species is reported from only one locality in Prov. Tosa (Sk.), and properly regarded as a tropical element which appears as an isolated disjunct in our area.

**Frullania parvistipula** St. -Hatt. 1944e: 150, f. 93. Rare, found in the southern lowland. Range: Hn. (nov.), Sk., Ks.

**Frullania pedicellata** St. -Hatt. 1944e: 151, f. 94-95; 1951c: 83, f. 25. Syn. *F. kochi-*

*ensis* St. 1911: 400; 1951c: 82, pl. 6 (29). Not rare. Range: Hn., Sk., Ks. *F. kochi-ensis* should be considered as a form of this variable species. The present species stands near *F. truncatifolia*, *F. Inuena*, and *F. Fauriana*.

**\*\*Frullania picta** St. This has been reported by Yoshinaga (1898b: 211) from Prov. Tosa (Sk.) However, it seems not probable that this species is really distributed in Japan.

**\*\*Frullania riparia** Hmpe. Also reported from Prov. Tosa (Sk.) by Yoshinaga (1906: 53), but not recognized by the author as yet.

**Frullania Sackawana** St. 1897: 91; Yoshin. 1898a: 74; St. 1911: 580; Verd. 1928: 109-122, f. 1-2; Kamim. 1943: 293, f. 2 (n-w); Hatt. 1951c: 83, pl. 4 (23-24); Yanagita & Kamim. 1951: 90, f. 2 (c-d), 3, pl. 2 (1-t). Very rare. Known from only two localities, one in Prov. Tosa (Sk.) and the other in Prov. Higo (Ks.), showing disjunct distribution.

**Frullania Schensiana** Mass. 1897b: 40, pl. 11 (15). Syn. *F. ontakensis* St. 1910: 404; Reim. 1931b: 34, f. 6; Hatt. 1944c: 156, f. 35; 1951b: 67; 1951c: 83, pl. 2 (34), (syn. nov.) Uncommon. Range: Hn., Sk., Ks., Yk., China.

**Frullania squarrosa** (Reinw., Bl. et N.) Dum. -Verd. 1930a: 34, f. 18-21, 42-45, 130-132; Hatt. 1944c: 152, f. 96; 1951c: 83, pl. 2 (35-37), 4 (25-26). Syn. *F. Formosae* St. -Horik. 1934a: 103. *F. subnigra* St. *F. mikawana* St. in sched. (syn. nov.) Otherwise see Verd. l. c. Rather common, preferably at lower altitudes. Range: Hn., Sk., Ks., Fm., Corea (nov.), Asia, Oceania, Australia, Africa, S. & N. Am.

**Frullania taradakensis** St. 1910: 352; Ihsiba 1936: 189; Hatt. 1951c: 83, pl. 4 (27). Syn. *F. Onoi* Hatt. in sched. (syn. nov.) Not common. Range: Hn., Sk. (nov.), Ks. This species lies near *F. nishiyamensis*.

**Frullania truncatifolia** St. -Hatt. 1944c: 159, f. 37; (Exsic.) 1946 (ser. 1): no. 29. Syn. *F. Fauriana* var. *Yoshinagana* Hatt. 1944c: 155 (syn. nov.) Not uncommon. Range: Hn., Sk. (nov.), Ks., Tsu., Yk. Related closely to *F. Fauriana*, *F. pedicellata* and *F. Inuena*.

**Frullania usamiensis** St. -Hatt. 1943c: 353, f. 28; 1944c: 153; 1951b: 67. Syn. *F. yakushimensis* Horik. 1934a: 237, f. 44. Not uncommon, preferably in mountains. Range: Hn., Sk. (nov.), Ks., Tsu., Yk. Allied closely to *F. kagoshimensis* and *F. Fauriana*.

**Frullania uvifera** Horik. 1934a: 239, pl. 18 (24-29); Hatt. 1944c: 153, f. 97; 1951b: 68. Discovered only from Isl. Yakushima and Osumi Pen. (the southernmost part in our area). Range: Ks., Yk., Bn.

**Frullania valida** St. 1910: 402. Known only from type locality. Range: Sk. (Prov. Tosa). This species stands near *F. nishiyamensis*.

**Jubula Hutchinsiae** subsp. *javanica* (St.) Verd. 1930a: 22, f. 1-12; Hatt. 1944c: 155; 1951b: 63; 1951c: 83, pl. 4 (30), 5 (30). Syn. *J. Hutchinsiae* Dum. p. p. (quoad plant. Japon.) Otherwise see Verd. l. c. Not rare, in lower elevations. Range: Hn., Sk., Ks., Yk., Lk., Fm., B.T., M. Asia, India, Sumatra, Java, Borneo, Philippines, Hawaii, Samoa, N. Guinea. -var. *integrifolia* (St.) Hatt. 1944c: 156, f. 98; 1951b: 68. Syn. *Jubula integrifolia* St. Rare, submerged or on wet rock, in the southernmost part of our area.

Range of var.: Ks., Yk.

**Jubula japonica** St. -Verd. 1930a: 19, f. 15-16; Hatt. 1944e: 156; 1951b: 68; 1951c: 83, pl. 5 (28-29). Not uncommon. Range: Yz., Hn., Sk., Ks., Yk., Lk., Fm., Qp.

#### Fam. 14. LEJEUNEACEAE

**Ptychanthus striatus** (Lehm. et Lindb.) Nees; -Horik. 1939c: 857, pl. 411; Hatt. 1944e: 126. Syn. cfr. Verd. 1934b: 115. Not uncommon. Range: Hn., Sk., Ks., Lk., Fm., India, Birma, Indo-malaya, Oceania, Africa. -var. **caudatus** (Herz.) Hatt., comb. nov. Syn. *Ptychanthus caudatus* Herz. 1930a: 43; Verd. 1934b: 118. Not rare. Range of var.: Hn., Sk., Ks., China. This variety is newly found in Japan. There are many intermediate forms between the typical form and var. *caudatus*.

**Tuzibeanthus porelloides** Hatt. 1947b: 5 & 7, sine descr.; 1950b: 47, f. 39; 1951c: 84, pl. 2 (1-2), 7 (19-21); (Exsicc.) 1951 (ser. 4): no. 199; Amak. 1951: 6. Disjunctively known from four localities, Provs. Musashi (Hn.), Tosa (Sk.), Higo (Ks.), and Hyuga (Ks.), where are geologically old; on limestone.

**Thysananthus aculeatus** Herz. 1931a: 89, f. 3 (a-i); Verd. 1933a: 233; 1934b: 174; Hatt. 1944e: 139; 1951b: 60, f. 40. Restricted to Osumi Pen. and Isl. Yakushima in our area. Range: Ks., Yk., Lk. (nov.), Philippines. *Thysananthus formosanus* Horik. (1934a: 252, pl. 20 (1-10) and *T. Richardianus* Verd. (1934b: 173) are both allied closely to (or conspecific with) the present species.

\***Thysananthus yokogurensis** (St.) Syn. *Thysanolejeunea yokogurensis* St. ex Yoshin. 1901a: 93, nom. nud. Recorded only once from Mt. Yokugura of Prov. Tosa (Sk.) I am not able to recognize this nomen nudum species.

**Mastigolejeunea liukiensis** (Horik.) Hatt. 1944e: 139. Syn. *Thysananthus liukiensis* Horik. 1934a: 250, pl. 19 (17-25). *M. Mayebarae* Hatt. 1950 (Exsiccatae ser. 3): no. 140; 1951c: 84, pl. 4 (33-34), 5 (41-42). *M. liukiensis* var. *Mayebarae* Hatt. 1951k: 299, f. 61. Discovered only from two stations: Isshoochi of Prov. Higo (Ks.) and Mt. Yokogura of Prov. Tosa (Sk.) Range: Sk., Ks., Lk., Fm. This species stands near *M. humilis* (Gott.) Spr.

**Spruceanthus polymorphus** (Sde. Lac.) Verd. 1934b: 155; Hatt. 1944e: 139, f. 79-80; 1951b: 56; 1951c: 84, pl. 2 (5-7). Syn. *Ptychanthus explicatus* Horik. 1934a: 247, pl. 19 (6-16). *Archilejeunea bidentata* Horik. 1931a: 32, pl. 2 (12-20); 1934a: 245. *S. polymorphus* var. *bidentatus* Hatt. 1944e: 131. Rather common at low elevations in the southern flank of our area. Range: Hn., Sk., Ks., Yk., Lk., Bn., Fm., India, Sumatra, Java, Borneo, Philippines, N. Guinea, N. Caledonia, Samoa, Tahiti, Hawaii. *Archilejeunea bidentata* is merely a form of this variable species.

**Spruceanthus semirepandus** (N.) Verd. 1934b: 153; Hatt. 1942a: 70, f. 6-7; 1944e: 131, f. 81-82; 1951b: 56; 1951c: 84, pl. 4 (32). Syn. *Thysananthus?* *fragillimus* Herz. 1930a: 45, f. 16 (1-13). *Ptychanthus nudothecoides* Horik. 1934a: 248, f. 48. *P. acuminatus* (non St.) Horik. 1934a: 247. Not uncommon at low elevations. Range: Hn. (nov.), Sk., Ks., Yk., Fm., China, India, Java, Borneo, Philippines.

**Archilejeunea kiushiana** (Horik.) Verd. (1934b: 46); Hatt. 1944e: 97; 1951b: 43; 1951c:

84, pl. 6 (35). Syn. *Lopholejeunea kiushiana* Horik. 1932c: 129, f. 8. ?*Leucolejeunea planifolia* Horik. 1933a: 199, pl. 25 (6-8). *A. sexplicata* Horik. 1934a: 224, pl. 19 (1-5). Not common, in the southern flank of our area. Range: Hn. (nov.), Sk., Ks., Yk.

***Lopholejeunea appplanata*** (Reinw., Bl. et N.) St.; -Hatt. 1942c: 470, f. 10; 1951b: 52. Syn. *L. Levieri* Mass. 1897b: 36-38, pl. 10 (14). *L. apiculata* St. ex Nakan. 1905: 226, nom. nud. *L. apiculata* Horik. 1932c: 128, f. 7; 1934a: 254; Kamim. 1939a: 70. Uncommon; at lower altitudes. Range: Hn. (nov.), Sk., Yk., Lk., China, Java, Sumatra, Borneo, N. Guinea.

***Lopholejeunea nipponica*** Horik. 1933a: 200, pl. 25 (9-12); Hatt. 1951c: 84, pl. 7 (29). Syn. *L. brunnea* Horik. var. *nipponica* Hatt. 1944e: 119; 1951b: 53. Uncommon. Range: Hn., Sk. (nov.), Ks., Yk.

***Lopholejeunea subfusca*** (Nees) St.; -Verd. 1934b: 78. Syn. *L. formosana* Horik. 1934a: 256, f. 51; Hatt. 1944e: 120, f. 72; 1951b: 53; 1951c: 84, pl. 2 (3-4), (syn. nov.) Otherwise see Verd., l. c. Not rare. Range: Sk., Ks., Yk., Lk., Fm., India, Ceylon, Malay Pen., Sumatra, Java, Borneo, Philippines, N. Guinea, N. Caledonia, Tahiti. (New to Japan and Formosa!) *L. brunnea* Horik. (1931a: 28, f. 9; 1934a: 258) seems to be closely related to or merely a form (bracteoles dentate) of the present species.

***Lopholejeunea Yoshinagana*** (Hatt.) Hatt., comb. nov. Syn. *L. subfusca* var. *Yoshinagana* Hatt. 1944f: 38. *L. javanica* Yoshin. 1900: 39; Horik. 1929b: 423, f. 14, -quoad plant. Japon. (nec *L. javanica* (N.) St.) Known from Provs. Tosa (Sk.) and Sagami (Hn.) only. Range: Hn., Sk. In some important characters this interesting species comes out of the category of the genus to which it has been referred, as follows: (1) Female inflorescence is terminal on the stem or leading branch, and usually two subfloral innovations are present, most of which successively produce flowers; (2) keels of perianth are not sharp and hardly winged, but provided with few spine-like projections at the apical portion, the bracts and bracteole are entire (or very weakly 3-4 angulate-dentate and faintly apiculate at the apex of bracts); (3) rare plant distributed discontinuously in the montane district along the northernmost limit of the known range of the other *Lopholejeuneas* of Japan.

**\*\**Ptychocoleus fertilis*** (Reinw., Bl. et N.) Trev. -Reported by Stephani (1897: 79, as *Aerolejeunea fertilis*) and Yoshinaga (1906: 53) from our area. The records, however, seem to be caused by an erroneous identification.

***Ptychocoleus nipponicus*** Hatt. 1943d: 358, f. 2; 1944e: 127; 1951b: 54; 1951c: 84, pl. 5 (31). Syn. *Archilejeunea pusilla* St. 1911: 731 (nec *P. pusillus* St.) *Ptychocoleus ustulatus* St. (1921: 58); -Horik. 1934a: 235, -quoad plant. Japon., nec *P. ustulatus* (Tayl.) St. Not rare. Range: Hn., Sk., Ks., Yk., Lk.

***Brachiolejeunea sandvicensis*** (Gott.) Evs.; -Hatt. 1944e: 97, f. 62; 1951b: 43; 1951c: 84, f. 21, pl. 4 (31). Syn. cfr. Verd. 1934b: 54. Common. Range: Hn., Sk., Ks., Yk., Lk., Fm., B.T., Hachi, Bn., Corea, China, Annam, Tonkin, India, Indo-malaya, Hawaii, Tahiti.

***Leucolejeunea flavescens*** (Hatt.) Hatt., comb. nov. Syn. *Archilejeunea flavescens* Hatt. 1944e: 95, f. 60-61. Known from Osumi Pen. (Ks.) only.

***Leucolejeunea japonica*** (Horik.) Verd. (1934b: 46 & 70); Hatt. 1944e: 117; Amak. 1951:

6. Syn. *Archilejeunea japonica* Horik. 1932a: 84; f. 8, pl. 11 (10-12). Rare; only two stations known: Miyazima in Prov. Aki (Hn.) and Shiiba in Prov. Hyuga (Ks.)

**Leucolejeunea rotundistipula** (Hatt.) Hatt., comb. nov. Syn. *Strepsilejeunea rotundistipula* Hatt. 1944h: 270, f. 53. -var. **yakumontana** (Hatt.) Hatt., comb. nov. Syn. *Strepsilejeunea rotundistipula* var. *yakumontana* Hatt. 1951b: 59, f. 39. Very rare; type form known from Mt. Tsubakuro in Prov. Nagano (Hn.) and var. *yakumontana* from the summit of Isl. Yakushima only.

**Leucolejeunea xanthocarpa** (Lehm. et Lindb.) Evans; -Hatt. 1944e: 117, f. 71; 1951c: 85, pl. 5 (43), 6 (30). Rare. Range: Hn. (nov.), Ks., Fm., China, Ceylon, Java, Borneo, Celebes, N. & S. Am., Africa.

**Euosmolejeunea auriculata** St.; -Horik. 1930a: 645, f. 12; Hatt. 1944e: 104; 1951c: 85. Syn. *E. compacta* var. *auriculata* Hatt. 1951b: 48. Not rare, creeping on larger bryophytes or on ferns of *Hymenophyllaceae*. Range: Hn., Sk., Ks., Yk., Lk., Fm., Qp.

**Euosmolejeunea claviflora** (St.) Hatt. 1943d: 358, f. 1; 1944e: 105; 1951b: 48; 1951c: 85. Syn. *Strepsilejeunea claviflora* St. 1913: 285; Reimers 1931b: 39. Restricted to Isl. Yakushima (common) and Osumi Pen. (rare) in our area. Creeping upon larger bryophytes or on ferns of *Hymenophyllaceae*. Range: Ks., Yk., China (Hupei).

**Euosmolejeunea compacta** (St.) Hatt. 1951b: 48. Syn. *Eulejeunea compacta* St. 1897: 93; Yoshin. 1903: 37. *Lejeunea compacta* St. 1915: 771; Reimers 1931a: 363. *L. Mayebrowae* Hatt. 1951c: 86, sine descr. (syn. nov.) Rare; on barks of trees or on larger bryophytes and small ferns. Range: Hn., Sk., Ks. (nov.), Corea. Closely related to *E. auriculata*.

**Euosmolejeunea nipponica** (Hatt.) Hatt. 1951c: 85, pl. 2 (15). Syn. *Strepsilejeunea nipponica* Hatt. 1944e: 134, f. 84; 1951b: 57, f. 36 (d-k). Uncommon. Range: Sk. (nov.), Ks., Yk.

**Euosmolejeunea obtusifolia** (St.) Hatt. 1951c: 85, pl. 2 (15). Syn. *Harpolejeunea obtusifolia* St. 1913: 265 (nec St. ex Yoshin. 1906: 53). *Strepsilejeunea pusilla* Hatt. 1944e: 136, f. 85-86; 1951b: 57, f. 38. Rare; often creeping on other bryophytes. Range: Sk. (nov.), Ks., Yk.

**Euosmolejeunea ontakensis** (St.) Hatt. 1951c: 85, pl. 7 (22-23). Syn. *Strepsilejeunea ontakensis* St. 1913: 285. *E. osumiensis* var. *Kanemaru* Hatt. 1951b: 49, f. 35 (syn. nov.) Uncommon. Range: Hn., Sk. (nov.), Ks., Yk. (nov.) *E. osumiensis* var. *Kanemaru* is a form lying near *E. osumiensis*.

**Euosmolejeunea osumiensis** Hatt. 1944e: 105, f. 65-66. Uncommon. Range: Hn., Sk., Ks., Yk. Closely allied to *E. ontakensis*.

**\*\*Cheilolejeunea intertexta** (Lindb.) St. -Reported by Stephani (1897: 79), Makino (1897: 35), and by Kamimura (1939a: 73) from our area. But I have not confirmed the occurrence of this in Japan.

**Pycnolejeunea imbricata** (Nees) St.; -Hoffm. 1935: 98, f. 7a; Hatt. 1944i: 67; 1951b: 55, f. 37. Syn. *P. tosanu* St.; -Hatt. 1944e: 128, f. 78; 1951c: 85, f. 20, pl. 2 (8-10). *P. Okamurana* St.; -Hatt. 1944e: 127, f. 77. *P. Fauriana* St. 1914: 622 (syn. nov.) *P.*



*japonica* St. 1914: 628 (syn. nov.) Not uncommon. Range: Hn., Sk., Ks., Yk., Lk., Fm., Bn., India, Sumatra, Java, Borneo, N. Guinea.

***Pycnolejeunea obtusilobula*** Hatt. 1950b: 44, f. 37; 1951c: 85, pl. 4 (38). Known from only two stations in Prov. Hyuga (Ks.)

**\*\**Pycnolejeunea trapezia*** (Nees) St. -Recorded by Yoshinaga (1898a: 74) from Prov. Tosa. I consulted the material collected by Yoshinaga and referred by Stephani to the present species, and found it to be *P. imbricata*.

***Nipponolejeunea pilifera*** (St.) Hatt. 1944e: 125, f. 76; 1951b: 54; 1951c: 86, pl. 2 (22-25). Syn. *Pycnolejeunea pilifera* St.; -Horik. 1932c: 130, pl. 16. *Dicranolejeunea japonica* St. 1923: 386. Not uncommon at higher altitudes. Range: Hn., Sk., Ks., Yk., Fm.

***Nipponolejeunea subalpina*** (Horik.) Hatt. 1944e: 125; 1951c: 85, pl. 7 (28). Syn. *Pycnolejeunea subalpina* Horik. 1939a: 360, f. 13-14. Found only on the summit of Mts. Ishizuchi and Higashiakaishi, both more than 1700 m. in height. Range: Sg., Yz., Hn., Sk. (nov.)

***Drepanolejeunea dactylophora*** (Gott., Lndnb. et N.) Spr.; -Herz. 1934: 77, f. 1d-e, 7-8, 16; Hatt. 1951b: 46. Syn. *D. tricuspidata* St. *D. grossedentata* Horik. 1934a: 263, pl. 21 (13-19); 1939a: 397. Very rare (only found in Isl. Yakushima) in our area. Range: Yk., Lk., Fm., BT., Philippines, Borneo, Java, Malacca. Isl. Yakushima is the northernmost limit of the known range of this tropical species.

***Drepanolejeunea foliicola*** Horik. 1932a: 85, f. 9-10; Hatt. 1944e: 103; 1951b: 46; 1951c: 86, pl. 7 (24-27). Not rare in damp, warm district; always epiphyllous. Range: Hn., Sk., Ks., Yk., Fm. Closely related to and possibly conspecific with *D. elegans* Herz.

***Drepanolejeunea japonica*** Horik. 1933a: 202, f. 4; Hatt. 1944e: 103; 1951b: 47; 1951c: 86, pl. 4 (43), 5 (7, 37-38). Not rare; on barks (mostly) and rocks, but never on living leaves. Range: Hn., Sk., Ks., Yk., Fm.

***Drepanolejeunea serrulata*** Horik. 1933a: 202, pl. 25 (13-17); Hatt. 1944e: 104; 1951b: 47. Rare. Range: Hn., Ks., Yk. This species lies between *D. foliicola* and *D. japonica*.

***Drepanolejeunea tenuis*** (Reinw., Bl. et N.) Schiffn.; -Evans 1906: 152, pl. 7 (10-19); Herz. 1939b: 101, f. 2; Hatt. 1944e: 104; 1951b: 47; 1951c: 86, pl. 4 (44). Syn. *D. tosenensis* St. 1913: 353; Reimers 1931b: 39. Not uncommon. Range: Hn., Sk., Ks., Tsu., Yk., Lk., Fm., China, Java, Sumatra, Borneo, Philippines.

***Harpalejeunea intermedia*** Evans 1906: 154, pl. 8 (1-11); Hatt. 1944e: 107; 1951c: 86, pl. 4 (42), 5 (35-36). Syn. *H. Yoshinagana* Evans ex St. 1913: 264. *Drepanolejeunea obliqua* St. ex Yoshin. 1906: 54, nom. nud. *D. asymmetrica* Horik. 1933a: 201, f. 3; 1935c: 589 (syn. nov.) Uncommon. Range: Hn. (nov.), Sk., Ks., Yk. (nov.), ?BT. As adequately named by Evans, this is an intermediate form between *Harpalejeunea* and *Drepanolejeunea*.

***Leptolejeunea subacuta*** St. msc. ex Evans 1906: 149, pl. 7 (1-9); Schiffn. 1929: 87, f. 1-2; Hatt. 1944e: 117; 1951b: 52; 1951c: 86, pl. 2 (22-25). Syn. *L. dapitana* St. 1897: 79, nom. nud., -quoad plant. Japon. Fairly common, mostly epiphyllous. Range: Hn., Sk., Ks., Yk., Lk., Fm., BT., Bn., Philippines.

**Lejeunea aquatica** Horik. 1930a: 643, f. 11; Hatt. 1944e: 108; 1951b: 49; 1951c: 86, pl. 4 (45-46), 6 (32-33). Syn. *L. minutilobula* Horik. 1934a: 274, f. 58 (syn. nov.) Not rare; submerged or wet rocks. Range: Hn., Sk., Ks., Yk., Hachi., Fm.

**Lejeunea boninensis** Horik. 1931a: 24, f. 7; Hatt. 1942a: 72, f. 8; 1944e: 108; 1951b: 50; 1951c: 86, f. 24, pl. 2 (16-17). Not rare; southern flank of Japan (at low altitudes). Range: Hn., Ks., Yk., Lk., Bn.

**\*\*Lejeunea cavifolia** (Ehrh.) Lindb. -Reported by Miquel (1867a: 209; 1867b: 373 & 391, as *L. serpyllifolia* Lib.) from Nagasaki (Ks.), and by Yoshinaga (1906: 54) from Tosa (Sk.) But I could not confirm the occurrence of this species in our area, and suppose that the reports might be caused by an erroneous identification.

**Lejeunea flava** (Sw.) Nees; -Eifrig 1936: 88, f. 4 (1a-d); Hatt. 1944e: 109; 1951c: 86, pl. 4 (47). Not rare. Range: Hn., Sk., Ks., Fm. (nov.), Sumatra, Yunnan, India, Eur., Madeira, Tenerifa, N. Am., Jamaica.

**\*\*Lejeunea Nietneri** (St.) St. -This is distributed in the tropical Asia and Oceania. Yoshinaga (1906: 54) recorded in Prov. Tosa (Sk.) I consulted his collection and found that it is referable to *L. vaginata* St. *L. Nietneri* was recorded also in Honshu by Horikawa (1932b: 178), who, however, in his later paper (Horik. 1934a: 274), omitted Honshu out of the known range of *L. Nietneri*. I suppose that *L. vaginata* may be conspecific with the present species.

**Lejeunea Otiana** Hatt., spec. nov.\*<sup>1</sup> Discovered from only two stations: Saijo in Prov. Iyo (Sk.) and Hitoyoshi in Prov. Higo (Ks.) On boulders side of river.

**Lejeunea pallida** (Hatt.) Hatt., comb. nov. Syn. *Microlejeunea rotundistipula* St. var. *pallida* Hatt. 1947 (Hepat. Japon. Exsicc. Ser. 2): no. 84; 1951b: 53; 1951c: 87. Not uncommon, at low elevations. Range: Hn., Sk., Ks., Yk.

**Lejeunea planiloba** Evans: 1906: 147, pl. 6 (11-16); St. 1915: 786; Horik. 1934a: 275; Kamim. 1939a: 73. Uncommon. Range: Sk., Ks. (nov.), Fm., Caroline I.

**Lejeunea rotundistipula** (St.) Hatt., comb. nov. Syn. *Microlejeunea rotundistipula* St.; -Hatt. 1944e: 121, f. 74-75; 1951b: 53; 1951c: 87. *Lejeunea curviloba* St. 1915: 774. Not rare; creeping on other bryophytes (mostly) or on barks. Range: Hn., Sk., Ks., Yk. This species seems to be an intermediate form between *Lejeunea* and *Microlejeunea*.

**Lejeunea scalaris** (St.) Hatt. 1944d: 1, f. 7; 1951c: 87, f. 22. Syn. *Cheilolejeunea scalaris* St. 1897: 93; Makino 1897: 35; St. 1914: 671. Rare. Range: Hn., Sk. (nov.), Ks. Closely allied to *L. japonica* Mitt. and *L. toana* St.

**Lejeunea toana** St. 1915: 790; Hatt. 1944e: 111. Syn. *L. nipponica* Hatt. 1944e: 109, f. 67; 1951b: 50; 1951c: 87, pl. 4 (48), 5 (1). Consulting the type specimen of *L. toana*, I found that Stephani's diagnosis was partially incorrect. I suppose that the present species may be identical to *L. japonica* Mitt. Unfortunately Mitten's diagnosis is too brief, and I can not see the type material.

**Lejeunea vaginata** St.; -Hatt. 1944e: 111, f. 68-69; 1951b: 50; 1951c: 87, pl. 5 (2-3).

\* Described in *Hepaticarum species novae et minus cognitae nipponenses*, VII. (Bot. Mag. Tokyo, Vol. 65, 1952, in press)

Not rare. Range: Hn., Sk., Ks., Yk. The present species may possibly be identical with *L. Nietneri* St.

***Microlejeunea punctiformis*** (Tayl.) Spr.; -Hatt. 1944e: 121, f. 73; 1951b: 53; 1951c: 87, pl. 2 (20-21). Not rare. Range: Hn., Sk., Ks., Yk., Tsu., Hachi., Fm., India, Ceylon.\*

\*\****Microlejeunea ulicina*** (Tayl.) Spr. -Reported by Yoshinaga (1898a: 74) from Prov. Tosa. It will almost be certain that his collection may be referable to *M. punctiformis* which is closely allied to *M. ulicina*. A critical study on the two and also other allied species will be of need.

***Tuyamaella Molischii*** (Schiffn.) Hatt. 1944i: 76; 1947b: 3 & 6; 1951b: 60, f. 41; 1951c: 87, pl. 6 (34-35). Syn. *Pycnolejeunea Molischii* Schiffn. 1929: 97, f. 7-8; Hatt. 1944e: 127. *P. boninensis* Horik. 1931a: 25, pl. 2 (1-11). Uncommon. Range: Hn., Sk., Ks., Tsu., Yk., Lk., Bn. The second species of this genus, *T. serrastipa* Hatt., was found in New Guinea.

***Cololejeunea denticulata*** (Horik.) Hatt. 1944e: 99; 1951b: 44; 1951c: 87. Syn. *Physocolea denticulata* Horik. 1934a: 287, f. 62; 1935c: 413; Kamim. 1939a: 77, f. 5. Rare. Range: Sk., Ks., Yk.

***Cololejeunea Hattorii*** Ikegami, spec. nov.\* Rare (three stations known), creeping on larger mosses or on ferns (*Hymenophyllum*) in calcareous regions, or directly on limestone. Range: Hn., Ks. Related to *C. calcarea* in Europe. Distinct from *C. venusta*, the most similar in statula, by its big stylus.

\*\****Cololejeunea microlejeuneoides*** (Horik.) Hatt., comb. nov. Syn. *Leptocola microlejeuneoides* Horik. 1932a: 88, f. 13, pl. 11 (13-16). Known only from Mt. Onigajo of Prov. Iyo (Sk.) I can not see the type, but suppose that it may stand near *C. minutissima* or *C. orbiculata*.

***Cololejeunea minuta*** (Mitt.) St.; -Hatt. 1944e: 100; 1951b: 44; 1951c: 87, pl. 6 (36). Syn. *Iejeunea minuta* Mitt. 1891: 203, pl. 51 (24-25). *Cololejeunea acutata* St. ex Yoshin. 1901a: 91, nom. nud. *Physocolea acutata* St. 1916: 887. *Ph. minuta* St. 1916: 899. *Ph. leptolejeuneoides* Schiffn. 1929: 95, f. 5-6. *Ph. oblonga* Herz. 1930a: 55, f. 21 (1-3). Not uncommon. Range: Hn., Sk., Ks., Yk., Lk., Fm., China (Yunnan).

***Cololejeunea minutissima*** (Sm.) Schiffn.; -Hatt. 1951c: 87. Syn. *Aphrolejeunea minutissima* Horik. 1934a: 283. Rare. Range: Ks., Yk. (nov.), Lk., Bn., India, Eur., N. Am.

***Cololejeunea nipponica*** (Horik.) Hatt. 1944e: 100; 1951b: 44. Syn. *Physocolea nipponica* Horik. 1931b: 72, pl. 9 (9-16). Rare, always epiphyllous in our area. Range: Sk., Ks., Yk., Lk., Fm. Related to *C. hirta* (St.) c. n. (= *Ph. hirta* St.)

***Cololejeunea orbiculata*** (Herz.) Hatt. 1944e: 101; 1951c: 87, f. 30-31. Syn. *Physocolea orbiculata* Herz. 1930a: 56, f. 21 (9-14). Rare. Range: Hn. (nov.), Sk. (nov.), Ks., China (Yunnan). Related to *C. minutissima*.

***Cololejeunea rupicola*** St.; -Horik. 1934a: 103; Hatt. 1944e: 99. Syn. *Physocolea rupicola* St. 1916: 904. *Ph. Handelii* Herz. 1930a: 55, f. 21 (4-8). *Ph. papillosa* Horik.

\* Mr. Y. Ikegami will illustrate this interesting new species in the coming number of this journal.

1932b: 182. *Cololejeunea Handellii* Hatt. 1944e: 100. Uncommon. Range: Hn., Sk., Ks., Yk., Fm., Corea, China.

*Cololejeunea shikokiana* (Horik.) Hatt. 1944e: 101; 1951b: 44; 1951c: 88, pl. 5 (4). Syn. *Physocolea shikokiana* Horik. 1932b: 182. Rare. Range: Hn. (nov.), Sk., Ks., Yk., Fm. -var. *subacuta* Hatt. 1944e: 101, f. 63-64; 1951b: 45. Rare. Range of var.: Hn. (nov.), Ks., Yk.

*Cololejeunea spinosa* (Horik.) Hatt. 1944e: 102; 1951b: 45; 1951c: 88, pl. 5 (32-34): 1951c: 160. Syn. *Physocolea spinosa* Horik. 1931b: 70, f. 9. *C. venusta* Evans 1906: 146, -quoad plant. Japon. *C. indica* Pande et Misra 1943: 164, f. 27-32. Not uncommon; epiphyllous. Range: Hn., Hachi, Sk., Ks., Yk., Lk., Fm., Himalaya. The present species is closely related to or possibly identical with *C. venusta*; a critical study on the two species will be of need. *C. hispidissima* (St.) c. n. (= *Leptocolea hispidissima* St.) seems to be allied to *C. spinosa*, too.

\*\**Cololejeunea venusta* (Sde. Lac.) Schiffn.; -Hatt. 1944e: 102; 1951b: 45; 1951c: 88. Range: Yz., Hn., Sk., Ks., Yk., Fm. (nov.), Java, Sumatra. It is still uncertain whether our plants are or not identical to Javanese *C. venusta*. *C. shikokiana*, particularly its var. *subacuta*, lies near our plants.

*Leptocolea aoshimensis* Horik. 1931a: 20, f. 5; Hatt. 1944e: 113; 1951c: 88, pl. 6 (38). Rare. Range: Sk., Ks., Yk., Lk., Fm. Qp.

*Leptocolea ciliatilobula* Horik. 1933a: 90, f. 14; Hatt. 1944e: 113; 1951b: 50; 1951c: 88, pl. 6 (39-40). Restricted in southern Kyushu including Yakushima Isl. (at low altitudes). Range: Ks., Yk., Lk., Fm.

*Leptocolea dolichostyla* Herz. 1930a: 54, f. 20 (1-6); Hatt. 1942c: 473, f. 11; 1944e: 113; 1951b: 51; 1951c: 88, f. 14-17. Not rare; at low elevations. Range: Sk., Ks., Yk., China (Kew Chow). Closely allied to *L. Goebelii*.

*Leptocolea Goebelii* (Gott. in litt.) Evans; -Hatt. 1943d: 360, f. 3; 1944e: 113; 1951b: 51; 1951c: 88. Not rare in the montane regions. Range: Hn., Sk., Ks., Yk., Lk., Fm., BT., Penang, Java.

*Leptocolea Horikawana* Hatt. 1942d: 653, f. 14; 1944e: 114; 1951b: 51; 1951c: 88. Not common, on trees and shrubs. Range: Ks., Yk. I suppose that this may possibly be conspecific with *L. magnistyla*, though the diagnosis of the latter can not cover this plant.

*Leptocolea japonica* Schiffn. 1929: 92, f. 3-4; Hatt. 1944e: 114; 1951c: 88. Not uncommon, at lower elevations. Range: Hn., Sk., Ks., Bn. (nov.)

*Leptocolea lanciloba* (St.) Evans; Pande et Misra 1943b: 160, f. 1-11. Syn. *L. lanciloba* var. *yakusimensis* Hatt. 1942d: 655, f. 16; 1944e: 114; 1951b: 51. Uncommon, restricted to the southern flank in our area. Range: Sk. (nov.), Ks., Yk., S. China, Nicobar I., S. India, Hawaii. -var. *Nakaii* (Horik.) Hatt., comb. nov. Syn. *L. Nakaii* Horik. 1931a: 18, f. 4; Hatt. 1944e: 115. Rare. Range of var.: Sk., Ks., Yk., Lk., Fm., Bn.

\*\**Leptocolea liukuensis* Horik. 1932b: 179; 1934a: 278; Kamim. 1939a: 77. Range: Sk., Lk., Fm.

*Leptocolea longilobula* Horik. 1931b: 73, f. 10; Hatt. 1944e: 114; 1951c: 88. Not rare.

Range: Hn., Sk., Ks., Lk., Fm., Bn., Qp. Closely related to or possibly conspecific with *L. japonica*.

**\*\*Leptocolea magnistyla** Horik. 1932c: 131, f. 9; 1934a: 283; Kamim. 1939a: 73. Range: Sk., Lk., Fm. The present species seems to be an aquatic form (submerged or wet rocks) of *L. Horikawana*.

**Leptocolea tonkinensis** (St.) St. 1916: 855. Syn. *Cololejeunea tonkinensis* St. 1895: 252. *Leptocolea miyajimensis* Horik. 1932b: 180; 1934a: 278 (syn. nov.) Uncommon. Range: Hn., Sk., Ks., Lk., Fm., Tonkin. -var. **microdonta** Hatt. 1940: 291, pl. 101; 1951b: 51; 1951c: 88, pl. 7 (30-32). Uncommon. Range of var.: Ks., Yk.

**Leptocolea Yoshinagana** Hatt. 1944e: 115, f. 70; 1951b: 51. Very rare. Range: Sk., Ks., Yk.

**Taeniolejeunea appressa** (Evans) Zwick.; -Hatt. 1941b: 461, f. 2c-e; 1951b: 59; 1951c: 88, pl. 7 (33). Syn. *Leptocolea appressa* Evans. *L. peraffinis* (non Schiffn.) Horik. 1934a: 280. Uncommon. Range: Sk., Ks., Yk., Fm. (nov.), Jamaica.

**Taeniolejeunea floccosa** (Lehm. et Lindb.) Zwick.; -Hatt. 1941b: 462, f. 2f-h. Rare. Range: Sk., Ks., Lk., Fm., Java, Sumatra, Borneo, Philippines.

**Taeniolejeunea ocelloides** (Horik.) Hatt. 1941b: 462, f. 2i; 1950b: 46; 1951b: 59; 1951c: 89, pl. 5 (5-6). Syn. *Leptocolea ocelloides* Horik. 1934a: 280, f. 60. Not common. Range: Hn., Sk., Ks., Yk., Tsu., Fm.

**Taeniolejeunea oshimensis** (Horik.) Hatt. 1941b: 463, f. 2a-b; 1951b: 59; 1951c: 89, pl. 7 (34-38). Syn. *Physocolea oshimensis* Horik. 1931b: 69, f. 8. Uncommon, found only in southern Kyushu including Yakushima Isl., and always epiphyllous in our area. Range: Ks., Yk., Lk., Fm.

**Taeniolejeunea peraffinis** (Schiffn.) Zwick.; -Hatt. 1941b: 463, f. 2p-q; 1951b: 59; 1951c: 89. Syn. *Leptocolea ocellata* Horik. 1932a: 86, f. 11; 1934a: 279; 1939b: 397; Iwamasa 1934: 22. *T. peraffinis* var. *ocellata* Hatt. 1941b: 465, f. 2j-l; 1944e: 138. Rare. Range: Hn., Ks., Yk., Fm., Java, Philippines, India.

**Taeniolejeunea pseudofloccosa** (Horik.) Hatt. 1941b: 465, f. 2m-c. Syn. *Leptocolea pseudofloccosa* Horik. 1932a: 87, f. 12. Not rare. Range: Hn., Sk., Ks., Yk., Fm.

**Taeniolejeunea Verdoornii** Hatt. 1941b: 459, f. 1; 1951b: 60. Discovered only in the southernmost part of our area. Range: Ks., Yk.

**Aphanolejeunea angustiloba** Horik. 1932a: 91, f. 15; Hatt. 1944e: 94. Very rare, known only from Provs. Osuni and Hyuga (Ks.) The present species seems to be very closely related to *A. microscopica* (Tayl.) Evans, which was recently recorded from Japan (Horik. 1950b: 30, in Prov. Aki (Hn.) and from Borneo (var. *borneensis* Herz. 1950: 324, f. 37). Japanese plant referred to *A. microscopica*, however, seems to be referable to *A. angustiloba* as well. These two species are closely allied to the other, but var. *borneensis* Herz. of *A. microscopica* seems to be a proper species.

**Aphanolejeunea truncatifolia** Horik. 1934a: 284, f. 61; 1939c: 863, pl. 414; 1950a: 21; Hatt. 1951b: 43. Range: Yk., Fm. I am not able to see this plant.

**Colura calyptrifolia** (Hook.) Dum. var. **pseudocalyptrifolia** (Horik.) Hatt. 1951b: 45.

Syn. *Colura pseudocalyptrifolia* Horik. 1934a: 289, f. 63. Very rare. Range of var.: Sk., Yk., Fm. *C. tenuicornis* Evans (endemic in Hawaii) seems to stand near this.

**Colura Inuii** Horik. 1931b: 68, pl. 9 (1-8); Hatt. 1944e: 103; 1951b: 45. Very rare. Range: Hn., Sk., Ks., Yk., Lk., Fm. The present species should be identical with *C. Karsteni* St.

#### Subord. 2. METZGERINEAE

#### Fam. 15. HAPLOMITRIACEAE

**Calobryum rotundifolium** (Mitt.) Schiffn.: -Horik. 1929b: 418, pl. 17; 1951a: 11; Hatt. 1947d: 3; 1951c: 89, pl. 1 (1-2), 3 (1-2). Syn. *Roparanthus mnioides* Lindb. *Scalia rotundifolia* Mitt. *Haplomitrium rotundifolium* St. *Calobryum mnioides* St.; -Hatt. 1944e: 6, (nec Schiffn. 1893: 61; f. 35a-c). Not uncommon, in lower places (on bank, mostly). Range: Hn., Sk., Ks., Yk., Lk., Fm.

#### Fam. 16. FOSSOMBRONIACEAE

**Fossombronia japonica** Schiffn.; -Hatt. 1944e: 157; 1951c: 89, f. 46-47, pl. 5 (45-46). Syn. *F. akiensis* Horik. 1934b: 453, f. 1 (syn. nov.) Not rare. Range: Hn., Sk., Ks. The present species seems to lie near *F. cristula* Aust. of N. Am.

#### Fam. 17. BLASIACEAE

**Blasia pusilla** L.; -Hatt. 1944e: 157; Horik. 1939c: 815, pl. 390; 1951a: 13. Common; growing richly on tuffy bank at lower places. Range: Sg., Yz., Hn., Sk., Ks., Fm., Kamtschatka, Siberia, Himalaya, Eur., N. Am.

**Cavicularia densa** St. 1897: 87; Schiffn. 1899b: 388 & 392-395; St. 1900: 363; Nakan. 1905: 266; Horik. 1928: 259-264, pl. 2; 1929b: 412, f. 9; 1939c: 815, pl. 390; 1950a: 22; 1951c: 15; Hatt. 1951c: 90. Not rare. Range: Hn., Sk., Ks. The present species is not distributed in south-western Kyushu.

#### Fam. 18. PALLAVICINIACEAE

**Pallavicinia longispina** St.; -Horik. 1939c: 811, pl. 388; Hatt. 1944e: 160. Syn. *P. spinosa* St. ex Yoshin. 1894: 393, nom. nud., nec Gott. *Symphyogyne torana* St. ex Yoshin. 1906: 54, nom. nud. Not uncommon. Range: Yz., Hn., Hachi., Sk., Ks., Yk., Lk., Fm. -var. **parvispina** Hatt. 1946 (Hepat. Japon. Exsicc. ser. 1): no. 33; 1951c: 90, pl. 5 (14-15, 47); 1951m: 7. Not uncommon. Range of var.: Hn., Sk., Ks., Lk., Bn.

**Pallavicinia Lyellii** (Hook.) Gray; -Hatt. 1944e: 160; 1951c: 90, pl. 2 (51-52), 6 (41-42). Not rare. Range: Yz., Hn., Sk., Ks., Yk., Hachi., Lk., Fm., Bn., India, Malay, Java, Philippines, N. Zealand, S. & N. Am., Eur., Africa.

**Moerckia erimona** (St.) Hatt. 1942c: 472; 1949b: 44. Syn. *Pallavicinia erimona* St. 1897: 102. Rare in our region. Range: Yz., Hn., Sk. (nov.), Ks. (nov.)

#### Fam. 19. MAKINOACEAE

**Makinooa crispata** (St.) Miyake 1899: 21, pl. 3; Schiffn. 1891: 82-89, pl. 2; Horik. 1929a: 51, pl. 6-7; Hatt. 1944e: 159; 1951c: 89, f. 26, pl. 5 (44). Not uncommon. Range: Yz., Hn., Sk., Ks., Yk., Lk., Fm., Qp., Corea, China.

#### Fam. 20. PELLACEAE

**Pellia epiphylla** (L.) Cda. The records in our area (Yoshin. 1894: 293; 1895: 135)

seem to be caused by an erroneous identification of *Stephani*. I do not see Japanese plant referable to the present species.

**Pellia Fabbriana** Raddi; -Hatt. 1944e: 158; 1951c: 89, pl. 2 (38-39), pl. 5 (13); 1951m: 7. Rather common. Range: Sg., Yz., Hn., Hach., Sk., Ks., Yk., Lk., Fm., Asia, Eur., N. Am.

**Pellia Neesiana** (Gott.) Limpr.; -Arnell 1927: 110; Hatt. 1944e: 158. Not rare. Range: Sg., Yz., Hn., Sk., Ks., Yk., Fm., Qp., Corea, China, Himalaya, Kamtschatka, Lena, Eur., N. Am.

#### Fam. 21. METZGERIACEAE

**Metzgeria conjugata** Lindb.; Besch. 1894: 26; St. 1897: 81; 1899: 299; Schiffn. 1893b: 388; 1900b: 62; Nichols. 1930a: 8; Horik. 1934a: 131; 1934c: 599; 1939c: 811, pl. 388; Hatt. 1949b: 44. Rather rare in our area. Range: Sg., Yz., Hn., Sk., Ks., Lk., Fm., Corea, China, Java, Celebes, Birma, India, Caucasus, Eur., N. & S. Am., N. Zealand., Africa.

**\*\*Metzgeria consanguinea** Schiffn. 1893: 271; 1898a: 59; 1898b: 181; St. 1899: 295; Schiffn. 1900b: 61; Nakan. 1905: 266; Yoshin. 1906: 54; Ihsiba 1908: 277. Range: Hn., Sk., Java, Sumatra, Philippines. I am not able to see this species in Japan, and suppose that the above-cited records in Japan (Nakan., l. c.; Yoshin., l. c.; Ihsiba, l. c.) may be caused by an erroneous identification.

**Metzgeria fruticulosa** (Dicks.) Evans; -Hatt. 1944e: 161; 1951c: 90. Not common. Range: Yz., Hn., Sk., Ks., Yk., Fm., China, Eur., N. Am.

**\*\*Metzgeria furcata** (L.) Dum.; -Mitt. 1861: 123; Sde. Lac. 1863-64: 314; Miq. 1867a: 373; 1867b: 391; Tsuge 1890: 210, pl. 7 (1); Mitt. 1891: 204; Makino 1897: 38; St. 1897: 81; 1899: 289; Yoshin. 1901b: 181; Ihsiba 1907a: 45; Nichols. 1930a: 8; Horik. 1934a: 130; Kamim. 1939a: 66. Range: Hn., Sk., Lk., Fm., Bn., China, India, Caucasus, Eur., N. & S. Am., Australia, Tasmania, N. Zealand, Africa. I could not confirm the occurrence of this species in our area.

**Metzgeria hamata** Lindb.; -Hatt. 1944e: 130. Rare. Range: Hn., Sk., Ks., Fm., India, Java, N. Guinea, N. Zealand, trop. & N. Am., Eur.

**Metzgeria himalayensis** Kashyap; -Hatt. 1944e: 162, f. 99; 1950b: 48; 1951c: 90, pl. 5 (16, 48). Syn. *M. curviseta* St. Fairly common. Range: Hn., Sk., Ks., Birma, India. This species lies near *M. conjugata*.

**Metzgeria Lindbergii** Schiffn.; -Hatt. 1944e: 163; 1951m: 8. Syn. *M. conjugata* var. *minor* Schiffn. Uncommon. Range: Ks., Yk., Java, Sumatra, Tahiti. Closely allied to *M. himalayensis*.

**Metzgeria pubescens** (Schrank) Raddi; -Hatt. 1944e: 163. Not rare. Range: Sg., Yz., Hn., Sk., Ks., Yk., Fm., Qp., Corea, Manchuria, China, Himalaya, Caucasus, Eur., N. Am.

**Metzgeria quadriseriata** Evans 1906: 142, pl. 6 (1-5); Hatt. 1944e: 164. Syn. *M. planifrons* St. 1917: 59 (syn. nov.) Uncommon. Range: Hn. (nov.), Sk., Ks.

#### Fam. 22. RICCARDIACEAE

**Riccardia angustata** Horik. 1934a: 126, f. 6; Hatt. 1944e: 164; 1951m: 9. Not common. Range: Hn. (nov.), Sk. (nov.), Ks., Yk., Fm. Related to *R. parvula*.



**Riccardia decrescens** (St.) Hatt. 1944e: 165, f. 100; 1951c: 90. Syn. *Aneura decrescens* St. Not rare. Range: Hn., Sk. (nov.), Ks., Yk.

**Riccardia Kanemarui** Hatt. 1951m: 9, f. 43. Restricted to Isl. Yakushima. Closely related to (or probably conspecific with) *R. scabra* Schiffn. (Hab. in Sumatra, Java). I know the latter by Schiffner's description only.

**\*\*Riccardia latifrons** (Lindb.) Lindb.; -Yoshin. 1906: 54; Horik. 1934a: 125. Syn. *Aneura latifrons* Lindb.; -Makino 1897: 84; St. 1897: 77; 1899: 268. Range: Hn., Sk., Fm., Siberia, Eur., Azores, N. Am. I do not see this plant in our area.

**Riccardia lobata** Schiffn. 1898b: 178; 1900b: 57; Ihsiba 1936: 188. Syn. *R. pinguis* var. *pinnatifida* Schiffn. *Aneura lobata* St. 1899: 271; Yoshin. 1906: 54. Range: ?Hn., ?Sk., Java, Sumatra, Borneo, ?N. Caledonia. The records of the present species in our area might be caused by an erroneous identification of Stephani. -var. **yakusimensis** Hatt. 1951m: 10. Known from Isl. Yakushima only.

**Riccardia Makinoana** (St.) St. Syn. *Aneura Makinoana* St. 1899: 244; Yoshin. 1901: 91; Nakan. 1906: 64; Ihsiba 1907: 339. Uncommon. Range: Hn., Sk., Ks. (nov.) Allied to *R. decrescens*!

**Riccardia Miyakeana** Schiffn.; -Hatt. 1944e: 166, f. 101-102; 1950b: 49, f. 40; 1951c: 90, f. 18-19. Syn. *Aneura onigrijona* St. 1917: 36. *R. onigrijona* Hatt. 1944e: 164, nom. nud. Uncommon. Range: Hn., Sk., Ks.

**\*\*Riccardia multifida** (L.) Gray; -St. 1897: 77; Horik. 1934a: 125; 1939c: 809, pl. 387. Syn. *Aneura multifida* Dum.; -Tsuge 1890: 212, pl. 7 (3); St. 1899: 237; Nichols. 1930a: 7; Ihsiba 1936: 188. Range: Hn., Sk., Fm., Asia (Yunnan, Sikkim-Himalaya), Eur., N. Am. I can not see this in our area.

**\*Riccardia nagasakiensis** (St.) Hatt. 1944e: 164. Syn. *Aneura nagasakiensis* St. 1917: 34. Range: Ks. This is known from only one collection (at Nagasaki, Ks.) which I am not able to see as yet.

**Riccardia palmata** (Hedw.) Carr.; -Horik. 1934a: 125; Hatt. 1951m: 10, f. 44. Rather rare. Range: Hn., Sk., Ks. (nov.), Yk., Lk., China, Siberia, Eur., N. Am.

**\*\*Riccardia parvula** Schiffn. 1898b: 173. This Javanese species has been reported by Yoshinaga (1903: 37, as *Aneura parvula*) from Prov. Tosa (Sk.) Yoshinaga's collection, however, will be referable to *R. angustata*, as well.

**Riccardia pinguis** (L.) Gray; -Hatt. 1944e: 168; 1951c: 90, f. 12-13, pl. 7 (39-40). Syn. *R. blavioides* Horik. 1933a: 197, f. 1. Not uncommon. Range: Sg., Yz., Hn., Sk., Ks., Yk., Lk., Fm., Manchuria, China, Himalaya, India, Siberia, Eur., N. Am., N. Zealand, Australia, Africa. Japanese plants mostly contain distinct oil-bodies, and seem to be different from the European type which, according to K. Mueller (1939), never contain oil-bodies. Also see Mueller, Lebermoose Europas (Rabenhorst's Kryptogamen-flora, 6. Bd.) 3. Aufl., Lief. 1, p. 142 (1951).

**Riccardia sinuata** (Dicks.) Trev.; -Hatt. 1944e: 168, f. 103-104; 1949b: 44; 1951m: 11, f. 45. Rather rare. Range: Hn., Sk., Ks., Yk., Fm., China, Eur., N. Am.

**Riccardia Stephanii** Hatt. 1944e: 164. Syn. *Aneura crenulata* St. 1897: 85; Makino

1897: 34; St. 1899: 231, -nec *R. crenulata* Schiffn. 1898b: 173. Range: Yz., Hn., Sk.

**Riccardia submersa** Horik. 1933a: 198, pl. 25 (1-2); Hatt. 1944e: 170; 1951m: 12, f. 46. Not rare; submerged or wet rocks. Range: Sk. (nov.), Ks., Yk.

\***Riccardia tosana** (St.) Hatt. 1944e: 164. Syn. *Aneura tosana* St. 1917: 44. Known only from Tosa (Sk.) I could not see the original material as yet.

\***Riccardia Uematsuana** Hatt. 1944i: 77. Syn. *Aneura rigida* St. 1917: 40, -nec *Riccardia rigida* Schiffn. 1898b: 172. Known only from Tosa (Sk.) My knowledge of this species as well as *R. tosana* comes from Stephani's original description only.

## Ord. 2. MARCHANTIALES

### Fam. 23. MARCHANTIACEAE

**Marchantia cuneiloba** St.; -Horik. 1939c: 807, pl. 386; Hatt. 1944e: 174; 1951c: 91, pl. 2 (40-43). Syn. *M. pinnatim-appendiculata* vel *pinnatim-articulata* St. in sched. (syn. nov.) Not uncommon. Range: Sk., Ks., Lk., Fm., S. China.

**Marchantia diptera** Mont.; -Horik. 1930a: 626, f. 3, pl. 21; Hatt. 1944e: 174; 1951c: 91, f. 38-39, pl. 2 (44). Syn. *M. calcavata* St. *M. alato-capitulata* St., nom. nud. *M. paleacea* Bertoloni; Evans 1917: 253, -quoad plant. Japon. *M. nitida* Lehm. et Lindb.; Mitt. 1865: 158; Miq. 1867b: 391; Mitt. 1891: 205, -quoad plant. Japon. *M. planipora* St. *M. pulcherrima* St. in sched. Common. Range: Yz., Hn., Sk., Ks., Yk., Fm., China. In the present species papillae are present on the surface of cupules, while *M. paleacea*, according to Evans (1917, l. c.), do not have such papillae.

\*\***Marchantia geminata** (Nees) Reinw., Bl. et N. -Recorded by Okamura (in Bot. Mag. Tokyo 22: 177-181, pl. 4) from Kyushu and Shikoku. It will be almost sure that his collections should be referable to *M. tosana*.

**Marchantia polymorpha** L.; -Hatt. 1944e: 174; 1951c: 91, f. 43-44. Not uncommon. Range: Sg., Yz., Hn., Sk., Ks., Yk., Fm., Manchuria, China, India, Siberia, Caucasus, Eur., N. & S. Am., Java.

**Marchantia tosana** St.; -Horik. 1930a: 632, pl. 23; Hatt. 1944e: 175; 1951c: 91, f. 42. Syn. *M. radiata* Horik. 1930a: 629, f. 4, pl. 22. Very common. Range: Hn., Sk., Ks., Yk., Hachi., Lk., Fm.

**Preissia quadrata** (Scop.) Nees; -Horik. 1950b: 32. Syn. *P. commutata* Nees; -Yoshin. 1895: 135; St. 1897: 82; 1898: 155; Yoshin. 1901b: 182. *Chomocarpon quadratus* Lindb.; -Horik. 1929b: 406, f. 6. Rare, at high elevations. Range: Sg., Hn., Sk., Siberia, Himalaya, Eur., N. Am. The records in our area, excepting Horikawa (1950, l. c.), might possibly be caused by an erroneous identification.

**Dumortiera Hiroshima** Burgeff, Genet. Stud. an Marchantia (1943) p. 229, sine diagn. Syn. *D. hirsuta* (Sw.) Reinw., Bl. et Nees; -Hatt. 1944e: 172; 1951i: 108; 1951m: 12, f. 47g; Horik. 1951b: 33, -quoad plant. Japon. *D. nepalensis* (Tayl.) Nees; -Evans 1919: 178; Hatt. 1944e: 172; 1951i: 109; 1951m: 13, f. 47a-f, -quoad plant. Japon. *D. japonica* Hatt. 1951c: 91, pl. 6 (43), (syn. nov.) *D. hirsuta* subsp. *Tatunoi* Horik. 1951b: 38 (syn. nov.) Not uncommon. Range: Yz., Hn., Sk., Ks., Yk. Cf. K. Mueller, Beitr. z. Krypt.-fl. d. Schweiz, Bd. 10, H. 2, p. 46 (1947); Tatuno's many important papers on Japanese *Dumortiera*,

in Bot. Mag. Tokyo, Vol. 64, p. 225 (1950); Jap. Journ. Genet., Vol. 21, pp. 37-38 (1946); Vol. 23, p. 55 (1948); Suppl. Vol. 1, pp. 119-121 (1947); Journ. Sci. Hiroshima Univ., Ser. B, Div. 2, Vol. 4, pp. 73-187, pl. 3-4 (1941). K. Mueller, in his recent letter (dated, Nov. 1948), says, "Bezuglich der Gattung *Dumortiera* bin ich der Ansicht, dass 3 Arten vorliegen; eine haploide (*D. hirsuta*), eine diploide (*D. nepalensis*) und eine triploide aus Japan. Diese Vermutung habe ich bereits in der zweiten Lieferung meiner Lebermoose Europas p. 273 zum Ausdruck gebracht." Cf. Lebermoose Europas (Rabenh., Kryptogamen-flora, 6 Bd.) 3. Aufl., Lief. 1, pp. 142-143 (1951).

**Monoselenium tenerum** Griffith; -Hatt. 1942a: 72, f. 9; 1944e: 176; 1951c: 91, pl. 2 (45-48). Syn. *Dumortieropsis liukiensis* Horik. 1934a: 117, f. 4. Uncommon. Range: Sk., Ks., Lk., China (Kwantong), India, Hawaii (?). *Dumortieropsis*, monotypic genus proposed by Horikawa, is identical to *Monoselenium*. Consulting the type material of *Dumortieropsis liukiensis*, we found the elater similar to that of *Monoselenium tenerum*, though Horikawa described, "Elateres nulli". Refer Goebel's detailed report on the morphology of the present species (in Flora 101: 43-97, with 45 figs.)

**Wiesnerella denudata** (Mitt.) St.; -Hatt. 1944e: 176; 1951c: 91. Syn. *Dumortiera denudata* Mitt. *Wiesnerella javanica* Schiffn. Not rare. Range: Hn., Sk., Ks., Yk., Fm., Hachi., Corea, India, Java, Hawaii.

#### Fam. 24. CONOCEPHALACEAE

**Conocephalum conicum** (L.) Dum.; -Hatt. 1944e: 170; 1951c: 91, f. 41. Syn. *Fegatella japonica* St. *Conocephalus japonicus* Schiffn. Common. Range: Kuriles, Sg., Yz., Hn., Sk., Ks., Yk., Lk., Fm., China, India, Siberia, Eur., N. Am.

**Conocephalum supradecompositum** (Lindb.) St. 1897: 7 & 82; Arnell 1927: 110; Horik. 1929b: 400, f. 2-3; Hatt. 1944e: 171; 1951c: 91, f. 40. Syn. *Lichen japonicus* Thunberg. *Marchantia japonica* Thunb. *Cyathodium japonicum* Lindb., msc. *Sandea japonica* St., msc. *S. supradecomposita* Lindb. *S. supradecomposita* var. *japonica* Lindb., msc. *Hepatica supradecomposita* Mass. 1897b: 52, pl. 14 (20), -fo. *propagulifera* Mass. *Fimicularia japonica* St. 1917: 70. Common. Range: Sg., Yz., Hn., Hachi, Sk., Ks., Lk., Fm., Qp., Corea, China, Assam, Kamtchatka.

#### Fam. 25. LUNULARIACEAE

**Lunularia cruciata** (L.) Dum.; -Horik. 1929b: 404, f. 4-5; Hatt. 1944d: 5. Found near or in the city, such as Tokyo, Yokohama, Sendai, Hiroshima (Hn.), and Yahata (Ks.) Range: Hn., Ks., Asia, Eur., N. & S. Am., Australia, Africa. The migration of the present species into Japan will be not so long ago, for the records from Japan are rather recent (after 1929).

#### Fam. 26. REBOULIACEAE

**Reboulia hemisphaerica** (L.) Raddi; -Horik. 1929a: 47, f. 1; 1939c: 797, pl. 381; Hatt. 1944e: 177; 1951c: 91. Syn. *R. javanica* Nees. *R. longipes* Sde. Lac. *Asterella longipes* Mitt. *R. hemisphaerica* var. *javanica* Schiffn. *R. hemisphaerica* var. *longipes* Jensen. Very Common. Range: Yz., Hn., Sk., Ks., Yk., Hachi, Lk., Fm., Corea, China, India, Siberia, Eur., N. & S. Am., N. Zealand, Australia, Africa.

**Asterella Yoshinagana** (Horik.) Hatt., comb. nov. Syn. *Fimbriaria Yoshinagana* Horik. 1929b: 395, pl. 16; 1934a: 113. Rare. Range: Sk., Fm.

**Plagiochasma intermedium** Lndnb. et Gott.; St. 1898: 79; Evans 1915: 301, f. 8; Horik. 1934a: 109; 1936c: 380; Kamim. 1939b: 728; Hatt. 1950b: 49, f. 41; 1951c: 92, pl. 7 (41). Syn. *Aitonina japonica* St. 1897: 84; Yoshin. 1898a: 74. *Plagiochasma japonicum* Mass. 1897b: 47, pl. 13 (19) -var. *chinense* Mass.; St. 1898: 74; Herz. 1932a: 71. *P. coreanum* St. 1917: 8. Not common; preferably on limestone. Range: Sg., Hn., Sk., Ks., Fm., Corea, China, Manchuria, Philippines, Mexico, Guatemala.

**Plagiochasma nipponicum** Horik. 1937: 427, f. 1-2. Rare. Range: Hn., Sk.

\*\*Fam. 27. CORSINIACEAE

\*\***Corsinia coriandrina** (Spr.) Lindb. This species has once been recorded by Makino (1897: 35, as *C. marchantioides* Raddi), but I could not confirm the occurrence of this in our area. Makino's record might possibly be caused by an erroneous identification of *Stephani*.

Fam. 28. RICCIACEAE

**Ricciocarpus natans** (L.) Oda.; -Horik. 1939c: 795, pl. 380; Hatt. 1944e: 181. Not rare. Range: Sg., Hn., Sk., Ks., Lk., Fm., China, Indo-china, India, Kamtchatka, Eur., N. & S. Am., N. Zealand, Australia.

**Riccia fluitans** L.; -Horik. 1939c: 793, pl. 379; Hatt. 1944e: 179. Syn. *Ricciella fluitans* Al. Braun. *Riccia canaliculata* var. *fluitans* Schiffn. Common. Range: Yz., Hn., Sk., Ks., Lk., Fm., Corea, China, India, Siberia, Eur., N. & S. Am., N. Zealand, Borneo, Africa.

**Riccia glauca** L.; -Horik. 1939c: 793, pl. 379; Hatt. 1944e: 179. Not rare. Range: Hn., Sk., Ks., Lk., Fm., Bn., Corea, Manchuria, Siberia, Eur., N. Am. -var. **japonica** (St.) Hatt. 1951c: 92. Syn. *R. japonica* St.; -Hatt. 1944e: 180, f. 105. Rather common. Range of var.: Sk., Ks.

**Riccia Huebeneriana** Lndnb.; -Hatt. 1944e: 179. Uncommon. Range: Hn., Sk., Ks. The Japanese plant seems to be more or less deviated from the European form, and near *R. Sullivantii* Aust. of North America.

**Riccia Miyakeana** Schiffn.; -Hatt. 1943b: 140, f. 1d-f, 2c-e, h-i; 1944e: 180. Syn. *R. Yoshinagana* St. ex Yoshin. 1903: 39, nom. nud. (syn. nov.) Not uncommon. Range: Hn., Sk. (nov.), Ks.

**Riccia nipponica** Hatt., spec. nov. Syn. *R. crystallina* (non L.) Hatt. 1943b: 140; 1944e: 178. *R. crystallina* var. *nipponica* Hatt. in sched. Uncommon. Known from Provs. Higo and Hyuga (Ks.) Related to *R. crystallina* closely.

**Riccia sorocarpa** Bischoff; -Hatt. 1944e: 180, f. 106. Uncommon. Range: Ks., China, Eur., Siberia, N. Am.

Ord. 3. ANTHOCEROTALES

Fam. 29. ANTHOCEROTACEAE

**Aspiromitus Miyabeanus** (St.) St.; -Hatt. 1944e: 185. Syn. *A. falsinervis* St. 1916: 968, -quoad plant. Japon., nec *A. falsinervis* (Lndnb.) St. Not rare. Range: Hn., Sk., Ks., Hachi., Yk., Lk., Bn., China. The present species lies near *A. falsinervis* (Lndnb.) of Java.

\***Anthoceros communis** St. 1897: 96; Makino 1897: 35; Ihsiba 1907a: 21; 1907b: 279; St.

1916: 981. Range: Hn., Sk. I could not recognize the present species, but suppose that this may be closely related to or possibly conspecific with *A. laevis*.

**Anthoceros Formosae** St.; -Hatt. 1944e: 182, f. 107-108, as fo. *gemmulosus* Hatt. Uncommon. Range: Ks., Lk., Fm.

**Anthoceros laevis** L.; -Horik. 1939c: 871, pl. 418; Hatt. 1944e: 183, f. 109. Rather common. Range: Yz., Hn., Sk., Ks., Yk., Lk., Fm., Bn., China, India, Eur., N. Am.

**Anthoceros Miyakeanus** Schiffn. 1899b: 391; St. 1916: 1005; Hatt. 1948b: 110. Syn. *A. radicellosus* St. 1916: 1005; Hatt. 1944e: 184, f. 110-111. Not uncommon. Range: Hn., Ks. The present species will be expected in Shikoku also.

\***Anthoceros Miyoshianus** St. 1916: 988. Recorded only once in Prov. Tosa (Sk.) (This species is known by a brief diagnosis only.)

**Anthoceros nagasakiensis** St.; -Hatt. 1944e: 184. Fairly common. Range: Hn., Sk. (nov.), Ks., Lk. (nov.) The present species lies near *A. crispulus* (Mont.) Douin and *A. punctatus* L.

**Megaceros tosanus** St.; -Horik. 1939c: 869, pl. 417; Hatt. 1944e: 186. Not rare; on wet rocks or submerged in stream. Range: Hn. (nov.), Sk., Ks., Yk., Lk., Fm.

**Dendroceros japonicus** St.; -Hatt. 1944e: 185, f. 112. Syn. *D. rugulosus* St. 1917: 1018 (syn. nov.) *D. tosanus* St. 1917: 1011 (syn. nov.) Uncommon. Range: Hn., Sk., Ks., Yk., Lk., Fm., Bn.

**Notothylas japonica** Horik. 1929b: 425, pl. 18 (1-9); Hatt. 1944e: 187. Not rare. Range: Yz., Hn., Sk., Ks., Fm. The present species seems to be closely related to (or possibly conspecific with) *N. orbicularis* (Schw.) Sull.

## STUDIES ON THE JAPANESE SPECIES OF ASTERELLA (1)

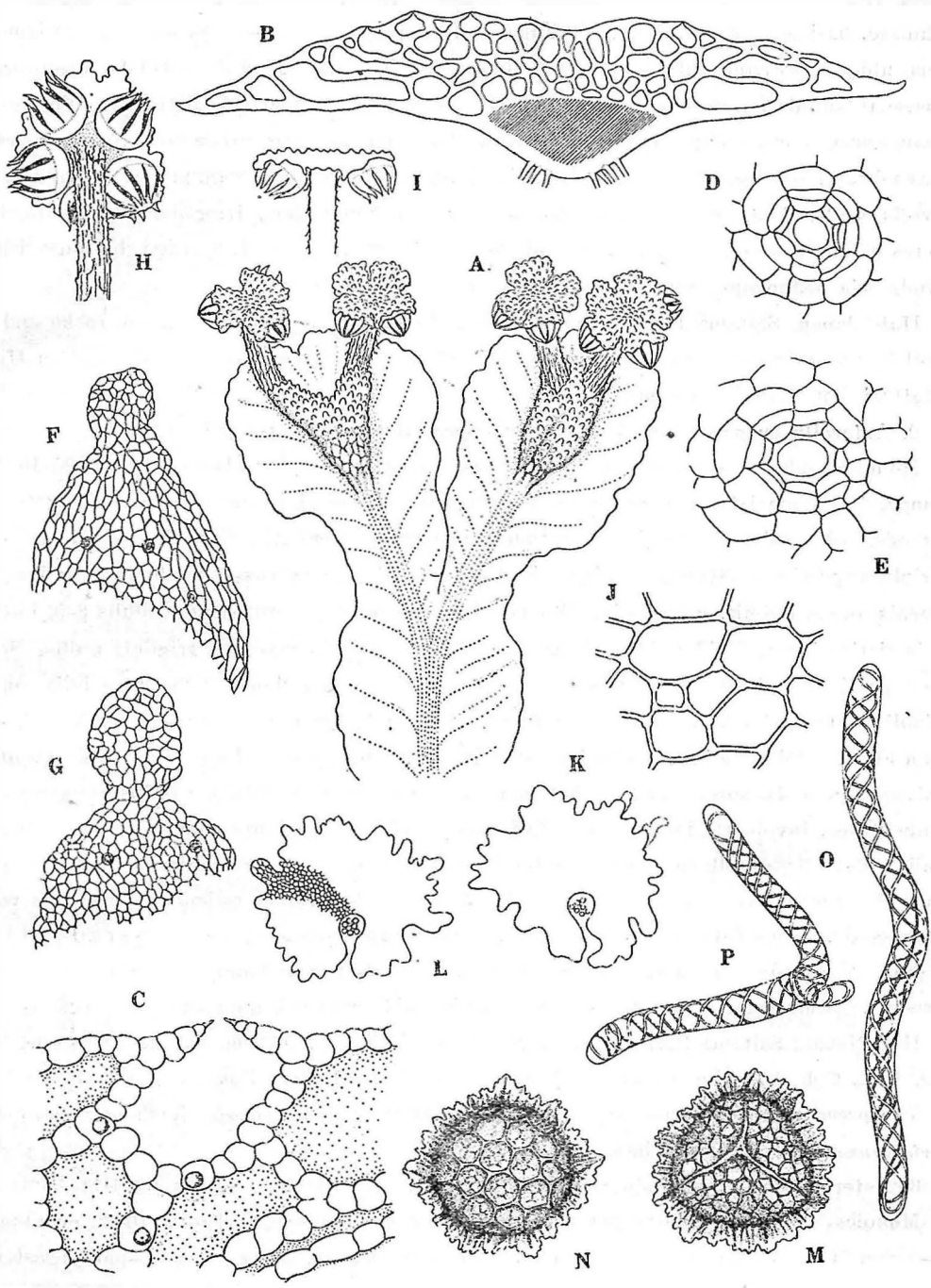
By Daisuke SHIMIZU and Sinske HATTORI

清水大典・服部新佐：日本産サイハイゴケの研究（其一）

### 1. *Asterella chichibuensis* Shimizu et Hattori, spec. nov. (Text-fig. I)

Monoica; crassa, viridis. Frons 10-25 mm longa, 2-6 mm lata,  $\pm$  dense furcata, costa fronde quadriplo angustiore, valde convexa, alis crassis, apice attenuatis, acutis. Stratum anticum in medio frondis costae subaequaltum, cavernis densis. Stomata parum convexa, poro magno, (7)-8 cellulis tri- vel subquadriseriatis cincta. Cellulae epidermidis leptoder-

Text-fig. I. *Asterella chichibuensis* Shimizu et Hattori A, Plant with female receptacles and androecia, x8. B, Cross section of thallus, x35. C, Portion of vertical section through pore and air chambers, x200. D, E, Pores of thallus, x320. F, G, Ventral scales of thallus, x80. H, Female receptacle, x15. I, Longitudinal section of female receptacle, x80. J, Cells from the wall of sporangium, x320. K, L, Cross sections of peduncle, x80. M, N, Spores, x600. O, P, Elaters, x600. The figures were all drawn from the type specimen.



Text-fig. 1

mes, trigonis nullis. Squamae posticae oblique ovatae, fusco-violaceae, appendiculo spatulato, basi leviter constricto. Pedunculus fere geminatus, 1.5–3 mm longus, alte lamellatus, ubique breviter paleaceus, paleis linearibus, hyalinis. Capitula viridula, disciformia, dense tubercularia, centro plano, profunde 3–6 loba, involueris indistinctis. Perianthia bene sphaeroidea, oblique patula, 8–9 fissa. Capsulae 2–5 per capitulum. Sporae obscure flavo-brunnescentes, (44)–50–72–(82)  $\mu$  in diametro (cum ala), regulariter reticulatae, foveolis 8–12–(14)  $\mu$ , late alatae, ala 6–16–(18)  $\mu$  lata, tenuissima, irregulariter crenata. Elateres pallide flavo-brunnei, (120)–140–180–(200)  $\mu$  longi, 8–14–(16)  $\mu$  crassi, bi-quadrispiri. Androecia pedunculo contigua, magna, elongata, valde convexa.

Hab. Japan. Saitama Prefecture: Chichibu, Hashitate, ca. 350 m. alt., on rocks and on soil in the calcareous region, Oct. 25, 1950, Coll. D. Shimizu, no. 18650–Typus! in Herb. Hattori Bot. Lab. Endemic.

2. **Asterella crassa** Shimizu et Hattori, spec. nov. (Text-fig. II)

Monoica; odorifera, crassa, valida, viridis, subtus obscure violacea. Frons 20–45 mm longa, 1–3.5 mm lata, subsimplex vel paucifurcata, antice plana, postice valde convexa, alis crassis, sed sensim ad marginem acutum  $\pm$  incurvum attenuatis, costa fronde tri- vel quadriplo angustiore. Stratum anticum in medio frondis quam costa subduplo humilior, cavernis angustissimis, numerosis. Stomata parum convexa, poro parvo, cellulis 8–9, bi- vel triseriatis cincta. Epidermidis cellulae aequaliter parum incrassatae, trigonis nullis. Squamae posticae oblique ovatae, purpureae, appendiculo magno, longe setaceo, cellulis appendiculi multo majoribus, biseriatis conflato. Pedunculus in ramis brevibus posticis, 2.5–7.5 mm altus, paleis hyalinis, linearibus sparsim vestitus, apice  $\pm$  longe barbatus. Capitula olivaceo-griseola, subsphaerica, 1.5–4 mm diametro, argute papillata, papillis elongato-prominentibus, involueris indistinctis. Perianthia ovoidea, acuminata, apice rostrato, horizontalia, 10–11 fissa; cellulae oleiferae praesentia. Capsulae 1–3 per capitulum. Sporae obscure brunneae, magnae, 80–96–(100)  $\mu$  in diametro, densissime reticulatae, reticulis valde incrassatis, itaque foveolis rotundatis, diametro 8–12  $\mu$  (cum ala), ala 14–16 (raro 5)  $\mu$  lata, valida, minutissime crenata. Elateres brunnei, 130–200–(220)  $\mu$  longi, 12–16  $\mu$  crassi, bi- vel trispiri. Androecia in ramulis posticis, parvis, valde convexa, cum ramulo clavelata.

Hab. Japan. Saitama Prefecture: Chichibu, Mt. Buko, ca. 1000 m. alt., on limestone, Oct. 22, 1951, Coll. D. Shimizu, no. 19297–Typus! in Herb. Hattori Bot. Lab. Endemic.

The present species seems to be closely related to *A. musuriensis* (Kashyap) (= *Fimbriaria musuriensis* Kashyap, hab. India).

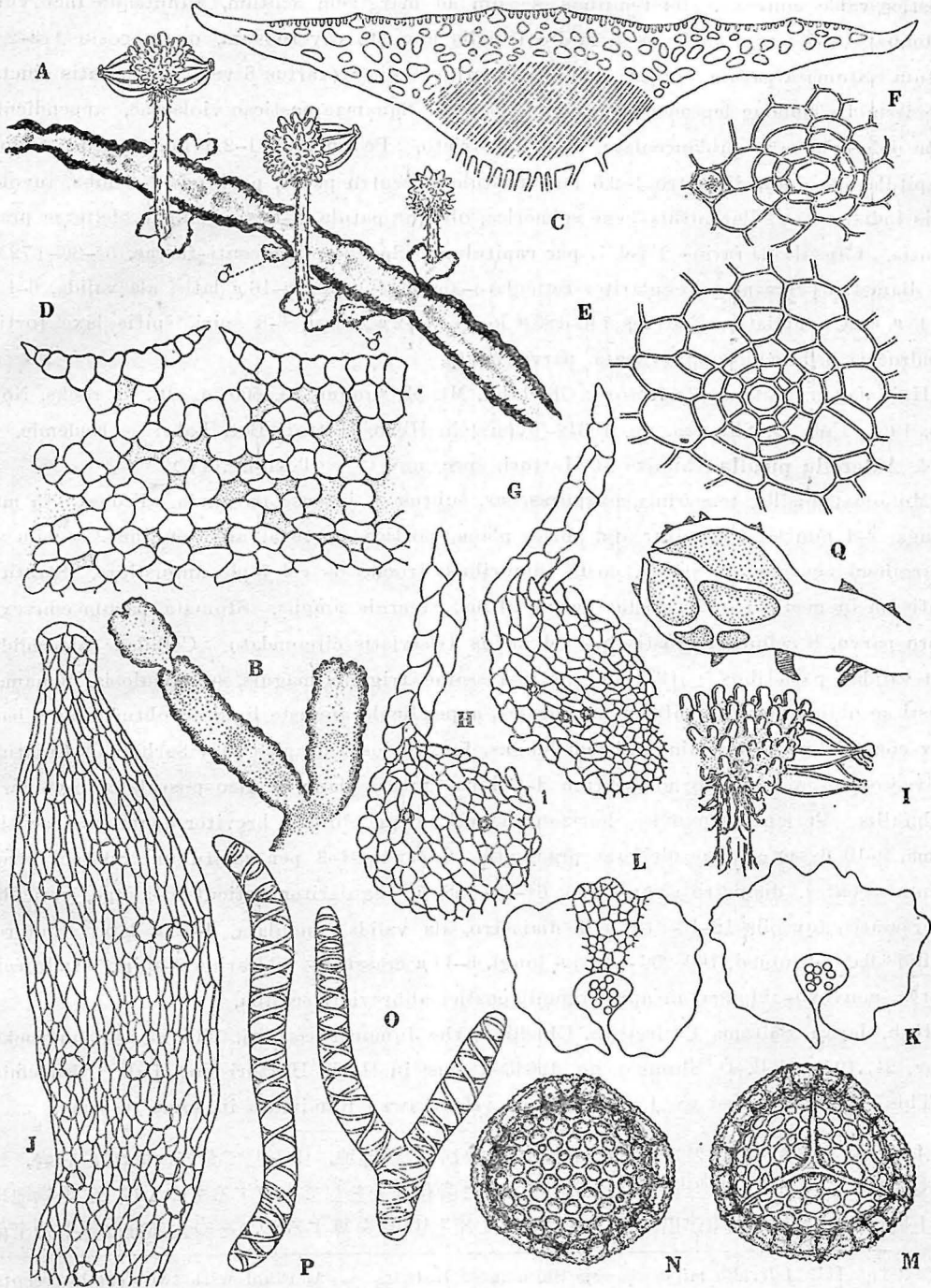
3. **Asterella mitsuminensis** Shimizu et Hattori, spec. nov. (Text-fig. III)

Monoica; odorifera, tenera, pallide virens, margine violascens. Frons 10–22 mm longa, 2–5 mm lata, furcata, linea mediana supra parum exarata, costa 5- vel 6-plo angustiore,

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Text-fig. II. *Asterella crassa* Shimizu et Hattori A, Plant with female receptacles and androecia, x7. B, Plant, x7. C, Cross section of thallus, x80. D, Vertical section through pore and air chambers, x320. E, F, Pores, x320. G, H, Ventral scales of thallus, x160. I, Female receptacle, x14. J, Segment of pseudoperianth, x30. K, L, Cross sections of peduncle, x160. M, N, Spores, x600. O, P, Elaters, x600. Q, Longitudinal vertical section of antheridial branch, x55. The figures were all drawn from the type specimen.





Text-fig. 11

postice valde convexa, alis tenuibus, sensim ad marginem acutum, minuteque incurvum attenuatis. Stratum anticum in medio frondis anguste cavernosum, quam costa  $1\frac{1}{3}$ – $2\frac{1}{5}$  altum. Stomata parum convexa, poro mediocri, cellulis 8 (rarius 6 vel 7), biseriatis cincta. Epidermidis cellulae leptodermes, trigonis parvis. Squamae posticae violaceae, appendiculo late oblongo, raro sublanccolato, basi constricto. Pedunculus 1–2.5 mm longus, nudus. Capitula discoidea, diametro 1–2.5 mm, pustulosa, centro plano, profunde 2–6 loba, involucri indistinctis. Perianthia bene sphaerica, oblique patula, 8-fissa; cellulae oleiferae praesentia. Capsula 3, rarius 2 vel 1, per capitulum. Sporae nigrescenti-fuscae, 5f–9f–(72)  $\mu$  in diametro (cum ala), regulariter reticulato-alatae, foveolis 8–16  $\mu$  latis, ala valida, 6–12–(14)  $\mu$  lata, undulata. Elateres 140–180  $\mu$  longi, 9–12  $\mu$  crassi, 1–3 spiri, spiris laxo tortis. Androecia pedunculo approximata, parva, ovata.

Hab. Japan. Saitama Prefecture: Chichibu, Mt. Mitsumine, ca. 600 m. alt., on rocks, Nov. 25, 1951, Coll. D. Shimizu, no. 19642–Typus! in Herb. Hattori Bot. Lab. Endemic.

4. *Asterella pusilla* Shimizu et Hattori, spec. nov. (Text-fig. IV)

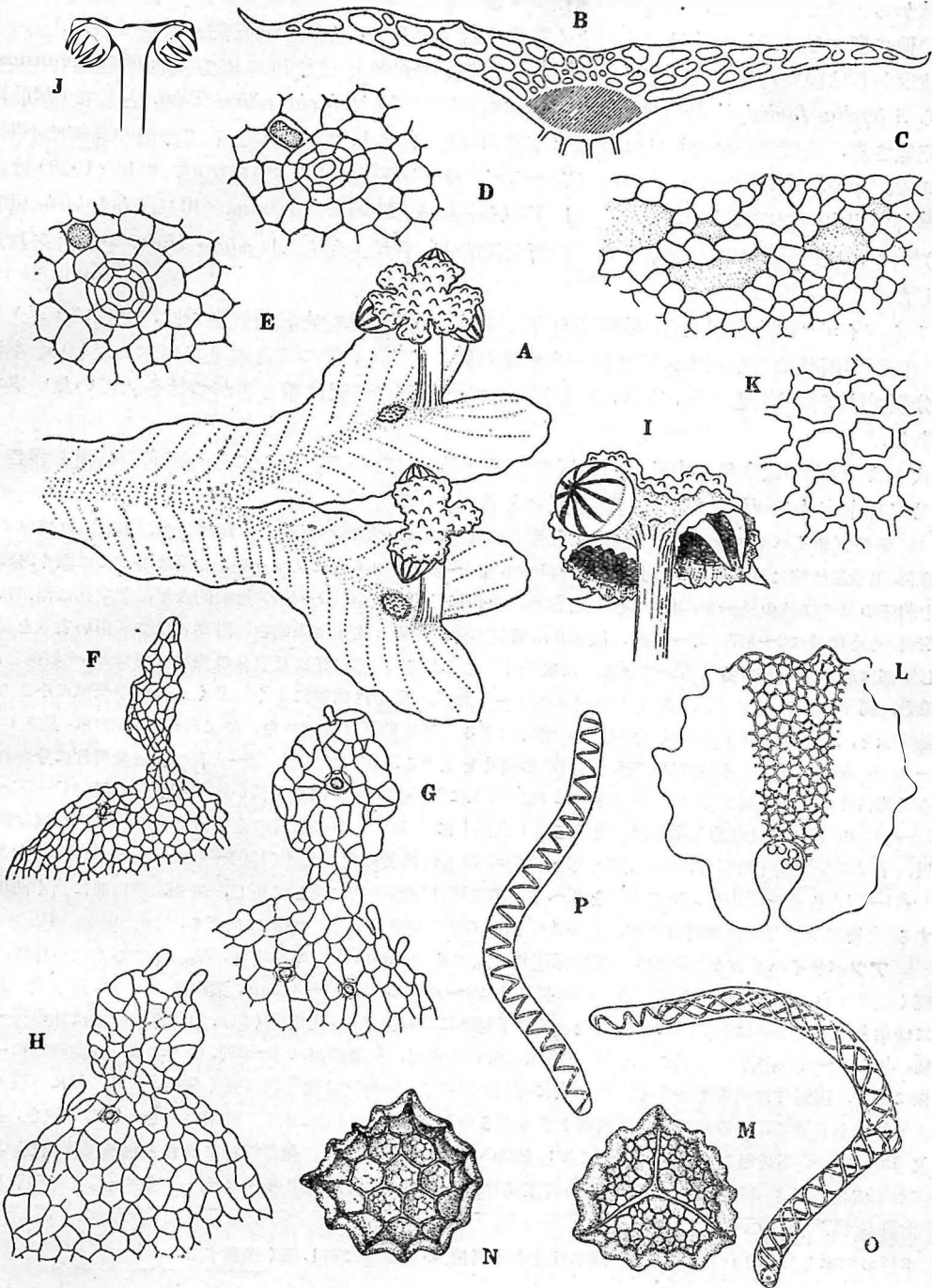
Monoica; pusilla, tenerrima, purpurascens, subtus  $\pm$  intense purpurea. Frons 8–15 mm longa, 2–4 mm lata, parvifurcata, antice plana, postice convexa, alis tenuibus, sensim ad marginem acutum attenuatis, costa minoribus, fronde 6- vel 7-plo angustiore. Stratum anticum in medio frondis costae parum altius, cavernis amplis. Stomata parum convexa, poro parvo, 8 cellulis angustis bi- vel rarius triseriatis circumdato. Cellulae epidermidis sat validae, parietibus  $\pm$  trabeculatis incrassatae, trigonis magnis, subnodulosi. Squamae posticae oblique ovatae, intense purpuratae, appendiculo anguste ligulato obtusiuscule, basi vix constricto. Pedunculus 2–5 mm longus, fere nudus sed apice parvibarbatulus. Capitula olivaceo-griseola, disciformia, parum 4–6 loba, antice plano, conico-pustulato, involucri subnullis. Perianthia ovoidea, horizontalia vel parum obliqua, breviter acuminata, acutissima, 9–10 fissa; cellulae oleiferae praesentia. Capsulae 1–3 per capitulum. Sporae flavo-brunnescentes, diametro (cum ala) 64–80–(88)  $\mu$ , regulariter reticulato-alatae, reticulis incrassatis, foveolis 12–16–(18)  $\mu$  in diametro, ala valida, undulata, 4–16  $\mu$  lata. Elateres pallide flavo-brunnei, 160–200–(220)  $\mu$  longi, 8–11  $\mu$  crassi, 3- vel rarius 2-spiri. Androecia parva, convexo-oblonga, in apice ramuli postici abbreviati sessilia.

Hab. Japan. Saitama Prefecture: Chichibu, the Jumonji pass, ca. 1800 m. alt., on rocks, Nov. 21, 1951, Coll. D. Shimizu, no. 19643–Typus! in Herb. Hattori Bot. Lab. Endemic.

This species is allied to *A. Yoshinagana* (Horikawa) Kamimura in some respects.

*Asterella* (サイハイボケ)の分布は我國に於ては古生層地塊, 主として角岩(chert), 珪岩, 輝綠凝灰岩, 石墨片岩, 石灰岩等の古い地質地帯に遺存分子として生育するものゝ様で, 生物地理學上興味深い属と言ふ事が出来る. 現在世界に凡そ100種を算するが, その大部分は熱帶乃至南

Text-fig. III. *Asterella mitsuminensis* Shimizu et Hattori A, Plant with two female receptacles and androecia,  $\times 10$ . B, Cross section of thallus,  $\times 55$ . C, Vertical section through pore and air chambers,  $\times 239$ . D, E, Pores and adjacent epidermal cells,  $\times 200$ . F, Ventral scale of thallus,  $\times 89$ . G, H, Do.,  $\times 200$ . I, Female receptacle,  $\times 18$ . J, Longitudinal section of female receptacle,  $\times 10$ . K, Cells from the wall of sporangium,  $\times 320$ . L, Cross section of peduncle of female receptacle,  $\times 160$ . M, N, Spores,  $\times 600$ . O, P, Elaters,  $\times 600$ . The figures were all drawn from the type specimen.



Text-fig. III

半球から記録されてゐる。このうち欧州に5種、北米に8種が分布するが、之等の種及びインドその他に産する若干種を除けば未だよく認識されてをらず、今後の再検討が必要である。

我が国からは現在次の4種が記録されてゐる。即ちStephani\* (1897) に依つて北海道 Rebunshiri から *Asterella Ludwigii* (Schwaegr.) Underw. (但し *Fimbriaria pilosa* Tayl. として) が最初に記録され、次で Stephani (1917) は日本邦内 (単に Hab. Japonia として産地の詳細は不明) から *A. cruciata* (St.) c. n. (但し *Fimbriaria cruciata* St. として) を発表、堀川 (1929) は高知県朴の川山の絹雲母片岩地帯から *A. Yoshinagawa* (Horik.) Kamim. (但し *Fimbriaria* 属下に)\*\* を、服部 (1944) は東京小石川の新生代第4紀台地上から *A. odora* Hatt. をそれぞれ記録した。

サイハイゴケは分布が狭く、雌器托を生じて居ない葉状体の肉眼的観察では、他のゼニゴケ類との区別が困難であるため確認された生育地が極めて少く、従つてその蒐集標本に乏しい。本属の分類学的研究はもとより、生態、分布と云つた面の調査研究は殆ど手がつけられていない実状である。

我々は1950年以降秩父山地から本属の6品を見出したので、ここにその研究の結果を報告し併せて日本産 *Asterella* 属の検討を試み度いと思ふ。

1. チチブサイハイゴケ (新種) - 秩父産配苔の意 (*A. chichibuensis*) 雌雄同株、葉状体は質厚く緑色、葉縁部は時に紅褐色。体の長さ10~25mm、巾2~3mm、やや密に又狀分岐、先端は浅く又は深く2分、中肋部の厚さは体の $\frac{1}{2}$ ~ $\frac{3}{4}$ 、巾は $\frac{1}{2}$ ~ $\frac{1}{4}$ を占め、腹面に凸出、氣室は2~4層、比較的大形、氣室孔は僅かに突出、孔邊細胞は2~4列、20~25個。腹鱗片は廣菱形、縁邊と先端は褐紫色。附屬物はやや凹い舌狀を呈し基部は僅かにくびれる (古い葉状体では腹鱗片はなくなる)。雌器托は葉状体の先端に通常2~4個生じ、緑色、扁平、不規則な凹形、直径1.5~4mm、2~6深裂、縁邊は内側にまくれ易く、表面中央部に小さな皺狀脈を、縁邊にかけて小疣狀突起をやや密に生ずる。雌器托柄は淡黄灰色、時に淡綠色を帯び、長さ1.5~3mm、表面に縱走する稜條は顯著、糸屑様の鱗片を生ずる。花被は球形、8~9個の披針狀裂片に分かれる (花被片はこわれ易くない)。胞子嚢は1雌器托上に2~5個。胞子はやや淡い暗黄褐色、直径(44)~50~72~(82) $\mu$ 、表面に規則的な網狀隆起を生じ (1直径上に6個)、1個の網目の直径は8~12~(14) $\mu$ 、莖は膜質、不規則な粗齒牙狀裂片、裂の巾6~10~(18) $\mu$ 、彈糸は淡黄褐色、長さ(120)~140~180~(200) $\mu$ 、太さ8~14~(16) $\mu$ 、2~4ラセン狀肥厚糸を具へる。雄器托は雌器托柄に接して生じ、無柄、随凹狀に高く凸出する。埼玉県秩父郡影森村橋立澤、約350m、山地石灰岩地帯の岩上、地上に生ずる。

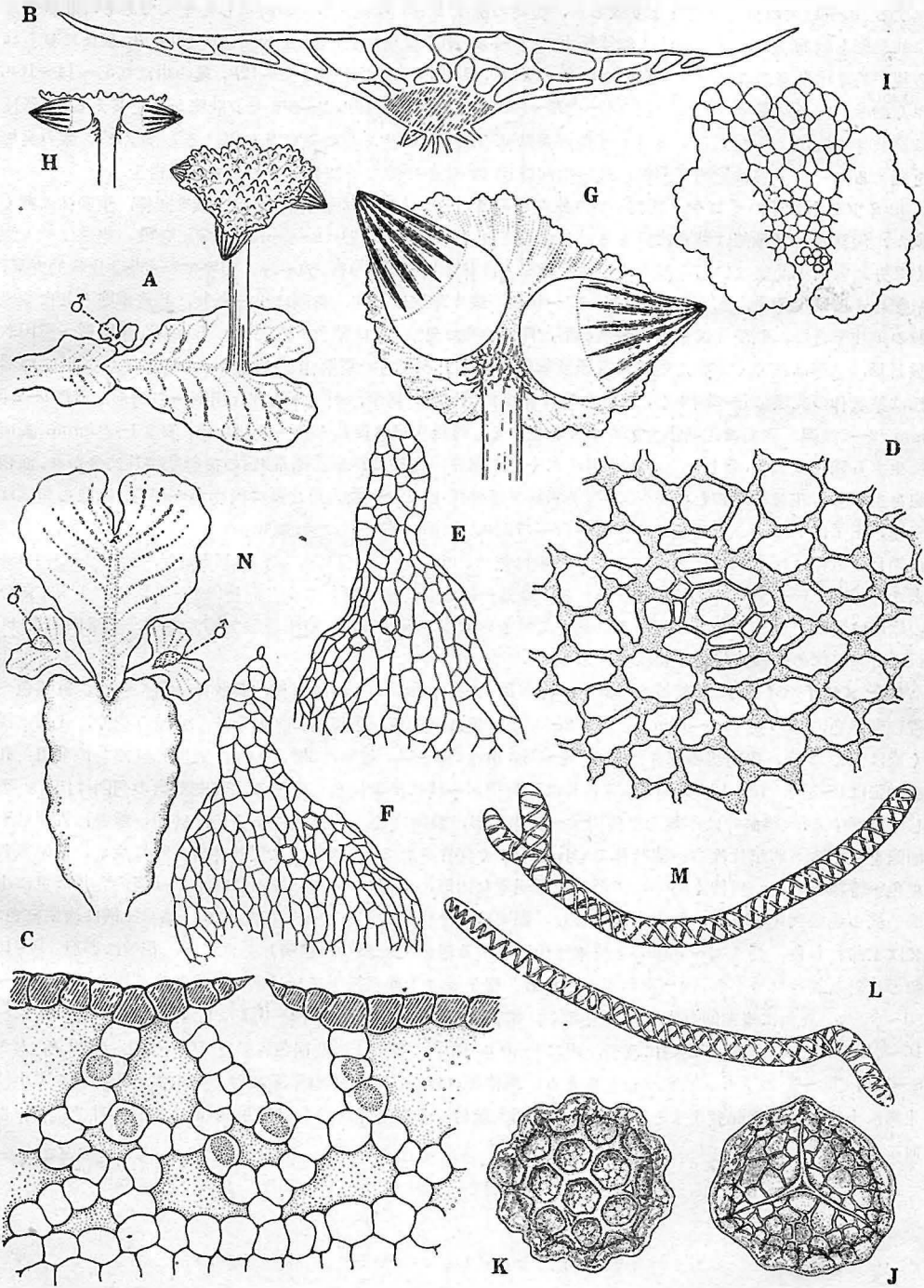
2. アツバサイハイゴケ (新種) - 厚葉配苔の意 (*A. crassa*) 雌雄同株、葉状体は厚く且つ比較的硬く、緑色、時に灰褐色を帯びる。体の長さは20~45mm、巾は1~3.5mm、葉縁部は上方に反り裏面共に暗紫色、又狀分岐は少く、帯狀に横走、又は不規則に2~2分岐し、先端浅く2分、中肋部の厚さは体の $\frac{1}{2}$ ~ $\frac{3}{4}$ 、巾は $\frac{1}{2}$ ~ $\frac{1}{4}$ 、氣室は3~4層、小形、氣室孔は僅かに突出、孔邊細胞は2~3列、17~22個、表皮細胞は一樣に肥厚。腹鱗片は斜卵形~卵形、やや密に配列、紅紫色、附屬物は龜尾狀に長く突出、2列、稀に3列の大形細胞から成る。雌器托は葉状体腹面より生ずる小翼狀の短枝頂端に生じ、帯紫わら色~淡黄灰褐色、直径1.5~4mm、不規則な半凹形、表面に著しく高い疣狀突起を生ずる。雌器托柄は淡わら色~淡黄褐色、基部やや濃色、長さ2.5~7.5mm、淡色の糸屑様鱗片を生ずる。花被は陷凹形~卵形、先端突出して吸盤狀を

\* 敬稱略、以下同様。

\*\* 本種の標本を貸與された上村登氏(高知縣立小津高校)の御厚意に對し深く感謝する。

Text-fig. IV. *Asterella pusilla* Shimizu et Hattori A, Plant with female receptacle and androecium, x10. B, Cross section of thallus, x50. C, Longitudinal vertical section through pore and air chambers, x320. D, Pore and adjacent epidermal cells, x600. E, F, Ventral scales of thallus, x100. G, Female receptacle, x30. H, Longitudinal section of female receptacle, x10. I, Cross section of peduncle of female receptacle, x200. J, K, Spores, x600. L, M, Elaters, x600. N, Plant with two androecia, x10. The figures were all drawn from the type specimen.





Text-fig. IV

呈する 10~11個の披針狀裂片より成るが、裂開の際は 2~3 片宛先端部が附着したまゝである。花被裂片に油細胞を散布する。孢子嚢は 1 雌器托上に 1~3個。孢子は焦褐色、直徑 80~90~(100) $\mu$ 、表面に見られる規則的な網狀隆起は肥厚 (1 直徑上に 9~11 個)、1 個の網目の直徑は 8~12 $\mu$ 、翼の巾は (5)~14~16 $\mu$ 、厚く肥厚。彈糸は肥厚、褐色、長さ 180~200~(220) $\mu$ 、太さ 12~16 $\mu$ 、2~3 ラセン狀肥厚糸を具える。雄器托は葉狀体の腹面より生ずる小スリコギ様の葉狀体の頭部に沈生。生時葉狀体を傷けるとドクダミ様の臭氣を發する。埼玉縣秩父郡横瀬村、武甲山海拔 1000m 位の冷涼な石灰岩地帯の濕岩面に着生。

3. ミツミネサイハイゴケ (新稱) - 三峯産采配苔の意 (*A. mitsuminensis*) 雌雄同株、葉狀体は薄く軟か、淡綠色、葉縁部は紫色に染まる。体の長さは 10~22mm、巾は 2~5mm、叉狀に分岐、先端はやゝ深く 2 分、背面中肋部は少しくぼみ、中肋部の厚さは体の  $\frac{1}{2}$ ~ $\frac{2}{3}$ 、巾は  $\frac{1}{6}$ ~ $\frac{1}{4}$ 、氣室は 2~3 層、比較的大形、氣室孔は僅かに突出、孔邊細胞は 2 列、12~16 個、表皮細胞は薄膜、角隅は小三角狀、孔邊細胞と共に葉縁粒の細片を含む。腹鱗片は陷凹形~廣卵形、縁邊(特に先端部)は紫色、附屬物は不規則な陷凹形~陷凹狀披針形、基部は淺くくびれ、縁邊に乳頭狀單細胞を生ずる(古い葉狀体では腹鱗片は見えなくなる)。雌器托は葉狀体の先端に 1~2 個生じ、淡綠色或は僅かに淡紫色、扁平、やゝ不規則な円形~三角形、直徑 1~2.5 mm、2~6 深裂、表面に疣狀小突起をやゝ疎生する。雌器托柄は淡わら色~淡黃灰色、長さ 1~2.5 mm、表面に生ずる稜條は低く、著しくない、細胞は太く且つ肥厚。花被は球形、通常 8 個の披針狀裂片に分かれ、油細胞を生ずる(花被片はこわれ易い)。孢子嚢は 1 雌器托上に 1~3 個、裂片壁は淡褐色~褐色。細胞の角隅は肥厚。孢子はやゝ淡い暗褐色、直徑 50~60~(72) $\mu$ 、表面に規則的な網狀隆起を生じ(1 直徑上に 5 個) 1 個の網目の直徑は、8~16 $\mu$ 、翼は肥厚、不規則に波曲、巾 6~12~(14) $\mu$ 。彈糸は淡褐色、長さ 140~180 $\mu$ 、太さ 9~12 $\mu$ 、1~3 ラセン狀肥厚糸を具える。雄器托は雌器托柄に接して生じ、楕円形、雄器托の生ずる部分の体面は僅かに凹んでいる。生時葉狀体を傷けると異臭を發する。埼玉縣秩父郡大瀧村、三峯山海拔 600 m の山地樹陰の輝綠凝灰岩の岩面に生ずる。

4. ヒメサイハイゴケ (新稱) - 姫采配苔の意 (*A. pusilla*) 雌雄同株、葉狀体は薄く軟か、紅紫色~帶紅紫綠色、体の長さ 8~15 mm、巾は 2~4 mm、裏面紅紫色、不規則に叉狀分岐、分岐は少く、先端は淺く或は深く 2 分、中肋部の厚さは体の  $\frac{1}{2}$ ~ $\frac{1}{3}$ 、巾は  $\frac{1}{6}$ ~ $\frac{1}{4}$ 、氣室は 2 層、大形、氣室孔は僅かに突出、孔邊細胞は 1~3 列、13~15 個、表皮細胞と共に細胞膜が一樣に淡紫褐色に染まる。表皮細胞の角隅は凹く、著しく肥厚する。腹鱗片は不規則な陷凹形~廣陷凹形、濃紫紅色、附屬物は狹舌形、鈍頭、縁邊に乳頭狀單細胞を生ずる(腹鱗片は古い葉狀体でも比較的良好に保存される)。雌器托は葉狀体の先端に生じ、帶紫淡黃灰色~帶紫わら色、質薄く扁平、円形乃至不規則な円形、直徑 1~3 mm、縁邊は淺く 4~6 裂、各片は更に小缺刻様の疣狀突起を具え、外上方に反卷し、表面には小疣狀突起をやゝ密に生ずる。雌器托柄は淡紫紅色、又は上部わら色、長さ 2~5 mm、上端雌器托に接する部分に絲蜘蛛狀の細鱗片を生ずる。花被は卵形、9~10 個の披針狀裂片に分かれ、油細胞が認められる。孢子嚢は 1 雌器托上に 1~3 個。孢子は淡黃褐色、直徑 64~80~(88) $\mu$ 、表面に規則的な網狀隆起を具く、網目は巾廣く(1 直徑上に 4~5 個)、1 個の網目の直徑は 12~16~(18) $\mu$ 、肥厚、翼は不規則に波曲、巾は 4~16 $\mu$ 、肥厚。彈糸は淡黃褐色、長さ 160~200~(220) $\mu$ 、太さ 8~11 $\mu$ 、(2)~3 のラセン狀肥厚糸を具える。雄器托は無柄、葉狀体の節部腹面より生ずる短い翼狀の小枝先端に小陷凹狀に隆起發達する。埼玉縣秩父郡大瀧村、十文字峠、海拔約 1800 m、高山樹陰の凝灰岩地帯、岩面に着生。

日本産ヤバネゴケ研究(2)<sup>1)</sup>

尼 川 大 録

Tairoku AMAKAWA: Studies on the Japanese species of *Cephalozia* (Hepaticae), 2.

4) *Cephalozia connivens* (DICKSON) LINDBERG in Acta Soc. Sci. Fenn. **10**, 238 (1872);  
STEPHANI in Bull. Herb. Boiss. **5**, 78 (1897); YOSHINAGA in Bot. Mag. Tokyo, **20**, 53 (1906);  
IHSIBA in YADU, Nikko no Syokubutu to Dobutu 189 (1936).

*Jungermannia connivens* DICKSON, Pl. Crypt. **4**, 19 (1801).

Distr. North America, Greenland, Siberia, Sakhalin, Europe, Africa, Japan (Hokkaido, Honshiu, Shikoku).

和名エゾヤバネゴケ (安田 1911)

4a) var. *pachydermis* HATTORI in Bull. Yamagata Agr. Coll. **1**, 42 (1949). (Fig. 7)

Spec. exam. Prov. Uzen, Mt. Asahi (S. HATTORI, No. 793, July 1941).

雌雄同株。帯赤褐色のオリーブ色を呈し、腐木に群生。莖は這い、7mmに達し、径約0.12mm、葉を入れて巾0.7mm。腹面より不規則に分枝。莖の横断面を見ると表皮細胞は約10個で大きさ約30 $\mu$ 、背側のものは扁平で15 $\times$ 42 $\mu$ 、内部の細胞はずっと小さく11 $\sim$ 12個で10 $\sim$ 20 $\mu$ 、両細胞の境界は顕微鏡下に透視出来る。葉

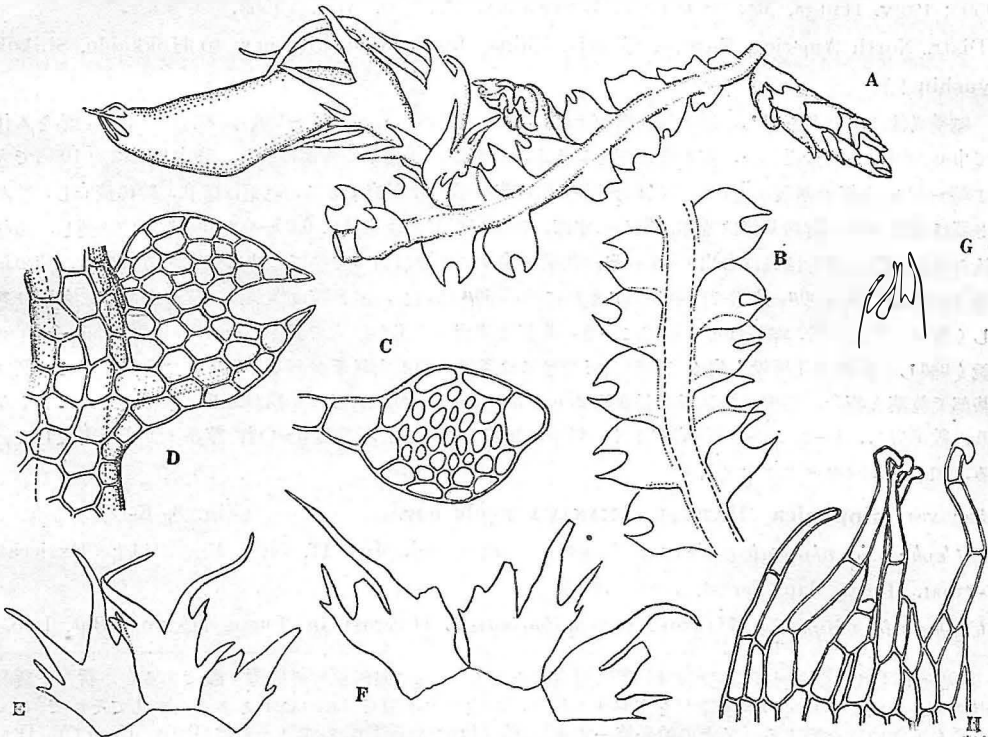


Fig. 7. *C. connivens* var. *pachydermis* HATT.

A. 莖の一部(雌雄同株) $\times$ 28 B. 莖の一部 $\times$ 40 C. 莖の横断面 $\times$ 150 D. 葉 $\times$ 105 E, F. 苞葉及び腹苞葉 $\times$ 28 G. 花被口縁部 $\times$ 40 H. 同(拡大) $\times$ 150 (圖は服部No. 793に基づく)

<sup>1)</sup> 文部省科學研究助成補助金による研究の一部



は接在又は少しく重なりあい、莖に殆ど縦につき、背縁部は流れる。ほぼ円形で長さ巾共に約0.27mm,  $\frac{2}{3}$ まで2裂し、切れ込みは狭溝状、裂片は底部の巾3~4細胞で、先端は尖り内方に曲つて時に相接するに至る。腹葉を欠く。葉の細胞は25—40 $\mu$ 、基部のものは更に大きく60 $\mu$ に達し、細胞膜は一樣に厚く、淡黄褐色を帯びてかたい。角隅は著しくなく、表皮は平滑。雌花は短い腹枝につき、苞葉は莖葉より遙かに大で長さ1~1.3mm, 巾0.3~0.6mm,  $\frac{2}{3}$ まで4裂し、裂片は披針形で先端は刺毛状に鋭く伸びる。縁邊は時に1~2の齒を具える。花被は紡錘形で長さ約2mm, 巾0.6mm, 口縁には多くの長い刺毛が発達する。雄花は小枝上に穗状をなし、苞葉3~4對、莖葉よりも小で密生している。和名カタエゾヤバネゴケ (新稱)

*C. connivens* は今まで記録されてはいるが我国には稀れに産するもののようで、私は -var. *pachydermis* の標本たゞ一品を檢しただけであつた。従來の記録も雌雄同株の点が確認されていなければ、或は *C. media* と混同されているのではないかと想像される。( *C. media* の項参照 )

5) *Cephalozia media* LINDBERG in Medd. af. Soc. F. Fl. Fenn. 6, 242 (1881); HATTORI in Bull. Yamagata Agr. Coll. 1, 43 (1949). (Fig. 8, A-J)

Spec. exam<sup>pl</sup>. Prov. Ishikari, Mt. Daisetsu (T. SASAKI, No. 524, July 1950, No. 761, Aug. 1951); Prov. Echigo (Y. IKEGAMI, No. 3250, 3383, Aug. 1941); Prov. Kaga, Mt. Hakusan (IKEGAMI, No. 8998, July 1947); Prov. Shinano, Mt. Komagatake (IKEGAMI, No. 8543, July 1946), Mt. Ontake (IKEGAMI, No. 8459, 8479, 8482, 8530, July 1946); Mt. Togakushi (IKEGAMI, No. 5385, 5391, Aug. 1943); Prov. Hida (S. HATTORI, No. (38). Sept. 1950); Prov. Iyo, Mt. Ishizuchi (K. OTI, No. 2779); Prov. Higo, (K. MAYEBARA, No. 1521, Aug. 1949; 2560, Oct. 1950); Prov. Hiuga, Mt. Osuzu (Y. KUWAHARA, No. 196, Aug. 1950).

Distr. North America, Europe, Siberia, China, Japan (Honshiu, new to Hokkaido, Shikoku, Kyushiu !)

雌雄異株。淡綠色を呈し、腐木又は腐植土等に群生、莖は短い、長さ7~10mm、徑約0.12mm、葉を入れて巾0.5mm、分枝に乏しい。莖の横断面を見ると、背面はほぼ扁平で腹面に膨れ、表皮細胞は約10個で大きき25~30 $\mu$ 、内部の細胞は約16個で徑12~17 $\mu$ 、兩細胞の境界は明瞭である。莖葉は離在、時に接在し、殆んど縦に莖につき、背縁基部は流れ、僅かに中凹、ほぼ円形で長さ巾共に0.25~0.4mm,  $\frac{2}{3}$ まで2裂し、切れ込みは狭溝状、裂片は底部の巾3~4細胞、先端は尖り、内方に曲つて接近し時に交叉するに至る。葉の細胞は中央部で25~30 $\mu$ 、基部では30~40 $\mu$ まれに40~60 $\mu$ に達し、細胞膜は僅かに一樣に肥厚し、角隅は著しくなく。表皮平滑。雌花は短い腹枝につき、苞葉は莖葉より遙かに大で長さ0.5~0.7mm, 巾0.36~0.6mm, 鋭く2裂し、裂片は先端鋭く尖る三角形状で側縁には通常1個の大歯牙がある。腹苞葉は苞葉に似て一側は基部で苞葉と癒合。花被は紡錘形で長さ約2mm, 巾0.7~0.8mm, 上部に3褶があり、口縁は僅かに狭くなり、數淺裂し、1~2細胞長の鈍齒がある。雄花は短枝上に頂生し、苞葉3~6對、莖葉よりも小で密生している。和名マルバヤバネゴケ (新稱)

5a) var. *nipponica* (HATTORI) AMAKAWA comb. nov. (Fig. 8, K-U)

*Cephalozia nipponica* HATTORI in Bull. Tokyo Sci. Mus. 11, 74, f. 45 (1944); (Exsiccata) HATTORI, Hepat. Jap. Ser. 4, 153 (1951).

*Cephalozia nipponica* HATTORI var. *yakusimensis* HATTORI in Journ. HATTORI Bot. Lab. 4,

2) 研究標本は第一報と同様で尾川の採集品(屋久島を除く)以外は服部植物研究所々蔵であるが、新たに新潟市池上義信氏より41包の本屬標本を惠與せられた。研究標本の項で IKEGAMI とあるのが凡てそれで、こゝに厚く感謝の意を表す。又その結果第一報中の *C. otaruensis* St. の産地として Prov. Uzen (Y. IKEGAMI, No. 1293); Prov. Etchu (Y. I. 4451); Prov. Echigo (Y. I. 1143, 1606, 3375, 4224, 8053, 9372, 9402, 9614); Isl. Sado (Y. I. 19671, 18417 leg. K. HOMMA); Prov. Musashi (Y. I. 6638); Prov. Shimotsuke (Y. I. 11772 leg. T. OZAKI); Prov. Yamashiro (Y. I. 5953); var. *acrogyna* AMAK. の産地として Prov. Uzen (Y. I. 1380); Prov. Echigo (Y. I. 5320); Isl. Sado (Y. I. 163, 164, 452, 687) を新しく記録する。

57, f. 30, 31 (1950)—syn. nov.

Spec. exam. Prov. Mutsu (Z. NAKAJIMA, No. 23, Oct. 1949); Prov. Iyo (K. OTI, No. 3969, Aug. 1945; M. TOKUI, No. 906, Aug. 1949); Prov. Tosa (Y. IKEGAMI, No. 4046, Jan. 1942);

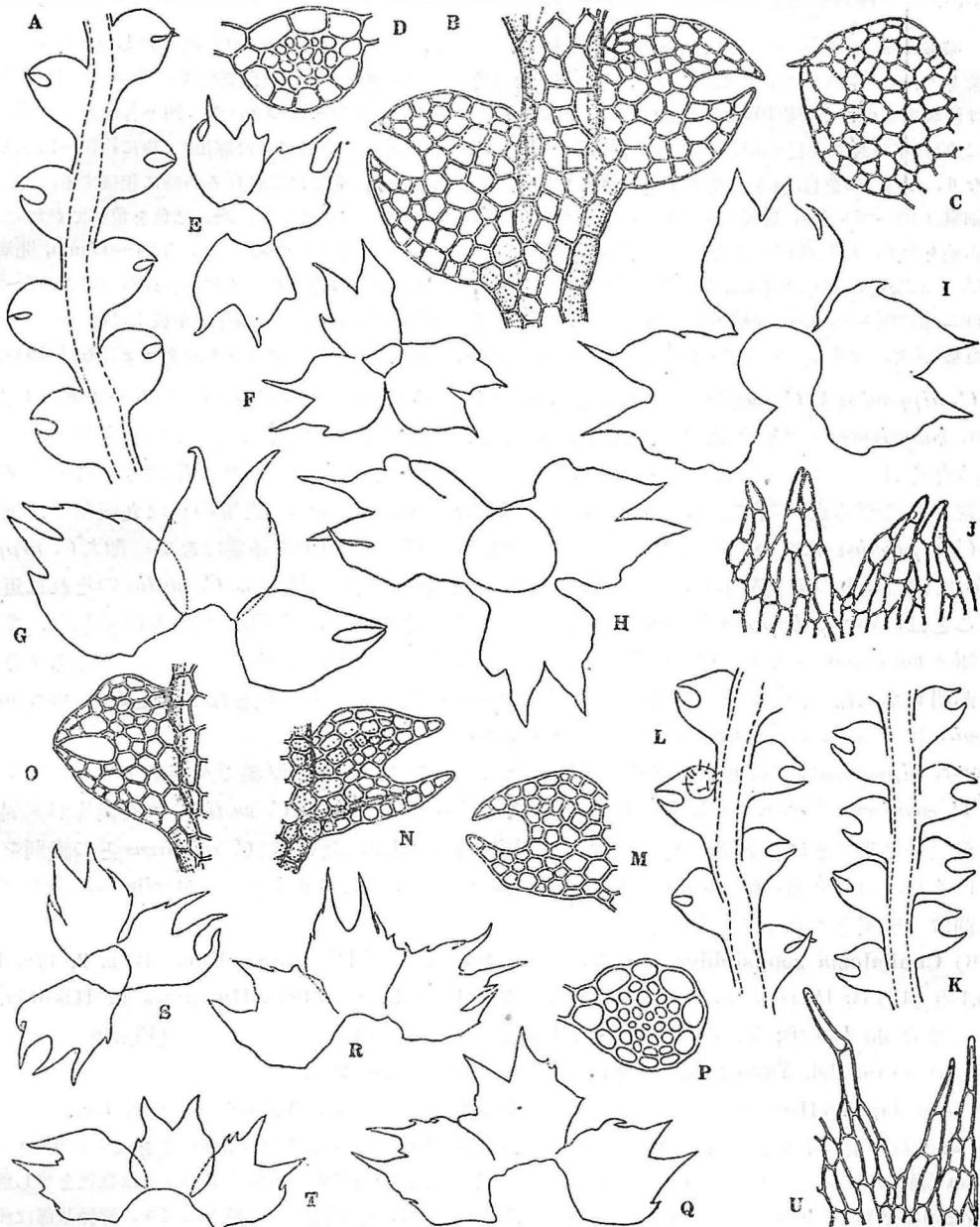


Fig. 8. *C. media* LINDB. (A—J), —var. *nipponica* (HATT.) (K—U)

A. 茎の一部×40 B. 同(拡大)×105 C. 葉(一形)×105 D. 茎の横断面×150 E—I. 苞葉及び腹苞葉×28 J. 花被口縁の一部×150 K. L. 茎の一部×40 M—O. 葉×105 P. 茎の横断面×150 Q—T. 苞葉及び腹苞葉×28 U. 花被口縁の一部×150 (圖のA, B, D, G, は佐々木 No. 524; C は服部・飛騨 (38); E, F は池上 No. 8479; H, I, J は桑原 No. 193; K, P, Q は服部, 日本苔類標本第4集 No. 153; L, O, は前原 No. 1719; M, N は池上4046; R, S, U は尼川 No. 680; T は尼川 Y—81に基づく)

Prov. Higo (K. MAYEBARA, No. 1557, 1574, Aug.; 1629, Sept., 1949; No. 1780, 1719, 1748, Nov. 1949); Prov. Bungo, Mt. Katamuku (AMAKAWA, No. 675, 680, Aug. 1951); Prov. Hiuga (AMAKAWA, No. 452, 602, 604, Jun. 1951); Isl. Yakushima (AMAKAWA, Y-5, 30, 57, 81, July, 1951). Distr. Japan (Kyushiu, Isl. Yakushima, new to Honshiu, Shikoku!)

雌雄異株。帯褐淡黄色を呈し、樹皮又は腐木時に土上に群生。莖は這い、長さ10mmに達し、径約0.1mm、葉を入れて巾約0.5mm、不規則に分枝、莖の横断面に於いて表皮細胞は10—11個で径20—30 $\mu$ 、内部の細胞は約20個で小さく径約10 $\mu$ で細胞膜は厚い。莖葉は僅かに離在、莖に斜めにつき、やや凹み背縁基部は僅かに流れ、平面観では長さ0.17—0.3mm、巾0.17—0.27mmの円状四邊形で腹縁弓状に膨出し、時に楕円—円状となり、 $1/2$ まで2裂し、裂片は基部で4—5細胞の巾、三角形状で尖り、先端は相離れるか時に相接する。葉の細胞は20—25 $\times$ 25 $\mu$ 、基部では大きく、35—40 $\times$ 40—50 $\mu$ 、細胞膜は一樣に厚く、淡黄褐色を帯びてかたい。腹葉を欠く。雌花は短い腹枝上に頂生し、苞葉は莖葉より大きく、長さ0.6—0.7mm、巾0.4—0.5mm、先端 $1/2$ まで2裂し、裂片は通常先端長く刺毛状に尖り縁邊に2—3の刺が発達する。花被は紡錘形で長さ0.8—2mm、巾約0.5mm、上部に3縞あり、口は狭くなり、口縁には多数の刺が発達する。雄花は小枝上に穂状につき、苞葉約8對、莖葉より小で密生し、基部膨れ、裂片は細長く尖る。 和名カタヤバネゴケ (服部 1944)

*C. nipponica* を *C. media* の変種に列し、*C. nipponica* var. *yakusimensis* をその異名とした。var. *yakusimensis* は屋久島産の個体について特に“苞葉及び腹苞葉が通例僅かに癒着し、歯牙は少なく且つさほど鋭くなく、又裂片は長刺状とならぬ点”或は葉の“裂片は屢々接近し又は接触するに至る点”等によつて基本種から区別されたのであるが、之等の点は九州及び四国産の *C. nipponica* についても普通に見ることが出来、両者を区別する必要はない。即ち *C. nipponica* は相当大巾の変異を示し、その苞葉は特有の長刺性を失つて極めて *C. media* のそれに近づくことは、var. *yakusimensis* の原記載文の図<sup>3)</sup>でも明瞭であり、又 Fig. 8 にも図示した。莖葉も屢々 connivent となり、*C. media* に極めて接近する。一方 *C. media* は日本全国に分布することが明らかになつたが、本種も相当の変異性を示し、苞葉裂片も鋭長となつて極めて var. *nipponica* に近づき、両者の連続を認めざるを得ない。

var. *nipponica* は主に九州南部及び四国に分布しており、細胞が厚膜で黄褐染する点、あたかも *C. connivens* と var. *pachydermis* との関係に近いものがある。*C. media* の苞葉裂片が変異して鋭長となることは、(雌雄異株と同株か確認出来れば問題はないが) *C. connivens* との識別を困難にさせ、特に九州の *C. media* には葉の細胞が60 $\mu$ を越すものさえあつて、sterile の場合両者の区別は一層困難となることがある。

6) *Cephalozia zoopsioides* HORIKAWA in Journ. Sci. Hiroshima Univ. B. 2, 2, 178, Pl. 15, 1—9 (1948); HATTORI in Journ. HATTORI Bot. Lab. 4, 58 (1950); HORIKAWA in Hikobia, 1 (1) 22 & 30 (1950); M. TOKUI, Hepat. Ehime Pref. 5 (1951). (Fig. 9)

Spec. exam. Isl. Yakushima (AMAKAWA, No. Y-53, July 1951).

Distr. Japan (Honshiu, Prov. Aki; Shikoku, Prov. Iyo; Isl. Yakushima typ. loc.)

雌雄異株。体は小さく淡緑色透明で倒木上に密に群生。莖は長さ7mm、径約0.12mm、葉を入れて巾約0.34mmで僅かに分枝、莖の横断面を見ると表皮細胞は全く透明で約8個径25—30 $\mu$ 、内部の細胞は緑色を呈し前者との境界明瞭で10—20個、径約12 $\mu$ 、葉は極めて小さく、離在、斜に莖につき、僅かに凹み、背縁基部は流れ、楕円状で長さ約0.12mm、巾0.09mmで4細胞巾、 $1/2$ まで2裂し、切れ込みは狭湾状又は半円状に近く、裂片は先端尖り、少しく内方に曲つて互いに近よる。細胞は25—42 $\times$ 25—30 $\mu$ 、細胞膜は薄い。腹葉を欠く。雌花は短かい腹枝上につき、苞葉は莖葉よりずっと大きく、長さ0.3—0.5mm、巾0.28—0.26mm、 $1/3$ — $1/2$ まで鋭く2—5裂し、裂片は披針形で鋭尖、腹苞葉は2裂する。花被は紡錘形で長さ約1.2mm、巾0.5mm、口縁部は

3) S. HATTORI in Journ. HATTORI Bot. Lab. 4, 56, f. 30 and 58, f. 31.

狭くなり、多数の刺が発達する。雄花は普通短枝上に穂状をなすが、時に莖頂又は莖の中央部にもつき、苞葉數對、葉より大きく長さ0.24mm、巾0.16mm、密生する。

本種は葉が微小で極めて特異なヤバネゴケであるが、その苞葉は葉に比して著しく大で(*C. media*に近く、Fig. 9に示す如くmedia型から変形派出したものと考えられる。葉も*C. media*の幼形に近く、本種が*C. media*に近縁を有することは間違いないと思われる。和名ミヂンコヤバネゴケ(服部 1950)

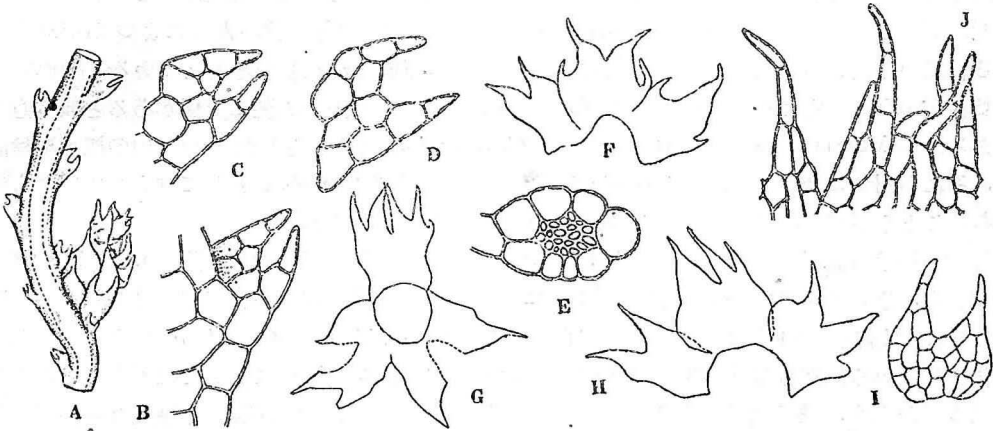


Fig. 9. *C. zoopsioides* HORIK.

A. 雄株の一部×40 B. 莖の一部×150 C, D. 葉×150 E. 莖の横断面×150 F, G, H. 雌苞葉×40 I. 雄苞葉×75 J. 花被口像の一部×150  
(圖は尼川Y-53に基く)

7) *Cephalozia catenulata* (HUEBENER) LINDBERG in Acta Soc. Sci. Fenn. 10, 262 (1872); MITTEN in Trans. Linn. Soc. London 2, 3, 199 (1891); STEPHANI in Bull. Herb. Boiss. 5, 78, (1897); Sp. Hep. 3, 398 (1908); YOSHINAGA in Bot. Mag. Tokyo 20, 52 (1906); K. MUELLER in RABENHORST, Krypt. -Fl. 6, (2), 59 (1912); IHSUBA in YADU, Nikko no Syokubutu to Dobutu 189 (1936) cum?; R. M. SCHUSTER in Amer. Midland Naturalist 42, (3), 541 (1949).

(Fig. 10, A-H)

*Jungermannia catenulata* HUEBENER, Hep. Germ. 169 (1884) in part.

*Jungermannia reclusa* TAYLOR, Journ. Bot. 5, 278 (1846) in part.

*Cephalozia reclusa* DUMORTIER, Hep. Eur. 92 (1874).

*Cephalozia serriflora* LINDBERG, Medl. Soc. Fauna Fl. Fenn. 187 (1876); YOSHINAGA in Bot. Mag. Tokyo 20, 53 (1906).

Spec. exam. Prov. Ishikari (S. NOTANI, No. 13, May 1950; A. NOGUCHI in Mt. Daisetsu, Aug. 1951).

Distr. North America, Europe, Caucasus, Siberia, Japan (? Honshiu, ? Shikoku, new to Hokkaido!)

雌雄異株。体は小さく緑色—オリーブ色を呈し、腐木又は腐植質上に群生、莖は長さ8mmに達し、径0.08—0.1mm、葉を入れて巾0.33—0.36mm、不規則に分枝、莖の横断面に於いて表皮細胞は透明で10—12個、径17—25 $\mu$ 、内部の細胞は緑色で12—15個、小さく径8—12 $\mu$ 、葉は小さく離在、斜に莖につき、少しく凹み、平面視で楕円形又は楕円状方形、長さ0.15—0.2mm、巾0.13—0.2mm、 $1/2 \sim 3/4$ まで2裂し、切れ込みは狭く又は廣く、裂片は細長い三角状で先端尖る。細胞は18—33 $\times$ 16—21 $\mu$ 、細胞膜は一樣に肥厚し、かたい。雌花は短

い腹枝上につき、苞葉は大きく  $0.7 \times 0.5$  mm,  $1/3$  まで 2 裂し、裂片は尖り、縁には多数の小歯が発達する。花被は紡錘形、長さ約 1.4 mm, 巾約 0.5 mm, 口縁はやゝ狭くなり刺を生じる。雄花は短い腹枝上につき、苞葉は莖葉より大きいとか又は等大で 2—6 對, 密生する。

本種は極めて厄介な問題を蔵している種であつて、従来本種の概念については諸家の間に混乱が甚だしい。今 R. M. SCHUSTER<sup>4)</sup> に従つて略述すれば Riffel 山の沼地から得られた HUEBENER の *Jungermannia catenulata* の原標本は紛失したが、それは沼地から採られている点等から *C. macrostachya* ではないかとも思われ *macrostachya* と *catenulata* との間に混同がひき起されている可能性がある。SCHIFFNER (Hedwigia, 54, 311-321) は K. MUELLER その他の人々によつて *catenulata* とされている全辺の苞葉を持つた植物は、他の数種が混同されたものと考えている。SCHUSTER も葉縁が spinose 又は serrate-dentate の苞葉を持つた材料のみが上の兩種に関係があると云う意見である。K. MUELLER (1947) は HUEBENER が *C. catenulata* であるとした Voges 山の標本を検討し、それが明かに今日我々が *catenulata* と呼んでいるもの及び *reclusa* として知られていたものであることを見出し、之と *macrostachya* との差異について述べた。

日本に於ける記録は MITTEN (1891), STEPHANI (1897—前者の再録で? を附す), 吉永 (1906—甲斐国産、恐らく STEPHANI の同定), STEPHANI (1908), 飯柴 (1936—日光産で? を附す) の順でなされ、又吉永 (1906) は別に EVANS の同定を経て *C. serriflora* (= *C. reclusa*) の名で四国からも報告している。然るに K. MUELLER (1912) は *C. catenulata* の分布については不完全なとしが判つておらず、ますます他種と混同されるばかりであると嘆いている。本種及びその近縁種間に於ける諸家の概念の混乱を考える時、上述の諸報告についても全幅の信頼をおきがたい。

K. MUELLER は *C. reclusa* の記相文の次に *catenulata* が之に最も近いと記しているが、彼自身 *catenulata* の苞葉を全辺と誤認していたことは前述の通りで、此の点を除けば *reclusa* は葉が離在して方形広卵形である点が異なるのみであるが、これ等は *catenulata* の変異の巾の中に取り込まれるべきものであろう。今回北海道から報告した 2 標本は *reclusa* の記相文と一致するもので、たゞ雄苞葉は莖葉よりは大きいとか又は等大で、この点は *macrostachya* の特徴である。但し兩種の中間的形質を持つた植物があらわれることを SCHUSTER も指摘し、たとえ fertile のものでも区別困難なものがあると述べている。兩種の関係についてはまだ *macrostachya* を見ていないので今触れることは出来ない。和名クサリヤバネゴケ (安田 1911)。

7a) var. **hakkodensis** (STEPHANI) AMAKAWA, comb. nov. (Fig. 10, I-L)

*Cephalozia hakkodensis* STEPHANI, Sp. Hep. 3, 303 (1908); IHSIBA in YADU, Nikko no Syokubutu to Dobutu 189 (1939); M. TOKUI, Hepat. Ehime Pref. 5 (1950).

*Cephalozia ochigajana* STEPHANI, Sp. Hep. 3, 303 (1908) -syn. nov.

Spec. exam. Prov. Tokachi (FAURIE, No. 1854, July 1950); Prov. Mutsu (FAURIE, No. 92 in Mt. Hakkoda, Aug. 1897); Prov. Shinano (FAURIE, No. 1710 in Mt. Ontake, July 1905; N. TAKAKI, No. 9959 in Mt. Senjogadake, Aug. 1950).

Distr. Japan (Honshu, Shikoku, new to Hokkaido !)

基本種と異なる点は葉の巾が狭く苞葉が全辺である点で、STEPHANI の原記載及び Icones 共に全辺となつている。然し基本種との間に中間形が見られ、Fig. 10, (G) は基本種の苞葉が全辺に近づいているのを示す。FAURIE 採品中八甲田山のもののは *C. hakkodensis* (タカネヤバネゴケ) の original 標本と考えられ、他の 2 品は STEPHANI により *C. ochigajana* (チャボヤバネゴケ) と同定されたものであるが、両者全く同一種の範囲に入ること認め、なお後者 (No. 1854) の苞

4) R. M. SCHUSTER in American Midland Naturalist 42 (3) 542, 543, foot note 16 and 17 (1949).

葉縁に歯が発達するものがあることも確めた。和名タカネヤバネゴケ (飯柴 1930) を採る。

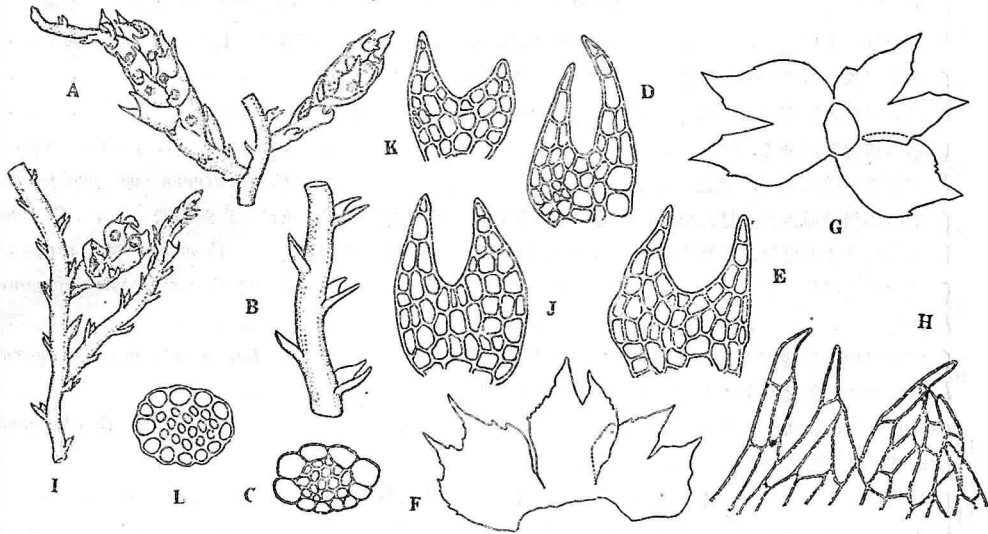


Fig. 10. *C. catenulata* (A—H), var. *hakkodensis* (ST.) (I—L)

A. 雄株の一部×25 B. 莖の一部×40 C. 茎の横断面×150 D, E. 葉×150 F, G. 苞葉及び腹苞葉×25 H. 花被口縁の一部×150 I. 雄株の一部 J, K. 葉×150 L. 茎の横断面×150 (圖のA—Hは野口採集大雪山産 Aug, 1950; I, Jは FAURIE, No. 92; K, Lは FAURIE, No. 1710に基づく)

***Cephalozia extensa* (TAYLOR) SPRUCE, On Cephalozia 44 (1882).**

STEPHANI (1908) に依り日本から報告されているが, HOWE (1899)<sup>5)</sup> が TAYLOR の *Jungermannia extensa* の原標本を検討して第1報に於いて疑問種とした *C. bicuspidata* の異名としているので, その見解に従うことにする。

***Cephalozia lacinulata* (JACK) SPRUCE, On Cephalozia 45 (1882).**

牧野富太郎博士 (1897)<sup>6)</sup> に依り安房国清登山から報告されたが, その同定は STEPHANI に依つたもので, STEPHANI (1897) も日本産を記録している。しかし K. MUELLER (1912)<sup>7)</sup> は “本種は歐洲にのみ分布するもので …… Herb. STEPHANI の中に日本からの *C. lacinulata* としてある標本は …… 同定の誤りである” と述べているので, 本種は我国フロラより除外すべきであろう。

以上の如く整理した結果, 現在我国に産することの確実な ヤバネゴケ は 7 種 6 変種 1 亜変種となる。

日本産ヤバネゴケ検索表

- |   |   |   |  |
|---|---|---|--|
| 1 | { | 葉は微小, 長さは一見茎の巾に等し (0.1~0.2mm), 巾は 3~12 細胞 . . . . . | 2  |
|   |   | 葉は大, 長さ茎の數倍, 巾は 6~24 細胞 . . . . .                   | 4  |
| 2 | { | 葉は 3~4 細胞巾, 背縁は流れる . . . . .                        | <i>C. zoopsisoides</i>                       |
|   |   | 葉は 6-12 細胞巾, 葉縁は流れない . . . . .                      | 3  |
| 3 | { | 葉の巾 0.2mm に達す, 苞葉は鋸齒縁 . . . . .                     | <i>C. catenulata</i>                         |
|   |   | 葉の巾 0.13mm, 苞葉は全邊 . . . . .                         | <i>C. catenulata</i> var. <i>hakkodensis</i> |

5) Howe in Mem. Torrey Bot. Club 7, 123 (1899)

6) T. MAKINO in Bot. Mag. Tokyo 11, 35 (1897)

7) K. MUELLER in RABENHORST, Krypt. -Flora 6-2, 68 (1912)

- 葉は円形，裂片は内方に曲り先端相接するに至る，殆んど縦に茎につき背縁は流れる．苞葉は  
 2〜4裂 . . . . . 5
- 葉は円形でない，裂片は相離れるか又はやや内方に曲り又は葉が褶狀に深く凹んで裂片の先端  
 相接するに至る，斜め又は横に茎につき背縁は流れないか又は僅かに流れる．苞葉は2裂 . . . 8
- 5 { 雌雄同株，苞葉3〜4裂，裂片長く尖る．花被口縁は條裂して刺毛狀 . . . . . 6  
 雌雄異株，苞葉2裂，裂片は長刺狀をなすか又は長刺狀でない . . . . . 7
- 6 { 葉の細胞膜は薄く，無色 . . . . . *C. connivens*  
 細胞膜一様に肥厚，褐色 . . . . . *C. connivens* var. *pachydermis*
- 7 { 葉の細胞膜僅かに一様に肥厚，無色，苞葉裂片は長刺狀をなさず，花被口縁鈍齒狀 . . . *C. media*  
 細胞膜はより肥厚，黄褐色，苞葉裂片は長刺狀，花被口縁に刺發達 . . . *C. media* var. *nipponica*
- 8 { 植物体黄褐色，細胞は厚膜，苞葉裂片は長刺狀 . . . . . (前出) *C. media* var. *nipponica*  
 然らず . . . . . 9
- 9 { 雌雄同株，花被直下より新枝を出し之に花をつける . . . . . *C. Lammersiana* var. *innovata*  
 雌雄異株，新枝を出さず (var. *aerogyna*を除く) . . . . . 10
- 10 { 雌花は茎の腹面から出たごく短い枝につく . . . . . *C. otaruensis*  
 雌花は茎頂にもつく . . . . . 11
- 11 { 植物体は小形，葉は深く $\frac{3}{5}$ まで2裂，苞葉縁に多くの小齒發達 . . . . . *C. otaruensis* var. *setiloba*  
 大形，葉は $\frac{1}{5}$ 〜 $\frac{1}{2}$ まで2裂，苞葉は全邊又は少數の齒がでる . . . . . 12
- 12 { 葉は褶狀に深く凹んで裂片の先端相接するに至る．苞葉は不規則に2〜4裂 . . . . . *C. hamatiloba*  
 葉は褶狀に深く凹むか又は浅く凹む．苞葉2裂 . . . . . 13
- 13 { 腹苞葉退化せず，無性芽なし . . . . . *C. otaruensis* var. *aerogyna*  
 腹苞葉小さくやや退化的，無性芽を生ず . . . . . subvar. *ishizuchiensis*

# 正 誤 表 Errata

号 (No.)	頁 (page)	行 (line)	誤 (for)	正 (read)
7	22	下より 2	//	Thér.
"	39	下より 15	propers pecies	proper species
"	40	10	Ks., Fm.	Ks., Yk., Fm.
"	41	4	spathulistipula	pathulistipula
"	42	11	Ks, Lk.	Ks., Yk., Lk.
"	43	10	inflorescence	fruit
"	"	16	acanthophylla	acanthophora
"	69	下より 4	tr fida	trifida
"	70	9	である.	である).
"	71	19	Exsiccata	Exsiccata
"	"	25	MACOFUKU	MAGOFUKU
"	73	16	Ohgi	Ohfuki
"	"	19	扇山	大保木山
"	"	下より 20	オウギ	オホフキ
"	"	図の説明	H	E



## 日本産 BLEPHAROSTOMA の研究 (其一)\*

服部新佐・桑原幸信

Sinske HATTORI and Yukinobu KUWAHARA: Studies on Japanese *Blepharostoma* (1)

*Blepharostoma* (マツバウロコゴケ属)の苔類は我国から只1種 *B. trichophyllum* (L.) Dum. が記録されてゐる。本種は歐洲、北米、シベリア、支那、印度、台灣、朝鮮、樺太等に知られ、我国内では北海道より屋久島、琉球迄多くの記録がある(文献に就ては服部、南九州苔類誌、東京科博研報第11号、24頁、1944年、及び四国、九州の苔類、其一、服部植研報第7号、39頁、1952年、参照)。我々は然し乍ら数年前より我国産 *Blepharostoma* に高地型と低地型とでも名づけて分けることの出来る2型があること、且つ少くともこのうちの低地型は歐洲の *B. trichophyllum* 基準型とは相当異つた点があることに注意してゐた(服部、1952年、前掲書、に少しく言及してゐる)。昨年服部植物研究所々歳の標本55点を調べて興味ある結果を得たので、こゝに本研究の第一報として上記55点の苔類の植物体計測データを報告する(第1表)。

我国に産する *Blepharostoma* の2型は第1表に表示した如く明瞭に分けられる。本表は植物体の各部の計測値を挙げたものであるが、このうちで茎表皮細胞の大きさ、葉裂片の長さ、細胞数(茎の中—上部)、葉裂片の細胞の大きさと形、花被の長さなどがよい特徴であらう。第1表に挙げた計測値の外にも多くの顕著な特徴が見出されるので次に述べる(第1図参照)。

1) 低地型の葉は乾燥標本では比較的かたくてもろく、裂片が折れやすい(但し生品ではこんなことは無い)。葉は常に3裂、裂片は茎の方へ曲り、頂端は余り鋭尖ならず、即ち多少円みを持ち、時に殆ど截頭に近い(特に茎頂端に多く見る)。高地型の葉は比較的脆弱であるが乾燥標本でも折れた裂片を見かけない。葉は3裂が多いが時に4又は2裂、裂片は松葉状に斜生して余り彎曲せず、頂端は漸尖、鋭頭となる。(図の3及び6参照)

2) 低地型の葉裂片は細胞節に於て細胞の角隅がやや肥大して外方に隆起するため裂片はやゝ竹節状を呈する。高地型は通例かゝる傾向が弱く、場合に依ては細胞が少し外方にふくらむ傾向があつて却て節部は僅かに凹んで見えることがある。(図の3及び6参照)

3) 低地型に於ては葉と腹葉との形態的差異が全く認められないか又はごく稀に僅かに認められるに過ぎない。之に反して高地型では形態的差異が比較的顕著で甚しい場合には肉眼でも識別出来る(この傾向は茎の中—下部に強い)。即ち腹葉は長さ、に於て50~200 $\mu$ 、細胞数に於て2~5細胞少い等である。

4) 低地型の花被は多少扁平、口部は殆ど狭まらず、口端の纖毛は多くの場合1~2回叉状分岐する。高地型の花被は円筒形で口部に向つて急に狭窄し、口端の纖毛は、少くとも1細胞列より成る部分では、叉状を呈しない。(図の2,5参照)

5) 苞葉の纖毛の1細胞列の部分は低地型に於ては1~2回分岐(時に3回又は稀に分岐せず)、高地型に於ては1回分岐(時に無分岐又は稀に2回分岐)。尚苞葉及び花被の纖毛は兩型夫々葉や腹葉の纖毛状裂片と共通した特徴を示す点がある(第1項及び第2項参照)。

6) 次に引用する標本産地から判断して、低地型は本州、四国、九州の低地(凡そ1000m以下)に産し、高地型はその上部(凡そ1000m以上)に産するやうである。

\* 本研究は文部省の補助を受けてゐる。

【高地型】長野：南アルプス北澤峠附近，高度2300m（高木典雄 1054）；伊豫：笹ヶ峰（越智一男 1720），角野町，角石原附近（越智 885），石鎚山，約1700m（服部新佐 5071）；肥後：市房山，約 1450m（前原勘次郎 1631），同山，約 1700m（前原 2498, 2499）。

【低地型】陸奥：恐山半島，藥研（中島全二 56）；信濃：霧ヶ峰西方，観音澤（高木 6450）；伊勢：七保村（孫福正 179）；伊豫：中萩町（越智 646, 1324, 1343），角野町（越智 1463, 1480, 2170），別子山村（越智 1659, 1664, 2132），大生院村（越智2437），關川村（越智 2532），大野原（得居衛 654），一本松村（得居1336）；豊後：深耶馬溪（野口彰 1160，小野孝 1234）；肥後：川村（前原 433），太平山（前原575），同山，約 850m（前原 1725），一勝地（前原 682），山江（前原 945），神ノ瀬（前原 1035, 1036），人吉市（前原 1397, 1488, 1504, 1505），市房山，約 500m（前原 2336），同山，約 800m（前原 2350），同山，約 600m（前原 2517）；日向：日南市（低地），約 15m—150m（服部 9850, 10335, 12938, 14313, 14317, 15664），市木村（服部 10578），日南市，小松山（服部6448）；大隅：重富村（新敏夫 3301）；薩摩：伊集院町（新2851, 2914），紫尾山（新3007），金峰山（新3071），開聞岳（新3562）。

次に上述 2 型を欧米産その他の既知種に比較するため種々文献を漁つたが，殆ど記載が使いものにならず，結局原標本乃至は確実な標本の入手が必要なことを確認した。例えば *Blepharostoma trichophyllum* の記載を調べると，Howe (Hepaticae and Anthocerotae of California, p. 139, 1899) に依れば，茎長 4—20mm，茎表皮細胞は  $28\sim96\mu\times15\sim82\mu$ ，葉は 3—4 裂（稀に 5 裂或はごく稀に 2 裂），裂片は  $0.4\sim0.65\text{mm}$ （8—13細胞）長，その細胞の大きさは  $40\sim70\mu\times16\sim82\mu$ （長さとの比 1.5—2.5），細胞角隅は外方に隆起（裂片はそのためやゝ節状），腹葉は葉に似るが僅かに短かく（通例 1—2 細胞短），花被は円筒形乃至やゝ梨形（pyriform-cylindrical），長さ  $1.5\sim2.2\text{mm}$ ，幅  $0.48\sim0.8\text{mm}$ ，胞子の直径  $14\sim18\mu$  である。次に Stephani (Species Hepaticarum, Vol. 3, p. 636, 1909) に依ると，茎長 15mm に達し，葉は 4 裂，裂片は 8 細胞長，腹葉は葉に似，花被は楕円状卵形，口部は僅かに狭窄，胞子の直径は  $10\mu$  とある。Müller (Die Lebermoose in Rabenhorst, Kryptogamen-Flora, 2. Aufl., 6. Bd., 2. Abt., p. 306, 1914) に依れば，茎長 1—2cm，葉及び腹葉は 3—4 裂，8—10 細胞長，細胞は  $20\times35\mu$ ，花被は卵形—梨果形，胞子の直径は  $10\sim12\mu$  となつてゐる。

Macvicar (Student's Handbook of British Hepaticae, 2. ed., p. 340, 1926) に依れば，茎長 8—20mm，葉は 3—4 裂，裂片は 8—12 細胞長，細胞は平均  $28\times40\mu$ （但し変化多し），腹葉は葉に似るがやゝ小形，枝腹葉は 2—3 裂，花被は円筒状，棍棒形，花被口部は少しく狭窄，纖毛は 7 細胞長，胞子の直径は  $9\sim11\mu$ 。堀川（朝比奈編，日本隠花植物図鑑，839頁，1939年）に依れば，茎長 8—20mm，葉は 4 裂，裂片は 8—12 細胞長，腹葉は葉に似るが少し小形で 2—3 裂，花被は卵形乃至梨果形，口部の纖毛は 7 細胞長，胞子の直径は  $10\sim12\mu$ 。又 Frye and Clark (Hepaticae of North America, Pt. 2, p. 191, 1943) に依ると，茎長 4—20mm，茎の表皮細胞は  $28\sim96\mu\times15\sim82\mu$ ，葉は 3—4（稀に 2 又は 5）裂，裂片は  $500\sim960\mu=8\sim12$  細胞長，細胞は  $40\sim70\mu\times16\sim82\mu$ （比 1.5—2.5），細胞角隅が外方に隆起（裂片はやゝ節状），腹葉は少し小形，3—4 裂（枝では 2—3 裂），裂片は約 2 細胞短，花被は円筒状棍棒形， $1.4\sim2.2\text{mm}$  長， $400\sim900\mu$  広，口部へ狭窄，纖毛は 7 細胞長，胞子の直径は  $14\sim18\mu$  となつてゐる。

上に引用した記載文は勿論我々の測定と比較するため抄出したものであるが，余り詳密ではなく，而も著者に依り相当の差が認められる。然し大体に於て歐洲系と北米系の 2 つに分けることが出来よう。前者は先づ Stephani であるがこの記載はやゝ疎雑で，次 Müller から Macvicar と記載がよくなつてゐる。堀川の記載は北日本高地産の標本に基いたかと思はれるが，我々の測定とは相当異つた点が多く，却て Macvicar 等の記載に近い。後者は Howe とそれを補つた Frye & Clark の記載である。この 2 群間の差は甚だ顕著であつて，葉裂片細胞の長さ及び胞

子の直径の差異でも種としての異同が問題にならう。こんな有様では印度、支那、朝鮮、台湾、樺太などの記録も検討の要が感じられて来る。よく認識されてゐる種と思つた *B. trichophyllum* が之では他の種は推して知る可しであらう。事実本属の他種は殆ど全く検討を経ておらず、そのうちには他属のものも少なからず見出されると思はれる。

然るに最近 S. Arnell (*Blepharostoma trichophyllum* (L.) Dum. var. *brevirete* Bryhn & Kaal, in Bot. Not. 1951, H. 1, p. 61-63) が歐洲産の標本約600点を検討した結果、中欧型=基準型(孢子直径 8~10 $\mu$ , 葉裂片は長く、鋭尖、裂片細胞長し)と var. *brevirete*=北歐型(孢子直径 (10)~12~14~(16) $\mu$ , 葉裂片は短く左程尖らず、裂片細胞は短し)に區別した。そして北スウェーデンでは前者は主として低地に、後者は山岳地に産すること、前者の分布北限は 62°で後者はスカンデナヴィア半島からロシア、シベリア、グリーンランド、アラスカ、カナダ等に分布し南限 61°31' としてゐる。彼は更に日本のものに言及してゐる。即ち九州産の標本1点に就て調べた結果、"Perhaps it is a local race, but of course more material must be studied to verify this supposition" と述べた。之は我々の低地型と判断されるが、彼は孢子の直径を 16~18 $\mu$  とし、我々の計測 (8)~9~12~(13) $\mu$  とは相当懸隔がある。恐らく彼の数値は誤りと考へるが(彼の調べた標本にその程度の直径の孢子を持つ他種が混生してゐたと想像される根拠がある)、之に就ては後報(孢子体の項)に論じたい。最後に我々の2型に就て、低地型に *B. japonicum* Hattori et Kuwahara なる新名を提案する。高地型は歐洲の *B. trichophyllum* (L.) Dum. に極めて近く或は同一種かと考へられるが、この決定及び新種の記載は後報に譲り、引用資料の採集者各位に厚く感謝して第1報を終る。

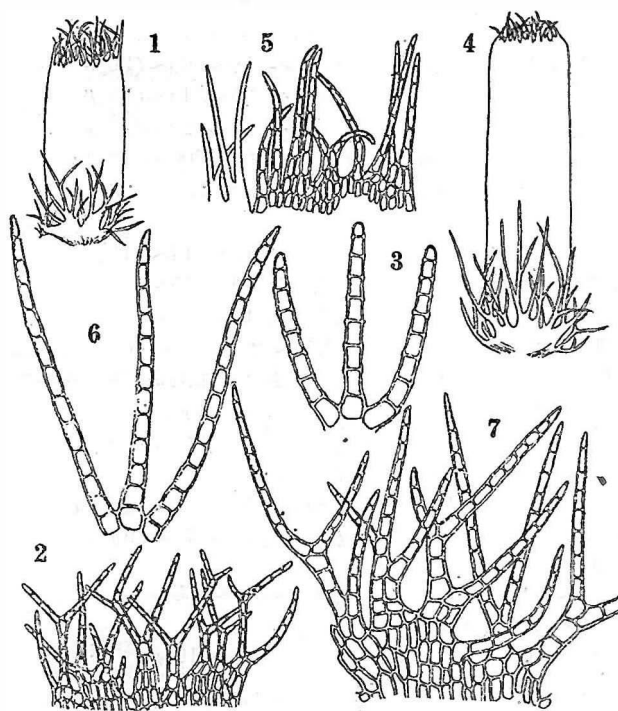


Fig. 1. Two forms of Japanese *Blepharostoma*. 1-3, lowland form (*Bl. japonicum* Hatt. et Kuwahara) 4-6, highland form (aff. *Bl. trichophyllum*) 1, 4, perianths (x25) 2, 5, parts of the mouth of perianth, showing cilia (2, x55; 5, x95) 3, 6, leaves dissected from the middle part of stem (3, x130; 6, x85) 7, female bract (x85)

### Résumé

There are two forms of *Blepharostoma* in Japan, as seen in Table I. and Fig. I. Further distinctions are in the following key:-

At lower elevations (5~1000 m. alt.); leaves divided always into 3 capillary segments, the segment  $\pm$  incurved and erect spreading, more or less rigid (so that are occasionally broken), obtuse or sometimes nearly truncate at the apex, transverse walls of leaf cells often slightly protuberant (or thickened outwardly so there is a ring appearing as an elevation over the transverse wall); underleaves quite like the leaves; perianth  $\pm$  compressed, hardly

contracted into mouth, the cilia of mouth 1-2 furcate (or rarely not furcate), the cilia of bract 1-2 or occasionally 3-furcate (rarely not furcate). . . . . Lowland Form  
At higher elevations (more than 1000 m. alt.); leaves divided into 3 but occasionally 4 or 2 capillary segments, the segment obliquely spreading, more or less delicate, attenuate and acute at the apex, transverse walls of leaf cells less protuberant or slightly depressed; underleaves a little smaller, their segments 2-5 cells shorter than those of leaves; perianth cylindrical, strongly contracted into mouth, the cilia of mouth 1- or occasionally 2-furcate (rarely not furcate), the cilia of bracts 1-furcate or occasionally non-furcate (rarely 2-furcate). . Highland Form

We have examined 55 specimens of Japanese *Blepharostoma* deposited in the herbarium of Hattori Botanical Laboratory, among them only 6 specimens are referred to the highland form, and the others are all proved to be the lowland form. The highland form seems to be closely related to or possibly conspecific with *Bl. trichophyllum* (L.) Dum. which were recorded many times from Japan. The lowland form, however, is considered as a distinct species, for which we wish to propose here new name, *Bl. japonicum* Hattori et Kuwahara.

第 I 表 (Table I)

	A. 低地型 (Lowland Form)	B. 高地型 (Highland Form)
1. 茎の長さ	2.5 ~ 8 mm	(4) ~ 5 ~ 7 ~ (9) mm
2. 茎の径	40 ~ 55 ~ (77) $\mu$	(50) ~ 55 ~ 65 ~ (90) $\mu$
3. 茎表皮細胞の長さ	(17) ~ 22 ~ 28 ~ (36) $\mu$	(22) ~ 35 ~ 45 ~ (55) $\mu$
4. 同 上, 幅	(6) ~ 8 ~ 11 ~ (15) $\mu$	(10) ~ 17 ~ 20 ~ (25) $\mu$
5. 葉裂片の長さ (茎の基部)	(80) ~ 100 ~ 180 ~ (200) $\mu$	(150) ~ 200 ~ 300 ~ (400) $\mu$
6. 同 上 (茎の中 ~ 上部)	(140) ~ 160 ~ 280 ~ (300) $\mu$	(320) ~ 400 ~ 500 ~ (590) $\mu$
7. 葉裂片の細胞数 (茎の基部)	(5) ~ 7 ~ 9 ~ (10)	8 ~ 12
8. 同 上 (茎の中 ~ 上部)	(7) ~ 9 ~ 11 ~ (12)	(10) ~ 12 ~ 14 ~ (15)
9. 葉裂片中部細胞の長さ	(15) ~ 18 ~ 23 ~ (30) $\mu$	(22) ~ 30 ~ 45 ~ (55) $\mu$
10. 同 上, 幅	(5) ~ 7 ~ 10 ~ (13) $\mu$	(7) ~ 11 ~ 15 ~ (17) $\mu$
11. 同 上, 長さとの幅の比	(1.2) ~ 1.5 ~ 2.5 ~ (4)	(2.5) ~ 3.5 ~ 4 ~ (6)
12. 花被の長さ	(600) ~ 650 ~ 800 ~ (1000) $\mu$	1000 ~ 1700 $\mu$
13. 同 上, 幅	350 ~ 450 $\mu$	350 ~ 450 $\mu$
14. 花被表皮細胞の長さ	(18) ~ 25 ~ 35 ~ (60) $\mu$	(21) ~ 27 ~ 40 ~ (60) $\mu$
15. 同 上, 幅	(10) ~ 12 ~ 15 ~ (18) $\mu$	(6) ~ 9 ~ 11 ~ (14) $\mu$
16. 花被口部纖毛の長さ	(250) ~ 350 ~ 400 ~ (450) $\mu$	(80) ~ 150 ~ 200 ~ (210) $\mu$
17. 同 上, 細胞数	(7) ~ 12 ~ 13 ~ (16)	(3) ~ 5 ~ 7 ~ (9)
18. 同上, 細胞の長さ (基部)	18 ~ 27 ~ (40) $\mu$	} (20) ~ 33 ~ 36 ~ (50) $\mu$
19. (中部)	22 ~ 28 ~ (40) $\mu$	
20. (上部)	18 ~ 22 ~ (40) $\mu$	
21. 同上, 細胞の幅 (基部)	10 ~ 25 $\mu$	7 ~ (10) $\mu$
22. (中部)	7 ~ 14 $\mu$	} 5 ~ 7 $\mu$
23. (上部)	4 ~ 7 $\mu$	
24. 同上, 長さとの幅の比 (基部)	1.2 ~ 1.5 ~ (3)	2.5 ~ 3.5
25. (中部)	1.7 ~ 3 ~ (5)	} 3.5 ~ 8
26. (上部)	3 ~ 8	
27. 苞葉纖毛の長さ	(300) ~ 400 ~ 450 ~ (550) $\mu$	(250) ~ 550 ~ 650 ~ (750) $\mu$
28. 同上, 細胞数	(10) ~ 14 ~ 16 ~ (20)	(5) ~ 10 ~ 14 ~ (16)
29. 同上, 細胞の長さ (基部)	(22) ~ 25 ~ 30 ~ (40) $\mu$	30 ~ 35 $\mu$
30. (中部)	22 ~ 28 ~ (35) $\mu$	45 ~ 55 ~ (65) $\mu$

31.	(上部)	(18)~ 20~ 25~(30) $\mu$	22~28 $\mu$
32. 同上, 細胞の幅	(基部)	(15)~ 20~ 23~(25) $\mu$	15~20 $\mu$
33.	(中部)	(12)~ 14~ 18 $\mu$	} 7~11 $\mu$
34.	(上部)	7~ 8 ~ (11) $\mu$	

(1) length of stem, (2) diameter of stem, (3) length of epidermal cell of stem, (4) width of do., (5) length of leaf lobe (basal part of stem), (6) do. (middle~apical part of stem), (7) number of lobe cells (leaf at basal part of stem), (8) do. (leaf at middle~upper part of stem), (9) length of cell from middle part of leaf lobe, (10) width of do., (11) ratio 9/10, (12) length of perianth, (13) width of do., (14) length of epidermal cell of perianth, (15) width of do., (16) length of cilium at mouth of perianth, (17) do. (number of cells), (18) length of cell from cilium of perianth (basal part), (19) do. (middle part), (20) do. (apical part), (21) width of cell from cilium of perianth (basal part), (22) do. (middle part), (23) do. (apical part), (24) ratio 18/21, (25) do. 19/22, (26) do. 20/23, (27) length of cilium of bract, (28) do. (number of cells), (29) length of cell of bract cilium (basal part), (30) do. (middle part), (31) do. (apical part), (32) width of cell of bract cilium (basal part), (33) do. (middle part), (34) do. (apical part)

# A. NOGUCHI and S. HATTORI: Musci Japonici (Exsiccati) Ser. 1-6

野口 彰, 服部新佐: 日本蕨類 (標本) 第1-6集

**Aërobryopsis subdivergens** (Broth.) Broth. (Meteoriaceae) *Mizusugimodoki* Miyazaki: Kitagō (A.N. & S.H. 12)

**Andreaea Fauriei** Besch. (Andreaeaceae) *Kurogoke* Nagano: Mt. Kirigamine (N.T. 154)

**Anoetangium dichroum** Card. (Pottiaceae) *Nishiki-rakkyōgoke* Miyazaki: Nakagō (S.H. 35); Ōita: Beppu (A.N. 201)

**Anomodon abbreviatus** Mitt. (Thuidiaceae) *Miyama-gibōshugokemodoki* Kumamoto: Mt. Kurobaru (K.M. 131)

**A. decurrens** Card. *Kisuji-kinuitogoke* Kumamoto: Kōnose (K.M. 132)

**A. Giraldii** C. Muell. *Ō-gibōshugokemodoki* Niigata: Mt. Yahiko (Y.I. 133); Ōita: Fukayabakei (A.N. 202)

**A. ramulosus** Mitt. *Gibōshugokemodoki* Kumamoto: Hitoyoshi (K.M. 134)

**Astomum crispum** (Hedw.) Hamp. (Pottiaceae) *Tsuchinoueno-tanagoke* Niigata: Sanjō (Y. I. 109)

**Aulacomnium heterostichum** (Hedw.) Br. eur. (Aulacomniaceae) *Nagami-chōchingoke* Nagano: Mt. Yatsugatake (N.T. 203)

**Aulacopilum japonicum** Broth. (Erpodiaceae) *Hime-shiwagoke* Ōita: Ōita City (A.N. 41); Kumamoto: Hitoyoshi (K.M. 170, 251)

**Barbella asperifolia** Card. (Meteoriaceae) *Kiyosumi-itogoke* Miyazaki: Ōbi (S.H. & T.K. 75)

- B. Determesii** (Ren. et Card.) Fl. *Tosano-sagarigoke* Ōita: Fukayabakei (A. N. 76)
- Barbula nipponica** Nog. (Pottiaceae) *Togariba-nejikuchigoke* Kumamoto: Ōno (K. M. 252) -Materia originalis!
- var. **gracilis** Nog. *Hoso-nejikuchigoke* Kumamoto: Isshōchi (K. M. 253) -Materia originalis!
- B. tosaensis** Broth. *Hosoba-nejikuchigoke* Miyazaki: Agata (S. H. 57)
- Bartramia crispata** Schimp. (Bartramiaceae) *Tamagoke* Ōita: Fukayabakei (A. N. 50)
- Bartramiopsis Lescurii** (James) Card. et Thér. (Polytrichaceae) *Fūringoke* Ōita: Mt. Kujū (A. N. 99)
- Bissetia lingulata** (Mitt.) Broth. (Neckeraceae) *Shitagoke* Kumamoto: Mt. Ichifusa (K. M. 81)
- Blindia japonica** Broth. (Seligeraceae) *Ko-shippogoke* Ōita: Fukayabakei (A. N. 51)
- Boulaya Mittenii** (Broth.) Card. (Thuidiaceae) *Ghabo-suzugoke* Kumamoto: Mt. Ichifusa (K. M. 86); Ōita: Mt. Yufu (A. N. 204)
- Brachythecium coreanum** Card. (Brachytheciaceae) *Komano-hitsujigoke* Miyazaki: Nakagū (S. H. 205)
- B. Wichurae** Broth. *Ke-hitsujigoke* Miyazaki: Ōbi (S. H. & T. K. 92)
- Breidleria homaliacea** (Besch.) Broth. (Hypnaceae) *Hirae-haigoke* Miyazaki: Kitagō (A. N. & S. H. 28); Kumamoto: Isshōchi (K. M. 187)
- Breutelia arundinifolia** (Dub.) Fl. (Bartramiaceae) *Oni-tamagoke* Isl. Yakushima: Kosugidani (K. M. 254)
- Brotherella Henoni** (Dub.) Broth. (Sematophyllaceae) *Kagamigoke* Ehime: Nakahagi (K. O. 96)
- Bryhnia noesica** (Besch.) Broth. (Brachytheciaceae) *Mutsu-yanonegoke* Ōita: Mt. Sobo (A. N. 255); Aichi: Taguchi (N. T. 256)
- B. Novae-Angliae** (Sull. et Lesq.) Grout *Yanonegoke* Miyazaki: Sakatani (S. H. & T. K. 93)
- B. sublaevifolia** Broth. et Par. *Nejire-yanonegoke* Niigata: Koide (Y. I. 257)
- var. **acuminata** Nog. Niigata: Toyanogata Lake (Y. I. 258) -Materia originalis!
- Bryhnia Tokubuchii** (Broth.) Par. *Ezono-yanonegoke* Kumamoto: Ichibu (K. M. 259)
- Bryoxiphium Savatieri** (Husn.) Mitt. (Bryoxiphiaceae) *Ebigoke* Ōita: Takeda (A. N. 43); Niigata: Akatani (Y. I. 157); Gifu: Mt. Norikura (S. H. 158)
- Bryum argenteum** L. (Bryaceae) *Gingoke* Miyazaki: Ōbi (S. H. 21)
- B. japonense** Besch. *Kawagishigoke* Kumamoto: Hitoyoshi (K. M. 64); Miyazaki: Ōbi (S. H. 206)
- B. Mayebarae** Nog. *Mayebara-magoke* Kumamoto: Shimomatsukuma (K. M. 166) -Materia originalis!
- B. ramosum** (Hook.) Mitt. *Taiwan-magoke* Kumamoto: Kōnose (K. M. 260)
- B. ventricosum** Dicks. *Ō-hariganegoke* Ōita: Fukayabakei (A. N. 207)
- Calliergonella cuspidata** (L.) Loesk. (Amblystegiaceae) *Yarinohogoke* Niigata: Onnagawa (Y. I. 184)
- Calyptothecium cuspidatum** (Okam.) Nog. fo. **robustum** (Besch.) Nog. (Neckeraceae) *Mura-dachigoke* Kumamoto: Kōnose (K. M. 125)
- Campylopus japonicus** Broth. (Dieraniaceae) *Yamato-fudogoke* Ōita: Fukayabakei (A. N. 52)
- Catharinaea chlorochaeta** Card. (Polytrichaceae) *Shiroe-tachigoke* Miyazaki: Agata (T. K. 148)
- Chrysocladium retrorsum** (Mitt.) Fl. (Meteoraceae) *Sori-shidaregoke* Miyazaki: Sakatani (S. H. 38)
- var. **kiusiuense** (Broth. et Par.) Card. *Tsukushi-shidaregoke* Kumamoto: Watari (K. M. 208)
- Claopodium assurgens** (Sull. et Lesq.) Card. (Thuidiaceae) *Makiha-harigoke* Miyazaki: Nakagō

(S. H. 209)

*Climacium dendroides* (Dill., L.) Web. et Mohr. (Climaciaceae) *Fūrosō* Kumamoto: Nishino-mura (K. M. 261)

*C. japonicum* Lindb. *Kōyano-mannengusa* Ōita: Fukayabakei (A. N. 49)

*Ctenidium capillifolium* (Mitt.) Broth. (Hypnaceae) *Kushinohagoke* Niigata: Mt. Yahiko (Y. I. 141)

*Cyathophorella tonkinensis* (Broth. et Par.) Broth. (Hypopterygiaceae) *Kijinowogoke* Miyazaki: Sakatani (A. N. & S. H. 4)

*Dichelyma japonicum* Card. var. *Hatakeyamae* (Okam.) Nog. (Fontinalaceae) *Koshino-yabangoke* Niigata: Irihirose (Y. I. 172)

*Dicranodontium denudatum* (Brid.) Haeg. (Dicranaceae) *Fumigoke* Ōita: Mt. Kujū (A. N. 53)

*Dicranum japonicum* Mitt. (♂ ♀) *Shippogoke* Shimane: Matsue (A. N. 159); Kumamoto: Watari (K. M. 262), Isshōchi (K. M. 263)

*D. scoparium* (L.) Hedw. *Kamogigoke* Ōita: Mt. Kujū (A. N. 210); Nagano: Takasagawa Valley (T. K. 264)

*D. undulatum* Ehrh. *Nami-shippogoke* Nagano: Mt. Yatsugatake (N. T. 211)

*Diphyscium fulvifolium* Mitt. (Diphysciaceae) *Ikubigoke* Kumamoto: Hitoyoshi (K. M. 146)

*Distichophyllum Gono* Broth. (Hookeriaceae) *Gōno-tsugagoke* Miyazaki: Kitagō (S. H. & T. K. 212)

*Ditrichum Mayebarae* Sakurai (Ditrichaceae) Kumamoto: Kōnose (K. M. 265-loc. typ.) Aff. *D. flexifolium*!

*D. pallidum* (Schreb.) Hamp. *Kinshigoke* Kochi: Mt. Miyaji (T. N. 156)

*Dolichomitra cymbifolia* (Lindb.) Broth. (Lembophyllaceae) *Toranowogoke* Aichi: Taguchi (N. T. 180)

*Dolichomitriopsis diversiformis* (Mitt.) Nog. (♂ ♀) *Ko-kusagoke* Ōita: Mori (A. N. 213)

-var. *longiseta* (Nog.) Nog. *Nagaeno-kokusagoke* Ōita: Mt. Sobo (A. N. 266)

*Drepanocladus japonicus* Dix. (Amblystegiaceae) *Sasaokagoke* Niigata: Niigata City (Y. I. 138)

*Duthiella flaccida* Card. (Trachypodaceae) *Taiwan-nokogirigoke* Miyazaki: Kitagō (A. N. & S. H. 26); Kumamoto: Kōnose (K. M. 120)

*D. myuriiformis* Sakurai *Iwa-nokogirigoke* Kumamoto: Kōnose (K. M. 121)

*D. speciosissima* Broth. *Matsumuragoke* Aichi: Miwa (N. T. 176)

*Encalypta ciliata* (Hedw.) Hoffm. (Encalyptaceae) *Yarikatsugi* Nagano: Mt. Yatsugatake (N. T. 214)

*Endotrichella Fauriei* (Broth. et Par.) Broth. (Pterobryaceae) *Kakuregoke* Miyazaki: Kitagō (A. N. & S. H. 10)

*Entodon Challengeri* Par. (Entodontaceae) *Hiro-tsuyagoke* Miyazaki: Ōbi (E. T. & R. S. 32); Kumamoto: Isshōchi (K. M. 139)

*E. Okamurae* Broth. *Futo-sanadagoke* Kumamoto: Hitoyoshi (K. M. 267)

*E. ramulosus* Mitt. *Eda-tsuyagoke* Ōita: Mt. Jinkakuji (A. N. 140); Miyazaki: Nakagō (S. H. 215)

*E. tosae* Besch. *Tosa-tsuyagoke* Kumamoto: Kōnose (K. M. 216)

*Epipterygium nagasakense* Broth. (Bryaceae) *Aka-sujigoke* Kumamoto: Uemura (K. M. 65)

*Eurhynchium Arbuscula* Broth. (Brachytheciaceae) *Kiburi-nagigoke* Miyazaki: Sakatani (S. H. 17)

*Fauriella tenuis* (Mitt.) Besch. (Theliaceae) *Asaitogoke* Miyazaki: Ōbi (S. H. 129)



- Fissidens cristatus** Wils. (Fissidentaceae) *Tosaka-hōwōgoke* Kumamoto: Hitoyoshi (K. M. 101, 217)
- F. japonicus** Doz. et Molk. *Hōwōgoke* Miyazaki: Kitagō (A. N. & S. H. 14)
- F. Mayebarae** Sakurai *Mayebara-hōwōgoke* Kumamoto: Nishinomura (K. M. 268) -c loc. typ.
- F. nagasakinus** Besch. *Nagasaki-hōwōgoke* Kumamoto: Watari (K. M. 218)
- F. perdecurrens** Besch. *Miyama-hōwōgoke* Kumamoto: Hitoyoshi (K. M. 102)
- F. planicaulis** Besch. *Hoso-hōwōgoke* Kumamoto: Kōnose (K. M. 103)
- F. sakourae** Broth. et Par. *Sakurajima-hōwōgoke* Kumamoto: Isshōchi (K. M. 104); Miyazaki: Kitagō (S. H. 155)
- F. taxifolius** (L.) Hedw. var. **acutifolius** Nog. *Yamato-kyarabokugoke* Kumamoto: Hitoyoshi (K. M. 105) Materia originalis!
- F. tosaensis** Broth. *Chabo-hōwōgoke* Kumamoto: Hitoyoshi (K. M. 106)
- Floribundaria nipponica** Nog. (Meteoriaceae) *Hiroha-shinobuitogoke* Ōita: Fukayabaki (A. N. 77) Materia originalis!
- F. pseudofloribunda** Fl. *Shinobuitogokemodoki* Kumamoto: Kōnose (K. M. 289)
- Fontinalis hypnoides** Hartm. (Fontinalaceae) *Kawagoke* Niigata: Mt. Yahiko (Y. I. 118)
- Forsstroemia cryphaeoides** Card. (Cryphaeaceae) *Hime-suzugoke* Ōita: Mori (A. N. 74)
- F. dendroidea** Toyama *Futo-suzugoke* Aichi: Taguchi (N. T. 174)
- F. japonica** (Besch.) Par. *Ito-suzugoke* Tottori: Wakasa (A. N. 175)
- Funaria hygrometrica** (L.) Sibth. (Funariaceae) *Hyōtangoke* Ōita: Ōita City (A. N. 42)
- Georgia pellucida** (L.) Rabenh. (Georgiaceae) *Yotsubagoke* Hakkaidō: Meakan Volcano (A. N. 219)
- Glyphomitrium humillimum** (Mitt.) Card. (Ptychomitriaceae) *Sayagoke* Kumamoto: Kumamoto Castle (A. N. 220)
- Gollania ruginosa** (Mitt.) Broth. (Rhytidiaceae) *Shiwa-rakogoke* Kumamoto: Isshōchi (K. M. 145)
- Grimmia pilifera** Palis (Grimmiaceae) *Ke-gibōshugoke* Kumamoto: Kawamura (K. M. 112)
- Gymnostomum rupestre** Schleich. (Pottiaceae) *Ō-hanashigoke* Kumamoto: Kōnose (K. M. 110)
- Haplocladium microphyllum** (Sw.) Broth. var. **latifolium** (Lac.) Thér. (Thuidiaceae) *Hirobano-asagoke* Ehime: Saijō (K. O. 269); Kumamoto: Hitoyoshi (K. M. 270)
- H. schwetschkeoides** (Card.) Broth. var. **longisetum** Nog. Miyazaki: Sakatani (S. H. & T. K. 135) -Materia originalis!
- H. subulaceum** (Mitt.) Broth. *Nomiha-niwagoke* Miyazaki: Kitagō (S. H. & T. K. 136)
- Haplohymenium longinerve** (Broth.) Broth. (♂ ♀) *Nagasuji-itogoke* Ōita: Mt. Katamuki (A. N. 137)
- H. microphyllum** (Broth. et Par.) Broth. *Kobano-itogoke* Miyazaki: Ōbi (S. H. & T. K. 87)
- H. Sieboldii** Doz. et Molk. *Iwa-itogokemodoki* Miyazaki: Ōbi (S. H. 88)
- Hedwigia albicans** (Web.) Lindb. (Hedwigiaceae) *Shiro-hijikigoke* Ōita: Mori (A. N. 47); Kumamoto: Hitoyoshi (K. M. 119)
- Herpetineuron Toccoae** (Sull.) Card. (Thuidiaceae) *Rasengoke* Ōita: Takeda (A. N. 44); Kumamoto: Kumamoto Castle (A. N. 181)
- Heterophyllum Haldanianum** (Greb.) Kindb. (Sematophyllaceae) *Kusagoke* Hokkaido: Meakan Volcano (A. N. 271)
- Homaliadelphus Targionianus** (Gough) Dix. et P. Varde (Neckeraaceae) *Tachi-hiragoke* Kumamoto: Kōnose (K. M. 126); Saitama: Kagemori (S. H. 272)

**Homaliodendron exiguum** (Bryol. jav.) Fl. (♂ ♀) *Hime-hagoromogoke* Miyazaki: Kitagō (A. N. & S. H. 31)

**H. scalpellifolium** (Mitt.) Fl. *Kidachi-hiragoke* Miyazaki: Kitagō (A. N. & S. H. 5)

**Homalothecium tokiodense** (Mitt.) Besch. (Brachytheciaceae) *Atsibusagoke* Kumamoto: Mt. Ichifusa (K. M. 94); Ōita: Fukayabakei (A. N. 185)

**Hylocomiopsis ovicarpa** (Besch.) Card. (Thuidiaceae) *Hina-toranowogoke* Nagano: Mt. Kirigamine (N. T. 182)

**Hylocomium cavifolium** Lac. (Hylocomiaceae) *Futo-ryūbigoke* Ōita: Fukayabakei (A. N. 97); Niigata: Tsugawa (Y. I. 196)

**-fo. angustifolium** Nog. *Hosobano-ryūbigoke* Aichi: Kamitsuge (N. T. 273) -Materia originalis!

**H. calvescens** (Wils.) Lindb. *Fusagoke* Nagano: Oshika (N. T. 195)

**H. himalayanum** Mitt. *Shinobu-hibagoke* Nara: Mt. Ōdaigahara (N. T. 221)

**H. proliferum** (L.) Lindb. *Iwadaregoke* Ōita: Mt. Yufu (A. N. 98)

**Hyophila Micholitzii** Broth. (Pottiaceae) *Kata-hamakigoke* Miyazaki: Ōhi (S. H. 58)

**H. Sieboldii** Besch. *Tsume-hamakigoke* Kumamoto: Isshōchi (K. M. 274)

**Hypnum circinatum** Schimp. (Hypnaceae) *Chirimengoke* Niigata: Mt. Yahiko (Y. I. 188); Kumamoto: Hitoyoshi (K. M. 189)

**H. Fujiyamae** (Broth.) Par. *Fuji-haigoke* Ōita: Mt. Katamuki (A. N. 142)

**H. Oldhamii** (Mitt.) Jaeg. *Hime-haigoke* Nara: Mt. Ōdaigahara (N. T. 190)

**H. plumaeforme** Wils. *Haigoke* Kumamoto: Ōno (K. M. 143)

**Hypopterygium ceylanicum** Mitt. (Hypopterygiaceae) *Ceylon-Kujakugoke* Miyazaki: Udo (S. H. & M. T. 19)

**H. japonicum** Mitt. *Hime-kujakugoke* Miyazaki: Sakatani (S. H. & T. K. 84); Kumamoto: Ishōchi (K. M. 222)

**Isopterygium subarcuatum** (Broth.) Nog. (Hypnaceae) *Yugami-tachihiragoke* Miyazaki: Ōhi (S. H. & T. K. 144)

**I. texori** (Lac.) Mitt. *Aka-ichiigoke* Ōita: Mt. Kujū (A. N. 191)

**I. tosaense** Broth. in litt. *Tosano-hiratsubogoke* Kumamoto: Hitoyoshi (K. M. 275)

**Isothecium subdiversiforme** Broth. (Lembophyllaceae) *Hime-kokusagoke* Miyazaki: Kitagō (A. N. & S. H. 6); Kumamoto: Hitoyoshi (K. M. 223)

**Leptobryum pyriforme** (L.) Wils. (Bryaceae) *Nashigoke* Nagano: Takasegawa Valley (T. Kn. 276)

**Leptodictyum riparium** (L.) Warnst. (Amblystegiaceae) *Yanagigoke* Kumamoto: Nishinomura (K. M. 277-aquatic form!); Ehime: Saijō (K. O. 278-land form!)

**Lesquereuxia robusta** Lindb. (Rhytidiaceae) *Kitsunegoke* Nagano: Mt. Kirigamine (N. T. 198)

**Leucobryum Bowringii** Mitt. (Leucobryaceae) *Araha-shiragagoke* Miyazaki: Nakagō (S. H. 224)

**L. neilgherrense** C. Muell. *Hosoba-okinagoke* Kumamoto: Hitoyoshi (K. M. 108)

**L. scabrum** Lam. *Ō-shiragagoke* Kumamoto: Hitoyoshi (K. M. 279)

**Leucodon nipponicus** Nog. (Leucodontaceae) *Nippon-itachigoke* Miyazaki: Sakatani (S. H. 37)

**Leucoloma molle** (C. Muell.) Mitt. (Dieranaceae) *Matsubagoke* Miyazaki: Kitagō (A. N. & S. H. 9)

**Lopidium nazeense** (Thér.) Broth. (Hypopterygiaceae) *Nazegoke* Miyazaki: Sakatani (A. N. & S. H. 3)

**Macromitrium brachycladulum** Broth. et Par. (Orthotrichaceae) *Miyama-minogoke* Kumamoto: Mt. Ichifusa (K. M. 72)

- M. gymnostomum** Sull. et Lesq. *Hime-minogoke* Miyazaki: Sakatani (S.H.33)
- M. incurvum** (Lindb.) Par. *Minogoke* Miyazaki: Obi (S.H.20)
- Macrosporiella dozyoides** (Broth. et Par.) Nog. (Leucodontaceae) *Risugokemotoki* Shimane: Wakasa (A.N.280)
- Meteoriella soluta** (Mitt.) Okam. (Pterobryaceae) *Ō-mimigoke* Ōita: Mt. Yufu (A.N.78)
- Meteoriopsis reclinata** (C. Muell.) Fl. (Meteoriaceae) *Takasago-haihimogoke* Kumamoto: Kōnose (K.M.123, 225)
- Meteorium helminthocladum** (C. Muell) Fl. ( ) *Hai-himogoke* Kumamoto: Watari (K.M.226)
- M. helmintocladulum** (Card.) Broth. *Ko-haihimogoke* Ōita: Mori (A.N.46); Saitama: Kagemori (S.H.281)
- vr. **cuspidatum** (Okam.) Nog. *Saikoku-sagarigoke* Kumamoto: Isshōchi (K.M.227)
- M. Miquelianum** (C. Muell.) Fl. *Ō-haihimogoke* Kumamoto: Ōno (K.M.124)
- M. papillarioides** Nog. *Hoso-himogoke* Kumamoto: Ōno (K.M.79) -e loco typ.
- Miyabea fruticella** (Mitt.) Broth. (Thuidiaceae) *Miyabegoke* Ōita: Mori (A.N.48)
- Mnium flagellare** Sull. et Lesq. (Mniaceae) *Ezo-chōchिंगoke* Hokkaido: Meakan Volcano (A.N.228)
- M. laevinerve** Card. *Nameri-chōchिंगoke* Miyazaki: Obi (S.H.67)
- M. Maximowiczii** Lindb. *Tsuru-chōchिंगoke* Shimane: Mt. Kiyomizudera (A.N.168)
- M. microphyllum** Doz. et Molk. *Kobano-chōchिंगoke* Miyazaki: Obi (M.T.15, S.H.229)
- M. punctatum** (L., Schreb.) Hedw. *Uchiwa-chōchिंगoke* Kumamoto: Hitoyoshi (K.M.115)
- M. rostratum** Schrad. *Nagahashi-chōchिंगoke* Kumamoto: Hitoyoshi (K.M.116)
- M. speciosum** Mitt. *Kashiwaba-chōchिंगoke* Nagano: Kamiina, the Kitazawa pass (N.T.169)
- M. succulentum** Mitt. *Atsuba-chōchिंगoke* Miyazaki: Sakatani (S.H. & T.K.230)
- M. Thomsonii** Schimp. *Hime-chōchिंगoke* Miyazaki: Sakatani (S.H. & T.K.231)
- M. trichomanes** Mitt. *Kotsubogoke* Miyazaki: Kitagō (S.H. & T.K.68)
- M. vesicatum** Besch. *Ōba-chōchिंगoke* Shimane: Mt. Gakuenji (A.N.232); Kumamoto: Kōnose (K.M.282)
- Myuriopsis sinica** (Mitt.) Nog. (Myuriaceae) *Nawagoke* Miyazaki: Sakatani (S.H.39)
- Myuroclada concinna** (Wils.) Besch. (Brachytheciaceae) *Nezuminowogoke* Ōita: Fukayabakei (A.N.95)
- Neckera humilis** Mitt. (Neckeraceae) *Chabo-hiragoke* Ōita: Fukayabakei (A.N.82); Niigata: Mt. Yahiko (Y.I.178)
- N. pusilla** Mitt. *Hime-hiragoke* Shimane: Mt. Gakuenji (A.N.179)
- N. tosaensis** Broth. *Tosa-hiragoke* Miyazaki: Kitagō (A.N. & S.H.29); Kumamoto: Mt. Ōhira (K.M.127)
- Neckeropsis Lepineana** (Mont.) Fl. ( ) *Seinan-hiragoke* Kumamoto: Kōnose (S.H.18)
- N. nitidula** (Mitt.) Fl. *Hiragoke* Miyazaki: Obi (S.H.83)
- Neobarbella pilifera** (Broth. et Yasuda) Nog. (Meteoriaceae) *Ke-sagarigoke* Ōita: Fukayabakei (A.N.233); Miyazaki: Iino (K.M.283)
- Okamuraea cristata** Broth. (Rhytidiaceae) *Okamuragoke* Ōita: Mori (A.N.45)
- Oligotrichum aligerum** Mitt. (Polytrichaceae) *Hagurumagoke* Nagano: Mt. Yatsugatake (N.T.234)
- Oncophorus crispifolius** (Mitt.) Lindb. (Dieranaceae) *Chabo-shippogoke* Miyazaki: Kitagō (S.H. & T.K.54); Kumamoto: Hitoyoshi (K.M.160)

- var. *brevipes* (Card.) Nog. *Koeno-Kobugoke* Ōita: Mt. Jinkakuji (A. N. 107)
- Orthodicranum hamulosum* (Mitt.) Broth. (♂ ♀) *Kagi-kamojigoke* Hokkaido: Mt. Daisetsu (A. N. 235)
- Orthomniopsis japonica* Broth. (Mniaceae) *Tachi-chūchingoke* Kumamoto: Ōno (K. M. 236)
- Oxyrrhynchium polysticum* (Mitt.) Broth. (Brachytheciaceae) *Tsukushi-nagigoke* Kumamoto: Hitoyoshi (K. M. 186)
- Philonotis fontana* Brid. (Bartramiaceae) *Sawagoke* Nagano: Takasegawa Valley (T. Kn. 284)
- P. Savatieri* Besch. *Numa-tamagoke* Kumamoto: Ōno (K. M. 69)
- P. socia* Mitt. *Tsukushi-sawagoke* Miyazaki: Sakatani (A. N. & S. H. 1)
- P. Turneriana* Mitt. *Oni-sawagoke* Kumamoto: Nishinomura (K. M. 285)
- Physcomitrium eurytomum* (Nees) Sendtn. (Funariaceae) *Hirokuchigoke* Ōita: Ōita City (A. N. 113); Kumamoto: Hitoyoshi (K. M. 237)
- Pilotrichopsis dentata* (Mitt.) Besch. (Cryphaeaceae) *Tsurugoke* Miyazaki: Sakatani (S. H. 36)
- Pinnatella Makinoi* (Broth.) Broth. (Neckeraceae) *Kiburi-hanegoke* Kumamoto: Kōnose (K. M. 128)
- Platyhypnidium rusciforme* (Neck.) Fl. (Amblystegiaceae)  *Ao-haigoke* Miyazaki: Kitagō (A. N. & S. H. 27); Shimane: Mt. Gakuenji (A. N. 238)
- Pleuridium subulatum* (Huds.) Rabenh. (Ditrichaceae) *Hosoba-kinchakugoke* Kumamoto: Kinoye (K. M. 286)
- Pleurochaete squarrosa* (Brid.) Lindb. var. *crispifolia* (Nog.) Nog. Syn. *Trichostomum crispifolium* Nog. (Pottiaceae) *Chijimiba-higegoke* Aichi: Miwa (N. T. 162, -Typus of *Trichostomum crispifolium*); Kumamoto: Kōnose (K. M. 287)
- Pleuropus fenestratus* Griff. (Brachytheciaceae) *Atsubusagokemodoki* Kumamoto: Isshōchi (K. M. 288)
- Pleuroziopsis ruthenica* (Weinm.) Kindb. (Climaciaceae) *Fujino-mannengusa* Nagano: Kamiina, the Kitazawa pass (N. T. 173)
- Pogonatum grandifolium* (Lindb.) Jaeg. (Polytrichaceae) *Setaka-sugigoke* Nagano: Kamiina, the Kitazawa pass (N. T. 198)
- P. inflexum* Lindb. *Ko-sugigoke* Miyazaki: Ōbi (S. H. & M. T. 22); Ōita: Mori (A. N. 239)
- P. pygmaeum* Card. *Chabo-sugigokemodoki* Aichi: Yamanoyoshida (N. T. 199); Ōita: Mt. Jinkakuji (A. N. 149)
- P. spinulosum* Mitt. *Hamizugoke* Miyazaki: Nakagō (S. H. & H. M. 34)
- P. spurio-cirratum* Broth. *Hōrai-sugigoke* Kumamoto: Yunomaye (K. M. 150)
- Polytrichum attenuatum* Menz. (♂ ♀) *Ō-sugigoke* Ehime: Nakahagi (K. O. 100); Aichi: Inuyama (S. H. 200)
- P. piliferum* Schreb. *Hari-sugigoke* Nagano: Mt. Kirigamine (N. T. 240)
- P. sphaerothercium* (Besch.) Broth. *Takane-sugigoke* Nagano: Mt. Yatsugatake (N. T. 241)
- Pseudobarbella kiushiuensis* (Broth.) Nog. (Meteoriaceae) *Tsukushi-sagarigoke* Miyazaki: Ōbi (S. H. 16)
- P. Levieri* (Ren. et Card.) Nog. *Takasago-sagarigoke* Miyazaki: Sakatani (S. H. & T. K. 80)
- P. mollissima* (Broth.) Nog. *Tosano-tasukigoke* Miyazaki: Kitagō (A. N. & S. H. 13), Sakatani (S. H. 242)
- Pseudoleskeopsis Hattorii* Nog. (Leskeaceae) *Hattori-asaitogoke* Miyazaki: Kitagō (S. H. & A. N. 30) *Materia originalis!*
- P. orbiculata* (Mitt.) Broth. *Asaitogoke* Miyazaki: Kitagō (A. N. & T. K. 130), Kitagō (S.

H. 243)

**Pterobryum arbuscula** Mitt. (Pterobryaceae) *Himurogoke* Miyazaki: Kitagō (A. N. & S. H. 11); Kumamoto: Hitoyoshi (K. M. 122)

**Ptilium crista-castrensis** (L.) DeNot. (Hypnaceae) *Dachōgoke* Yamanashi: Mt. Koma (N. T. 192)

**Ptychomitrium dentatum** (Mitt.) Jaeg. (Ptychomitriaceae) *Hachijiregoke* Miyazaki: Kitagō (S. H. & T. K. 70); Isl. Yakushima: Susukawa (K. M. 244)

**P. linearifolium** Reim. et Sak. *Nagaba-chijiregoke* Kumamoto: Isshōchi (K. M. 71)

**P. sinense** (Mitt.) Jaeg. *Chijiregoke* Ōita: Yunohira (A. N. 171)

**Rhacomitrium anomodontoides** Card. (Grimmiaceae) *Nagaeno-sunagoke* Ōita: Fukayabakei (A. N. 60); Niigata: Mikawa (Y. I. 164)

**R. canescens** (Weiss, Timm.) Brid. *Naga-sunagoke* Ōita: Fukayabakei (A. N. 61)

**R. carinatum** Card. *Chōsen-sunagoke* Ehime: Sumino (K. O. 62)

**R. heterostichum** (Hedw.) Brid. *Kuro-kawakigoke* Ōita: Mt. Kujū (A. N. 63)

**R. laetum** Besch. et Card. *Ki-sunagoke* Nagano: Takasegawa Valley (T. Kn. 290)

**Rhacopilum aristatum** Mitt. (Rhacopilaceae) *Hogoke* Miyazaki: Ōbi (S. H. 73)

**Rhizogonium badakense** Fl. (Rhizogoniaceae) *Hiroha-hinokigoke* Miyazaki: Sakatani (A. N. & S. H. 24)

**R. Dozyanum** Lac. *Itachinoshippo* Miyazaki: Sakatani (A. N. & S. H. 25)

**Rhodobryum giganteum** (Hook.) Par. (Bryaceae) *Ō-kasagoke* Kumamoto: Nishinomura (K. M. 114)

**Rhytidadelphus triquetrus** (L.) Warnst. (Hylocomiaceae) *Ō-fusagoke* Hokkaidō: Mt. Daisetsu (A. N. 245)

**Rhytidium rugosum** (Ehrh.) Kindb. (Rhytidiaceae) *Futogoke* Nagano: Mt. Kirigamine (N. T. 194)

**Schistostega osmundacea** (Dicks.) Mohr. (Schistostegaceae) *Hikarigoke* Nagano: Takasegawa Valley (T. Kn. 246)

**Schlotheimia latifolia** Card. et Thér. (Orthotrichaceae) *Hiroha-momigoke* Miyazaki: Kitagō (A. N. & S. H. 7)

**Schwetschkea Matsumurae** Besch. (Fabroniaceae) *Kinoueno-kegoke* Kumamoto: Hitoyoshi (K. M. 291)

**Schwetschkeopsis japonica** (Besch.) Broth. ( ) *Kinoueno-hosogoke* Miyazaki: Ōbi (S. H. & T. K. 85)

**Sematophyllum japonicum** (Broth.) Broth. (Sematophyllaceae) *Nagahashigoke* Ehime: Nakahagi (K. O. 247)

**Sphagnum fuscum** (Schpr.) V. Klingr. (Sphagnaceae) *Cha-mizugoke* Nagano: Mt. Kirigamine (N. T. 151)

**S. palustre** L. *Ō-mizugoke* Kumamoto: Hitoyoshi (K. M. 152)

**S. Takedae** Okam. *Ito-mizugoke* Nagano: Mt. Kirigamine (N. T. 153)

**Syrrophodon japonicus** Besch. (Calymperaceae) *Katasuirogoke* Miyazaki: Kitagō (A. N. & S. H. 56)

**Tetracladium Molkenboerii** Lac. (Thuidiaceae) *Hon-shinobugoke* Nagano: Mt. Yatsugatake (N. T. 248)

**Tetraplodon angustatus** (Lindb. fil.) Bryol. eur. (Splachnaceae) *Marudaiogoke* Gifu: Mt. Norikura (S. H. 165)

- T. bryoides** (Zoeg.) Lindb. *Hanashi-marudai* Gifu: Mt. Norikura (S. H. 292)
- Thamnium plicatulum** Lac. (Neckeraceae) *Ko-toranowogoke* Miyazaki: Sakatani (A. N. & S. H. 23)
- T. Sandei** Besch. var. **cymbifolium** Card. *Funaba-toranowogoke* Kumamoto: Kōnose (K. M. 293)
- Theriotia lorifolia** Card. (Diphyseaceae) *Kumanogoke* Kumamoto: Hitoyoshi (K. M. 147); Aichi: Mt. Hōrai (N. T. 197)
- Thuidium cymbifolium** (Doz. et Molk.) Bryol. jav. (Thuidiaceae) *Hime-shinobugoke* Ehime: Nakahagi (K. O. 89)
- T. glaucinum** (Mitt.) Jaeg. *Ao-shinobugoke* Miyazaki: Kitagō (A. N. & S. H. 90)
- T. Toyamae** Nog. *Toyama-shinobugoke* Miyazaki: Obi (S. H. & T. K. 91 -Materia originalis); Niigata: Mt. Sugana (Y. I. 183)
- T. viridiforme** Card. *Nagaba-koshinobugoke* Nagano: Takasegawa Valley (T. Kn. 294)
- Thysanomitrium Richardii** Schwaegr. (Dicranaceae) *Fudegoke* Miyazaki: Nakagō (S. H. 40); Kumamoto: Nishinomura (K. M. 295)
- Tortella himantina** (Besch.) Broth. (Pottiaceae) *Eso-ko-nejiregoke* Kumamoto: Kōnose (K. M. 296)
- T. japonica** (Besch.) Broth. *Ko-nejiregoke* Miyazaki: Sakatani (A. N. & S. H. 8)
- Trachypus humilis** Lindb. fo. **secundus** Nog. (Trachypodaceae) a form of *Hoso-mujinagoke* Miyazaki: Kitagō (A. N. & S. H. 177)
- T. humilis** Lindb. var. **brevifolius** Card. *Kobano-mujinagoke* Miyazaki: Sakatani (A. N. & S. H. 2)
- Trematodon atrovirens** Broth. (Dicranaceae) *Kuro-nagadaigoke* Kumamoto: Hitoyoshi (K. M. 297)
- T. drepanellus** Besch. *Nagadaigoke* Kumamoto: Hitoyoshi (K. M. 55); Miyazaki: Obi (S. H. & T. K. 161)
- Trichostomum crispifolium** Nog. → *Pleurochaete squarrosa* var. *crispifolia*! Aichi: Miwa (N. T. 162) Materia originalis!
- Ulotia crispa** Brid. (Orthotrichaceae) *Chijire-kinmōgoke* Ōita: Mt. Yufu (A. N. 249)
- Venturiella sinensis** (Vent.) C. Muell. (Erpodiaceae) *Hinano-haigoke* Ōita: Ōita City (A. N. 117)
- Vesicularia apiculata** Broth. (Hypnaceae) *Seinan-fukurogoke* Niigata: Koide (Y. I. 298)
- var. **major** Broth. *Ō-fukurogoke* Aichi: Mt. Hōrai (N. T. 299)
- V. japonica** Broth. *Yamato-fukurogoke* Kumamoto: Uyemura (K. M. 250)
- Webera scabridens** (Mitt.) Broth. (Bryaceae) *Ke-hechimagoke* Miyazaki: Agata (S. H. 66); Ehime: Ōjōin (K. O. 167)
- Weisia longidens** Card. (Pottiaceae) *Nagaba-kogoke* Miyazaki: Obi (S. H. 59; S. H. & T. K. 163)
- W. viridula** (L.) Hedw. *Midori-senbongoke* Kumamoto: Kōnose (K. M. 300)
- Weisiopsis Cardoti** (Broth.) Broth. (♂ ♀) *Kinoueno-kogokemodoki* Miyazaki: Obi (S. H. 111)

\* All collections except *Sphagna* were identified or verified by A. Noguchi

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## Abbreviations of collectors' names

A. N.	A. Noguchi	E. T.	E. Taniyama (Miss)	H. M.	H. Matuura
K. M.	M. Mayebara	K. O.	K. Oti	M. T.	M. Toyama (Miss)
N. T.	N. Takaki	R. S.	R. Shimosugi (Miss)	S. H.	S. Hattori
T. K.	T. Kurata	T. Kn.	T. Kuno	Y. I.	Y. Ikegami

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編集者の1人服部は昭和20年より苔類標本集の刊行を計畫、材料を集め、翌21年にその第1集を完成したが、22年春他の編集者野口に本計畫を話して快諾を得、4月6〜7日に研究所に近い酒谷村新村と北郷村猪八重に同行、その採集品をもとにして10月に當標本第1集を刊行した。野口はミズゴケ類を除くすべての蕨類の種名を決定又は確認し、且つ服部がそれに依つて作つた原稿を校閲することとし、服部は野口と相談し乍らその外の仕事に研究所の職員と共に當ることとした。ミズゴケ類は専門家鈴木兵二氏(廣島大學)の同定を得難い事情にあるため止むを得ず最近アメリカの Andrews 氏に依頼して數點の學名を得た(第7集に收録)。

第2集以降次第に材料の蒐集に協力者が出来て各地方の蕨類を容易に收録し得るようになった。次に第6集迄の標本數を採集者別に示して見よう。前原勘次郎89點、野口彰88點(但し1部は服部との協同採集)、服部新佐85點(但し凡そ半數は野口その他との共同採集)、高木典雄31點、倉田辰二21點(但し1點を除き服部との共同採集)、池上義信10點、越智一男8點、久野哲夫6點、以下略。

尙現在尼川大録、上村登、桑原幸信、清水大典、新敏夫、水島うららの諸氏が協力されているが、更に多くの同志の援助を希望する。

協力者に対する御禮として研究所報告等の刊行物を贈り、且つ2又は3點(標本の質に依り)が收録される都度その標本集1組を進呈することになっている。特に收録標本と斷つた譯は不適當と判斷した材料は收録しないからで、例えば量の不足する場合、混生種や夾雜物がひどい場合、2又は3回以上の重複種であつて更に收録するだけの意義を認めない場合などである。各集の製作部數は100乃至200であつたが今後は100と150に限定し度い。この製作は細心の注意を要し、實際に材料を包み分けたりラベルを貼つたりする仕事に當つた人でないとその辛勞は仲々理解して貰えないように感じられる。

終りに臨んでこの製作に當られた倉田辰二氏以下の當研究所職員、材料の蒐集に協力いただいた前原勘次郎(人吉市)、高木典雄(名古屋大學)、池上義信(市立新潟高校)、越智一男(西條高校)、久野哲夫(名古屋大學)その他の各位、並びに種々御指導御鞭撻賜つた中井猛之進、朝比奈泰彦兩先生その他の諸先生、先輩、友人に厚く御禮申し上げます。又當所の如き貧弱な研究所がこの製作、刊行を續け得たのは文部省民間研究機關事業補助金の交付に負う所が大であり、記して深く感謝の意を表します。



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