Kamezo SAITO*: **Notes on the Pottiaceae (3)****

斉藤亀三*: センボンゴケ科雑記 (3)**

8) Lazarenko (1970) proposed the monotypic genus *Usmania* based on the new species *U. campylopoda* from Tadjikistan, southern USSR. He placed the genus in the family Pottiaceae. There seems to be no doubt that the plant represents a distinct species. The original description and the figures of the species are excellent, but show some discrepancies from other taxa of the Pottiaceae. The mitrate calyptra (cf. Lazarenko, fig. 6) in particular, led me to doubt the taxonomic position of the species as well as the validity of the genus. I have been able to examine the holotype of *U. campylopoda* thanks to the kindness of Dr. Lazarenko. Since Lazarenko (l.c.) gave a detailed description, the following discussion is limited to those features which he did not note, or which are considered important for other reasons.

The cross section of the leaf (Fig. 1-5,-6) shows some important features of the species. The inner structure of the costa is scarcely differentiated. The costa consists of four rows of cells at its thickest portion; both surface cells and the guide cells are irregularly elliptical and equally thick-walled and similar to each other in size and shape; the cells under the guide cells are thin-walled and more or less smaller than the other cells. In cross section, the equally thick-walled, elliptical lamina cells and the absence of the dorsal stereid band as well as the absence of the ventral stereid band are unusual features in the Pottiaceae, however, they are of general occurrence in the family Grimmiaceae (cf. Kawai 1965).

There is another important feature in the cross section of the leaf (Fig. 1-5). The lamina shows bistratose areas, where the surfaces of the lamina scarcely bulge. In *U. campylopoda*, the bistratose parts of the

* Dept. of Botany, Fac. of Science, Tokyo Kyoiku Univ., Otsuka, Tokyo. 東京教育大学理学部植物学教室.

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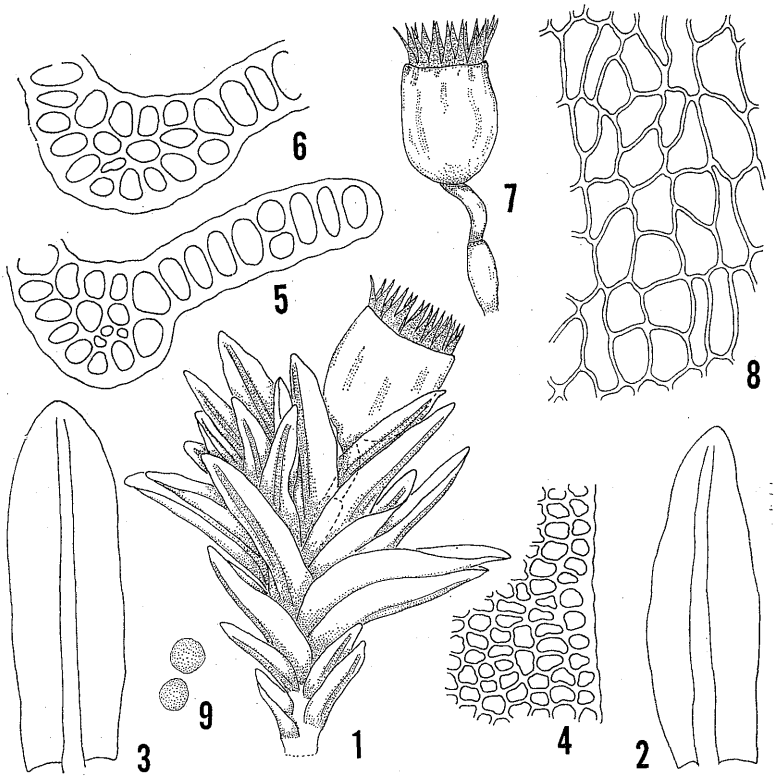

Fig. 1. *Grimmia campylopoda* (Laz.) Saito. 1. Plant, ×27. 2, 3. Leaves, ×40. 4. Median leaf-cells, ×270. 5, 6. Parts of cross sections of leaves, ×400. 7. Deoperculated capsule, ×27. 8. Exothecial cells, ×270. 9. Spores, ×400. All figs. drawn from the type of *U. campylopoda*.

lamina are irregularly scattered. Uniformly bistratose laminae are sometimes observed in some species of Pottiaceae (*Timmiella anomala*, *Tortula bistratosa*, etc.), and an irregularly bistratose lamina is rather rarely observed in the Pottiaceae (*Tortula desertorum*). However, in those irregularly bistratose laminae of Pottiaceous species, laminal cells are regularly quadrate or oblong and thin-walled in cross section and different from those of *U. campylopoda*. Irregularly bistratose laminae are common in *Ptychomitrium* and *Grimmia*, in which the lamina cells are elliptical, and thick-walled in cross section.

The most distinctive feature of the genus, compared to other Pottiaceae, is the immersed capsule bearing sixteen teeth of eight pairs (Fig. 1-1,-7). Lazarenko (l.c.) clearly described the detailed characters of seta, capsule and peristome teeth. There are some important characters that were not described by Lazarenko: the exothecial cells are irregularly quadrate, more or less sinuous and the operculum is clearly cut off from the capsule and falls without the columella. In Pottiaceae, the immersed capsule (as in *Astomum*, *Phascum*, etc.) is always cleistocarpous except in *Usmania campylopoda*. In the cleistocarpous capsule, the exothecial cells are rather enlarged and regularly quadrate to rectangular, not sinuous, and peristome teeth and annulus are absent. A sporophyte like that of *Usmania* is often observed in some species of *Grimmia* (*G. anodon*, *G. plagiopoda*, and *G. tergestina* var. *poeliostoma*; cf. Savicz-Ljubitzkaja & Smirnova 1970).

In *U. campylopoda*, the calyptra is minute and divided into four to five clefts at the base, and it is apparently mitriform. The calyptra of other species of Pottiaceae is usually cucullate. On the other hand, a mitriform calyptra is very common in the Grimmiaceae (*Grimmia*, *Rhacomitrium*, *Coscinodon*, etc.).

The account on the morphology and the figures of *U. campylopoda* suggests that *U. campylopoda* may belong to the Grimmiaceae rather than to the Pottiaceae. There is no related or similar genus to *Usmania* in the Pottiaceae. In addition to the above mentioned characters, the lanceolate to ligulate leaves (Fig. 1-2,-3), of which the apex is obtuse and the margin entire, and the short, much reduced sixteen peristome teeth seem to indicate that *Usmania* is identical with *Grimmia*. I can find no essential difference between *Grimmia* and *Usmania*, and the following nomenclatural change become necessary.

Grimmia Hedw., Spec. Musc. 75. 1801.

Synonym: *Usmania* Laz., Dopovidi, A.N. USSR. 11: 1039. 1970. syn. nov.

Grimmia campylopoda (Laz.) Saito, comb. nov.

Basionym: *Usmania campylopoda* Laz., Dopovidi, A.N. USSR. 11: 1040. 1970. syn. nov.

Specimen examined: USSR. Tadjikistan, South Shaartus, Tugon-Tau range, Karon, on the soil in the half-savanna plant communities. leg. U.K. Mamatkulov 8266 (in herb. Lazarenko)—holotype of *Usmania campylopoda* Laz.

9) **Gymnostomum chenii** Saito, sp. nov.

Plantae robustae, usque ad 2 cm longae. Folia lineari-lanceolata, apice anguste-acuta, usque 3 mm longa. Cellulae laminarum irregulariter hexagonae, 7–12×10–15μ, laeves, parietibus incrassatis distinctis. Seta dextrorsa, 1 cm longa. Capsula subsphaerica, 1.2–1.5 mm longa. Annuli evoluti, persistentes. Peristomia destituta. Sporae leviter papillatae, 12–14μ diametro. Operculum et calyptra ignota.

Plants robust, forming a dense tuft. Stems erect, procumbent at base, scarcely branched, up to 2 cm long; central strand usually absent, rarely weakly differentiated, outer two to three layer-cells small, slightly sclerenchymatous, pale brownish, inner ground cells large, thin-walled, yellowish. Rhizoids abundant, tomentose. Leaves crowded in upper part of stem, strongly crisped when dry, spreading and more or less falcate when moist, linear-lanceolate, narrowly acute at apex, often slightly constricted above base, 2.5–3 mm long, ca. 0.25 mm wide at middle. Lamina cells irregularly hexagonal, 7–12×10–15μ, corner conspicuously bulging into the lumen in surface view; marginal cells longitudinally elliptical, much smaller than inner cells; basal cells large, irregularly rectangular, thin-walled, nearly hyaline. Costa ending at apex or shortly excurrent from apex, both stereid bands well developed, smooth on both surfaces. Perichaetial leaves undifferentiated. Seta solitary, on tip of stem, up to 1 cm long, pale brown, dextrorse throughout. Capsule spherical, 1.2–1.5 mm long, 1–1.3 mm thick at middle, thickness of capsule-wall uncertain. Exothecial cells irregular in shape, 20–40×40–70μ, thick-walled. Annulus differentiated, of two to three rows at mouth, persistent. Stomata on neck, phaneropore, five to seven per capsule. Peristome teeth absent. Spores 12–14μ in diam., exine thin, faintly papillose, greenish (?). Operculum and calyptra unknown.

Type: North West Himalaya, leg. Royle s.n. (det. as *Hymenostylium aurantiacum*, in NY).

Specimens examined. North West Himalaya, leg. Falconer 45 (in NY). China, Prov. Setschwan, Yalung at Nganning-no, in regionis calide temperatae rupibus ad vicum Waluping prope pagum Puti, on calcareous rock, ca. 1775 m, leg. Handel-Mazzetti s.n. (in NY).

The type specimen of *G. chenii* is deposited in the Mitten Herbarium of the New York Botanical Garden under the name of *Hymenostylium*

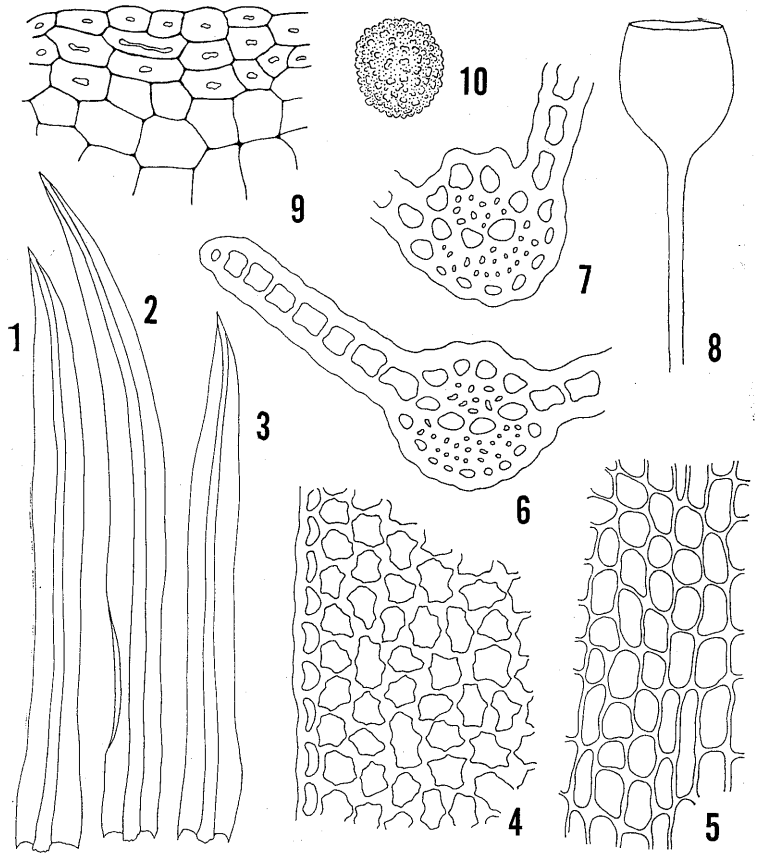

Fig. 2. *Gymnostomum chenii* Saito. 1, 2, 3. Leaves, ×27. 4. Cells from leaf middle, ×400. 5. Cells from leaf base, ×400. 6, 7. Parts of cross sections of leaves, ×400. Deoperculated capsule, ×27. 9. Persistent annuli at capsule mouth, ×270. 10. Spore, ×1000. All figs. drawn from the type.

aurantiacum (=*Gymnostomum aurantiacum*) which is very closely related to *G. recurvirostre*, and the other two cited specimens are also erroneously determined as either *H. aurantiacum* (leg. Royle) or *Molendoa roylei* (leg. Handel-Mazzetti). Thus the present new species is very similar to *G. aurantiacum* and *M. roylei* in habit and many detailed characters.

The gymnostomous capsule, stem apical position of archegonia and strongly thick-walled lamina cells (Fig. 2-4) of *G. chenii* are common to

G. aurantiacum. But *G. chenii* is much larger in plant-size and clearly distinguished from *G. aurantiacum* by the presence of ventral stereid band of costa (Fig. 2-6,-7), the long linear-lanceolate leaves (Fig. 2-1, -2, -3), with narrow border of longitudinally elliptical cells and entirely smooth lamina cells. *G. chenii* is also easily distinguished from *M. roylei* (which bears archegonia on the short lateral branches), by the stem apical position of the archegonia. But in the other gametophytic and sporophytic features, *G. chenii* is very similar to *M. roylei*. It seems to be impossible to distinguish sterile specimens of *M. roylei* from *G. chenii*.

The above comparison of *G. chenii* with allied species suggests the close relationship of *Molendoa* to *Gymnostomum*. Brotherus (1924) separated *Molendoa* from *Gymnostomum* in subfamilial rank on account of the difference of the location of the archegonia, and he treated *Molendoa* as a member of Pleuroweisioideae and *Gymnostomum* of Trichostomoideae. On the other hand, Meusel (1935) stated that the pleurocarpous habit of *Anoectangium*, which is also a gymnostomous moss of the Pottiaceae and has been considered to be closely related to *Molendoa*, is a convergent form to "die kalktuffbildenden Formen". He concluded that *Anoectangium* is essentially an acrocarpous moss. Surely, there are many examples in *Gymnostomum* showing the close similarity to those of *Molendoa* or *Anoectangium*, e.g. *G. angustifolium* has long been misidentified as *M. sendtneriana* (cf. Saito 1972). There are transitional lines of growth form from acrocarpous habit to pleurocarpous habit in the other mosses (cf. *Fissidens* in Meusel 1935). We may regard *G. chenii* and *M. roylei* as transitional species from acrocarpous *Gymnostomum* to pleurocarpous *Molendoa*.

The species epithet, *chenii*, is in honour of the Dr. Pan-Chieh Chen who made an excellent study on the Asiatic species and genera of Pottiaceae.

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Savicz-Ljubitzkaja, L. I. & Z. N. Smirnova, 1970. The Handbook of the Mosses of the USSR. pp. 287–510.

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8) Lazarenko (1970) は南ソ連より単型属 *Usmania*を，新種 *U. campylopoda* とともにセンボンゴケ科の属として記載した。だがこの種は，1) 朔柄が短かく，朔は葉の間に埋れているが8対16本の朔歯がある，2)帽子は僧帽状だが，基部は4-5裂している，3) 葉身は不規則に2層になる，4) 中肋には背腹どちらの stereid band もないなど，他のセンボンゴケ科の種にはほとんど見られない特徴を多くもっている。これらの諸形質をそなえたものは，ギボウシゴケ科 (Grimmiaceae) のギボウシゴケ属 (*Grimmia*) にみられる。この *U. campylopoda* は，ギボウシゴケ属の一種とするのが適当であろう。

9) ニューヨーク植物園に所蔵されている *Hymenostylium aurantiacum* (=*Gymnostomum aurantiacum*) および *Molendoa roylei* の標本中に，これら両種とは全体の大きさ，葉形，中肋の内部構造および造卵器のつき方などの点で異なるものがあったので，新種 *Gymnostomum chenii* として記載した。イシバイゴケ属 (*Molendoa*) とハナシゴケ属 (*Gymnostomum*) とは造卵器のつき方の差によって区別されているが，他の形質にはほとんど差はない。イシバイゴケ属で造卵器が短かい側枝の先に生じることは，Meusel (1935) が述べたように，茎の先端に造卵器を生じるもの (ハナシゴケ属) の“die kalktuffbildenden Formen”への集斂現象と考えられる。特に *G. chenii* と *M. roylei* は造卵器のつき方の差の他には全く相違点がなく，両種をハナシゴケ属よりイシバイゴケ属への移行段階にある種とみなすこともできよう。

□前川文夫： **日本人と植物** 岩波新書，pp. 193, 1973年2月，¥180。植物の名は歴史的，地域的に拡散，収斂し，その間に変形を繰り返えし，また内容が別物と入れ替ったりしていて，今日では全く意味の取れなくなっているものも多い。この書では分散して僅かに残っている小さな諸証拠を総合し，組織化して，その植物が認識され利用された日本の古い時代の物の見方，習俗にまで溯って，植物和名の原義を求めようというユニークな努力がなされている。その意味でこれは語源論であるばかりでなくて，植物を媒体とする日本文化史論という一面が強い。著者の文化への広い理解に支えられたこの論集は肩がこらず興味深く読まれる。語源論はとかく独断におちいり易い危険を伴うが，この書では広い基盤に立った議論を随筆風に展開しながら，なお世の広い読者層の関心に訴えてその批評をまつという姿勢をとっている。 (津山 尚)