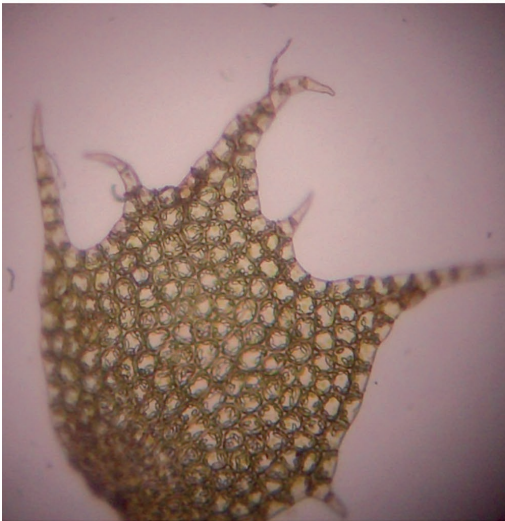
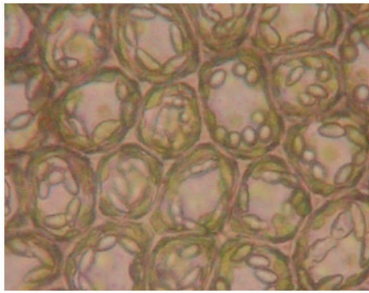
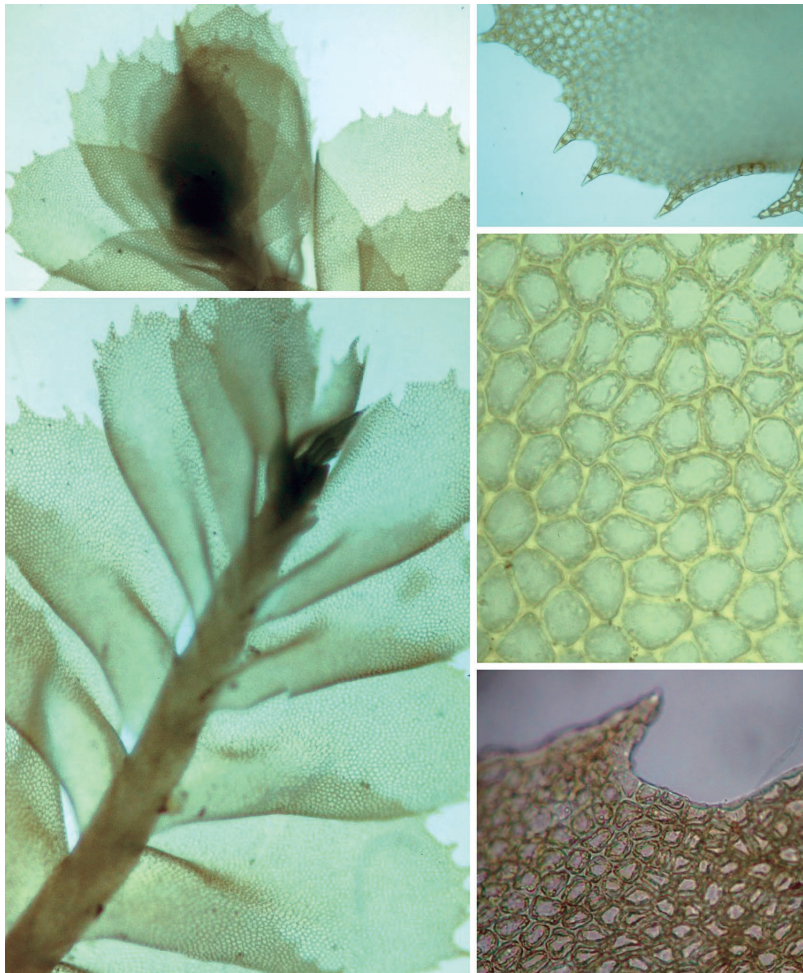


**Figs 318 and 319 (next page). *Plagiochila subalpina* Steph.**

Synonym: *Plagiochila pseudoattenuata* S.W.Arnell. Plants up to 1-2 cm tall, shoots up to 1.5-2 mm wide, with intercalary ramifications, microphyllous flagellae abundant. Leaves distant to contiguous, obovate or suborbicular, 0.58-0.82 x 0.72-1 mm, ventral margin convex, nearly hemicircular, apex rounded, ventral margin and apex with (4-)6-9(-10) teeth with 2-3 cells in a row. Cells with large trigones, 19-25 x 23-26  $\mu$ m. Vegetative reproduction with caducous leaves. **Habitat:** Epiphyte in *Dendrosenecio-Lobelia stuhlmannii* paramo, 3600-3900 m. **Distribution in Rwanda: Volcano NP:** Karisimbi, on the E-slopes along trail to summit. **Distribution in Africa:** DR Congo, Uganda, Kenya, Tanzania, Malawi, Lesotho. Also Madagascar.







**Figs 320 and 321 (next page).** *Plagiochila terebrans* Lindenb. ex Nees & Mont. Plants in dark green tufts, shoots up to 3-5(-10) cm long and 2-5(-7) mm wide, irregularly pinnate-bipinnate. Leaves distant to contiguous, sometimes slightly imbricate, 0.7-1.5 x 1.5-3.2 mm, slightly falcate, ventral appendix lacking, ventral margin convex, slightly decurrent at stem, in distal part with 4-10 unequal and broadly triangular teeth, dorsal margin concave, with 0-3 small teeth. Cells with distinct non-nodulose trigones, 15-20 x 22-35  $\mu$ m. Dioicous. Perianth ovate or oblong, 1.2-1.8(-2.4) x 1.6 x 2.4 mm, dorsal keel with wing, apex with long and fimbriate cilia on each side of mouth. **Habitat:** Epiphyte in montane rainforest, *Hagenia-Hypericum* forest, ericaceous shrub and *Dendrosenecio-Lobelia stuhlmannii* paramo, 2000-3900 m. **Distribution in Rwanda:** **Volcano NP:** Karisimbi, in the saddle between Mt. Bisoke and Mt. Karisimbi, on the E-slopes along trail to summit, *Erica* forest SW of Susa river. **Nyungwe NP:** Rwasekoko, Karamba, Kamiranzovu, Uwinka, Gisakura. **Distribution in Africa:** Ivory Coast, Annobón, São Tomé, Bioko, Cameroon, Rio Muni, DR Congo, Burundi, Ethiopia, Uganda, Kenya, Tanzania, Angola, Malawi. Also Comoros, Madagascar, Mauritius, Réunion.



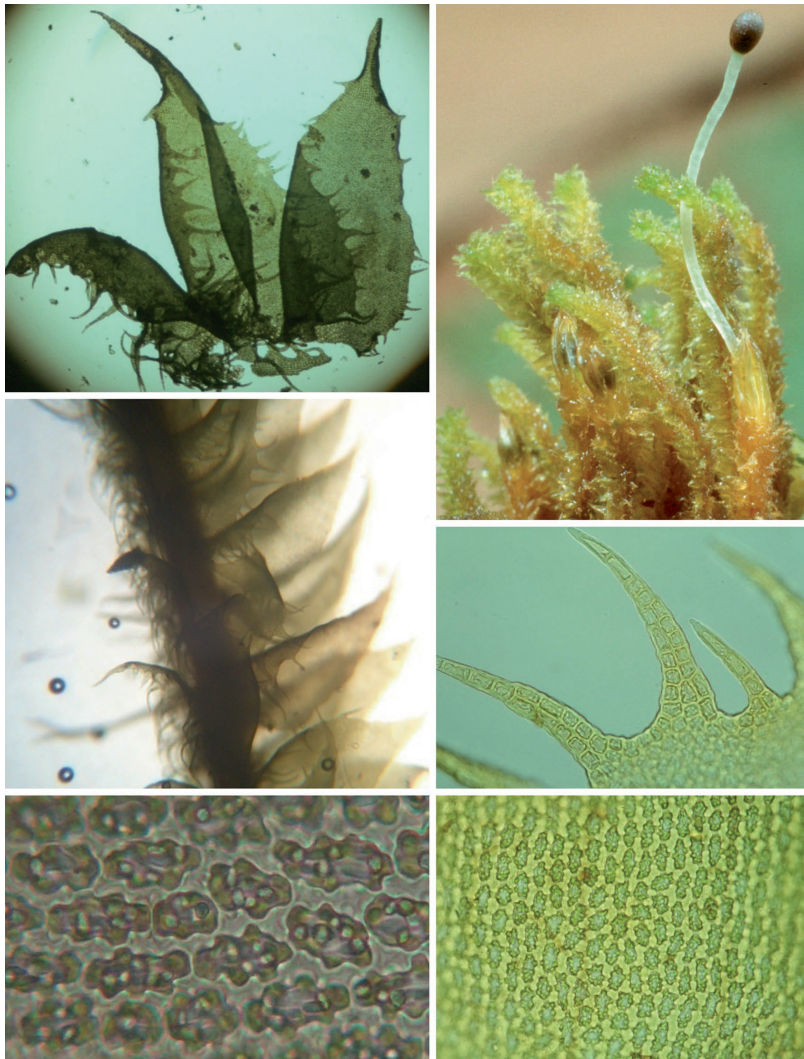




**Fig. 322. *Plicanthus giganteus* (Steph.) R.M.Schust.**

Synonyms: *Chandonanthus hirtellus* ssp. *giganteus* (Steph.) Vanden Berghen; *C. giganteus* Steph. Plants epiphytic or rupicolous, large, robust, yellowish-green to brown. Stems suberect to erect, up to 10-12 cm long, with paraphyllia. Leaves imbricate, transversely inserted, asymmetrically 3-lobed, to 3 mm long, margins long-ciliate near base, with 15-20 cilia on each margin, cilia about 180  $\mu$ m long. Cells with large, bulging trigones, 15-25  $\mu$ m in diameter towards apex, basal leaf cells elongate, 30-40 x 15-20  $\mu$ m. Underleaves as large as leaves, deeply 2-lobed, margin long-ciliate. **Habitat:** *Hagenia-Hypericum* forest (with mossballs on branches) and *Erica* forest, 3000 - 3500 m. **Distribution in Rwanda: Volcano NP:** Sabinyo, Karisimbi, in the saddle between Mt. Bisoke and Mt. Karisimbi, Karisimbi, SW of Susa river. **Distribution in Africa:** DR Congo, Ethiopia, Uganda, Kenya, Tanzania.

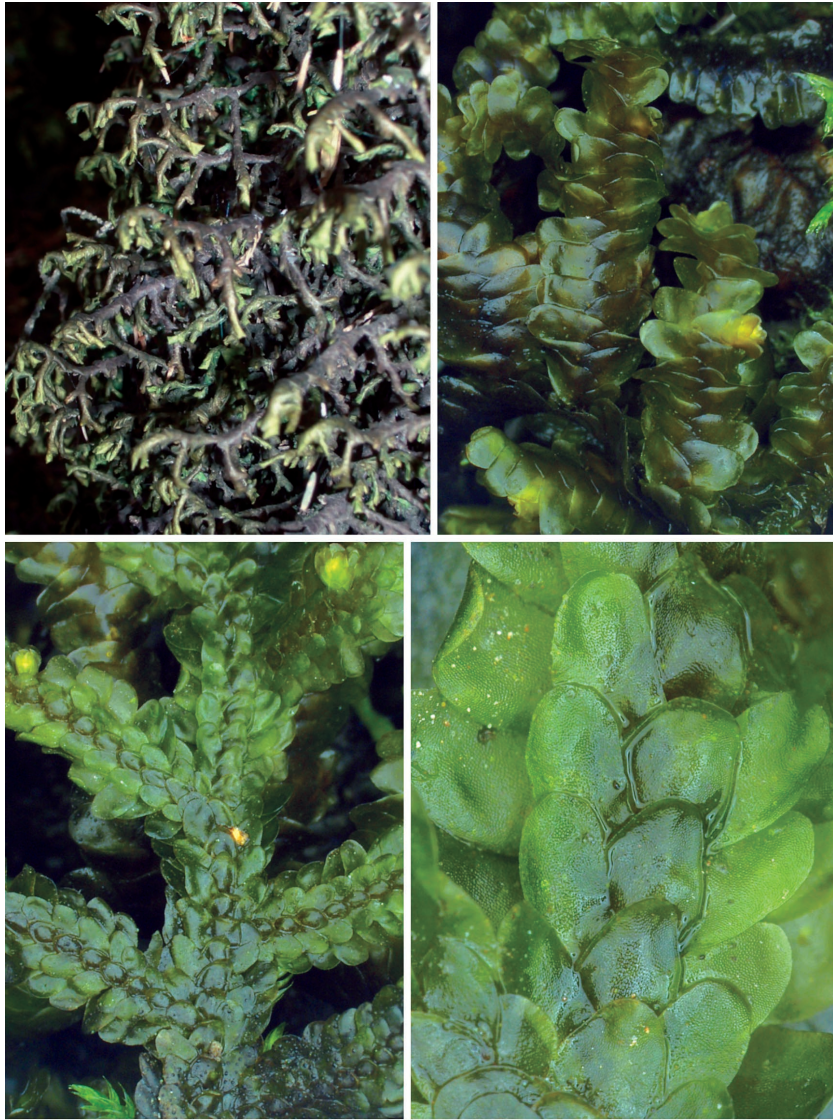




**Figs 323 and 324 (next page). *Plicanthus hirtellus* (F.Weber) R.M.Schust.**  
 Synonym: *Chandonanthus hirtellus* (F.Weber) Mitt. Plants epiphytic or rupicolous, small, brownish. Stems suberect to erect, about 2-4 cm long, paraphyllia absent. Leaves laxly imbricate, transversely inserted, asymmetrically 3-lobed almost to base, to 3 mm long, margins long-ciliate, up to 5-7 ciliae on each margin, cilia about 150  $\mu$ m long. Cells with large, bulging trigones, 18  $\mu$ m in diameter towards apex, mid leaf cells 15-20 x 10-15  $\mu$ m. Underleaves smaller than leaves, deeply 2-lobed, margin long-ciliate. **Habitat:** montane forest, rocky slopes in heath forest, 2000-2500 m, *Carapa grandiflora*-*Syzygium* swamp forest. **Distribution in Rwanda:** Nyungwe NP: Rwasenkoko, Karamba, along abandoned road to Burundi, Kamiranzovu, Gisakura. **Distribution in Africa:** Sierra Leone, São Tomé, Cameroon, DR Congo, Ethiopia, Uganda, Kenya, Tanzania, Zimbabwe, Malawi, South Africa. Also Comoros, Madagascar, Mauritius, Réunion, Seychelles.





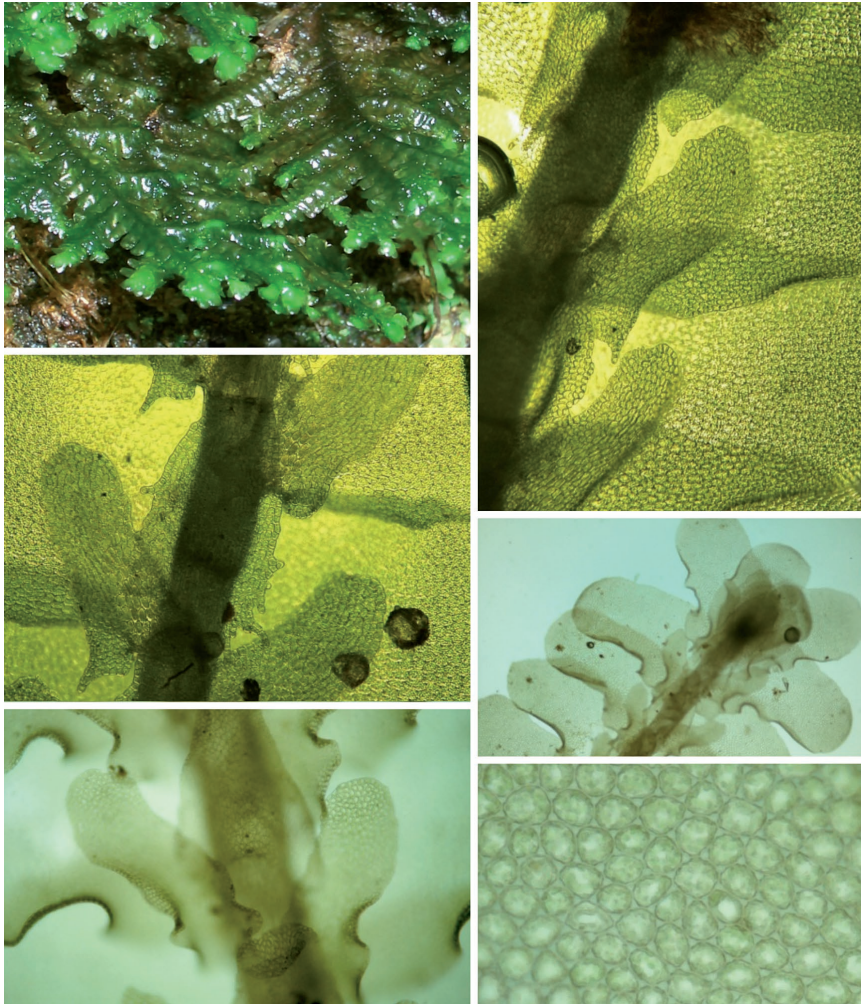


**Fig. 325. *Porella abyssinica* (Nees) Trev.**

Plants robust, olive-green to brown, prostrate or pendent, 3.6-4 mm wide. Stems pinnate to bipinnate, 5-6 cm long. Lobes convex, ovate to oblong, dorsally decurrent on stem, 1-1.4 x 1.8-2.5 mm, entire, rounded or truncate at apex, margins entire. Lobules oblong, wider than stem, 0.6-0.75 x 0.7-1.2 mm, auriculate and crispate to lacinate at base, apex entire. Cells with trigones, 20-25(-28) x 24-30(-35)  $\mu$ m. Underleaves 2-2.5 x the width of the stem large, longer than wide, undivided, 0.8-1.2 x 1-1.4 mm. Dioicous.

Perianths bluntly 3-keeled, mouth with large unequal teeth, 1.8-2 x 2.8-3 mm. **Habitat:** Epiphyte in montane forest, 2300 m. **Distribution in Rwanda: Gishwati Forest:** Gikungu.

**Distribution in Africa:** DR Congo, Ethiopia, Kenya, Tanzania.



**Figs 326 and 327 (next page).** *Porella subdentata* (Mitt.) Steph.

Plants robust, olive-green to brown, prostrate or pendent, 3-3.6 mm wide. Stems bipinnate, 3-8 cm long. Lobes convex, subtriangular to oblong, dorsally and ventrally decurrent on stem, 1-1.6 x 2-2.6 mm, entire, rounded or truncate at apex, margins entire.

Lobules oblong, wider than stem, 0.6-0.75 x 0.7-1.2 mm, auriculate and crispate to lacinate at base, apex irregularly dentate. Cells with trigones, 20-25(-28) x 24-30(-35)  $\mu$ m. Underleaves 1-1.6 x the width of the stem, large, longer than wide, undivided, 0.8-1.2 x 1-1.4 mm, margin irregularly dentate. Dioicous. Perianths bluntly 3-keeled, mouth with large unequal teeth, 1.8-2 x 2.8-3 mm. **Habitat:** A variable species growing in rain forests or gallery forests preferably as epiphyte or on rocks, 1400-1700 m. **Distribution in Rwanda: Volcano NP:** Ibhanga. **Akagera:** Akagera near Kagitumba. **Distribution in Africa:** Guinea, Ivory Coast, Ghana, Togo, Nigeria, Príncipe, São Tomé, Cameroon, Gabon, Central African Republic, Ethiopia, Uganda, Kenya, Tanzania, Angola, Malawi, Zimbabwe.





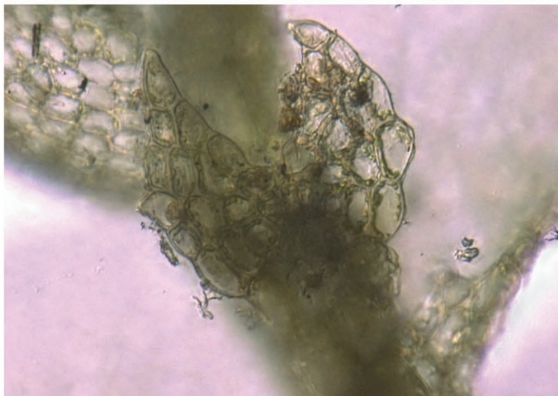
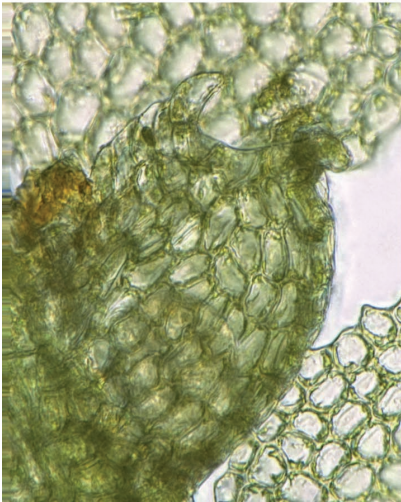
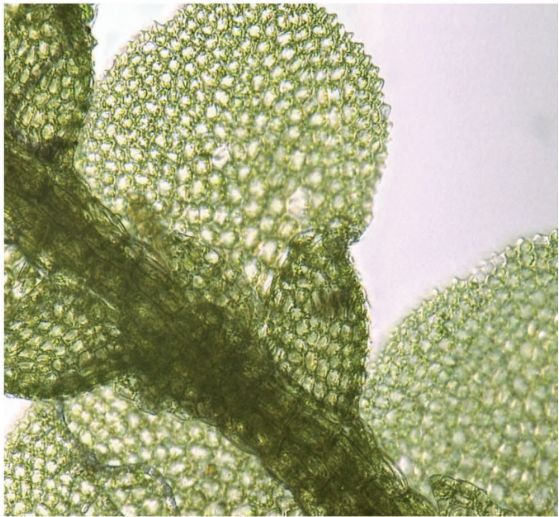
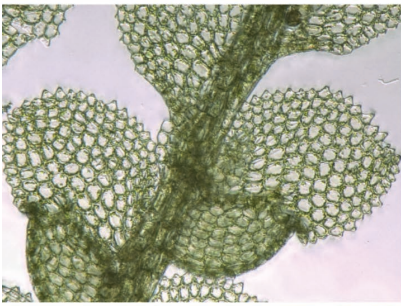
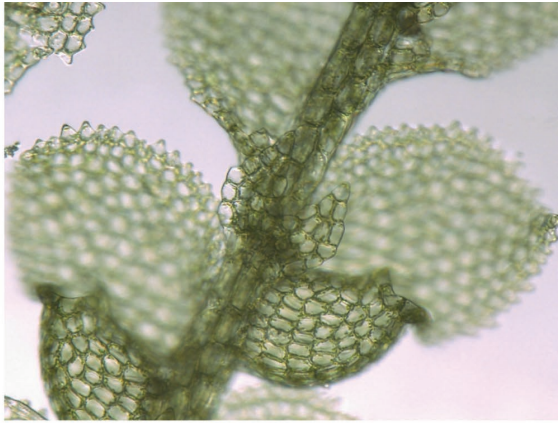
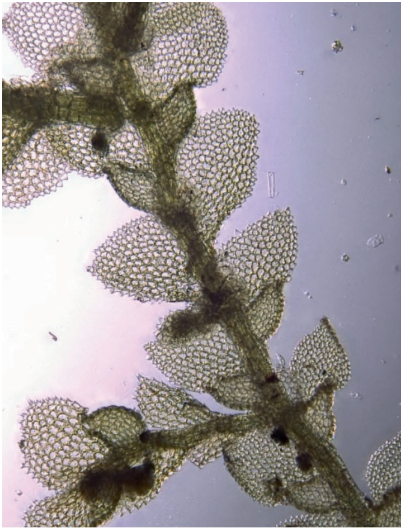




**Figs 328 and 329 (next page). *Prionolejeunea grata* (Gottsche) Schiffn.**

Synonym: *Prionolejeunea serrula* (Mitt.) Steph. Plants epiphytic to epiphyllous, pale-green to yellowish-green, 0.6-0.8 mm wide. Leaves alternate, 0.3-0.35 x 0.22-0.27 mm, dorsal base straight proximally, then arched across the stem, apex acute to acuminate, margins crenulate-denticulate with conically projecting cells, thickened by a papilla at apex. Lobules about 1/3 of lobe length, ovate-inflated, with a 1-celled tooth, hyaline papilla proximal, keel strongly arched. Cells with trigones and intermediate thickenings, 14-22 x 17-26  $\mu$ m. Underleaves small, 1.5-2 x stem width, deeply bifid with a broad sinus. Autoicous. Perianths flattened-pyriform, somewhat inflated ventrally, with 2 broad lateral keels, usually expanded above into short auricles, 0.6-0.8 x 0.4-0.5 mm. **Habitat:** Epiphytic or epiphyllous in montane forest, 1900-2000 m. **Distribution in Rwanda:** **Nyungwe NP:** Kamiranzovu, Gisakura. **Distribution in Africa:** Ivory Coast, Ghana, Nigeria, Annobon, Príncipe, São Tomé, Cameroon, Gabon, Rio Muni, DR Congo, tTanzania, Malawi, Zimbabwe. Also Comoros, Madagascar, Mauritius, Seychelles.



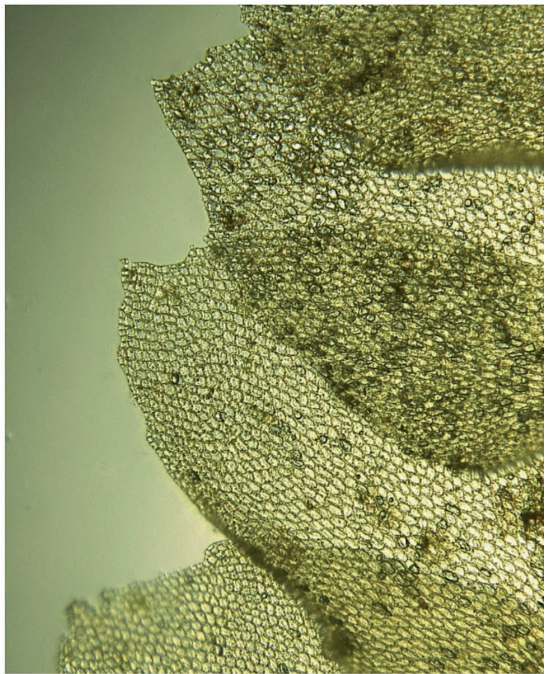
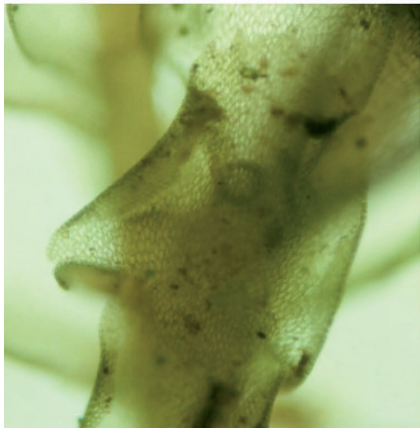
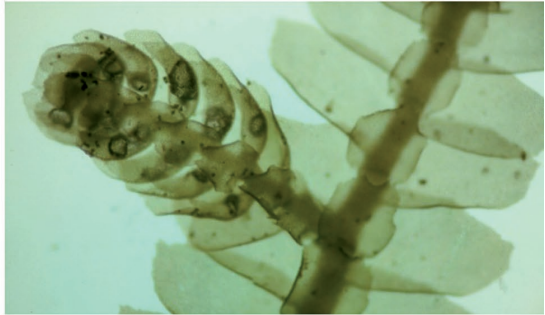
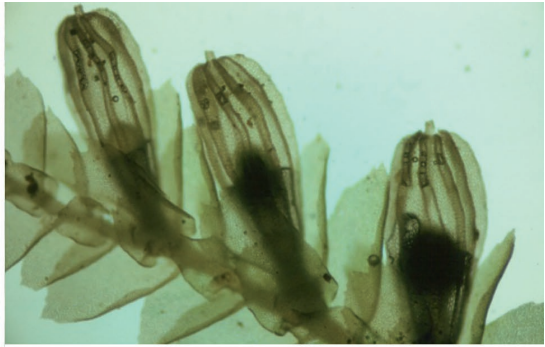


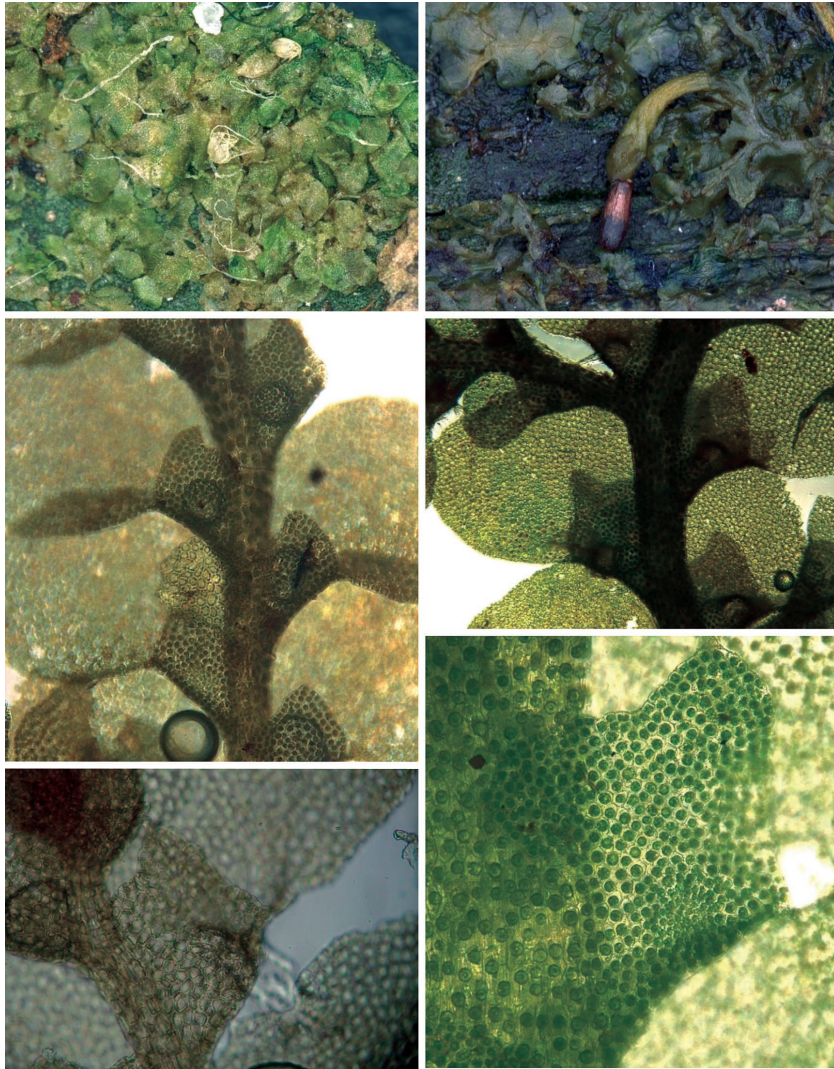


**Figs 330 and 331 (next page). *Ptychanthus africanus* Steph.**

Synonym: *Ptychanthus striatus* auct. non (Lehm. & Lindenb.) Nees. Plants dull green to brownish-green, robust, usually pendent or spreading-erect and resembling *Porella* or *Plagiochila*. Stems regularly pinnate or bipinnate, up to 18 cm long. Leaves alternate. Lobes usually coarsely dentate, acuminate, 1.7 x 1 mm. Lobules inflated, very small, only with one apical tooth. Cells with thickened walls, 20-24 x 25-30  $\mu$ m. Underleaves coarsely dentate, sometimes emarginate at apex, 2-4 x as wide as the stem. Autoicous. Perianths claviform-cylindric, inflated, striate with about 10 longitudinal keels, 1.2-1.7 x 0.6-0.8 mm. **Habitat:** Epiphytic or epiphyllous in montane forest, 1900-2100 m. **Distribution in Rwanda:** Gishwati Forest: Gishwati. **Nyungwe NP:** Cyamudongo Forest, Gisakura. **Distribution in Africa:** Guinea, Sierra Leone, Bioko, Cameroon, DR Congo, Burundi, Ethiopia, Uganda, Kenya, Tanzania, Malawi, Zambia, Zimbabwe, Mozambique, South Africa. Also Madagascar.







**Fig 332. *Radula ankefinensis* Gottsche ex Steph.**

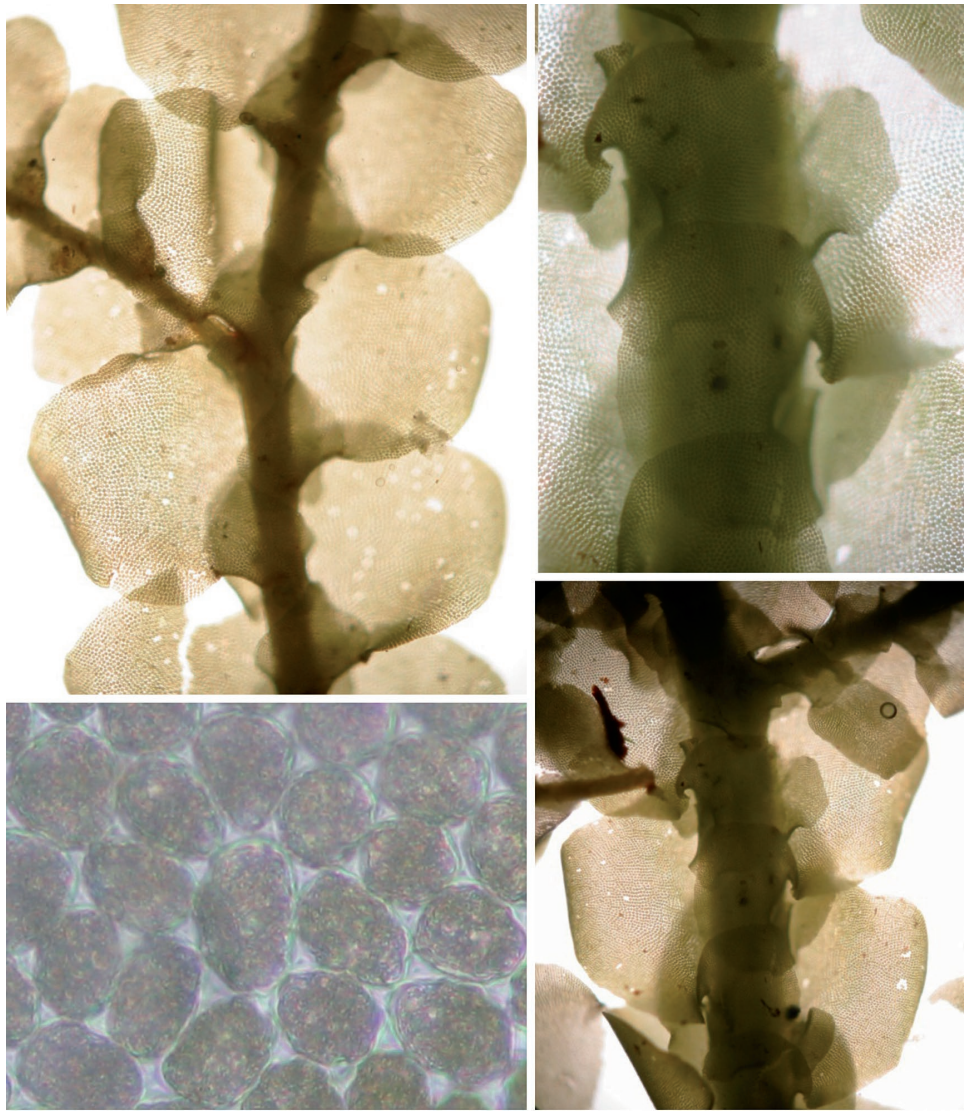
Synonym: *Radula holstiana* Steph. Plants small, light green, usually not more than 2 cm long, regularly pinnate, robust shoots 1.5-2.5 mm wide. Leaves approximate or slightly imbricate, ovate, base rounded and extending towards other side of stem but not crossing it, 0.9-1.2 x 0.6-0.9 mm, often caducous. Lobules small, occupying 0.35-0.45 the width of the shoot, keel nearly straight, usually slightly concave, forming an angle of 45-80° with the stem, slightly wider than long, apex rectangular or extended slightly into a blunt beak. Cells with thin walls and usually with minute trigones. Monoicous. Perianth narrowly conical, 0.7-0.8 x 2-3 mm, compressed in upper third. **Habitat:** Montane forest, 2000-2500 m. **Distribution in Rwanda:** Nyungwe NP: Rwasenkoko, Karamba. **Distribution in Africa:** Bioko, Cameroon, Burundi, Ethiopia, Uganda, Kenya, Tanzania, Malawi, Swaziland, South Africa. Also Madagascar, Mauritius, Réunion.



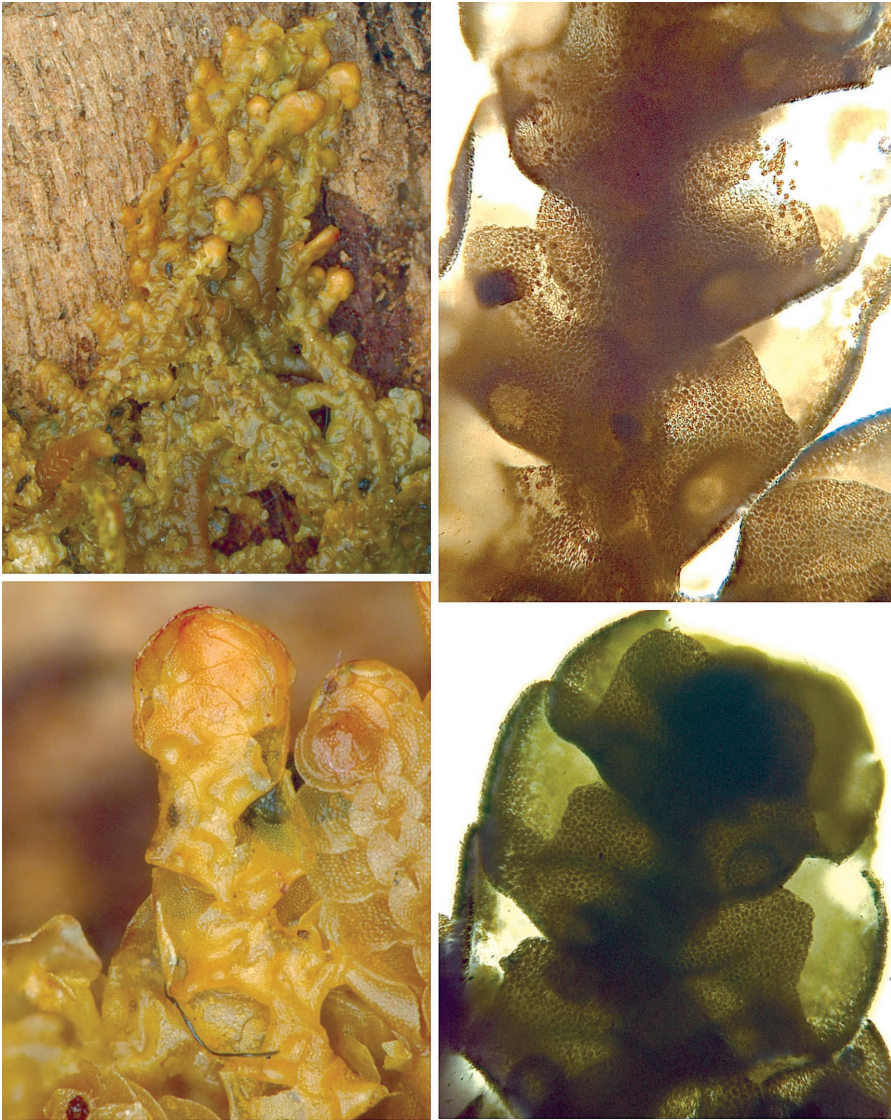


**Figs 333 and 334 (next page).** *Radula boryana* (Web.) Nees ex Mont.

Plants dark olive-green or brown, with glossy dark brown stems, up to 10 cm long, bipinnate, shoots 2.5-3 mm wide. Leaves approximate or distant, base of the lobe usually crossing the stem. Lobule relatively small, the base occupying 1/5 to 1/3 the width of the shoot, in robust forms extending across the stem into a large volute auricle, keel very short, straight or concave, forming an angle of 60-90° with the stem. Cells with nodular trigones. Dioicous. Perianth second, broadly oblong-conical, compressed, up to 2.5-2.8 mm long. **Habitat:** Montane *Carapa grandiflora*-*Syzygium* swamp forest, 2000 m. **Distribution in Rwanda:** Nyungwe NP: Karamba, Kamiranzovu, Gisakura. **Distribution in Africa:** Ghana, Togo, Annobón, São Tomé, Príncipe, Bioko, Cameroon, Rio Muni, DR Congo, Uganda, Kenya, Tanzania, Malawi, Zimbabwe, South Africa. Also Comoros, Madagascar, Mauritius, Réunion.

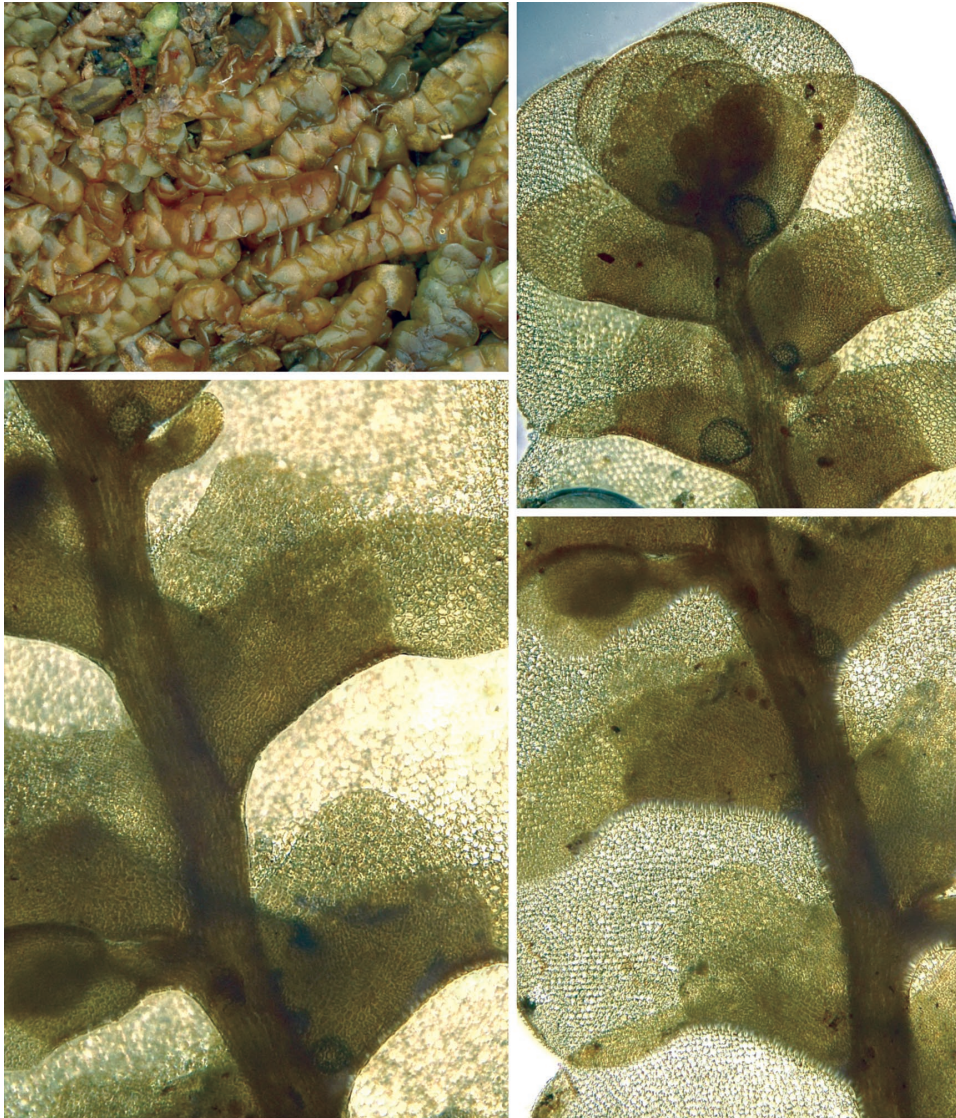






**Fig. 335. *Radula comorensis* Steph.**

Plants light green, sparsely branched, shoots 1.5-1.8 mm wide. Leaves ovate, distant approximate or moderately imbricate, not or only slightly crossing the stem, 0.9 x 0.64 mm, keel concave or straight, forming an angle of 45-60°. Lobule rather small, the base occupying 1/3 to 2/5 of the width of the shoot, slightly ampliate but rarely reaching the other side of the stem, apex rectangular to acute. Cells without trigones or minute trigones present. Dioicous. Perianth narrowly conical, up to 2.5-3 mm long. **Habitat:** Montane rainforest, 2300 m. **Distribution in Rwanda:** Nyungwe NP: Uwinka. **Distribution in Africa:** DR Congo, Socotra, Uganda, Malawi, Lesotho. Also Comoros, Madagascar, Mauritius, Réunion.



**Fig. 336. *Radula evelynae* Yamada**

Plants brownish-green, irregularly pinnately branched, shoots 1.5-2 mm wide. Leaves complanate, approximate or moderately imbricate, 0.86-1.15 x 0.64-0.8 mm. Lobule a little longer than wide, with a long insertion, the base occupying 1/3 of the width, not or only slightly ampliate and not or only slightly crossing the midline of stem, keel nearly straight, forming an angle of 40-60°. Cells without trigones or minute trigones present. Dioicous.

Perianth compressed, up to 3 mm long. **Habitat:** Epiphyte in montane rainforest, 2400 m. **Distribution in Rwanda:** Nyungwe NP: Uwinka. **Distribution in Africa:** DR Congo, Kenya, Tanzania. Also Réunion.