

Fig. 78. *Cheilolejeunea cordistipula* (Steph.) Grolle ex E.W.Jones

Plants pale green, appressed to slightly pendent, shoots 0.8-1.5 mm wide. Leaves imbricate, lobes ovate, strongly convex, 0.57-0.87 x 0.35-0.45 mm, apex narrow, rounded to acute, strongly decurved. Lobule large, triangular-ovate, inflated proximally, 0.28-0.46 mm long, 0.5-0.6 as long as the lobes, distal free margin flattened, apical tooth 1-2(-3) celled. Cells with very large trigones, 18-30 x 13-24 μ m. Underleaves 0.2-0.4 x 0.2-0.6 mm, usually wider than long, 3-5 x as wide as stem, rounded to obcordate, apex 2-lobed to 1/4 of their length. Autoicous. Perianth exserted, 0.8-1.3 x 0.3-0.8 mm, keels 5-10, rostrum 41-105 μ m long. **Habitat:** Epiphyte in montane forest, 2500-3000 m. **Distribution in Rwanda: Volcano NP:** Karisimbi, between Karisimbi and Bisoke. **Nyungwe NP:** Rwasekoko. **Distribution in Africa:** DR Congo, Ethiopia, Uganda, Kenya, Tanzania, Malawi.

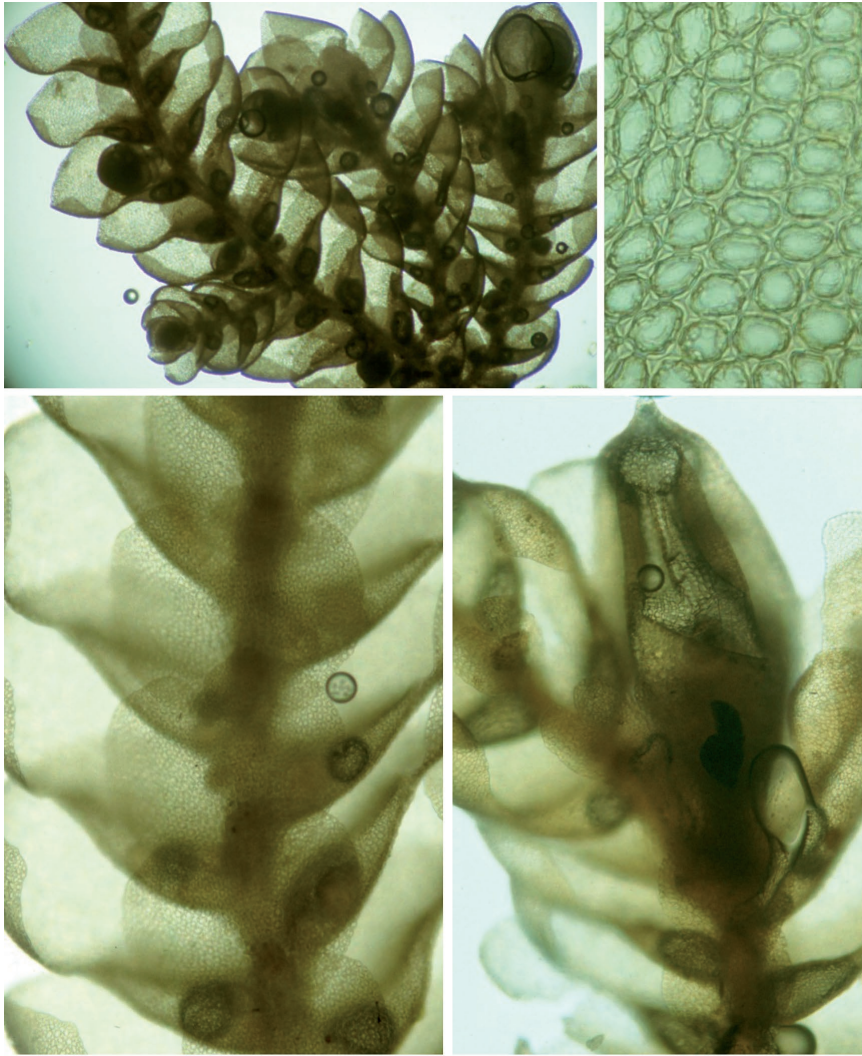


Fig. 79. *Cheilolejeunea krakammae* (Lindenb.) R.M.Schust.

Synonym: *Strepsilejeunea brevifissa* (Lindenb.) Steph. Plants yellowish green, shoots 0.6-1.25 mm wide. Leaves imbricate, lobes ovate, weakly to strongly convex, falcate, 0.42-0.7 mm long, apex subacute to sharply acute, recurved. Lobule ovate, inflated, 0.14-0.25 mm long, 1/5-2/5(-1/2) as long as the lobes, lateral free margin strongly incurved, keel arched, apical tooth 1(2-4) celled. Cells with small trigones, 17-28 x 11-19 μ m. Underleaves 0.17-0.36 x 0.17-0.43 mm, usually slightly wider than long, 2-4 x as wide as stem. Autoicous.

Perianth exserted, 0.47-0.86 x 0.3-0.58 mm, keels 3(4-5), rostrum 30-94 μ m long.

Habitat: Epiphyte in montane forest, 2000-3000 m. **Distribution in Rwanda:** Volcano NP: Karisimbi. **Nyungwe NP:** Kamiranzovu, Rwasenkoko, Uwinka. **Distribution in Africa:** DR Congo, Burundi, Ethiopia, Uganda, Kenya, Tanzania, Zimbabwe, South Africa. Also Comoros, Madagascar, Mauritius, Réunion.

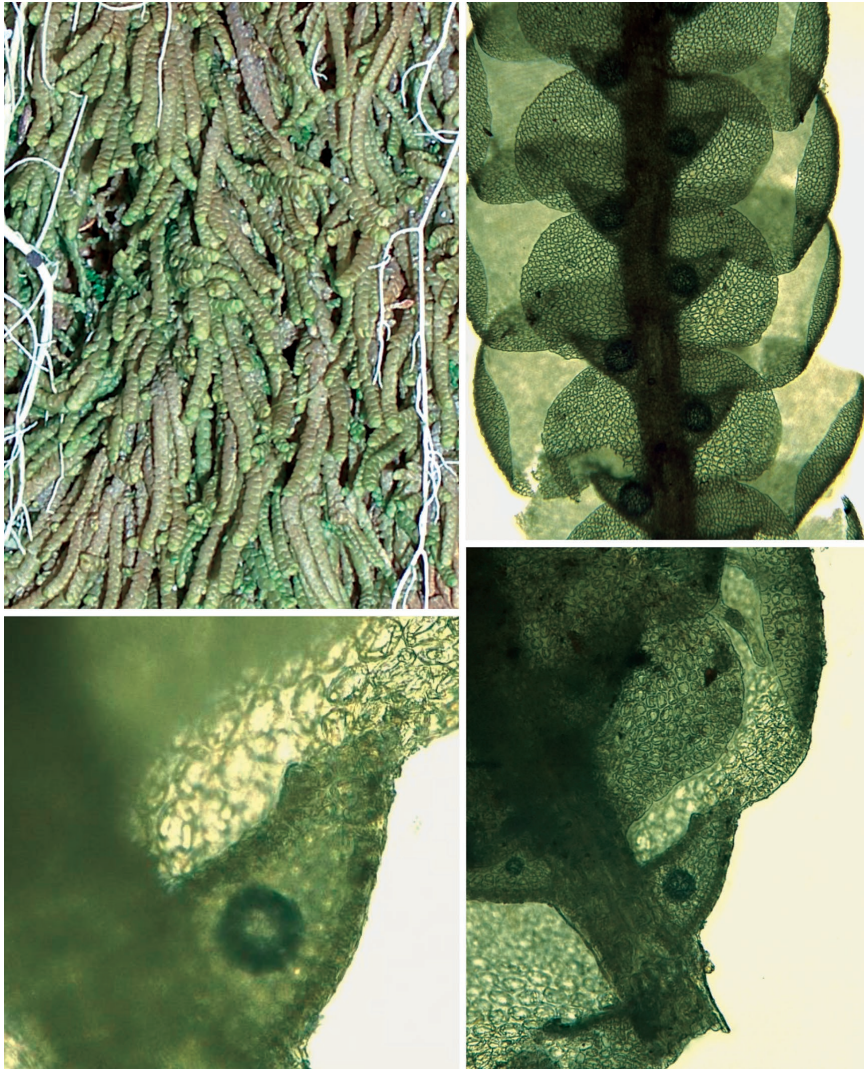


Fig. 80. *Cheilolejeunea montagnei* (Gottsche) R.M.Schust.

Plants pale green to glossy greenish-brown, 2-3(-7) cm long and 0.8-1.2 mm wide. Leaves imbricate, lobes broadly ovate, strongly convex with the rounded apices recurved, about 0.6-0.8 x 0.45-0.6 mm, dorsal base widely crossing stem. Lobules small, triangular, strongly inflated, 0.18-0.34 mm long, about 1/3-2/5(-1/2) of lobe length, the free margin incurved, with apical tooth 1(-4)-celled. Cells 20-26 x 16-22 μ m, trigones large, often irregularly nodulose. Underleaves reniform, wider than long, about 0.38-0.6 x 0.4-0.7 mm, 3.5-5.4 x as wide as the stem, the base broadly cuneate, the apex entire, rounded to very shallowly retuse. Dioicous. Perianths not observed in material from Rwanda. **Habitat:** Epiphyte in montane forest and ericaceous shrub, 2000-2500 m. **Distribution in Rwanda:** Nyungwe NP: Rwasekoko, Kamiranzovu, Karamba. **Distribution in Africa:** São Tomé, Bioko, DR Congo, Kenya, Tanzania. Also Comoros, Madagascar, Mauritius, Réunion.

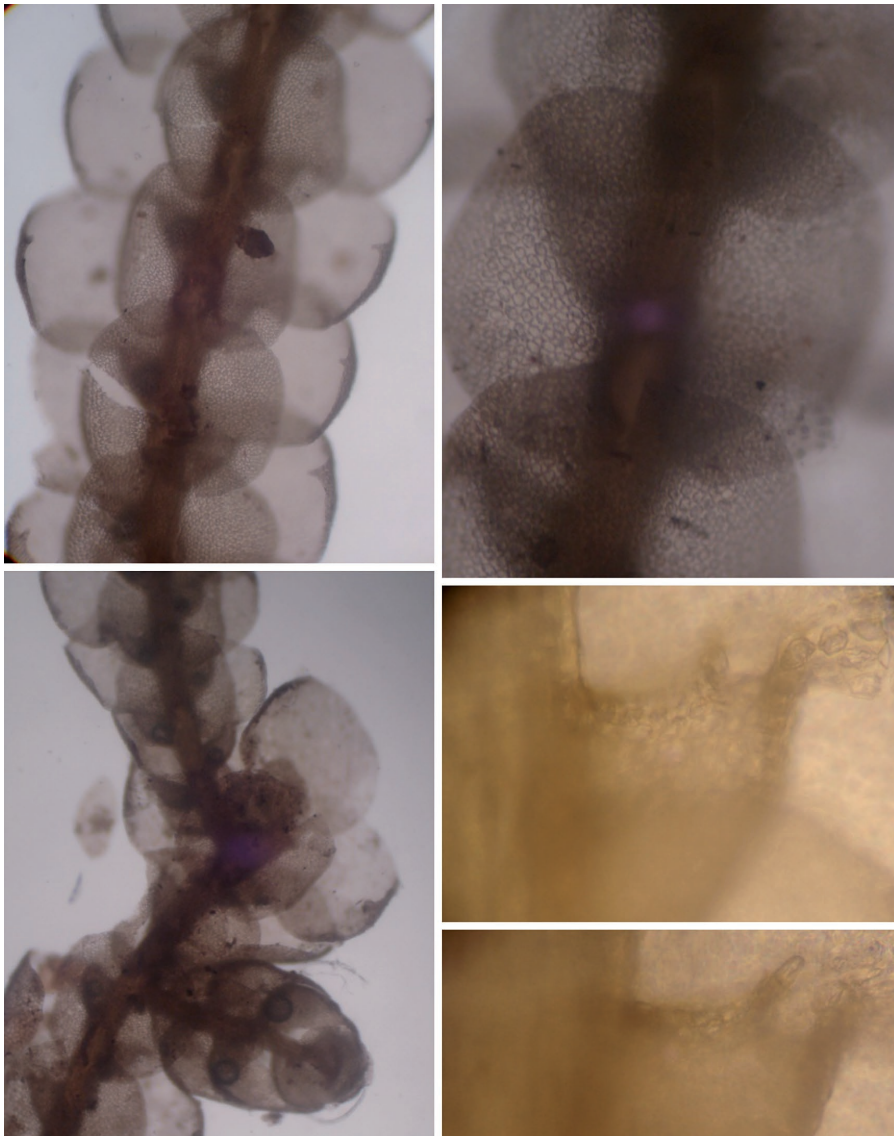


Fig. 81. *Cheilolejeunea omphalogastris* Pócs

Plants pale green, pendent on twigs, shoots 0.9 mm wide. Leaves approximate, lobes ovate, strongly convex, 0.6-0.65 x 0.4-0.5 mm, apex subacute. Lobule small, triangular, entirely inflated, 0.17-0.2 mm long, 0.3 as long as the lobes, apical tooth 1-3 celled. Cells with very large trigones, occasionally nodulose, 8-26 x 8-19 μ m. Underleaves large, 0.48-0.53 x 0.47-0.6 mm, wider than long, 5-6 x as wide as stem, orbicular, apex 2-lobed to 1/5- 1/4 of their length, sinus V-shaped, base cordate, with overlapping auricles. Dioicous.

Perianth unknown. **Habitat:** Pendent on small branches in the canopy of montane rainforest, 2000 m. **Distribution in Rwanda:** Nyungwe NP: Gisakura.

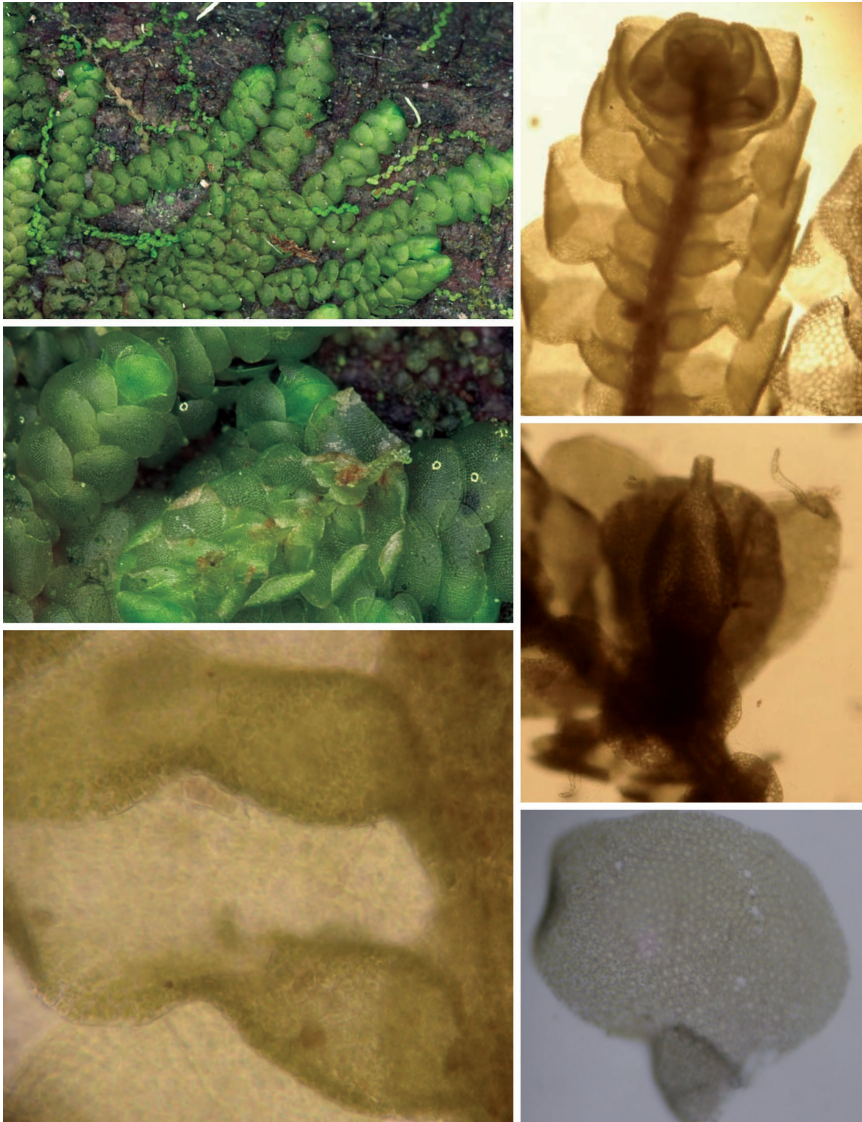


Fig. 82. *Cheilolejeunea pocsii* E.W.Jones

Plants yellowish green, shoots 0.7-1 mm wide. Leaves usually caducous, lobes ovate, strongly convex, 0.41-0.64 mm long, apex obtuse to subacute, strongly decurved. Lobule ovate, inflated proximally, contracted distally, 0.16-0.3 mm long, $(1/3-2/5-1/2)$ as long as the lobes, apical tooth 1-celled. Cells with very large trigones, nodulose, 20-24 x 14-17 μ m. Underleaves 0.17-0.34 x 0.17-0.39 mm, usually wider than long, 1.8-4 x as wide as stem, sinus V-shaped. Dioicous or autoicous. Perianth exserted, pyriform, 0.7-0.85 x 0.45-0.49 mm, keels 3, rostrum 41-58 μ m long. **Habitat:** Epiphyte in montane forest, 2000 m. **Distribution in Rwanda: Nyungwe NP:** Gisakura. **Distribution in Africa:** Uganda, Kenya, Tanzania, Malawi, South Africa. Also Madagascar.

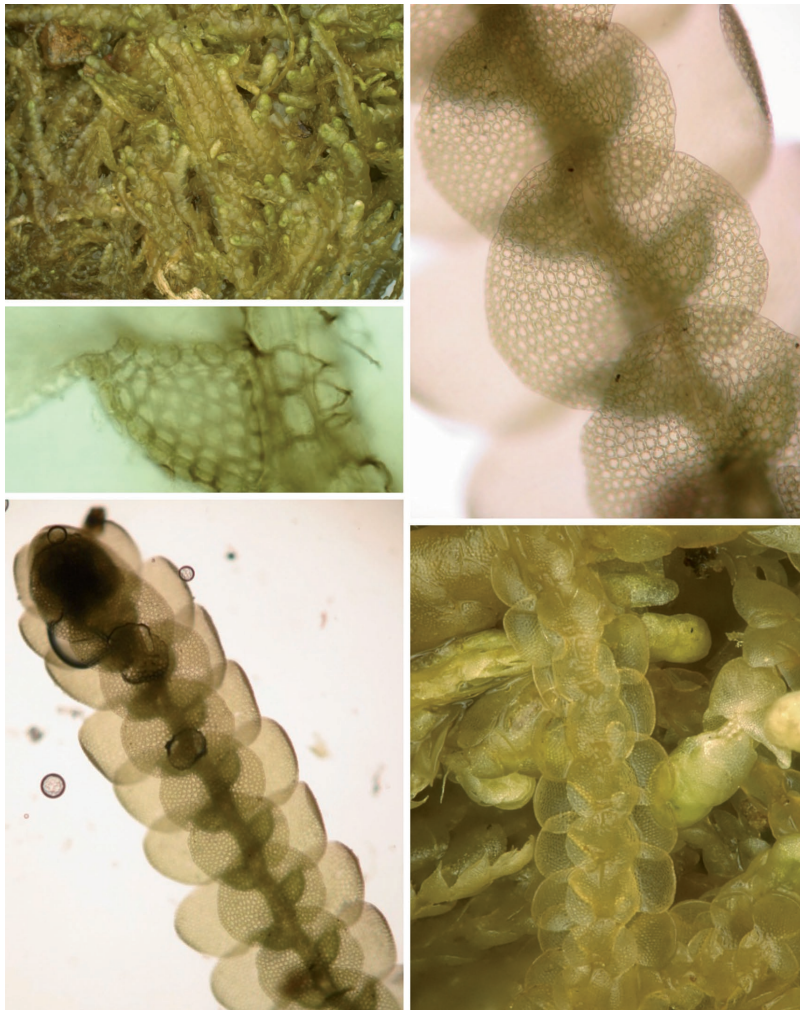
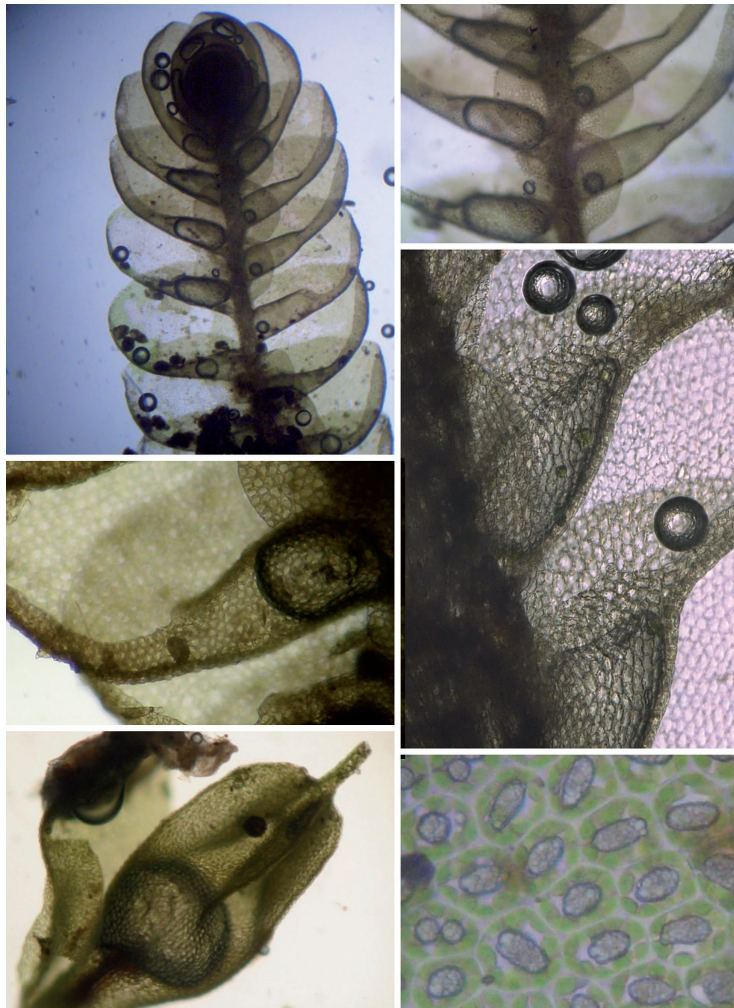
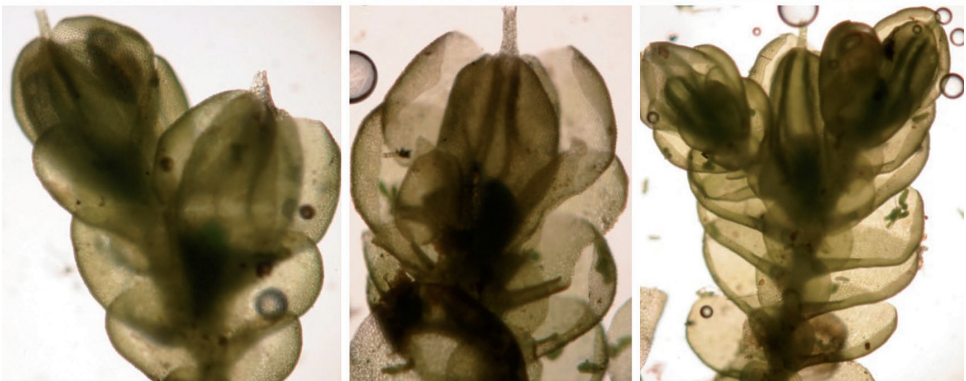


Fig. 83. *Cheilolejeunea trifaria* (Reinw. *et al.*) Mizutani

Plants epiphytic, green, up to 0.7-0.9(-1.0) mm wide. Leaves alternate, imbricate, moderately convex and deflexed or nearly flat. Lobes 0.45-0.7 x 0.45-0.55 mm, the dorsal base broadly rounded, often crossing the stem, rounded at apex. margins entire. Lobules inflated, triangular-quadrate, narrowed to the mouth, about 0.2-0.25 of lobe length, the keel strongly arched and forming an angle of about 90° with the arched ventral margin, with apical tooth straight, 1-celled, the cell short and obtuse. Cells in mid-lobe 15-22 x 20-30 μ m. Underleaves ovate, wider than long, nearly as wide as the lobes, 0.4-0.65 x 0.35-0.5 mm, bilobed to 0.25-0.35 of their length, the sinus narrow, the base cordate, the insertion strongly arched. Autoicous. Perianths exserted from the bracts, with 5 smooth keels. **Habitat:** Epiphyte in montane forest, 2000m. **Distribution in Rwanda:** Nyungwe NP: Gisakura. **Distribution in Africa:** Sierra Leone, Ghana, Togo, São Tomé, Bioko, Cameroon, Central African Republic, Gabon, DR Congo, Uganda, Malawi, Zimbabwe. Also Madagascar, Mauritius, Réunion, Rodriguez, Seychelles.

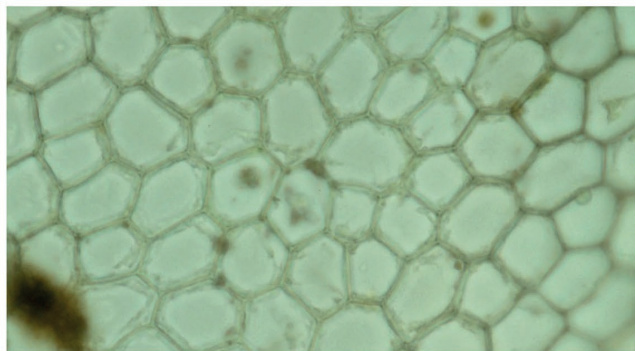
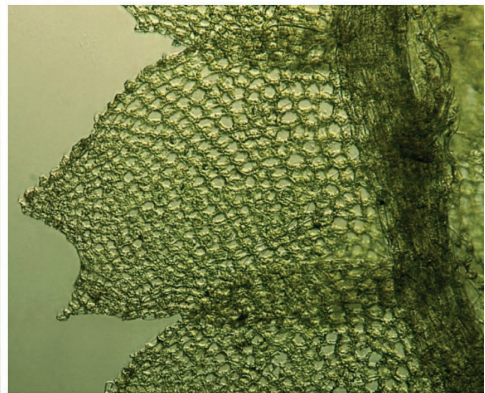
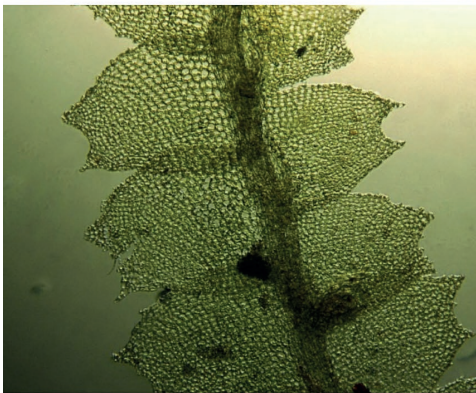


Figs 84 and 85 (next page). *Cheilolejeunea xanthocarpa* (Lehm. & Lindenb.) Malombe
 Synonym: *Leucolejeunea xanthocarpa* (Lehm. & Lindenb.) A.Evans. Plants pale glaucous
 to light green, shoots 0.9-1.8 mm wide. Leaves imbricate, lobes ovate, convex, 0.6-1
 x0.46-0.85 mm, apex rounded, together with ventral margin strongly involute. Lobule
 oblong to rectangular or ovoid, inflated, 0.3-0.5 mm long, 2/5-1/2 as long as the lobes,
 lateral free margin involute, apical tooth 1-celled. Cells with very large trigones, 18-24
 x 18-24 μ m, oil bodies 1 per cell. Underleaves reniform, wider than long, 4-6 x as wide
 as stem, apex entire, base cordate. Autoicous. Perianth obovate, emergent, 0.8-1.3 x
 0.3-0.8 mm, keels 5, rostrum 104-198 μ m long. **Habitat:** Epiphyte in montane rainforest,
 2000-2500 m. **Distribution in Rwanda:** Gishwati Forest: Gikungu. **Nyungwe NP:**
 Rwasekoko, Karamba, Uwinka; Gisakura. **Distribution in Africa:** Bioko, DR Congo,
 Ethiopia, Uganda, Kenya, Tanzania, Zimbabwe, Mozambique, South Africa. Also Cape
 Verde, St. Helena, Comoros, Madagascar, Réunion. Almost pantropical.



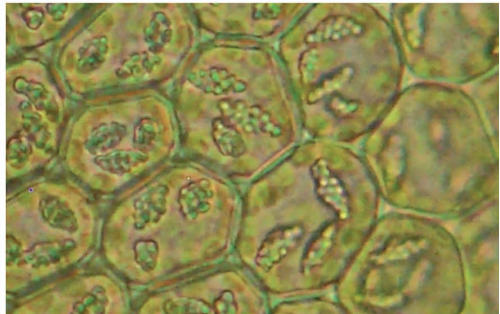
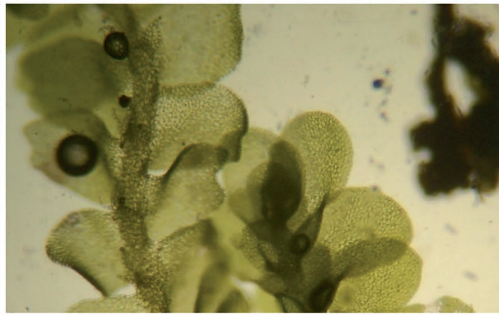
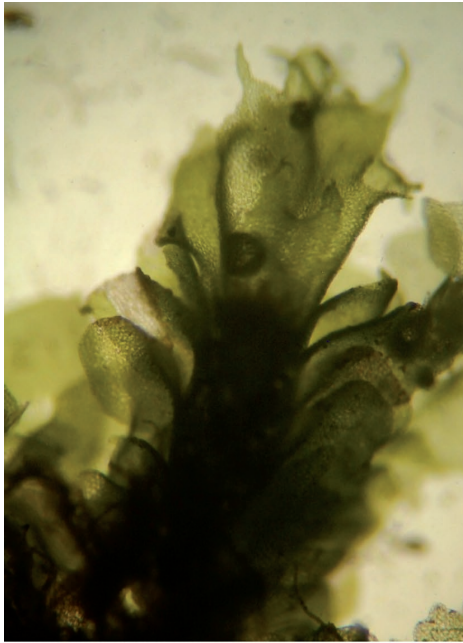


Figs 86 and 87 (next page). *Chiloscypus coadunatus* (Sw.) J.J.Engel & R.M.Schust. Synonyms: *Chiloscypus cuspidatus* (Nees) Engel & R.M.Schust.; *Lophocolea bidentata* (L.) Dumort.; *L. cuspidata* (Nees) Limpr. Plants large, yellowish-green or green, shoots 2-4 mm wide. Leaves asymmetric, 1-2 mm long, alternate, dorsal margin decurrent, deeply bilobed at apex, the lobes longly acuminate, acumen up to 8 cells long. Cells thin-walled, 25-45 μ m wide, trigones minute or absent. Underleaves bilobed, not connate with leaf base, with tooth on either side. Autoicous. Perianths longly emergent, trigonous above, keels winged, wings often with apical tooth, mouth wide, trilobed, lobes laciniate. **Habitat:** From gallery forest to montane forest and alpine habitats, ground, on buttresses of large trees, as epiphyte on bamboo and giant groundsels as well as on rocks, peat and rotten wood from 1300 to 3400 m. **Distribution in Rwanda:** **Volcano NP:** Karisimbi, Bisoke, Gahinga. **Gishwati Forest:** Gikungu. **Central Rwanda:** Butare. **Nyungwe NP:** Rwasenkoko, waterfall ca. 3 km E of Pindura, Gisakura, Karamba, Pindura-Bweyeye, Mt. Bigugu, Mt. Muzimu. **Akagera:** Ibanda-Makera. **Distribution in Africa:** Cape Verde, Annobon, Bioko, Cameroon, DR Congo, Burundi, Ethiopia, Uganda, Kenya, Tanzania, Malawi, South Africa. Also in the Northern Hemisphere, Madagascar, Mauritius, Réunion. **Note:** The most frequent species of *Chiloscypus* in Africa.



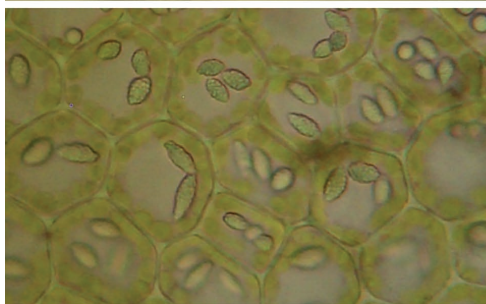
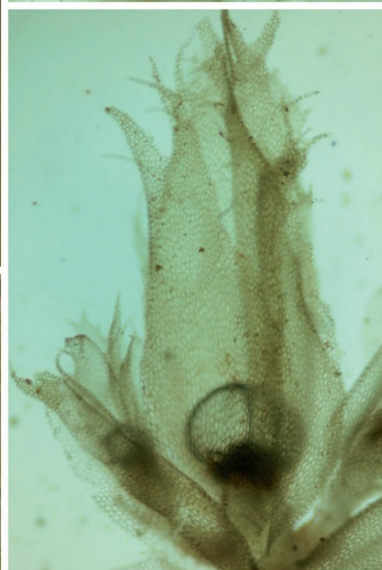
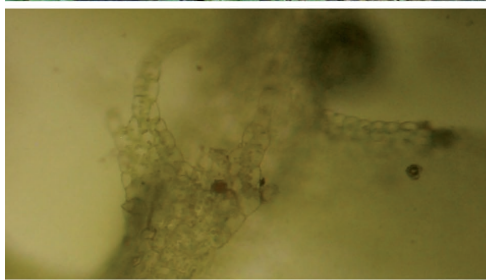
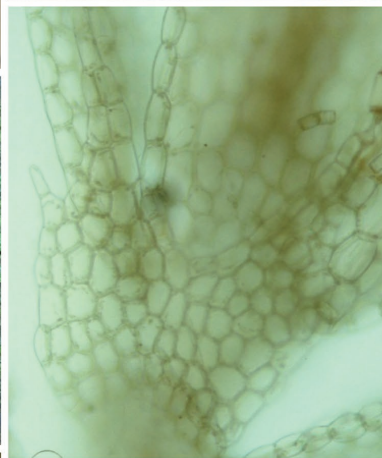
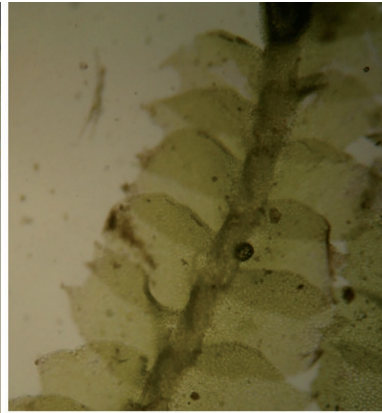
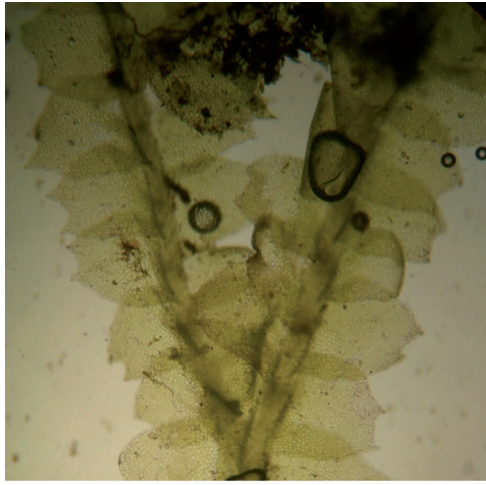


Figs 88 and 89 (next page). *Chiloscypus concretus* (Mont.) J.J.Engel & R.M.Schust. Synonym: *Lophocolea concreta* Mont. Plants medium-sized to small, yellowish-green, shoots 1.4-2.2 mm wide. Leaves asymmetric, ovate or oblong, scarcely contracted at base, 0.6-1 mm long, rounded or truncate to retuse at apex, rarely weakly bilobed. Cells thin-walled, 20-25(-30) μm wide, trigones usually distinct. Underleaves bilobed, not connate with leaf base, with coarse tooth on either side. Paroicous to autoicous. Perianths obconical, deeply lobed and lacinate. **Habitat:** In montane forest and plantations on soil and rotten wood, 1750-2100 m. **Distribution in Rwanda:** Nyungwe NP: Uwinka. **Central Rwanda:** Butare, Arboretum Ruhande. **Distribution in Africa:** Sierra Leone, Ghana, Togo, Nigeria, Annobon, DR Congo, Burundi, Kenya, Tanzania, Zambia, Zimbabwe, Malawi, Swaziland, South Africa. Also Madagascar, Mauritius, Réunion, Rodriguez.



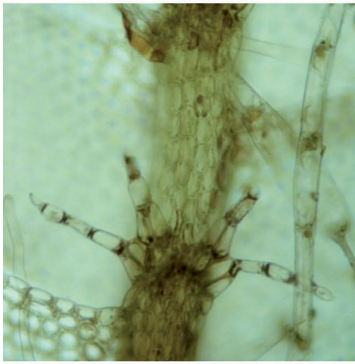
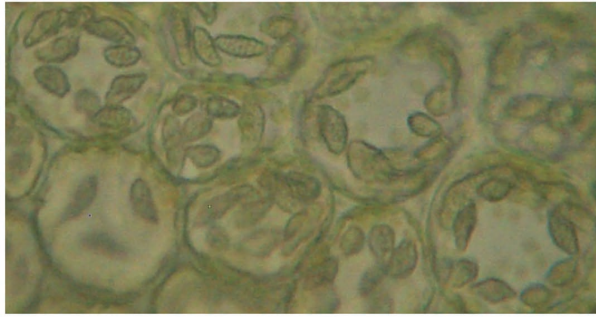
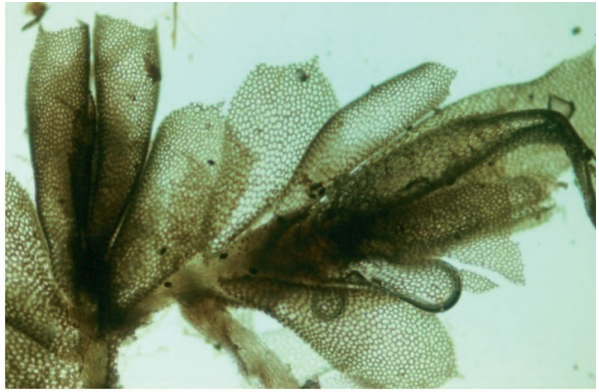


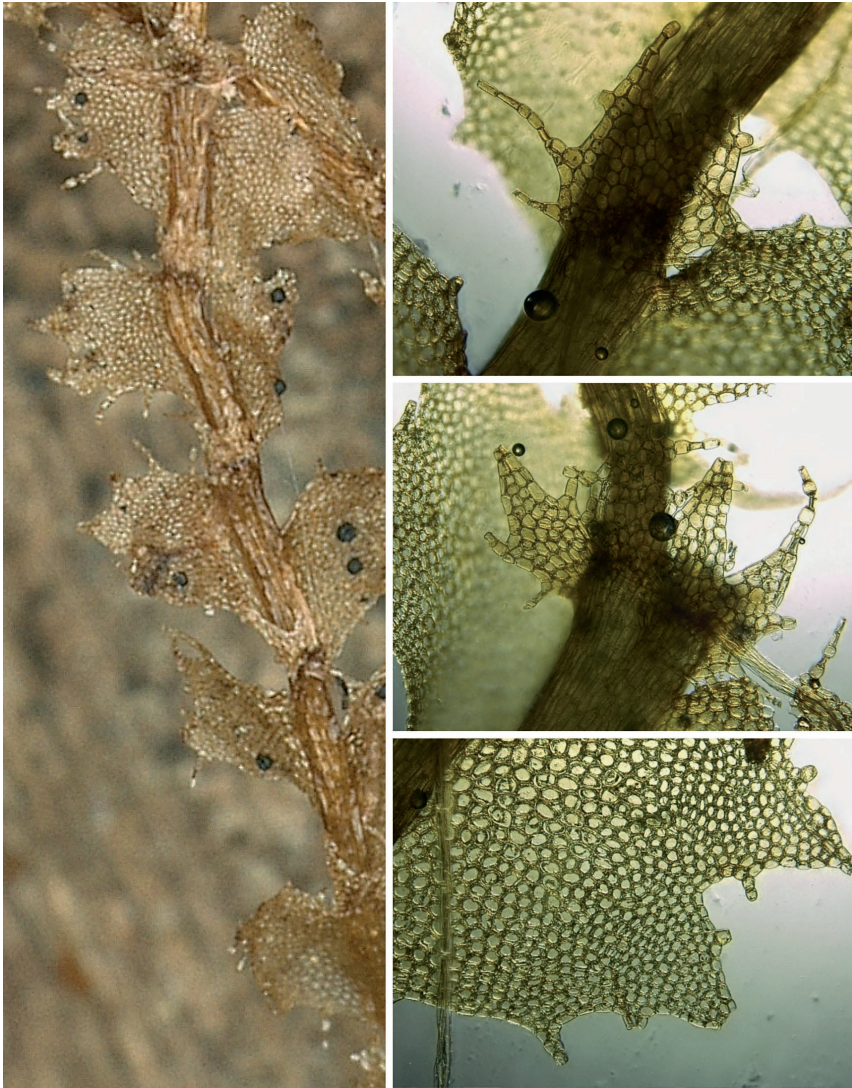
Figs 90 and 91 (next page). *Chiloscypus difformis* (Nees) J.J.Engel & R.M.Schust. Synonym: *Lophocolea difformis* Nees in Gottsche, Lindenb. & Nees. Plants medium-sized to small, yellowish-green or green, shoots 1.5-2 mm wide. Leaves short and wide, 0.8-1 x 0.8-1 mm, alternate, shortly bilobed at apex, the lobes shortly and widely pointed, acumen lacking or up to 1-3 cells long, dorsal margin decurrent. Cells thin-walled, 25-34 μm wide, trigones present or absent. Underleaves bilobed, not connate with leaf base, lobes broad, lanceolate, with tooth on either side. Dioicous. **Habitat:** On rotten wood and occasionally as epiphyte on the bark of *Agauria salicifolia*, 1750-2100 m. **Distribution in Rwanda:** **Nyungwe NP:** Karamba, Kamiranzovu, Uwinka. **Central Rwanda:** Butare. **Distribution in Africa:** Sierra Leone, Ghana, Togo, Nigeria, São Tomé, Bioko, Cameroon, Central African Republic, DR Congo, Ethiopia, Uganda, Kenya, Tanzania, Zimbabwe, Malawi, South Africa. Also Madagascar, Mauritius, Réunion.





Figs 92 and 93 (next page). *Chiloscypus martianus* (Nees) J.J.Engel & R.M.Schust. Synonyms: *Lophocolea martiana* Nees; *L. congoana* Steph. Plants medium-sized to large, shoots 2.5-3.5 mm wide. Leaves subsymmetric, trapezoid, 1-1.5 mm long, alternate, dorsal base shortly decurrent, truncate at apex, 2-lobed, the lobes shortly acuminate. Cells thin-walled, 30-45 μm wide, trigones absent. Underleaves bilobed, narrowly connate with leaf base, with tooth on either side. Autoicous. Perianths longly emergent, trigonous above, keels winged, mouth wide, trilobed, lobes lacinate. **Habitat:** On vertical rock, decaying wood and on ground in montane rainforest, 1800-2100 m. **Distribution in Rwanda: Nyungwe NP:** Kamiranzovu, Uwinka. **Distribution in Africa:** Sierra Leone, Ivory Coast, Ghana, Togo, Nigeria, Principe, Bioko, Cameroon, Gabon, Rio Muni, Central African Republic, Congo-Brazzaville, DR Congo, Burundi, Tanzania, Zimbabwe, Swaziland, South Africa. Also Madagascar, Mauritius, Réunion, Seychelles.



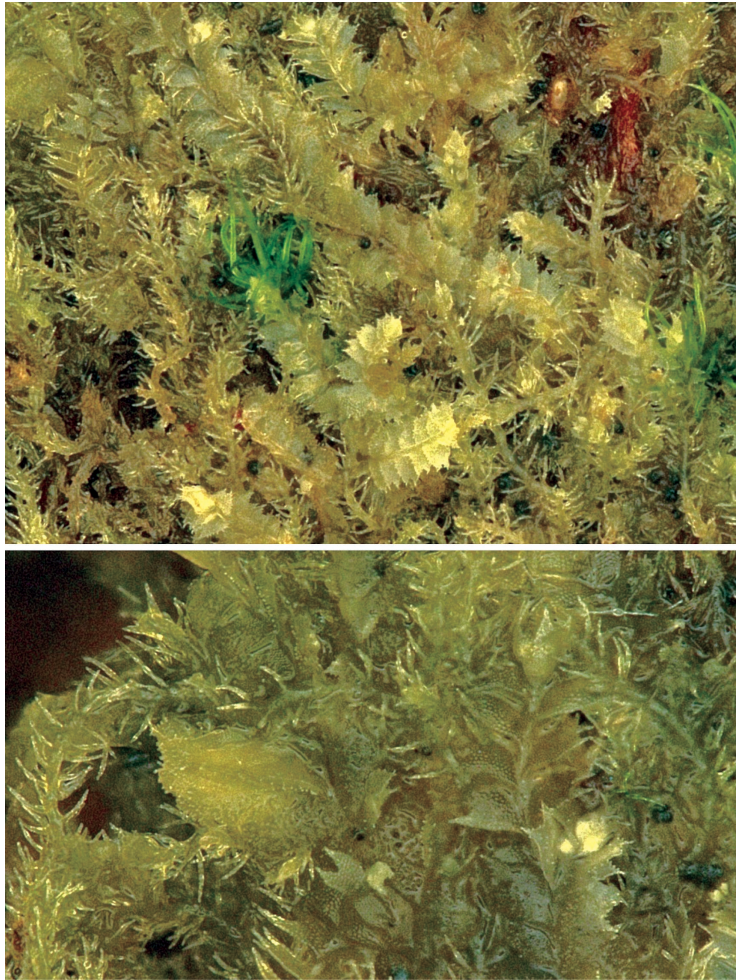


Figs 94 and 95 (next page). *Chiloscyphus muhavurensis* S.W.Arnell

Synonym: *Lophocolea muhavurensis* (S.W.Arnell) S.W.Arnell ex Pócs. Plants medium-sized to large, shoots up to 5 cm long and 1-3 mm wide. Leaves subsymmetric, trapezoid to orbicular, 0.5-1.8 × 1-1.3 mm, alternate to subopposite, dorsal base shortly decurrent, 2-lobed, the lobes shortly acuminate, margin with several cilia up to 5-8 cells long.

Cells thin-walled, 36-40 µm wide, trigones conspicuous. Underleaves deeply bifid, with long tapering segments and with one to several teeth or cilia on each side, 2-3 as wide as the stem, narrowly connate with leaf base, with tooth on either side. Probably dioicous. Perianths not known. **Habitat:** On soil and rotten wood in subalpine *Erica* and *Dendrosenecio* Forest, 3000-3400 m. **Distribution in Rwanda: Volcano NP:** Sabinyo, Muhabura. **Distribution in Africa:** Uganda, Kenya, Tanzania.





Figs 96 and 97 (next page). *Chiloscypus muricatus* (Lehm.) Engel & R.M.Schust. Synonyms: *Lophocolea muricata* (Lehm.) Nees in Gottsche, Lindenb. & Nees; *L. spiniflora* Steph. Plants small, yellowish-green, shoots 1-2 mm wide. Leaves decurved, 0.5-1 mm long, alternate, bilobed or 3-lobed at apex, the lobes denticulate on both sides with sharp teeth 1-2 cells long, similar teeth on ventral and dorsal margin, short setae on dorsal side of leaves and on perianths. Cells thin-walled, 10-20 μm wide, trigones minute or absent. Underleaves bilobed, not connate with leaf base, lobe ending in an acumen up to 4 cells long, base dentate or lacinate. Autoicous. Perianths cylindrical to ovate, keels lacking, with 1-2-celled setae on surface. **Habitat:** On rotten wood, as epiphyte on living trees (*Agauria*, *Erica*, *Sinarundinaria*) as well as on litter or on roadcuts from montane forest at 2000 to 3700 m in *Dendrosenecio-Lobelia stuhlmannii* paramo. **Distribution in Rwanda:** **Volcano NP:** Karisimbi, on the E-slopes along trail to summit. **Nyungwe NP:** Kamiranzovu, along road to Bweyeye ca. 2 km S of Pindura, Uwinka. **Distribution in Africa:** Bioko, Cameroon, DR Congo, Burundi, Ethiopia, Uganda, Tanzania, Malawi, Zimbabwe, Mozambique, South Africa. Also Comoros, Madagascar, Réunion.