

Fig. 277. *Lopholejeunea eulopa* (Tayl.) Schiffn.

Plants dark brown-olive to nearly black, shoots 2-3(-5) cm long and 1.4-2(-2.8) mm wide.

Leaves imbricate. Lobe concave at ventral face, obovate-elliptic, rounded and often involute at apex, dorsal base truncate to rounded, (0.6-)0.7-0.9(-1.2) x (0.7-)1-1.3(-1.6) mm, lobule with arched keel forming an obtuse angle with the ventral margin of lobe, 0.15-0.27 x 0.2-0.375 mm, lobule sometimes reduced. Underleaves imbricate to contiguous, large, 5-8 x as wide as the stem, reniform, wider than high, (0.4-)0.5-0.8 x 0.9-1.2(-1.4) mm. Cells hexagonal, wall with non-nodulose trigones and nodulose-elongated intermediate thickenings, (22-)25-30(-35) x (28-)30-36(-45) μ m. Monoicous. Perianth covered by female bracteoles or weakly exserted, obovate, rounded or subcordate at apex, 2 lateral and 2 ventral keels present, winged and with laciniae, 1.1-1.6 x 0.8-1 mm.

Habitat: Epiphytic or epiphyllous in montane forest, 2000 m. **Distribution in Rwanda:** Nyungwe NP: Karamba, Kamiranzovu. **Distribution in Africa:** Tanzania. Also Comoros, Madagascar, Mauritius, Réunion, Seychelles.

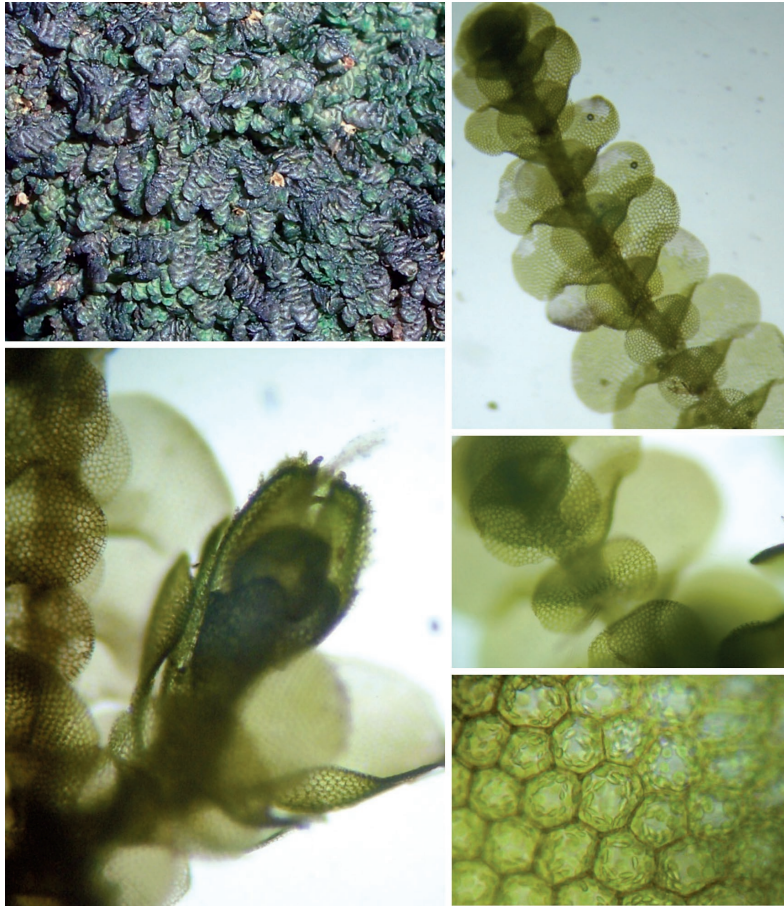


Fig. 278. *Lopholejeunea nigricans* (Lindenb.) Schiffn.

Synonym: *Lopholejeunea abortiva* (Mitt.) Steph. var. *fragilis* (Steph.) Vanden Berghen.

Plants brown to dark brown-green, shoots 1-3 cm long and 0.9-1.4(-1.6) mm wide. Leaves contiguous or imbricate. Lobe elliptic, subsymmetrical, entire, rounded, obtuse or apiculate at apex, plane or weakly concave, 0.4-0.6(-0.75) x 0.5-0.8(-1) mm, lobule well developed, large, 1/4-1/2 as long as the lobe, proximal part inflated, keel very convex forming an obtuse angle with the margin of the lobe, 0.13-0.15(-0.22) x 0.18-0.25(-0.38) mm, sometimes reduced. Underleaves distant to imbricate, (2-)3-4 x as wide as the stem, reniform to suborbicular, entire, 0.27-0.4(-0.6) x 0.3-0.6(-0.75) mm. Cells with small trigones and nodulose-elongated intermediate thickenings, 18-26(-30) x 20-30(-40) μ m. Perianth shortly to longly exserted, compressed, obovate to obcordate, rounded, retuse or emarginate at apex, with 2 lateral and 2 ventral keels. **Habitat:** Epiphytic or epiphyllous in montane forest, 2000 m. **Distribution in Rwanda: Nyungwe NP:** Karamba. **Distribution in Africa:** Guinea, Sierra Leone, Ivory Coast, Ghana, Togo, Nigeria, Bioko, Cameroon, Rio Muni, Gabon, Central African Republic, Congo-Brazzaville, DR Congo, Burundi, Ethiopia, Tanzania, Malawi, Zambia, Zimbabwe, Mozambique, South Africa. Also Madagascar, Mauritius, Réunion, Rodriguez, Seychelles.

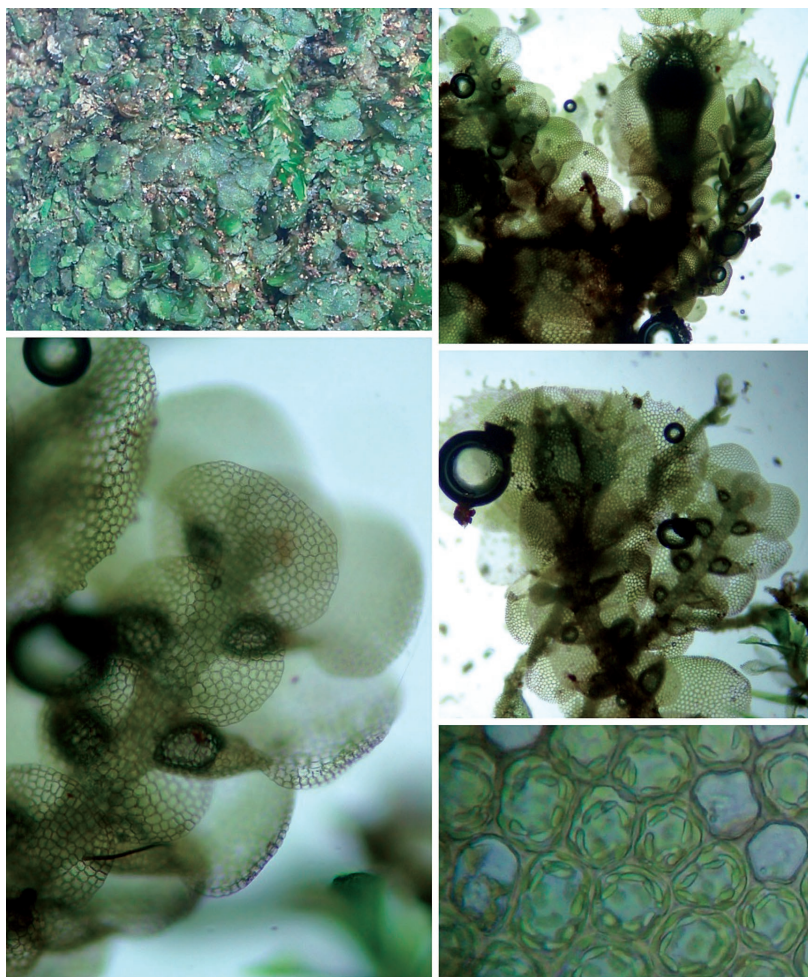


Fig. 279. *Lopholejeunea subfusca* (Nees) Schiffn.

Plants dark brown, shoots 1-3 cm long and (0.8-)1-1.3(-1.75) mm wide, sometimes microphyllous shoots present. Leaves weakly imbricate. Lobe subelliptic, falcate, subsymmetrical, rounded at apex, plane, 0.4-0.6(-0.75) x 0.5-0.8(-1) mm, lobule well developed, ovate, proximal part inflated, 0.15-0.2 x 0.2-0.26 mm. Underleaves distant to imbricate, 3-5 x as wide as the stem, reniform to elliptic, entire, 0.3-0.5 x (0.28-)0.45-0.6(-0.7) mm. Cells with small trigones and nodulose-elongated intermediate thickenings, 20-23 x (20-)23-27(-30) μm . Monoicous. Perianth often nearly entirely covered by female bracteoles, sometimes exerted to 1/5 of its length, compressed, obovate to obcordate, rounded to subtruncate at apex, with 2 lateral and 2 ventral keels bearing irregularly triangular laciniae. **Habitat:** Epiphytic or epiphyllous in montane forest, 2000 m. **Distribution in Rwanda:** Nyungwe NP: Kamiranzovu. **Distribution in Africa:** Guinea, Sierra Leone, Ivory Coast, Ghana, Togo, Nigeria, Annobon, Bioko, Cameroon, Rio Muni, Gabon, Central African Republic, DR Congo, Kenya, Tanzania, Angola, South Africa. Also Comoros, Madagascar, Mauritius, Réunion, Seychelles

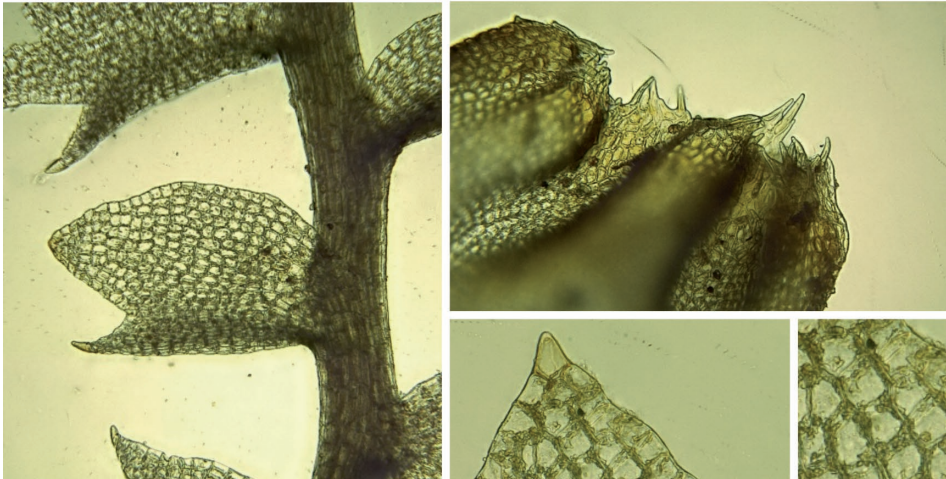


Fig. 280. *Lophozia jamesonii* (Mont.) R.M.Schust.

Synonyms: *Andrewsianthus jamesonii* (Mont.) Váňa; *A. kilimanjaricus* (S.W.Arnell) Grolle & Váňa. Plants pale green to brownish, stems 0.4-1.5 cm long, prostrate to ascending. Leaves distant to imbricate, erect-spreading, oblong, subequally 2-lobed, rarely 3-lobed. Underleaves subulate to reduced to 1-2 cells or absent. Cells thin-walled, with trigones, 25-30 x 30-45 μ m. **Habitat:** Epiphyte on ericaceous shrubs, 3100-3400 m. **Distribution in Rwanda: Volcano NP:** Sabinyo. **Distribution in Africa:** DR Congo, Uganda, Kenya, Tanzania.



Figs 281 and 282 (next page). *Marchesinia deslooveri* Vanden Berghen
 Plants large, epiphytic, deep green to brown. Stems up to 3-4 cm long. Leaves alternate, imbricate, wide-spreading. Lobes concave, elliptic, 1.2-1.6 mm long, apex acuminate, margin entire. Lobules 0.4-0.52 x 0.58-0.6 mm, usually flat, apical tooth with 1-3 cells, free margin usually plane, with 2-4 small teeth. Cells with trigones 26-31 x 30-35 μ m. Underleaves 3-5 times as large as stem, 0.9-1.3 x 0.98-1.5 μ m. Monoicous. Perianths obcordate, truncate, flat and compressed, plane on both surfaces or with obscure keel on ventral surface, margins entire, 2-2.2 x 3.4-3.6 mm. **Habitat:** Epiphytic in montane bamboo forest, 2350 m. **Distribution in Rwanda:** Nyungwe NP: Rugera. **Distribution in Africa:** Tanzania.

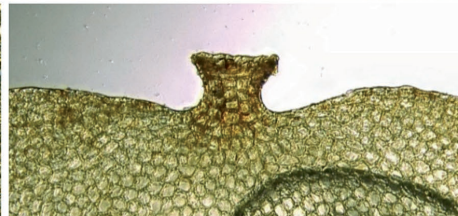
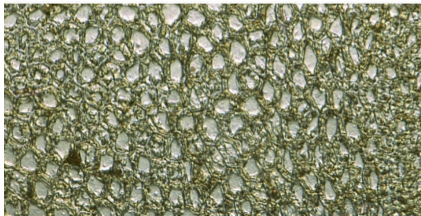
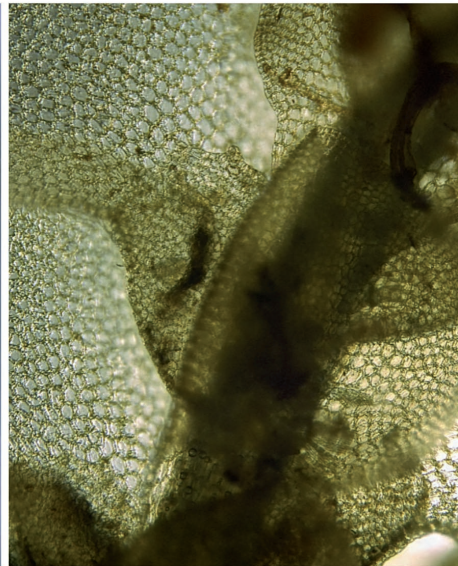




Fig. 283. *Marchesinia excavata* (Mitt.) Schiffn.

Plants large, epiphytic, deep green to brown. Stems up to 4.5 cm long. Leaves alternate, imbricate, wide-spreading. Lobes concave, elliptic, 0.8-0.9 x 0.45-0.6 mm, apex rounded but usually with a sharp apiculus and also with few minute teeth. Lobules 0.4-0.52 x 0.58-0.6 mm, usually flat, with only 1 apical tooth consisting of 1-2 cells. Cells with trigones 20-25 x 20-30 μ m. Underleaves 3-5 x as large as stem, 0.9-1.3 x 0.9-1.2 μ m. Dioicous. Perianths obcordate, truncate, flat and compressed, keeled laterally but not winged, 1.6 x 0.9 mm. **Habitat:** Epiphytic in montane forest, 2000-2200 m. **Distribution in Rwanda: Nyungwe NP:** Gisakura. **Distribution in Africa:** Guinea, Sierra Leone, Ghana, Togo, Nigeria, Annobón, São Tomé, Bioko, Cameroon, Gabon, Rio Muni, DR Congo, Uganda, Kenya, Tanzania, Malawi, Zambia. Also Socotra, Madagascar.



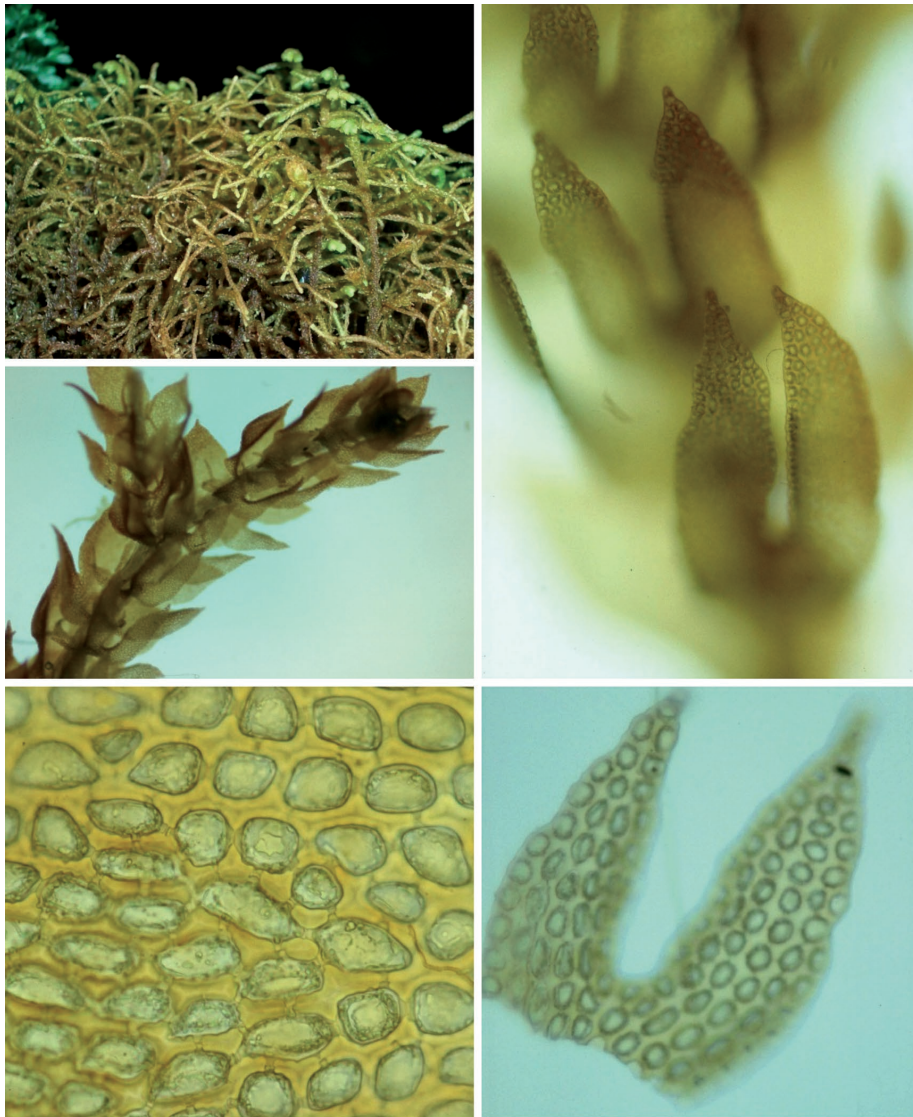
Fig. 284. *Marsupella emarginata* (Ehrh.) Dumort.

Plants green to reddish-brown or brownish, in dense patches, shoots (10-)20-50 mm high and 1.6-2.4 mm wide, erect, simple or with few branches. Leaves contiguous to imbricate, round ate, bilobed to 0.2-0.3 of their length, lobes obtusely pointed to subacute. Cells with thin walls and large trigones, 17-30 μm in diameter. Dioicous. Perianth short, tubular, irregularly lobed, nearly ridge within bracts. **Habitat:** On rocks in *Dendrosenecio* paramo and in *Alchemilla* mats interrupted by boulders, 4200-4400 m. **Distribution in Rwanda:** **Volcano NP:** Karisimbi, on the E slope in the alpine belt. **Distribution in Africa:** DR Congo, Uganda, Tanzania. Also in the Northern Hemisphere and in high mountains of Central and South America and South East Asia.

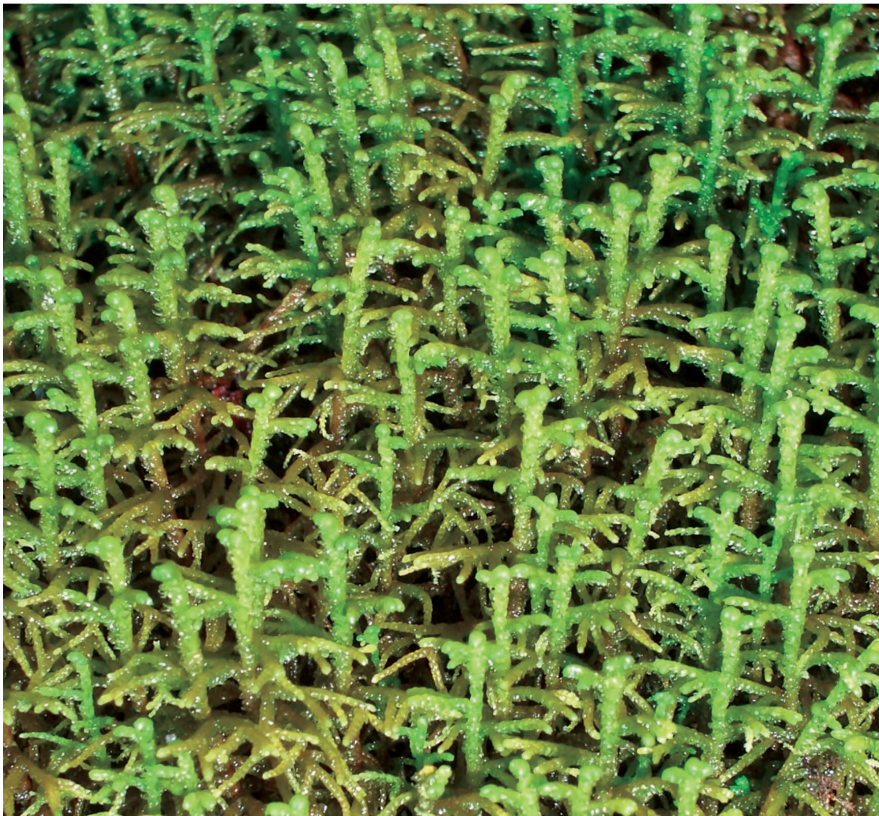


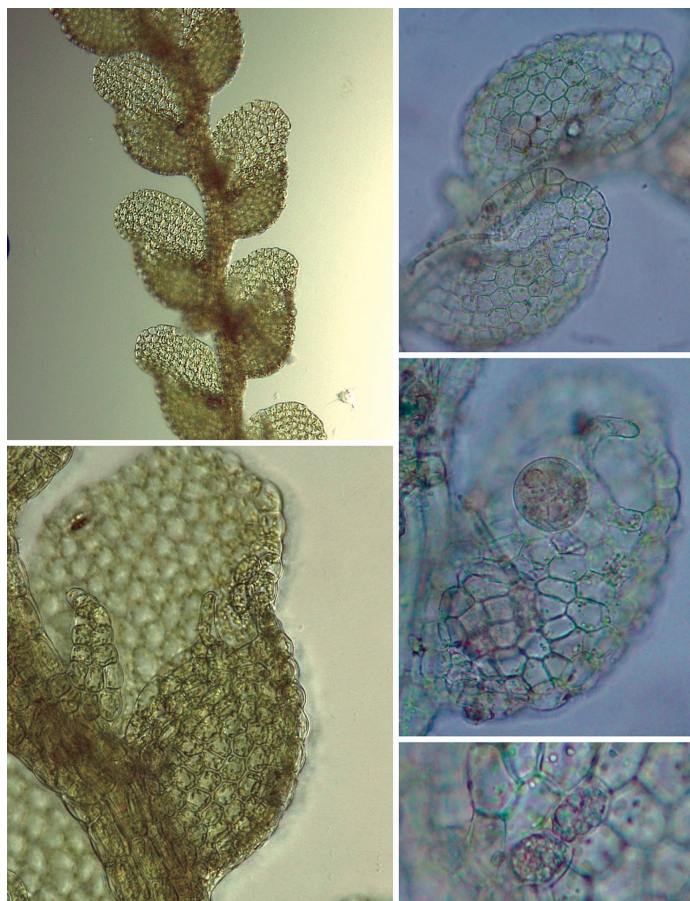
Fig. 285. *Marsupella subintegra* S.W.Arnell

Plants reddish-brown or brownish, in dense patches, shoots 10-15 mm high and 1.2-2 mm wide, erect, simple or with few branches. Leaves contiguous to imbricate, roundate, bilobed to 0.2-0.3 of their length, lobes obtusely pointed to subacute. Cells with thin walls and large trigones, 17-30 μ m in diameter. Dioicous. Perianth absent. **Habitat:** On rocks in *Dendrosenecio* paramo, 3700-4500 m. **Distribution in Rwanda:** Volcano NP: Karisimbi. **Distribution in Africa:** Uganda, Malawi. Also Réunion, Nepal, Borneo, Sumatra, Papua New Guinea.



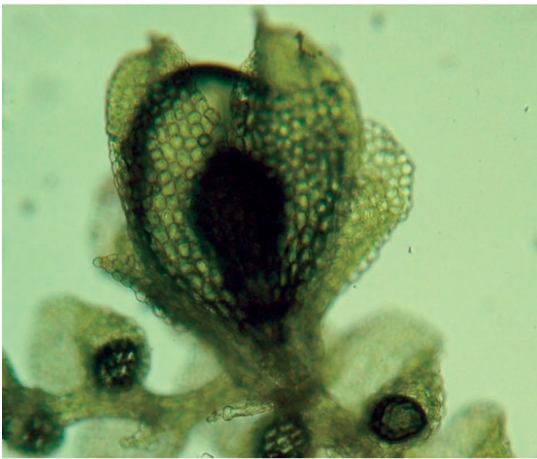
Figs 286 and 287 (next page). *Mastigophora dicladus* (Brid. ex Web.) Nees
 Plants reddish to yellowish-brown. Stems procumbent to ascending or erect, up to 10
 cm long, 1-2-pinnate, mature branches with attenuate apices with small leaves. Leaves,
 2-3-lobed, 0.5-1.1 mm long, divided for 0.8-0.9 of their length, dorsal lobes large, ventral
 lobes much smaller, with triangular laciniae at both lobes. Cells with large trigones, walls
 pigmented, 20-25 x 25-35 μ m. Underleaves 2-lobed, similar to lateral leaves. **Habitat:**
 Epiphytic in montane forest, 2000-2200 m. **Distribution in Rwanda:** Nyungwe NP:
 Rugege, Gisakura, Karamba, Kamiranzovu. **Distribution in Africa:** Annobón, São
 Tomé, Bioko, Cameroon, Gabon, Rio Muni, Ethiopia, Uganda, Tanzania. Also Ascension,
 Comoros, Madagascar, Mauritius, Réunion, Seychelles.





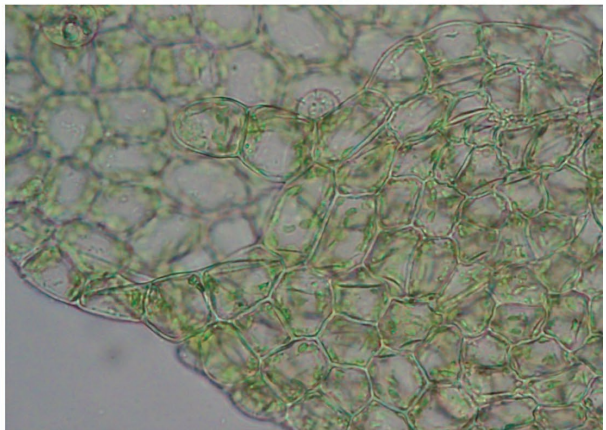
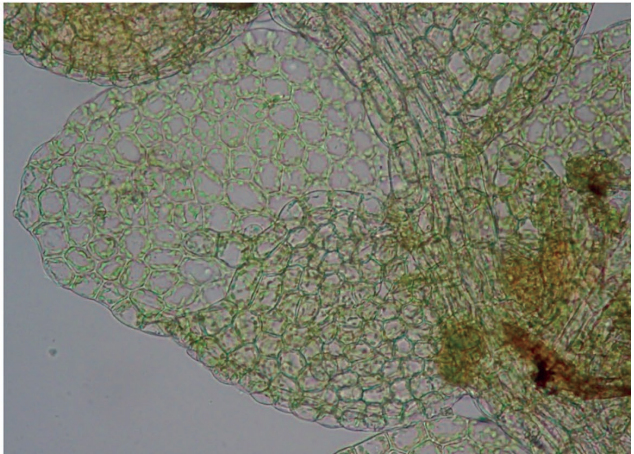
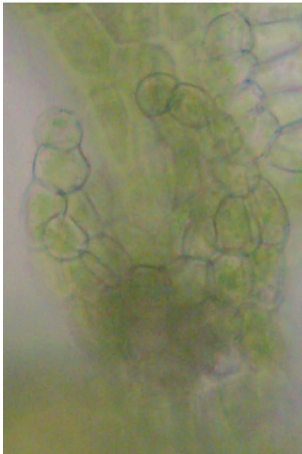
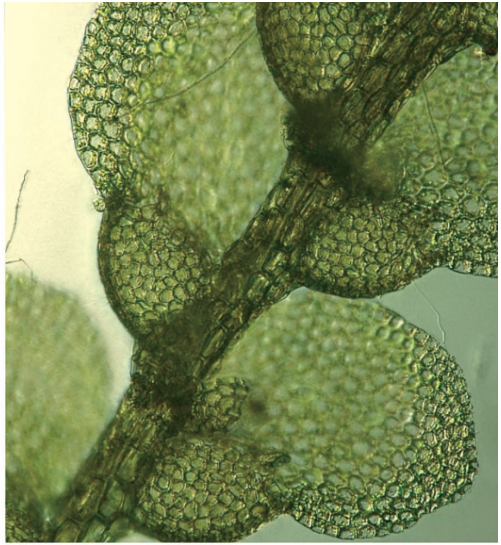
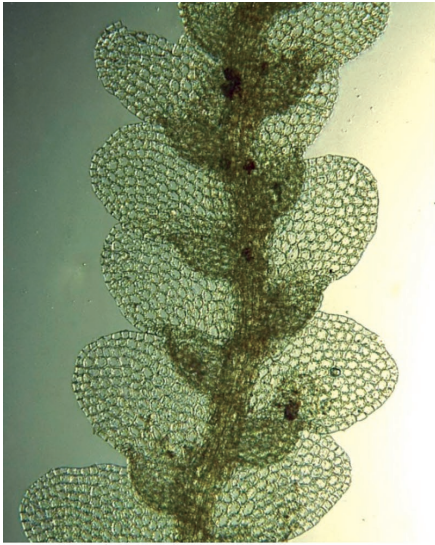
Figs 288 and 289 (next page). *Microlejeunea africana* Steph.

Synonyms: *Lejeunea ulicina* ssp. *africana* (Steph.) Vanden Berghen; *L. ulicina* ssp. *ocellifera* (S.W.Arnell) R.M.Schust. Plants very small, 2-5 mm long and 0.1-0.2 mm wide, epiphytic or epiphyllous, pale green to pure-green. Leaves dimorphous, distant to contiguous, 0.15-0.22 mm long, in sterile shoots the portion of the lobe extending forward from the lobule about equal to the lobule, with ventral margin almost in line with keel. Lobes suberect, apex rounded, margins entire, ocelli 1-3. Lobules inflated, elongate ovate, apical tooth curved, spiniform. Cells thin-walled, 15-18 x 18-20 μ m. Underleaves bifid to 1/3-2/5 of their length, longer than wide, 1.5 x stem width. Dioicous. Perianths inflated-pyriform, with 5 slightly crenulate keels. **Habitat:** Epiphytic or epiphyllous in montane forest up to *Dendrosenecio-Lobelia stuhlmannii* paramo, 2000-3600 m. **Distribution in Rwanda: Volcano NP:** Karisimbi, on the E-slopes along trail to summit. **Gishwati Forest:** Gikungu. **Nyungwe NP:** Rwasekoko, Karamba, Kamiranzovu, Gisakura, Uwinka, Mt. Bigugu. **Distribution in Africa:** Guinea, Guinea-Bissau, Sierra Leone, Ghana, Benin, Togo, Nigeria, Príncipe, Annobón, São Tomé, Bioko, Cameroon, Central African Republic, Congo-Brazzaville, DR Congo, Burundi, Ethiopia, Uganda, Kenya, Tanzania, Malawi, Zimbabwe, Mozambique, Lesotho, South Africa. Also Socotra, Comoros, Madagascar, Mauritius, Réunion, Rodriguez, Seychelles.





Figs 290 and 291 (next page). *Microlejeunea kamerunensis* Steph.
 Synonym: *Lejeunea kamerunensis* (Steph.) Vanden Berghen. Plants very small, 2-5 mm long and 0.35-0.6 mm wide, epiphytic or epiphyllous, pale green to pure-green. Leaves dimorphous, distant to contigous, 0.15-0.2 x 0.2-0.4 mm. Lobes ovate, asymmetric, spreading at right angle to the stem, leaves of sterile shoots with ventral margin arched, forming a distinct sinus with keel apex rounded, margins entire or crenulated, ocelli (1-)2-6(-8), in an irregular group. Lobules c. 1/2 of the length of the lobe, apical tooth falcate, acute, 40-50 μ m long. Cells thin-walled, 15 x 17 μ m. Underleaves bifid to 1/2 of their length, longer than wide, 1.5-2 x stem width, 0.06-0.1 x 0.09-0.13 mm. Dioicous. Perianths inflated-pyriform, 0.27-0.3 x 0.5-0.6 mm, conically obovate or narrow pyriform, with 5 slightly crenulate keels. **Habitat:** Epiphytic or epiphyllous in montane forest up to *Hagenia-Hypericum* forest and *Dendrosenecio-Lobelia stuhlmannii* paramo, 1950-3600 m. **Distribution in Rwanda: Volcano NP:** Karisimbi, in the saddle between Bisoke and Karisimbi, Karisimbi, on E-slopes along trail to summit. **Nyungwe NP:** Rwasekoko, Gisakura, Karamba, Kamiranzovu, Rwankuba, Uwinka. **Distribution in Africa:** Sierra Leone, Ivory Coast, Nigeria, Príncipe, São Tomé, Bioko, Cameroon, DR Congo, Burundi, Uganda, Kenya, Tanzania, Zimbabwe, Mozambique. Also Mauritius, Réunion.



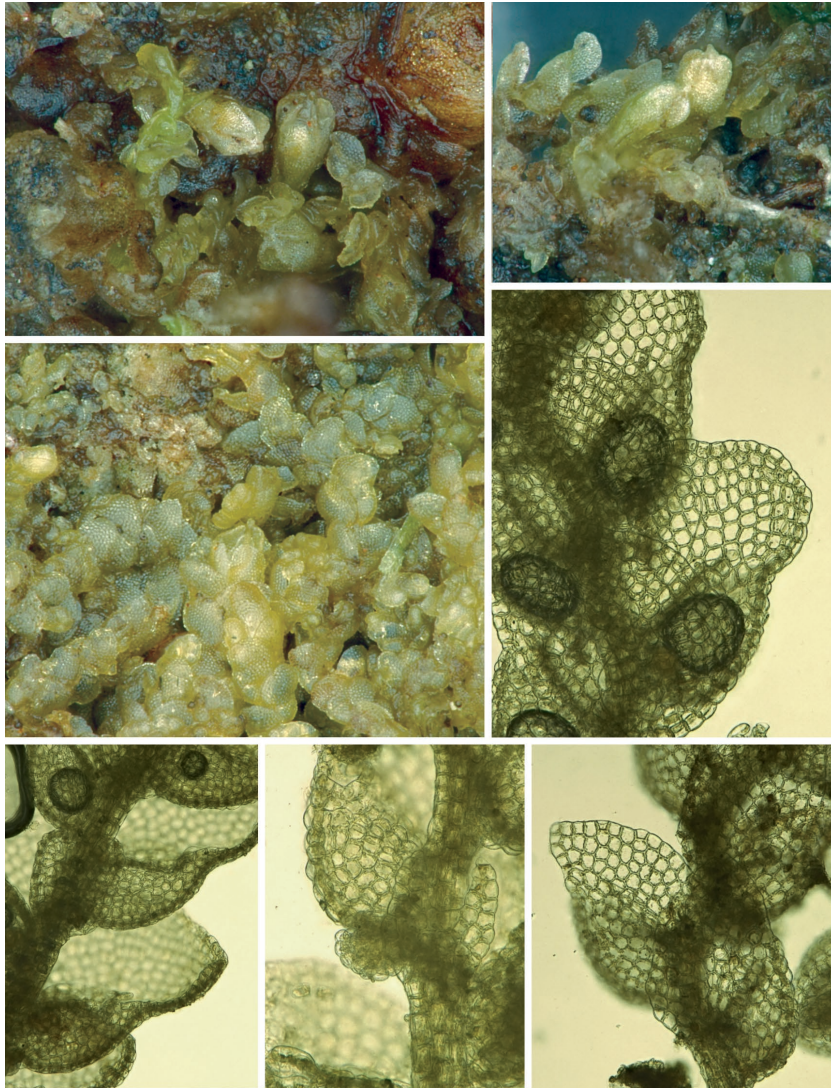


Fig. 292. *Microlejeunea nyandaruensis* Pócs

Plants very small, 2-5 mm long and 0.2-0.3 mm wide, epiphytic or epiphyllous, pale green to pure-green. Leaves dimorphous, distant to contiguous, 300-400 x 250-300 μm . Lobes suberect, apex rounded, margins entire or crenulated, ocelli (1)2-6(-8), in an irregular group. Lobules inflated, elongate ovate, apical tooth falcate, often hidden by the enrolled free margin, hyaline papilla distal. Cells thin-walled, 20 x 20-35 μm . Underleaves bifid to 1/3-2/5 of their length, longer than wide, 1.2-2.0 x stem width, 200 x 150 μm . Autoicous. Perianths inflated-pyriform, 350-700 μm long, conically obovate or narrow pyriform, with 5 slightly crenulate keels. **Habitat:** Epiphytic in *Dendrosenecio-Lobelia stuhlmannii* paramo, 3600 m. **Distribution in Rwanda: Volcano NP:** Karisimbi, on E-slopes along trail to summit. **Distribution in Africa:** Kenya.



Figs 293 and 294 (next page). *Mnioloma fusca* (Lehm.) R.M.Schust.

Synonym: *Calypogeia fusca* (Lehm.) Steph. Plants usually terrestrial, small to medium-sized, pale-brown to dark-brown, 1-2 mm wide. Stems prostrate to ascending, 0.1-0.2 mm wide. Leaves imbricate, alternate, oblong-ovate to broadly ovate, 0.5-1.0 x 0.4-0.8 mm, apex rounded or slightly emarginate, ventral base decurrent. Cells thin-walled, with small nodulose trigones, subapical cells 20-30 x 30-40 μm , mid-leaf cells 25-30 x 34-50 μm , cuticle verrucose, oil bodies compound, finely granular (*Jungermannia*-type), colourless, 2-6 per cell. Underleaves 1.5-2 x as wide as the stem, rounded, apex minutely emarginate to rounded, base not decurrent, margin dentate or entire. **Habitat:** On soil, rotten wood and on roadcuts 1950-2100 m. **Distribution in Rwanda:** Nyungwe NP: Gisakura, Uwinka. **Distribution in Africa:** Bioko, Cameroon, DR Congo, Ethiopia, Uganda, Tanzania, Lesotho, Swaziland, South Africa. Also Azores, St. Helena, Mauritius, Réunion, Seychelles.



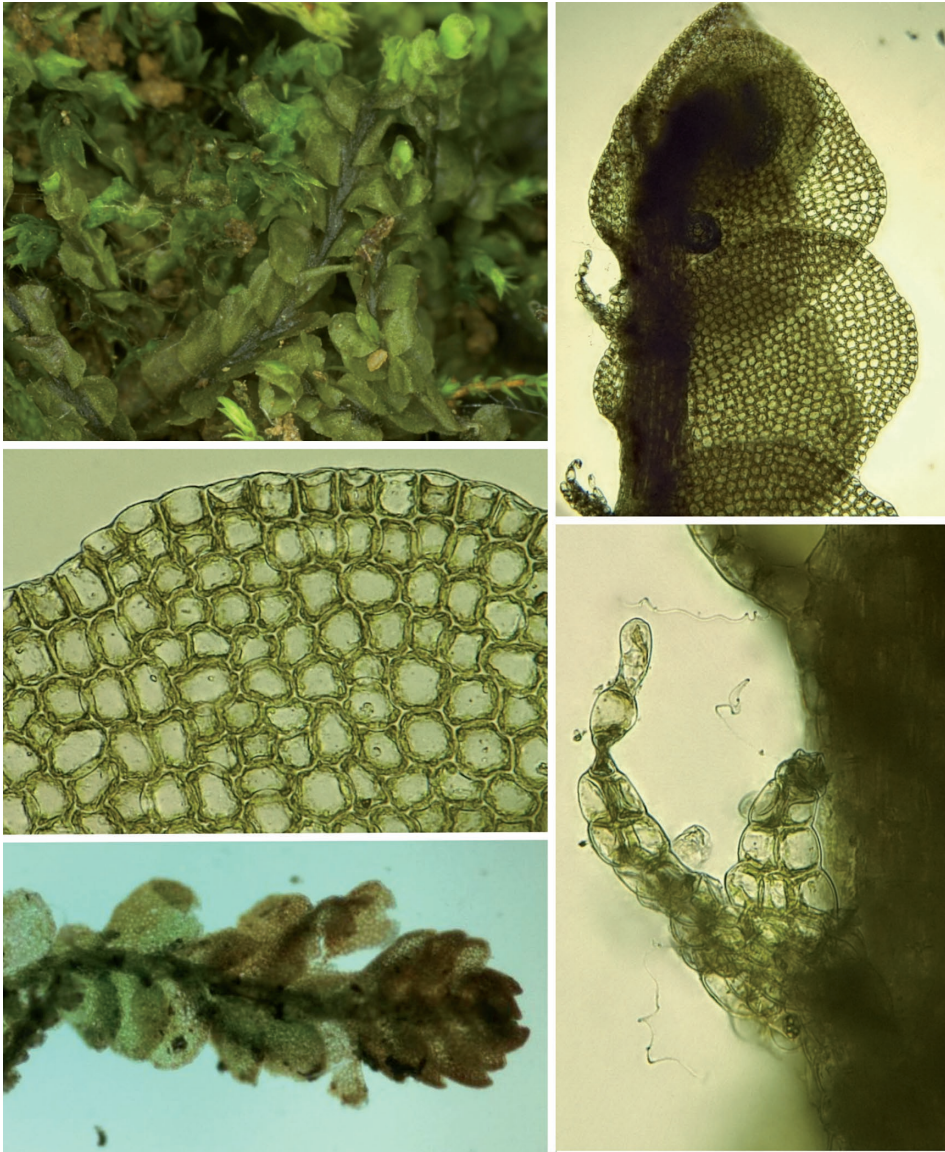
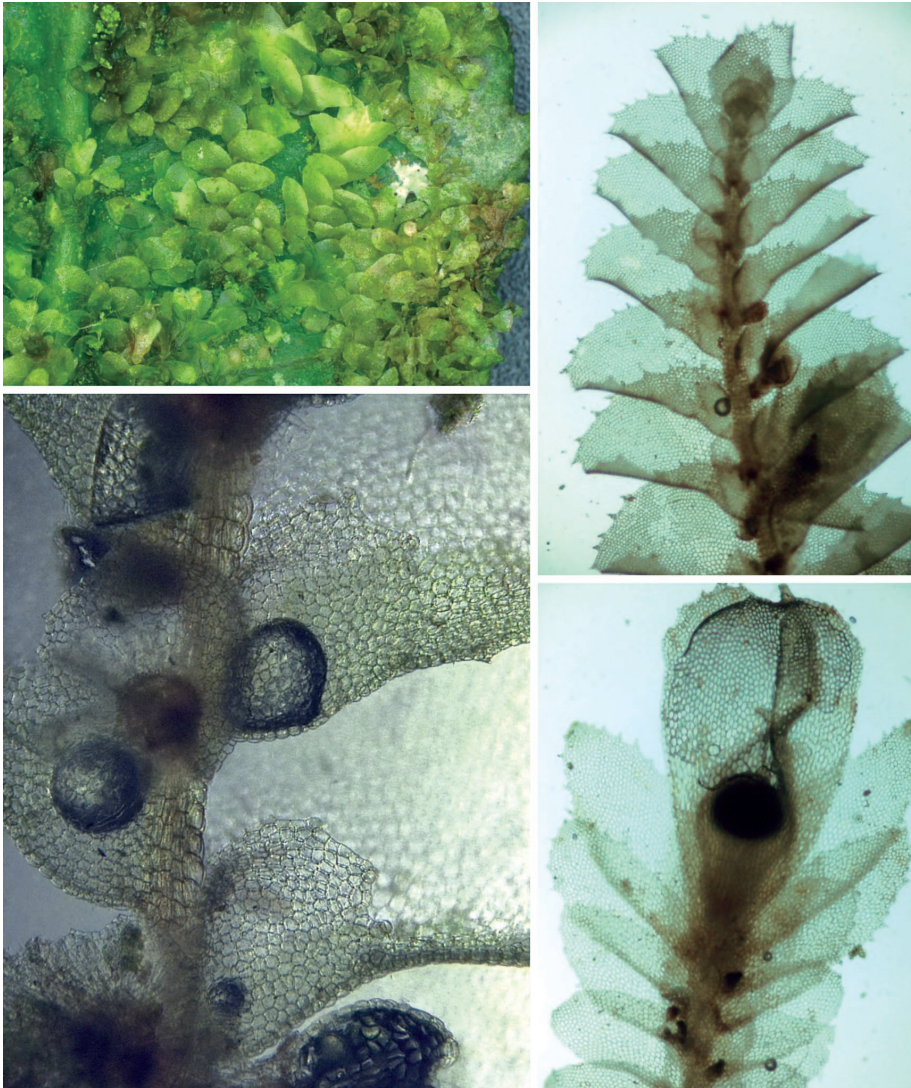


Fig. 295. *Notoscyphus lutescens* (Lehm. & Lindenb.) Mitt.

Synonym: *Notoscyphus belangerianus* (Lehm. & Lindenb.) Mitt. Plants terrestrial, green to red, shoots 1-2 mm wide. Leaves alternate to subopposite, ovate-oblong, 0.4-1 x 0.3-0.6 mm, apex rounded or truncate. Cells usually with large trigones, rectangular, 20-35 x 25-45 μ m. Underleaves small, narrower than stem, divided into 2 subulate lobes. Dioicous.

Habitat: Quartzitic rocks in montane forest, 2000 m. **Distribution in Rwanda:** Nyungwe NP: Karamba. **Distribution in Africa:** Cameroon, DR Congo, Burundi, Malawi, South Africa. Also Comoros, Madagascar, Mauritius, Réunion.



Figs 296 and 297 (next page). *Odontolejeunea lunulata* (Web.) Schiffn.

Plants large, forming dense mats of several cm², shoots (1.8-)2.5-3.2 mm wide. Lobe ovate, rounded and sometimes dentate at apex, 0.18-0.3 x (0.27-)0.3-0.45 mm.

Lobule inflated, ovate, c. 0.22 x 0.32 mm, keel convex. Underleaves with disc-like paraphigastria for adhesion on leaf surfaces. Monoicous. Perianth compressed, obovate to oblong, dorsal face smooth, ventral face with obtuse keel, lateral keels dentate, 0.7-1 x 1-1.4 mm. **Habitat:** Epiphyllous in montane forest, 1970-2000 m. **Distribution in Rwanda:** Nyungwe NP: Gisakura, Karamba, Kamiranzovu. **Distribution in Africa:** Guinea, Sierra Leone, Ivory Coast, Nigeria, Bioko, São Tomé, Cameroon, Rio Muni, Congo-Brazzaville, DR Congo, Ethiopia, Uganda, Kenya, Tanzania, Mozambique. Also Comoros, Madagascar, Mauritius, Réunion.