



Figs 396 and 397 (next page). *Marchantia polymorpha* L. ssp. *montivagans* Bischl. & Boisselier

Synonym: *Marchantia alpestris* (Nees) Burgeff. Thalli yellowish to dark green, furcate, up to 40-100 x 7.5-11 mm, leathery, without median longitudinal line. Ventral surfaces with large colourless or violet scales in 6 rows. Dioicous. Male receptacles c. 8 mm diameter, shallowly 8(-10)-lobed stalks, 4.5-15 mm long. Female receptacles c. 9.5-10 mm diameter, stalks 17-40 mm long, deeply divided into 9-11 rays. **Habitat:** Streams and sources in *Hagenia-Hypericum* forest and *Dendrosenecio* paramo, 2700-3500 m. **Distribution in Rwanda:** Volcano NP: Karisimbi, Bisoke, Muhavura. **Distribution in Africa:** Ethiopia, Uganda.





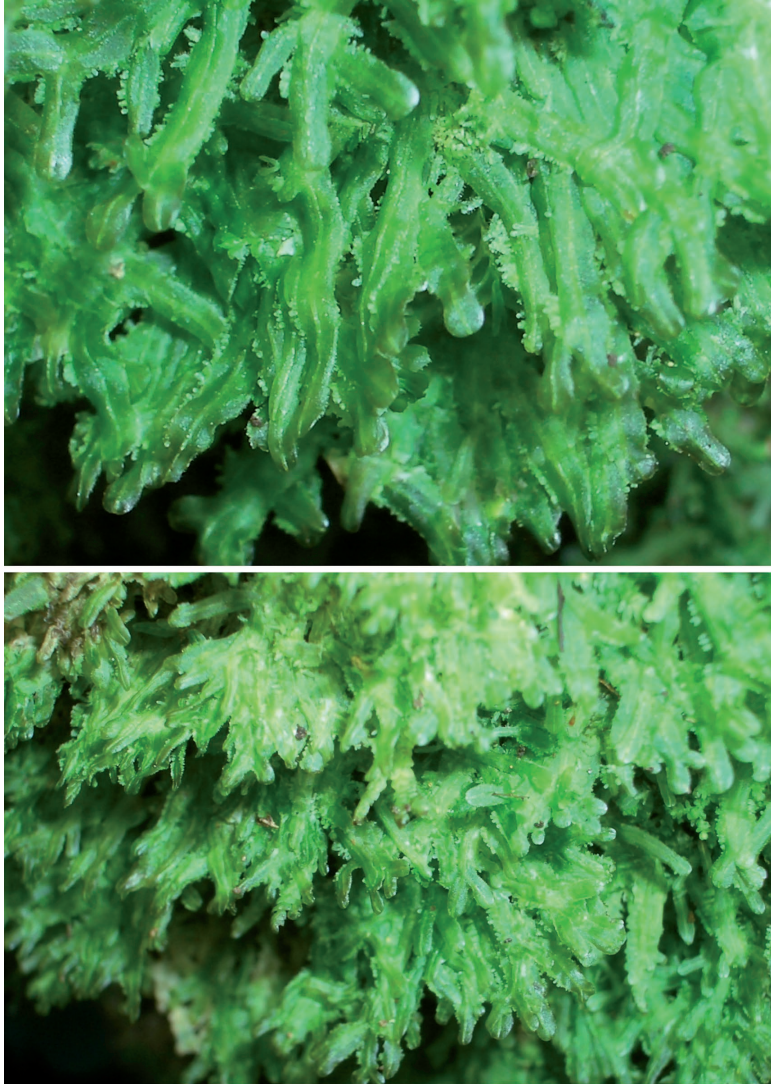
Fig. 398. *Marchantia polymorpha* L. ssp. *ruderalis* Bischl. & Boisselier
 Synonym: *Marchantia latifolia* Gray. Thalli yellowish to dark green, furcate, up to 40-6 x 7-13 mm, not leathery, with discontinuous dark median line. Ventral surfaces with large colourless or violet scales in 6 rows. Dioicous. Male receptacles c. 8 mm diameter, shallowly 8(-10)-lobed stalks, 4.5-15 mm long. Female receptacles c. 9.5-10 mm diameter, stalks 17-40 mm long, deeply divided into 9-11 rays. **Habitat:** On soil in disturbed places, e.g. gardens and on paths, 1700-1800 m. **Distribution in Rwanda:** Musanze (Ruhengeri), probably introduced. **Distribution in Africa:** South Africa. Widespread in Northern Hemisphere.



Figs 399 and 400 (next page). *Metzgeria consanguinea* Schiffn.

Synonyms: *Metzgeria agnewiae* Kuwah.; *M. attenuata* Steph.; *M. elliotii* Steph.; *M. vandenberghenii* Kuwah. Plants green to yellowish-green, deep blue in dried specimens, sparsely to profusely branched. Branches short and curved, growing away from the substratum, branches of 2 types, attenuate (tapered) and non-attenuate, the attenuate part of the shoot in attenuate thalli retaining a narrow lamina bordering the costa to the apex. Thallus flat to convex. Costa with 2 rows of cortical cells on dorsal and ventral side, medullary cells 10-15, thick-walled. Hairs straight or flexuose, usually single. Gemmae sparse to abundant. Dioicous. **Habitat:** Epiphyte in montane forest up to *Dendrosenecio-Lobelia stuhlmannii* paramo, and paramo with *Alchemilla* mats interrupted by boulders in the alpine belt, 2000-4200 m. **Distribution in Rwanda: Volcano NP:** Karisimbi, at E-slopes along trail to summit. S-slope of Bisoke. **Nyungwe NP:** Gisakura, Karamba, Kamiranzovu, Uwinka, Rwasekoko. **Distribution in Africa:** Cameroon, DR Congo, Burundi, Ethiopia, Uganda, Kenya, Tanzania, Lesotho, South Africa.





Figs 401 and 402 (next page). *Metzgeria furcata* (L.) Dumort.

Synonym: *Metzgeria thomeensis* Steph. Plants green to pale- or yellowish-green. Thalli 0.5-1.4 mm wide, up to 3 cm long, flat, margins usually plane, apices rounded, branching furcate. Dorsal surface without hairs, ventral surface without or with short hairs c. 40-200 μm long. Thallus margin with sparse single straight or weakly curved hairs. Costa in cross section equally arched, with 2 rows of dorsal cortical cells and 2-3(-4) ventral cortical cells, medullary cells 12-18, thick-walled. Gemmae occasional on thallus margin. Dioicous.

Habitat: Epiphyte in montane forest, 2200-2400 m. **Distribution in Rwanda:** Nyungwe NP: Uwinka. **Distribution in Africa:** Sierra Leone, Ivory Coast, Ghana, Annobón, São Tomé, Bioko, Cameroon, Rio Muni, DR Congo, Ethiopia, Uganda, Kenya, Tanzania, Malawi, South Africa. Widespread in Northern Hemisphere.

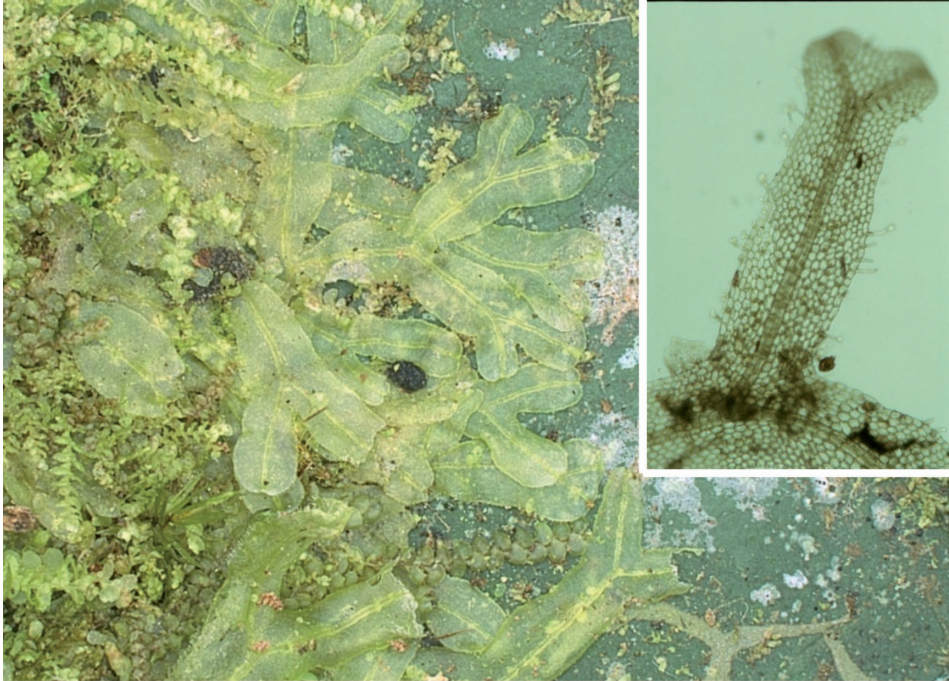


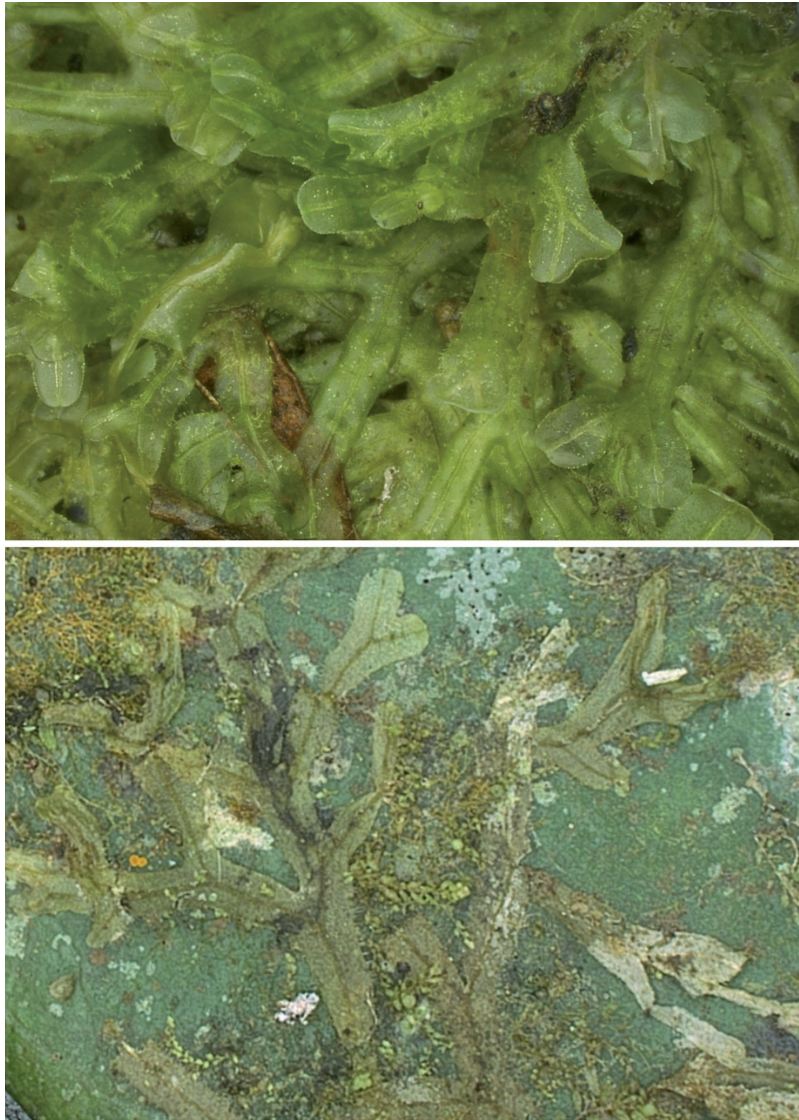


Fig. 403. *Metzgeria leptoneura* Spruce

Synonym: *Metzgeria australis* Steph. Plants green to yellowish-green. Thallus distinctly convex, margins strongly recurved to revolute, c. 10-20 x 0.7-1.2(-2.5) mm when flattened. Thallus margins with geminate, distinctly curved or falcate hairs, ventral surface of thallus lamina without hairs, ventral surface of midrib with falcate hairs. Midrib equally arched in cross-section, with 2 rows of dorsal cortical cells and 2-3 rows of ventral cortical cells, medullary cells 10-24, thick-walled. Gemmae occasional on thallus margin. Dioicous.

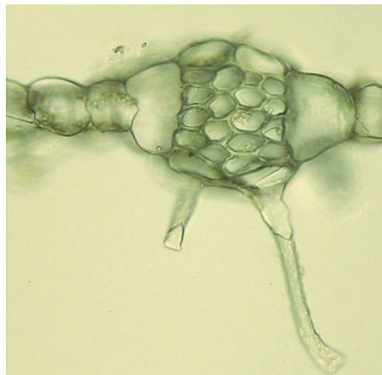
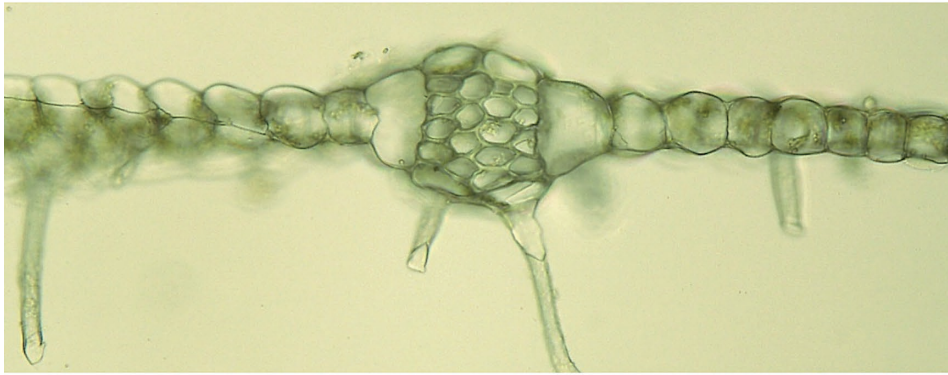
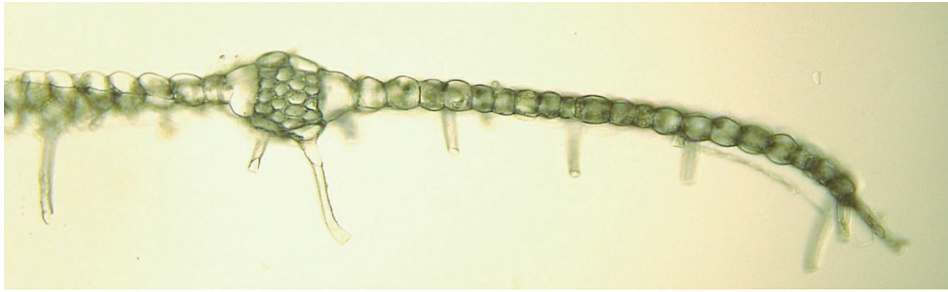
Habitat: Epiphyte in montane forest, *Hagenia-Hypericum* forest and *Dendrosenecio-Lobelia wollastoni* paramo up to the alpine belt with *Alchemilla* mats, 2000-4200 m.

Distribution in Rwanda: Volcano NP: Karisimbi, in the saddle between Bisoke and Karisimbi, on the E-slopes along trail to summit, Mt. Karisimbi, on E slope in the alpine belt. **Nyungwe NP:** Kamiranzovu. **Distribution in Africa:** São Tomé, DR Congo, Uganda, Tanzania, Malawi, Zimbabwe. **Note:** Subcosmopolitan, occurring widely in temperate and tropical regions.



Figs 404 and 405 (next page). *Metzgeria madagassa* Steph.

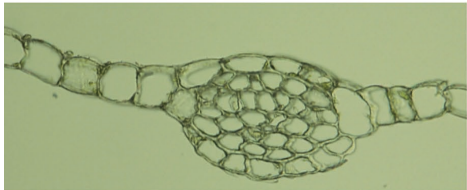
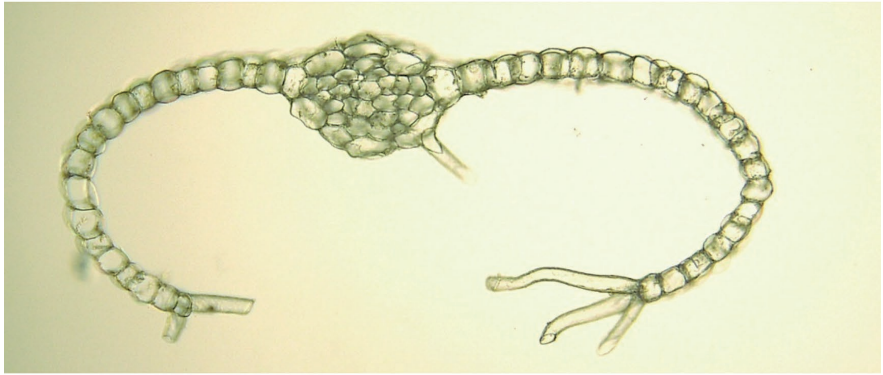
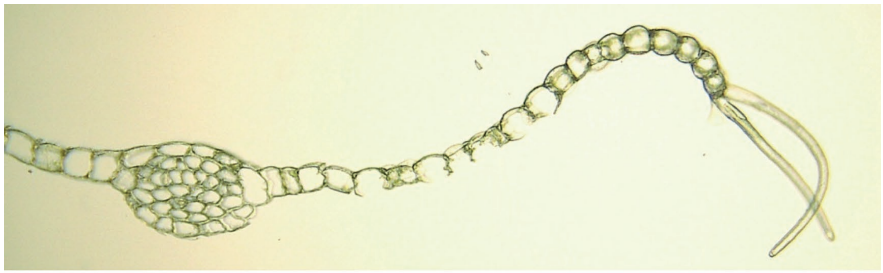
Synonym: *Metzgeria limbato-setosa* Steph. Plants green to yellow-green, up to 40 x 0.8-1.7 mm, often only 0.3-0.5 mm wide, branching irregularly furcate. Thallus often strongly convex with recurved margins to almost flat. Marginal hairs variable, with paired or single hairs, hairs dense on ventral surface of midrib. Costa with 2 rows of dorsal cortical cells and 2-3(-4) rows of ventral cortical cells, medullary cells 10-30, thick-walled. Gemmae on thallus margin flat, round or oval. Dioicous. **Habitat:** Epiphyte in montane forest, 2000-2500 m. **Distribution in Rwanda:** Volcano NP: Sabinyo. **Gishwati Forest. Nyungwe NP:** Rwasenkoko, Kamiranzovu, Uwinka. **Distribution in Africa:** DR Congo, Ethiopia, Uganda, Kenya, Tanzania, Zimbabwe, Mozambique, South Africa. Also Madagascar.





Figs 406 and 407 (next page). *Metzgeria quadrifaria* Steph.

Synonyms: *Metzgeria muscicola* Steph.; *M. hedbergii* Vanden Berghen. Plants green, yellowish-green or yellow, becoming bluish when dry. Thallus up to 60 x 0.7-1.7(-2.5) mm when flattened, irregularly furcate, margins inrolled to strongly convex, often nearly tubular. Dorsal surface of thallus without hairs, ventral surface with scattered hairs. Midrib with 3-4(-5) rows of dorsal cortical cells and (3-)4-6 rows of ventral cortical cells, medullary cells up to 30. Thallus margin single or geminate. Gemmae on thallus margin flat, oval or ribbon-like. Dioicous. **Habitat:** Epiphyte in *Hypericum-Dendrosenecio* subparamo and *Dendrosenecio-Lobelia stuhlmannii* paramo, 3400-3900 m. **Distribution in Rwanda:** **Volcano NP:** Karisimbi, at E-slopes along trail to summit. **Distribution in Africa:** Cameroon, DR Congo, Uganda, Tanzania, Zimbabwe, Lesotho, South Africa.





Figs 408 and 409 (next page). *Pallavicinia lyellii* (Hook.) Carruth. Thalli green, prostrate, simple or only sparsely branched, up to 60 x 3-6 mm, procumbent to ascending, often in mats, midrib to 1/8-1/6 of thallus width, with one central strand of narrow, thick-walled cells. Dioicous. Sporophyte surrounded by a tubular pseudoperianth. **Habitat:** On boggy ground, along stream banks and in swamps in montane forest, e.g. in *Carapa grandiflora*-*Syzygium* swamp forest, 1940-2300 m. **Distribution in Rwanda:** **Nyungwe NP:** Kamiranzovu, Uwinka. **Distribution in Africa:** São Tomé, DR Congo, Burundi, Uganda, Tanzania, Malawi, Zimbabwe, Lesotho, South Africa. Also Northern Hemisphere, Madagascar, Mauritius, Réunion.





Figs 410 and 411 (next page). *Plagiochasma rupestre* (J.R.Forst. & G.Forst.) Steph.

Thalli medium-size to large, in dense patches, bluish-green, surface waxy, water-repellent, 8-25 x 4-6 mm, ventral surface green, scales reddish-pink or purple, in two rows. Monoicous. Androecia in sessile cushions, Gynoecial receptacles enclosed by purple-red paleae, carpocephala 2-3 mm wide, stalk up to 6 mm long. **Habitat:** Volcanic rocks in sunny exposition, 2300-2700 m. **Distribution in Rwanda:** Volcano NP: Foot and S slope of Muhabura. **Distribution in Africa:** Chad, Sudan, Eritrea, Ethiopia, Djibouti, DR Congo, Uganda, Kenya, Tanzania, Angola, Zimbabwe, Botswana, Lesotho, Namibia, South Africa. Also in the Mediterranean, Azores, Madeira, Canaries, Cape Verde, St. Helena, Ascension, Mauritius, Réunion.



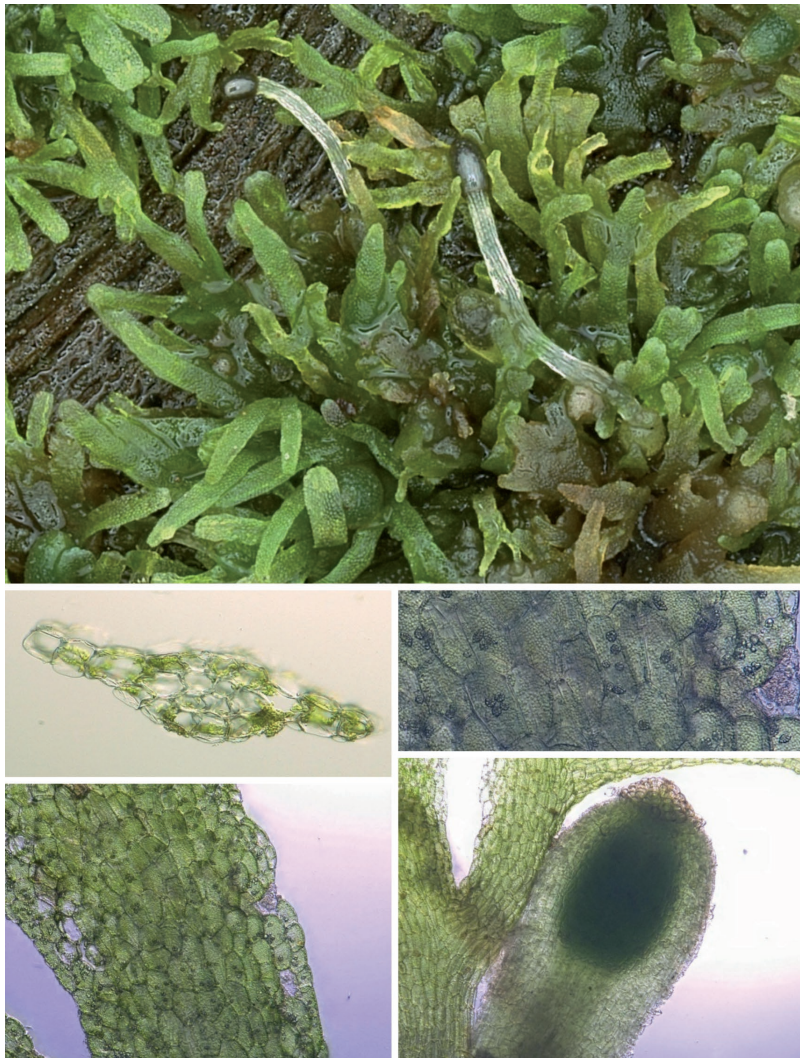
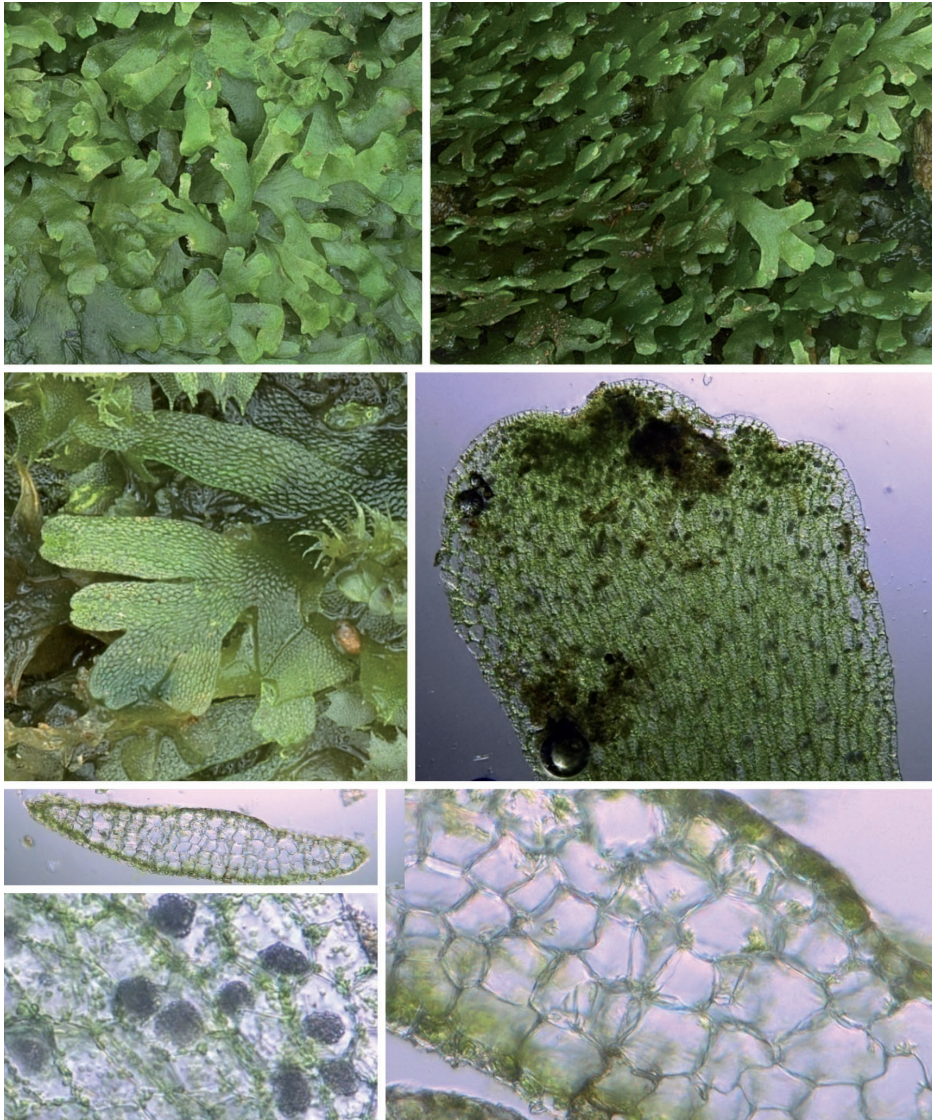


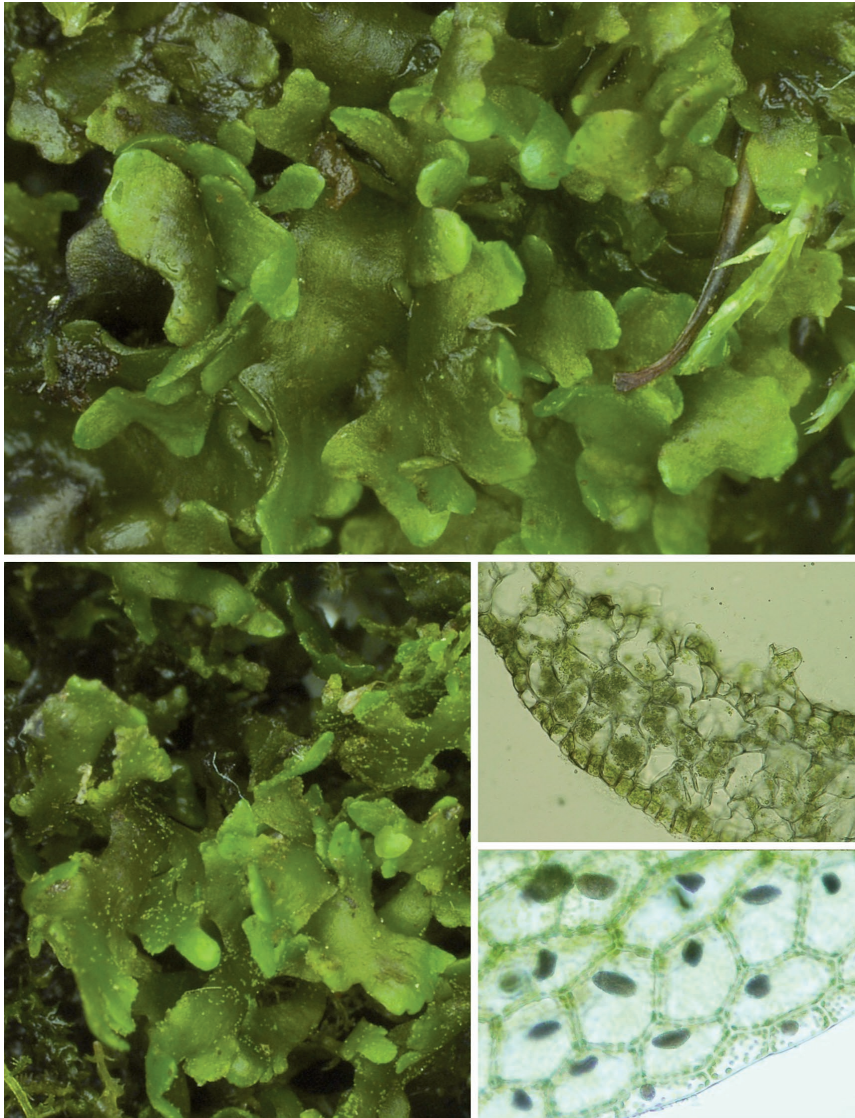
Fig. 412. *Riccardia amazonica* (Spruce) Schiffn. ex Gradstein
 Synonym: *Riccardia stephanii* (Besch.) E.W.Jones. Thallus small, stolons numerous, ascending fronds 2-4 mm tall, branching usually palmate. Main axes to 6 cells thick, not or only slightly winged, main branches 0.2-0.6 mm wide, broadly winged, ultimate branches with 2-5 marginal rows of unistratose cells and only 2-3 rows, 3-stratose in the middle of the branch. Cells 40-50 × 75 μm, oil bodies 1(-2) per cell. Monoicous or dioicous. Calyptra clavate, c. 1.3 mm long. **Habitat:** Montane forest, near rivers and streams in valleys, on decaying wood and bark, rarely on soil, 1900-2400 m. **Distribution in Rwanda: Nyungwe NP:** Gisakura, Kamiranzovu, Uwinka. **Distribution in Africa:** Sierra Leone, Ivory Coast, Ghana, Nigeria, Bioko, Cameroon, Gabon, Rio Muni, Congo-Brazzaville, DR Congo, Uganda, Kenya, Tanzania, Malawi, Zambia, Zimbabwe, Lesotho, South Africa. Also Madagascar, South America.



Figs 413 and 414 (next page). *Riccardia limbata* (Steph.) E.W.Jones

Thallus pinnate or bipinnate, usually 1-2 cm long. Main axes 5-9 cells thick, 0.5-0.9 mm wide, distinctly winged, ultimate branches, 3-4 cells thick with unistratose wings, 2-4 cells wide. Cortical cells in middle of branch 25-35 × 45-90 μm, branches 12-30 μm thick in cross section. Dioicous or sometimes monoicous. Calyptra clavate, c. 2 mm long. **Habitat:** Montane forest, near rivers and streams in valleys, on wet rocks, rotting wood, tree boles, less often on soil, 1900-2400 m. **Distribution in Rwanda:** Nyungwe NP: Gisakura, Kamiranzovu, Uwinka. **Distribution in Africa:** Sierra Leone, Ghana, Togo, Nigeria, Annobón, São Tomé, Bioko, Cameroon, Rio Muni, Congo-Brazzaville, DR Congo, Kenya, Tanzania, Malawi, Zambia, Swaziland, South Africa. Also Mauritius, Réunion.





Figs 415 and 416 (next page). *Riccardia longispica* (Steph.) Pears.

Thallus pinnate-bipinnate, often 2 cm long, apex deeply dissected. Main axes usually 0.8-1.2(-1.4) mm wide, segments \pm parallel-sided or only slightly widened upwards, 5-8 cells thick, with distinct border of 2(-3) rows of unistratose cells, ultimate branches distinctly narrower, up to 4 cells thick, with a border 4-5 cells wide. Cells with 1 oil body. Usually dioicous, sometimes monoicous. **Habitat:** Montane forest, near rivers and streams in valleys, on wet rocks, rotting wood and soil, 1900-2400 m. **Distribution in Rwanda:** **Nyungwe NP:** Gisakura, Kamiranzovu, Uwinka. **Distribution in Africa:** Cameroon, Rio Muni, Bioko, DR Congo, Uganda, Tanzania. Also Madagascar, Comoros, Réunion, Mauritius, Seychelles.