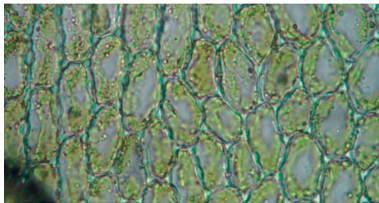
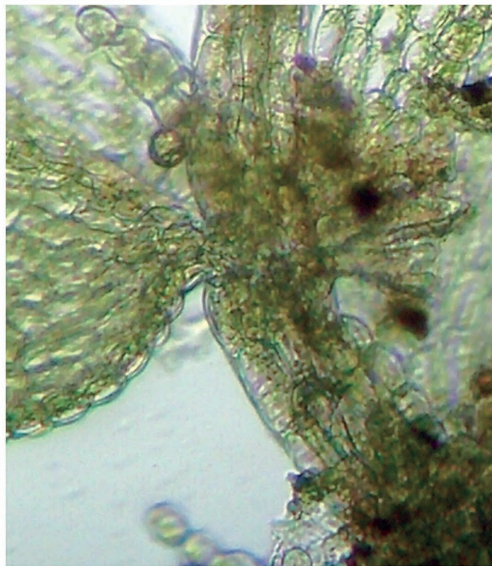
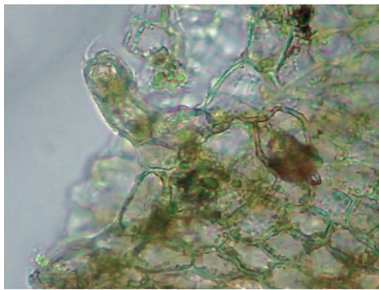
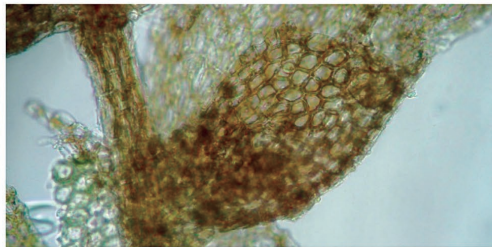
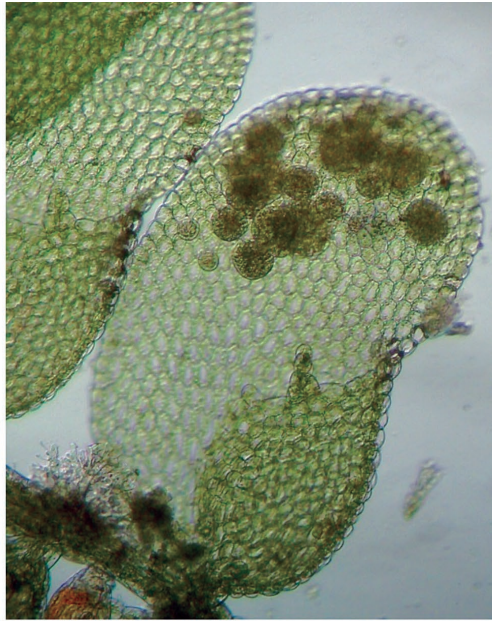
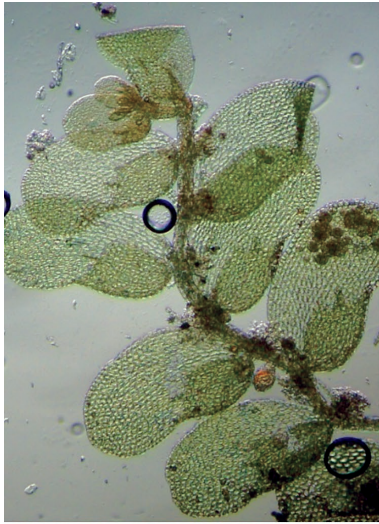
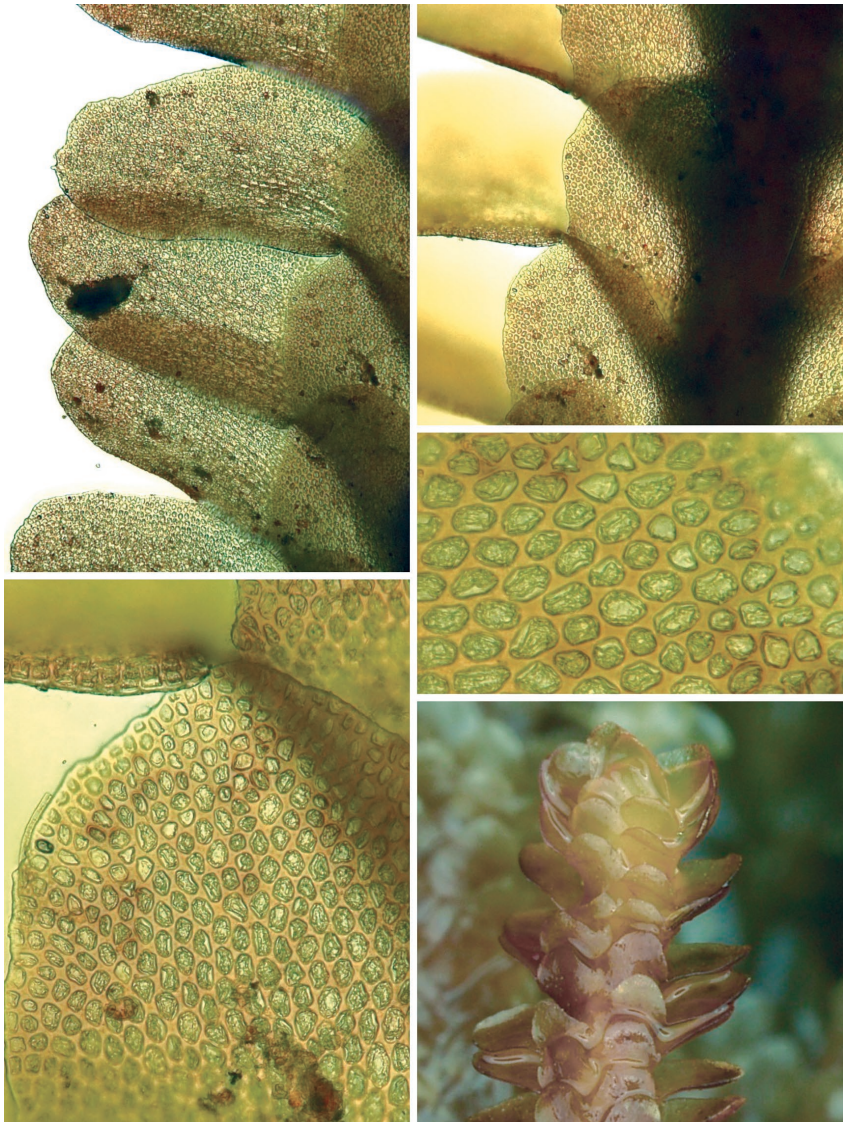


Figs 178 and 179 (next page). *Diplasiolejeunea symoensii* Vanden Berghen
 Plants small, 1.2-1.8 mm wide, pale green. Leaves distant to slightly imbricate. Lobes entire, asymmetrical, ovate, rounded to truncate at apex, 0.65-1 x 0.3-0.6 mm. Lobules only slightly inflated, ovate to subrectangular, 0.42-0.45 x 0.27-0.3 mm, apical tooth 50-90 μ m long, with two rows of 3-5 cells, ending in an isolated cell or 2 adjacent cells. Cells with small trigones, central cells 17-22 x 23-30 μ m, 1-3 ocelli at base of lobe. Underleaves bifid, 3 x wider than stem, lobes 120-180 μ m long, 3-5 cells wide at base, terminated by 1 or 2 uniseriate cells. Vegetative propagation by gemmae comprising c. 38 cells. Monoicous (?). Perianths longly exserted, stipitate, clavate, with 5 keels, 750 x 330-345 μ m. **Habitat:** Epiphyllous or epiphytic in montane forest and *Hagenia-Hypericum* forest, 1950-3300 m. **Distribution in Rwanda:** **Volcano NP:** Karisimbi, in the saddle between Bisoke and Karisimbi. **Nyungwe NP:** Karamba, Kamiranzovu, Gisakura, Rwankuba. **Distribution in Africa:** DR Congo, Burundi, Uganda, Kenya, Tanzania, Malawi. Also Comoros, Madagascar.

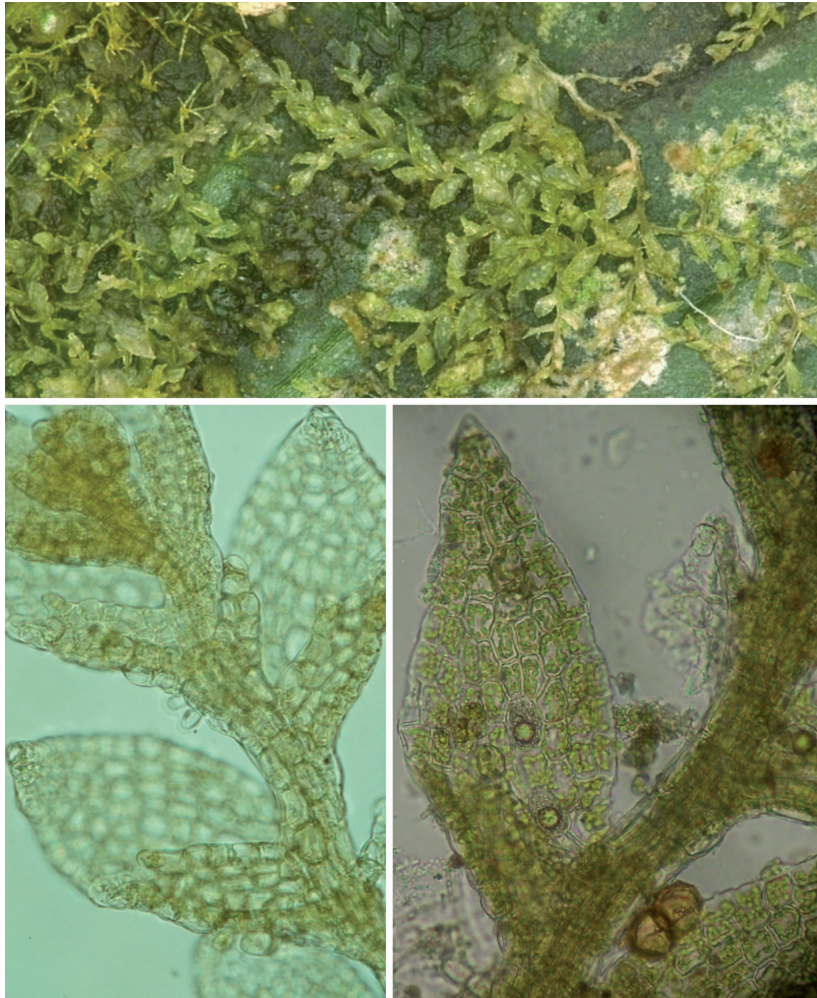




Figs 180 and 181 (next page). *Diplophyllum africanum* S.W.Arnell

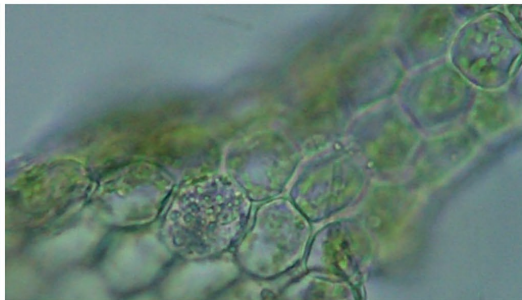
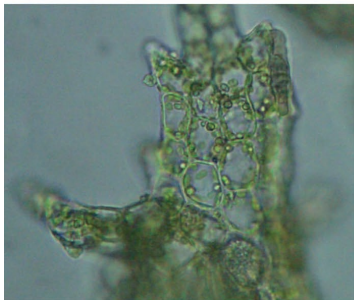
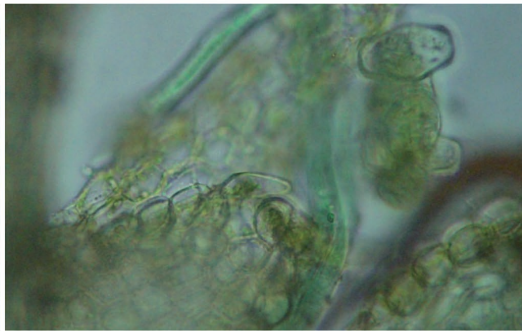
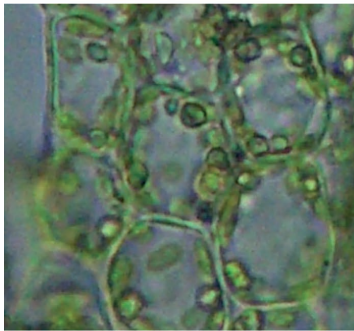
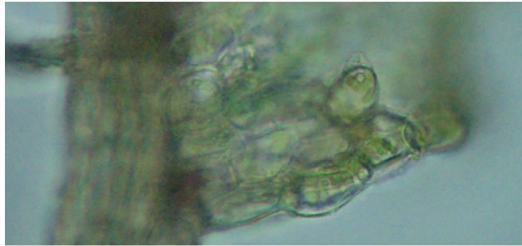
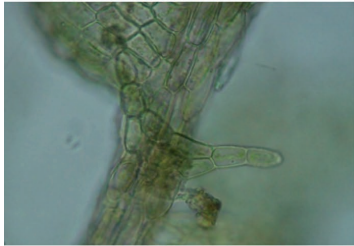
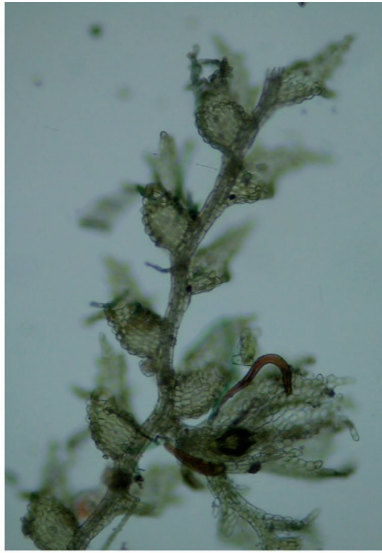
Plants small, rupicolous, pale green, in loose tufts. Stems prostrate to suberect, usually simple, to 1 cm long. Leaves about 0.39 x 0.84 mm, distant to subimbricate, bilobed, lobes conduplicate, margin slightly denticulate. Lobes of similar shape as ventral lobules, appressed to lobule, about 0.7 of its length, apex rounded except when gemmiferous, acute or obtuse and apiculate, keel curved. Cells isodiametric to slightly elongate in vitta region, 10 x 15 μ m. Underleaves absent. Asexual reproduction by brown, unicellular gemmae on deformed lobe apices of upper leaves, 25-33 μ m long. **Habitat:** On rocks and moist ground in Paramo from 3500 to 3700 m. **Distribution in Rwanda: Volcano NP: Bisoke. Distribution in Africa:** Kenya, Tanzania.





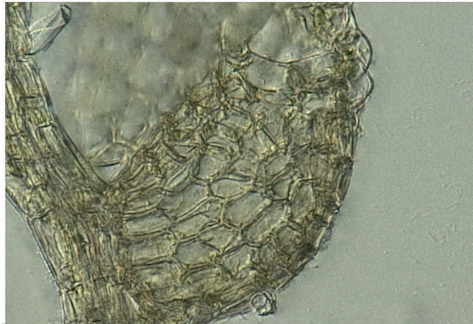
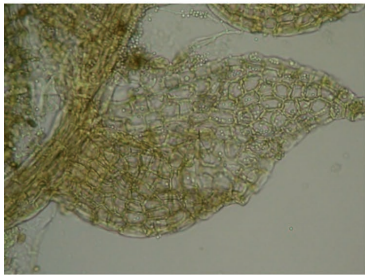
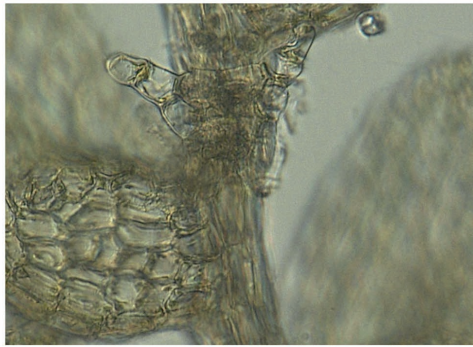
Figs 182 and 183 (next page). *Drepanolejeunea cultrella* (Mitt.) Steph.

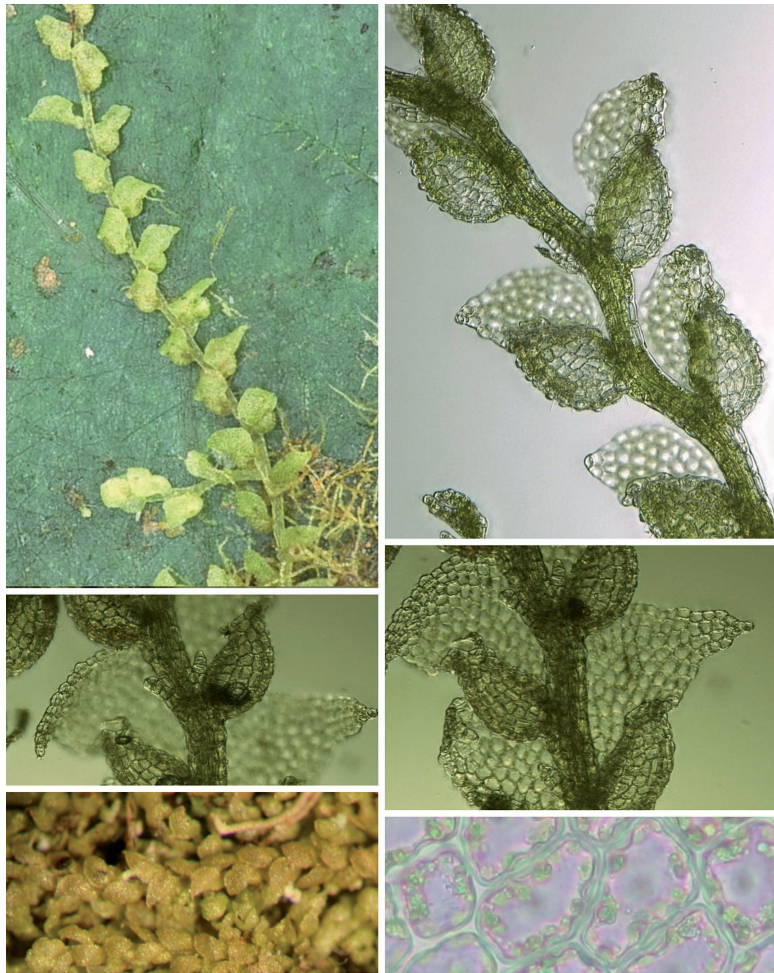
Plants small, shoots 0.3-0.45 mm wide and several mm long. Leaves distant to contiguous, with short insertion line. Lobe lanceolate, distinctly convex on dorsal side and nearly straight on ventral side, entire on dorsal margin, ventral margin with strong triangular tooth at its base and occasionally some spiniform teeth, asymmetrical, slightly falcate, apex acuminate, 0.12-0.16 x 0.2-0.35 mm. Lobule inflated, fusiform, 0.3-0.5 the length of the lobe, apical tooth 1-celled, curved. 1-3 scattered ocelli present. Underleaves distant, with triangular lobes, 0.06-0.07 mm long, at base 2-3 cells wide, followed by a uniseriate lobe. Autoicous. Perianth obconical, dentate, the lobes acuminate, with 5 keels, 0.2 x 0.45 mm, short and acute horns present. **Habitat:** Epiphyllous or epiphytic in montane forest, 1900-2000 m. **Distribution in Rwanda:** Nyungwe NP: Karamba, Gisakura, km 106 Butare-Cyangugu, Kamiranzovu. **Distribution in Africa:** Guinea, Sierra Leone, Ivory Coast, São Tomé, Cameroon, DR Congo, Burundi, Kenya, Tanzania. Also Comoros, Madagascar.



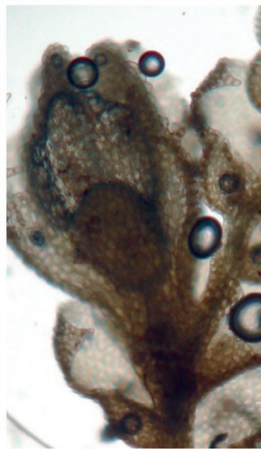
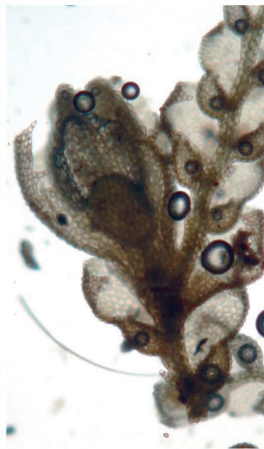
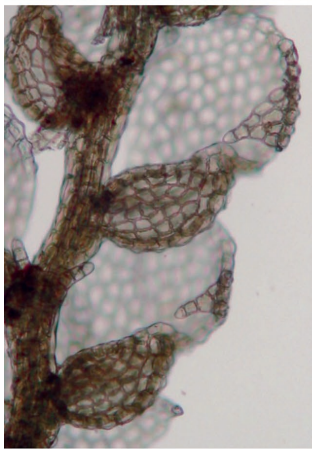
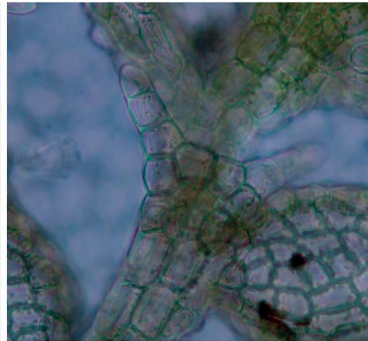
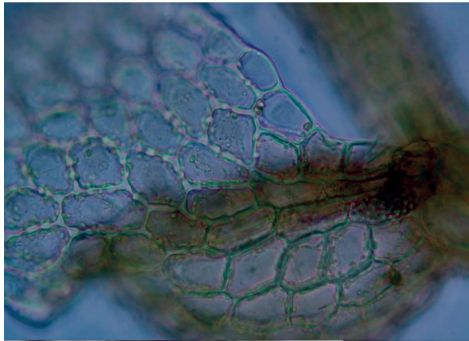
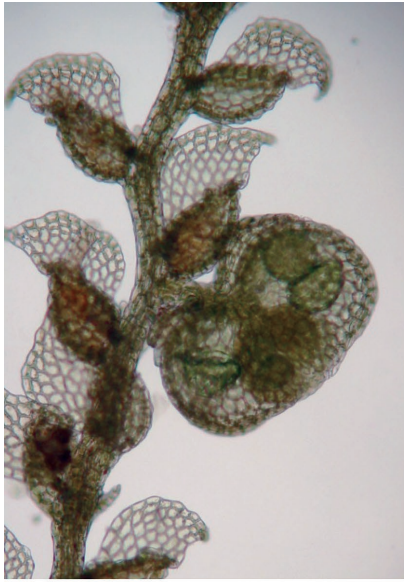


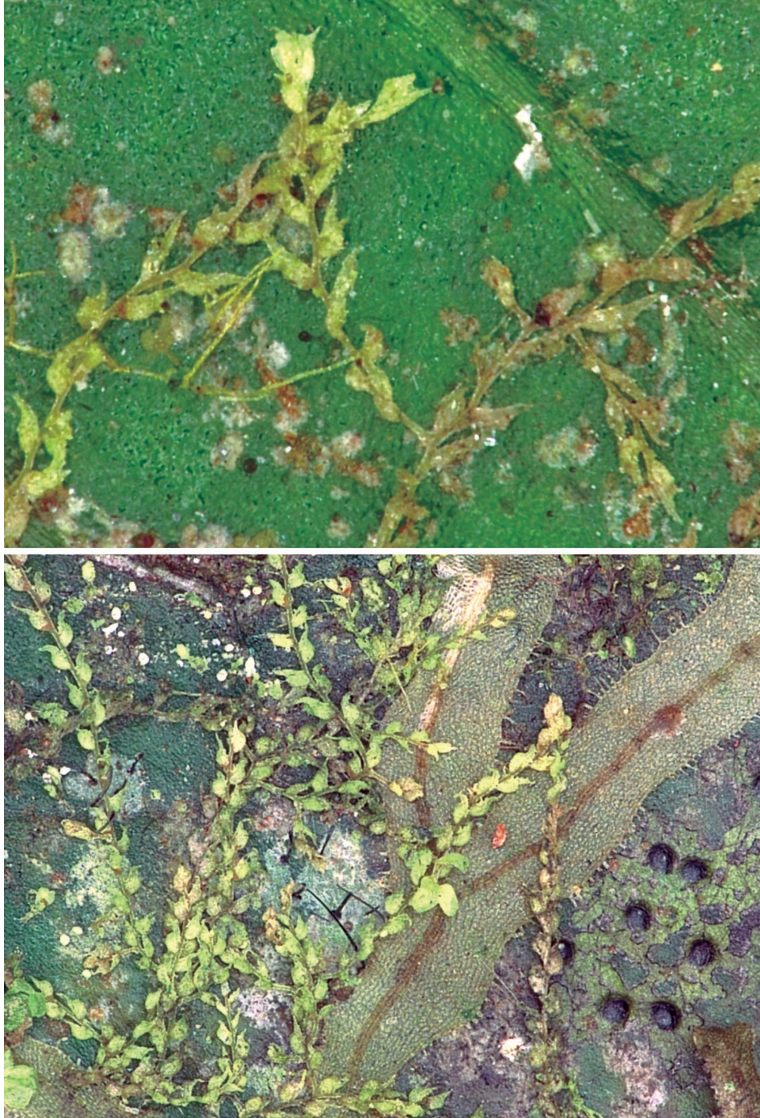
Figs 184 and 185 (next page). *Drepanolejeunea deslooveri* Vanden Berghen
 Synonym: *Drepanolejeunea hamatifolia* auct. non (Hook.) Schiffn. Plants small, shoots 0.32-0.52 mm wide. Leaves slightly imbricate. Lobe distinctly concave on ventral side, forming an angle of 10-40° with the stem, entire or sinuate, asymmetrical, subtriangular-lanceolate, slightly falcate, apex acuminate, 0.09-0.13 x 0.27-0.36 mm. Lobule inflated, fusiform, apical tooth 1-celled, hyaline papilla subglobose, 0.05-0.085 x 0.1-0.15 mm. 1-2 ocelli present. Underleaves distant, with subulate lobes, 0.05-0.07 mm long, at base 2 cells wide. Monoicous. Perianth turbinate, with 5 keels, 0.3-0.36 x 0.45-0.52 mm, horns absent. **Habitat:** Epiphyllous or epiphytic in montane forest, 2500 m. **Distribution in Rwanda: Nyungwe NP:** Rwasekoko. **Distribution in Africa:** DR Congo, Zimbabwe, Mozambique, South Africa.



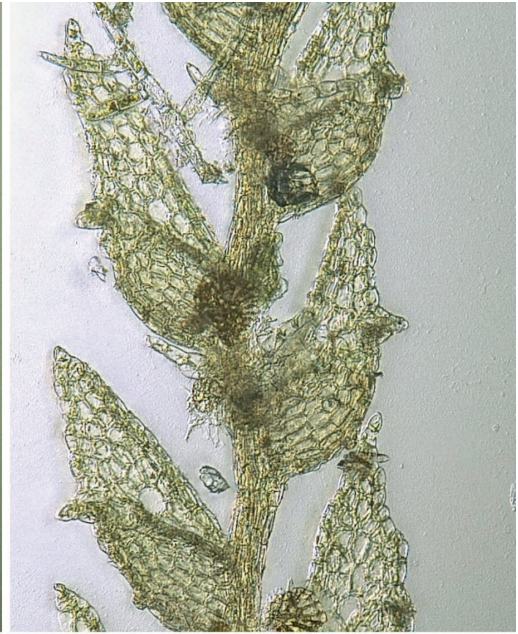
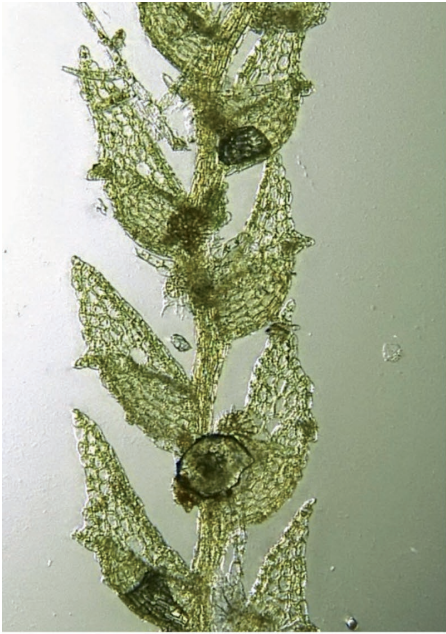


Figs 186 and 187 (next page). *Drepanolejeunea physaefolia* (Gottsche) Steph.
 Synonyms: *Drepanolejeunea friesii* Vanden Berghen; *D. vesiculosa* auct. non (Mitt.) Steph. Plants yellowish to light-brownish green, 4-5.5(-7) mm long and 0.35-0.45 mm wide. Leaves mostly imbricate, (0.25-)0.28-0.29 x 0.22-0.25 mm, with strongly decurved acute pointed apex. Basal ocelli present in most leaves, 2 in a row, containing one large oil body. Lobules \pm ovate in shape, 0.14-0.160 x 0.08-0.09 mm, 0.5 the length of the lobe, apical tooth 1-celled, curved towards lower margin of lobe. Underleaves 1.2-2 x as wide as the stem, 0.070-0.088 x (0.06-) 0.07-1 mm, with widely diverging, small triangular lobes ending in a one-celled apex. Perianths 0.5-0.55(-0.7) x 0.25-0.28 mm, obovoid with five long deep equal keels and a strong rostrum. **Habitat:** Epiphytic or epiphyllous in montane forest, 1900-2500 m. **Distribution in Rwanda:** Nyungwe NP: Rwasenkoko, Karamba, Kamiranzovu, Gisakura, Uwinka. **Distribution in Africa:** Guinea, Ivory Coast, Principe, Bioko, São Tomé, Cameroon, Rio Muni, DR Congo, Uganda, Kenya, Tanzania, Zimbabwe, Malawi, Mozambique, South Africa. Also Comoros, Madagascar, Mauritius, Réunion, Seychelles.



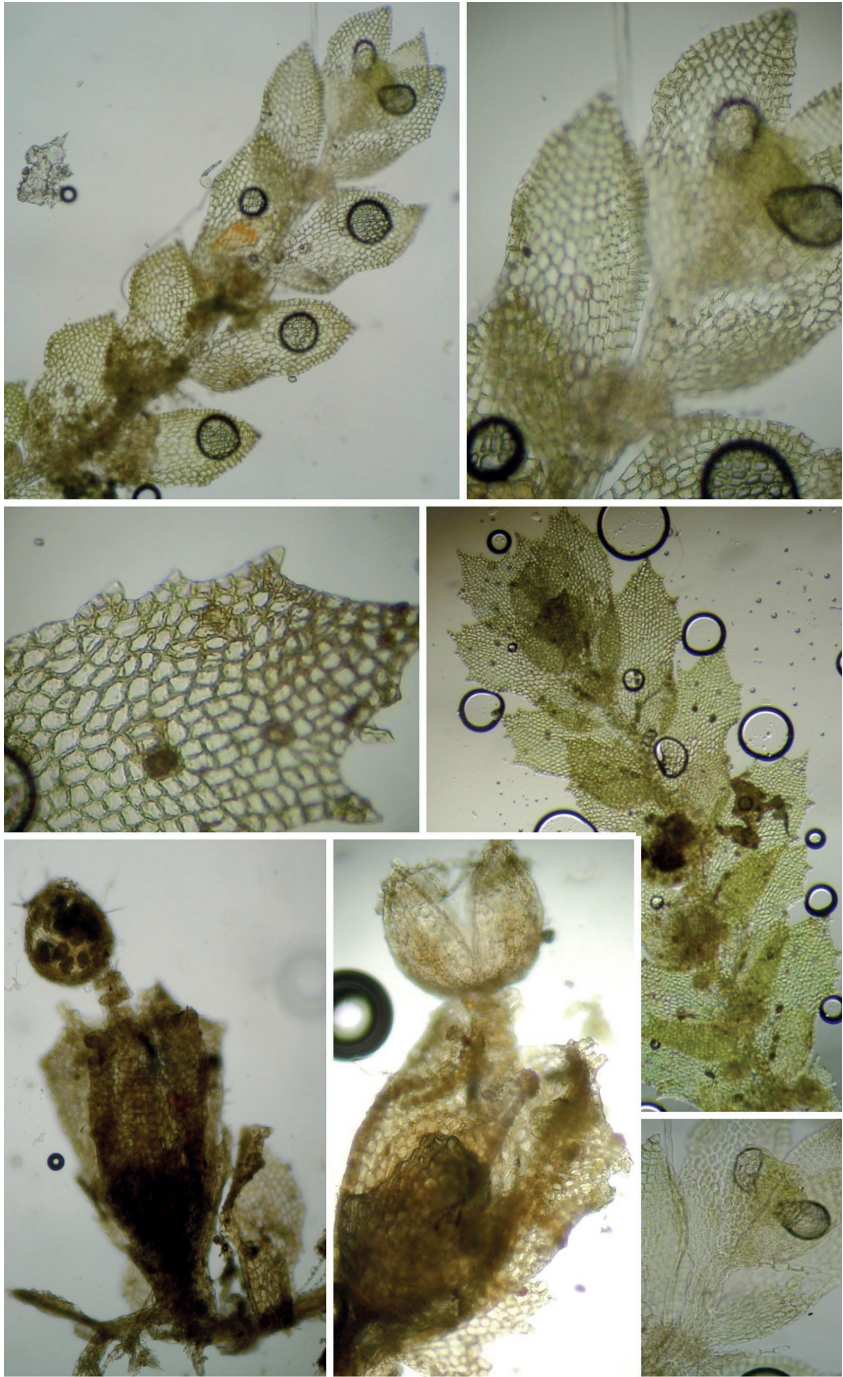


Figs 188 and 189 (next page). *Drepanolejeunea ruandensis* Vanden Berghen
 Plants small, shoots 0.3-0.4 mm wide and several mm long. Leaves distant to contiguous, with short insertion line. Lobe lanceolate, distinctly convex on dorsal side and nearly straight on ventral side, irregularly dentate, asymmetrical, slightly falcate, apex acuminate, 0.1-0.15 x 0.2-0.37 mm. Lobule inflated, fusiform, 0.07-0.09 x 0.13-0.17 mm, apical tooth 1-celled, arched, keel convex and mamillate. 1-3 scattered ocelli present. Underleaves distant, with triangular lobes, 0.06-0.07 mm long, at base 2-3 cells wide. Monoicous. Perianth turbinate, with 5 keels, 0.3-0.37 x 0.5-0.6 mm, short horns present. **Habitat:** Epiphyllous or epiphytic in montane forest, 2000 m. **Distribution in Rwanda:** Nyungwe NP: Karamba, Kamiranzovu. **Distribution in Africa:** DR Congo.





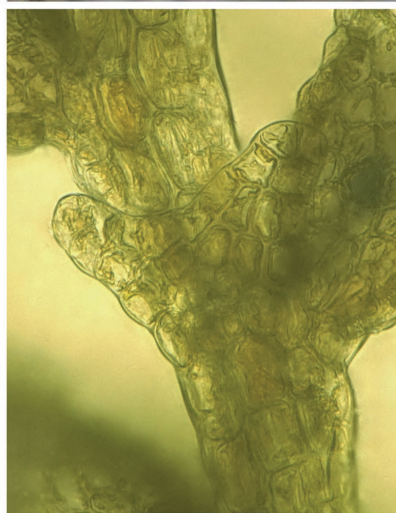
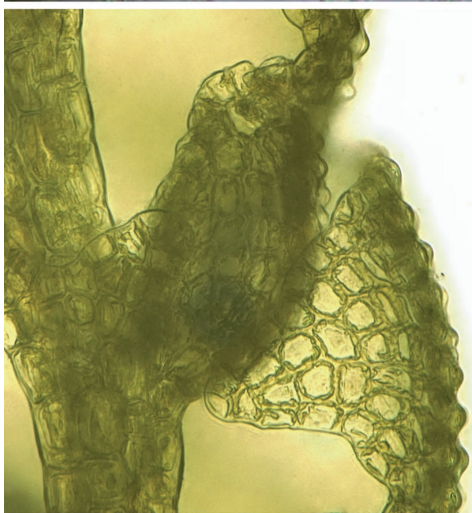
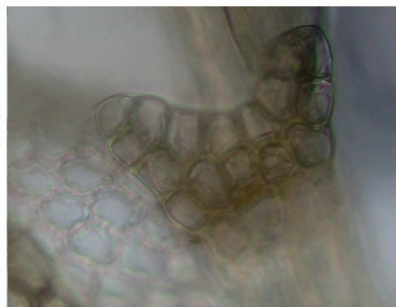
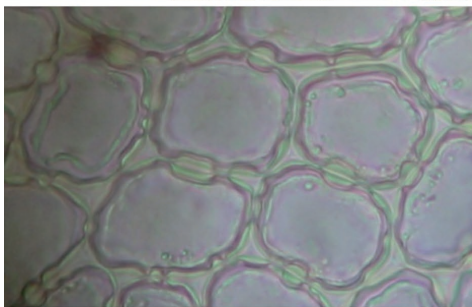
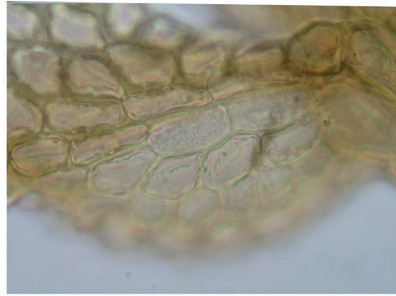
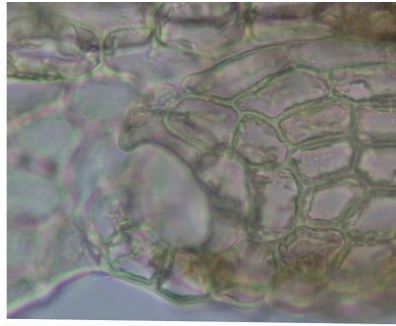
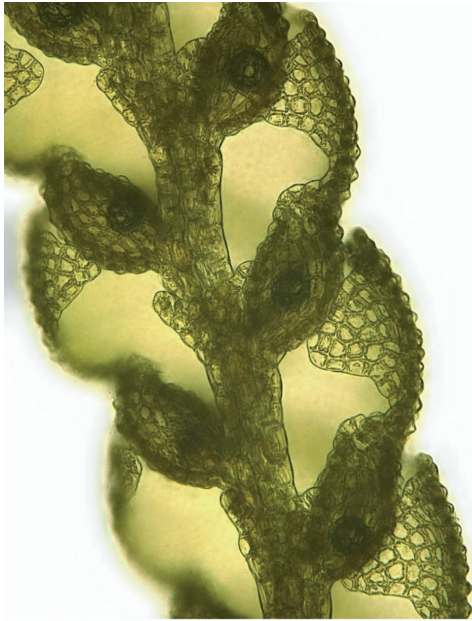
Figs 190 and 191 (next page). *Drepanolejeunea symoensii* (Vanden Berghen) Grolle
 Synonym: *Leptolejeunea symoensii* Vanden Berghen. Plants small, shoots 0.32-0.52 mm wide and 2-4 mm long. Leaves distant or contiguous. Lobe lanceolate-rhombical, subsymmetrical, margin entire or with few teeth, apex acuminate, 0.16-0.26 x 0.45-0.67 mm. Lobule subquadrangular, 0.06-0.13 x 0.15-0.27 mm, apical tooth 1-2-celled, hyaline papilla subglobose. 1-3 scattered ocelli present. Underleaves distant, with basilar disc, and subulate lobes, 0.08-0.16 mm long, at base 2 cells wide, followed by a row of 1-5 cells. Dioicous. Perianth turbinate, with 5 keels, 0.45 x 0.75 mm, horns absent. **Habitat:** Epiphyllous in montane forest, 1950-2000 m. **Distribution in Rwanda:** Nyungwe NP: Gisakura, Rwankuba, Kamiranzovu. **Distribution in Africa:** DR Congo, Burundi, Uganda.





Figs 192 and 193 (next page). *Drepanolejeunea vandenberghenii* Buchbender & Eb.Fisch.

Plants yellowish to light-brownish green, up to 14 mm long and 0.45-0.6 mm wide. Leaves mostly imbricate, (0.37-)0.4-0.45 x 0.37-0.4(-0.42) mm, with strongly decurved rounded to acute but rather widely pointed apex. Lobules \pm ovate in shape with the upper border being more straight than the lower, 0.16-0.175(-0.188) x 0.087-0.1 mm, 1/2 of the length of the lobe, with apical tooth curved towards lower margin of lobe. Underleaves 1.5-2 x as wide as the stem, 0.087-0.1 x (0.112-)0.125-0.138 mm, obtrapeziform with widely diverging, small triangular lobes ending mostly in a two-celled apex, separated by a shallow to rectangulate sinus. Perianth 0.7(-0.9) x 0.35(-0.4) mm, obovoid with 5 long deep equal keels and a strong rostrum. **Habitat:** Quartzitic rocks with *Sphagnum* and *Breutelia* in montane forest, also epiphytic on small twigs of *Symphonia globulifera* in the canopy, 1900-2020 m. **Distribution in Rwanda:** Nyungwe NP: Karamba, along old road to Ntendezi, between Gisakura and Karamba, E Karamba. **Distribution in Africa:** Malawi.





Figs 194 and 195 (next page). *Frullania angulata* Mitt.

Plants dark brown, laxly pinnate, forming pendent fronds up to 10-20 cm long. Leaf lobes 1-1.3(-2) x 0.7-0.9(-1.5) mm, spreading when moist, rolled around stem when dry, mucronate or apiculate at apex, auriculate at base. Lobules 0.2-0.35 mm long, 2.5-4 x as long as wide, mouth not projecting beyond lobe margin. Underleaves 2-3(-4) x as wide as the stem, bilobed for 0.3-0.4 of their length, lobes acute, margins revolute, auricled at base. Dioicous. Perianths claviform-cylindrical, trigonous, smooth. **Habitat:** Epiphyte on small branches in montane forest, 2000-2500 m. **Distribution in Rwanda:** Nyungwe NP: Rwasenkoko, Uwinka, Gisakura, Kamiranzovu, Ntendezi. **Distribution in Africa:** Nigeria, Annobón, São Tomé, Bioko, Cameroon, DR Congo, Burundi, Ethiopia, Uganda, Kenya, Tanzania, Angola, Malawi, Zimbabwe, Mozambique. Also Comoros, Madagascar, Mauritius, Réunion.





Fig 196. *Frullania apicalis* Mitt.

Plants dark brown to black, irregularly pinnate. Leaves distant to almost imbricate. Leaf lobes 0.5-0.8(-1) x 0.4-0.65(-0.75) mm, rounded at apex, truncate to weakly rounded at base. Lobules 0.2-0.3 mm long, 1.6-2.5 x as long as wide, mouth projecting beyond lobe margin. Underleaves 2-3 x as wide as the stem, bilobed for 0.25-0.35 of their length.

Dioicous. Perianths claviform or fusiform, trigonous in upper part, terete below, smooth.

Habitat: Epiphyte, rarely on rocks, 2020-2650 m. **Distribution in Rwanda:** Volcano NP: Sabinyo. **Nyungwe NP:** Karamba, Uwinka. **Distribution in Africa:** Guinea, Liberia, Sierra Leone, Ivory Coast, Ghana, Nigeria, Annobón, São Tomé, Bioko, Rio Muni, DR Congo, Burundi, Ethiopia, Uganda, Kenya, Tanzania, Zimbabwe, Mozambique. Also Comoros, Madagascar, Mauritius, Réunion, Rodriguez, Seychelles.