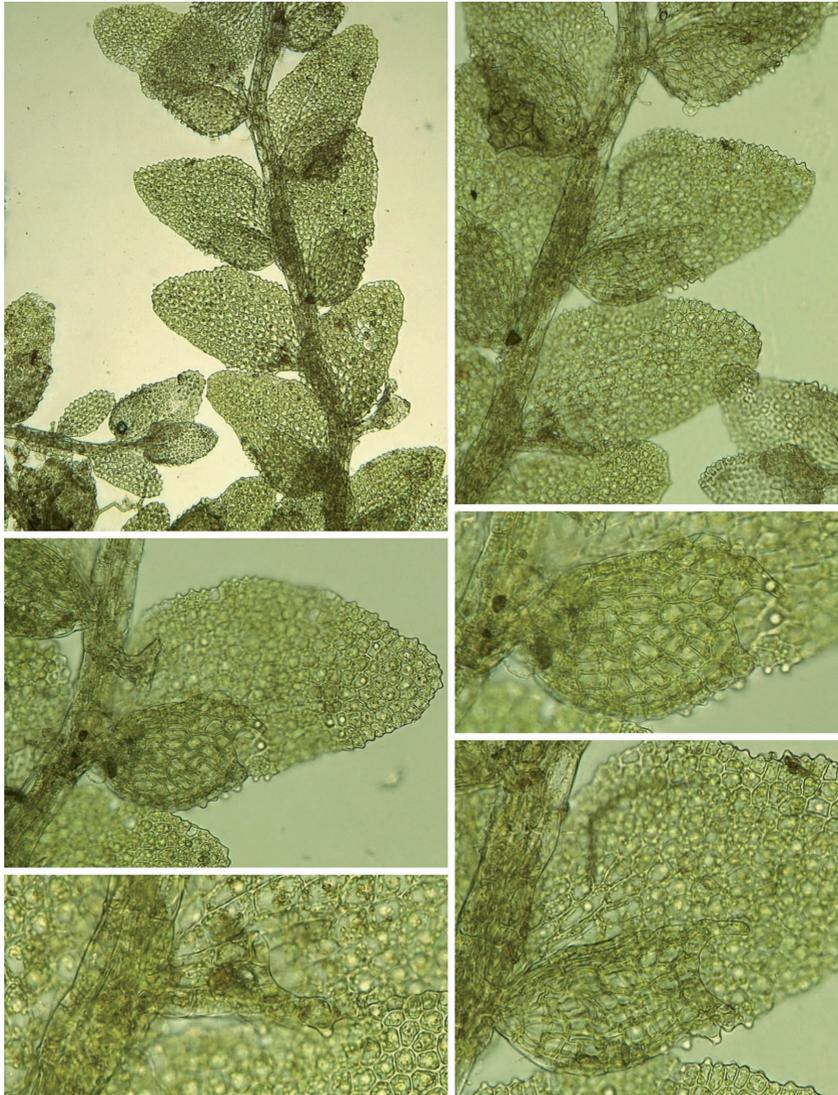


Figs 138 and 139 (next page). *Cololejeunea parva* Vanden Berghen

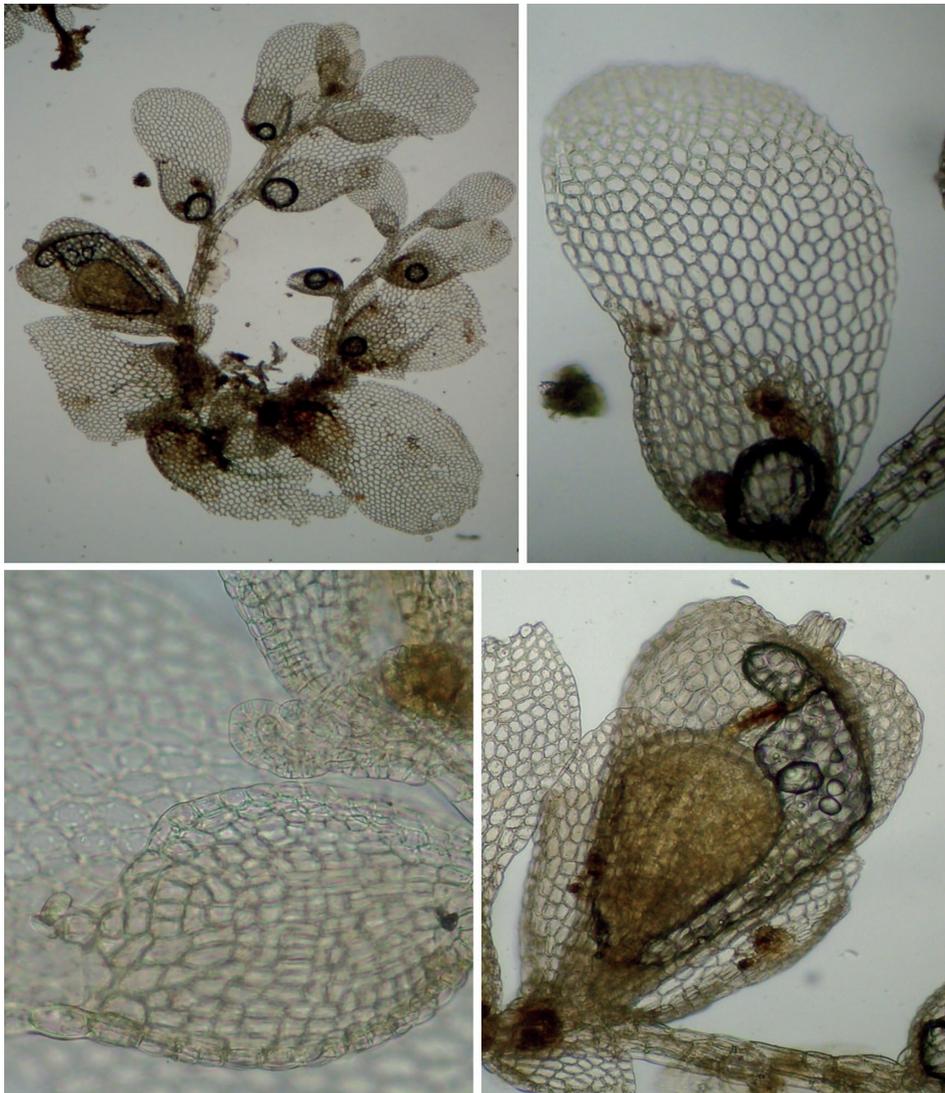
Plants small, shoots 0.38-0.53 mm wide. Lobe ovate, acute at apex, dorsal base truncate, densely denticulate at margin by acute papillose cells, 0.15-0.185 x 0.21-0.27 mm, dorsal cells with straight conical papilla. Lobule variable, often rather small, forming a few-celled row, 0.036-0.045 x 0.045-0.075 mm, ending in an acute apical tooth, consisting of 1 cell or 2 adjacent cells surmounted by 1 cell, hyaline papilla at apex of apical tooth. Monoicous. Perianth exerted, inflated, clubshaped, rounded or truncate at apex, with 2 ventral keels, papillose, 0.25-0.36 x 0.42-0.55 mm. **Habitat:** On mosses and epiphyllous in montane forest, 2000-2200 m. **Distribution in Rwanda: Gishwati Forest:** Gikungu, vallée Bikeneko. **Distribution in Africa:** Uganda.





Figs 140 and 141 (next page). *Cololejeunea platyneura* (Spruce) S.W.Arnell
 Synonym: *Cololejeunea usambarica* E.W.Jones. Plants small, shoots 0.4-0.6 mm wide. Lobe convex, decurved, ovate, slightly falcate, 0.25-0.32 x 0.15-0.18 mm. Cells papillose, vitta 3-4 cells long, in 1-2 rows, usually not clearly demarcated, bordered by elongate papillose cells intermediate in size, vitta cells without papilla. Lobule 0.4-0.5 the length of the lobe, inflated, distal cell of free margin projecting as an acute tooth, apical tooth of 2 cells, usually overlapping with distal tooth. Monoicous (?). Perianth pyriform, ventrally inflated, papillose. **Habitat:** Epiphyllous in submontane forest, 2000 m. **Distribution in Rwanda: Nyungwe NP:** Kamiranzovu. **Distribution in Africa:** Guinea, Sierra Leone, Nigeria, DR Congo, Tanzania. Also Madagascar.





Figs 142 and 143 (next page). *Cololejeunea pseudo-obliqua* Tixier

Plants medium-sized, up to 0.8 mm wide. Stems up to 1 cm long. Lobes ovate, apex rounded, 0.5 x 0.3 mm. Lobules saccate, inflated, reaching middle of lobe, with 2 teeth, apical tooth unicellular, hardly visible, median tooth 2-cellular, hyaline papilla at median tooth. Asexual reproduction with up to 24-celled gemmae. Monoicous. Perianths ovoid, apex truncate, without ventral keels, 0.5 x 0.3 mm wide, papillose at apex. **Habitat:** Epiphyllous in montane forest, 2000 m. **Distribution in Rwanda:** Nyungwe NP: Karamba, Kamiranzovu. **Distribution in Africa:** DR Congo. **Note:** Tixier (1995) cites erroneously DR Congo, Kahuzi-Biéga as type locality (misspelled as 'Kahuzi Riega', 'forêt à *Cootea ussambarica*' = *Ocotea usambarensis*), but indicates correctly the collection number of the type locality in Rwanda.

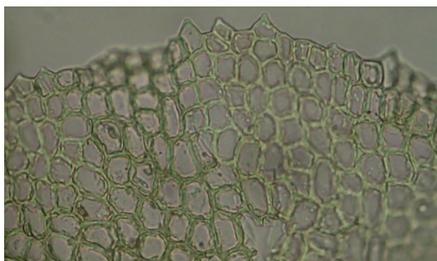
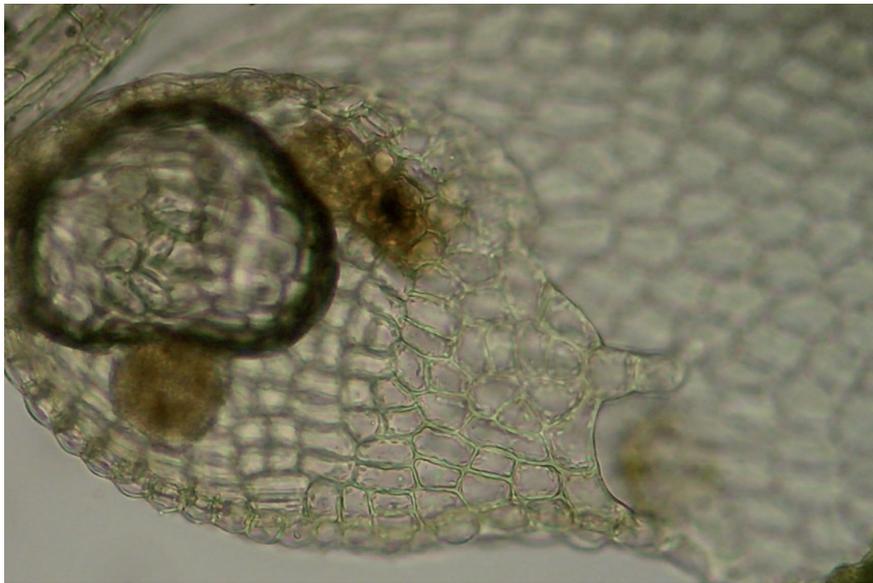




Fig. 144. *Cololejeunea pseudo-pusilla* Tixier

Plants small, up to 0.7 mm wide. Stems up to 0.5 cm long, up to 60 μ m in diameter. Lobes ovate, acuminate at apex, 0.3 mm long and 0.2 mm wide. Lobules saccate, inflated, well developed or reduced, well developed lobule 150 μ m long and 100 μ m wide, with apical tooth hardly visible, median tooth 2-cellular, hyaline papilla at base of median tooth.

Asexual reproduction with up to 22-24-celled gemmae. Monoicous. Perianths ovoid, apex rounded, without ventral keels, 0.4 mm long and 0.2 mm wide. **Habitat:** Submontane rain forest, 1950 m. **Distribution in Rwanda:** Nyungwe NP: Gisakura. **Distribution in Africa:** DR Congo.

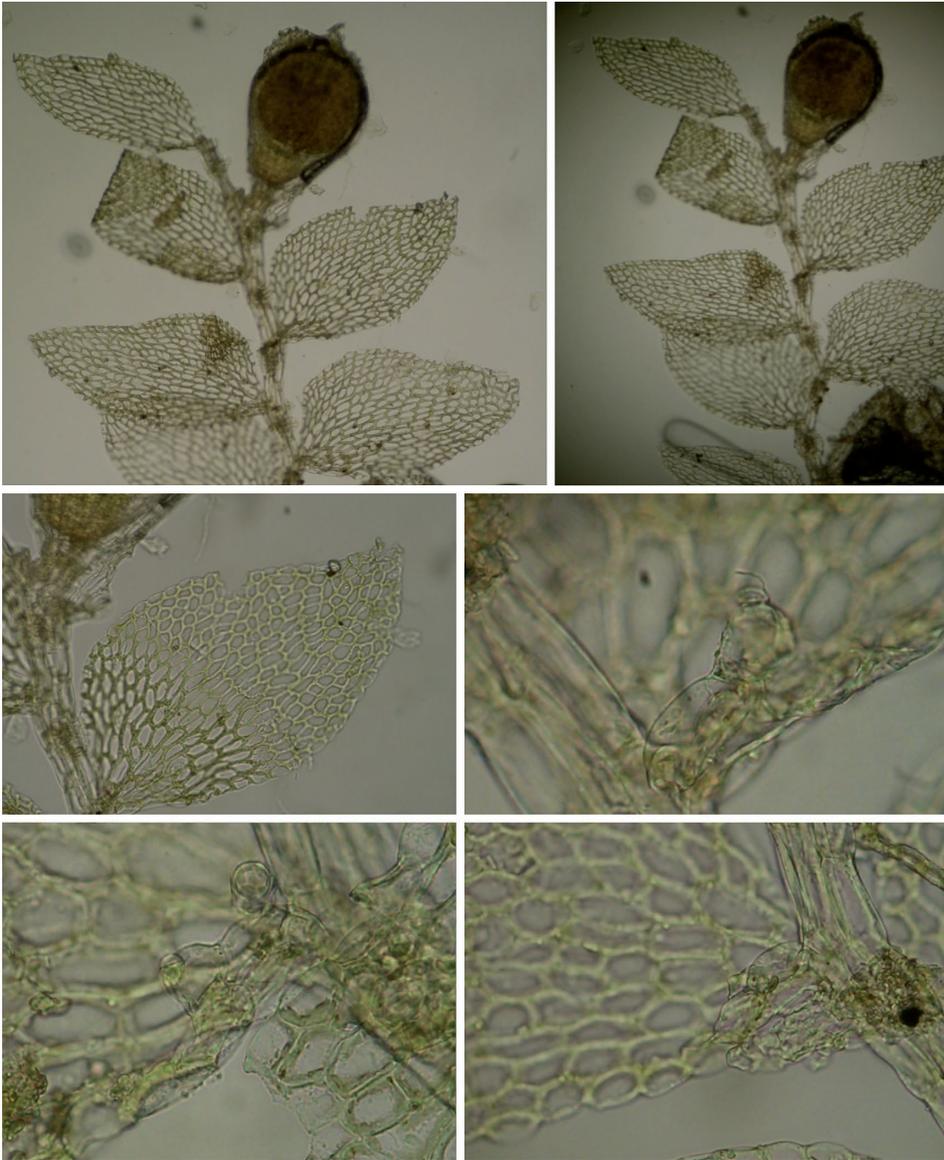
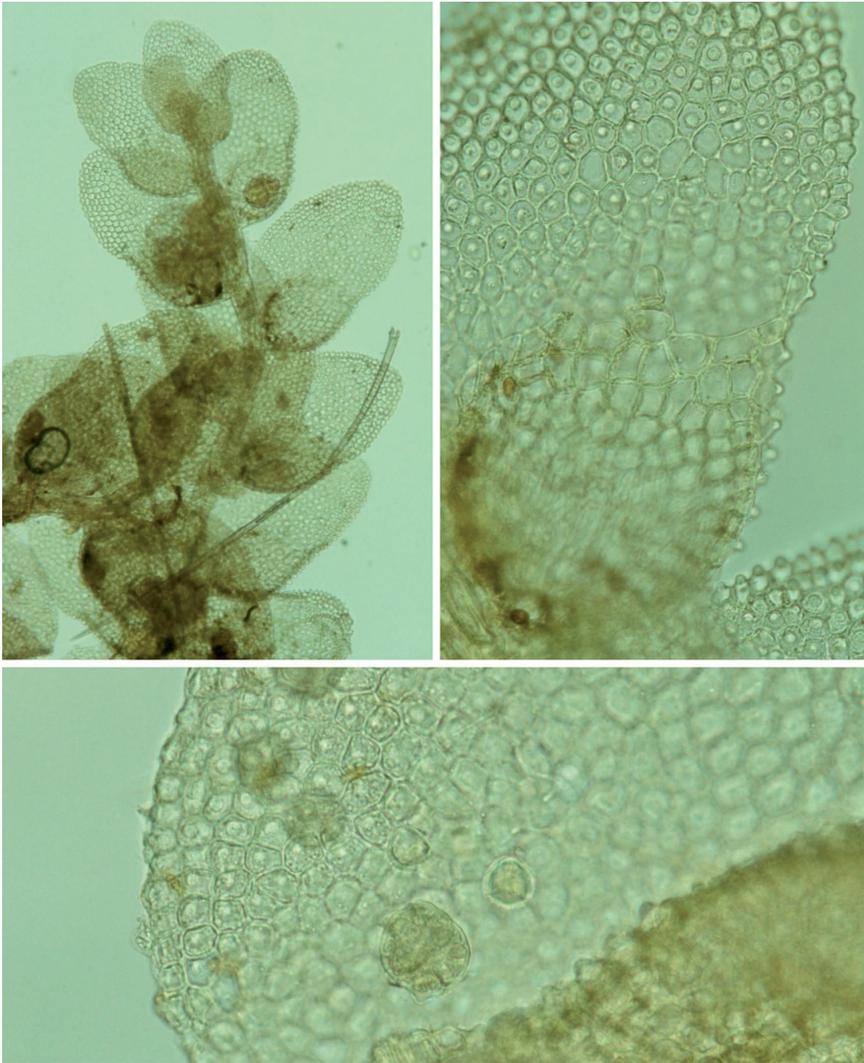
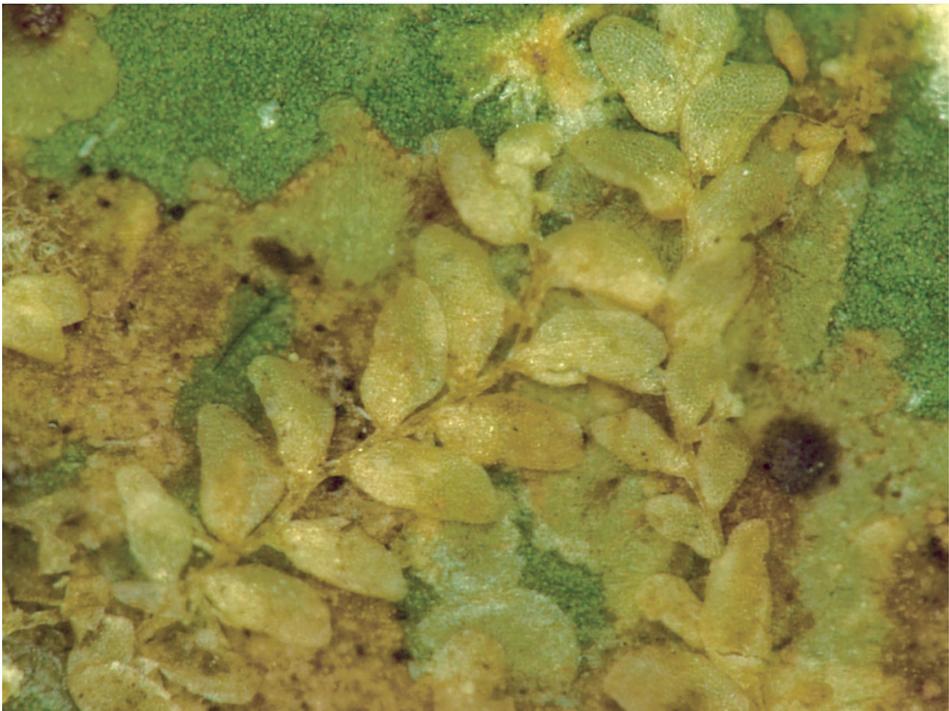
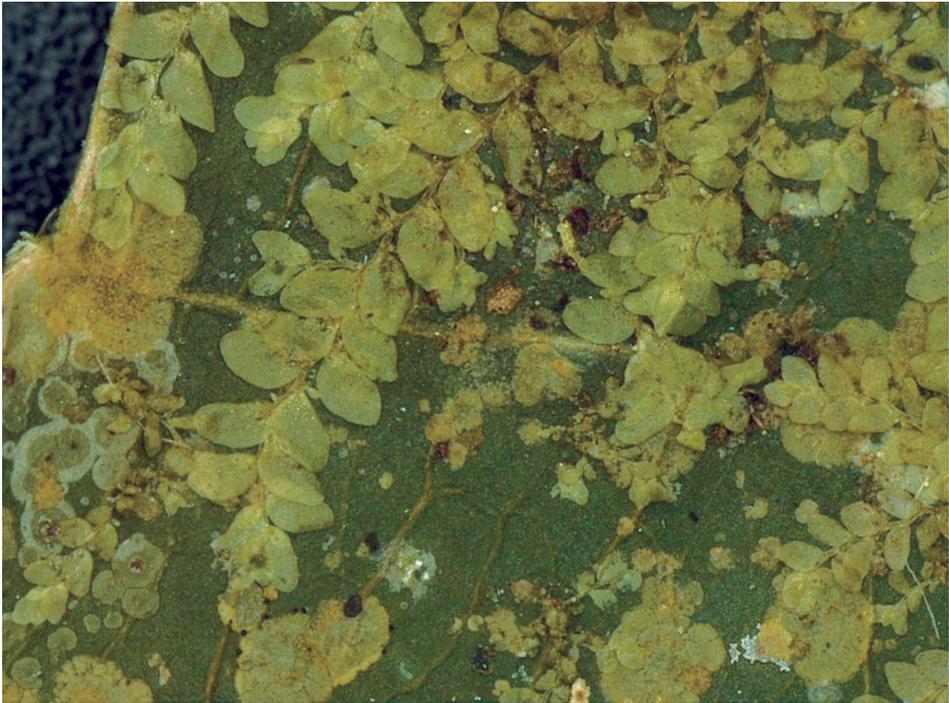


Fig. 145. *Cololejeunea pusilla* Steph.

Synonym: *Cololejeunea pusilla* Steph. *var. pusilla*. Plants small, shoots 0.5-0.8(-1) mm wide. Leaves approximate, spreading at 50-80° to the stem. Lobe up to 0.4-0.6 mm long, ovate-lanceolate, with acute apex. Lobule reduced to a few (4-8) cells, 36-55 x 22-40 µm. Gemmae on non-marginal lobe cells. Autoicous. Perianth pyriform and terete, 0.4-0.6 x 0.3-0.4 mm, with 5 keels. **Habitat:** Epiphyllous in montane forest, 2000-2100 m. **Distribution in Rwanda:** Nyungwe NP: Karamba, Uwinka. **Distribution in Africa:** Guinea, Ghana, Togo, Nigeria, Bioko, Cameroon, Gabon, Rio Muni.



Figs 146 and 147 (next page). *Cololejeunea runssorensis* (Steph.) Pócs
 Synonyms: *Cololejeunea leonardii* Vanden Berghen; *C. elegans* auct. non Steph. Plants medium-sized, shoots 0.8-1.2 mm wide. Stem 2-5 mm long. Lobe elliptical, rounded at apex, crenulate at margin by papillose cells, 0.3-0.4(-0.5) x 0.54-0.64 mm. Lobule well developed, c. 1/3-2/5 of lobe length, 0.13-0.18 x 0.2-0.27 mm, sometimes inflated in basal part, with 2 teeth, apical tooth consisting of 1-3 cells, proximal tooth of 1 cell, sometimes lobule reduced to a few cells and then only 1 tooth developed. Cells of lobe each with papilla on dorsal side. Monoicous. Perianth exserted, compressed, obovate, 0.375 x 0.6 mm, lateral keels slightly auriculate, ventral keel obtuse, cells papillose. **Habitat:** Epiphyllous in montane forest, 1900-2500 m. **Distribution in Rwanda:** Nyungwe NP: Rwasekoko, Karamba, Kamiranzovu, Rwankuba, Uwinka, Gisakura. **Distribution in Africa:** DR Congo, Burundi, Uganda, Kenya, Malawi.



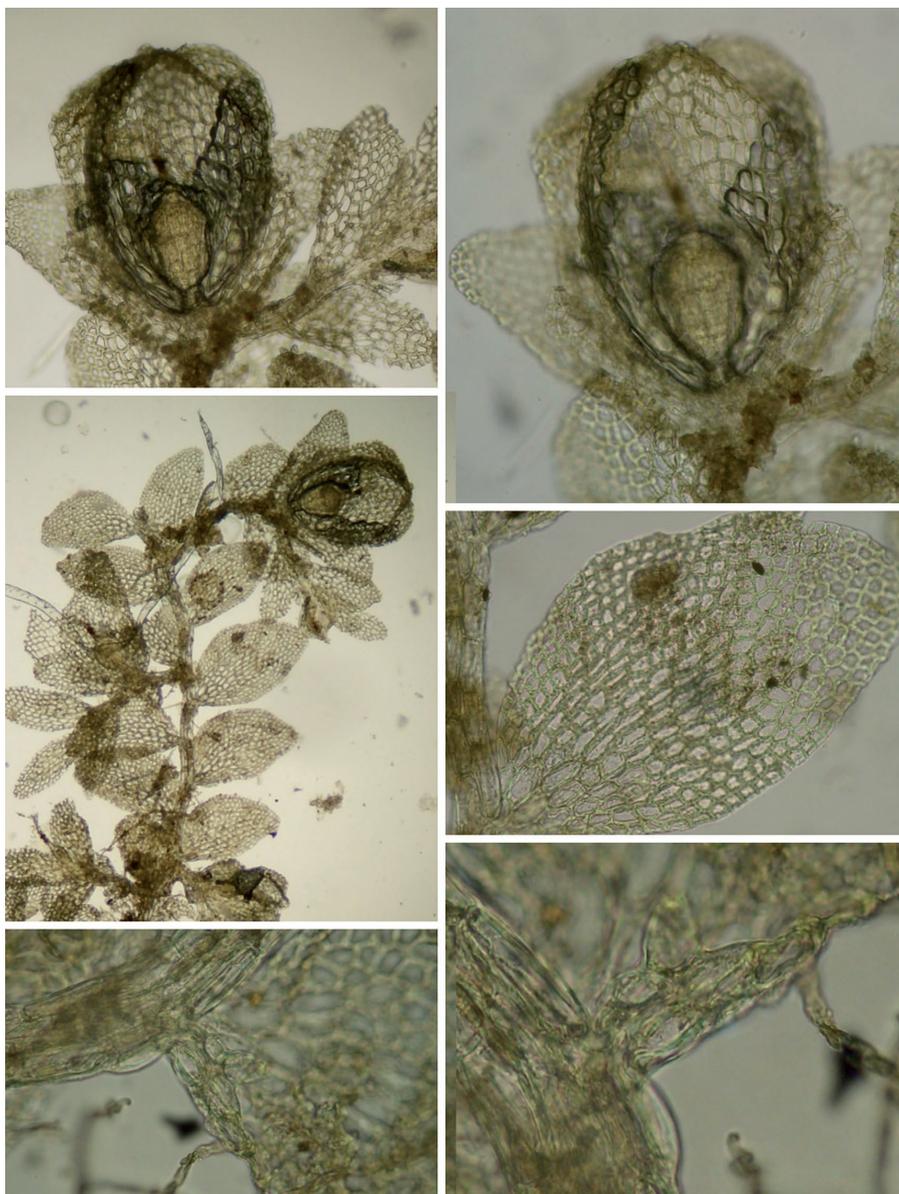
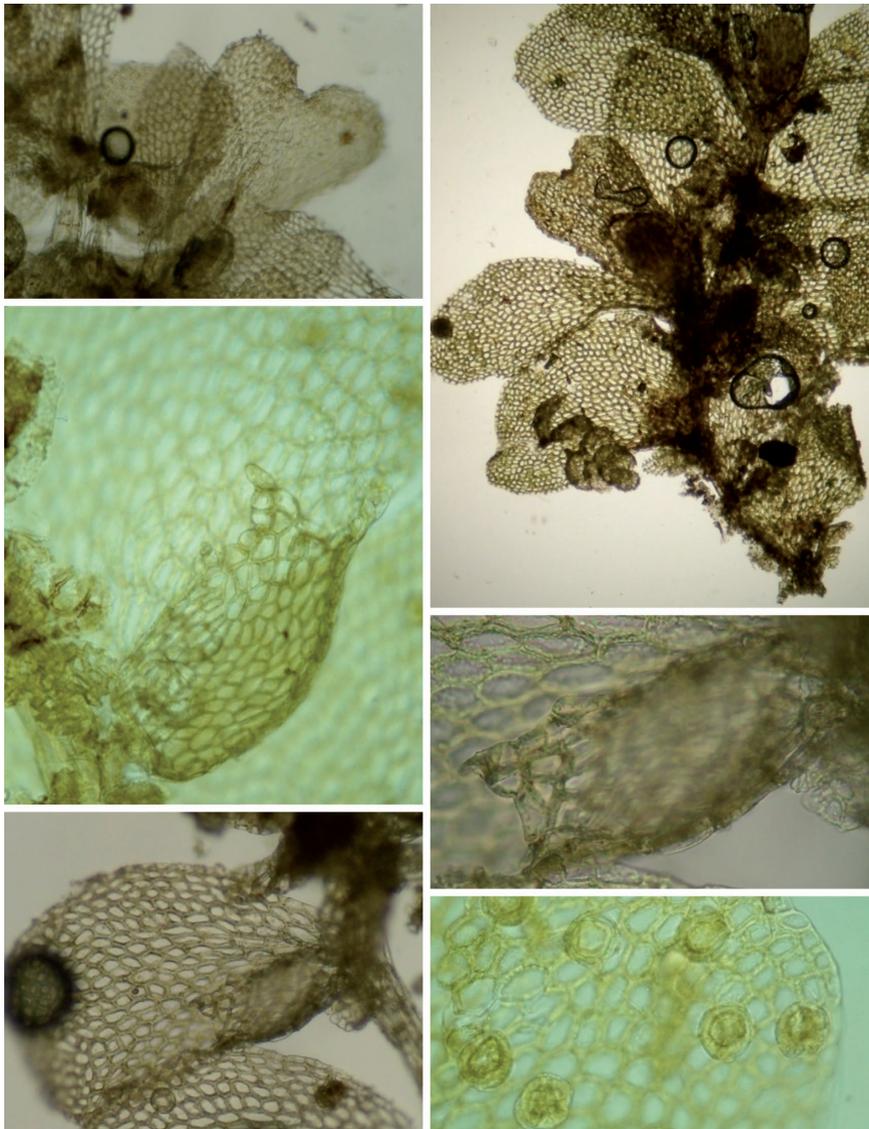


Fig. 148. *Cololejeunea sphaerocarpa* Tixier

Plants small, up to 0.5 mm wide. Stems up to 1 cm long, branched, up to 60 µm in diameter. Lobes rounded-ovate, apex rounded, pseudovitta short, at base of lobe. Lobules usually reduced, triangular, keel straight, with apical tooth unicellular, well developed lobules sometimes present. Asexual reproduction with up to 24-celled gemmae.

Monoicous. Perianths spherical, apex rounded, with indistinct ventral keels and short rostrum, 0.25 mm long and 0.2 mm wide. **Habitat:** Epiphyllous in montane forest, 2100 m.

Distribution in Rwanda: Nyungwe NP: Uwinka. **Distribution in Africa:** DR Congo.



Figs 149 and 150 (next page). *Cololejeunea tenuiparietata* Tixier
 Plants medium-sized, up to 1.7 mm wide. Stems up to 1 cm long. Lobes elongate, slightly rectangular, apex rounded, 1 mm long and 0.6 mm wide, pseudovitta short, at base of lobe. Lobules saccate, about 1/5 of lobe length, keel straight, 0.2 mm long and 0.15 mm wide, with 2 teeth, apical tooth unicellular, hardly visible, median tooth 3-cellular, with 2 basal and 1 apical cell. Asexual reproduction with up to 20-22-celled gemmae. Monoicous. Perianths compressed, with wide and rounded wings, with ventral keels and short rostrum, 0.7 mm long and 0.35 mm wide. **Habitat:** Epiphyllous in montane forest on *Marattia fraxinea*, 2000-2100 m. **Distribution in Rwanda:** Nyungwe NP: Uwinka, Gisakura. **Distribution in Africa:** DR Congo.



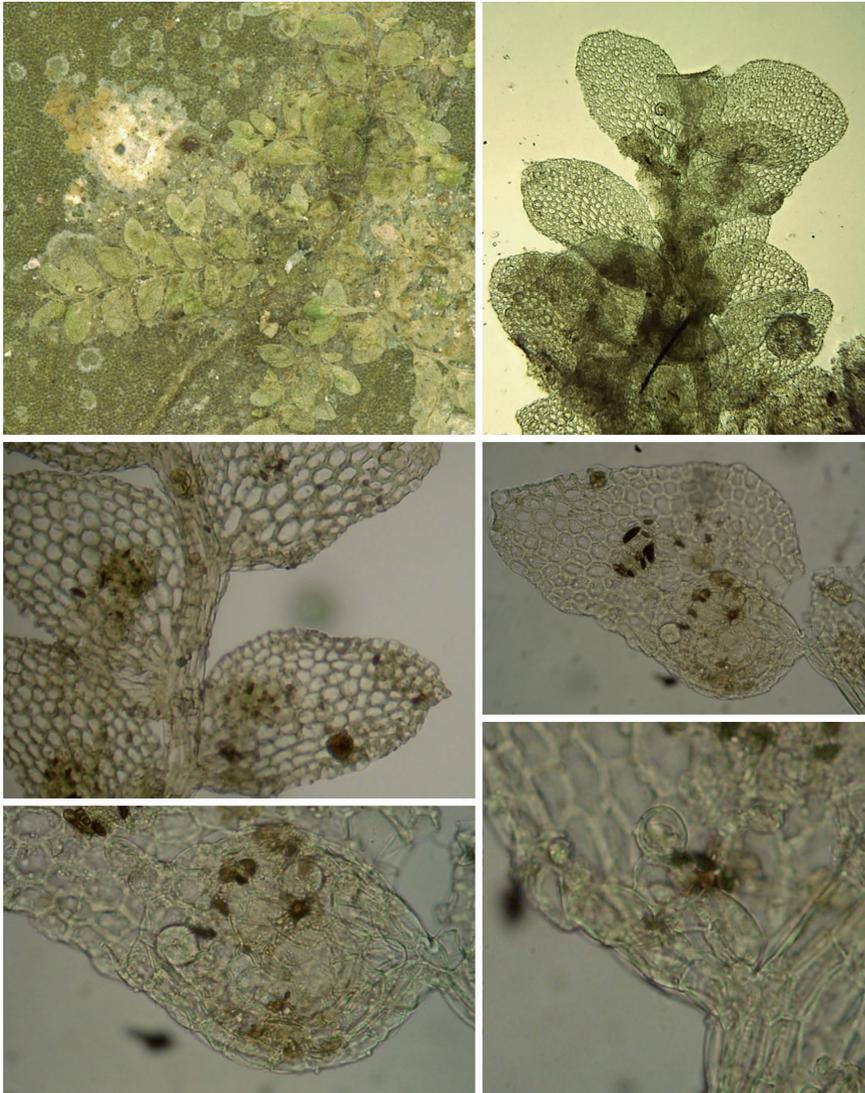


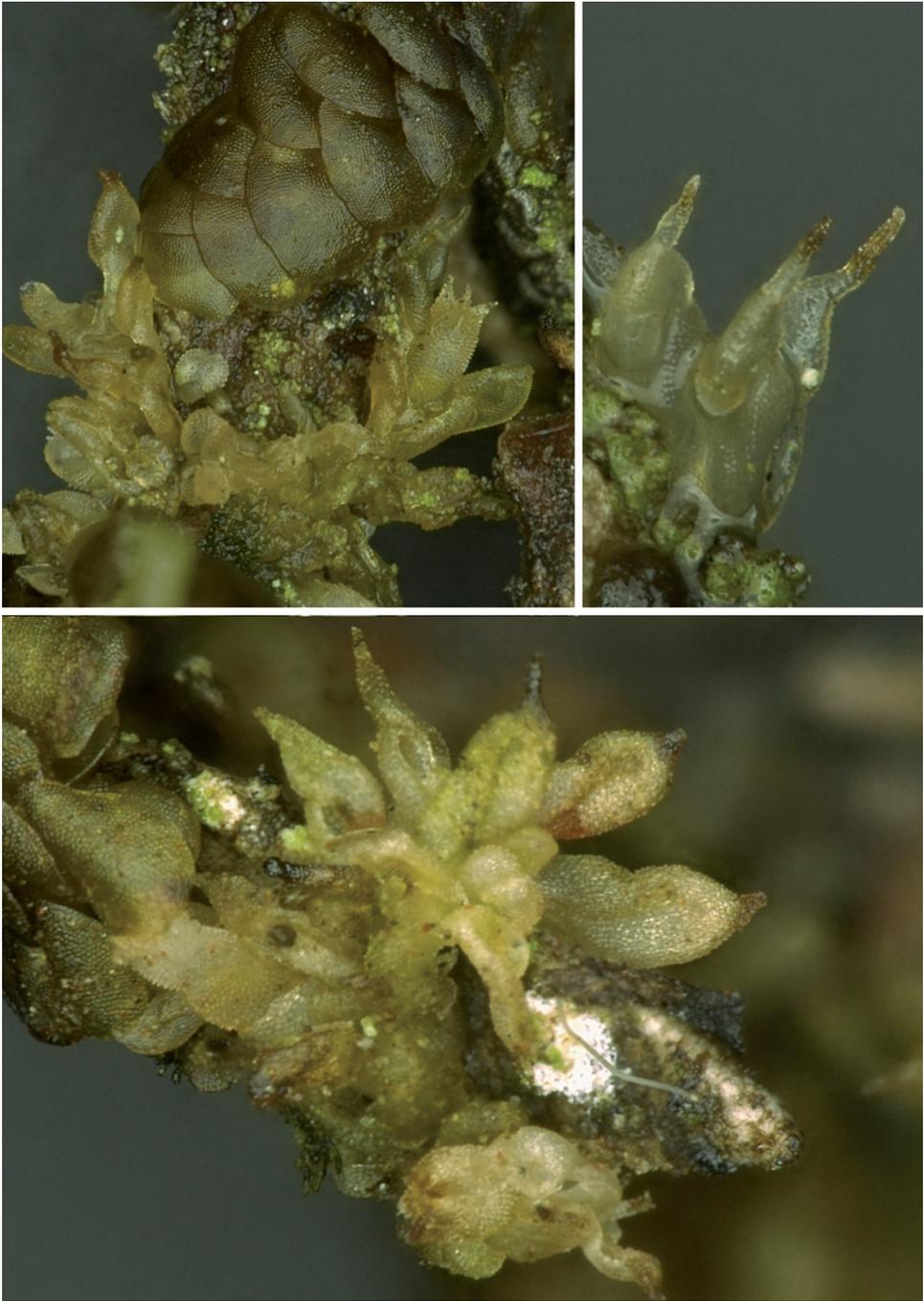
Fig. 151. *Cololejeunea zenkeri* (Steph.) E.W.Jones

Plants medium-sized, shoots up to 1-1.4 mm wide. Leaves approximate, in an angle of c. 60° to the stem. Lobe 0.55-0.8 x 0.4-0.55 mm, ovate, apex obtuse, margin irregularly serrate with conically protuberant cells. Lobule c. 0.35-0.5 the length of the lobe, sometimes reduced to a few cells, apical tooth with 2 short cells, hyaline papilla spherical, at base of apical tooth. Gemmae present. Autoicous. Perianth pyriform, strongly inflated, lateral keels narrow, at papillose apex. **Habitat:** Epiphyllous or epiphytic in montane rainforest, 2000-2300 m. **Distribution in Rwanda:** Gishwati Forest: Gikungu. **Nyungwe NP:** Karamba, Kamiranzovu, Uwinka. **Distribution in Africa:** Sierra Leone, Principe, Bioko, Cameroon, Rio Muni, DR Congo, Burundi, Uganda, Tanzania. Also Madagascar, Réunion.



Figs 152 and 153 (next page). *Colura berghenii* Jovet-Ast

Plants pale green, resembling *C. calyptrifolia*. Leaves distichous, ascending to erect, 0.7-1.4 mm long, all possessing a claviform sac, dorsal lobe smaller than ventral lobe, ovate to orbicular, overlapping stem and decurved, ventral lobe ovoid, sac-like, abruptly narrowed into a beak of 1/4 to 1/3 of total leaf length. Cells of lobe 16-24 x 20 μ m, each cell distinctly papillose, walls with large nodular trigones. Autoicous. Perianth densely papillose, narrowly pyriform with five spreading 0.15 mm long horns, 1.5 mm long and 0.5 mm wide. **Habitat:** Epiphyllous (?) or on small dead twigs of ericaceous shrub in montane forest, 2000-2950 m. **Distribution in Rwanda:** Nyungwe NP: Gisakura, Mt. Bigugu, Rwasenkoko. **Distribution in Africa:** Ethiopia (Bale Mts.), Tanzania (Kilimanjaro, Rungwe). **Note:** First recorded by Tixier (1995) based on a depauperate and doubtful specimen from rather low altitude. On Mt. Bigugu at 2950 m and in Rwasenkoko Swamp at 2450 m the plant is well developed and fertile.



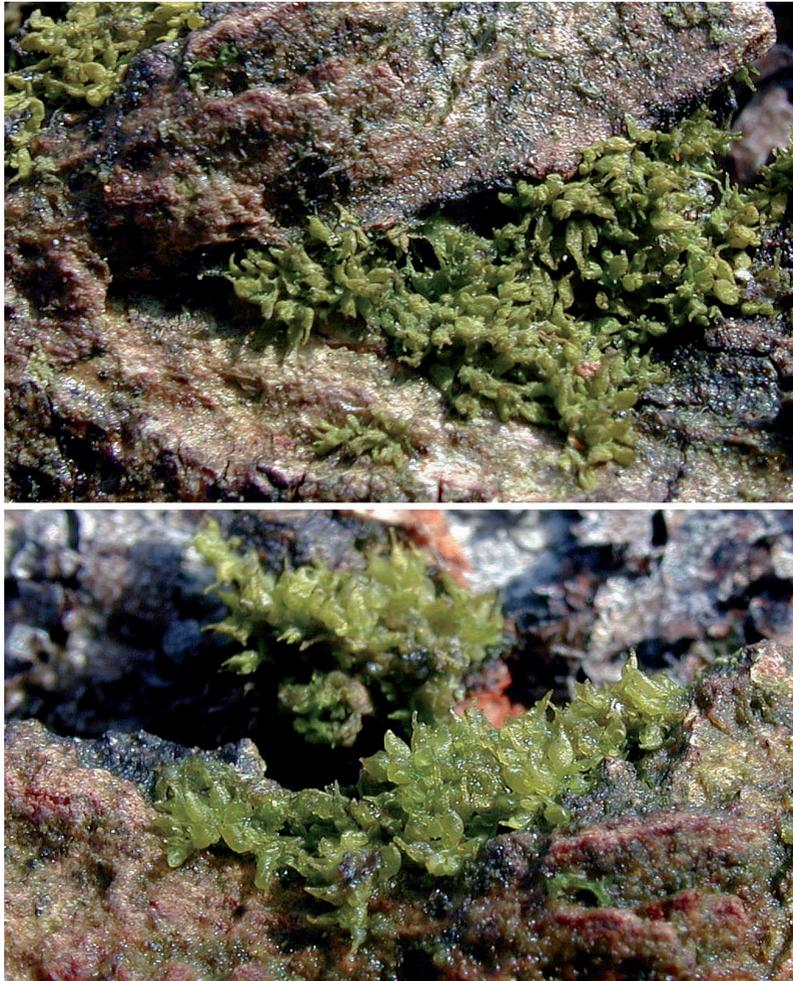
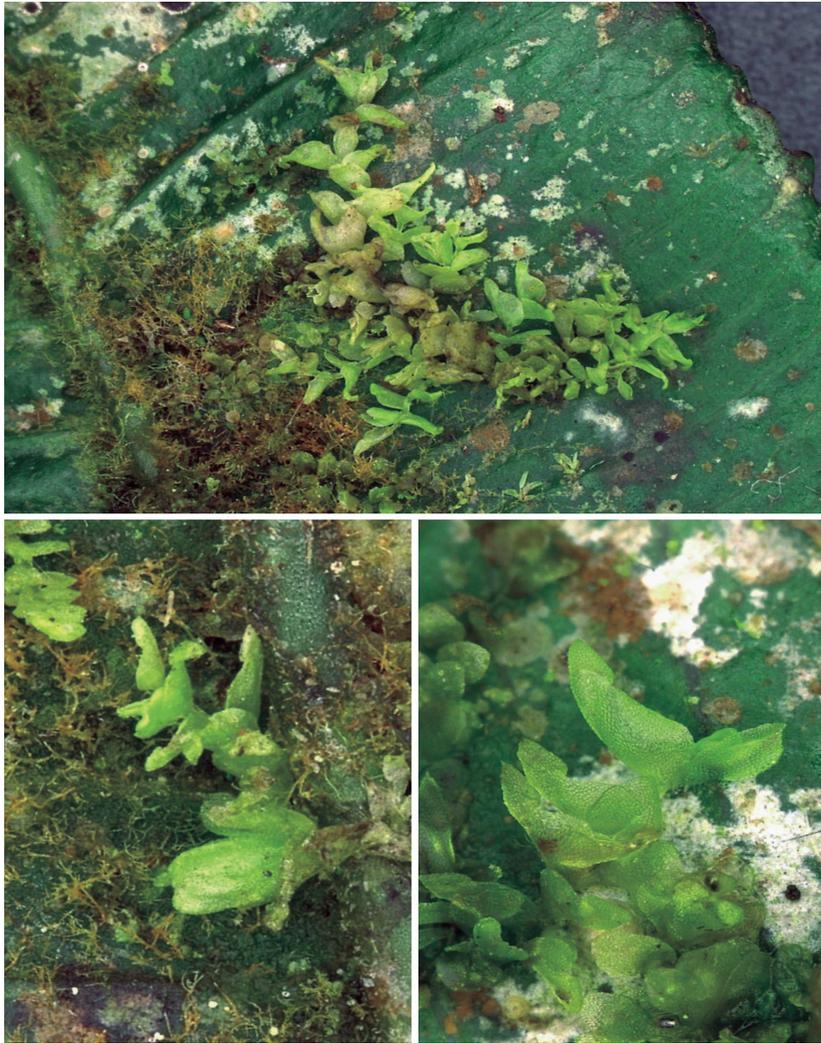


Fig. 154. *Colura calyptrifolia* (Hook.) Dumort.

Plants epiphytic on twigs of ericaceous shrubs or epiphyllous, pale green. Stems up to 4 mm long. Leaves distichous, ascending to erect, 0.7-1.4 mm long, all possessing a claviform sac, dorsal lobe smaller than ventral lobe, ovate to orbicular, overlapping stem and decurved, ventral lobe ovoid, sac-like, abruptly narrowed into a beak of 1/4 to 1/3 of total leaf length. Cells of lobe 16-24 x 20 μ m, walls without nodular trigones. Valve movable, ovate, bordered by c. 16-18 hyaline cells, the central tissue of c. 10-12 cells with uniformly thickened walls. Underleaves bilobed, about 0.5 mm long, with subulate lobes up to 2 cells wide at base. Autoicous. Perianth lateral on the main axis, narrowly pyriform with five weak papillose spreading 0.15 mm long horns, 1.5 mm long and 0.5 mm wide, rostrum short, 1-celled. **Habitat:** Epiphyllous or epiphytic on dead twigs of ericaceous shrubs in montane forest, 2000-2450 m. **Distribution in Rwanda:** Nyungwe NP: Gisakura, Rwasekoko. **Distribution in Africa:** DR Congo, Burundi, Tanzania, Malawi, Zimbabwe, South Africa. Also Central and South America, Western Europe, Azores, Madeira, Canary Islands, Mauritius, Réunion.



Figs 155 and 156. (next page) *Colura digitalis* (Mitt.) Steph.

Plants epiphyllous, pale green. Stems up to 6 mm long. Leaves distichous, 1.1-1.8 mm long, lobe c. 0.65 the length of the leaf, 0.35-0.75 mm wide, sac about 0.3 the length of the leaf, apex rounded. Cells of lobe 20-30 x 35-40 μm , walls with nodular trigones and intermediate thickenings. Valve ovate, bordered by 15-18 hyaline cells, the central tissue of 16-18 cells with uniformly thickened walls. Underleaves bilobed, about 0.8 mm long, with acute lobes, 5-8 cells wide at base. Autoicous. Perianth 1.3 mm long and 0.8 mm wide, 3-winged distally. **Habitat:** Epiphyllous in montane forest, 1950-2000 m. **Distribution in Rwanda: Nyungwe NP:** Karamba, Gisakura, Rwankuba, Kamiranzovu. **Distribution in Africa:** Guinea, Sierra Leone, Ghana, Nigeria, Principe, Annobon, São Tomé, Bioko, Cameroon, Gabon, Rio Muni, Central African Republic, Congo-Brazzaville, DR Congo, Burundi, Uganda, Tanzania. Also Comoros, Madagascar, Mauritius, Réunion, Seychelles.

