Figs 337 and 338 (next page). *Radula flaccida* Lindenb. & Gottsche

Plants green, regularly pinnate or bipinnate, closely appressed to the substrate, shoots 1.5-1.9 mm wide. Leaves flat, approximate or moderately imbricate, bearing reniform stipitate gemmae on the antical margin, the base crossing the stem. Lobule occupying 1/3 the width of the shoot, apex prolonged into a blunt liguliform beak, directed forwards parallel to the stem, keel nearly straight or concave, decurrent, forming an angle of 40-45° with the stem and a wide sinus with the lobe. Cells without trigones. Dioicous. Perianth erect, narrowly conical, up to 2.8 mm long. **Habitat:** Foliicolous in montane forest, 2000-2500 m. **Distribution in Rwanda:** Nyungwe NP: Rwasenkoko, Karamba, Kamiranzovu, Uwinka. **Distribution in Africa:** Guinea, Sierra Leone, Ivory Coast, Ghana, Nigeria, São Tomé, Principe, Bioko, Cameroon, Rio Muni, DR Congo, Uganda, Kenya, Tanzania, Angola. Also Comoros.
Figs 339 and 340 (next page). *Radula quadrata* Gottsche

Synonym: *Radula recurvifolia* Steph. Plants green, irregularly pinnately branched, shoots 1.8-2.5 mm wide. Leaves convex, imbricate, 1-1.5 x 0.68-1.2 mm, always with gemmae on margin. Lobule a little longer than wide, with a long insertion, the base occupying more than 1/2 of the width of the shoot, the keel usually nearly straight, making an angle of 50-80° with the stem, the base extending far across the stem but not auriculate. Cells with small trigones, 18-20 µm in diameter. Dioicous. Perianth compressed, 1-2.7 x 1.5-3.5 mm, the mouth truncate. **Habitat**: Epiphyte in ericaceous heath with *Andropogon shirensis*, 2500 m. **Distribution in Rwanda**: Nyungwe NP: Rwasenkoko. **Distribution in Africa**: Bioko, Cameroon, DR Congo, Socotra, Eritrea, Ethiopia, Uganda, Kenya, Tanzania, Malawi, South Africa. Also Comoros, Madagascar, Mauritius, South America.
Fig. 341. *Radula stenocalyx* Mont.

Plants green, pinnately branched, shoots 1-1.8 mm wide. Leaves ovate, approximate, 1-1.5 x 0.68 -0.8 mm, bearing discoid gemmae. Lobule a little longer than wide, with a long insertion, the keel extending rather less than 1/2 the distance from insertion to leaf apex, very strongly convex, making an angle of 90° with the postical margin of the lobe, the base narrow. Cells without or with minute trigones, 15-25 µm in diameter. Dioicous.

Perianth compressed, 0.5 x 2.5 mm, the mouth compressed, slightly and irregularly lobed.

**Habitat:** Epiphyllous in montane forest, 1950-1970 m. **Distribution in Rwanda:** Nyungwe NP: Gisakura. **Distribution in Africa:** Guinea, Sierra Leone, Ghana, São Tomé, Bioko, Cameroon, Rio Muni, Gabon, DR Congo, Burundi, Uganda, Kenya, Tanzania, Malawi, South Africa. Also Comoros, Madagascar, Mauritius, Réunion, Seychelles.
Figs 342 and 343 (next page). *Radula voluta* Tayl. ex Gottsche, Lindenb. & Nees
Synonyms: *Radula stipatiflora* Steph.; *R. allamanoi* Gola. Plants pale yellow brown or green, pinnately branched, up to 4-10 cm long. Leaves flat or slightly convex, sometimes caducuous, approximate or imbricate, 1-4.5 x 1.1-3.6 mm, the base crossing the stem, sometimes auriculate. Lobule a little wider than long, with a long insertion, the base occupying rather more than 1/2 of the width of a strong shoot, convex, strongly ampliate, apex rectangular, often exceeding the stem, keel nearly straight or slightly concave, forming an angle of 40-60°. Cells with thin trigones. Dioicus. Perianth conical or with oblong apex, up to 2.5-6 mm long. Habitat: Montane forest, *Hagenia-Hypericum* forest and *Dendrosenecio-Lobelia stuhlmannii* paramo, 2000 - 3900 m. Distribution in Rwanda: Volcano NP: Karisimbi, in the saddle between Mt. Biseke and Mt. Karisimbi, Karisimbi, on E-slopes along trail to summit, Biseke, crater crest, Sabinyo, Muhavura. Gishwati Forest: Gikungu, vallée de Sebeya. Nyungwe NP: Rwasenkoko, Mt. Muzimu. Distribution in Africa: Bioko, DR Congo, Socotra, Ethiopia, Uganda, Kenya, Tanzania, Malawi, South Africa. Also Madagascar, Mauritius, Réunion.
Figs 344 and 345 (next page). *Schiffneriolejeunea altimontana* Vanden Berghen
Plants epiphytic, glossy brown. Stems prostrate to ascending, 2-3 cm long. Leaves alternately, densely imbricate, convolute and wrapped around the stem when dry. Lobes with apex apiculate, 0.6-0.8 x 0.9-1.2 mm. Lobules inflated, free margin sinuate, 0.22-0.27 x 0.37-0.46 mm, with 1 apical tooth of 2-3 cells. Cells with trigones cordate, 15-20 x 21-28 µm. Underleaves undivided, 0.6-0.75 x 0.6-0.82 mm, base not auriculate. Dioicous. Perianths smooth, with 3 distinct keels in the upper third, slightly exserted, 0.7-0.88 x 1.4-1.5 mm, rostrum indistinct or lacking. **Habitat:** Epiphytic in montane forest, 2200-2500 m. **Distribution in Rwanda:** Nyungwe NP: Uwinka, Mt. Muzimu, Pindura-Bweyeye. **Distribution in Africa:** DR Congo (Kahuzi-Biéga), Uganda, Tanzania.
Schiffneriolejeunea pappeana (Nees) Gradst.

Plants epiphytic, brown to olive or blackish. Stems prostrate to ascending, 1.5-3.5(-6) cm long. Leaves alternate, densely imbricate, convolute and wrapped around the stem when dry. Lobes with apex obtuse, ovate-elliptical, 0.7-0.85 x 0.9-1.3(-1.8) mm. Lobules inflated, rectangular, 0.4-0.5 the length of the lobe, with 1 apical tooth. Cells with trigones cordate, 15-20 x 18-28 µm. Underleaves undivided, 0.6-0.75 x 0.6-0.82 mm, base auriculate. Dioicous. Perianths smooth, without keels or only slightly keeled in upper part, deeply immersed, rostrum well developed. Habitat: Epiphyte in montane forest, 2000-2380 m. Distribution in Rwanda: Gishwati Forest: Gikungu. Nyungwe NP: 1 km E of Pindura, near small waterfall. Distribution in Africa: Guinea, Annobón, São Tomé, Bioko, Cameroon, Central African Republic, DR Congo, Ethiopia, Uganda, Kenya, Tanzania, Angola, Malawi, Zimbabwe, South Africa. Also Madagascar, Mauritius, Réunion.
Fig. 348. *Schistochila engleriana* Steph.

Synonyms: *Gottschea engleriana* (Steph.) Grolle & Zijlstra; *Paraschistochila engleriana* (Steph.) Schust. Shoots 5-8 mm wide. Lower lobes of leaves 3.5 x 0.9-1.3 mm, (2.5-)3-4(-4.5) x as long as wide, ligulate with broadly rounded nearly entire apex to narrowly lanceolate with tapering acute coarsely serrate apex, dentition variable. Upper lobe with a straight suture extending for 1/2 the length of the lower lobe, convex, oblong to ovate-oblong, base not crossing stem, apex truncate with short apiculus to rounded without apiculus. Underleaves often absent, if present bifid, 0.3 x 0.2 mm. Cells 25-35 µm wide, with nodular trigones. Habitat: Epiphytic or on dead wood in montane forest, 2000 m. Distribution in Rwanda: Nyungwe NP: Gisakura. Distribution in Africa: Tanzania, Malawi. Also Comoros.
Figs 349 and 350 (next page). Solenostoma borgenii (Gottsche ex Pears.) Steph.

Synonym: Jungermannia borgenii Gottsche ex Pears. Plants green to brown. Rhizoids abundant on stem, brown or purple. Leaves nearly orbicular, 0.4-1 x 0.4-1 mm. Cells thin-walled, c. 23-35 x 20-27 µm, trigones distinct. Dioicous. Perianths emergent, pyriform, abruptly narrowed to the mouth. Habitat: On damp peaty soil in ericaceous heath with Andropogon shirensis, Hypericum-Dendrosenecio subparamo, open Dendrosenecio-Lobelia wollastoni paramo, 2400-3900 m. Distribution in Rwanda: Volcano NP: Karisimbi, at E-slopes along trail to summit. Nyungwe NP: Rwasenkoko, waterfall c. 3 km E of Pindura. Distribution in Africa: São Tomé, Bioko, Cameroon, Congo-Brazzaville, DR Congo, Uganda, Kenya, Tanzania, Angola, Malawi, Zambia, Zimbabwe, Botswana, South Africa. Also Madagascar, Mauritius, Réunion.
Solenostoma mildbraedii (Steph.) R.M.Schust.

Synonym: Jungermannia mildbraedii Steph. Plants green, yellow green, olive-brown or brownish-green. Shoots 0.5-3 cm long and 0.3-1.4 mm wide, prostrate to ascendant, rhizoids numerous, brownish to yellow-brown. Leaves ovate, rarely cordate to orbiculate, concave, decurrent only at dorsal margin. Cells isodiametric, (18-) 20-30 µm in leaf center, trigones small or lacking. Paroicous. Perianths at maturity exceeding the bracts, ovate to clavate. Habitat: On damp peaty soil in ericaceous heath with Andropogon shirensis, Hypericum-Dendrosenecio subparamo, open Dendrosenecio paramo, 2400-3400 m.

Figs 352 and 353 (next page). *Solenostoma sphaerocarpum* (Hook.) Steph. Synonym: *Jungermannia sphaerocarpa* Hook. Plants yellowish-green to brown. Rhizoids abundant on stem, colourless. Leaves orbicular, 0.5-1.3 X 0.5-1.3 mm. Cells thin-walled, c. 25-35 µm long, trigones distinct. Paroicous. Perianths emergent, broadly obovate, abruptly narrowed to the mouth. **Habitat:** Terrestrial in ericaceous heath with *Andropogon shirensis, Dendrosenecio-Lobelia stuhlmannii* paramo, open *Dendrosenecio-Lobelia wollastoni* paramo, *Alchemilla* mats interrupted by boulders in the alpine belt, 2400-4200 m. **Distribution in Rwanda:** Volcano NP: Bisoke, Sabinyo, Karisimbi, on E-slopes along trail to summit. Nyungwe NP: Rwasenkoko, waterfall c. 3 km E of Pindura. **Distribution in Africa:** Cameroon, DR Congo, Uganda, Tanzania, Malawi, Zimbabwe, Lesotho, South Africa. Also Madagascar, Réunion. Widespread in the Northern Hemisphere.
Fig. 354. *Syzygiella concreta* (Gottsche) Spruce

Plants rupicolous, small to large, 1-5 cm long, reddish-brown to purplish. Stems prostrate or erect. Leaves distant to moderately contiguous, obliquely to nearly lanceolately spreading, oblong-ligulate or oblong. 1 x 0.7 mm. Cells 26-33 x 32-40 µm, with large trigones. **Habitat:** Rocky slopes in montane forest, 2000 m. **Distribution in Rwanda:** *Nyungwe NP:* Rugege. **Distribution in Africa:** DR Congo (Kahuzi-Biéga, 3200 m), Kenya (Mt. Kenya), Tanzania (Uluguru Mts.). Also Madagascar, Mexico, Cuba, Venezuela, Brazil, Tristan da Cunha. **Note:** The only collection from Rwanda made by J.-J. De Sloover is without precise locality.
Fig. 355. *Syzygiella geminifolia* (Mitt.) Steph.

Synonyms: *Plagiochila (?) ruwenzorensis* Steph.; *Syzygiella ruwenzorensis* Steph. Plants rupicolous, small to large, 1-5 cm long, reddish-brown to purplish. Stems prostrate or erect. Leaves contiguous to imbricate, opposite to subopposite, obliquely spreading, triangular-ovate, 1-1.1 x 0.7-0.8 mm. Cells 26-33 x 32-40 µm, with large trigones. 

**Habitat:** Rocky slopes in heath forest, 2000 m. **Distribution in Rwanda:** Nyungwe NP: Karamba, along abandoned road to Burundi. **Distribution in Africa:** São Tomé, Bioko, DR Congo, Ethiopia, Tanzania. Also Madagascar, Réunion.
Figs 356 and 357 (next page). **Taxilejeunea conformis** (Nees & Mont.) Steph. Plants flaccid, green, 0.5-1.8 mm wide. Leaves ovate, acuminate, 0.8 x 0.6 mm, apex acuminate, margin more or less crenulated with protuberant cells. Lobules very variable, 1/3-1/2 the length of the lobe, apical tooth one-celled, with hyaline papilla on proximal side. Cells pellucid, 18-25(-30) x 25-40 µm in leaf centre, walls thin, trigones and intermediate thickenings small but distinct, cuticle often finely punctate. Underleaves broadly orbiculate, bifid to middle, sinus V-shaped, base rounded, 2-2.5 x the width of stem. Monoicous. Perianths clavate, exserted for 1/2 or more of its length, with 5 equal keels in the upper third to half, beak short, c. 40 µm long. **Habitat:** Epiphytic or epiphyllous in montane forest, 2000-2300 m. **Distribution in Rwanda:** *Gishwati Forest:* Gikunku. **Nyungwe NP:** Kamiranzovu, Gisakura. **Distribution in Africa:** Sierra Leone, Ghana, Togo, Cameroon, Central African Republic, DR Congo, Burundi, Ethiopia, Uganda, Kenya, Tanzania, Angola, Malawi, South Africa. Also Comoros, Madagascar, Mauritius, Réunion.