

SCHIZODISCUS, A NEW PORPIDIOID LICHEN GENUS FROM THE DRAKENSBERG

Schizodiscus *Brusse*, gen. nov.

Thallus crustaceus, saxicola. *Cortex superior* paraplectenchymatus, cellulis 2,5–4,0 μm diametro. *Algae* Chlorococcaleae. *Apothecia* atra, immersa. *Excipulum* et *hypothecium* ut in *Lecidea*. *Paraphyses* simplices vel

furcatae, conglutinatae, septatae. *Asci* clavati, non-halonati, tholis J+ caeruleis ut in iconem (Figura 7) illustratis. *Ascosporae* octonae, hyalinae, simplices, ellipsoideae, non-halonatae. *Pycnidia* immersa, globosa vel oblonga. *Pycnidiosporae* acrogenae, bacillares, hyalinae, rigidae, rectae.

TYPE.—*Schizodiscus afroalpinus* Brusse

Thallus crustose, saxicolous. *Upper cortex* paraplectenchymatous, cells 2,5–4,0 μm diam. *Algae* Chlorococcalean. *Apothecia* black, immersed. *Exciple* and *hypothecium* as in *Lecidea*. *Paraphyses* simple or branched, septate, conglutinate. *Asci* clavate, eight-spored, non-gelatinized, tholus J+ blue as in Figure 7. *Ascospores* hyaline, simple, ellipsoid, non-halonate. *Pycnidia* immersed, spherical to globose. *Pycnidiospores* acrogenous, straight, hyaline, rigid rods.

Etymology: the generic name is derived from the Greek 'schizo' meaning split and 'discos' meaning disc, in allusion to the apothecia which develop fissures and cracks with age.

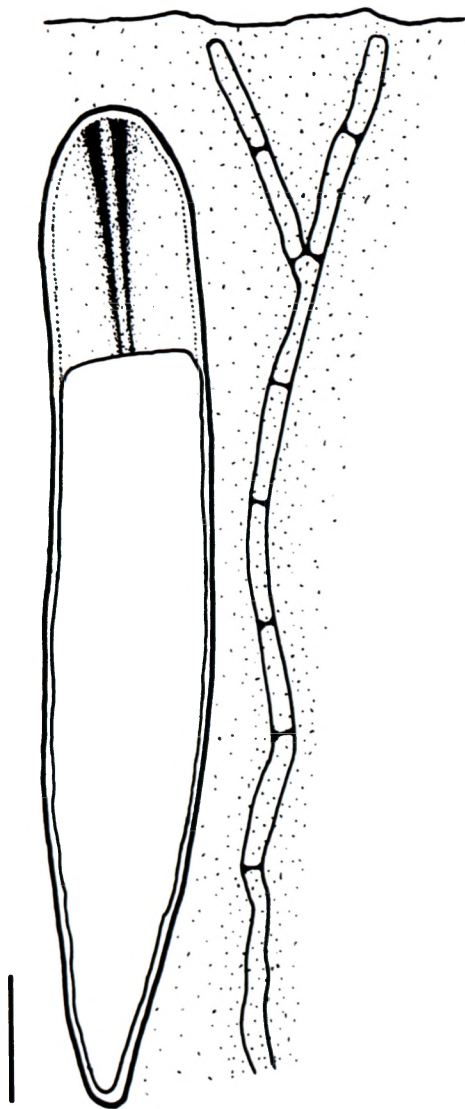


FIGURE 7.—*Schizodiscus afroalpinus* Brusse, ascus and paraphysis. F. Brusse 4523, holotype. Bar = 10 μm .

***Schizodiscus afroalpinus* Brusse, sp. nov.**

Thallus crustosus, saxicola, caesio-cinereus, usque ad 40 mm diametro, 0,2–1 mm crassus, continuus et rimosus, vel rimoso-areolatus, vel interdum dispersus, areolis (0,2–) 0,5–4,0 mm diametro, planis vel interdum convexis, isidiis sorediisque destitutis. *Cortex superior* 17–20 μm crassus, paraplectenchymatus, cellulis 2,5–4,0 μm diametro. *Stratum gonidiale* 50–70 μm

crassum, algis chlorococcaleis, 5–15 μm diametro. *Medulla* alba, J–, 150–800 μm crassa. *Apothecia* atra, innata, interdum emergentia, plana, lecideina, usque ad 1,5 mm diametro, plerumque cum fissuris cincta, primum integra deinde fissurata. *Excipulum* inferne brunneum, circa 10 μm crassum, pericline prosoplectenchymatum, superne circa 20 μm crassum, atrovirens, paraplectenchymatum. *Hypothecium* stramineum vel pallide badium, 50–100 μm crassum, granulis inspersum, paraplectenchymatum, cellulis 3,0–5,5 μm diametro, superne (subhymenium) cum guttulis inspersum. *Hymenium* hyalinum (vel pallide viride), 70–80 μm altum, J+ caeruleum, epihymenio fusco-brunnescenti. *Paraphyses* simplices vel furcatae, septatae, ecapitatae, conglutinatae, lumenibus 1–1,5 μm crassis, gelatinis J+ pallide caeruleis. *Asci* clavati vel subcylindrici, non-halonati, tholis J+ caeruleis ut in iconem (Figura 7) illustratis. *Ascospores* octonae, hyalinae, simplices, ellipsoideae, ehalonatae, 10,0–17,5 \times 6,0–7,5 μm . *Pycnidia* (in typo non visa) immersa, globosa vel oblonga, saepe aggregata, 100–120 μm profunda, 70–100 μm lata. *Pycnidiospores* acrogenae, bacillares, hyalinae, rectae, rigidae, 6,5–15 \times 0,8 μm . *Thallus* acidum 2'-0-methylperlatolicum solum continens.

TYPE.—2828 (Bethlehem): 31 km S of Phuthadi-tjhaba (Witsieshoek), summit of Western Buttress (Mont-aux-Sources), on low basalt exposures near soil near seepage areas, on gentle S slope on summit plateau, alt. 3 080 m (–DB), F. Brusse 4523, 1986.01.21 (PRE, hol.; BM, LD, iso.). Figure 8.

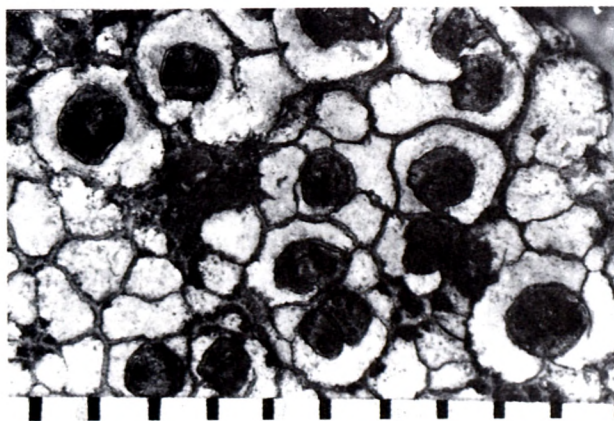


FIGURE 8.—*Schizodiscus afroalpinus* Brusse, habit. F. Brusse 4523, holotype. Scale in mm.

Thallus crustose, saxicolous, pale blue-grey, up to 40 mm across, 0,2–1 mm thick, continuous and rimose, to rimose-areolate, to sometimes dispersed, areoles (0,2–) 0,5–4,0 mm across, flat or sometimes convex, lacking isidia and soredia. *Upper cortex* 17–20 μm thick, paraplectenchymatous, cells 2,5–4,0 μm diam. *Algal layer* 50–70 μm , algae chlorococcalean, 5–15 μm diam. *Medulla* white, J–, 150–800 μm thick. *Apothecia* black, innate sometimes emergent, flat, lecideine, up to 1,5 mm diam., often surrounded by a fissure, at first entire then becoming fissured (starting from the interior, not from the margins). *Exciple* brown, periclinally prosoplectenchymatous and about 10 μm thick below, becoming dark green, paraplectenchymatous and about 20 μm thick above (at the flanks of the hymenium). *Hypothecium* stramineous or pale reddish brown, 50–100 μm thick, granular inspersed, paraplectenchymatous, cells

3,0–5,5 μm diam., becoming interspersed with 'oil-droplets' above (in the subhymenial zone). *Hymenium* hyaline (or pale green in thick sections), 70–80 μm high, J+ blue, epihymenium fuscous brown. *Paraphyses* simple to branched, septate, ecapitate, conglutinate, lumens 1–1,5 μm thick, gelatin J+ pale blue. *Asci* clavate to subcylindrical, eight-spored, non-halonate (no gelatinous sheath or excess present), tholus J+ blue as illustrated in Figure 7. *Ascospores* hyaline, simple, ellipsoid, non-halonate, 10,0–17,5 \times 6,0–7,5 μm . *Pycnidia* (not seen in holotype) immersed, globose or oblong, often aggregated (sometimes in darkened verrucae), 100–120 μm deep, 70–100 μm wide. *Pycnidiospores* acrogenous, hyaline, rigid, straight rods or needles, 6,5–15 \times 0,8 μm . *Chemistry*: only 2'-0-methylperlatolic acid present.

This new lichen is characterized by a porpidioid tholus reaction with Lugol's iodine solution, where most of the tholus is very pale blue, almost colourless, with a narrow cylinder of strongly amyloid material in the axis of the tholus (Figure 7). *Schizodiscus* differs from the genera in the Porpidiaceae in the lack of a halo around the ascospores, which, besides *Clauzadea*, are also smaller. The recently described genus, *Clauzadea* Hafelln. & Bellem. (Hafellner 1984), typified by *C. monticola* (Ach. in Schaer.) Hafelln. & Bellem., is similar to *Schizodiscus*, but has a large gelatinous excess (sheath, halo) around the ascus, which is absent in *Schizodiscus*. The ascospores in *Clauzadea* are reported to be halonate when young (Hafellner 1984), but this was difficult to confirm with the century-old material available. Very young ascospores ruptured from their asci by external mechanical means, sometimes carry a certain amount of ascoplasm with them. The ascospores of *Schizodiscus* are clearly non-halonate. The hypothecium in *Clauzadea* is an even reddish brown colour, and the paraplectenchyma is larger-celled than in *Schizodiscus*. The exciple in *Clauzadea* is slightly deeper reddish brown, is well developed, and is composed of radially arranged paraplectenchyma, with large cells. The exciple of *Schizodiscus* is very reduced, being clearly discernible only on the flanks of the hymenium, and is composed of smaller-celled paraplectenchyma, which is aeruginose-black in this region. The hypothecium of *Schizodiscus* has a pale brown wash to it, and is not solidly reddish brown as in *Clauzadea*.

Schizodiscus resembles *Clauzadea immersa* (Web.) Hafelln. & Bellem. more closely in excipular characters, but *C. immersa* also has a clear gelatinous excess to the ascus. The asci of *Schizodiscus* do not contribute to the gelatinous matrix of the hymenium, this being produced solely by the paraphyses.

Nothopropidia Hertel (1984) is characterized by a tholus which has both a strongly amyloid, axial, narrow cylinder (as in *Porpidia*) and an amyloid crescent at the apex (as in *Lecidea*), but I have not examined material of this lichen. The additional crescent at the apex of the tholus, may not be very significant in this case, as this has also been observed in the tholus of *Porpidia macrocarpa* (DC.) Hertel & Schwab (Schwab: 268, fig. 13, 1986). The exciple is reported to be strongly developed and hyaline within, with a deep fuscous brown hypothecium, whereas that of *Schizodiscus* is weakly developed, with a pale brown hypothecium. The only species, *N. irrubens* (Zahlbr.) Hertel, contains norstictic acid (Hertel

1984), whereas *S. afroalpinus* contains 2'-0-methylperlatolic acid.

Another Porpidiaceous lichen worth mentioning in connection with this new genus is *Porpidia skottsbergiana* Hertel, with small ascospores, similar in size to those of *Schizodiscus afroalpinus*. Despite the size, the ascospores were reported to be clearly halonate, and the author of the species (Hertel 1984), expressed no doubt about its generic affinity.

The lack of gelatinized ascospores and asci leads one to look to the Psoraceae for relatives. However, the tholus background to the narrow strongly amyloid cylinder, is clearly blue (amyloid) and not pale, as in the Porpidiaceae and *Schizodiscus*. The only crustose genus, *Protoblastenia* (Zahlbr.) Stnr., is characterized by coarse, but thin-walled, loose paraphyses, which are often branched and anastomosed, and always ecapitate. The production of monomeric anthraquinones is also characteristic for *Protoblastenia*.

This new lichen is presently known from high altitudes in the Drakensberg from Mont-aux-Sources in the north to Naudé's Nek in the south-west, on basalt in or near seepage.

NATAL.—2828 (Bethlehem): 31 km S of Phuthaditjhaba (Witsieshoek), summit of Western Buttress (Mont-aux-Sources), on low basalt exposures near soil near seepage areas, on gentle S slope on summit plateau, alt. 3 080 m (–DB), *F. Brusse 4523*, 1986.01.21 (PRE, holo.; BM, LD, iso.); 32 km S of Phuthaditjhaba (Witsieshoek), summit of Mont-aux-Sources at Tugela falls, on N bank of Tugela River, on basalt in low near-vertical bank, in seepage zone, alt. 2 960 m (–DD), *F. Brusse 4530*, 1986.01.21 (BM, PRE). 3028 (Matatiele): 65 km N of Maclear, summit of Naudé's Nek, on basalt exposures nearly level with ground, in seepage on summit plateau, alt. 2 500 m (–CA), *F. Brusse 4593*, 1986.01.26 (BM, COLO, E, LD, PRE, UC, UPS).

SPECIMENS OF OTHER SPECIES EXAMINED

Clauzadea immersa (Weber) Hafelln. & Bellem.

ITALY.—4611: An einem Kalkfelsen in der Matreier Grube ober der Waldrast, 6000', Matrei in Tyrol. *Arnold s.n.*, 22 Juli 1869 (Arnold, Lichenes Exsiccati 360b; PRE CH2779).

Clauzadea monticola (Ach. in Schaer.) Hafelln. & Bellem.

GERMANY.—4811: An Geröllsteinen in einer Waldkiesgrube östlich ober der Reismühle bei Gauting, München. *Arnold s.n.*, 26 Juli 1894 (Arnold, Lichenes Monacenses Exsiccati 354; PRE CH2643).

Protoblastenia rupestris (Scop.) Stnr.

GERMANY.—4811: Auf Hohlziegeln der Kirchhofmauer in Gräffing bei München. *Arnold s.n.*, 9 November 1890 (Arnold, Lichenes Monacenses Exsiccati 105; PRE CH2423).

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- HERTEL, H. 1984. Über saxicole, lecideoide Flechten der Subantarktis. *Beihefte zur Nova Hedwigia* 79: 399–499.
- SCHWAB, A. J. 1986. Rostfarbene Arten der Sammelgattung *Lecidea* (Lecanorales). Revision der Arten Mittel- und Nordeuropas. *Mitteilungen aus der botanischen Staatssammlung, München* 22: 221–476.

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