

## TELOSCHISTACEAE

### A NEW SPECIES OF *CALOPLACA* FROM SOUTHERN AFRICA

#### INTRODUCTION

The genus *Caloplaca* Th. Fr. is one of the largest lichen genera known. The total number of species has been estimated at almost 500 (Santesson 1970). Although many of the published species names will be reduced to synonyms in future revisions, there are still unknown species to be discovered in this fascinating genus. The genus is also extremely variable and incorporates many different structural forms, which, if measured by today's taxonomic concepts in, for example, the Lecideaceae or Parmeliaceae, would have been recognized at generic level. However, too many intermediate forms are present to justify a more diversified generic taxonomy in the Teloschistaceae (see Hafellner & Poelt 1979; Poelt & Hafellner 1980; Poelt & Pelleter 1984; Wunder 1974).

In addition many species show extremely broad morphological variations, which normally also correlate with rather extensive geographical ranges. In taxonomic terms this variation is usually extremely hard to define. Yet, many characteristic species with geographically limited distributions are also present in the genus. The new species described here belongs to this latter category. I recognized the unique characteristics of the species for the first time in undetermined material from Lesotho. On a field trip in southern Africa with Mr Frank Brusse at the beginning of 1986, we collected the new

species in several different localities along the Drakensberg escarpment. The species is named in honour of my older colleague Dr Ove Almborn, who collected it as far back as 1953.

#### *Caloplaca almbornii* Kärnefelt, sp. nov.

*Thallus* areolis dispersis sanguineis 0,2–3,0 mm diametro compositus. *Apothecia* immersa, postea parum prominentia, lecideina; discus aurantiacus. *Ascospores* polaribiloculares, 9,5–13,5 × 3,8–4,7 μm, septum ± 2 μm crassum. *Thallus* K+ purpureus, parietinum adest.

TYPE.—Lesotho, 2929 (Underberg): Mokhotlong, mountain behind Pack Horse Inn (–AC), 1963, *Kofler* (LD, hol.).

*Thallus* composed of scattered, more or less circular, usually convex areoles, 0,2–1,0 mm across, or when flatter up to 3,0 mm across, then secondarily cracked into several small areoles; usually bright reddish or occasionally more orange pigmented. *Cortical layer* ± 40–70 μm thick, covered by a ± 10 μm thick pigmented layer, paraplectenchymatous, composed of anticlinal cells, occasionally penetrating the clustered algae in up to 150 μm deep strands. *Photobiont* clustered, occasionally nearing the surface, single cells green and spherical, ± 10 μm in diameter. *Medullary layer* rather dense, 130–350 μm deep (Figure 17F). *Apothecia* often present, immersed, becoming slightly raised with maturity,

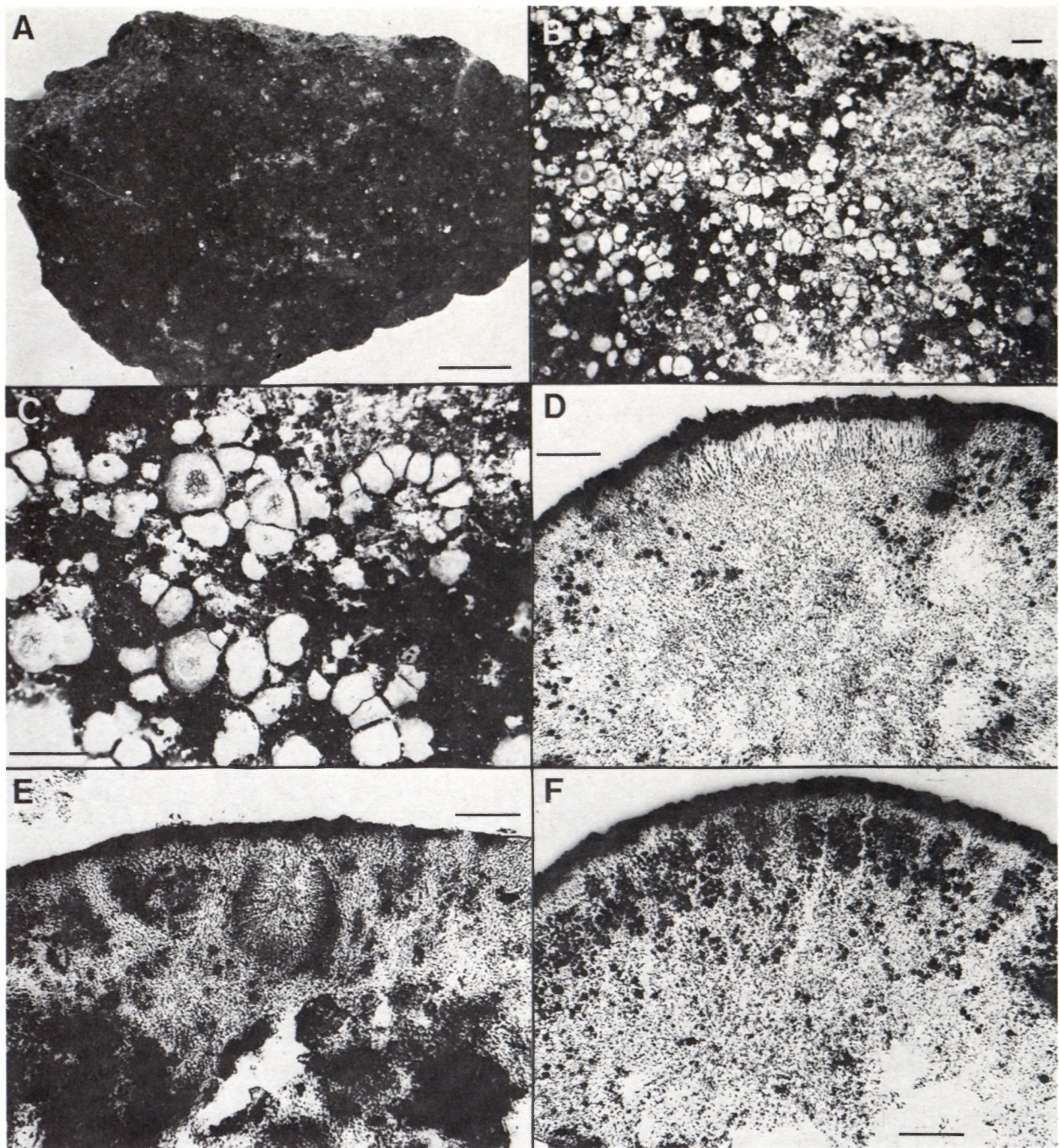


FIGURE 17.—*Caloplaca almbornii*. A, specimen with very scattered areoles, Kärnefelt 8626-7, bar = 10 mm; B & C, close up of thallus, Kofler s.n., bar = 1 mm; D, cross section of areole showing immersed apothecium, Kärnefelt 8625-20, bar = 100  $\mu\text{m}$ .; E, cross section of areole with conidiomata, Kärnefelt 8626-8, bar = 100  $\mu\text{m}$ .; F, cross section of areole, Kärnefelt 8625-20, bar = 100  $\mu\text{m}$ .

often one per areole (Figure 17C & D), to several together on the broader cracked areoles; disc very small, 0,1–0,7 mm across, covered by an orange pigment. *Excipulum* occasionally seen as a thin pale orange ring around the disc, 10–20  $\mu\text{m}$  thick. *Hymenium*  $\pm$  65–95  $\mu\text{m}$  thick, covered by a pigmented, granular, epihymenial layer up to 35  $\mu\text{m}$  thick. *Asci* 45–55  $\times$  8–10  $\mu\text{m}$ . *Ascospores* ellipsoidal, polaribilocular, 9,5–13,5  $\times$  3,8–5,7  $\mu\text{m}$ ; septum  $\pm$  2  $\mu\text{m}$  thick. *Hypothecium* forming a relatively flat dome below the excipulum, 35–55 (–150)  $\mu\text{m}$  deep, hyaline. *Conidiomata* scattered, 110–170  $\mu\text{m}$  large, pyriform (Figure 17E); conidia very small, slightly bifusiform,  $\pm$  3,5  $\times$  0,5  $\mu\text{m}$ . *Reactions* K+ blood red, C–, KC– and P–. *Caloplaca almbornii* contains parietin only (TLC).

*Caloplaca almbornii* is characterized particularly by the remarkable structure of the thallus composed of scattered convex areoles, forming small red-spotted patches (Figure 17A, B & C). Apart from thallus colour and structure of the ascomata, *C. almbornii* is reminiscent of *Aspicilia contorta* (Hoffm.) Krempelh. which occurs on various calcareous rocks in Europe. The areoles are often embedded in other blackish, crustose, sterile lichens. It is therefore not possible to demonstrate whether the areoles are connected by anastomosing hyphae, or by a thin hypothallus. Flatter and up to 3 mm broad areoles can occasionally be found. The colour of the areoles is sometimes more orange than bright reddish.

*Caloplaca almbornii* appears to be isolated in the genus and is not clearly related to any other species. It

shows some affinities with the *C. cinnabarina* group, which is a very variable species complex occurring mainly at lower altitudes in southern Africa. *C. almbornii* and the *C. cinnabarina* group have similar anatomical characters but differ considerably in the structure of the thallus. The bright reddish colour is most reminiscent of the colour of *C. haematodes* (Massal.) Zahlbr. *C. almbornii* also differs chemically by containing only parietin, whereas most other species examined contain more than one anthraquinone.

*Caloplaca almbornii* is endemic to southern Africa and is known only from mountainous regions, mainly at rather high altitudes. It has been found locally abundant at 2 000–3 000 m in the Drakensberg in Lesotho, the Transkei and Natal. Furthermore, it has been found in the Orange Free State close to the Lesotho border, in the easternmost part of the Cape Province and in the Matopo Hills in SW Zimbabwe (Figure 18). The species could probably occur in the eastern mountainous region of the Transvaal, located between the northernmost outpost in Zimbabwe and the Drakensberg centre in the south. I have, however, not been able to find it during several excursions, specially undertaken to this otherwise lichenologically very rich eastern extension of the Drakensberg. The eastern Transvaal mountains are presumably too low in altitude.

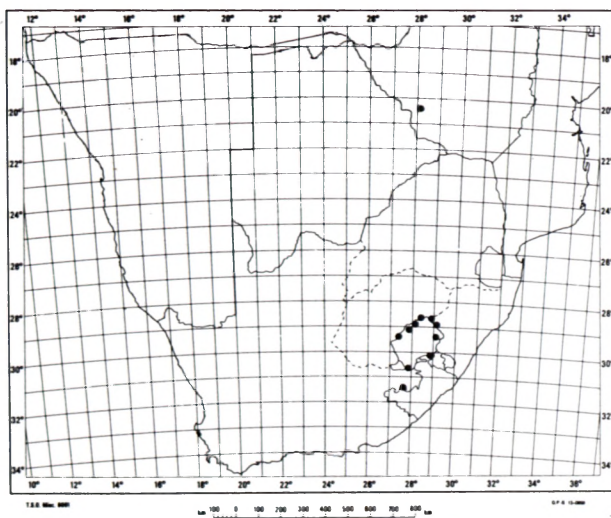


FIGURE 18.—Distribution of *Caloplaca almbornii*.

In the Mont-aux-Sources region in the northern part of the Drakensberg, I found *C. almbornii* locally abundant on sloping dark basaltic rocks with dripping water. In the southern part of the Drakensberg the species was also found locally in the cave sandstone belt, growing on flat surfaces with stagnant water, or on sloping surfaces with dripping water. Most of these habitats are easily recognized by the blackish colour caused by a variety of crustose lichens and possibly also by Cyanobacteria. *C. almbornii* is easily discovered here, where it contrasts as patches of bright red spots against the dark rock surface.

ZIMBABWE.—2028 (Bulawayo): Matopo Hills, Pomowe (–AC), 1963, *Kofler* (LD).

O.F.S.—2828 (Bethlehem): Clarens (–CB), 1943, *Plank 1880* (PRE).

NATAL.—2828 (Bethlehem): Royal Natal National Park, mountain path to Mont-aux-Sources from entrance gate at the end of mountain road from Phuthaditjhaba (–DB), 1986, *Kärnefelt 8626-8, 8626-10, 8626-20, 8626-22, 2826-46* (LD); Little Tugela area (–DB), 1943, *Esterhuysen 8875* (BOL). 2829 (Harrismith): Cathedral Peak area, Organ Pipes (–CC), 1953, *Almborn 9037, 9058* (LD).

QWA-QWA.—2828 (Bethlehem): Mont-aux-Sources area, mountain path from entrance gate to Royal Natal National Park at the end of mountain road from Phuthaditjhaba (–DB), 1986, *Kärnefelt 8625-8, 8625-12, 8625-14, 8625-15, 8625-20–8625-23* (LD).

LESOTHO.—2927 (Maseru): Machache Mtn (–AD), 1929–1930, *Hewitt* (TRH, 4 collections); Popanyane (–BB), 1963, *Kofler 3523* (LD). 2828 (Bethlehem): Leribe, Oxbow (–CC), 1953, *Kofler* (LD, 2 collections); Mapoteng, 30 miles E of Leribe (–CC), 1963, *Kofler 310195* (LD, 2 collections). 2929 (Underberg): Mokhotlong, behind Pack Horse Inn (–AC), *Kofler* (LD, 2 collections).

TRANSKEI.—3029 (Matatiele): Qachas Nek, close to the Lesotho border, cave sandstone formations (–BB), 1986, *Kärnefelt 8630-44–8630-51* (LD).

CAPE.—3027 (Lady Grey): Naude's Nek, on R396 to Rhodes from Elands Height (–DB), 1986, *Kärnefelt 8632-3–8632-6* (LD); mountain 6 miles from Naude's Nek, on the way to Ben McDhuy (–DB), 1963, *Kofler 311166*. 3127 (Lady Frere): Barkly Pass on R58 between Barkly Pass and Elliot (–BB), 1986, *Kärnefelt 8633-1–8633-3* (LD).

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