

THE GENUS CORDIERITES IN
THE NETHERLANDS INDIES

BY

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Introduction.—The genus *Cordierites* was erected by MONTAGNE (9) in the year 1840 for a strongly branched Ascomycete, named by him *C. guianensis*. The genus was considered to be transitional between Pyrenomyces and Disco-mycetes. The branched stem was accepted to represent a stroma.

In 1884 SACCARDO (10) transferred the genus to the Disco-mycetes and established a distinct family for it, viz. *Cordieriteae*. He added to the generic diagnosis: "Ad Pyrenomyces vergit".

LINDAU (7) in ENGLER & PRANTL accepted this family under the name *Cordieritaceae* and inserted it in the neighbourhood of the *Cyttariaceae*. By CLEMENTS & SHEAR (4) the family *Cordieritaceae* is incorporated in the *Cyttariaceae*. It is useless to say that the latter procedure is wholly unfounded.

In 1923 DURAND wrote a paper (5) dealing with three genera among which is also *Cordierites*. Unfortunately this paper was not accessible to me. It may be, hence, possible that some of the results obtained by me have been already stated by him.

Up to the present the genus *Cordierites* was only found in America, chiefly in South America. The material which I now possess from the Netherlands Indies enables me to furnish a more detailed description of the genus, which, up till the present, was badly understood.

I am convinced that the Netherlands Indian material does not represent a new species, and that it is not specifically distinct from the type-species. I even suggest that the genus consists of 1 species only, and that all other described species must be reduced as synonyms to the type. In comparing the descriptions with one another, it is clear that the differences, suggested by various authors to be of specific value, are very small and cannot be used for distinguishing different species. The diagnoses of *C. muscoides* BERK. & CURT., *C. coralloides* BERK. & CURT. and of *C. Sprucei* BERK. are so poor and incomplete, that they may be considered worthless. Only MÖLLER (8) has furnished descriptions of 2 species which are less inadequate. Of his *C. fasciculata* he writes: "Der Pilz scheint *Cordierites guianensis* MONT. nahe zu stehen". Though the original description of *C. guianensis* is very short, it agrees surely in all characters with MÖLLER's species. The other species of MÖLLER, viz. *C. umbilicarioides* differs from *C. guianensis* only in its apothecia attaining 2 cm diameter, those of *C. guianensis* being said to attain only 7 mm diam. In my material the apothecia are very variable as to their shape and dimensions. Young stages measure only 2—5 mm in diameter but later they may attain 2 cm diameter

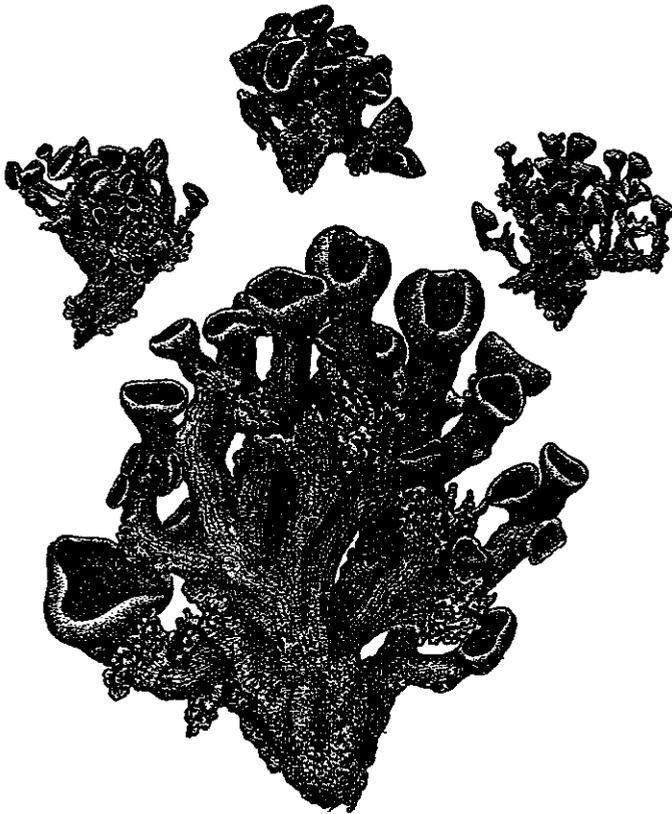


Fig. I. *Cordierites guianensis*. — Three upper figures nat. size, lower one $\times 3$.

as well. It seems to me that the growth of the apothecia is of long duration; the old, large ones are often lobed and by excentric growth the stems often become wholly lateral. In that condition they neatly agree with the figure given by BERKELEY (1) of *C. Sprucei* and with the description of *C. umbilicarioides* of MÖLLER.

The consistency is always stated to be carbonaceous and this may have been one of the reasons why the genus was considered to represent a transition between Pyrenomycetes and Discomycetes. Fresh plants, however, are about coriaceous inclining to subfleshy. The brittleness holds only true for dried materials or for those preserved in alcoholic fluid.

The assumption of the stem and branches representing a stroma is incorrect. In anatomical structure there is no difference with the apothecia.

Although I had no opportunity to study the original type materials of the various species described in *Cordierites*, I believe to have been able to show, that there exists only one variable species, for which the name *C. guianensis* is the adequate one.

CORDIERITES

MONTAGNE in Ann. Sc. Nat., sér. 2, Bot., 14, p. 330, 1840.

Fructification dark, coriaceous inclining to subfleshy in consistency, much-branched, most branches ending in an apothecium. Some apothecia lateral and nearly sessile. *Abortive branches* of varying length mostly present; the very short ones giving the plants locally a squamulose appearance. *Apothecia* at first cupshaped, afterwards increasing in size and becoming difformed, lobed and split. Often the growth of the cups is nearly wholly one-sided, giving rise to apothecia with laterally attached stalk. Stems and outer surface of the apothecia finely pruinose. *Texture* of stems and apothecia plectenchymatic with a nearly pseudoparenchymatic cortex layer. *Subhymenium* well developed. *Hymenium* consisting of asci and paraphyses of about the same length. *Asci* 8-spored, cylindric. *Spores* 1-seriate, elliptic, continuous, hyaline. *Paraphyses* nearly as thick as the asci, mostly unbranched, septated, slightly attenuated towards the apex.

Cordierites guianensis MONTAGNE in Ann. Sc. nat. sér. 2, Bot. 14, p. 331, 1840. — Fig. I—II.

C. Sprucei BERKELEY in Hook. Journ. Bot. Kew Gard. Misc. 8, p. 280, 1856.

C. muscoides BERKELEY et CURTIS in Ann. Mag. Nat. Hist. 4, 1859.

C. coralloides BERKELEY et CURTIS in Journ. Linn. Soc. Bot. 10, p. 370, 1868.

C. fasciculata MÖLLER, Phycomyceten und Ascomyceten, p. 278, 1901.

C. umbilicarioides MÖLLER, Phycomyceten und Ascomyceten, p. 279, 1901.

Fructifications 2—3 cm high 1—3 cm broad, blackish about aniline black RIDGWAY, apothecia with brown hue, coriaceous, inclining to subfleshy when fresh, brittle when dry; consisting of a much-branched stem, the final branches mostly ending in an apothecium. Very variable in shape, mostly more or less shrublike, with a short

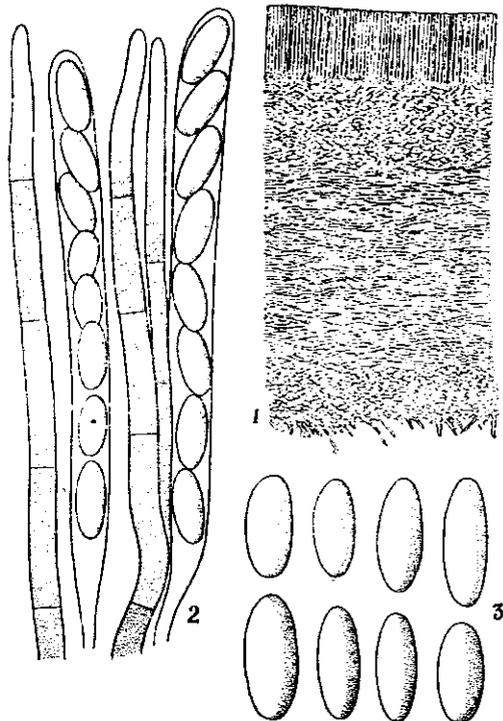


Fig. II. *Cordierites guianensis*. 1. Part of a section through an apothecium, $\times 66$, 2. asci and paraphyses, $\times 1000$, 3. spores, $\times 1333$.

basal trunk from which a number of branching stems arise. Sometimes a main stem is formed, which is ending in a small number of branches, each bearing an apothecium. *Basal trunk* if present 5—9 mm in diam., stems $\frac{1}{2}$ —2 mm broad. *Abortive branches* always present, sometimes very numerous, the short wartlike ones often crowded, giving the stem locally a squamulose appearance. *Apothecia* 2—20 mm in diam., at the ends of the branches; also lateral, nearly sessile ones are often found. At first they are cupshaped but afterwards through continuous growth they may become very irregular. The large ones are mostly lobed and split and as the growth is often only on one side of the cup, the firstly central stipe is finally wholly lateral. Stems and especially the outside of the apothecia finely pruinose. Under the microscope a section through the trunk shows an irregular plectenchymatic tissue [textura intricata STARBÄCK (12)], consisting of rather thinwalled, septate, branched and undulating pale brown hyphae 3—8 μ in diam. In the stem and branches the hyphae are mostly longitudinally arranged (textura oblita) and densely interwoven, whereas near the periphery they pass into a nearly pseudoparenchymatic cortex layer (textura epidermoidea) of varying thickness. On the trunk and thicker stems this layer is 128—176 μ in diam., on the smaller branches 80—96 μ in diam. It consists of cells 4—12 μ broad, whereas on the outside there are numerous projecting pale brown, septate and unbranched hairs 14—60 μ (mostly 20—40 μ) long and 2—4 μ broad, with rounded tips. In the apothecia the same structure is met with, the cortex layer, however, being only 64—80 μ broad. A *subhymenial layer* 96—112 μ broad, decreasing gradually in thickness near the margin of the cups, is formed; the plectenchym of the hypothecium passes into a tissue intermediate in structure between textura prismatica and textura epidermoidea. The cells decrease in size near the hymenium. The *hymenium* consists of asci and paraphyses of about the same length. The *asci* are cylindric, thinwalled, 8-spored, attenuated near the base, $47-50 \times 4-6 \mu$. *Spores* elliptic, hyaline, continuous, $5-6\frac{1}{2} \times 2-2\frac{1}{2} \mu$. *Paraphyses* nearly as thick as the asci, simple rarely branched at the tips, septate, pale brown, $1\frac{1}{2}-2\frac{1}{2} \mu$ broad in the middle, slightly attenuated near the colourless tops.

SUMATRA Res. Lampongs: Krakatau Island, on wood, April 1934, BOEDIJN 2925.

JAVA. Res. Priangan: Tjibodas (Sindanglaja), ca 1500 m alt., on wood, 1925, BRUGGEMAN.

In alcohol a dark brown stain is emitted from the fructifications.

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