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A note on the pollen morphology in the Ancistrocladaceae and Dioncophyllaceae

By G. ERDTMAN, Stockholm

It is only right and proper to emphasize that it is essentially due to the activities of the buoyant and energetic septuagenarian WERNER LÜDI, and his collaborators, that such important strides have been made in the field of Swiss pollen analysis since the first results of pollen analyses (according to the method of L. von Post) of Swiss material were published a third of a century ago (cf. «Prähistorisches und Naturwissenschaftliches vom Hallwilersee. B. Naturwissenschaftliches vom Siedlungsgebiet», by H. HÄRRI [Mitt. Aarg. naturf. Ges., H. 17, 1925; analyses by K. TROLL] and «Analyse pollinique de la tourbe de deux marais de la Vallée de la Brévine», by H. SPINNER, [Bull. Soc. neuch. Sci. nat., T. 5, 1925]). In these papers only about a dozen different kinds of pollen grains are recorded.

Nowadays there is a gratifying tendency in pollen analysis to identify as many pollen grains and spores as possible. This cannot, however, be done without further basic research into pollen morphology. Research of the same kind is also necessary in other branches of palynology (pollen and spore research in the widest sense), e. g., those parts of palynology which are connected with plant taxonomy or with the micropalaeobotany of Prequaternary deposits. The following lines form a fraction of the efforts of the Palynological Laboratory of the Swedish Natural Science Research Council, Stockholm-Solna, to accumulate new facts from the truly inexhaustible sources of pollen morphology.

ANCISTROCLADACEAE

(for taxonomy, see LÉONARD, Bull. Soc. bot. Belge, 82, p. 27—40, 1949).

Species investigated: *Ancistrocladus congolensis* J. Léon. (Congo; LÉONARD 1513): pollen grains 3-colpate (zonicolpate as in all the following species), probably oblate — suboblate (about $30 \times 40 \mu$). Colpi relatively longer than in *A. likoko*; suprategillar processes smaller and more densely spaced; baculation less pronounced. — *A. ealaensis* J. Léon. (Congo; PYNART 211): 3-colpate, about $31 \times 39 \mu$, otherwise more or less as in *A. likoko*. — *A. heyneanus* Wall. (India; MEEBOLD 8540): 3-colpate, equatorial diameter about 37μ . Suprategillar processes smaller and more densely spaced than in *A. likoko*. No evident baculation. — *A. likoko* J. Léon. (Fig. 1; Congo; LÉONARD 1850 [type]): grains 3-colp(oid)ate, oblate — suboblate ($33 \times 44 \mu$), tenui-exinous.

Apocolpium diameter about 21μ . Exine stratification \pm obscure. Sexine (processes not included) probably thicker than nexine, consisting of bacula and tegillum with attached suprategillar processes. In the latter a

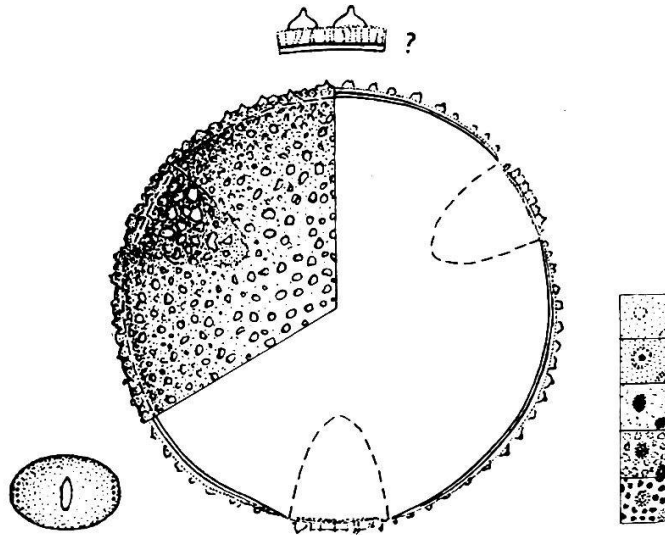


Fig. 1. *Ancistrocladus likoko*. Pollen grain, polar view, surface and optical section ($\times 1000$). Lower left hand figure: pollen grain, equatorial view ($\times 250$). Lower right hand figure: LO-patterns. Upper detail figure: exine stratification ($\times 2000$).

short, pointed apex rises from a half-spherical basement. LO-patterns as shown in Fig. 1, right-hand detail figure. Colpi with rounded ends, tenuimarginate, covered by a membrane with a slightly coarser pattern than the rest of the exine. The pollen grains in a specimen collected at Yangambi (MULLENDERS 2423) are slightly smaller (equatorial diameter about 40μ).

In apertures, size, and exine stratification, the pollen grains are similar to the grains in *Triphyophyllum peltatum* (Dioncophyllaceae; cf. Fig. 2). According to METCALFE (Kew Bull. 1951 [1952]) there are notable similarities between the *Ancistrocladaceae* and the *Dioncophyllaceae* in the leaf. Furthermore, the central vascular tissue, in both families, is encircled by a zone of fibres in which additional vascular strands are embedded. These facts, together with several others, tend to make plausible a \pm close relationship between the *Ancistrocladaceae* and *Dioncophyllaceae*.

DIONCOPHYLLACEAE

(for taxonomy, see H. K. A. SHAW in Kew Bull. 1951 [1952], p. 327—347).

Species investigated: *Dioncophyllum tholloni* (Gabun; le TESTU 8135; for palynogram, see Webbia, Vol. XI, [1955] 1956, p. 410, or Grana

Palynologica, N. S., Vol. 1 : 1, paper no. 5, p. 6): pollen grains 3 (—4)-colpoidate (zoniaperturate, as in the following species), oblate (about $38 \times 52 \mu$). Apocolpium diameter about 29μ . Exine about 2.5μ thick. Exine stratification \pm obscure. In several grains an LO-OL-pattern could be seen. The first, \pm irregular pattern (LO) is due to small irregularities of the sexine surface. The latter pattern (OL) is more regular (circular «islands») and, apparently, due either to endosexinous or to nexinous (?) details. Colpoids (approximate size $23 \times 13 \mu$) with rounded ends and covered by a membrane consisting of a smooth nexine beset with \pm coarse, piloid — baculoid rods. — *Triphyophyllum peltatum* (Fig. 2; Sierra Leone; DEIGHTON 5235): grains 3-colpate, subprolate —

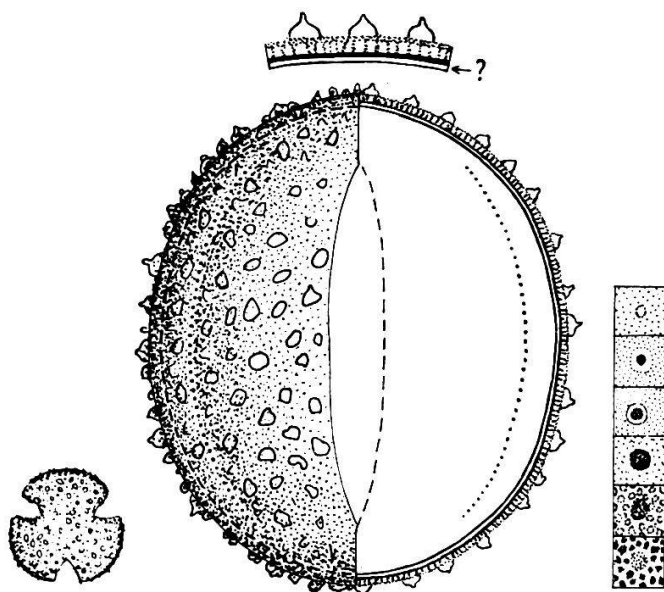


Fig. 2. *Triphyophyllum peltatum*. Pollen grain, equatorial view; surface (left) and optical section (right; $\times 1000$). Lower left hand figure: pollen grain, polar view ($\times 250$). Lower right hand figure: LO-patterns. Upper detail figure: exine stratification ($\times 2000$).

prolate spheroidal ($50 \times 44 \mu$), tenui-exinous. Colpi not very distinct, tenuimarginate. Exine stratification \pm obscure. Sexine probably considerably thicker than nexine, tegillate. Tegillum supported by bacula (easily discernible in LO-analysis but difficult to trace in optical sections), beset with small processes consisting of a broad, half-spherical part bearing a thin, pointed apex.

The pollen grains in *Dioncophyllum tholloni* are slightly similar to those in *Roridula* (cf. ERDTMAN, Pollen Morphology and Plant Taxonomy, 1952, p. 379) and also, as far as the shape and the colpi are concerned, to those in *Ancistrocladus*. The pollen grains in *Triphyophyllum peltatum* have several characteristics in common with those in *Ancistrocladus*.