

On the occurrence of pollen similar to *Bruckenthalia spiculifolia* (Salisb.) Reichenb. in Danish Quaternary deposits

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Menke (1970) has called attention to the fact that pollen grains very similar to pollen of the ericaceous genera *Blaeria* and *Bruckenthalia* occur in Quaternary deposits of various ages in Schleswig-Holstein. Pollen from these genera resemble *Frangula alnus* Miller pollen, and the fossil grains were earlier referred to "Rhamnaceae-type" (Menke 1969). They occur as late as Brørup-Interstadial deposits in Schleswig-Holstein, and Menke (1970) suggests that other finds from deposits of such age referred to *Frangula alnus* also belong to the *Blaeria*-type.

Pollen tetrads occur in *Blaeria patula* Engl., whereas the pollen grains of *Blaeria ericoides* L., *Bruckenthalia spiculifolia* and *Frangula alnus* Mill. are tricolporate and \pm psilate. These tricolporate grains have pronounced costae colpi (sensu Iversen and Troels-Smith 1950) and the pore appears in surface view as a colpus transversalis; however, as pointed out by Menke (1970) they differ slightly, as the pore is seen as a simple slit in *Blaeria* and *Bruckenthalia* in optical cross-section, whereas a vestibulum-like structure appears in *Frangula* pollen (illustrations in Menke l.c.). This is due to the presence of costae transversales in *Frangula*, but these are not always pronounced and may be missing. The *Blaeria ericoides* and *Bruckenthalia* pollen in our material have convex intercolpia. The *Frangula* pollen grains often have concave intercolpia, but grains with convex intercolpia also occur.

Tricolporate and psilate pollen grains from various Danish Quaternary deposits including the Brørup Interstadial have been referred to *Frangula alnus* by the present author (Andersen 1961, 1965). The reference collection examined comprised North and Central European species, and *Blaeria* and *Bruckenthalia* were not represented. The author felt slightly bothered by the absence of costae transversales in the fossil grains, but there seemed no other possibility of identification than *Frangula alnus*. After a re-examination of the material from the Brørup Interstadial (Brørup Hotel Bog, Nør-

bølling, Andersen 1961), the author feels convinced that these grains should rather be referred to an ericaceous genus, probably *Bruckenthalia* or *Blaeria*. Similar grains also occur at sites of middle Quaternary age, whereas scattered *Frangula* pollen occurs at the sites from the Eemian Interglacial (Andersen 1965). Further revision of this material will be necessary, however.

Bruckenthalia spiculifolia is monotypic. It is calcifuge and occurs today in woods and subalpine pastures in mountains of Jugoslavia, Romania, Bulgaria, Greece and Asia minor (Hegi 1908–31, Flora Europaea), whereas *Blaeria* occurs with numerous species in tropical and southern Africa. No ericaceous macrofossils were recorded in the deposits from Brørup and Nørbølling. As *Picea omorika* from Jugoslavia is represented it is not unlikely that the ericaceous pollen belongs to *Bruckenthalia spiculifolia*. Its occurrence would not contradict the acidophilous vegetation otherwise indicated at that time (Andersen 1961). The identity of the tricolporate ericaceous pollen grains from the older sites mentioned above is more uncertain; however a widespread occurrence of an ericaceous shrub is in accordance with the increasingly open and heathlike vegetation otherwise indicated in the oligocratic and telocratic phases of the interglacial successions (cp. Andersen 1969).

The present revisions suggest that surprising plants may have been widespread even in a rather young stage of the Quaternary, and such unexpected discoveries must be welcomed.

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