TAXONOMY OF THE TERTIARY FOSSIL FRUIT *CARPOLITHES OESTRUPII* FROM THE PLEISTOCENE OF DENMARK

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Friis, E. M.: Taxonomy of the Tertiary fossil fruit *Carpolithes oestrupii* from the Pleistocene of Denmark. *Bull. geol. Soc. Denmark,* vol. 23, pp. 265–268. Copenhagen, December 4th 1974.

From the Pleistocene amber-twig-beds ("Rav-pindelag") in Denmark Hartz (1909) described a fossil flora of redeposited fruits and seeds belonging to Tertiary and Pleistocene species. *Carpolithes oestrupii* Hartz (1909), referred to the Tertiary species, is here reinvestigated. In Hartz' collection only two specimens of *Carpolithes oestrupii* are found. They belong to two different genera: *Sparganium* L. and *Comptonia* Banks.

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In his dissertation ("Bidrag til Danmarks tertiære og diluviale Flora"), Hartz (1909) treats different fossil floras from the so-called amber-twig-beds (translation of the original term in Danish: "Rav-pindelag" (Ussing 1899) defined by Hartz 1909). The amber-twig-beds are layers rich in organic detritus in Pleistocene fluviatile sand beds. The organic detritus, which has a high content of wood, fossil fruits, fossil seeds and amber, is considered to be redeposited. Hartz divided the fossil fruits and seeds into two groups of which the Tertiary specimens differed from the Pleistocene specimens in being incoaled.

From the Miocene deposits from Fasterholt, Jylland, Denmark, endocarps of the genus *Comptonia* Banks have been reported (Koch et al 1973). In working with these endocarps (recently referred to the species *Comptonia longistyla* (Nikitin) Dorofeev) my attention was drawn to the species *Carpolithes oestrupii* Hartz (1909). According to Dr. Mai, Berlin (personal communication 1972) and Dr. Holy, Prague (personal communication 1973) *Carpolithes oestrupii* may belong to the genus *Comptonia* and may be identical with *Comptonia longistyla* (Nikitin) Dorofeev described from Oligocene and Miocene deposits in Western Siberia (Nikitin 1965, Dorofeev 1966).

In the collection of Hartz there are only two specimens which could be refered to *Carpolithes oestrupii.* The two specimens are unlabelled, but both are figured by Hartz (1909, Pl. IV, fig. 25–26). The two specimens are

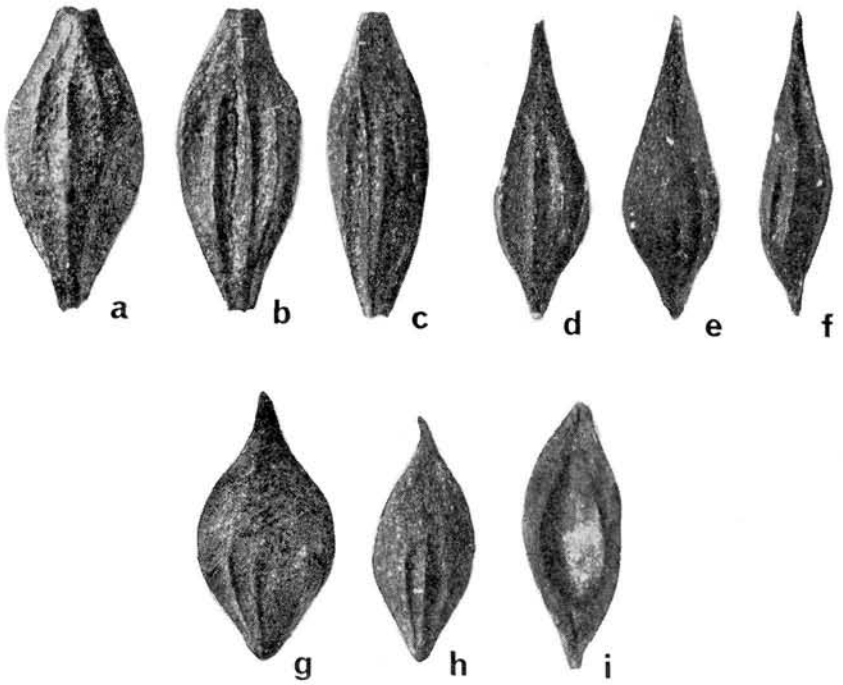

Fig. 1. a–c. *Sparganium* sp. (syn: *Carpolithes oestrupii* Hartz) from the amber-twig-beds, Kalvebodsstrand, Sjælland, Denmark. ×10. d–f. *Comptonia* sp. (syn: *Carpolithes oestrupii* Hartz) from the amber-twig-beds. Kalvebodsstrand, Sjælland, Denmark. × 10. g–i. *Comptonia longistyla* Dorofeev from Fasterholt, Jylland, Denmark. ×10.

in the following referred to as *Carpolithes oestrupii* (25) and *Carpolithes oestrupii (26)*, the numbers being Hartz' figure numbers.

Carpolithes oestrupii was found in the amber-twig-beds at Kalvebodsstrand, Sjælland, Denmark, and it is referred to the Tertiary species. Hartz described it as *"a black, fusiform carpolite with holes at both ends and with low ribs running from pole to pole"*. The original description of Hartz corresponds approximately to *Carpolithes oestrupii (26)*.

Sparganium sp.

Fig. 1 a–c.

Syn: *Carpolithes oestrupii* Hartz, 1909, pl. IV fig. 26.

This specimen is 4.1 mm long and 1.8 mm broad. It is narrow-elliptical in outline with 8 slightly anastomosing longitudinal ribs running from base to apex. On some ribs there are traces of vascular bundles. There are no dehiscing-margins and the fruit does not seem to be bivalved. At the base the

fruit is broken, but there is no aperture. At the apex the stylus is broken and there is a little aperture leading to the loculus. The endocarp has many features in common with endocarps of the genus *Sparganium* L. and is here referred to this genus. Among the fossil *Sparganium*-endocarps the specimen partly agrees with *Sparganium elongatum* Dorofeev (1963) from Oligocene deposits in Western Siberia. The ribs of the Siberian material are thinner and less conspicious.

Comptonia sp.

Fig. 1 d–f.

Syn: *Carpolithes oestrupii* Hartz, 1909, pl. IV, fig. 25.

This specimen is elongated, oval in outline, 4.0 mm long and 1.3 mm broad, pointed at apex and base. The apical point is very long. There are no apertures. At the surfaces there are 7 non-anastomosing ribs. The ribs are prominent and most conspicuous on the lower half of the endocarp. The endocarp is bisymmetrical about a longitudinal plane, which seems to be the dehiscing-plane, although the fruit is not open along the supposed dehiscing-line. The specimen looks very much like fossil endocarps referred to the genus *Comptonia* by Dorofeev (1966). 7 fossil species of *Comptonia*-fruits have been described, all from deposits in U.S.S.R. Of these species *Comptonia longistyla* has much in common with *Carpolithes oestrupii (25),* but there are some differences. *Comptonia longistyla* is 1.4–3.2 mm long and 0.8–2.7 mm broad (Nikitin 1965, Dorofeev 1966). This means that *Comptonia longistyla* is smaller and broader than *Carpolithes oestrupii* (25).

A large material of *Comptonia longistyla* is found in the Miocene deposits in Fasterholt, Jylland. *Comptonia longistyla* from Fasterholt is shown on fig. 1 g–i.

Conclusions

Hartz referred only two specimens to the species *Carpolithes oestrupii* Hartz (1909). The two specimens are figured on pl. IV, fig. 25–26. They belong to two genera. The specimen figured on pl. IV, fig. 26 (Hartz 1909) is referred to the genus *Sparganium* L. The specimen figured on pl. IV, fig. 25 (Hartz 1909) is referred to the genus *Comptonia* Banks and does not agree completely with the species *Comptonia longistyla* (Nikitin) Dorofeev for which reason the species *Comptonia longistyla* is maintained.

As the material is very small, only one specimen per genus, the name

oestrupii, is not attached to any particular genus. Instead, the specimens are here referred to as *Sparganium* sp. and *Comptonia* sp. respectively.

Acknowledgements. I wish to thank Dr. Ingwersen (Geological Survey of Denmark) who kindly placed the original material of Hartz at my disposal. I also wish to thank Dr. Holy (Narodní Museum, Prague) with whom I have discussed the problem, B. Eske Koch who read the manuscript and J. Sommer who made the photographs. This study has been undertaken at the Phytopalaeontological Department, Geological Institute, Aarhus University (Søby-Fasterholt brunkulsprojekt) with support from the Danish Science Council (Statens naturvidenskabelige Forskningsråd).

Dansk sammendrag

Carpolithes oestrupii Hartz (1909) er beskrevet fra ravpindelagene ved Kalvebodsstrand. Den bliver af Hartz henregnet til de Tertiære arter. Arten er her revideret. Der er i Hartz' samling kun fundet 2 eksemplarer af *Carpolithes oestrupii*, begge er uetiketterede, men afbildet på tavle IV, fig. 25–26 af Hartz (1909). Endocarpiet afbildet tavle IV, fig. 26, henføres til slægten *Sparganium* L. Endocarpiet afbildet tavle IV, fig. 25, henregnes til slægten *Comptonia* Banks. Af de beskrevne fossile *Comptonia*-frugter er der størst lighed med *Comptonia longistyla* (Nikitin) Dorofeev, fra hvilken den dog adskiller sig ved at være længere og slankere, og arten *Comptonia longistyla* bør således opretholdes. Da Hartz' materiale er meget lille, er artsnavnet *oestrupii* ikke her knyttet til nogen af de to eksemplarer, der blot beskrives som *Sparganium* sp. og *Comptonia* sp.

References

Dorofeev, P. I. 1963: Tretičnye flory Zapadnoj Sibiri. *Izd. Akad. Nauk SSSR*. 287 pp.

Dorofeev, P. I. 1966: O plodah *Comptonia* iz tretičnyh otloženij SSSR. *Dokl. Akad. Nauk. SSSR* **167** (4), 910–913.

Hartz, N. 1909: Bidrag til Danmarks tertiære og diluviale flora. *Dan. geol. Unders.* række 2, **20**, 292 pp.

Koch, B. E. et. al. 1973: Den miocæne brunkulsflora og dens geologiske miljø i Søby-Fasterholt området sydøst for Herning. *Dansk geol. Foren., Årsskrift for 1972*, 1–57.

Nikitin, P. A. 1965: Akvitanskaja semennaja flora Lagernago Sada (Tomsk). *Izdateltvo Tomskogo Universiteta*. 119 pp.

Ussing, N. V. 1899: Danmarks Geologi i almenfatteligt Omrids. *Danmarks geol. Unders.* række 3, **2**, 264 pp.