***In situ* miospores from the Rhynie chert plant *Horneophyton ligneri* (Kidston & Lang) Barghoorn & Darrah – New observations and remaining questions**

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The Rhynie locality, situated in the northern part of Scotland, is well-known thanks to the remarkable state of preservation of the numerous fossils from the Rhynie chert. This exceptional preservation is due to the silicification in sinters deposited by hot-spring activity associated with a complex hydrothermal system. Together with exceptionally well preserved macroplant remains miospore assemblages have been recovered from sediments cored by a number of boreholes through the stratigraphical sequence of the Rhynie outlier. However, *in situ* spores are not exceptionally well preserved in the chert: they are dark brown and intensively torn, while larger plant fragments are perfectly fossilised. Spore features are very difficult to describe accurately, but some of the spores can sometimes be attributed to taxonomic groups. For example, Bhutta (1973) recognized two different taxa in the same sporangium: *Apiculiretusispora* type and *Emphanisporites decoratus*. The former is proximally laevigate and distally ornamented by short spines. On the reverse, the latter is characterized proximally by radial muri and distally by spines and coni of different shapes. On the other hand, Wellman (2004, 2017) and Wellman et al. (2004) considered that there is only one species present in the sporangium: *E. decoratus*. In this communication, we present a preliminary analysis of the slides from the collection of Lille University and confirm the difficulty of the examination of *in situ* spores because of their very bad preservation, the thickness of the slides and the preservation of specimens in 3D. The conditions of observation are not optimal and the identification of the specimens is doubtful in many cases. The specimens of *E. decoratus* are rather easy to identify thanks to their radial muri on the proximal face. This species is dominant in the observed assemblages. Other specimens do not show those muri. We discuss here a series of questions: Is this character taphonomy-induced? Are those spores less mature? Do they really lack radial muri?

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