Ordovician trilete spores from Saudi Arabia

A spectacular and intriguing assemblage of trilete spores have been observed from the Qusaiba-1 shallow core hole, Qasim region, central Saudi Arabia (Steemans *et al*., 2009; Wellman *et al*., 2015).

It was the first time that an assemblage of trilete spores was observed below the Silurian except rare occurrences of *Ambitisporites avitus* in the Late Ordovician (e.g. Steemans, 1996). This discovery went against the hypotheses concerning the evolution of the first land plants put forward by certain authors, going so far as to "forget" the existence of these publications in the absence of having peremptory arguments to prove that it is a scientific mistake (e.g. Strother & Foster, 2021).

Let's go to the facts:

- The samples are collected from cores and not cuttings.

- "*They were prepared at the University of Liège, Belgium, using standard palynological HCl HF–HCl acid maceration techniques (...). Subsequently selected duplicate samples were independently processed at the University of Sheffield and prepared using standard HCl–HF–HCl palynological acid maceration techniques (...). The palynological characteristics of preparations from both laboratories were identical. All of the samples yielded rich organic residues including palynomorphs (miospores, acritarchs, chitinozoans) that are abundant, well-preserved and of low thermal maturity* » (Wellman *et al*., 2015).

- Acritarchs and chitinozoans display a normal biostratigraphic succession without any reworkings or contaminations.

- The cryptospores observed are all in situ, without biostratigraphic anomalies.

- The trilete spores show the same state of preservation as the other palynomorphs.

- Trilete spores are observed in 8 samples.

- Except for one species, none of them are known higher in the stratigraphy, which makes their contamination unlikely.

After reading those arguments and after 15 years of absences of publications, which would demonstrate that these trilete spores are artifacts, it seems to me that it is time to accept that there were indeed plants producing trilete spores in the Upper Ordovician and that the new theories on the evolution of the first plants must take this into account.

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