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A new microfossils from the Early Paleozoic formations of the Gemericum

JÁN SOTÁK[1], ANNA VOZÁROVÁ[2] & JÁN IVANIČKA[3]

[1]Geological Institute, Slovak Academy of Science Bratislava, Severná 5, 974 01 Banská Bystrica, Slovak Republic
[2]Department of Mineralogy and Petrology, Comenius University, Mlynská Dolina, 842 15 Bratislava, Slovak Republic
[3]Geological Survey of Slovak Republic, Mlynská dolina 1, 817 04 Bratislava, Slovak Republic

Abstract: In the metamorphic series of the Gemericum, in the Vlachovo and Bystrý potok Formations of the Gelnica Group, fossil remnants of foraminifers, were described for the first time. The foraminifers occur as a numerous spherical tests attributing to the several species of psammosphaerids and saccamminids. They show a primitive variability of the Early Paleozoic associations without younger foraminiferal taxa.

Key words: Inner Western Carpathians, Gemericum, Early Paleozoic, arenaceous foraminifers

Early Paleozoic lydites from the Gelnica group contain a rich association of microfossils (Fig. 1), which have been obtained here for the first time. Of the microfossils most numerous are the spherical siliceous tests. In some extractions they form even monoassociations (e.g. at the Kojšov - Jedlinka locality comprising of 70 individual tests), in thin sections they are practically rock-forming fossils (e.g. Henclová locality). Similar spherical forms were already described from the locality Betliar. Ondrejíčková & Snopko (1986) consider them as a radiolarians close to the genus *Pylentonema* DEFLANDRE. Betliar's specimens, which exhibit a meshwork wall structure, presence of „pylum„ and tiny dimensions (80 - 100 μ), are not identical with spherical fossils described herein (Dr. A. Ondrejíčková also refused them to be radiolarians). These organisms are more likely a single-cell foraminifers of the family **Psammosphaeridae** or **Saccamminidae**, sometimes erroneously identified with spores (e.g. *Calcisphaera* WILLIAMSON). An evidence of their appurtenance to forminifers is, however, the agglutinated character of siliceous tests, oversized dimensions (up to 1 mm) and mainly the presence of flat or also neck-like shaped aperture. Similar forms of foraminifers are already mentioned from the Early Cambrian under the generic designation *Palaeospheroidina* KOROLJUK. Alike the foraminifers of the genus *Palaeospheroidina* KOROLJUK, the microfossils from lydites have a siliceous test, spherical shape, the presence of aperture, dimensions in the limits of 0.4-1 mm and mass occurrence. Formaninifers of the genus *Palaeospheroidina* KOROLJUK may be considered as predecessors of simple agglutinated species as *Psammosphaera* SCHULTZE, *Saccammina* CARPENTER, *Sorosphaera* BRADY, *Thurammina* BRADY or *Hemisphaerammina* LEOBLICH & TAPPAN, which are frequently described from the Ordovician, but mainly from the Silurian and Devonian formations. Foraminifers with identical marks were described, e.g. from the Ordovician of the Baltic region (Eisenack 1967) and Silurian of the Grauwackenzone in Austria (Kristan -Tollmann 1971). Some forms from Gemeric lydites may be ranged directly, as species, to them.

In foraminiferal association, there is a predominance of two psammosphaerid species, which substantially differ in size and structure of agglutination (Fig. 2). Larger forms correspond to the species *Psammosphaera cava* MOREMAN having the thicker and coarsely agglutinated walls with spongy-like exterior surface. Smaller forms of psammosphaerids, which tests are finely agglutinated up to subgranular, smoothly-walled and misty tranculent, belong to the species *Psammosphaera micrograna* EISENACK. The psammoshaerid tests have no definite aperture (only interstitial pores that serve as aperture). The foraminifers with recognizable aperture respond to the genus *Saccammina* CARPENTER, and that to the following two taxa: *Saccammina glenisteri* CRESPIN (forms with simple rounded aperture) and *Saccammina silurica* EISENACK (forms with raised apertural neck). Some saccamminid forms show an indication of symmetrical spiny-like protuberances, which are typical for the species *Amphitremoida tubulosa* EISENACK. Beside of single-cell forms there is also a small bilocular tests, which recall a some thuramminid species (e.g. *Tubeporina umbilicata* PORONINA).

The occurrence of arenaceous foraminifers in the Gelnica Group allows us to make some stratigraphic considerations. The foraminifers *Psammosphaeridae* are known since Cambrian period, but particularly rich association they formed during the Ordovician and Silurian (cf. Moreman 1930, Plummer 1945, Poronina, 1969, etc.). The Silurian associations of psammosphaerids and saccamminids are, however, also completed by younger foraminiferal taxa (*Ammodiscidae, Trochamminidae, Tolypamminidae*), which are missing in lydites of the Gemericum. This age limitation (Ordovician to Early Silurian) corresponds essentially with the results of former biostratigraphical investigations in the Gelnica

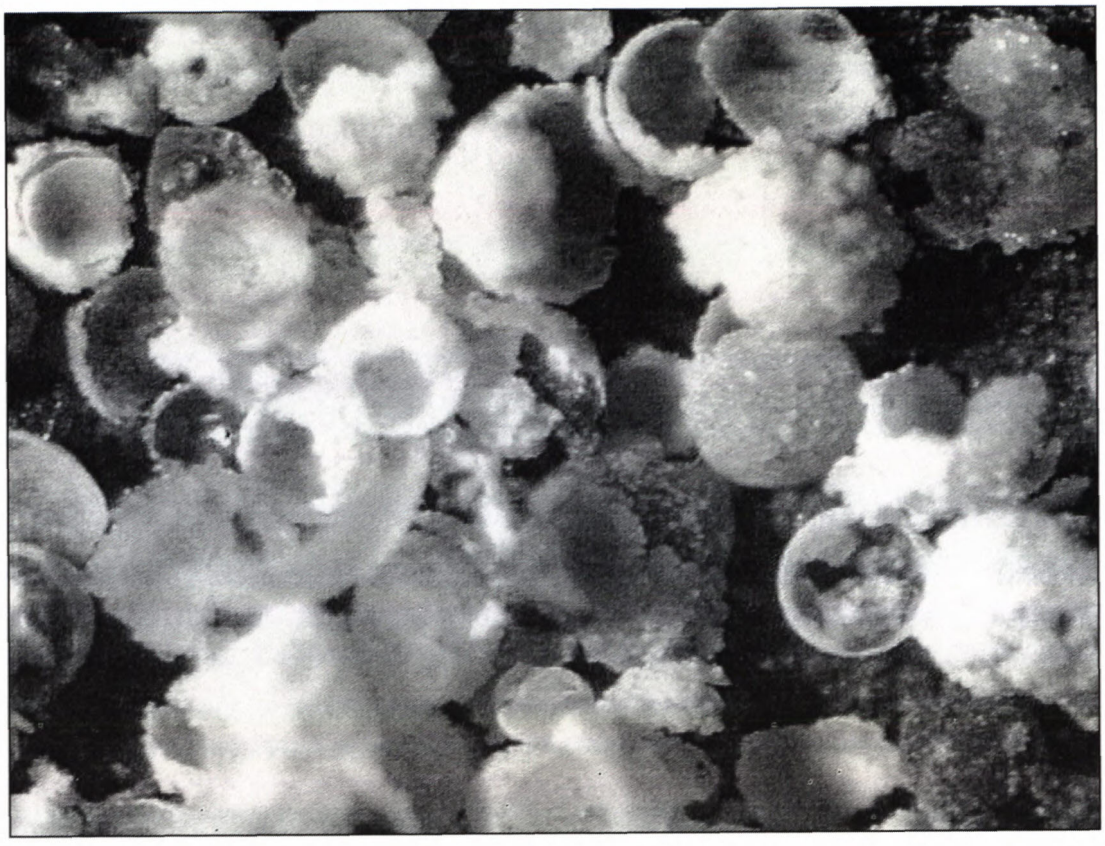

Fig. 1 Numerous association of sherical microfossils obtained from the Gemeric lydites. Microfossils are considered to be an arenaceous foraminifera (Psammospheridae), having a single-cell shape, coarsely agglutinated siliceous walls, interstitial pores or simple rounded aperture and oversized dimensions (0.3 – 0.7 mm). Loc. Kojšov - Jedlinka, magnif. 48x.

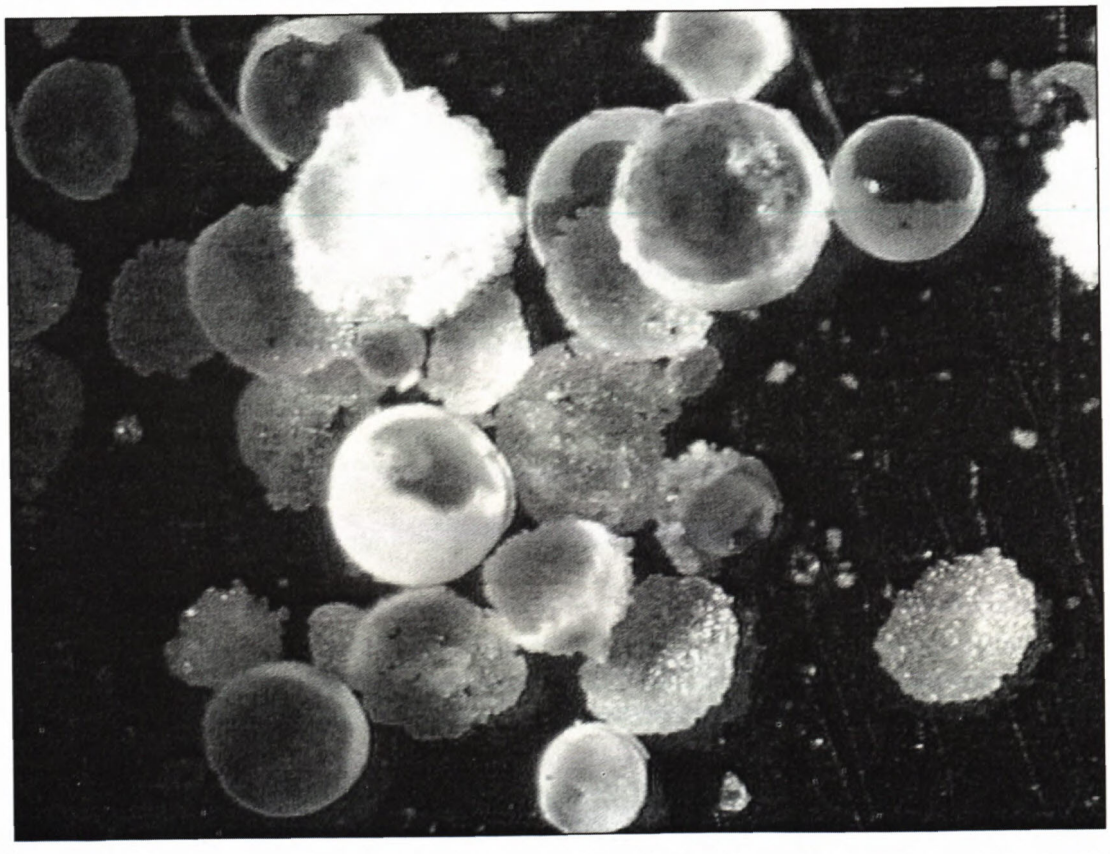

Fig. 2 Two different psammosphaerid species in foraminiferal association of the Gemeric lydites. One of them shows a thicker agglutinated walls with spongy-like exterior surface (Psammosphaera cava MOREMAN), and second one a finely agglutinated up to subgranular walls with smooth exterior surface (Psammosphaera micrograna EISENACK). Loc. Kojšov - Jedlinka, magnif. 64x.

Group, based upon the study of palynomorphs and kerogene (Snopková & Snopko 1979, Čorná 1972, etc.). The abundance of psammosphaerids and saccamminids, i.e. flysch-type assemblage of agglutinated foraminifers (*sensu* Kuhnt et al. 1989), indicates a deep-water character of the Gelnica Group formations.

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