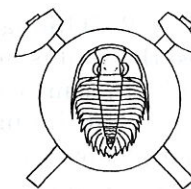


## Bioturbation of freshwater sediments of the Semily Formation (Late Carboniferous, Podkrkonoší basin, Czech Republic)



### Bioturbace sladkovodních sedimentů semilského souvrství (svrchní karbon, podkrkonošská pánev) (Czech summary)

(1 text-fig., 2 plates)

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Strongly bioturbated layers in sandy siltstones, showing thickness of several decimeters and horizontal extent of meters or tens of meters, have been ascertain in the lower and middle parts of the Semily Formation (Stephanian C). The very abundant ichnofossils have been determined as *?Palaeophycus* cf. *P. tubularis* Hall, 1847; it seems to be an individual transitional form between ichnogenera *Palaeophycus* and *Planolites*. Besides a feeding function of the described ichnofossil, the possibility that it represents cubichnia or fugichnia (shelters protecting from drying) is discussed.

### Introduction

Towards the end of 80's, a large, several hundred meters long outcrop in the sediments of the latest Carboniferous of the Podkrkonoší basin originated during a road building west of Vrchlabí. The outcrop has been studied geologically and palaeontologically by Šimůnek, Drábková and Zajíc (1990). The presence of invertebrate traces, probably of worms, has been ascertain in lower and middle part of the Semily Formation.

The aim of the present contribution is to place the mentioned finds into the ichnological system and to define, what activity of tracemakers caused their origin. Attention to this monotonous ichnoassemblage has been paid because of the lack of information of nonmarine invertebrate traces both in the Bohemian massif and worldwide. Equivalent of detailed trace fossil facies models known for the marine environments is practically lacking for nonmarine settings (Frey and Pemberton 1984, Maples and Archer 1989, a.o.).

The Semily Formation (Stephanian C – ?early Autunian), lying disconformably on the Syřenov Formation (Stephanian B), is formed by polymictic conglomerates, variegated or grey siltstones to sandstones, by lenses of tuffs and tuffites and by intercalations of limestones and cherts. The maximum thickness of the formation is 400 m (Táslar, Havlena and Prouza 1980).

The section near Vrchlabí exposed the lower part of the Semily Formation (reddish-brown sandy siltstones locally with bioturbation, containing irregular, lenticular or trough-shaped bodies of polymictic, medium- or coarse-grained conglomerates), and the middle part of the formation (purple-grey to brown-grey, medium-

or coarse-grained sandstones, and conglomerates) – see Šimůnek, Drábková and Zajíc (1990).

Zajíc (in Šimůnek, Drábková and Zajíc 1990) stated that the bioturbation occurs in some layers both in the lower and the middle parts of the formation. This bioturbation is formed by punch-like bodies of circular cross-section. The traces are usually parallel to bedding, sporadically they become oblique and intersect the bedding upwards; thus the traces of in-fauna feeding the substrate (probably worms) are concerned.

### Systematic ichnology

*Palaeophycus* Hall, 1847

*?Palaeophycus* cf. *tubularis* Hall, 1847

Pl. I, fig. 1–5; Pl. II, fig. 1

**Material:** Two larger samples (ca. 10 x 25 cm) of sandy siltstone with numerous traces (full reliefs). Ten free fillings of traces. Photographs and figures made at the locality by Z. Šimůnek, J. Drábková, and J. Zajíc.

**Description:** Smooth, straight or moderately curved tubes of circular to oval cross-section. Diameter 6–12 mm, length of preserved sections to 20 cm. Horizontal orientations strongly prevail (Pl. I, fig. 4), parts of some tubes are oriented obliquely to bedding. Tubes are densely crowded (their filling represents about 40% of the rock volume), being arranged on the bedding planes either parallel (Pl. I, fig. 5), or chaotically (Pl. I, fig. 1,3). Tubes are never ramifying, they often cross each other, or some segment is in common for two different tubes (Pl. I, fig. 1, 3).