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DISCOVERY OF NEW FAUNA OF MARINE AND TERRESTRIAL VERTEBRATES IN DEVÍNSKA NOVÁ VES

(Fig. 1, Pls. 3)

Abstract: A new locality near Devínska Nová Ves, its lithologic conditions and a list of the discovered fauna are described in the presented paper. Noteworthy is the discovery of marine and terrestrial vertebrates on the same locality.

Резюме: В настоящей статье описывается новое местонахождение недалеко Девинской Новой Вси, его литологические условия и список найденой фауны. Замечательным является открытие морских и наземных позвоночных на том же местонахождении.

Introduction

During investigations of the former Stockerau lime kilt near Devínska Nová Ves (former Neudorf a. d. March) in the year 1984, a new fissure was discovered by Š. Mészáros in Lias limestones, which he called Bonanza. This fissure was filled with greatest probability by Badenian sediments in which a rich fauna of marine and terrestrial vertebrates and more scarcely also marine and terrestrial molluscs was discovered. It was possible to determine the Badenian age on the basis of the presence of a lamellibranch of the species *Pecten aduncus* EICHW.

Description of the locality

The fissure occurs on the Eastern margin of the quarry where Lias limestone occurs in the protective wall oriented towards the main railway line Bratislava—Prague. The fissure has WNW-ESE direction and its width varies between 2.5 and 3 m. The exposed part is approx. 5 m high. The fissure contains great limestone boulders, sand and sandstone (Fig. 1). The walls of the fissure are formed by limestone breccia with traces of boring by a lamellibranch of the genus *Lithodomus*. The character of the sediment indicates a cliff strongly affected by surf (Pl. 1).

The fauna is similar to the nearby locality Devínska Nová Ves — Sandberg. A great quantity of bones of bony fishes (*Osteichthyes*) as well as jawbones covered by button-like teeth, isolated fish teeth and tail-thorns of rays were found here. From marine mammals there were mostly remnants of seals, parts of a skull (Pl. 3), bones and teeth, but as well coprolites full of fish

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remnants. From terrestrial vertebrates, remnants of frogs, bony scales of a reptile of the genus *Ophisaurus*, remnants of insectivoral animals and small carnivores as well as of a small ungulate were found. Except animal remnants, relics of plants — branches and fruits — have been found here as well.

Such a mixture of marine, freshwater and terrestrial animals suggests that this was a case of litoral facies with possible nearby freshwater estuary.

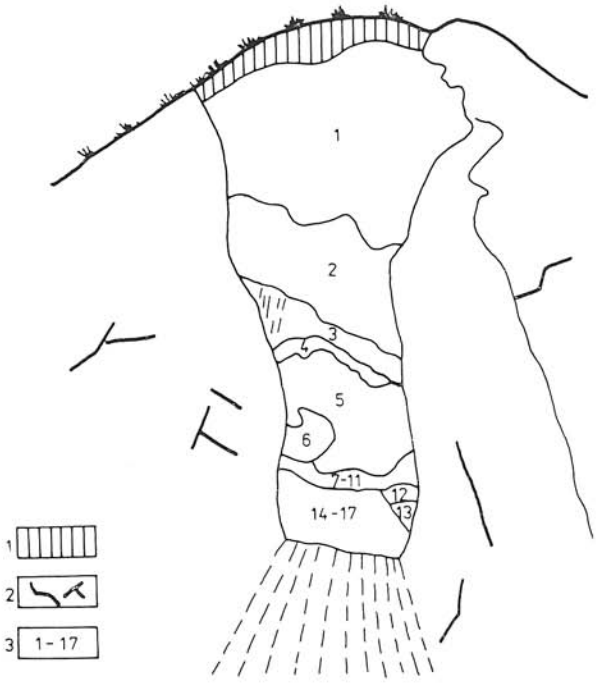


Fig. 1. Schematic drawing of the new place of occurence of fossile remnants in the quarry of the former Stockerau lime kilt near Devínska Nová Ves.
Explanations: 1 — Holocene humus-carbonate soil; 2 — tectonically faulted limestone; 3 — marking of the individual layers.

Preliminary list of fauna

F i s h: *Tetraodon* sp., *Dentex?* sp., *Lepidopus?* sp., *Dasyatis* sp., *Pagridae?*, *Sparidae?* genus et species indet.

A m p h i b i a n s: *Bufo* sp., *Anura* indet., *Urodela* indet.

R e p t i l e s: *Ophisaurus* sp., *Serpentes* indet.,

M a m m a l s: *Pristiphoca ventusta* ZAPFE (Pl. 3), *Lagomeryx parvulus?* (ROGER) (Pl. 2), *Talpidae*, gen. et sp. indet., *Eumyarion* sp., *Plesictis* sp., *Zygolophodon turicensis* (SCHINZ, 1833).

Plate I
A view of the new place of occurence of fossile fauna from WNW (Photo: Mészáros)

Plate 2
Part of a skull with the remnants of vertebras of *Lagomeryx parvulus?* (ROGER)
(Photo: Osvald, enlargement 0.8x)

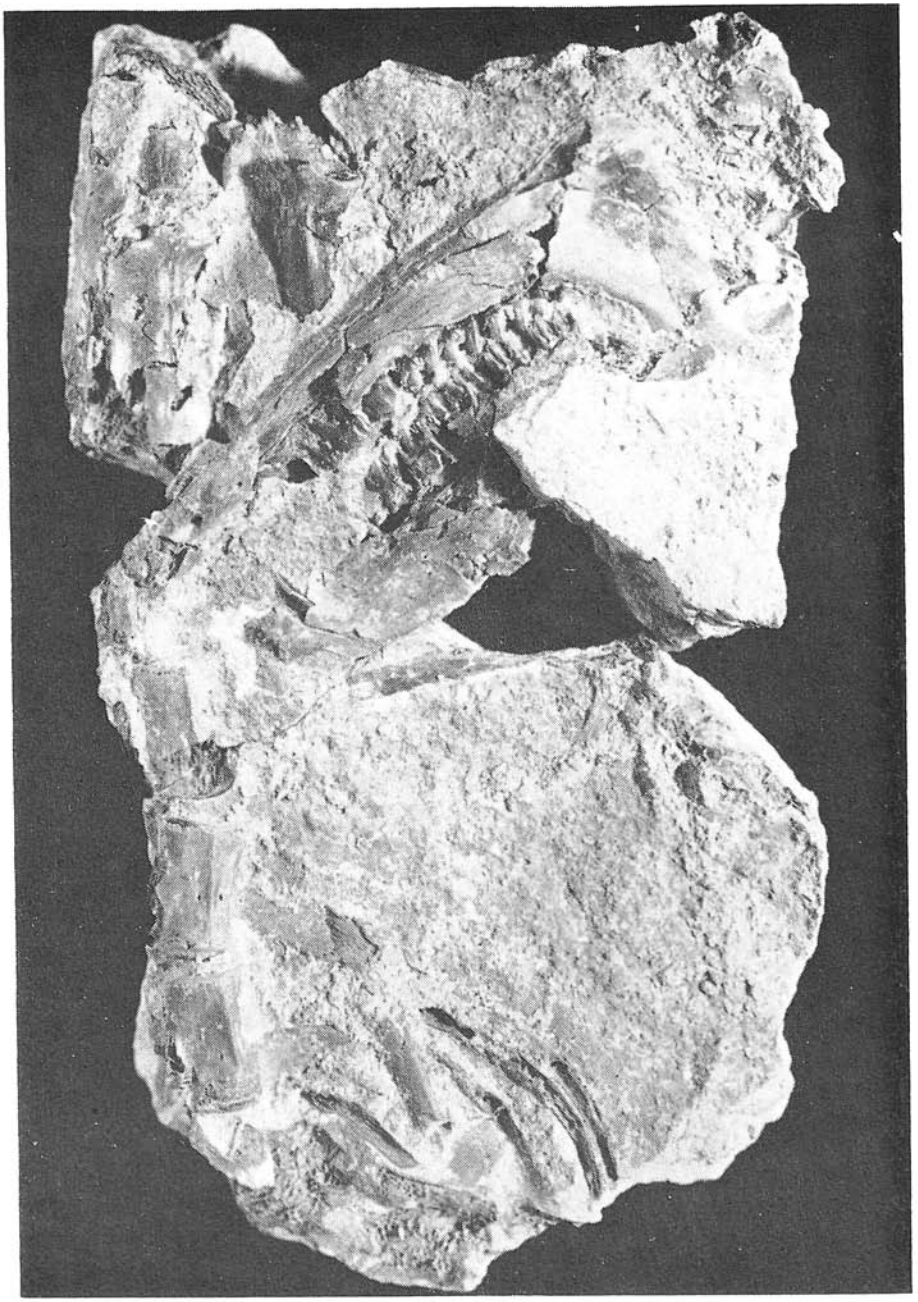
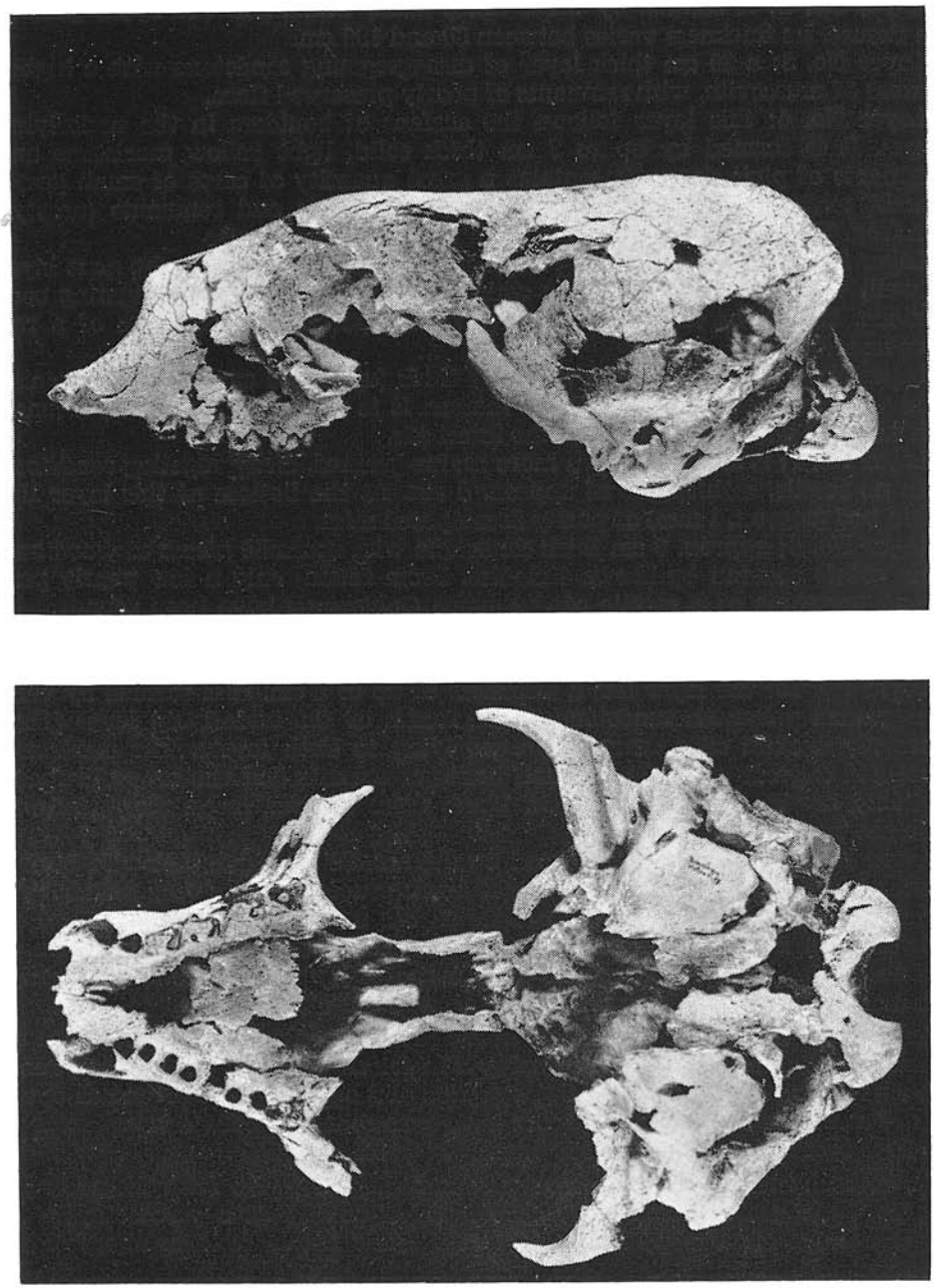


Plate 3
A view of the skull of the seal *Pristiphoca vetusta* (ZAPFE), norma lateralis et basilaris (Photo: Osvald, enlargement 0.5x)



Geological profile

Layer No. 1: is the uppermost part of the exposure and it is formed by fine limestone debris covered by a layer of brown loam. Its thickness is 30 to 50 cm.

Layer No. 2: is formed by white limey sand, which fills the upper part of the fissure. Its thickness varies between 80 and 130 cm.

Layer No. 3: a 20 cm thick layer of disaggregsting sandstone with a higher content of muscovite, with remnants of poorly preserved flora.

Layer No. 4: this layer follows the surface of boulders in the underlying layers. It is formed by up to 7 cm thick solid, light yellow marlstone and fragments of pink sinter. It contains a great quantity of cores of small gasteropods, teeth and isolated bones of small mammals and remnants (urostyl) of a frog. The gasteropod cores are usually covered by limonite.

Layer No. 5: is formed by big boulders (reaching partly into the next layer as well) with white limey matter which sometimes forms disaggregating concretions. In one of them, four seal jawbones and a big tail-thorn of a ray have been found.

Layer No. 6: is formed by a variously thick (up to 100 cm) layer of greenish sand with interbeds of white limey matter. It is very poor in fossils. A small fish vertebra was found in one of the interbeds.

Layer No. 7: it is formed by a more coarse-grained, disaggregating sandstone with no fossils, a thickness of approx. 5 cm. At the bottom of this layer lies a thin bed (approx. 1 mm) of partly decomposed mica.

Layer No. 8: approx. 5 cm thick sandstone with sporadic pieces of wood and their prints covered by brown limonite. From fauna, only a few poorly preserved vertebras of a reptile of the genus *Ophisaurus* have been found.

Layer No. 9: is formed by brown marlstone up to 1 cm thick, full of plant debris.

Layer No. 10: the layer has a thickness of up to 3 cm. It is formed by very fine-grained yellowish sandstone. Some fossils of the underlying layer (11a), especially a skull of a carnivore, were lying in both layers. The sandstone contained a great quantity of small bones of rodents and the lower jawbone probably of the genus *Ophisaurus*. Plant relics occured frequently, similarly as in the layer 11a.

Layer No. 11: this layer is formed by approx. 12 cm thick yellowish-brown marl, which is in the central part of the fissure substituted by very firm, finely lamelled grey carbonate. In the middle of the marl layer lies a thin bed of brownish concretions. The layer contains vertebrate fauna, but also molluscs and flora. Fish and seal remnants and coprolites are missing here completely. The marl layer is denoted as 11a, the layer of solid carbonate 11b.

Layer 11a: the marl is very rich in fossils. Two very well preserved skulls of smaller carnivores, a great quantity of various bones of vertebrates, remnants of two different terrestrial gastropods and approx. 10 small round opercula of so far unidentified gastropods have been found. The flora is represented by three types of fruits, wood debris and two cores.

Layer 11b: this layer is also rich in fossils. On the border with the underlying layer No. 12, an almost complete skeleton of a frog, a part of spine of a so far unidentified reptile, the skull of a shrew and of another rodent have been found. The fossils were lying partly in the layer No. 11b, but they pro-

truded also into the underlying layer No. 12. The layer contained further an almost complete skeleton of a small ungulate with a well preserved set of teeth in the right jawbone (Pl. 2) and further remnants of a frog. The upper part of this layer contained prints of small wood-pieces covered by limonite.

Layer No. 12: has a thickness of 8—15 cm; it is formed by white calciferous sandstone, in places solidified into a very firm bed. Small bones, scales, fish teeth and big, partly decomposed coprolites have been found in great quantities. Important are the discoveries of marine lamellibranchs, two damaged specimens of the species *Chlamys (Manupecten) fasciculata* (MILLET), *Ostrea* sp. and one core originating from a decomposed coprolite determined to be *Parvilucina (Microloripes)* cf. *dentata* DEFR.).

Layer No. 13: a 10—50 cm layer of yellowish-white sand with a great quantity of fauna. In contained above all small bones of fish, scales and teeth, but also remnants of big fish, ray thorns, bones and teeth of seals and coprolites concentrated mostly between big limestone boulders. Interesting is the occurrence of so far unidentified terrestrial vertebrates. Remnants of rodents have also been found — front teeth, a jawbone and bones of limbs, as well as remnants of a bigger mammalian skeleton.

Layer No. 14: it is formed by greenish sandstone, about 5—7 cm thick. It contains thin calcareous interbeds and a few coprolites.

Layer No. 15: it has a thickness of up to 20 cm and is formed by calcified light-coloured sediments with coprolites and scarce fauna of fish bones and scales.

Layer No. 16: it is formed by loose bluish sand with similar fossil content as the underlying layer. This layer has variable thickness not exceeding 10 cm.

Layer No. 17 it is formed by firm conglomerate consisting of limestone and sinter fragments up to 10 cm in size, scarcely also with granite pebbles (gastrolites?). Some limestone and sinter fragments were bored into by lamellibranchs of the genus *Lithophaga* and boring sponges. The fragments were cemented by a firm white sandstone. The thickness of the conglomerate varies between 5 and 20 cm. The layer contained numerous remnants of big fish skeletons (jawbones, vertebras) and seal bones (vertebras, ribs, jawbones, finger bones). A few fragments of big, probably seal coprolites with a content of small fish bones and scales have also been found. Except these, two isolated teeth of a small ungulate and fragments of the left shell of a *Pecten aduncus* EICHW, species have been found in the layer.

In the lower part of the exposure, big blocks of limestone and pink sinter can be found. It is necessary to mention that on the left side of the exposed fissure occurs a vertical strip of karsted debris containing fauna (rodents). In extends from the layer No. 4 to the lowest up to now exposed layer.

From the lithologic circumstances and the paleocommunity of fauna it follows that the filling of the "Bonanza" fissure is older than the fauna of mammals from the nearby locality Sandberg and younger than the vertebrate fauna from the fissure described by Zapfe (1949, 1960). They are probably transgressive sediments of a slightly oscillating sea (Senеš, personal communication) with interchanging marine and freshwater sediments.

Conclusions

A new fissure with fossile fauna is described on the well-known locality Devínska Nová Ves (former Stockerau lime kilt). The lithologic character of the individual layers is described and the authors have presented a list of the discovered fauna. The fauna is comparable with that of Sandberg (Thenius, 1952; Papp—Cícha—Seneš—Steininger, 1978).

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