

The Early Cretaceous ammonite genus *Oosterella* KILIAN, 1911 in Hungary

by
István FÓZY

Abstract — The Hungarian occurrence of the late Valanginian to earliest Hauterivian ammonite genus *Oosterella* is reviewed. Earlier descriptions indicated only the presence of *O. cultrata* in the Gerecse Mts. Recent observations proved that the genus is present also in the southern part of the Transdanubian Central Range, in the Bakony Mts. *Oosterella cultrata*, *O. cultrataeformis*, *O. gaudryi*, *O. vilanova*, *O. fascigera*, *O. ondulata*, *O. begatsrensis* and a possible new species, described here as *Oosterella* sp. 1, were documented in the Hungarian collections. Some specimens have a stratigraphic control, coming from bed-by-bed collected cephalopod assemblages. The majority of the Hungarian Oosterellidae was found in the Late Valanginian Peregrinus Zone, and a single species was described from the Uppermost Valanginian Furcillata Zone, while beds assigned to the Lower Hauterivian yielded no oosterellids.

Keywords — Lower Cretaceous, ammonite, biostratigraphy, Tethys.

FÓZY, I. (2004): The Early Cretaceous ammonite genus *Oosterella* KILIAN, 1911 in Hungary. — *Fragmenta Palaeontologica Hungarica*, 22: 51–62.

Introduction

During the revision of the Early Cretaceous ammonite assemblages of Hungary, specimens belonging to the genus *Oosterella* KILIAN, 1911 were discovered. This genus includes small to medium sized, moderately involute, ribbed, or smooth, strongly keeled ammonites with mainly Tethyan distribution. Its stratigraphic range spans from the early Late Valanginian to the earliest Early Hauterivian, from the base of the Verrucosum Zone up to the Radiatus Zone. Higher records are uncertain. The bulk of the species are

typically Late Valanginian (from Peregrinus to Furcillata Zones) in age; therefore the genus has a special stratigraphic importance. For the present article, the last recommended zonal scheme of the IUGS Lower Cretaceous Ammonite Working Group (HOEDEMAEKER et al. 2003), was adopted.

The aim of the present paper is to give a detailed account on the occurrence of this important ammonite group in Hungary.

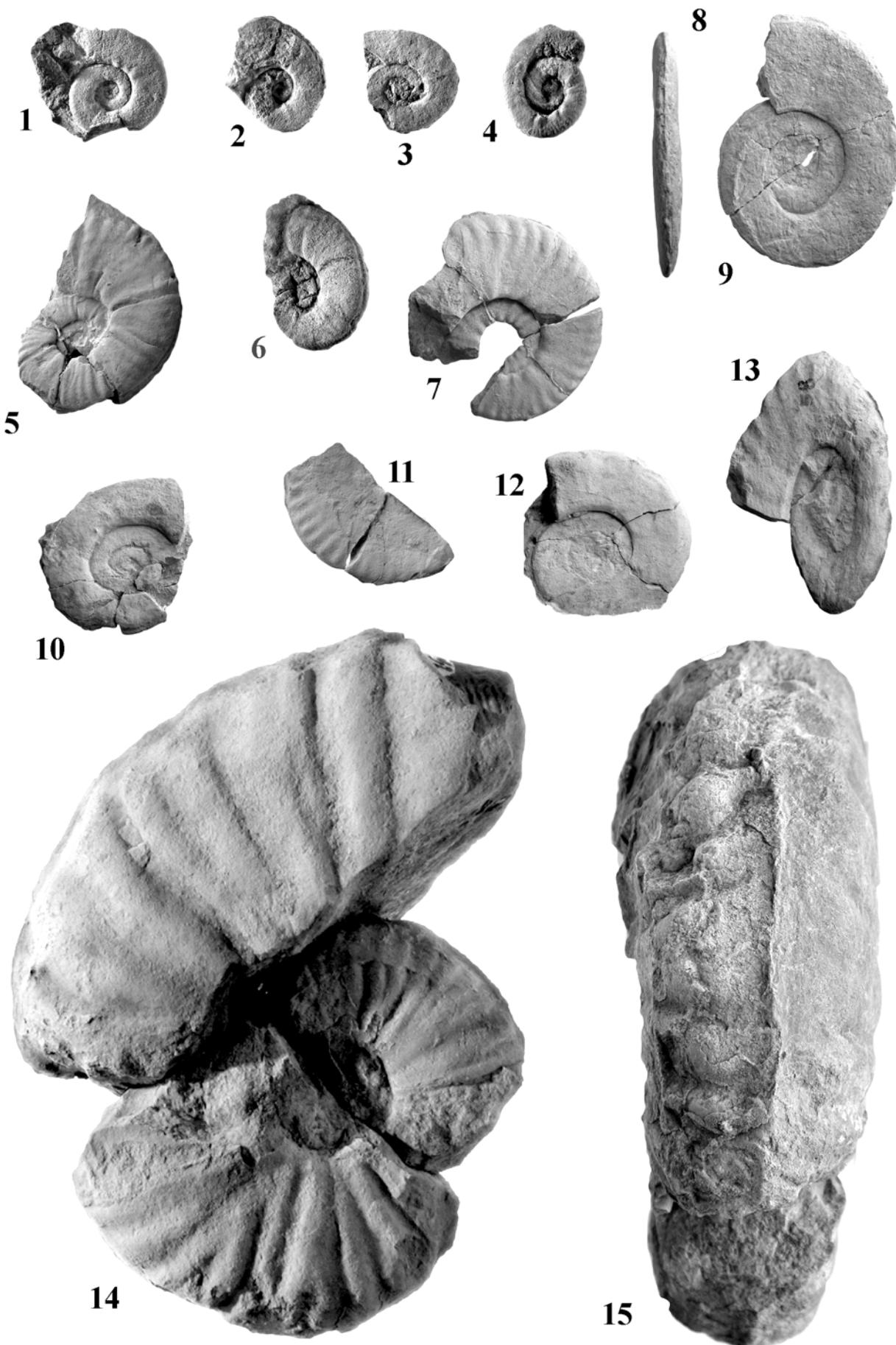
Localities

Fossiliferous Valanginian deposits are known from South Hungary (Mecsek Mts) and from the Transdanubian Central Range. The localities in the Mecsek Mts yielded a Lower Valanginian fauna (representing basically the Pertransiens Zone), while the ammonite data on the Upper Valanginian (Verrucosum Zone) are very scattered and uncertain (BUJTOR 1993). As a consequence, no *Oosterellas* were reported from this part of Hungary. In contrary, specimens belonging to the genus are known from the Transdanubian Central Range (Gerecse and Bakony Mts) where the late Valanginian is relatively well represented by means of ammonites.

The Gerecse locality — Oosterellid ammonites of the Gerecse Mts (Bakony Tectonic Unit, KÁZMÉR 1986) were collected from the upper part of the Bersek Marl Formation (CSÁSZÁR 1997) in the huge open pit mine of the Bersek-hegy (GPS data: X: 47° 43' 13", Y: 18° 31' 42", Z: 338). Some specimens are from old collections, these are without stratigraphic control. Others belong to a larger fossil material, collected carefully, bed, by bed. Precise biostratigraphic informations on the stratigraphically controlled specimens are available in FÓZY & FOGARASI

(2002, Section "C" on. table III, and fig. 4.) The majority of the Oosterellidae from the Bersek-hegy comes from the Peregrinus Zone. (This unit replaces the lower part of the Pachydicranus Zone, which was used by FÓZY & FOGARASI 2002.) This interval yielded, besides the vast amount of Phylloceratina and Lytoceratina, numerous specimens of the following genera: *Neolissoceras*, *Bochianites*, *Olcostephanus*, *Neocomites*, *Teschenites*, *Crioceratites* and *Jeanthieuloyites*.

The Bakony localities — Until now, *Oosterellas* were not reported from the Bakony Mts (Bakony Tectonic Unit, KÁZMÉR 1986). The only exception is a single specimen, reported by FÜLÖP (1964) as *Pseudoosterella* sp. from the Neocomian of the Lókút-hegy. A research in the old collection revealed, that specimens belonging to *Oosterella* spp. were collected also in the Hárskút sections (GPS data: X: 47° 09' 928", Y: 17° 47' 139", Z: 422 m). These ammonites remained undetermined or misidentified for a long time, and now are revised in this paper. A brief description and stratigraphy of the Hárskút section is given by FÜLÖP (1964, p. 92) however it is impossible to obtain precise data on the original location of the specimens described below.

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Plate I

Material

All specimens are only moderately well, or poorly preserved, slightly or strongly flattened internal moulds, without any remains of the shell. Most of them are incomplete. The innermost parts of the ammonites (the nuclei) are rarely and the aperture never preserved. No hints for suture line.

Many of the revised specimens were collected by the staff of the Hungarian Geological Survey, under the supervision of the late prof. FÜLÖP. Other *Oosterellas* were

collected by HANTKEN, SOMOGYI, NAGY, and FÓZY. The described and figured specimens are deposited in the Paleontological Collections of the Hungarian Geological Survey and in the Geological and Paleontological Department of the Hungarian Natural History Museum. Those from the Survey have inventory number starting with letter "K", while those from the Museum start with letter "M", or simply with the year, when the specimen was invented.

Systematic descriptions

Suborder Ammonitina HYATT, 1889
Superfamily Perisphictaceae STEINMANN, 1890
Family Oosterellidae BREISTROFFER, 1940

Description and remarks — Species belonging to this family show a remarkable homeomorphy to Albian and Cenomanian keeled ammonites (Brancoceratidae, Schloenbachidae). The historical aspect of the *Oosterella* studies was reviewed by COMPANY (1987). The taxa were regarded as "incertae sedis" for a long time; later Neocomitidae connections were suggested. Today, based on suture line observations, the group has a family rank within the Perisphictaceae. As it was documented by VERMEULEN (1972) and accepted by COMPANY (1987) and REBOULET (1996) it is closely

related to the genus *Paquiericeras*, within Platylenticeratinea.

The family includes small to medium sized forms, with more or less compressed whorl section, steep umbilical wall, and flat or slightly concave sides. Some species (*O. cultrata*, *O. cultrataformis*, *O. fascigera*) are always strongly ribbed, others (group of *O. gaudryi*) could be well ornamented to nearly smooth, while *O. begastrensis* is completely unornamented. Ribbing is built up by blunt, quite irregular single or fasciculate ribs, branching from perumbilical nodules or not. All species are keeled.

Genus *Oosterella* KILIAN, 1911

Type species: *Ammonites cultratus* D'ORBIGNY, by subsequent designation of ROMAN (1938).

Description and remarks — The poorly known and not clearly defined genus *Pseudoosterella* SPATH, 1924 can be regarded as a possible synonym of KILIAN's genus. Therefore, *Oosterella* seems the only genus of its family.

As it was demonstrated by REBOULET (1996) the genus shows explicit dimorphism. Similarly to many other cases, the presence of dimorphism seems to be indisputable, but

matching the micro- and macroconchs, described under different specific names, seems to be problematic. The small microconchs have wider umbilicus and a keel which can be surrounded by two more or less developed grooves. The medium sized macroconch have a narrower umbilicus and a sharp keel, which is not bordered by grooves, at least not on the adult body chamber.

Oosterella cultrata (D'ORBIGNY, 1841) (Plate I: 6, 14, 15; Plate II: 2, 3)

- 1841: *Ammonites cultratus*. — D'ORBIGNY, p. 145, pl. 46, figs. 1, 2.
 1914: *Schloenbachia (Nicklesia) cultrata* D'ORBIGNY — SOMOGYI, p. 341
 1942: *Oosterella cultrata* D'ORBIGNY — WEBER, p. 275, pl. 16, fig. 1.
 non 1958: *Oosterella cultrata* D'ORBIGNY — FÜLÖP, pl. 5, fig. 4. (= *Oosterella cultrataformis*)

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Explanation to Plate I

- 1–2 *Oosterella gaudryi* (NICKLES, 1892); (M. 2002. 166) — ×1; both from Bed 249, Section "C" of the Bersek-hegy, Peregrinus Zone.
- 3 *Oosterella gaudryi* (NICKLES, 1892); (M. 2002. 168) — ×1; Bed 252, Section "C" of the Bersek-hegy, Peregrinus Zone.
- 4 *Oosterella gaudryi* (NICKLES, 1892); (M. 2002. 164) — ×1; Bed 255, Section "C" of the Bersek-hegy, Peregrinus Zone.
- 5 *Oosterella cultrataformis* (UHLIG, 1882); (2004. 58.1) — ×1; Bed 10, Bersek-hegy, described in FÓZY (1995), Late Valanginian.
- 6 *Oosterella cultrata* (D'ORBIGNY, 1841); (M. 2002. 161) — ×1; Bed 245, Section "C" of the Bersek-hegy, Peregrinus Zone.
- 7 *Oosterella fascigera* THIEULOY & BULOT, 1992; (2004. 57.1) — ×1; from loose, possibly from the Bersek-hegy, ×1
- 8–9 *Oosterella begastrensis* COMPANY, 1987; (K 15223) — ×1; Hárskút, Közöskúti-árok, Section HK-123, beds 20–26, Late Valanginian.
- 10 *Oosterella begastrensis* COMPANY, 1987; (K 15222) — ×1; from the same locality as for Figure 8–9.
- 11 *Oosterella cf. ondulata* REBOULET, 1996; (M. 2002. 167) — ×1; Bed 255, Section "C" of the Bersek-hegy, Peregrinus Zone.
- 12 *Oosterella begastrensis* COMPANY, 1987; (K 15224) — ×1; Hárskút, Édesvízmajor, labelled as section HK-27/1/2.
- 13 *Oosterella* sp.; (K 15221) — ×1; Hárskút, labelled as Édesvíz section, Bed 58.
- 14–15 *Oosterella cultrata* (D'ORBIGNY 1841); (M. 2002. 162) — ×1; Bed 240, Section "C" of the Bersek-hegy, Furcillata Zone.

- v., ? 1968: *Oosterella cultrata* (D'ORBIGNY) — NAGY, p. 44.
 non 1981: *Oosterella aff. cultrata* (D'ORBIGNY) — KEMPER et al., p.302, pl. 37, figs. 9–10 (cited here as *Oosterella* sp. 1.).
 1987: *Oosterella cultrata* (D'ORBIGNY) — COMPANY, p. 191, pl. 13, figs. 19, pl. 19, fig. 27.
 pars 1996: *Oosterella cultrata* (D'ORBIGNY) — REBOULET, p. 142, pl. 27, figs. 7–17.
 2001: *Oosterella cultrata* (D'ORBIGNY) — WIPPICH, p.65, pl. 6, figs. 1–3., pl. 26, fig. 3.
 2002: *Oosterella cultrata* (D'ORBIGNY) — FÓZY & FOGARASI, p. 306.

Material — Specimens (M. 2002. 161, M 2002. 162) from the Bersek-hegy (Gerecse Mts) section "C", beds 240 and 245 and also from loose (K 908, K 909, K 1288) and one from the nearby Nyagda valley (K 2097).

Description and remarks — *O. cultrata* is a classic species, easy to recognise, because it has blunt, coarse regular ribbing, without strong nodules and constriction. Specimen M. 2002. 162. (Plate I: 14–15) is an almost complete macroconch, possibly close to the adult stage. It features minimum deformation, which is exceptional in the Hungarian material. It has flat sides, narrow umbilicus with steep umbilical wall, broad venter with a strong keel which shows hints of undulation. Specimen M. 2002. 161. (Plate 1: 6) is a small, evolute fragment only, displaying the typical broad, flattened ribs arising from slight peri-umbilical strengthenings. The keel is bordered by two grooves. Possibly a microconch.

Specimens K 908, K 909 and K 1288 (two of them are figured on Plate II.) have coarse, widely spaced regular ribbing resembling to that of the holotype. The Nyagda specimen (not figured here) is more densely and irregularly ribbed. The specimen described by NAGY 1968, (M. 67. 19) is a small piece of *Oosterella* sp. unsuitable for precise identification.

O. cultrata is close to *O. cultrataeformis*, having strong constrictions. Microconchs can be misinterpreted as *O. gaudryi*, because of the large intraspecific variability of the latter.

Distribution — It appears probably in the upper part of Peregrinus Zone and enters into the Lowermost Hauerivian. The Hungarian specimens, those which have a stratigraphic control, were collected from the beds assigned to the Peregrinus and Furcillata Zones. Known from the Mediterranean realm.

Oosterella cultrataeformis (UHLIG, 1882)

(Plate I: 5; Plate II: 6, 7; Plate III: 1, 2)

- 1882: *Schloenbachia cultrataeformis* n. f. — UHLIG, p. 381, pl. 4, fig. 1, 2.
 1958: *Oosterella cultrata* D'ORBIGNY — FÜLÖP, pl. 5, fig. 4.
 1976: *Oosterella cultrataeformis* (UHLIG) — MANDOV, p. 84, pl. 19, fig. 3.
 1993: *Oosterella cultrataeformis* (UHLIG) — AUTRAN, pl. 3, fig. 1.
 1996: *Oosterella cultrataeformis* (UHLIG) — REBOULET, p. 144, pl. 27, figs. 1–6
 2002: *Oosterella cultrataeformis* (UHLIG) — FÓZY & FOGARASI, p. 306.
 2003: *Oosterella cultrataeformis* (UHLIG) — BUSNARDO et al., p. 47, pl. 2, fig. 10.

Material — Four specimens are available from the Bersek-hegy section "C", from beds 258, 252 and 248 (M. 2002. 158, M. 2002. 159, M. 2002. 160). A further specimen (2004. 58. 1) is from the same locality; but from bed № 10 of a different (parallel) section (FÓZY 1995, p. 11, without specifying the species).

Description and remarks — The four specimens from section "C" are macroconchs, two of them are relatively well preserved. Specimen from bed № 252. (Plate 3, Figs. 1, 2) is supposedly close to the adult stage. It has flat sides, shallow umbilicus, but steep umbilical walls, close to the perpendicular, especially on the last two whorls. Its ribbing is irregular; the clear constrictions are moderately strong. The fragmentary specimen from

bed № 10, (Plate I: 5) is a microconch, or the inner part of a macroconch.

The specimen figured by FÜLÖP (1958) was not available during this revision.

The closest species is *O. cultrata*, which has no constrictions.

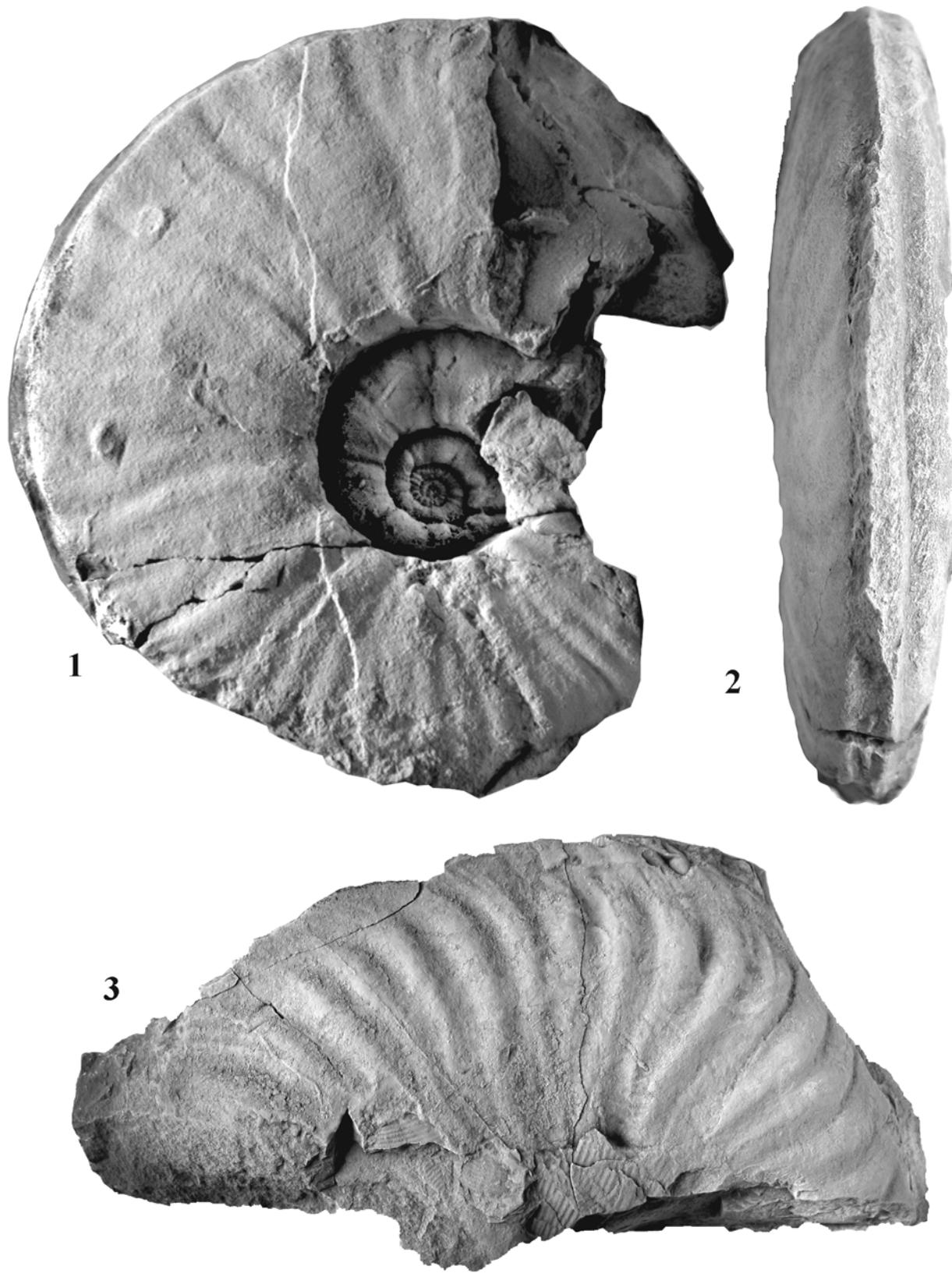
Distribution — Possibly the same, or close to *O. cultrata*. As it was pointed out by REBOULET (1996), UHLIG's species appears higher in the succession (in the latest part of the Trinodosum Zone) than *O. cultrata*, (which starts in the middle part of the same zone). The Hungarian specimens come from beds assigned to the Peregrinus Zone. Known from the Mediterranean realm.

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Explanation to Plate II

- 1 *Oosterella fascigera* THIEULOUY & BULOT, 1992; (K 1290) — ×1; Bersek-hegy, Late Valanginian.
- 2 *Oosterella cultrata* (D'ORBIGNY, 1841); (K 1288) — ×1; Bersek-hegy, Late Valanginian.
- 3 *Oosterella cultrata* (D'ORBIGNY, 1841); (K 908) — ×1; Bersek-hegy, Late Valanginian.
- 4 *Oosterella fascigera* THIEULOUY & BULOT, 1992; (K 934) — ×1; Bersek-hegy, Late Valanginian.
- 5 *Oosterella* sp 1.; (K 936) — ×1; Bersek-hegy, Late Valanginian.
- 6–7 *Oosterella cultrataeformis* (UHLIG, 1882); (M.2002.159) — ×1; Bed 258, Section "C" of the Bersek-hegy, Peregrinus Zone.
- 8–9 *Oosterella vilanovaae* (NICKLES, 1892); (K 139) — ×2; Nyagda-völgy, Late Valanginian, holotype of *Schloenbachia* (Nicklesia) *Hantkeni* SOMOGYI, 1914 (enlarged).





Oosterella gaudryi (NICKLES, 1892)

(Plate I: 1–4)

- 1892: *Mortoniceras Gaudryi* n. sp. — NICKLES, p. 188, pl. 7, figs 1–3, pl. 8, fig. 1.
 1892: *Mortoniceras Vidali* n. sp. — NICKLES, p. 196, pl. 7, fig. 10, pl. 8, fig. 7.
 ? 1892: *Mortoniceras Fischeri* n. sp. — NICKLES, p. 191, pl. 7, fig. 11, pl. 8, fig. 2.
 ? 1892: *Mortoniceras Garciæ* n. sp. — NICKLES, p. 193, pl. 7, figs 8, 9, pl. 8, figs 4, 5..
 1901: *Mortoniceras cf. Gaudryi* NICKLES — SAYN, p. 25, pl. 2, fig. 14.
 1914: *Schloenbachia (Nicklesia)* n. sp. ind. — SOMOGYI, p. 342, pl. XII, figs 5, 6.
 1964: *Pseudoosterella* sp. — FÜLÖP, p. 173, pl. XXI, fig. 2.
 1970: *Oosterella gaudryi* (NICKLES) — MEMMI, p. 148, pl. 8, fig. 4.
 1970: *Oosterella vidali* (NICKLES) — MEMMI, p. 148, pl. 8, fig. 5.
 1987: *Oosterella gaudryi* (NICKLES) — COMPANY, p. 192, pl. 13, figs 15–17, pl. 19, fig. 26.
 1990: *Oosterella aff. gaudryi* (NICKLES) — THIEULOUY et al., p. 76, pl. 5, figs 2, 3.
 pars 1996: *Oosterella gaudryi* (NICKLES) — REBOULET p. 139 (only those described as microconchs).
 1994: *Oosterella cf. gaudryi* (NICKLES) — AVRAM, pl. 1, fig. 4.
 1997: *Oosterella gaudryi* (NICKLES) — FARAOXI et al., pl. 7, figs 5.6, pl. 8, figs 4–7.
 2000: *Oosterella gaudryi* (NICKLES) — VAŠÍČEK & FAUPL, p. 596, pl. 1, figs 10–12.
 2002: *Paquiericeras* spp. — FÓZY & FOGARASI, p. 306.
 2002: *Oosterella gaudryi* (NICKLES) — FÓZY & FOGARASI, p. 306.
 2003: *Oosterella gr. gaudryi* (NICKLES) — BUSNARDO et al., p. 47, pl. 2, figs 5, 7, 8.

Material — Six specimens from the Bersek-hegy, section “C”, from beds 257, 255, 252, 249 (M. 2002. 164 – M. 2002. 166, M. 2002. 168, M. 2002. 169)

Description and remarks — As it is inferred from the list, some of the small sized forms of NICKLES can be possibly united under the name *O. gaudryi*. The ornamentation of this species varies from strongly ribbed, tuberculated (Plate I: 4) to nearly smooth (Plate I: 1–3) with all intermediate forms. Earlier, the nearly smooth forms (M. 2002. 168.–169.), which have only minute perumbilical tubercles, were misidentified as *Paquiericeras* (FÓZY & FOGARASI 2002, Tab. III).

REBOULET (1996) suggested, that these small sized, evolute ammonites are microconch pairs of *O. fascigera*, a medium-size ammonite, described by THIEULOUY & BULOT (1992). It seems that the stratigraphic range of *O. fascigera* do not cover the whole distribution of *O. gaudryi*, therefore in the present paper they are described under separate specific names.

Distribution — REBOULET (1996) described *O. gaudryi* from the middle part of the Upper Valanginian (late Verrucosum Zone – early Trinodosum Zone), but the species appear probably also in higher levels. The Hungarian specimens were found in beds assigned to the Peregrinus Zone. Known from the Mediterranean Realm.

Oosterella cf. vilanovaæ (NICKLES, 1892)

(Plate II: 8–9)

- 1892: *Mortoniceras Vilanovaæ* n. sp. — NICKLES, p. 192, pl. 7, fig. 7, pl. 8, fig. 3.
 1914: *Schloenbachia (Nicklesia) Hantkeni* n. sp. — SOMOGYI, p. 341.
 ? 1987: *Oosterella vilanovaæ* (NICKLES) — COMPANY, p. 193, pl. 13, fig. 18, pl. 19, fig. 25.
 ? 1990: *Oosterella vilanovaæ* (NICKLES) — THIEULOUY et al., p. 75, pl. 5, fig. 1.
 ? 1997: *Oosterella vilanovaæ* (NICKLES) — FARAOXI et al., pl. 8, figs. 8, 12.

Material — A single specimen (K 139), holotype of *Schloenbachia (Nicklesia) Hantkeni* SOMOGYI, 1914, figured here for the first time.

Description and remarks — The specimen was described, but not illustrated, by SOMOGYI. It is a fragmentary internal mould, featuring a moderate deformation. The umbilical wall is steep, the flanks are gently convex, the ventro-lateral edge is rounded, the ventral side is broad. In the middle there is a strong and thick, low (?possibly broken off) keel, surrounded by wide grooves. The innermost whorls have strong, thick, rectiradiate simple ribs, which become bifurcating at about 7 mm of diameter. On the last (broken)

whorl of the specimen the ribs are still thick, but slightly flexuous, bending forward. The biplicate and/or triplicate ribs araise from perumbilical swellings.

The species is close to other small sized, variable species of NICKLES, which are generally listed as “gr. *gaudryi*”. On the other hand, COMPANY (1987) separated *gaudryi* and *vilanovaæ*, and at the same time the species *vidali* and *stevini* were listed under the name *O. vilanovaæ*. Indeed, *vilanovaæ* has a more inflated whorl section, a broader venter which makes the difference. More complete material is needed to form a more established opinion on the relation between the small oosterellids, described under different names.

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Explanation to Plate III

- 1–2 *Oosterella cultrataeformis* (UHLIG, 1882); (M.2002.158) — ×1; Bed 252, Section “C” of the Bersek-hegy, Peregrinus Zone.
 3 *Oosterella* sp. 1.; (K 2212) — ×1; Bersek-hegy, Late Valanginian.

Distribution — In accordance with the problematic taxonomy, the distribution of the species is also dubious. The poorly preserved Italian specimens of FARAONI et al. (1997) were recorded from the Late Valanginian Pachy-

dicranus Zone, and COMPANY (1987) suggested a similar interval. The figured Hungarian ammonite was found in the late Valanginian part of the Bersek Marl Formation, without any stratigraphic control.

Oosterella fascigera THIEULEY & BULOT, 1992

(Plate I: 7; Plate II: 1, 4; Plate IV: 1)

1992: *Oosterella fascigera* nov. sp. — THIEULEY & BULOT, p. 89, pl. 1, figs. 1–4, pl. 2, figs. 3, 4.
pars 1996: *Oosterella gaudryi* (NICKLES) — REBOULET, p. 139. (only those described as macroconchs)

Material — Three fragmentary specimens from the old Bersek-hegy collection of the Survey (K 912, K 934, K 1290), and one more specimen from the collection of the Hungarian Natural History Museum (2004. 57. 1).

Description and remarks — The museum specimen (Plate I: 7), labelled as “from the Valanginian grey marl”, collected by NAGY, is probably also from the Bersek-hegy. This broken ammonite is rather evolute, the flanks are very flat, however it suffered also from pressure. The ornamentation consists of blunt, flat, distant ribs, arising from small perumbilical swellings, which tend to be smooth on the middle part of the flank. The type of ribbing is especially close to the specimens, figured by THIEULEY & BULOT (1992) on Plate 1, fig. 3, and by REBOULET (1996) on Plate 28, fig. 14. The fragment shows the trace of the keel, which was broken off.

The two smaller specimens (Plate II) from the Survey collection originally determined as ?*Oosterella* sp. and *Neocomites* aff. *regalis*, may represent the middle stage of *O. fascigera*. Both specimens still have the keel, which turns

into a high and sharp ventral element on the adult body chamber. The large specimen on Plate IV, originally labelled as *Substeuroceras* sp. (a non-European ammonite with tabulate venter) is close to the holotype, but more densely ribbed. It possibly represents the fully grown stage. Flanks are very flat, probably also flattened. Most of the ventro-lateral part is broken off, but the fragments still bear the traces of a fine keel in certain sections.

The species was chosen as the macroconch pair of *O. gaudryi* by REBOULET (1996), a point of view, not adopted here.

Distribution — *O. fascigera* was described from the *V. peregrinus* and *O. nicklesi* horizons of the Verrucosum and Trinodosum Zones (today: Peregrinus Zone). It is worth mentioning that the “oosterellid-rich” section “C” of the Bersek-hegy, yielded no *O. fascigera*. All specimens were discovered in earlier collections from the same locality. Known only from a few areas of the Mediterranean region.

Oosterella begastrensis COMPANY, 1987

(Plate I: 8–10, 12)

v. 1964: *Neolissoceras salinarium* (D'ORBIGNY) — FÜLÖP, p. 92.
1987: *Oosterella begastrensis* nov. sp. — COMPANY, 194, pl. 13, figs. 20, 21.
1995: *Oosterella begastrensis* COMPANY — REBOULET, p. 138, pl. 28, fig. 25.
1997: *Oosterella begastrensis* COMPANY — FARAONI et al., p. 78, pl. 6, fig. 16.

Material — Three specimens from the Hárskút sections (Bakony Mts) (K 15222, K 15223, K 15224)

Description and remarks — All specimens are strongly flattened and deformed. The internal moulds are completely smooth. The ventral keel can be traced at least partially, that is probably the reason why one of the specimens was determined and listed as *N. salinarium* by A. HORVÁTH (in FÜLÖP 1964). Indeed, *O. begastrensis* has a more opened umbilicus, than the Lower Valanginian species of D'ORBIGNY. The species of COMPANY shows a close affinity to the smooth forms of *Paquiericeras*, but the latter have fascigate, sharp venter, unlike *O. begastrensis*, which bears the keel surrounded by flat shoulders.

Distribution — *O. begastrensis* is a poorly known ammonite. The type was described from the Verrucosum Zone (COMPANY, 1987). REBOULET (1996) indicated the species from the middle part of the same zone, as the first stock of

the *Oosterella* lineage. The species was collected also from early late Valanginian marls from Mexico (Taraises Formation, Durango State, personal observations). It is worth mentioning that *O. begastrensis* in Mexico, unlike in Spain, France and Hungary was found together with medium sized, strongly ribbed *Oosterellas*, of the *cultrata* group.

According to the labels of the Hungarian specimens, they were found in Hárskút-Közöskút ravine, from sections HK-27, and HK-123. Although bed numbers are also indicated (see figure captions of the illustrated ammonites), however the precise stratigraphic positions of the specimens remained uncertain, because of the lack of detailed documentation of the collecting. Most probably they come from beds above strata containing *Olcostephanus drumensis*, and numerous neocomitids close to the *campylotoxus* group, representing early late Valanginian (possibly Verrucosum Zone) age.

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Explanation to Plate IV

1 *Oosterella fascigera* THIEULEY & BULOT, 1992; (K 912) — ×1; from old collection, Bersek-hegy, Late Valanginian.



Oosterella cf. ondulata REBOULET, 1996

(Plate I: 11)

- ? 1996: *Oosterella ondulata* nov. sp. — REBOULET, p. 145, pl. 28, figs. 1–8, pl. 29, figs. 1–2.
 ? 1997: *Oosterella ondulata* REBOULET — FARAONI et al., pl. 7, figs. 13, 14.
 2002: *Paquiericeras mourrei* VERMEULLEN — FŐZY & FOGARASI, p. 306.
 2002: *Oosterella ondulata* REBOULET — VAŠICEK, p. 188, pl. 1, fig. 1.

Material — A single, poorly preserved fragment from the Bersek-hegy, bed № 255. (M. 2002. 167)

Description and remarks — *O. ondulata* is a recently described, little known ammonite. The Hungarian specimen is a very poor fragment, with flat side, the characteristic ornamentation around the ventrolateral border and with traces of a fine keel. Comparing the specimen with the type

material, we can conclude that the Hungarian specimen is possibly a fragment of an adult? microconch.

Distribution — The species was described from Late Valanginian (Furcillata Horizon) to basal Hauterivian (Radiatus Zone) deposits. The Bersek specimen was found in a deeper level, in a bed assigned to the Peregrinus Zone. Known from a few Mediterranean localities.

Oosterella sp. 1
(Plate II: 5; Plate III: 3)

- ? 1981 *Oosterella aff. cultrata* (D'ORBIGNY) — KEMPER et al., p.302, pl. 37, figs 9–10.

Material — Two specimens from the Gerecse Mts (K 936, K 2212).

Description and remarks — Both fragments are poorly preserved whorl pieces. The umbilical parts are not preserved. The flanks are flat, probably also flattened, convex, forming a sharp, highly keeled venter, without venrolateral edge. The ribbing is uniform, regular (unlike in most species within the family), built up by simple, flexuous ribs. The form is close to *O. cultrata*, but has a more regular and more closely spaced ribbing, and has no (or possibly only a few) secondary ribs. Resembles also *O. fascigera*, but the latter has more rigid ribs arising from umbilical bundles,

making the ribbing “fasciculate”. The Bersek specimens are also close to the forms described by KEMPER et al. (1981) from Germany. *Oosterella* sp. 1 may represent a new form, however the known material is insufficient to give a detailed description of a new species.

Distribution — The exact stratigraphic position of the specimens is unknown, but they definitely came from the Late Valanginian part of the Bersek Marl Formation. The German specimen originates from the Crassus Zone. The latter occurrence has a special paleobiogeographic importance, since it is from the Subboreal Province.

Oosterella sp. indet.
(Plate I: 13)

Material — Strongly deformed, subsolved and/or fragmentary specimens from the Gerecse Mts (M. 67. 19, M. 2002. 163, K 1289) and the Bakony Mts (K 15221).

Description and remarks — Specimens from the Gerecse Mts may belong to *O. cultrata*, or *O. ultrataeformis*. One of them (M. 67.19) was described by NAGY (1968)

as *O. cultrata*. That one from the Bakony Mts belongs probably to the *O. ondulata/fascigera* group. Due to the poor state of preservation not too much can be said.

Distribution — All the specimens come from late Valanginian deposits.

Distribution of the genus *Oosterella*

As a summary of the record on the occurrence of genus *Oosterella*, we can conclude, that this moderately frequent genus has a Tethyan distribution. It is best known from Late Valanginian to earliest Hauterivian rocks of the Mediterranean Region. It was reported from the Subbetics (Spain) (COMPANY 1987), from the Vocontian Basin (South-East of France) (THIEULOY et al. 1990, REBOULET 1996), from the Ultrahelvetic, External Prealps (Switzerland) (BUSNARDO et al. 2003), from the Northern Calcareous Alps (Austria) (WEBER 1942, VAŠICEK & FAUPL 2000), from the Apennines and from the Southern Alps (Italy) (FARAONI et al. 1997), from the Western Carpathians, (VAŠICEK 2002), from the Southern Carpathians (AVRAM 1994), from the Balkan (MANDOV 1976), from northern Africa (Tunisia and

Morocco) (MEMMI 1970, WIPPICH 2001), and also from the Transdanubian Central Range (Hungary). It seems that the representatives of the genus are more abundant in basin deposits, then in the platform or slope environments.

It appears also in North of Germany (KEMPER et al., 1981) making a possible correlation towards the North-West European Region. Since *Oosterella* is known also from Mexico (personal observations), and furthermore the genus was also reported from Columbia (WRIGHT et al., 1994, p. 42.) the Neuquen Basin (Argentina) (AGUIRE-URRETA & RAWSON 1996), the genus is a possible correlation tool for later paleobiogeographic studies and for long distance correlation.

As it was already documented, *Oosterella* is basically a late

Valanginian genus. Some species appear also in the earliest Hauterivian (basal Radiatus Zone) deposits. REBOULET (1996) indicated the taxa higher in the succession, also from

the Loryi Zone. These occurrences are waiting for further confirmation, and the Oosterellidae record of this level needs a further study on species level as well.

Acknowledgements — O. SZIVES (Hungarian Natural History Museum), J. KLEIN (University of Leiden) and M. COMPANY (University of Granada) are especially thanked for providing literature and also for consulting on ammonite taxonomy and biostratigraphy. C. GONZALEZ-ARREOLA, A. B. VILASENOR and R. BARRAGAN (Universidad Autonoma de Mexico) are thanked for providing access to the Valanginian ammonite material and field exposures in Mexico. The study has been sponsored by the Hungarian Scientific Research Found (OTKA), project №: 34208, and also by the Hungarian-Mexican Scientific Bilateral Cooperation in 2000–2003.

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Author's address:

Dr. István FŐZY
 Geological and Palaeontological Department
 Hungarian Natural History Museum
Map: Budapest, VIII, Ludovika tér 2
Mail: 1431 Budapest, pf. 137
 Hungary
 E-mail: fozy@nhmus.hu