



New Crinoids (col.) from the Zlíchovian limestone (Lower Devonian, Lower Emsian) of the Barrandian area (Czech Republic)

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ABSTRACT. On the basis of the crinoid columnals and stem fragments, a new genus *Ellipsocrinus* gen. n. and three new species *Ellipsocrinus hanusi* sp. n., *Dimerocrinites lemenni* sp. n., and *Bystrowicrinus vitiosus* sp. n. are described for the first time from limestones of the Zlíchovian age (Lower Devonian).

KEY WORDS. Echinodermata, Crinoidea, *Ellipsocrinus* gen. n., *Dimerocrinites*, *Bystrowicrinus*, columnals, systematics, Lower Devonian, Zlíchovian, Lower Emsian, Barrandian area, Czech Republic

INTRODUCTION

During the current research of echinoderm assemblages from the Bohemian Zlíchovian (= Lower Emsian), a lot of isolated crinoid columnals and pluricolumnals were found in washings from weathered parts of biosparitic limestones of the „Chapel Coral Horizon“ at the base of the Zlíchov Limestone (Lower Emsian). Some of these skeletal ossicles are described herein as a new genus *Ellipsocrinus* with the species *Ellipsocrinus hanusi* gen. et sp. n., and species *Dimerocrinites lemenni* sp. n., and *Bystrowicrinus vitiosus* sp. n. Skeletal remains of the crinoid genera *Dimerocrinites* and *Bystrowicrinus* have been obtained also in washings from the limestones of the earlier strata, i.e. the Koněprusy Limestone (Pragian), and isolated columnals of *Dimerocrinites* sp. were collected in the Kotýs Limestone of the Lochkovian age.

All material examined come mostly from the classic locality of the „Chapel Coral Horizon“, i.e. „U Kapličky“ (= “At the Chapel”) quarry in Praha-Zlíchov. Lesser part of it comes from the same layers exposed by an open cut in active quarry „Hvíždalka“ near Praha-Lochkov.

SYSTEMATIC PART

Subclass and order incertae sedis

Group: Elliptici Moore et Jeffords, 1968

Family incertae sedis

***Ellipsocrinus* gen. n. (col.)**

TYPE SPECIES: *Ellipsocrinus hanusi* sp. n. (col.), Lower Devonian, Zlíchovian (= Lower Emsian), Bohemia.

SPECIES INCLUDED: Type species only.

DIAGNOSIS: Homeomorphic stem, elliptical in cross section, composed from oblique or bending columnals. Short fulcrum developed only at the top borders of the articular surface.

***Ellipsocrinus hanusi* sp. n. (col.).**

(Pl. 1, Figs 1-10)

1987 *Ellipsocrinus hanusi* sp. n. (col.): Slámová MS, p. 98, pl. XVII, 1-10, text-fig. 31 A- B2.

HOLOTYPE: Isolated columnal NMP L 26737; figured by Slámová 1987, pl. XVII, fig.7, and herein on pl. 1, fig.1.

TYPE HORIZON: „Chapel Coral Horizon“ at the base of the Zlíchov Limestone, Lower Devonian, Zlíchovian (= Lower Emsian).

TYPE LOCALITY: Abandoned „U kapličky“ quarry, Praha-Zlíchov.

MATERIAL: In addition to the holotype and figured paratypes ca. 250 isolated columnals and stem fragments from weathered biosparitic limestones exposed at the type locality (collection ing. František Hanuš). A few specimens have been recently obtained from washings in the same „Chapel“ horizon, which has been exposed by an open cut in the active „Hvízdalka“ quarry near Praha-Lochkov (collected by Radek Labuťa). All specimens are housed in the collections of the Palaeontological Department of the National Museum, Praha (abbrev. NMP, catalogue L).

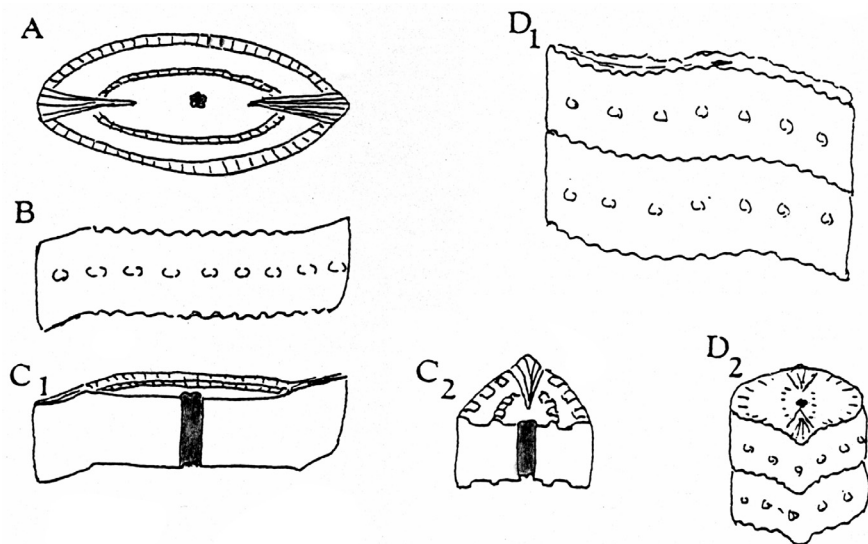


Fig. 1: *Ellipsocrinus hanusi* gen et sp. n. (col.): A – isolated columnal, facetal view. B – columnal in lateral view. C 1 – cross section of columnal along its longitudinal axis. C 2 – cross section of columnal along the transversal axis. D 1 – distal pluricolumnal in lateral view. D 2 – proximal pluricolumnal in laterofacetal view. Drawings by Radana Slámová.

DESCRIPTION: Stem homeomorphic, narrowly elliptical in cross section, with oblique or bending articularia between the adjoining columnals. External articulation marginal, cryptosymplexial (see pl. 1/G), internal articulation is represented by the slender, fine-denticular crenularium, narrow, straight epifacets and by a short incomplete fulcrum, developed only at the top borders of the elliptical articular surface. Lumen minute, pentalobate.

REMARKS: Columnals of *Ellipsocrinus hanusi* sp. n. resemble ossicles of the genus *Campocrinus* known from the Lower and Middle Carboniferous of different territories in the USA, Great Britain and south-eastern Russia. *Ellipsocrinus* differs by excellently elliptical shape of columnals, oblique laterae, bilaterally symmetrical articular facet, narrow epifacet and shortly fulcral ribs, missing in the central part of articulum and developed only in its borders.

OCCURRENCE: *Ellipsocrinus hanusi* sp. n. occurs abundantly in the type horizon of the type locality and, rarely, at the locality „Hvízdalka“ near Praha-Lochkov in the same horizon.

MEASUREMENTS: See Tab. 1.

Tab. 1. Dimensions of columnals of *Ellipsocrinus hanusi* sp. n. (in mm):

Specimen	Longitudinal axis	Transverse axis	Columnal height
L 26730	4.2	2.5	1.2
L 26731	5.0	2.2	0.8
L 26732	5.0	2.8	1.5
L 26733	4.6	2.6	1.8
L 26734	5.0	2.0	1.1
L 26735	4.0	3.0	0.8
L 26736	5.8	3.0	1.4
L 26737 (holotype)	4.2	2.1	1.5
L 26738	4.8	2.2	1.1
L 26739	8.5	4.8	2.0

Subclass: Camerata Wachsmuth et Springer, 1885

Order: Diplobathrida Moore et Laudon, 1943

Family: Dimerocrinitidae Bassler, 1938

***Dimerocrinites* Phillips, 1839**

SYN.: *Exacosiodiscus* (col.) Moore et Jeffords, 1968

TYPE SPECIES: *Dimerocrinites decadactylus* Phillips, 1839. Lower Silurian, Wenlockian, England.

***Dimerocrinites lemenni* sp. n. (col.).**

(Pl. 1, Figs A-D)

1987 *Dimerocrinites* sp., aff. *lanveocensis* LeMenn, 1985 (col.): Slámová 1987, p. 48, pl. II, figs 6-9, text-fig. 13.

HOLOTYPE: Isolated columnal (nodal) NM L 26545 figured by Slámová 1987, pl. II, and herein on pl. 1, fig. A.

TYPE HORIZON: „Chapel Coral Horizon“ at the base of the Zlíčov Limestone. Lower Devonian, Zlíčovian (= Lower Emsian).

TYPE LOCALITY: Abandoned „U kapličky“ quarry, Praha-Zlíčov.

DERIVATIO NOMINIS: Named for Dr. Jean LeMenn, an outstanding specialist in echinoderm palaeontology.

MATERIAL: Except the holotype and figured paratypes, roughly 270 isolated columnals, pluricolumnals and stem fragments from the type locality. Most of these specimens originated from the collection of František Hanuš, a smaller part from the first author's check sampling at the same locality. All specimens are housed in the collections of the Palaeontological Department of the National Museum, Praha (abbrev. NMP, catalogue L).

DESCRIPTION: Stem homeomorphic, circular, with flaring nodals (N) and three orders of small, thin internodals (IN). Nodals massive, lenticular, symmetric or slightly disymmetric with conspicuously wide, bulky and smooth epifacete occupying cca 1/2 of the total wide of N. Latera smooth but often irregularly undulate. Articular facet thin, flat or dish-like, crenularium constituted of straight and slender crenulae. Symplexial articulation. IN thin with narrow, smooth epifacete and minute flat or dish-like artic-

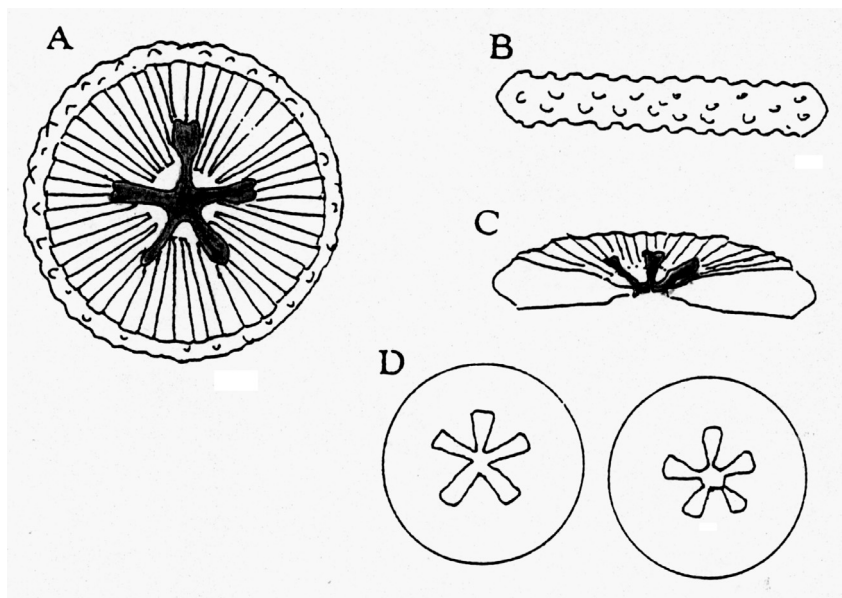


Fig. 2: *Dimerocrinites lemenni* sp. n. (col.): A – nodal, facetal view. B – cross section of nodal. C 1 – cross section of pluricolumnal. C 2 – pluricolumnal in lateral view. Drawings by Radana Slámová.

ular facete. Lumen central, minute, pentalobal in outline. It is often broken up to the circular orifice (see pl. 1/B) that represents only the border shaped of epifacete.

REMARKS: *Dimerocrinites lemenni* sp. n. differs from *D. lanveocensis* LeMenn, 1985 by larger articular facets of the adjacent IN1 and IN2 (that resembles the species *Dimerocrinites* sp. B of LeMenn (1985), narrower epifacete of N and by irregularly undulosed border of nodals. A comparison of the new species with *D. oehlerti* LeMenn, 1980 is rather difficult because it was described on the basis of the crowns. Stem fragments or isolated columnals of *D. oehlerti* are hitherto unknown. For a metrical comparison see Tab. 2.

Table 2. Metrical comparison of *Dimerocrinites lemenni* sp. n. with congeneric species. All measurements are in mm.

	Diameter of nodal	Diameter of articular
<i>Dimerocrinites lemenni</i> sp. n	30	13
<i>D. lanveocensis</i> LeMenn, 1985	35	7
<i>D.</i> sp. A of LeMenn (1985)	28	5
<i>D.</i> sp. B of LeMenn (1985)	28	12

OCCURRENCE: *Dimerocrinites lemenni* sp. n. occurs relatively frequently in typical limestones of the „Chapel Coral Horizon“ at all localities in which this horizon is exposed, i.e. Praha-Zlíchov „U kapličky“ quarry, Praha-Lochkov, „Hvíždalka“ quarry and in the eastern part of the „Červený lom“ quarry, Praha-Klukovice. Isolated nodals of *Dimerocrinites* sp. indet. have been found also in washings from weathered bioclastic limestones of the Koněprusy Limestone (Pragian) and biosparitic Kotýs limestones of Lochkovian age.

DIMENSIONS: See Tab. 3.

Table 3. Dimensions of *Dimerocrinites lemenni* sp. n. (in mm).

	L 26545	L 26544	L 26543	L 26542
	Holotype	Paratype	Paratype	Paratype
Total diameter of columnal (N)	7.5	8.0	6.0	6.0
Diameter of articulum (N)	3.2	3.2	3.0	2,8
Height of areola (N)	1.2	1.5	1.2	1.1
Diameter of IN1			2.8	1.5
Height of IN1			0.1	0.8
Height of IN2			0.1	0.4
Height of IN3			0.1	

Group: Cyclici Moore et Jeffords, 1968
Family: Bystrowicrinidae Eltyševa et Stukalina, 1963 (col.)

***Bystrowicrinus* Eltyševa in Eltyševa et Stukalina, 1963 (col.)**

TYPE SPECIES: *Pentagonpentagonalis quinquelobus* Eltyševa, 1955 (col.). Middle Ordovician – lower Silurian, Siberian Platform, Taymir, Russia.

SYN.: *Obuticrinus* Eltyševa et Stukalina, 1963 (col.) – Type species: *Pentagonpentagonalis bilobatus* Eltyševa et Stukalina, 1963. Silurian, Novaâ Zemlâ, Siberian Platform, Russia, Tadzhikistan.

***Bystrowicrinus vitiosus* sp. n. (col.)**

(Pl. 1, Figs E-K)

1987 *Bystrowicrinus vitiosus* sp. n. (col.): Slámová MS, p. 91, pl. XIV, figs 7-12, pl. XV, figs 1–5, textfig. 28A-D.

HOLOTYPE: NMP L 26706, isolated columnal figured by Slámová 1987, pl. XIV, fig 12, and herein on pl. 1, fig. F.

TYPE HORIZON: „Chapel Coral Horizon“ at the base of the Zlíchov Limestone, Lower Devonian, Zlíchovian.

TYPE LOCALITY: „U kapličky“ (= At the Chapel) quarry, Praha-Zlíchov.

MATERIAL: In addition to the holotype and figured paratypes, ca. 70 isolated columnals, 14 pluricolumnals and 18 stem fragments mostly from the distal part of stem.

DESCRIPTION: Stem heteromorphic, subpentagonal to subcyclic in outline; only IN1 were ascertained, but not well differentiated in width and height from nodals. Laterae convex in longitudinal profile, weakly granulated, sporadically either with robust cirri (see

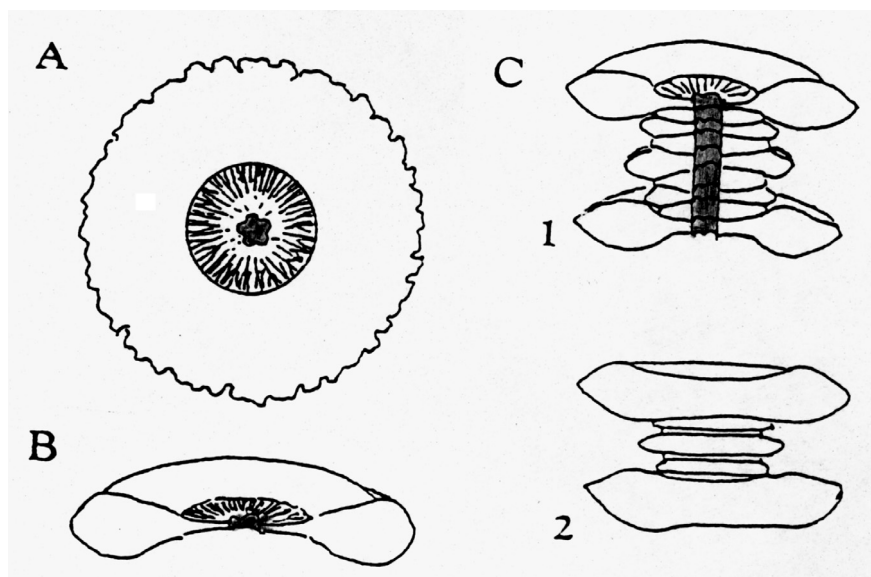


Fig. 3: *Bystrowicrinus vitiosus* sp. n. (col.): A – columnal in facetal view. B – columnal in lateral view. C – cross section of columnal. D – variability of the lumen shape. Drawings by Radana Slámová.

fig. 2G) or large, oboval cirrus scars. Articular facets plain with mid-coarse crenulae. Symplexy articulation. Epifacete very narrow or missing. Large stellate lumen has circular central part and long, narrow, distally expanded extremities. Tops of these extremities are roundedly simple.

REMARKS: Only difference between the genus *Obuticrinus* differs from *Bystrowicrinus* only in having roundedly bifurcated tops of the lumen extremities. Therefore I put the „genus“ *Obuticrinus* Eltyševa et Stukalina, 1963 in the synonymy of *Bystrowicrinus* Eltyševa, 1963. The columnals, stem fragments and radicular holfasts of a similar species of the genus *Bystrowicrinus* occur abundantly also in the Koněprusy limestone in the active quarries „Čertovy schody“ near Koněprusy and „Plešivec“ near Suchomasty.

DIMENSIONS OF THE HOLOTYPE: diameter of columnal = 7.8 mm, diameter of lumen = 4.0 mm, height of col. = 2.0 mm.

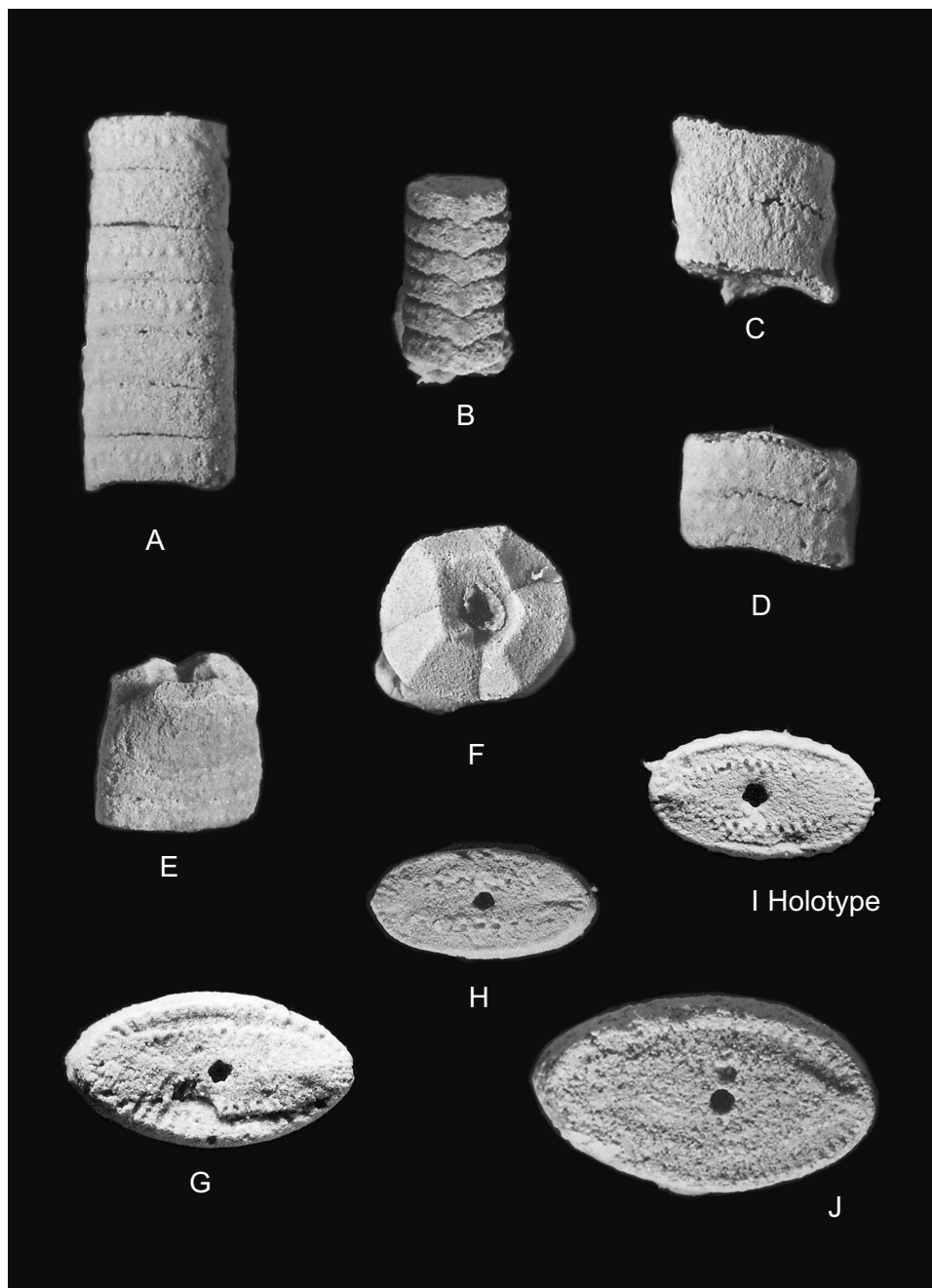
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Pl. 1. *Ellipsocrinus hanusi* gen. et sp. n. (col): **A:** NMP L 26730, proximal pluricolumnal, lateral view. **B:** NMP L 26731, distal pluricolumnal, lateral view showing articulation of the fulcral ridges and grooves. **C:** NMP L 26733, pluricolumnal in lateral view showing the characteristic bending of columnals. **D:** NMP L 26732 other pluricolumnal showing the bending of columnals. **E:** NMP L 26734, proximal part of stem showing the base of a cup, basilarid and the first proximal columnal. **F:** NMP L 26735, cup base in oral view showing the facets that served for articulation with basals. **G:** NMP L 26736, articulum of an isolated columnal with partly weathered areola. **H:** NMP L 26738, articulum of an isolated columnal. **I:** holotype NMP L 26737, articulum of an isolated columnal. **J:** NMP L 26739, articulum of an isolated columnal. (Magnified 4x)



Pl. 2. *Dimerocrinites lemenni* sp. n. (col). **A:** holotype NMP L 256545, articulum of an isolated nodal. **B:** NMP L 26543, isolated nodal with internodals (IN1, IN2) in lateral view. **C:** NMP L 26544, isolated nodal with the adjoining first internodal. Articular facets both N and IN1 are broken off. **D:** NMP L 26542, stem fragment showing asymmetricaly developed nodals and internodals of all three orders. (Magnified 4x)

Bystrowicrinus vitiosus sp. n. (col). **E:** NMP L 26709, articulum of an isolated columnal. **F:** holotype, NMP L 26706, articulum of isolated columnal. **G:** NMP L 26702, pluricolumnal in lateral view, middle columnal projected in a thick pseudocirrus. **H:** NMP L 26707, articulum of isolated columnal. Terminal parts of a stelliform lumen extended and slightly bifurcated (= *Obuticrinus* Eltyševa et Stukalina, 1963). **I:** NMP L 26703, isolated pluricolumnal from the distal part of stem, lateral view. **J:** NMP L 26705, isolated pluricolumnal of a young specimen. **K:** NMP L 26710, articulum of isolated columnal with a cirrus scar. Connection between the columnal lumen and cirral lumens is perspicuously visible. **L:** NMP L 26711, articular facet of isolated cirrus. Lower Devonian, lower Emsian (= Zlíchovian) "Chapel Coral Horizon" at the base of the Zlíchov Limestone. Praha-Zlíchov, "U kapličky" quarry and Praha-Lochkov, "Hvíždalka" quarry. Magnification: Figs E, F, H, K: 3x, Figs G, I, J, L: 4x. All specimens are deposited in the collections of the Palaeontological Department of the National Museum (abbrev. NMP), catalogue L.

