

Nautiloid cephalopods from the Middle Eocene of Iszkaszentgyörgy, Transdanubian Hungary

András GALÁ CZ¹

(with 4 figures)

Abstract

Two nautiloid specimens are described from the Transdanubian (West Hungarian) Middle Eocene. The specimens belong to the species *Euciphoceras regale* (J. SOW.) and *Cimomia elliptica* (SCHAFHÄUTL). While these Nautiloids represent a subordinate part of the otherwise very rich molluscan fauna of the localities, their appearance may suggest connections with areas in the wider paleogeographic surroundings.

Introduction

The Eocene formations, especially the Middle Eocene nummulitic limestones of the Transdanubian Central Range not uncommonly yield nautiloids. These have been usually recorded in faunal lists (see e.g. SZŐTS 1956), but systematic evaluations, or proper descriptions, with the one exception of the works of VOGL (1908, 1910, 1911), are missing. Realizing that Nautiloids are good indications of marine connections, paleocurrents and other paleoceanic parameters, it seemed worth treating the old and new finds with special attention. This paper is a sequel of a former short note (GALÁ CZ 1987) aimed to start introducing the Hungarian Tertiary representatives of this somewhat neglected fossil group.

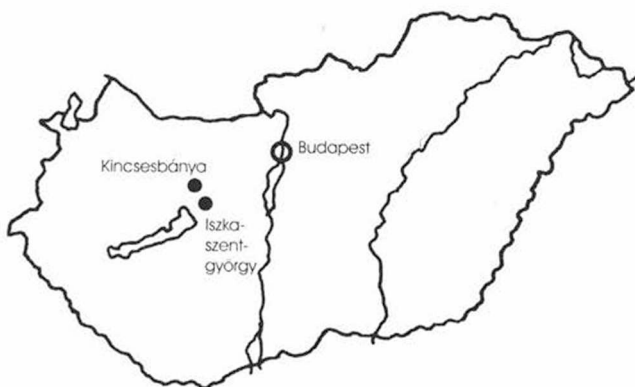
Material

In Iszkaszentgyörgy the Eocene sequence is well-known as a good source of fossils. Most common group is that of the molluscs, including occasional Nautiloids (KECSKEMÉTI-KÖRMENDY & MÉSZÁROS 1980, p. 9; KOPEK 1980, p. 59). There are several Middle and Upper Eocene horizons with rich fossil assemblages exposed in numerous natural and artificial outcrops. These latter are the abandoned bauxite pits, which expose mainly the nummulitic limestones and marls forming the higher cover of the bauxite exploited here. The richest mollusc material came from the cut of the road

¹ Department of Palaeontology, Eötvös University, P.O. Box 120, H–1518 Budapest, Hungary.
E-mail: galacz@ludens.elte.hu

leading to the former coal mine shaft (Kincses II).

One of the here described specimens is from the former collection of the Department of Geology of Eötvös University. It has a label with inventory no. M80, locality as Iszkaszentgyörgy, and a year: 1966. The collector is not recorded. The other specimen is from the collection of Z. EVANICS, a private collector, who kindly provided his material for study. The specimen is labelled as No. 76/596, and was collected in 1990 in Kincsesbánya, near Iszkaszentgyörgy (Text-fig. 1).



Text-fig. 1. Localities of the described Nautiloids

Systematic descriptions

- Classis Cephalopoda CUVIER, 1795
 Subclassis Nautiloidea AGASSIZ, 1847
 Ordo Nautilida AGASSIZ, 1847
 Superfamilia Nautilaceae BLAINVILLE, 1825
 Familia Nautilidae BLAINVILLE, 1825
 Genus *Euciphoceras* SCHULTZ, 1976

Euciphoceras regale (J. de C. SOWERBY, 1823)
 Text-figs 2, 3.

1822. *Nautilus regalis* – SOWERBY, J. de C., p. 77, pl. 355.
 1849. *Nautilus regalis*, SOWERBY – EDWARDS, p. 46, pl. IV, pl. VIII, fig. 5.
 1849. *Nautilus urbanus* SOWERBY – EDWARDS, p. 46, pl. III, fig. 2, pl. VIII, fig. 4.
 non 1880. *Nautilus regalis* SOW. – DE GREGORIO, p. 2, pl. B, figs 6, 7.
 1891. *Nautilus urbanus*, J. de C. SOWERBY – FOORD, p. 320.
 1908. *Nautilus regalis* SOW. – VOGL, p. 639, text-fig. 1.
 1976. *Eutrephoceras (Euciphoceras) regale* (SOWERBY, 1822) – SCHULTZ, 1976a, p. 5, text-fig. 1D.
 1976. *Eutrephoceras (Euciphoceras) regale* (J.SOWERBY, 1922) – SCHULTZ, 1976b, p. 9, text-fig. 1D.

Measurements

Specimen	Diameter (D)	Whorl height (Wh)	Wh/D	Whorl breadth (Wb)	Wb/D	Umbilical breadth (U)	U/D
M.60	127	70	0.55	66	0.52	10.5	0.08
	85	50	0.59	54	0.63	6	0.07

Description

A medium-size, slightly squeezed, but otherwise well-preserved internal mould. This is an adult example, showing the crowding of the last three septa at 115 mm diameter, and preserving a short part of the infilled body-chamber. The whorl-section (Text-fig. 3A) is high trapezoidal, with rounded umbilical shoulder, flattish, convergent flanks, rounded ventrolateral margin, and wide, depressed venter. Position of the siphuncle is not visible.

The suture line (Text-fig. 3C) is undulating for the genus, having a narrow umbilical saddle, a very wide, shallow lateral lobe, and a slight ventral lobe.

Comparison and remarks

Eucipheroceras regale is a well-distinguished species by its whorl-section with flattened flanks and venter. The original of *Nautilus regalis* figured by VOGL (1908, text-fig.1) is now in the collection of the Department of Paleontology, Eötvös L. University. This is a big (nearly 200 mm diameter) specimen, septate up to about 160 mm, and shows the characteristic, trapezoidal whorl-section.

Distribution

E. regale seems to be a common nautilid in the Eocene of Europe. In Austria, it occurs mainly in the Middle Eocene (see SCHULTZ, 1976b). The here described specimen came most probably from the „*Nummulites perforatus* marl” of the Upper Lutetian.

Genus *Cimomia* CONRAD, 1866

Cimomia elliptica (SCHAFHÄUTL, 1852)

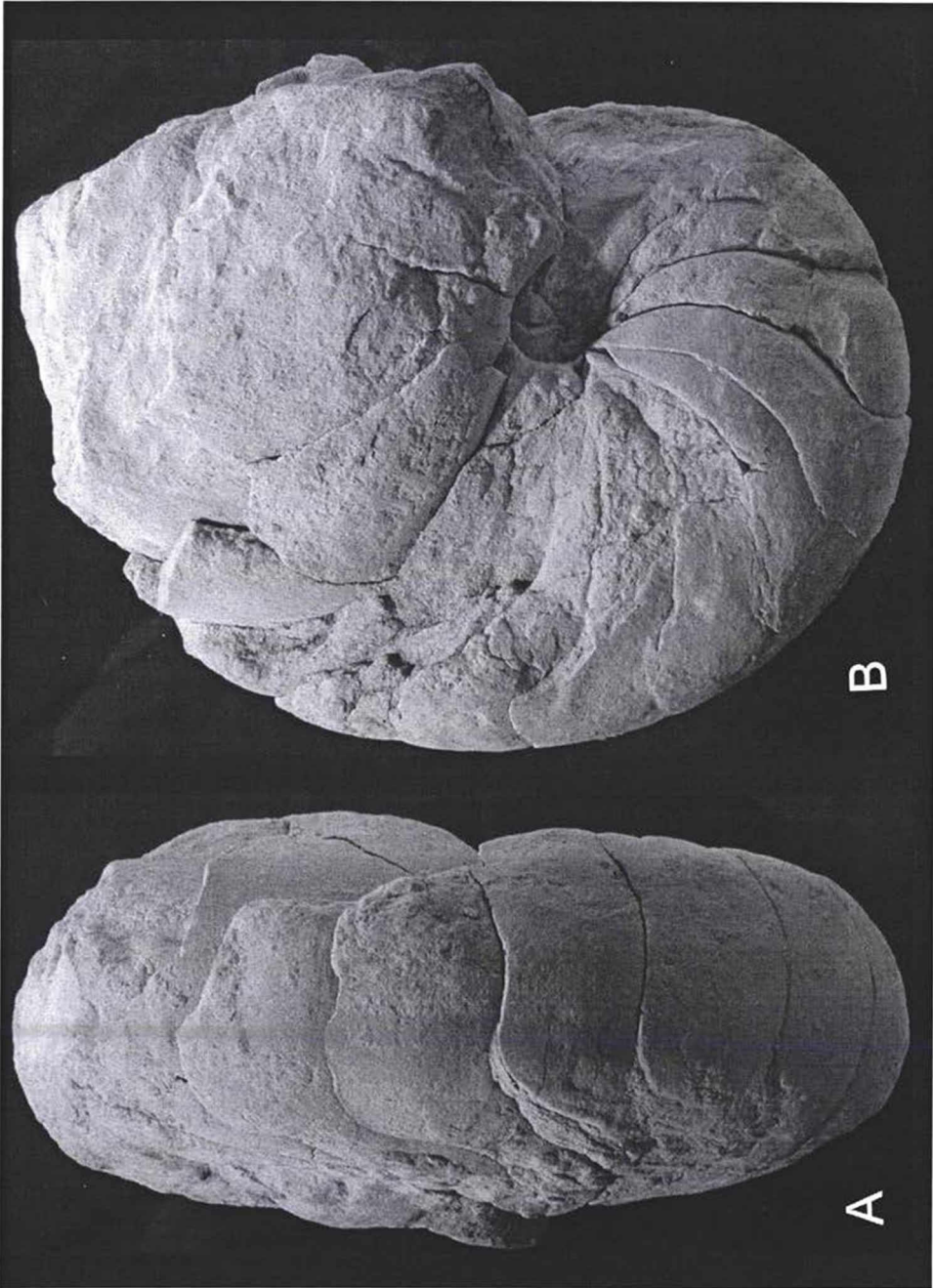
Text-figs 3, 4

1863. *Nautilus ellipticus* mihi – SCHAFHÄUTL, p. 214, pls 57, 58.

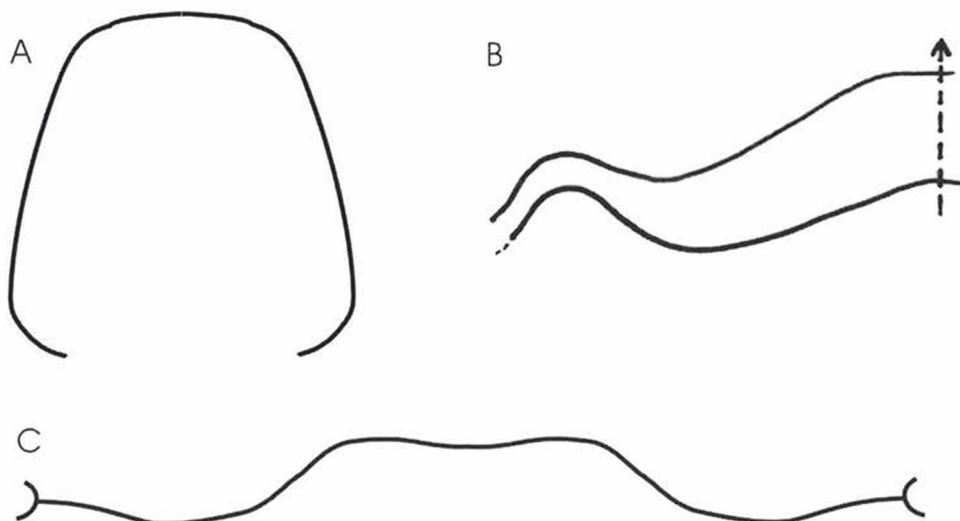
1891. *Nautilus ellipticus*, SCHAFHÄUTL – FOORD, p. 324.

Material

A single, small specimen – internal cast – from the so-called „*Nummulites perforatus* horizon” of Kincsesbánya, near Iszkaszentgyörgy, from the collection of Z. Evancis.



Text-fig. 2. *Eutrephoceras regale* (SOW.). Iszkaszentgyörgy, Middle Eocene. Collection of the Department of Palaeontology. A: ventral view; B: lateral view (x0.9)



Text-fig. 3. Suture-lines and cross-section of the described forms. A and C: Cross-section and suture-line of *Euciphoceras regale* (SOW.) at 90 mm diameter (x1); B: Suture-lines of *Cimomia elliptica* (SCHAFHÄUTL) at 52 mm diameter (x2)

Measurements:

Specimen	Diameter (D)	Whorl height (Wh)	Wh/D	Whorl breadth (Wb)	Wb/D	Umbilical breadth (U)	U/D
76/596	90	57	0.63	? 42	? 0.47	? 4	? 0.05
	61	36	0.59	? 24	? 0.39	-	-

Description

A small, somewhat compressed specimen consisted entirely of the phragmocone. Seemingly a subadult specimen, because there are no traces of sutural crowding around the last visible sutures. Near the end of the septate part the distortion is smaller, here the whorl with narrow umbilicus shows high-oval cross-section with low, rounded umbilical wall, slightly convex, convergent flanks and narrow, arched venter. Maximum width of the whorl appears below the middle of the flanks, near to the umbilical margin. Siphuncle cannot be seen.

The suture-line (Text-fig. 3B) shows a narrow umbilical saddle and a wide, shallow lateral lobe, then runs straight across the venter.

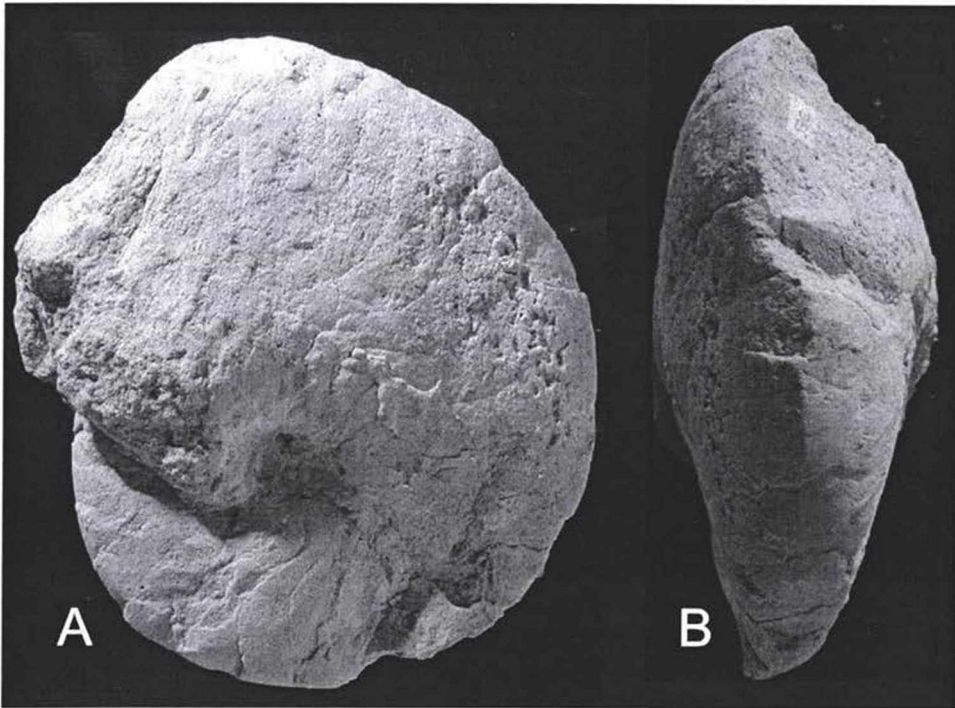
Comparison and remarks

This is a young specimen, with its dimensions half as those of the type. With its narrow, high-oval whorl-section it matches „*N.*” *ellipticus* SCHAFHÄUTL, the only narrow-whorled form within the genus. „*Nautilus*” *ellipticus*, designated by SCHAFHÄUTL belongs into genus *Cimomia* on the basis of its suture-line with shallow

lateral lobe and narrow, but highly-rounded umbilical saddle (see also KUMMEL 1956). It differs from the other Eocene *Cimomia* species by its narrow, high-oval whorl-section.

Distribution

C. elliptica seems to be a rare species, even the description given by FOORD (1891) refers to specimens in the Natural History Museum from the type locality Kressenberg (Bavaria). The Bavarian specimens, just as the here described example, came from the Middle Eocene Lutetian.



Text-fig. 4. *Cimomia elliptica* (SCHAFHÄUTL). Kincsesbánya, Middle Eocene. EVANICS collection (No. LC 76/596). A: lateral view; B: ventral view. Natural size.

Conclusions

As in other rich Middle Eocene localities of the Transdanubian Central Range, in the Iszkaszentgyörgy-Kincsesbánya fossil sites nautiloids also occur. Nevertheless, this occurrence yielded these forms in low proportion knowing the huge mollusc material collected previously from these fossil-rich beds. This can probably be due to the fact that the so-called *perforatus* beds are the first fully marine formations here and in the wider, Bakony Mountain area following a coal-bearing terrestrial sequence. The appearing nautiloids may indicate that after a long terrestrial period not only the fully marine

environment, but the wider, high-sea connections became established only for later Middle Eocene times.

Acknowledgements

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References

- EDWARDS, F. E. (1849): A monograph of the Mollusca from the Eocene formations of England. First Class – Cephalopoda. Palaeontographical Society, 2, pp. 1–56, pls 1–9. London.
- FOORD, A. H. (1891): Catalogue of the fossil Cephalopoda in the British Museum (Natural History). Part II, Nautiloidea. i–xxii + 1–407 p. London.
- GALÁ CZ, A. (1987): A Middle Eocene nautiloid from Dudar (Transdanubian Central Range, Hungary). – *Annales Universitatis Scientiarum Budapestinensis, Sectio Geologica* 27, 79–88, Budapest.
- GREGORIO, A. de (1880): Fauna di S. Giovanni Ilarione (Parisiense). Parte I^a: Cefalopodi e Gasteropodi. pp. 1–110. Palermo.
- KECSKEMÉTI-KÖRMENDY, A. & MÉSZÁROS, N. (1980): Mollusques éocènes du secteur oriental de la Montagne du Bakony (faciès archipelagique). – *Annales Instituti Geologici Hungarici* 63/2, 1–143, Budapest. (In Hungarian with French summary)
- KOPEK, G. (1980): L'éocène de la partie nord-orientale de la Montagne du Bakony (Transdanubie, Hongrie). – *Annales Instituti Geologici Hungarici*, 63/1, 1–176, Budapest. (In Hungarian, with French summary)
- KUMMEL, B. (1956): Post-Triassic Nautiloid genera. – *Bulletin of the Museum of Comparative Zoology* 114/7, 317–494, Cambridge (Mass.)
- SCHAFHÄUTL, K. E. (1863): Süd-Bayerns Lethaea Geognostica. Der Kressenberg und die südlich von ihm gelegenen Hochalpen Geognostisch betrachtet in ihnen Petrefacten. 487 p., Leipzig.
- SCHULTZ, O. (1976a): Zur Systematik der Nautilidae. – *Anzeiger der mathematisch-naturwissenschaftliche Klasse der Österreichischen Akademie der Wissenschaften*, 1976/6, 1–9, Wien.
- SCHULTZ, O. (1976b): Nautiloidea tertiaria et Dibranchiata tertiaria. *In: Catalogus Fossilium Austriae*, VI f/3, 1–32, Springer, Wien.
- SOWERBY, J. & SOWERBY, J. de C. (1812–1846): Mineral Conchology. 7 vols, pls 1–337 (1812–1822) by J. SOWERBY; pls 338–648 (1822–1846) by J. de C. SOWERBY.
- SZÖTS, E. (1956): L'Éocène (Paléogène) de la Hongrie. – *Geologica Hungarica, Series Geologica* 9, 1–320, Budapest.
- VOGL V. (1908): Über eocäne Nautiliden. – *Földtani Közlöny* 38, 636–649, Budapest.
- VOGL V. (1910): Neuere Beiträge zur Kenntnis der alttertiären Nautiliden Ungarns. – *Centralblatt für Mineralogie, etc.* 1910/21, 707–710, Stuttgart.
- VOGL, V. (1911): Die Fauna des sogenannten Bryozoenmergels von Piszke. – *Jahrbuch der Ungarischen Geologischen Reichsanstalt*, XVIII/3, 197–228, Budapest.