

A MIDDLE EOCENE NAUTILOID FROM DUDAR (TRANSDANUBIAN CENTRAL RANGE, HUNGARY)

by

A. GALÁCZ

(Department of Paleontology, Eötvös L. University, Budapest)

Abstract

Collection from the extremely rich faunal assemblage of the Middle Eocene calcareous sandstone of Dudar (Bakony Mountains, Transdanubian Hungary) yielded a well-preserved nautiloid specimen. Gastropods and bivalves are well-known and partly monographed from this locality, however cephalopods are practically unknown. Thus the specimen, a *Cimomia crassiconcha* (VOGL, 1908), its preservation history and morphologic description is given.

Introduction

Tertiary nautiloids are rare fossils, even in assemblages of rich mollusc faunas. Exceptions are known (see MILLER, 1947) and one of these is probably of the Eocene marls of Piszke and Buda, both in the Transdanubian Central Range. The nautiloids of these formations have been treated by VOGL (1908; 1910a; 1910b), but subsequent records of Hungarian Tertiary cephalopods are only items in fossil lists published sporadically. Therefore it seemed reasonable that description of a recently collected, stratigraphically well localized specimen would warrant more than usual interest.

The here described specimen was collected by geology student G. VÁRNAI, on an excursion to Dudar in 1982. The specimen was found on the waste-dump of the coal mine, the usual site of collecting the extremely rich Middle Eocene fossils. The example is deposited in the collection of the Paleontological Department of the Hungarian Natural History Museum, Budapest, as No. M. 85. 1.

Locality and stratigraphy

The first results of detailed studies on the Eocene occurrences around Dudar were published by TOMOR-THIRRING (1934; 1935). His faunal lists contain the first reference to nautiloids, quoting *Nautilus* sp. from the "Bartonian" marls. At the same time coal exploration has started in the Dudar area, and in the 1940s the subsurface mining activity made it possible to outline the Eocene succession (SZÓRS, 1948). From the beginning of mining the waste dumped around the shafts has been an

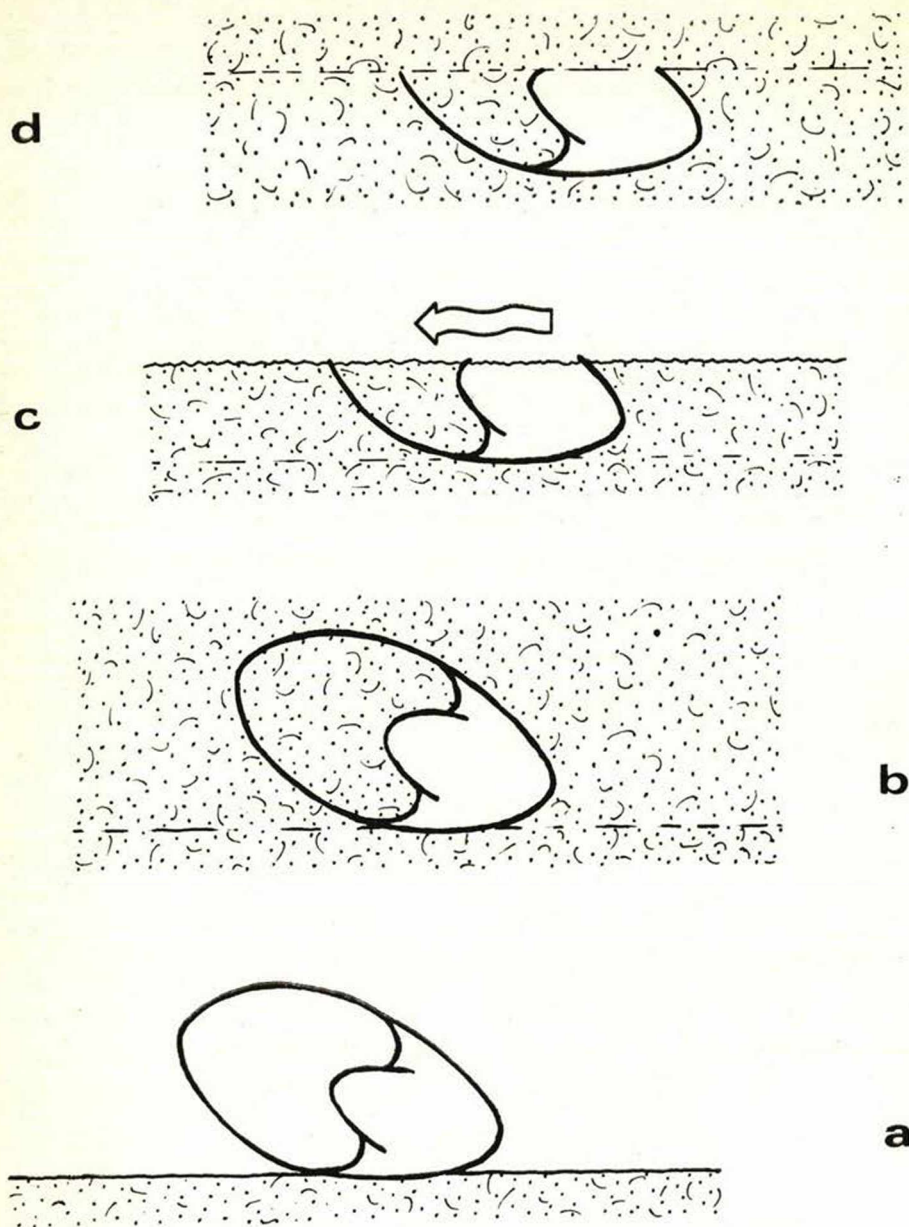


Fig. 1. Phases of the preservation history of the here described *Cimomia crassiconcha* (VöGL, 1908) specimen.

excellent source of beautifully preserved fossils, mainly molluscs. In spite of the fact, that the fossils of several distinct horizons are mixed in the material, the specimens can be easily ranged into the original levels, because their preservation and matrix is sufficiently different.

The most fossiliferous Eocene horizon of Dudar is the greyish-brown nummulitic calcareous sandstone overlying immediately the upper coal seam. The richness of the fauna is well-documented by the monograph of STRAUZ (1966), who described 155 species of nearly 90 genera of gastropods, and the preliminary and far incomplete list of bivalves given by SZÓTS (1956), which contains 36 genera. Other macrofossil groups are subordinate, but corals, worms, bryozoans, brachiopods, echinoids and marine vertebrates are also represented.

SZÓTS (1956, p. 43) and MONOSTORI (1972) pointed out that the 2 m thick nummulitic, mollusc-bearing sandstone is a typical coastal sediment, with washed, transported faunal elements commonly embedded fragmentarily. Nevertheless, the individual preservation is sometimes exceptional: gastropods with original coloration are well-known items of the collections. The preservation of the here described nautiloid illustrates the deposition history clearly (Fig. 1). The specimen sank to the bottom, it was partially loaded with bottom sediment, then the moving sand eroded the exposed parts, so the resulting fossil is a half-cut partial mould. The preserved portion retained the original shell, however during the collection it was peeled off and lost. However, original color pattern could not be seen.

Detailed analysis on the age of the beds was made by STRAUZ (1966, pp. 82–84). His dating as Lower Lutetian is convincing and unequivocally supported by the mass occurrence of characteristic *Nummulites* species (KECSKEMÉTI, 1980).

Systematic description

Subclass NAUTILOIDEA AGASSIZ, 1847
 Order NAUULOIDA AGASSIZ, 1847
 Superfamily Nautilaceae BLAINVILLE, 1825
 Family Nautilidae BLAINVILLE, 1825
 Genus *Cimomia* CONRAD, 1866

Cimomia crassiconcha (VOGL, 1908)

Plates I, II; text-figure 2.

1908. *Nautilus (Hercoglossa) crassiconcha* n. sp. — VOGL, p. 647; text-figs. 6, 7.
 non 1910. *Nautilus (Hercoglossa) crassiconcha* VOGL — VOGL, p. 198, text-figs. 7, 8.

Description: The specimen is a large internal mould with partially preserved shell fragments. Because of subsequent erosion and slight oblique crushing, measurements may be misleading. The maximal preserved

diameter is ca. 150 mm, but parts still preserved indicate that actual size might have been ca. 250 mm. At 150 mm the width of the whorl is about 100 mm ($\sim 67\%$), the whorl-height is 95 mm ($\sim 63\%$), and the umbilical width is ca. 10 mm ($\sim 7\%$). The specimen is an adult phragmocone, as indicated by sutural crowding and shell thickening around the umbilicus. At least one half whorl of body chamber was broken off. The whorl-section is lenticular, with evenly-rounded flanks, highly-arched venter and steep umbilical wall meeting the flank in rounded, but distinct umbilical shoulder. Position of the siphuncle is unknown.

The suture-lines are clearly shown by several consecutive sutures (Fig. 2). These cross the external part radially, then form wide, moderately deep lateral lobe, and round into high, narrow lateral saddle near the umbilical margin. There are some minor differences between individual sutures, but the described features seem fairly general.

Remarks: VOGL (1908, p. 647) established his „*Nautilus (Hercoglossa) crassiconcha*” on a well-preserved phragmocone from the “perforata beds” (Middle Eocene) of Tatabánya (Transdanubian Central Range). His short, incomplete description and figures indicate a relatively compressed form with highly-arched venter. The sutures are well visible in the photograph (fig. 6), and this is a solid basis for ranging the species into the genus *Cimomia*. The same conclusion was drawn by KUMMEL (1956, p. 450).

Subsequently VOGL (1910b, p. 221) described a form from the Piszke Marl (Middle Eocene), which he ranged into this species. However, the cross-section and the suture-line figures (figs. 7 and 8 in VOGL) indicate a strongly compressed form with different septal sutures. Detailed studies on VOGL's originals may reveal further information, but the real specific state of his *C. crassiconcha*, as well as the exclusion of his subsequently described specimen can be ascertained even on the basis of his figures.

Comparisons: As that of most Tertiary nautiloids, the systematics of European *Cimomia* species is in a rather diffuse state, calling for detailed revision. Many names are available, but being based usually on single specimens, the specific variability, hence the possible synonyms are difficult to decipher.

Cimomia burtini (GALEOTTI, 1837), the genotype, of which type figure is reprinted by MILLER (1947, pl. 26, fig. 1) and KUMMEL (1956, pl. 24) is a form with closed umbilicus and extremely high lateral saddle following a very wide lateral lobe. The forms described by SCHAFHÄUTL (1863) are all different: his *C. parallela* (pl. LVI, figs. 1. a-c) is a compressed form with wide umbilicus; *C. macrocephala* (pl. LIV, figs. 2. a-c) is a very wide species with shallow lobe and low saddle in the suture line; his *C. elliptica* (pls. LVII, LVIII) has a widely-rounded venter and a suture line which lacks the radial portion around the ventrolateral shoulder, while has a characteristic, shallow external lobe.

OPPENHEIM (1901, pp. 252-253, pl. XVIII, figs. 1, 1a) gave the original diagnosis and measurements of *C. leonicensis* (DE ZIGNO), and figured a specimen from DE ZIGNO's original material. These show wide, low outer whorl, nearly triangular in cross-section. The general appearance is very

similar to that of *C. macrocephala* (SCHAFHÄUTL). *C. imperialis* (SOWERBY) seems as the most closely allied form, but it has wide, evenly-rounded low whorls. A good specimen of this species was described and figured by FRAUSCHER (1895, p. 193, pl. I, figs. 1 - 2) as "*Nautilus Seelandi* PENECKE" (see SCHULTZ, 1976, pp. 9 - 10).

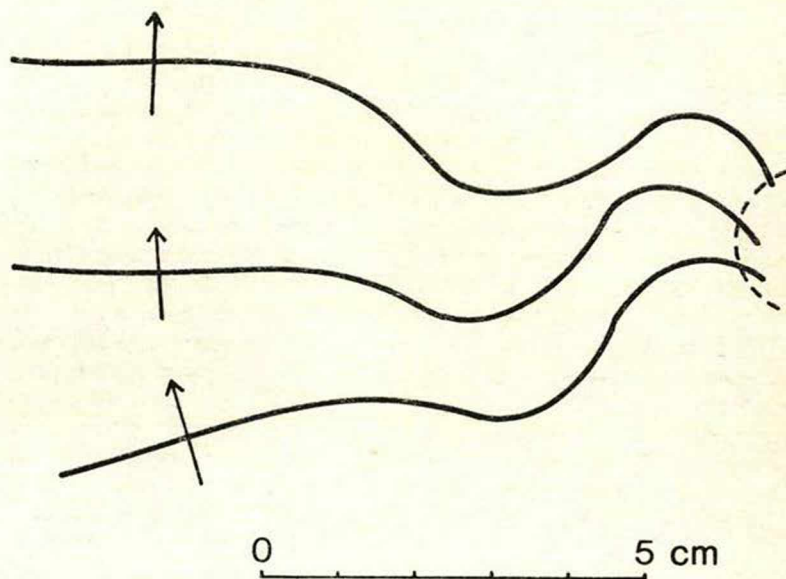


Fig. 2. Consecutive suture-lines of *Cimomia crassiconcha* (VOGL, 1908)

Conclusively, *C. crassiconcha* (VOGL) appears to be a distinct, well-characterised Eocene species of *Cimomia*, of which studies on further relations with allied forms and other aspects can reveal interesting results.

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Tertiary nautiloids — a most neglected field of the recent European invertebrate paleontology — seems a rather interesting topic for further investigations. The results may solve taxonomic problems and can cast light on paleobiogeographic connections.

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PLATE I.

Cimomia crassiconcha (VOGL, 1908), Dudar, Middle Eocene. Lateral view. (natural size)

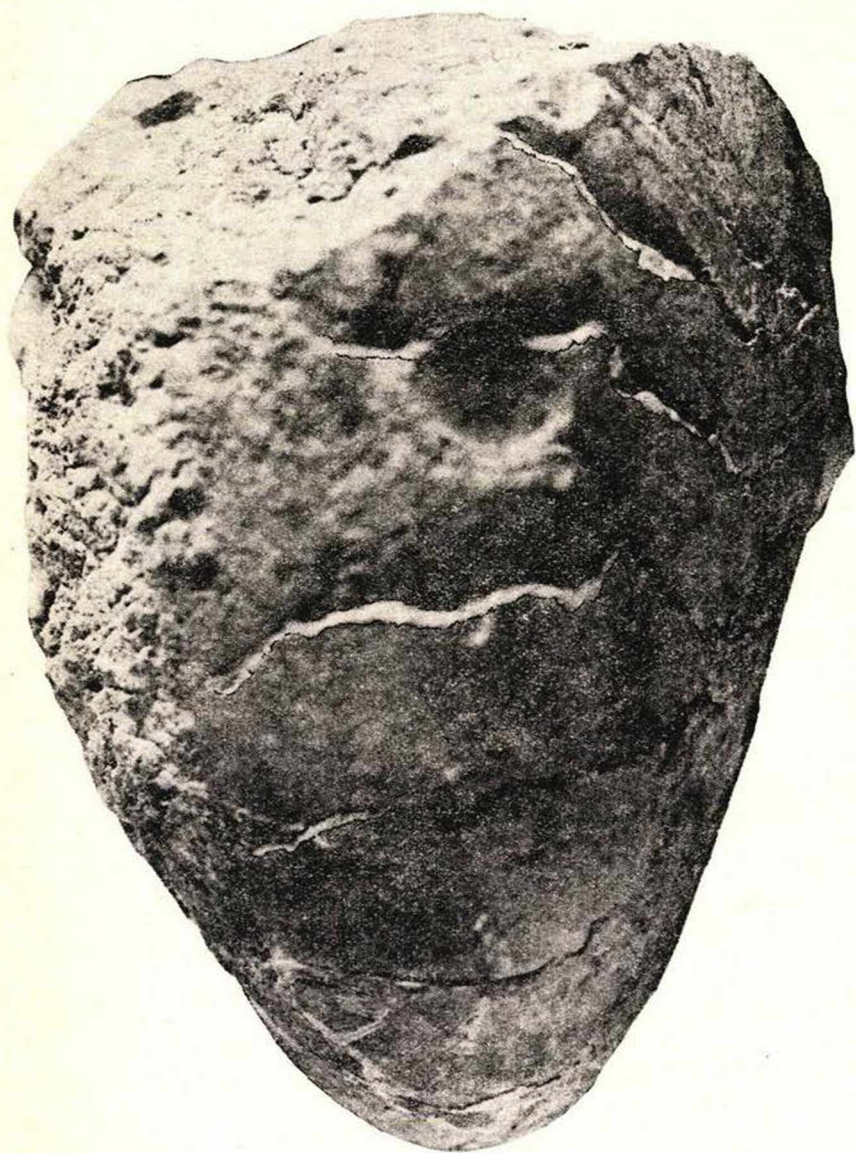


PLATE II.

Cimomia crassiconcha (VOGL, 1908). Dudar, Middle Eocene. Ventral view. (natural size)

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