

Foraminifera from the Cenomanian of the "Cеровска Река" Section, Strandža region, Bulgaria

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*Ек. Димитрова — Foraminifera из сеномана разреза "Река Церовская" Странджанской области, Болгария. В настоящей работе сообщается о характерной ассоциации, установленной в сеноманских отложениях разреза "Река Церовская", расположенные восточнее села Индже Войвода Странджанской области. Сообщество составлено в основном из бентосных фораминифер: *Orbitolina concava* (L a m a r c k), *Nezzazata simplex* O m a r a, *Pseudolituonella* sp., *Pseudonummoloculina* sp., Miliolidae, *Ammodiscus cretaceous* B r a d y, Astorhizidae, Hormosinidae (?*Reophax* sp.), Textulariidae, ?*Lingulogavelinella* sp., *Hedbergella* sp. Еще Algae и Врyозoa присутствуют. Описаны два вида и дано их стратиграфическое и географическое распространение. В работе используется классификация L o e b l i c h, T a p p a n (1988).*

*Abstract. Shallow-water foraminiferal assemblage has been studied from the Cenomanian of the "Cеровска Река" Section, Strandza region. Two of the observed species — *Nezzazata simplex* O m a r a and *Pseudonummoloculina* sp., are described, and their stratigraphic range is reported herein.*

Introduction

The stratigraphical problems of the Upper Cretaceous of the Strandža region have been discussed by many investigators. The different fossil groups (echinids, brachiopods, foraminifers) have been used for age determination of the rocks. The presence of the Cenomanian sediments has been proved by some species of the genus *Orbitolina* (К у л а к с ь з о в et al., 1962; Н и к о л о в, 1979; Н а ч е в, С у л т а н о в, 1979; П е т р о в а et al., 1980). Lately, characteristic nanofossil association has been reported (С и н ь о в с к и, С и н ь о в с к а, 1989).

In the sample B-11, of the base of the Cenomanian of the "Cеровска Река" Section, east of the village of Indze Vojvoda ("Cерово Formation" — Н а ч е в, Д и м и т р о в а, 1995), an interesting association, composed mainly of benthic foraminifera was established.

In this article, the L o e b l i c h, T a p p a n's (1988) classification is applied.

Description of the association: *Orbitolina concava* (L a m a r c k), *Nezzazata simplex* O m a r a — Pl. I, figs. 1, 2, *Pseudolituonella* sp. — Pl. I, fig. 3, *Pseudonummoloculina* sp. — Pl. I, fig. 4, Miliolidae — Pl. I, figs. 4, 7, *Ammodiscus*

cretaceous Brady — Pl. I, fig. 6, ?Astrorhizidae — Pl. I, fig. 3, Hormosinidae (?*Reophax* sp.) — Pl. I, fig. 5, Textulariidae, ?*Lingulogavelinella* sp., *Hedbergella* sp. are observed. Parts of Algae and Bryozoa are present, too. The sections of the uppermentioned taxa are single not — well preserved specimens. The association is characteristic of the litoral zone of the basin, and indicates normal marine salinity (Omara, Strauch, 1965).

Taxonomy

Order FORAMINIFERIDA Eichwald, 1830.

Suborder TEXTULARIINA Delage and Herouard, 1896.

Superfamily HAPLOPHRAGMIACEA Eimer and Fickert, 1899.

Family NEZZAZATINAE Hamaoui and Saint Marc, 1970.

Subfamily NEZZAZATINAE Hamaoui and Saint Marc, 1970.

Genus *Nezzazata* Omara, 1956.

Nezzazata simplex Omara, 1956.

pl. I, figs 1, 2.

1960. *Nezzazata simplex* Omara; Radoičić, pl. 28, fig. 1; pl. 35, fig. 1; pl. 37, fig. 2.

1965. *Nezzazata simplex* Omara; Omara and Strauch, p. 551, pl. 65, figs. 1-7.

1972. *Nezzazata simplex* Omara; Radoičić, pl. 7, figs. 1-3.

1988. *Nezzazata simplex* Omara; Loeblich and Tappan, p. 86, pl. 72, figs. 8-15.

1988. *Nezzazata simplex* Omara; AGIP, p. 110.

Nomenclature. The holotype is the specimen refigured by Loeblich and Tappan (1988, pl. 72, figs. 1-3).

Description. Test subcircular to oval in outline, ventrally convex, dorsally either slightly convex or nearly flat. Three whorles with 8-10 chambers in each whorl, chambers distinct increasing slightly in size as added; ventral sutures radial, slightly depressed and curved, dorsal sutures nearly straight, oblique, faintly limbate; umbilical area closed; periphery usually acute, slightly lobulate, rarely nearly smooth; aperture ventral, angled, extending from near the umbilical area at the base of the aperural face, nearly parallel to the periphery, typically with a tooth-plate, projecting into the aperture; wall single layered, granulate, finely perforate.

Distribution. Lower Cretaceous (Albian) to Upper Cretaceous (Turonian); Egypt, Israel, Iraq, Iran, Italy, Yugoslavia (Montenegro); Upper Cenomanian of Bulgaria.

Localities: The section "Cerovska Reka", east of the village of Indže Vijvoda, Upper Cenomanian, sample B-11; section "Zidarovo", sample 1802; section "Karnobat", sample 1729 (Nachev, Dimitrova, 1995).

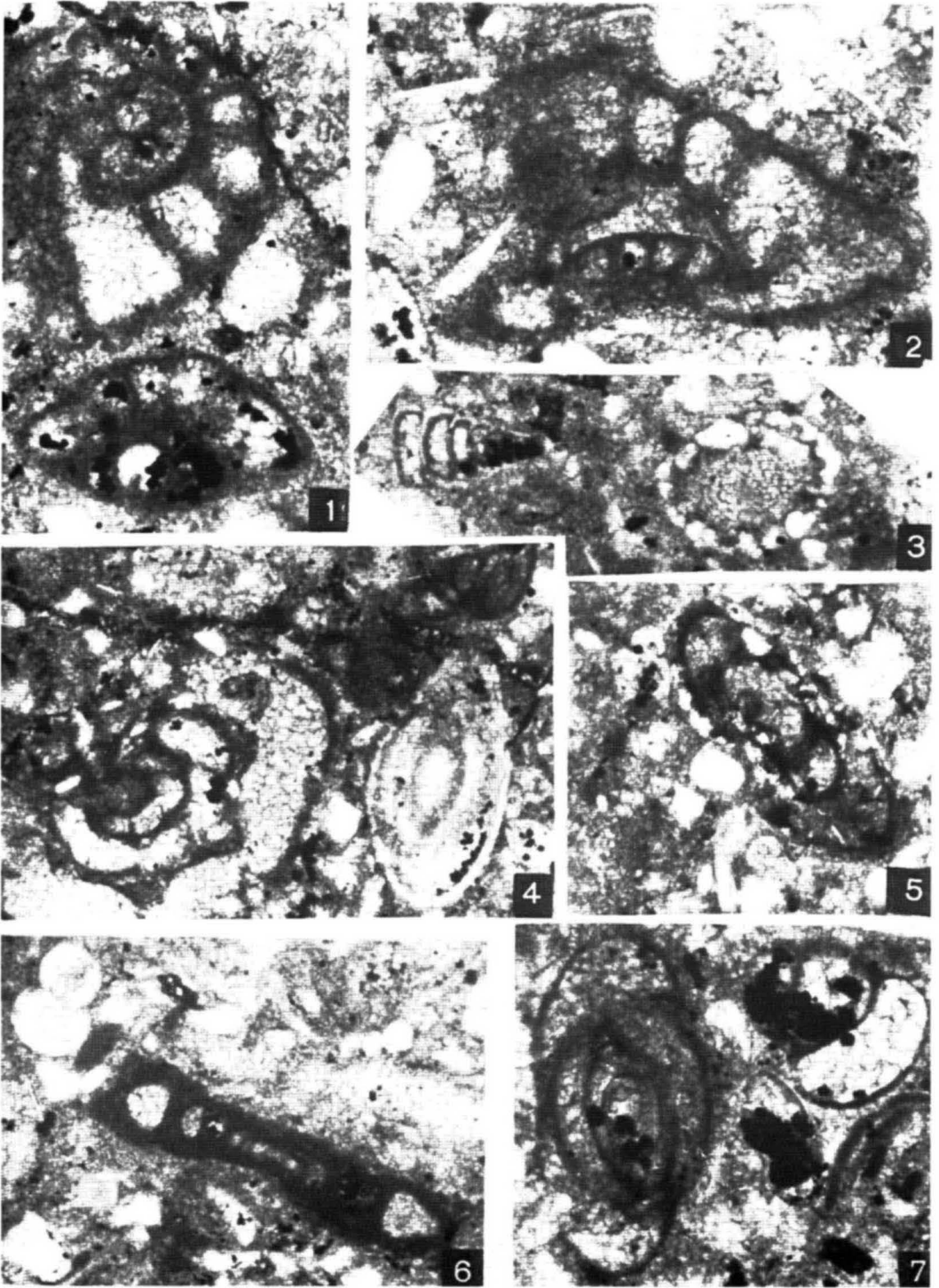
Suborder MILIOLINA (Delage and Herouard, 1896).

Superfamily MILIOLACEA (Ehrenberg, 1839).

Family MILIOLIDAE (Ehrenberg, 1839).

?Subfamily QUINQUELOCULININAE Cushman, 1917=Subfamily HAUERININAE Schwager, 1876.

PLATE I



Explanation to plate I

All figures x100

- 1, 2. *Nezzazata simplex* (O m a r a). Section "Cеровска Reka", Lower Cenomanian, sample B-11.
3. *Pseudolituonella reicheli* M a r i e. ?*Reophax* sp. Section "Cеровска Reka", Lower Cenomanian, sample B-11.
4. *Pseudonummoloculina* sp., ?*Lingulogavelinella* sp. and Miliolidae are present. Section "Cеровска Reka", Lower Cenomanian, sample B-11.
5. ?Astrothizidae. Section "Cеровска Reka", Lower Cenomanian, sample B-11.
6. *Ammodiscus cretaceous* (Reuss); *Hedbergella* sp. is present. Section "Cеровска Reka", Lower Cenomanian, sample B-11.
7. Miliolidae, sp. div. Section "Cеровска Reka", Lower Cenomanian, sample B-11.

Genus *Pseudonummoloculina* Calvez, 1986.

Pseudonummoloculina sp.

pl. I. fig. 4.

Generic diagnosis: Foraminifera with free, spiral, calcite, porcelaneous test with compact wall. The ontogenetic development is characterized by a young agatiatheg — quinqueloculiniform stage, followed by a planispiral adult stage, by a complicated slitlike aperture bordered by a series of notches, derived from the floor and the roof of the chambers, by the globular shape of the test and by the disposition and the number of chambers per whorl (Calvez, 1986).

Remarks. The only one section I have at a hand is near to the generic description. I have not enough data to refer my specimen to the only one known species — *Pseudonummoloculina aurigerica* Calvez, 1986.

Distribution. Albian of the French and Spanish Pyrenees; Albian — Cenomanian of Italy (Southern Tethys); Upper Cenomanian of Bulgaria.

Localities: The section "Cеровска Река", east of the village of Indžev Vojvoda, Upper Cenomanian, sample B-11 (Nachev, Dimitrova, 1995).

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