

GASTROPODS AND BIVALVES OF THE MIDDLE ANISIAN FROM KOKAELI PENINSULA (TURKEY)

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Key-words: Gastropoda, Bivalvia, Pelsonian (Middle Triassic), Kokaeli Peninsula (Turkey), description.

Riassunto. I fossili studiati sono stati raccolti da R. Assereto nel 1969 e 1971 nell'area di Gebze nella Penisola di Kokaeli (Turchia). Essi provengono da livelli del Membro superiore del Calcarea Nodulare, attribuiti al Pelsonico per la presenza di *Balatonites*, *Acrochordiceras* e *Ptychites* (Assereto, 1974). Sono state identificate due specie di Bivalvi ed una di Gasteropodi, ma seppure così povera questa fauna ha offerto dati cronostatigrafici assai interessanti. Risulta infatti che il genere *Physocardia* Woehrmann, segnalato sinora solo nel Carnico, e *Vistilia dittmari* (Koken) dell'Anisico superiore, sono presenti già nell'Anisico medio.

Aim of this paper is the description of a faunule of gastropods and bivalves found associated with ammonites belonging to the Pelsonian from Kokaeli Peninsula (Turkey), a region named in the past Bithynia (Fig. 1). This faunule was collected by R. Assereto in 1969-1971 along the rail-road from

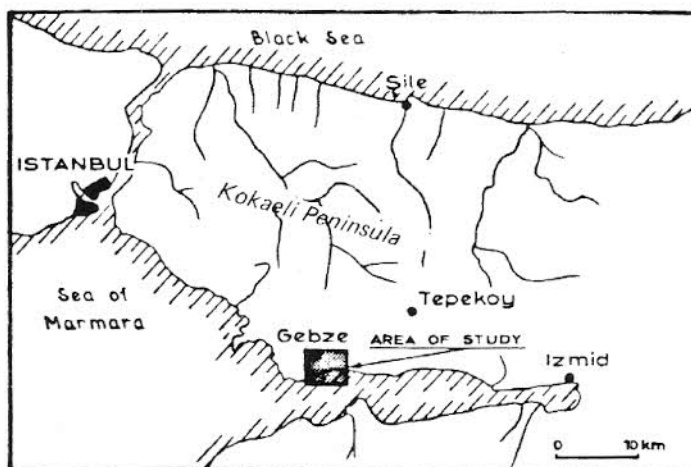


Fig. 1 - Location of the studied area.

Istanbul to Izmid between the km 49.780 and km 50.500. Assereto (1974) designated this locality as type-section of the Bithynian, one of the Anisian substages, as established by Assereto in 1974. Megafossils from this area have been described since many years by Toula (1896) and Arthaber (1914). However, in these monographs accurate biostratigraphic locations were totally missing. The new fossil collection by Assereto, layer by layer, which includes beside the ammonites other types of Mollusks, is supposed to fill up such a gap of information.

All the studied specimens (T63, T69, T97, T175) are from the base of the upper member of the Nodular Limestone (see Fig. 2), which consists of a micritic nodular dark limestone, separated by yellowish marls in its lower part; the latter lithotype is replaced in the upper part by grey marls with intercalated thin beds of micrites. The lower and middle beds of the upper member including an assemblage with *Balatonites*, *Acrochordiceras* and *Ptychites* have been referred to the B. balatonicus Zone of the Pelsonian by Assereto (1974). As shown in Fig. 2 the A. ismidicus Zone occurs in the upper beds of the middle member of the Nodular Limestone.

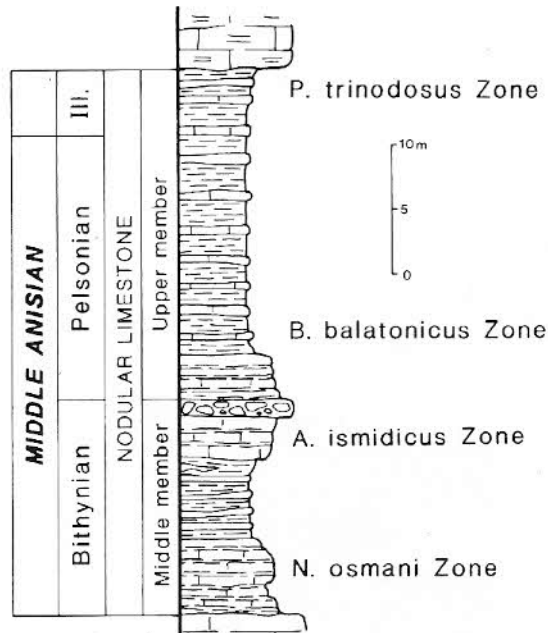


Fig. 2 — Stratigraphic section of the Middle Anisian beds in Gebze area (from Assereto, 1974 modified).

The studied fauna consists of 10 specimens belonging to three species. In Toula's paper (1896), there were described 7 specimens attributed to four species. A little more numerous were those described by Arthaber (1914). Not all the species identified by these two authors are present in the Assereto's new collection. However, in both Toula's and Arthaber's papers the exact location and stratigraphic position from where the fossils were collected are missing and in the area Triassic sediments not only attributable to the Pelsonian are also present.

The species identified are as follows:

Vistilia dittmari (Koken), cited by Toula as *Trochus* (?*Flemingia*) aff. *acute-carinata* Klipstein; *Physocardia arthaberi* (Kutassy), indicated by Arthaber as (?) *Megalodon* cf. *rimosus* (Münster) and finally *Palaeoneilo* aff. *lineata* (Goldfuss), not cited by the previous authors.

Even so poor, this faunule allows some interesting chronostratigraphic remarks. In particular, the genus *Physocardia* Woehrmann, known uptill now only from the Carnian, and *Vistilia dittmari*, known from the Upper Anisian, are already present since the Pelsonian.

Class BIVALVIA

Subclass PALAEOTAXONDONTA

Order Nuculoida

Family *Mallettiidae*

Genus *Palaeoneilo* Hall & Whitfield, 1869

Type-species *Nuculites constricta* Conrad, 1842

***Palaeoneilo* aff. *lineata* (Goldfuss, 1838)**

Only one internal mould of small size. Serial teeth stronger anteriorly, shallow radial sulcus from umbo to postero-ventral margin without reaching it. For the general shape this specimen recalls *P. lineata* (Goldfuss), a species frequently found in Carnian beds from Southern Alps, but it possesses, however a less prominent ventral margin and a shallower posterior sulcus.

Dimensions (in mm):

	L	H	I
T63	13.5	10	7

Material. T63 (1 specimen).

Subclass HETERODONTA

Order Veneroida

Superfamily GLOSSACEA

Family *Dicerocardiidae*Genus *Physocardia* Woehrmann, 1893Type-species *Physocardia ogilvae* Woehrmann, 1893***Physocardia arthaberi*** (Kutassy, 1934)

Pl. 32, fig. 1a-c, 4,5

1914 (?) *Megalodon* cf. *rimosus* – Arthaber, p. 193, pl. 18, fig. 6.1934 *Megalodus arthaberi* Kutassy, p. 28.1982 *Physocardia arthaberi* – Végh–Neubrandt, p. 457, fig. 226,228.

Shell medium sized, subtrigonal, slightly higher than longer, equivalve and almost equilateral. Prominent umbones prosogyrous with slightly uncoiled and outtoured beaks. Opisthodontic ligament inserted in a long groove which is deeply impressed in both valves.

Stark ridge from umbo to the center of ventral margin which is short and prominent. Posterior radial sulcus very shallow, but well visible on the internal moulds. Posterior area triangular, flat or slightly concave.

Thin shell, thickened only on the umbones, rarely preserved. Concentric undulations along the margins. Weak ribs anteriorly preserved. Adductor scars not observed. Hinge poorly preserved with 2 teeth elongated on R.V., L.V. not observed.

Dimensions (in mm):

	H	L	I
T175A	32	31	27
T175D	42	41,2	33 (?)
T175C	43	41	36.5
T175B	46	37.8	40

Remarks. Based on the studied specimens it is possible to confirm that the species *Ph. arthaberi* belongs to the genus *Physocardia* as established by Végh–Neubrandt (1982) essentially on the shape of the umbo. Oriented sections crossing the cardinal region revealed the presence of a thin limonitic shell and two elongated robust teeth, without cardinal plate, located anteriorly and posteriorly of the umbo on the R.V.

The stratigraphic range of the genus *Physocardia* is then extended from the Carnian to the Middle Anisian. The earlier appearance of *Physocardia*

should be confirmed by the occurrence of a specimen named as *Megalodon* sp. from the Nahlak Formation of the Anarak region (Iran), very similar to those studied here, at least at a generic level. The Iranian specimen would be the oldest representative of *Physocardia*, because it occurs in the Bithynian A. ismidicus Zone (Tozer, 1972).

Material. T69 (1 specimen); T97 (1 specimen); T175 (5 specimens).

Class GASTROPODA
Subclass PROSOBRANCHIA
Order ?Archaeogastropoda
Suborder Murchisoniina
Superfamily *Murchisoniacea*
Family *Murchisoniidae*
Genus *Vistilia* Koken, 1897
Type—species *Vistilia klipsteini* Koken, 1897
Vistilia dittmari (Koken, 1895)
Pl. 32, fig. 2, 3

- 1895 *Murchisonia dittmari* Koken, p. 448, fig. 7.
1896 *Trochus (Flemingia?) acuticarinata* — Toula, p. 160, pl. 18, fig. 6.
1897 *Vistilia dittmari* — Koken, p. 85, fig. 10.
1897 *Vistilia dittmari* — Koken, p. 104, pl. 7, fig. 28.
1967 *Eucyclomphalus izmitensis* — Casati & Gnaccolini, p. 130, pl. 9, fig. 12, 13.
1980 *Vistilia dittmari* — Tichy, p. 430, pl. 2, fig. 8; pl. 3, fig. 12, 13.

Internal mould high—spired; angular whorls with sharp carinate periphery abapically; large sutural ramp. Slightly convex base with narrow umbilicus.

Remarks. The studied material, although as internal moulds corresponds well to the description by previous authors. Moreover, it permits to confirm that the specimens illustrated by Toula (1896) are attributable to *Vistilia dittmari* (Koken), as already proposed, but doubtfully by Tichy (1980). Because of their occurrence in the Middle Anisian, Toula's and Assereto's specimens are the oldest representatives of *V. dittmari*, whereas in the Alps this species is known only from Upper Anisian layers (Tichy, 1980).

Material. T97 (2 specimens).

REFERENCES

- Arthaber G. (1914) - Die Trias von Bithynien (Anatolien). *Beitr. Geol. Paläont. Oesterr. Ung.*, v. 27, pp. 85–206, 8 pl., Wien.
- Assereto R. (1972) - Notes on the Anisian biostratigraphy of the Gebze Area (Kocaeli Peninsula, Turkey). *Zeit. Deutsch. Geol. Gesellsch.*, v. 123, pp. 435–444, Hannover.
- Assereto R. (1974) - Aegean and Bithynian: proposal for two new Anisian substages. *Schriften. Erdwiss. Komm. Oesterr. Akad. Wiss.*, v. 2, pp. 23–39, Wien.
- Casati P. & Gnaccolini M. (1967) - Geologia delle Alpi Orobic Occidentali. *Riv. Ital. Paleont. Strat.*, v. 73, pp. 25–162, 9 pl., 34 fig., Milano.
- Davoudzadeh M., Seyed-Emami K. & Amidi M. (1969) - Preliminary note on a newly discovered Triassic Section northeast of Anarak (Central Iran), with some remarks on the age of the Metamorphism in the Anarak Region. *Geol. Survey Iran*, Note n. 51, 23 pp., 4 pl., Tehran.
- Koken E. (1895) - Die Fauna der Schichten mit *Arcestes studeri*. *Jahrb. Geol. Reichsanst.*, v. 44 (1894), pp. 441–459, Wien.
- Koken E. (1897) - Die Gastropoden der Trias um Hallstatt. *Jahrb. Geol. Reichsanst.*, v. 46 (1896), pp. 37–126, Wien.
- Koken E. (1897) - Die Gastropoden der Trias um Hallstatt. *Abhandl. Geol. Reichsanst.*, v. 17, 112 pp., 23 pl., Wien.
- Kutassy A. (1934) - Pachyodonta mesozoica. *Fossilium Catalogus I*, v. 68, 202 pp., Gravenhage.
- Tichy G. (1980) - Gastropoden aus dem Prezzokalk (Anis) von Lenna im Val Brembana (Sudalpen, Italien). *Verh. Geol. B – A*, p. 3 (1979), pp. 423–441, Wien.
- Toula F. (1896) - Eine Muschelkalkfauna am Golfe von Ismid in Kleinasien. *Beitr. Geol. Paläont. Oesterr. Ung.*, v. 10, pp. 153–191, 5 pl., Wien.
- Tozer E. T. (1972) - Triassic Ammonoids and *Daonella* from the Nakhlak Group, Anarak Region, Central Iran. *Geol. Survey Iran*, Rep. n. 28, pp. 29–40, 9 pl., Tehran.
- Végh-Neubrandt E. (1982) - Triassische Megalodontaceae. Entwicklung, Stratigraphie und Paläontologie. Vol. of 526 pp., 236 fig., 18 tab., Akadémiai Kiadó, Budapest.

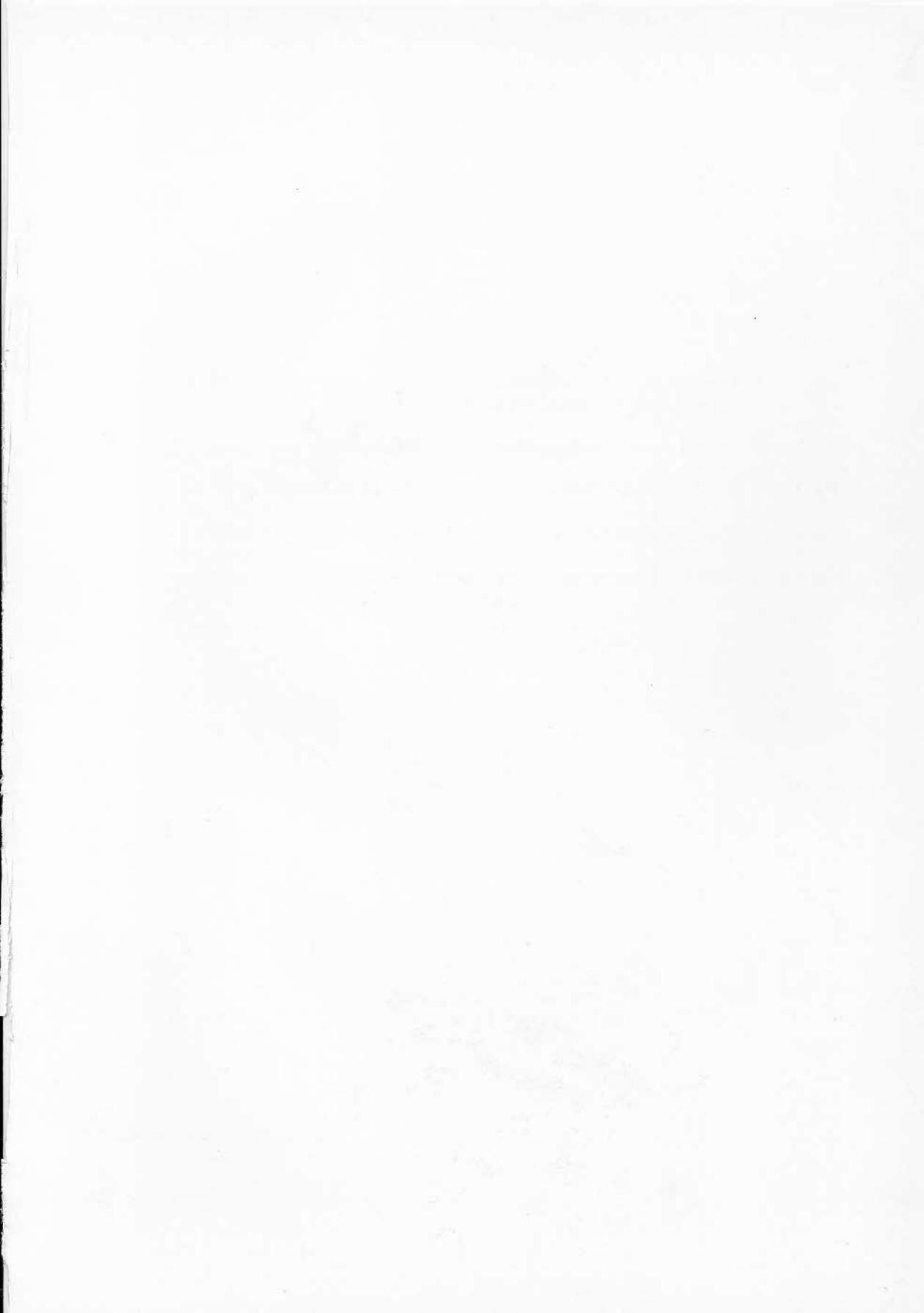


PLATE 32

- Fig. 1 a-c – *Physocardia arthaberi* (Kutassy). Gebze area, T175 A. Respectively: a, right valve; b, anterior view; c, left valve; x 1.
- Fig. 2 – *Vistilia dittmari* (Koken). Gebze area, T97B. Umbilical view; x 1.
- Fig. 3 – *Vistilia dittmari* (Koken). Gebze area, T97A. Lateral view; x 1.
- Fig. 4 – *Physocardia arthaberi* (Kutassy). Gebze area, T175C. Right valve; x 1.
- Fig. 5 – *Physocardia arthaberi* (Kutassy). Gebze area. T175B. Right valve; x 1.

