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A NEW MIDDLE JURASSIC BRACHIOPOD FROM THE BUCEGI MTS. (EASTERN CARPATHIANS, ROMANIA)

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Abstract: *Neaguithyris neagui* gen and sp. nov. *(Terebratulidae, Lobothyrinae)* is reported from the Upper Bajocian–Lowermost Bathonian sandy limestones of the Bucegi Mountains, Romania. It had been collected from the "bank with brachiopods" at Vama Strunga-Strungulița. Appart of systematics and stratigraphical distribution, some paleoecological and paleobiogeographical aspects are also presented.

Key words: Terebratulid brachiopod, paleobiology, Middle Jurassic, Eastern Carpathians, Romania.

Introduction

A very rich brachiopod assemblage (in fact the richest in Romania) had been collected from Vama Strunga-Strungulița, Bucegi Mountains, Eastern Carpathians. Over 4.000 specimens were used by the present author for a monograph on this fauna. Twenty four brachiopod species, eight of them new, had been identified. The assemblage had been collected from a sandy limestones level, with a thickness of about one meter; this level is known in the Romanian regional geology as the "bank with brachiopods".

Previous researches

The Dogger deposits from Vama Strunga-Strungulița had been the object for several studies performed by Štúr (1860), Suess (1867) and Hauer (1867). The first monograph on the fauna from the "bank with brachiopods" had been performed by Herbich (1885). Detailed studies concerning other fossil groups had been performed by Redlich (1896), Popovici Hatzeg (1905) and Simionescu (1905) on ammonites and Jekelius (1925) on bivalves and gastropods.

Another kind of researches, those concerning the stratigraphy had been done by Oncescu (1945) and Patrulius (1969).

In the last decade, Dr. Doc. Neagu (University of Bucharest) started a series of paleontological, microbiostratigraphical and paleoecological studies within this area; the "bank with brachiopods" was the object of some very detailed studies. For the first time in Romania the inner structures of the Middle Jurassic brachiopoda had been revealed. Stroică et al. (1982) and Neagu et al. (1983) have published some results of these researches.

Stratigraphical part

Neagu et al. (1983) elaborated fine division of the Jurassic lithological sequence establishing several lithological members which will be shortly presented now. It is to mention that the total absence of ammonites caused many difficulties in the biostratigraphy.

Bajocian sediments at Vama Strunga-Strungulița, about 50 meters thick, lie transgressively on the Proterozoic crystalline (Leaota Series). The sequence, attributed to Bajocian –? Callovian consists of:

A – Microconglomerates with small and rounded elements into a clayey matrix (3 meters).

B – Grey clays with small coal lenses (1 meter).

C – Greenish and sandy marls containing corals at the base (*Montlivaltia* sp.) and bivalves *Pholadomya murchinsoni* SOWERBY. At the top, Neagu et al. (1983) identified some foraminifers: *Spirophtalmidium infraoolithicum* (TERQUEM), *S. clarum* (ANTONOVA), *Epistomina regularis* (TERQUEM), *E. coronata* (TERQUEM), *E. nuda* (TERQUEM) and the Ostracoda: *Cytherella perenis* (BLASZYK), *Lophrocythere scabra* (TREIBER) and *Ektyphocythere diraliensis* (BASHA). The massive development of the genera *Spirophtalmidium* and *Epistomina* seems to indicate Middle Bajocian age (4 meters).

D – Sandy limestones with *Isognomon isognomoides* (STAHL), *Lopha* sp., *Pinna* sp. (10 meters).

E – The bank with brachiopods; very numerous shells are contained in a sandy limestone matrix. The present author recorded here the following brachiopod species: *Kutchirhynchia morieri* (DAVIDSON), *Parvirhynchia parvula* (DESLONGCHAMPS), *Morrisithyris phillipsi* (MORRIS and DAVIDSON), *Monsardithyris buckmaniana* (WALKER and DAVIDSON), *Conarothyris eudesi* (OPPEL), *Holcothyris depressa* SAHNI, *H. angulata* BUCKMAN, *H. trigonalis* BUCKMAN, *Ptyctothyris solitaria* (SZAJNOCHA), *Stiphrothyris cheltensis* BUCKMAN, *S. birdlipensis* (WALKER–DAVIDSON), *Sphaeroidothyris sphaeroidalis* (SOWERBY), *Neaguithyris neagui* gen. and sp. nov. The presence of this assemblage seems to indicate Upper Bajocian and Lowermost Bathonian age (1 meter).

F – Tătaru sandstones. It is a flyshoid member devoid of fossils (25 meters).

G – A thin, red, limonitic and nonfossiliferous crust, which corresponds to the "bank with cephalopods" (0.15 meters).

The Upper Jurassic deposits which terminate this lithological sequence are represented by the Oxfordian jaspers and marls (I) and the "acanthicum" beds (K) attributed to the Kimmeridgian.

Paleontological part

Phyllum: *Brachiopoda* DUMERIL, 1806
Class: *Articulata* HUXLEY, 1869
Order: *Terebratulida* WAAGEN, 1883
Suborder: *Terebratulidina* WAAGEN, 1883
Superfamily: *Terebratulacea* GRAY, 1840
Family: *Terebratulidae* GRAY, 1840
Subfamily: *Lobothyrinae* MAKRIDIN, 1964
Genus: *Neaguithyris* nov.

Type – species: *Neaguithyris neagui* gen. and sp. nov.
Derivatio nominis: genus named after Dr. Doc. Neagu (University of Bucharest).

Stratum typicum: the "bank with brachiopods", Vama Strunga-Strunguliţa, Bucegi Mountains, Romania, Upper Bajocian to Lowermost Bathonian in age.

Diagnosis: Medium sized shells, with rounded pentagonal outline; at the adult specimens, the frontal commissure is sulciplicate. The cardinal process is bilobate and the hinge plates are very thin, with the crural bases very slightly pronounced. The transverse band is typically bilobated. No euseptoidum is present. The brachidium is short, approximatelly 25 % from the length of the brachial valve.

Stratigraphical and geographical distribution: Middle Bajocian of Germany, Upper Bajocian–Lowermost Bathonian of Romania, (?) Middle Callovian of France.

Species attributed to the genus:

Neaguithyris neagui gen. and sp. nov.
Lobothyris dubia SEIFERT, 1963; p. 187, Pl. 13, Fig. 7, Abb. 38. (?)
Gen. and sp. indet. – Alméras, 1971; p. 540, Pl. 170, Pl. 172, Fit. 8, Pl. 189.

Remarks: *Neaguithyris* nov. is a genus with very seldom features. This genus differs from *Lobothyris* BUCKMAN, *Loboidothyris* BUCKMAN and *Loboidothyropsis* SUČIĆ and PROTIĆ by a more inflated cardinal process, thinner hinge plates, shorter hinge, crural processes and crus. The transverse band has a totally different shape. There are some common features with other genera. One of these is the Bathonian genus *Cererithyris* BUCKMAN. It differs from *Neaguithyris* nov., by the shape of the cardinal process, the hinge plates, the crural processes and the transverse band. *Neaguithyris* nov. differs from the genus *Conarothyris* COOPER (Aalenian to Bajocian of Western Europe) by thinner internal structures, shape of the transverse band and the distal parts of the brachidium. Our genus has some resemblances with the Recent, genus *Arctosia* COOPER. However, *Neaguithyris* nov. has a shorter loop, a thinner jugulum and longer distal parts of the brachidium.

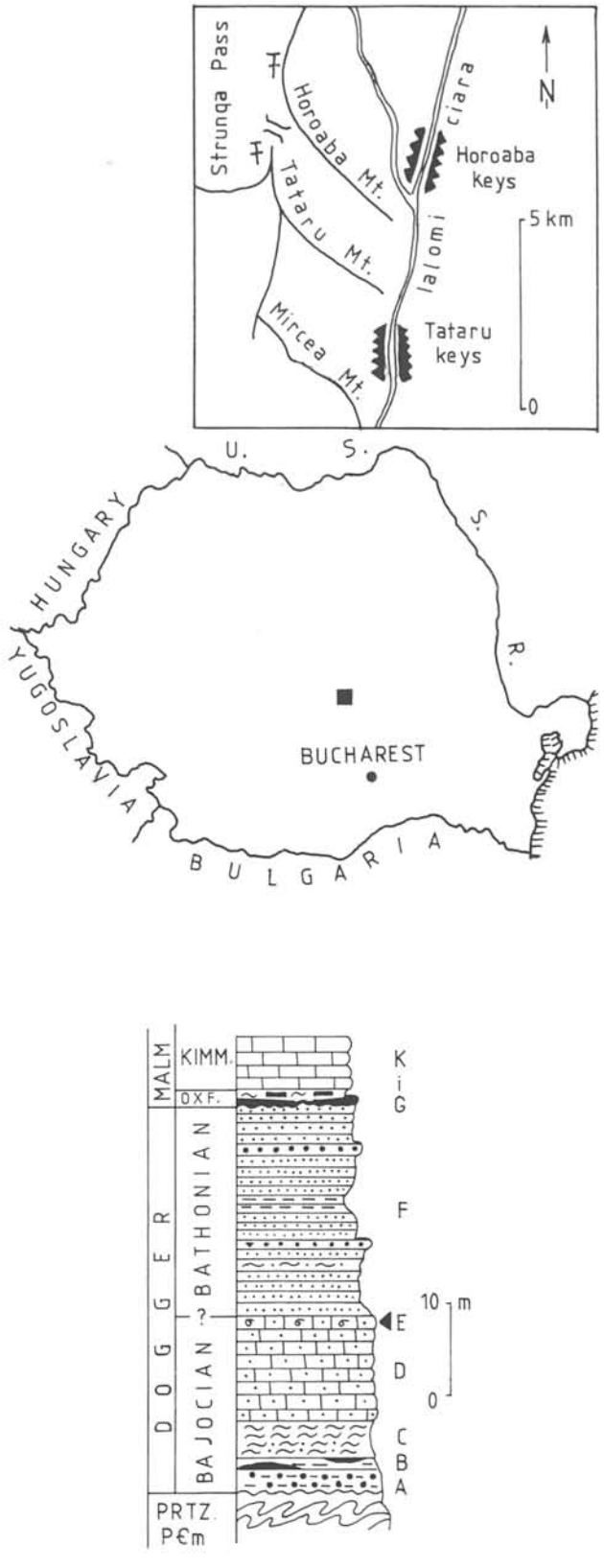

Fig. 1. Location of the brachiopod outcrops at Vama Strunga-Strunguliţa (Strunga Pass). The lithological column of the Jurassic sediments at Vama Strunga-Strunguliţa. The arrow points the "bank with brachiopod".

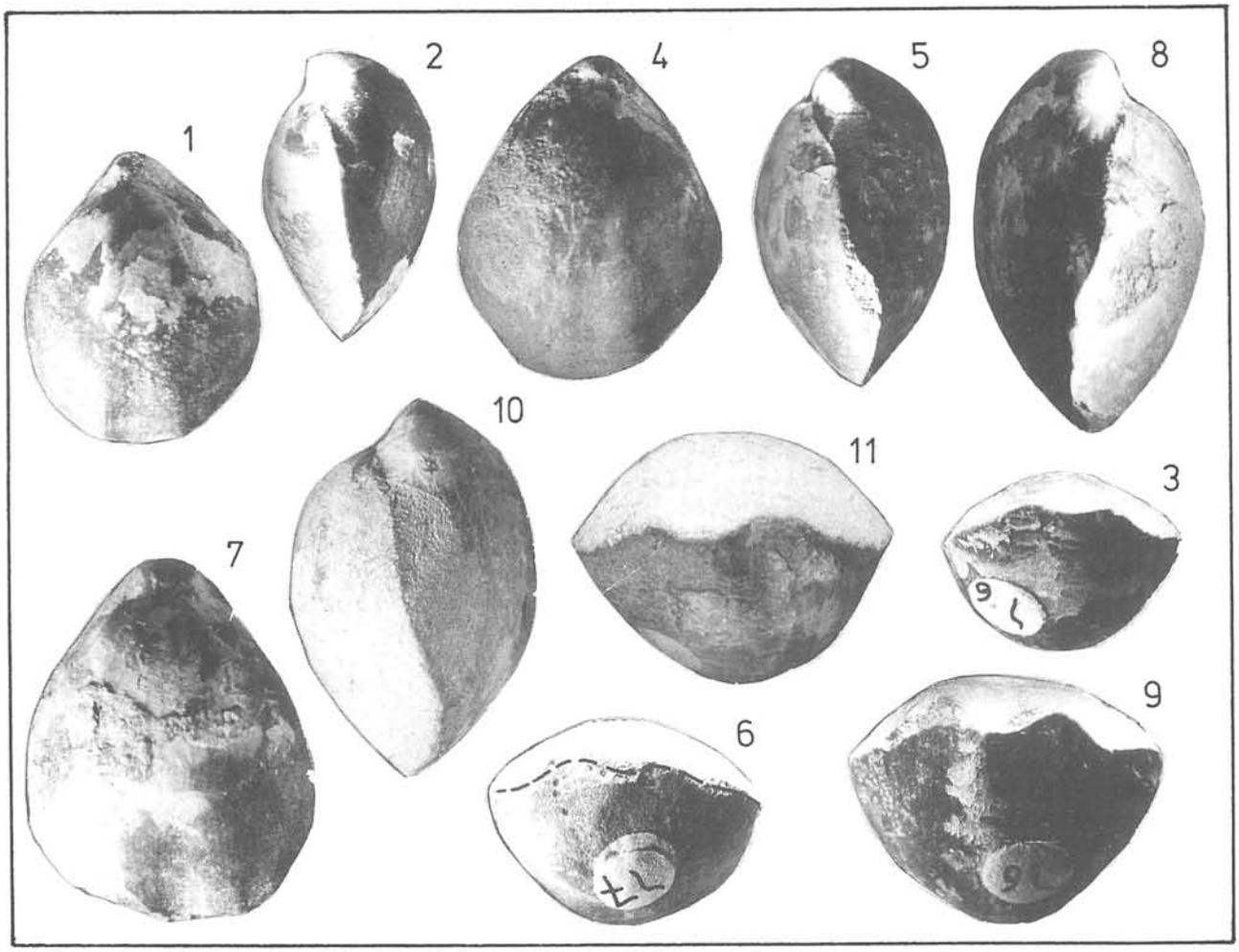

Plate 1. *Neaguithyris neagui* gen. and sp. nov.
Figs. 1–3. Paratype, L. P. B. IIIb 0197; Figs. 4–6. Paratype, L.P.B. IIIb 0197; Figs. 7–9. Holotype, L. P. B. IIIb 0196; Figs. 10–11. Paratype, L. P. B. IIIb 0197. It is a specimen which revealed very clear the features of the frontal and lateral commissures.
All the figures: approx. X 2. Photos: Bostan V. (University of Bucharest).

Neaguithyris neagui sp. nov.
(Pl. 1, Figs. 1–11, Text-figs. 1–5)

Holotype: specimen L. P. B. III b 0196, figured here in Pl. 1, Figs. 7–9.

Dimensions of the holotype: $L_p = 26.1$; $L_b = 22.5$; $W = 20.3$; $t = 16.0$; $t_b = 8.7$; $LFS = 8.7$; $P = 17.8$; $d = 7.9$; $D = 15.4$; $p = 1.1$; $H = 2.9$ (dimensions given in milimeters). $L_p/L_b = 0.862$; $W/L_p = 0.777$; $t/L_p = 0.613$; $t_b/t = 0.543$; $P/L_p = 0.681$; $d/L_p = 0.302$; $p/d = 0.139$; $H/D = 0.188$[1].

Derivatio nominis: as for genus.

Stratum typicum: the "bank with brachiopods", Vama Strunga-Strungulița, Bucegi Mountains, Romania, Upper Bajocian to Lowermost Bathonian ina age.

Material: Twenty five well preserved specimens, L. P. B. III b 0197. Other two specimens (L. P. B. III b 0198) had been transversally sectioned. Over thirty bad preserved specimens had been not inventarised.

Dimensions: the ranges of the main external features are:
$L_p = 20.0–31.9$ *mm*; $W = 15.7–24.9$ *mm*;
$t = 12.3–18.6$ *mm*; $d = 4.4–11.2$ *mm*; $p = 0.4–2.5$ *mm*;
$D = 10.6–16.3$ *mm*; $H = 2.0–5.3$ *mm*.
The ranges for the main ratios are:
$W/L_p = 0.722–0.847$; $t/L_p = 0.515–0.676$;
$t_b/t = 0.409–0.643$; $P/L_p = 0.563–0.701$;
$p/d = 0.056–0.187$.

Two regression lines, obtained by the least squares method are presented here:

$$W = L_p \,.\, 0.77–1.67$$
$$t = L_p \,.\, 0.69–4.68$$

1) L_p – length of the pedicle valve; L_b – length of the brachial valve; W – maximum width; t – thickness; t_b – thickness of the brachial valve; LFS – length of the folded part of the shell; P – length from the posterior margin to the maximum width; d – length of the sinus; p – depth of the sinus; D – length of the fold; H – heigth of the fold.

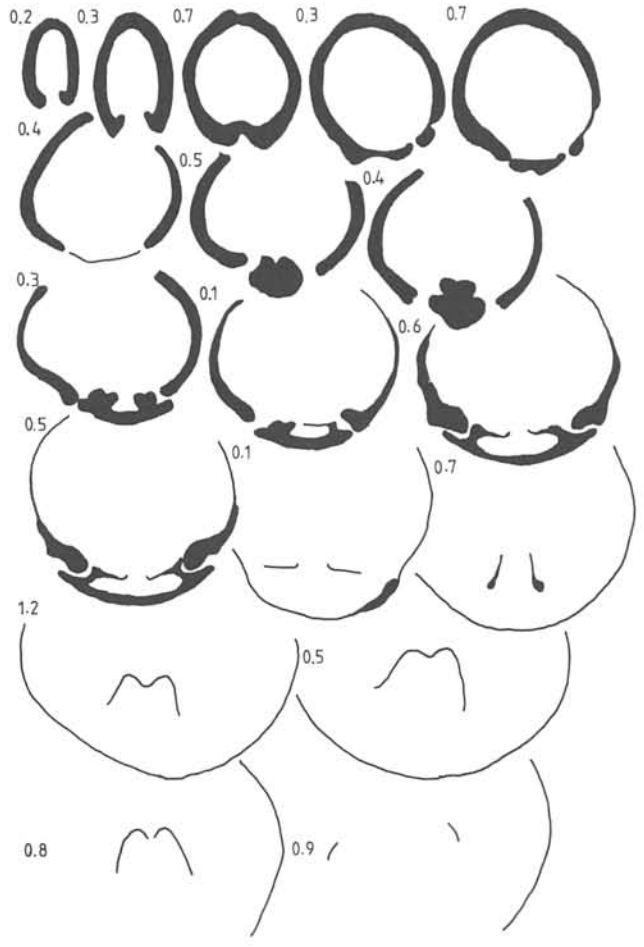

Fig. 2. Series of eighteen serial transverse sections through a specimen of *Neaguithyris neagui* gen. and sp. nov. (L_v = 28.0 *mm*).

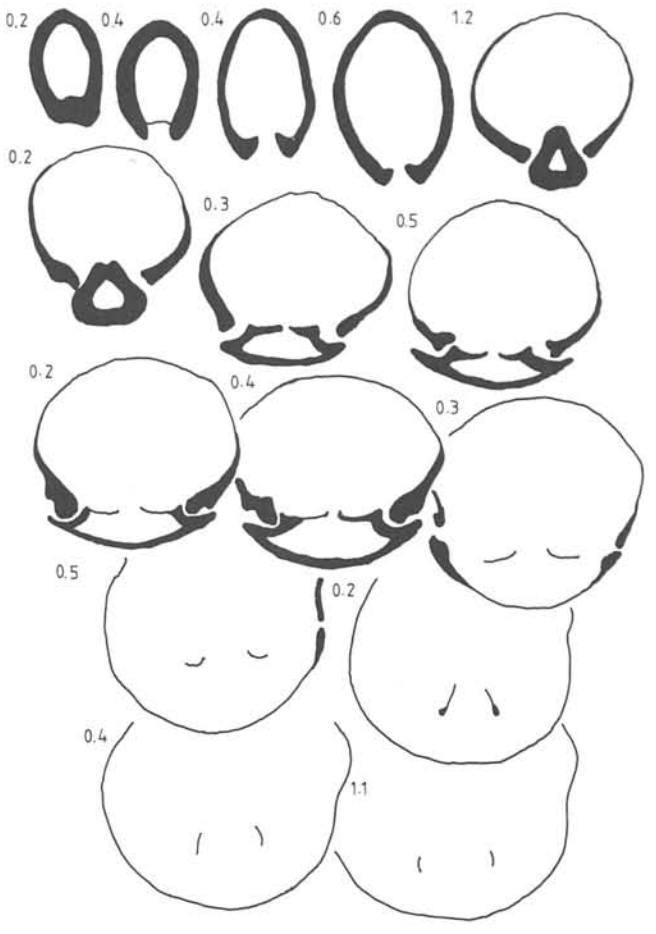

Fig. 3. Series of fifteen serial transverse sections through a specimen of *Neaguithyris neagui* gen. and sp. nov. (L_v = 25.7 *mm*).

Description: External features. Medium sized shells, with pentagonal rounded outline. The maximum width is attained anteriorly, not far from the middle of the valves. Shells biconvex, the pedicle valve being more convex than the brachial one. The lateral commissures are slightly inclined ventrally, having anteriorly a rounded sinus; the frontal commissure is rectimarginate at the small specimens, becoming then uniplicate and finally low and rounded sulciplicate. Massive beak is suberect to erect. Beak ridges are rounded. Foramen is circular, medium sized and mesothyrid. Symphytium is low and well exposed. Folding of the valves is anteriorly present, and usually weak. Smooth valve surface presents rarely fine growth lines. Internal features are developed in the pedicle valve. Short and thin pedicle collar and a well developed symphytium. Cardinal process is initially low and bilobated, then inflated, and finally separating two well expressed lateral cavities. The cardinal process may be or not accompanied with a umbonal cavity; when present, this has a trigonal rounded shape. Hinge plates are very thin, with very weak inner socket ridge and crural base. The hinge is short; the hinge teeth are rather small and rounded, and the denticulum is very reduced. These are inserted into the very large hinge sockets on the brachial valve. The crural processes are short, thin, dorsally pointed, having dorsal vergence. The crura are thin and short. The transverse band is typically bilobated. The distal parts of the brachidium are relativelly short. There is no euseptoidum.

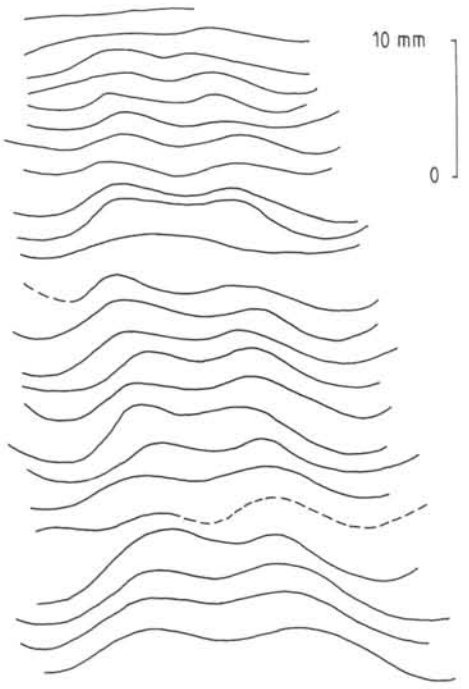

Fig. 4. *Neaguithyris neagui* gen. and sp. nov. The variation of the frontal commissure.

Remarks: This species differs of *N. dubia* (SEIFERT), initially attributed to *Lobothyris* BUCKMAN, by a reduced folding of the two valves, by the low and rounded frontal commissure, as well as the convexity of the valves.

Stratigraphical and geographical distribution: Up to date, our species is restricted to the Upper Bajocian–Lowermost Bathonian from Bucegi Mountains, Romania.

Paleoecology: This species inhabited the epicontinental seas, with oxygenated waters, and of somewhat high energy, which can be prooved by the great amount of broken shells collected. There are no evidences concerning the predation.

Paleobiogeography: *Neaguithyris* nov. seems to be the ancestor of a group of *Terebratulidae*, characterised by the very thin internal structures. It is recorded from the Middle Bajocian to Lowermost Bathonian of Germany and Romania strata. Its descendants reached the western seas probably during the Callovian transgression.

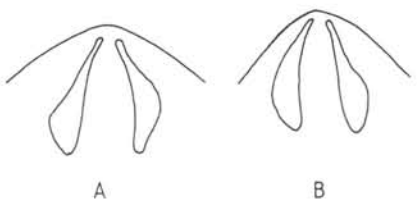

Fig. 5. The impressions of the dorsal adductor muscles on two specimens of *Neaguithyris neagui* gen. and sp. nov. (x 6.3).

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