

New Pelecypods from the Paleogene of Ukraine

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Abstract—Two new species and one new subspecies of the family Arcidae, i.e., *Arca parita*, *A. nefanda*, and *A. conformis mandrikovkaensis*, from the Paleogene deposits of Ukraine, are described. Several new species of the families Parallelodontidae, i.e., *Porterius mira* and *P. promptus*, and Chamidae, i.e., *Chama petala* and *C. deplanata*, are described.

INTRODUCTION

A reexamination of members of the family Arcidae from the Paleogene deposits of Ukraine revealed the presence of the following five species: *Arca montensis* Cossm., *A. sandbergeri* Desh., *A. conformis* Koen. (represented by a new subspecies), *A. parita* sp. nov., and *A. nefanda* sp. nov. The valves that were earlier determined as *A. biangula* Lmk. (Klyushnikov, 1958; Korobkov, 1962) and *A. minuata* Desh. (Makarenko and Zelinskaya, 1982) should be assigned to *A. sandbergeri*.

The genus *Porterius* is similar to *Barbatia* but has long and horizontal lamellar teeth of the posterior tooth branch (Fig. 1). The fossil members of this genus are rather scarce. In particular, only two species are known from the Eocene of Europe, i.e., *P. adversidentata* (Desh.) from the Lutetian of the Paris Basin (Deshayes, 1856–1860, p. 907, pl. 68, figs. 7–9) and *P. decussata* (Nyst) from the Latdorfian–Rupelian of Germany and Belgium (Koenen, 1893–1894, p. 1104, pl. 70, figs. 11–14). According to previous publications, the genus appears in the Eocene (*Treatise...*, 1969). However, it also occurred in the Late Paleocene of Ukraine. This was discovered after a revision of pelecypods from the Luzanovka Beds. Originally, these forms were described as *Parallelodon faxensis* (Ravn) (Makarenko, 1979). The genus *Proterius* was first reported from the Eocene of Ukraine. The species *P. decussata* (Nyst) and *P. prompta* sp. nov. were found in the Upper Eocene, Mandrikovka Beds; the species *P. mira* sp. nov. was found in the Middle Eocene in the vicinity of Nikopol.

A revision of the genus *Chama* from the Eocene of Ukraine revealed the presence of seven species of this group, i.e., *C. calcarata* Desh., *C. sulcata* Desh., *C. fimbriata* Defr., *C. papyracea* Desh., *C. monstrosa* Phil., and two new species described below.

The material described in the present paper is housed at the Geological Museum of the Technical University of Krivoi Rog (GMKTU).

SYSTEMATIC PALEONTOLOGY

Family Arcidae Lamarck, 1809

Genus *Arca* Linnaeus, 1758

Subgenus *Arca sensu stricto*

Arca (Arca) parita Berezovsky, sp. nov.

Plate 1, fig. 1

E t y m o l o g y. From the Latin *paritum* (obvious).

H o l o t y p e. GMKTU, no. L-12/1, right valve, village of Luzanovka, Cherkassy Region; Lower Paleocene, Luzanovka Beds.

D e s c r i p t i o n. The shell is up to 40 mm long, elongated, irregularly trapezoid, and strongly convex. The valves have an angular but low posterior carina and a pointed beak. The posterior area is concave and bears the median groove. The anterior area is almost flat with a convex central area. The anterior and posterior margins are almost straight and truncated; the ventral margin is irregularly concave.

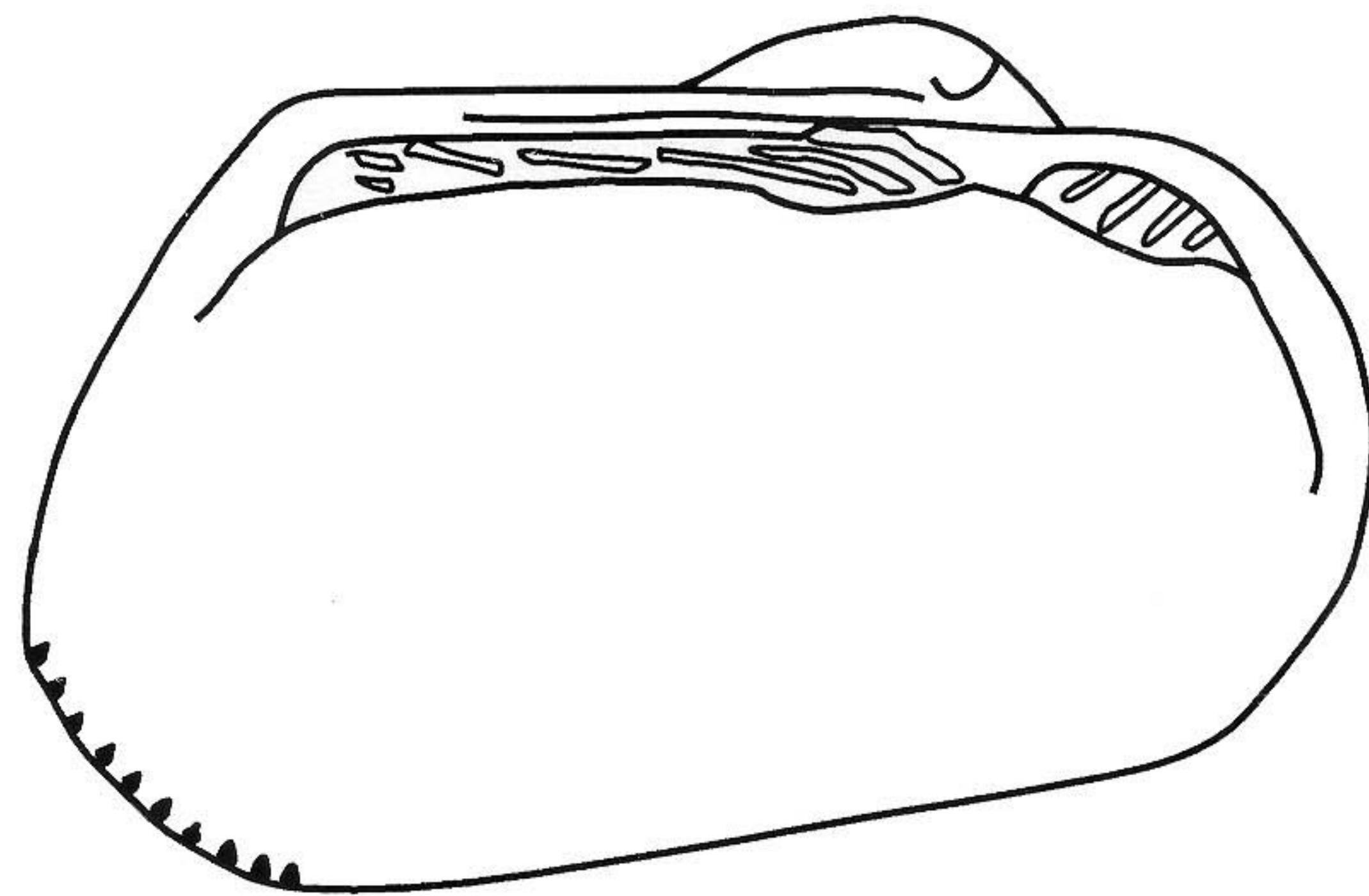
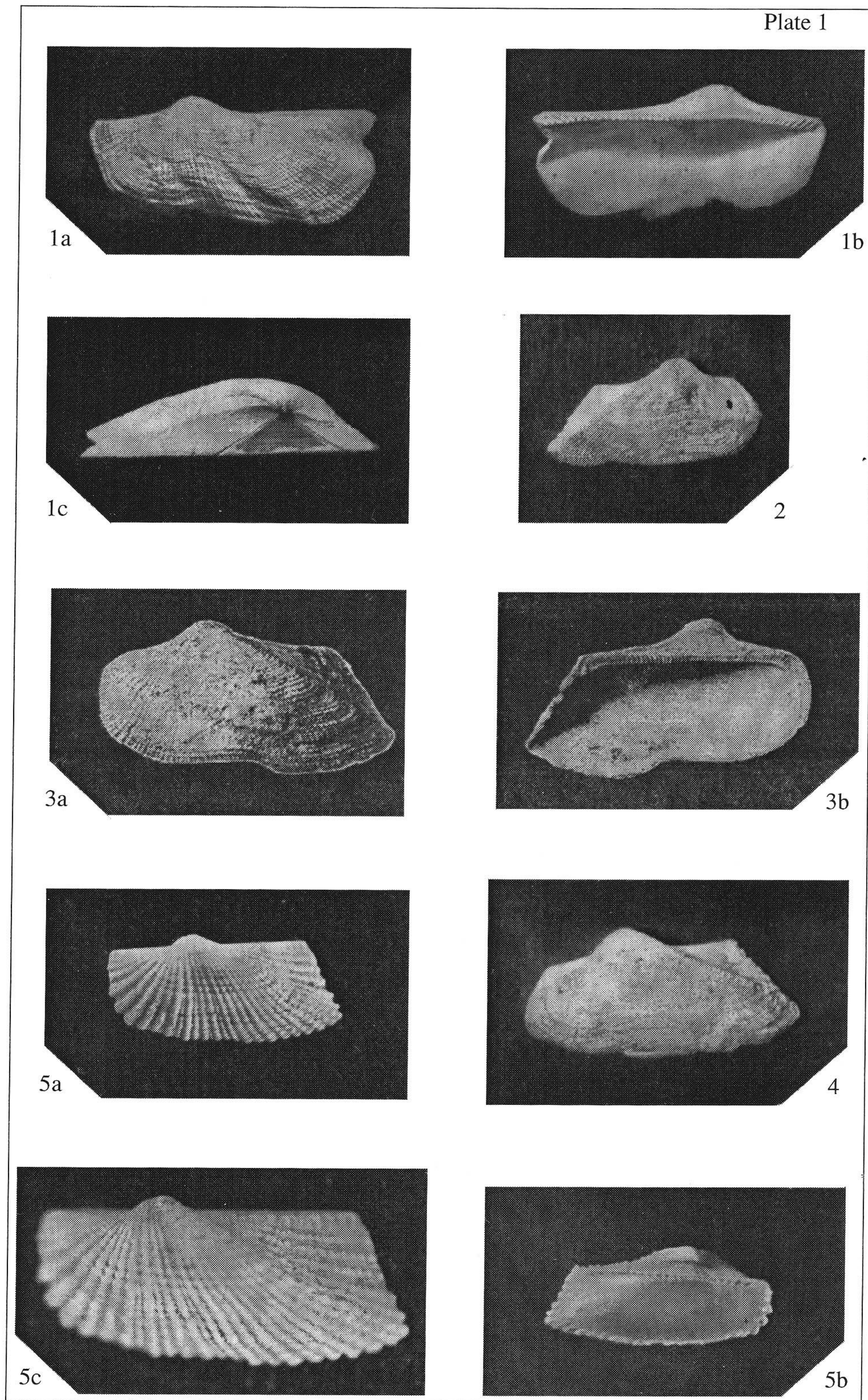


Fig. 1. Hinge morphology of the left valve of the genus *Porterius*, $\times 1.8$.



The external surface is covered by numerous thin radial ribs 0.2–0.3 mm wide. In addition to the median groove, the posterior area bears very fine and discontinuous radial striae 0.1 mm in width. The striae are separated from each other by intervals 0.3 mm wide. The

rest of the valve surface is covered by distinct ribs 0.2–0.3 mm wide. The ribs diverge from the posterior carina to the border between the central and anterior areas; thus, the width of the intervals between the ribs is about 0.25 mm near the posterior carina, 0.50 mm in the cen-

Explanation of Plate 1

Fig. 1. *Arca parita* sp. nov.; holotype GMKTU, no. L-12/1, $\times 1.3$, village of Luzanovka, Cherkassy Region, Ukraine; Lower Paleocene: (a) externally, (b) internally, and (c) umbilical view.

Figs. 2–4. *Arca nefanda* sp. nov.; Dnepropetrovsk, Ukraine; Upper Eocene: (2) specimen GMKTU, no. M-9/1, externally, $\times 1.6$; (3) specimen figured by Sokolov (1905, pl. 4, fig. 2), $\times 2.0$: (a) externally and (b) internally; and (4) holotype GMKTU, no. M-9/2, externally, $\times 1.7$.

Fig. 5. *Arca conformis mandrikovkaensis* subsp. nov.; holotype GMKTU, no. M-10/4; Dnepropetrovsk, Ukraine; Upper Eocene: (a) externally, $\times 10.0$; (b) internally, $\times 10.0$; and (c) externally, $\times 16.0$.

tral part, and 0.80–0.90 mm on the anterior area. All the ribs are covered by small nodes. On the posterior part of the central area, the ribs are crossed by lamellar growth lines. The narrow median depression extends from the umbo.

The ligament area is triangular, 5–6 mm wide, and bears two chevron furrows connected to each other below the umbo. The hinge margin is narrow; its width is 0.8 mm in the middle and 1.7–2.0 mm on the flanks. The dental row consists of numerous fine teeth, which are gradually inclined to the valve margins.

The gape is large and distinct. Its length in large shells is 14–15 mm; the width is 6.5 mm. The adductor scars are rounded and rectangular. Interiorly, the valve margins are smooth.

Measurements, mm:

Specimen GMKTU, no.	L	H	W	PML	H/L	W/H	PML/L
holotype L-12/1	40.4	16.0	9.2	30.0	0.40	0.58	0.74
L-12/2	32.9	13.3	8.1	23.1	0.40	0.61	0.70

Remarks. The length of the holotype includes the posterior part, which is broken off, of the valve. Abbreviations: (L) valve length; (H) valve height; (W) shell width, convexity; and (PML) length of the posterior margin.

Comparison. The new species differs from the cooccurring *A. montensis* Cossm. by a larger shell (among 300 studied shells, the largest specimen of *A. montensis* is 20.5 mm long) and by the type of ornamentation (the ribs of the new species are two or three times wider than those of *A. montensis*). Similar ornamentation is observed in *A. sandbergeri* Desh. from the Eocene and Oligocene; however, the new species can be easily identified by the number of chevron furrows (two instead of five or more in *A. sandbergeri*), the presence of median groove on the posterior area, and by the absence of furrows on the edge of the carina.

Material. Two adult and ten immature valves from the type locality.

Arca (Arca) nefanda Berezovsky, sp. nov.

Plate 1, figs. 2–4

Arca sandbergeri Desh.: Sokolov, 1905, pl. 4, fig. 2 (non figs. 1, 3, and 4).

Etymology. From the Latin *nefandus* (villainous).

Holotype. GMKTU, no. M-9/2, left valve; Rybal'skii quarry, Dnepropetrovsk, Ukraine; Upper Eocene, Mandrikovka Beds.

Description. The shell is up to 25 mm long, elongated, irregularly trapezoid, strongly convex, with a subcentral umbo. The valve bears a sharp posterior carina. The posterior area is flat; the central and anterior areas are convex. The anterior margin is evenly rounded, the posterior margin is straight and truncate, and the ventral margin is almost straight.

The valves are covered by radial and concentric ribs; the ribs cross to form nodes or scales. The posterior area bears 10–11 radial ribs; 6–7 of them are relatively high and up to 0.5 mm wide. The other ribs are intercalatory; they are lower, thinner, and up to 0.3 mm wide. The ribs are covered by arched and flat scales. Thin and straight regular crosspieces lie between the ribs. The crosspieces are substantially lower and thinner than the ribs; their width is about 0.05 mm. The crosspieces extend onto the ribs, become lamelliform, and transform into scales. At the edge of the largest valve, the crosspieces become lamellar concentric ribs. The radial ribs of the central area are threadlike; the concentric ribs are lamellar. The scales are located near the carina, while the remaining surface is covered by nodes. The area covered by scales comprises approximately 30% of the total area of the central field. The radial ribs are regularly spaced and almost equal in width (up to 0.2 mm). Only the border between the central and anterior areas bears three to five more prominent ribs (up to 0.3 mm wide). The intervals between the ribs are approximately as wide as the ribs. The radial ribs are crossed by concentric laminae. The laminae are unevenly spaced, irregularly undulating, and 0.1–0.2 mm wide. The anterior area is similar in ornamentation to the anterior region of the central area. However, sometimes, it consists of thicker radial ribs up to 0.3–0.4 mm wide.

The ligamental area is triangular, up to 4.5 mm wide, and bears up to five chevron furrows. The hinge margin is narrow, 1.2 mm thick, and covered by fine and short teeth. The gape of the valves is small or virtually absent. The adductor scars and pallial line are imperceptible. The posterior margin is finely corrugated interiorly, and the ventral and anterior margins are smooth.

Measurements, mm:

Specimen GMKTU, no.	L	H	W	PML	H/L	W/H	PML/L
holotype M-9/2	24.9	12.3	7.0	15.5	0.49	0.57	0.62
M-9/1	20.0	9.0	5.1	12.9	0.50	0.52	0.65
M-9/3	22.0	10.5	5.8	16.0	0.48	0.55	0.73

Comparison. The new species is very similar to *A. sandbergeri* (Deshayes, 1856–1860, p. 868, pl. 68, figs. 1–3), but the study of more than 80 valves of the latter species found in the Eocene deposits of Ukraine revealed certain distinctive features. The new species is distinguished by the structure of the top of the posterior carina, the size of the gape, and ornamentation. The top of the posterior carina of *A. nefanda* is always sharp, while, in *A. sandbergeri*, it bears a distinct furrow; the gape is almost absent, while, in *A. sandbergeri*, it is clear even in immature forms. The posterior area of *A. nefanda* bears 6 or 7 prominent radial ribs, while *A. sandbergeri* has only 2–4. The ribs on the central area of the new species are approximately half as thick as those of *A. sandbergeri*. In addition, the ribs are not densely spaced near the carina and the anterior part of the central area bears equal radial ribs. In contrast, *A. sandbergeri* has several small intercalatory ribs between the pair of prominent radial ribs.

A. nefanda can be easily distinguished from juvenile *A. biangula* (Cossmann and Pissaro, 1904–1906, pl. 35, fig. 110-1) by radial ribs that are two to three times more densely spaced.

Material. Three valves from the type locality.

***Arca conformis* Koenen, 1894**

Arca (Arca) conformis mandrikovkaensis Berezovsky, subsp. nov.

Plate 1, fig. 5

Arca conformis Koenen var.: Sokolov, 1905, p. 20, pl. 4, figs. 7–10.

Etymology. After the Mandrikovka Beds.

Holotype. GMKTU, no. M-10/4, left valve, Rybal'skii quarry, Dnepropetrovsk, Ukraine; Upper Eocene, Mandrikovka Beds.

Description. The shell is up to 14 mm long, irregularly parallelogram in outline, and moderately convex. The umbo only slightly projects and is displaced anteriorly. The valves bear distinct posterior carina with a rounded top. The posterior field is flat or slightly concave. The anterior and ventral fields are convex. The depression extending from the umbo to the ventral margin is in the center of the central field. The anterior margin is unevenly rounded; the point of the maximum convexity lies close to the hinge. The ventral margin is slightly undulating due to the gape. The posterior margin is truncated and straight or slightly concave.

The entire external surface is covered by coarse, uniform radial ribs. Some specimens have distinct irregular concentric laminae on the central field. The ribs are ridgelike, with nodes, and up to 0.2 mm wide.

Sometimes, a single intercalatory rib (0.05 mm wide) lies between the main ribs. The posterior field has five to seven equally developed radial ribs.

The area is trapezoid, up to 6 mm wide, and bears two straight or arched chevrons. The hinge margin is narrow, 0.2–0.3 mm wide. The gape is small and almost invisible. The posterior adductor scar is rounded trapezoid and significantly larger than irregular rounded anterior scar. The pallial line is poorly pronounced. The valve margin is serrated interiorly, except for the smooth segment of the ventral margin, which forms the gape.

Measurements, mm:

Specimen GMKTU, no.	L	H	W	PML	H/L	W/H	PML/L
holotype M-10/4	3.4	1.3	0.9	2.0	0.75	0.75	0.83
M-10/1	6.5	3.5	1.9	3.7	0.54	0.54	0.57
M-10/9	3.0	1.1	0.8	1.9	0.76	0.87	0.86

Age variability. The valves less than 1 mm have a smooth upper part. The valves ranging from 5 to 7 mm are more elongated (0.73–0.85, on average, 0.79), more convex (0.82–0.91, on average, 0.86), and more equilateral (0.83–0.89, on average, 0.86).

Comparison. The valves longer than 10 mm assigned to the new subspecies from the Mandrikovka Beds differ from the nominative form by a greater elongation (the mean values are 0.46 and 0.54, respectively) and less equilateral shape (0.61 and 0.72). The difference in these parameters between immature shells 5–7 mm long is greater.

Material. 32 valves from the type locality.

Family Parallelodontidae Dall, 1898**Genus *Porterius* Clark, 1925**

Porterius mira Berezovsky, sp. nov.

Etymology. From the Latin *mirus* (remarkable).

Holotype. GMKTU, no. N-17/1, left valve; vicinity of Nikopol; Middle Eocene, Kiev Horizon.

Description. (Fig. 2). The shell is up to 8 mm long, rounded rectangular, and moderately convex. The anterior and posterior margins are rounded, and the ventral margin is straight. The valves have a low and gentle posterior carina and distinct depression extending from the umbo to the middle of the ventral margin.

The ornamentation is composed of radial ribs and concentric furrows. The ribs and furrows cross to form small, regular, square nodes. Rounded pits located in the interrib spaces decorate the corners of the nodes. The radial ribs are thin, with a flat top, and slightly curved. The rib width is about 0.1 mm, and it is almost constant throughout the valve surface; only the posterior carina bears about ten ribs 0.15 mm wide. The interrib spaces are 2–2.5 times narrower than the ribs, but the spaces on the anterior field are of the same width as the ribs. The concentric furrows are replaced by indistinct striae on the posterior field.

The hinge margin is narrow, becomes wider on its flanks, and has a straight upper edge and arcuate lower edge. The teeth are absent from the sub-umbilical area. The length of the dental series is about 65% of the valvelength. The short anterior branch bears six or seven small oblique teeth. The long posterior branch bears the same number of teeth; however, the anterior teeth are long and horizontal, while the posterior teeth are short and oblique. The teeth are ornamented by coarse transverse hatching. The area is short and triangular, its length constitutes about 50% of the valve length, and its width is about 12% of the valve convexity. The posterior part of the area bears two ligament ridges; the remaining surface is smooth. The adductor scars and pallial line are indistinguishable. The negative ornamentation is absent. The interior edges of the valves are smooth; only the segment near the contact between the posterior and ventral margins is serrated.

M e a s u r e m e n t s, mm:

Specimen GMKTU, no.	L	H	W	H/L	W/H
holotype N-17/1	5.0	3.0	1.0	0.60	0.33
N-17/2	7.7	4.8	1.5	0.62	0.41

C o m p a r i s o n. The new species clearly differs from *P. decussata* (Nyst) from the Upper Eocene of Germany and *P. adversidentata* (Desh.) from the Middle Eocene of France by ornamentation, shell outline, less projecting umbo, and less curved ribs. The external surface of *P. mira* sp. nov. is covered by regular square nodes, while the above mentioned species have rectangular nodes formed by more widely spaced concentric furrows. The outlines of *P. mira* sp. nov. are rounded rectangular rather than irregularly oval; the radial ribs on the anterior field are almost straight, whereas, in the other species of the genus, they are arched.

M a t e r i a l. Two valves from the type locality.

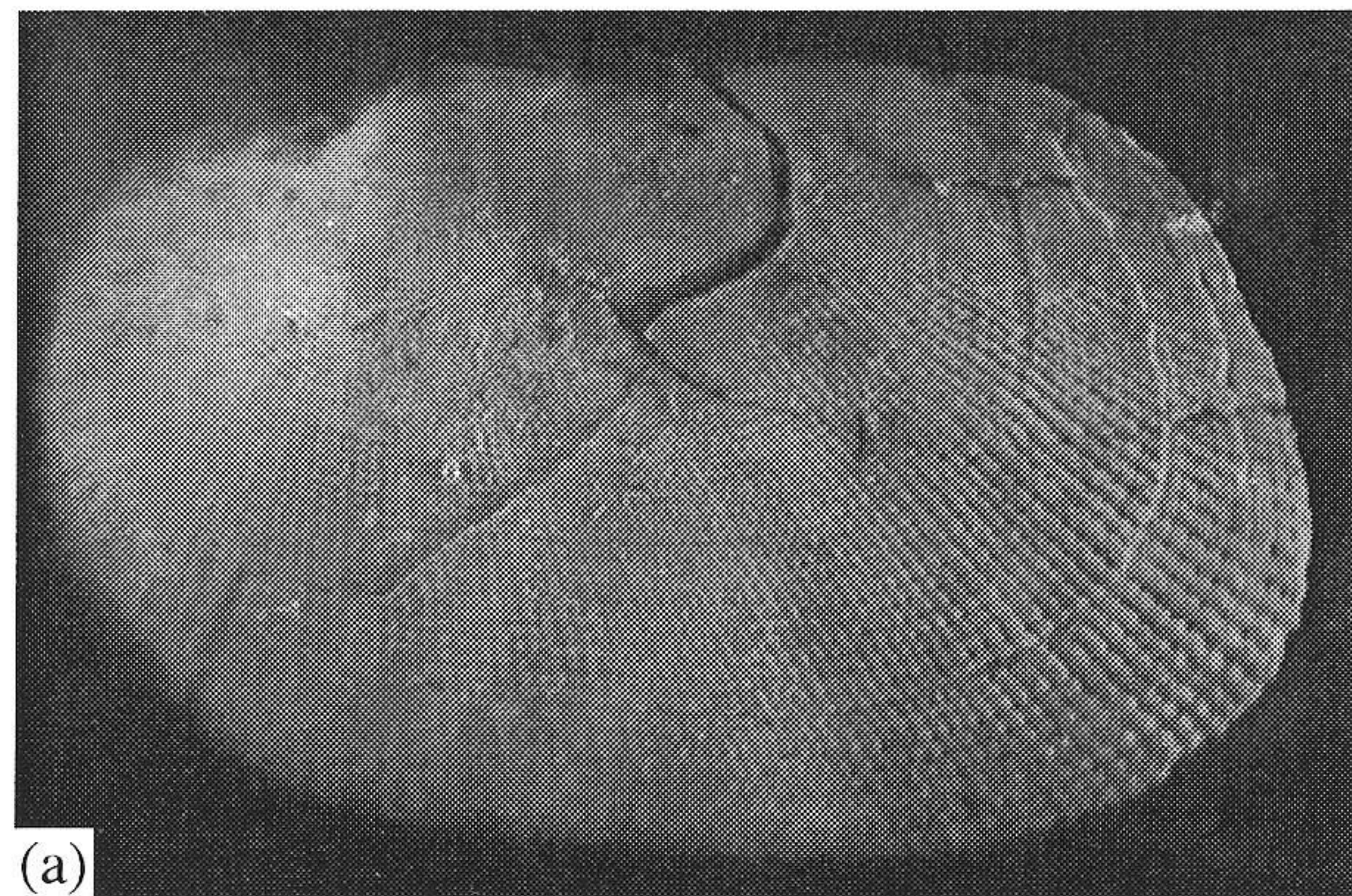
Porterius promptus Berezovsky, sp. nov.

E t y m o l o g y. From the Latin *promptus* (obvious).

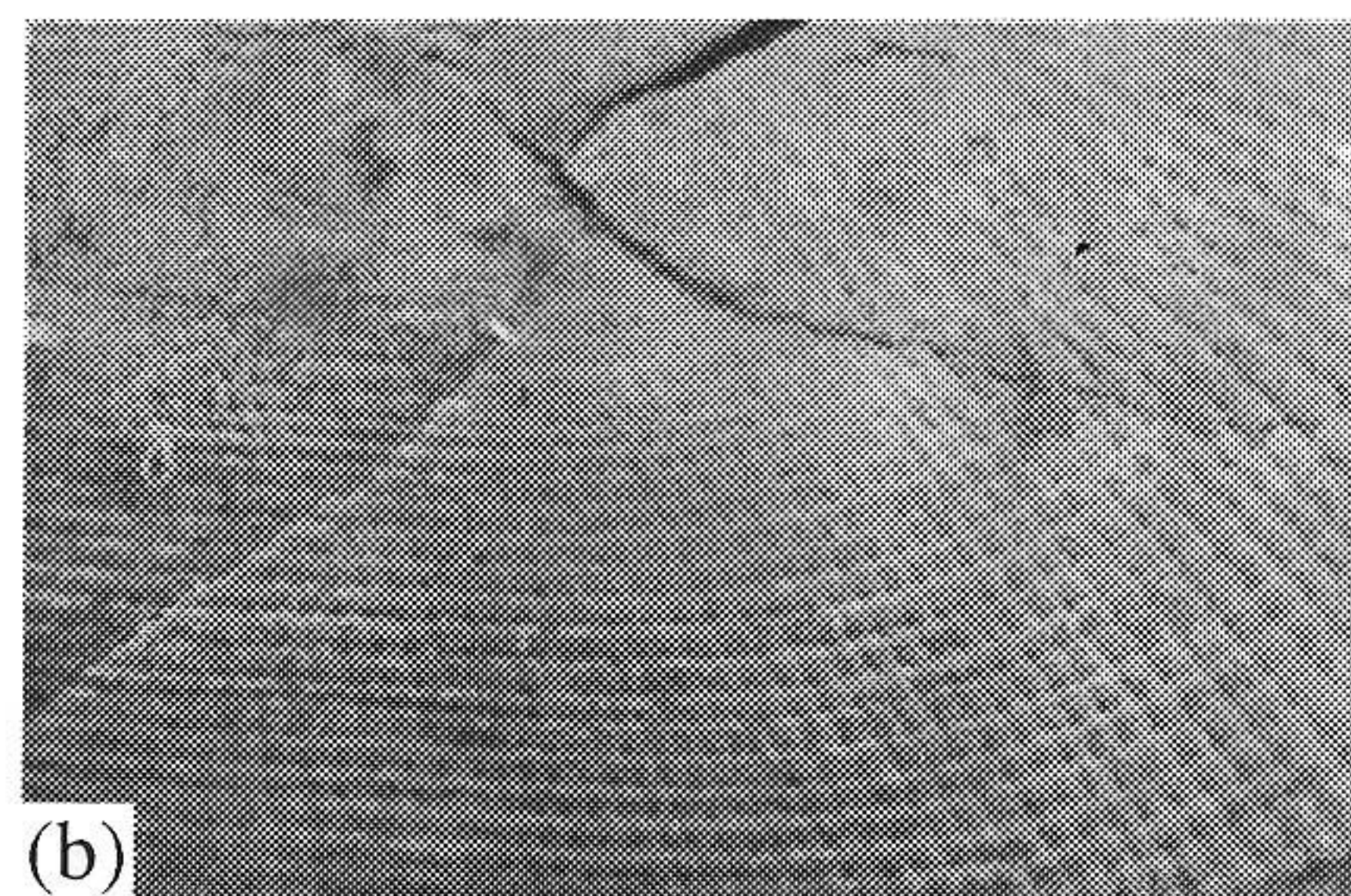
H o l o t y p e. GMKTU, no. N-16/1, right valve; Rybal'skii quarry, Dnepropetrovsk; Upper Eocene, Mandrikovka Beds.

D e s c r i p t i o n. (Fig. 3). The shells are up to 6 mm long, irregularly oval, and moderately convex. The anterior and posterior margins are rounded; the ventral margin is straight or slightly curved. The valves have low and gentle posterior carina.

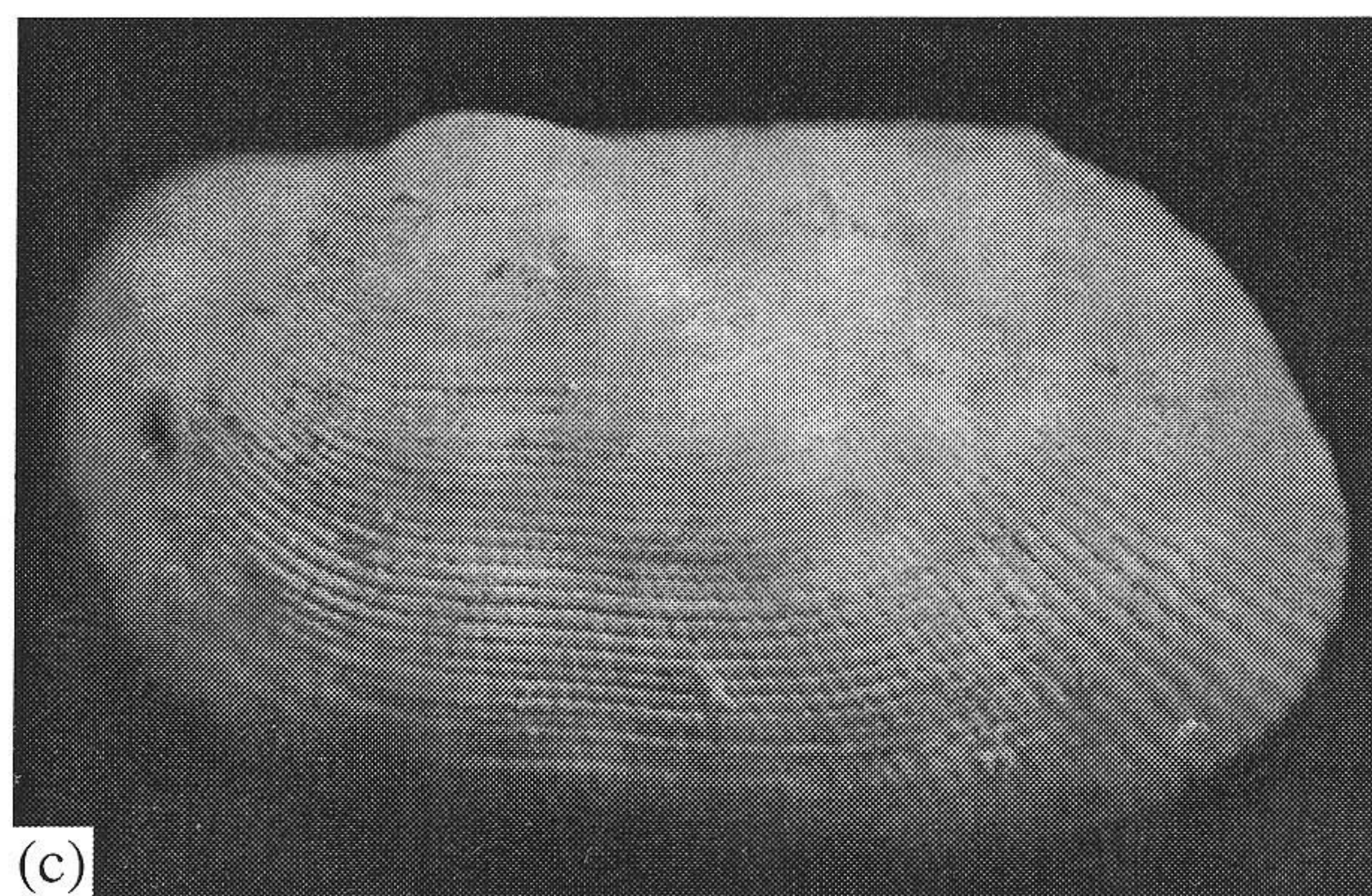
The ornamentation is composed of radial and concentric ribs. The ribs of the two types cross to form small rounded nodes. The radial ribs are thin with convex top; on the anterior and posterior fields, the ribs are strongly curved and widely spaced. The central field is covered by slightly curved and densely spaced ribs. The width of the ribs is about 0.25 mm on the anterior and posterior fields and about 0.1 mm on the central field. The lower part of the central field is covered by thin



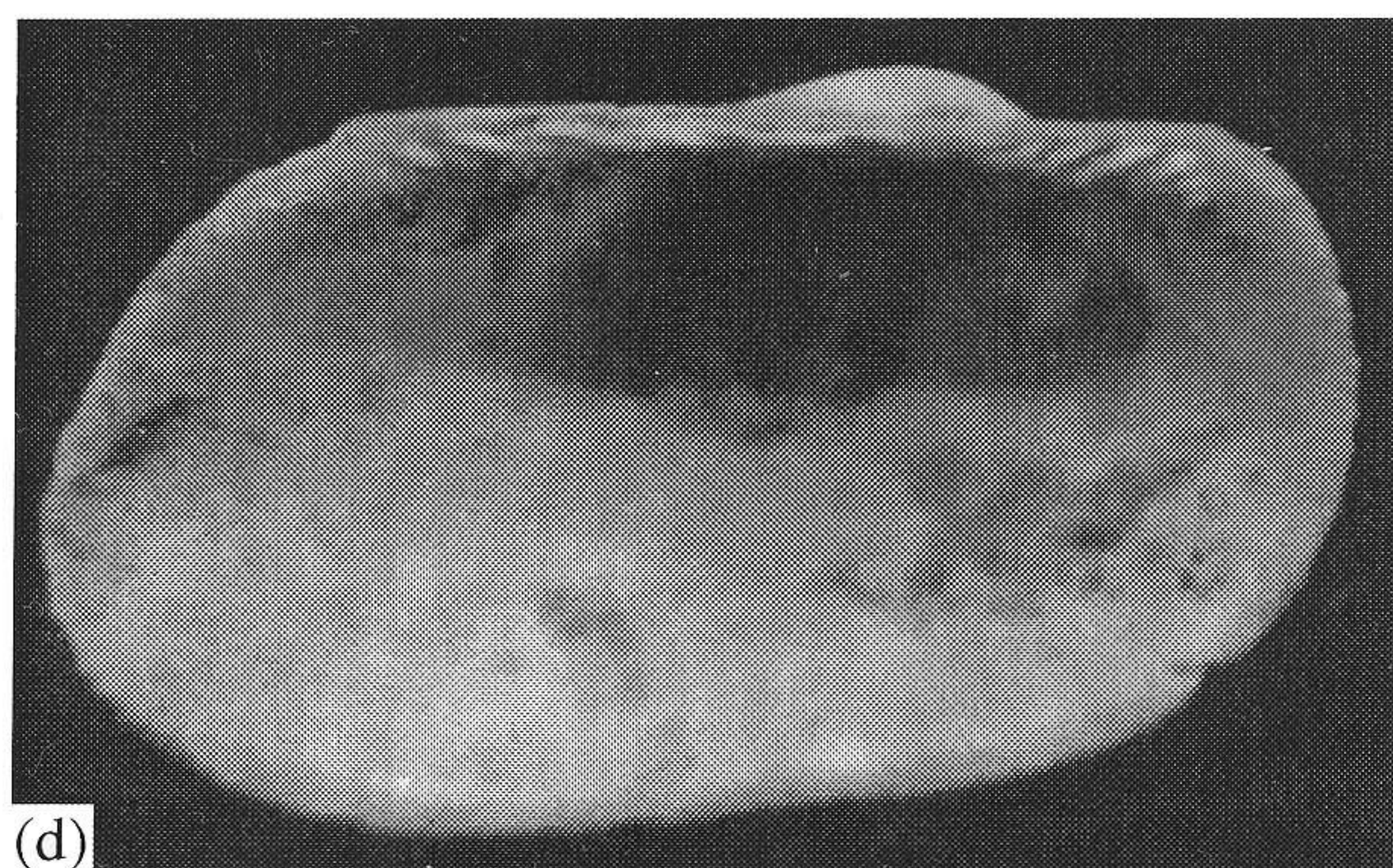
(a)



(b)



(c)



(d)

Fig. 2. *Porterius mira* sp. nov.; vicinity of Nikipol, Dnepropetrovsk Region, Ukraine; Middle Eocene: (a and b) specimen GMKTU, no. N-17/2, left valve: (a) external view, $\times 1.9$; (b) fragment of external surface, $\times 3$; (c and d) holotype GMKTU, no. N-17/1, left valve, $\times 1.9$: (c) external and (d) internal views.

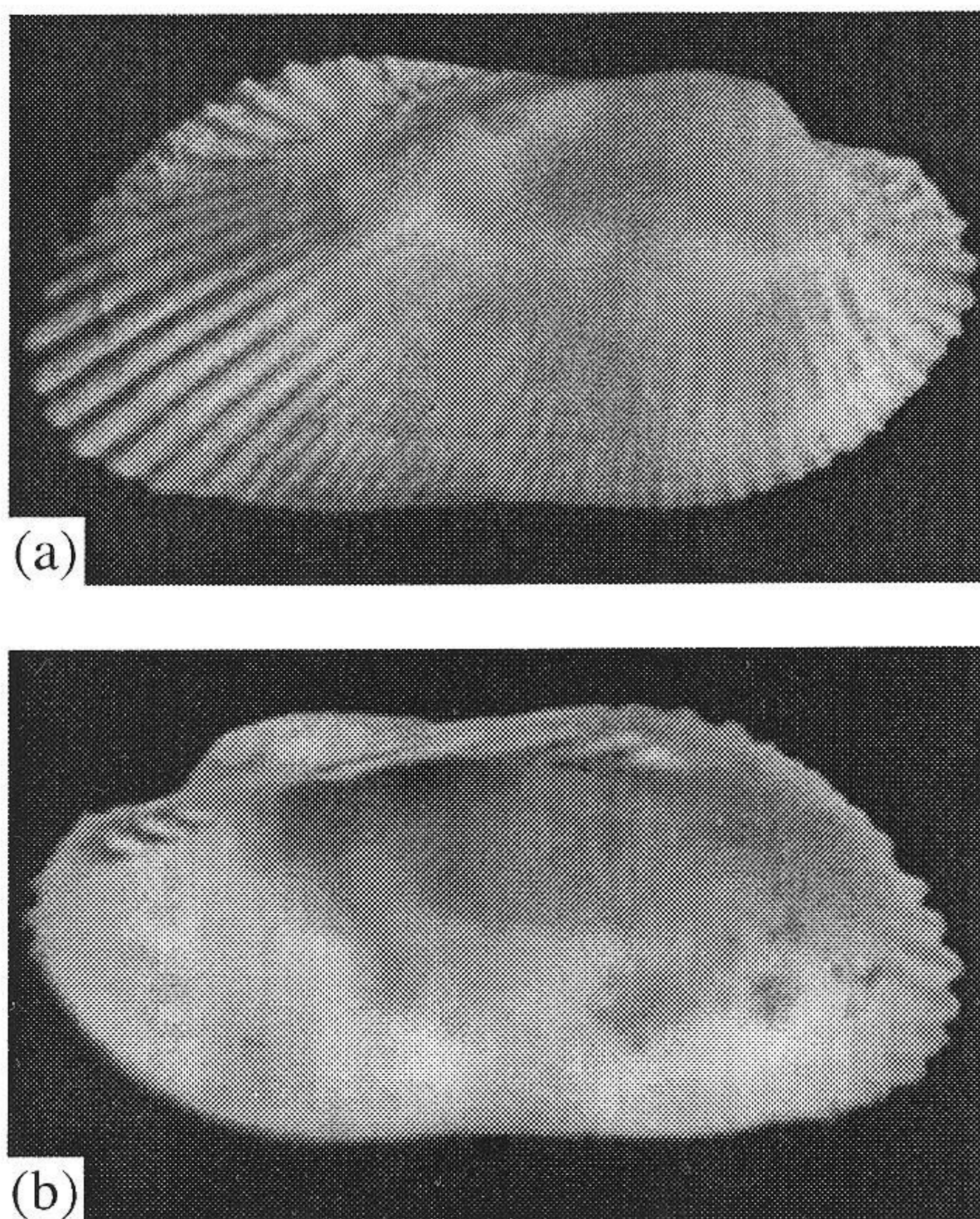


Fig. 3. *Porterius promptus* sp. nov.; holotype GMKTU, no. M-16/1, right valve; Rybal'skii quarry, Dnepropetrovsk, Ukraine; Upper Eocene, $\times 1.9$: (a) external and (b) internal views.

intercalatory radial ribs. The concentric ribs are 0.05 mm wide and are visible only within the grooves between the radial ribs. In addition, the concentric ribs are absent from the posterior field. The interrib spaces are several times as wide as the ribs.

The hinge margin is narrow, has a straight upper edge and an arched lower edge. The hinge margin becomes wide in the center and towards the flanks. The teeth are absent from below the umbo. The dental series is approximately 70% of the valve length. The short anterior branch bears four or five small oblique teeth, and the long posterior branch bears six or seven teeth: three anterior teeth are long and horizontal, and the other teeth are much shorter and slightly oblique. The tooth surface is covered by coarse transverse hatching. The area is short and triangular. Its length is about 50% of the valve length; the width is about 23% of the valve convexity. The posterior part of the area bears two ligament ridges: the remaining surface is smooth. The adductor scars and pallial line are indistinguishable. The interior surface is ornamented by faint radial furrows. The anterior and posterior margins are serrated.

Measurements, mm:

Specimen GMKTU, no.	L	H	W	H/L	W/H
holotype M-16/1	4.0	2.0	0.75	0.50	0.38
M-16/2	5.7	3.1	1.10	0.54	0.36
M-16/3	4.5	2.3	0.80	0.51	0.35

Comparison. The new species clearly differs from *P. adversidentata* (Desh.) from the Lutetian of France and from *P. decussata* from the Latdorfian of Germany by the ornamentation. It is characterized by

coarse and widely spaced radial ribs on the anterior and posterior fields, the presence of concentric ribs rather than furrows, and the absence of pitted ornamentation. In addition, the ribs increase in number by the development of intercalatory ribs rather than by bifurcation of ribs.

Material. Five valves from the type locality.

Family Chamidae Lamarck, 1809

Genus *Chama* Linnaeus, 1758

Subgenus *Chama* sensu stricto

Chama (Chama) deplanata Berezovsky, sp. nov.

Etymology. From the Latin *deplanatus* (flattened).

Holotype. GMKTU, no. M-5/1, left valve; Rybal'skii quarry, Dnepropetrovsk; Upper Eocene, Mandrikovka Beds.

Description. (Fig. 4). The shell is up to 34 mm high. The left (free) valve is rounded or irregularly oval in outlines and slightly convex. The elongation index is 0.86–1.19 (on average, 1.08); the convexity is 0.23–0.36 (on average, 0.28). The valve is covered by overlapping concentric lamellar ridges. The valves are approximately 10 mm high and are decorated by 40–47 concentric lamellar ribs of plates. The plates are densely spaced; in the ventral part, a valve bears 9–11 plates per 10 mm of the valve height. The lower facets of the plates and the interrib spaces are smooth. The upper facets of the plates are covered by furrows and folded. The furrows are developed on the anterior part of shell; they are about 0.1 mm wide. The plates on the posterior part of valve are finely folded. About 10–13 folds fit within the 10 mm of the plate length. The folds are about 0.5 mm wide; the space between them is 1 mm wide. On the ventral margin of large valves, the folds are 1.0–1.5 mm high. Tooth 2 is thin, short (at most 4 mm long), and almost straight. Its lower facet is covered by fine transverse ridges. The dental socket is irregularly oval, up to 4 mm long, and 1.3 mm wide. The nymph is lamellar, arched, and up to 5 mm long. The large adductor scar is 13 mm high and 6.5 mm wide. The anterior adductor scar is 9 mm long and 4.5 mm wide.

The right (lower) valve is irregularly wedge-shaped, strongly convex, and with a sharp bent bordering the attachment surface. Its external surface bears radial striae broken by coarse irregular growth lines. The striae are very densely spaced and 0.1 mm wide. Close to the anterior margin, the valve is covered by concentric lamellar projections. The projections are folded in a similar manner as the folds of the opposite valve; therefore, the projections are serrated. The projections occupy only one-quarter of the external valve surface. Tooth 1 is stout, high, and flattened; it is up to 8 mm long and 1.5 mm wide. Its upper facet is covered by fine transverse ridges. Tooth 3a is distinguishable; it is low, thin, straight, and up to 6 mm long. The adductor scars are irregularly oval; the posterior scar is up to 11 mm

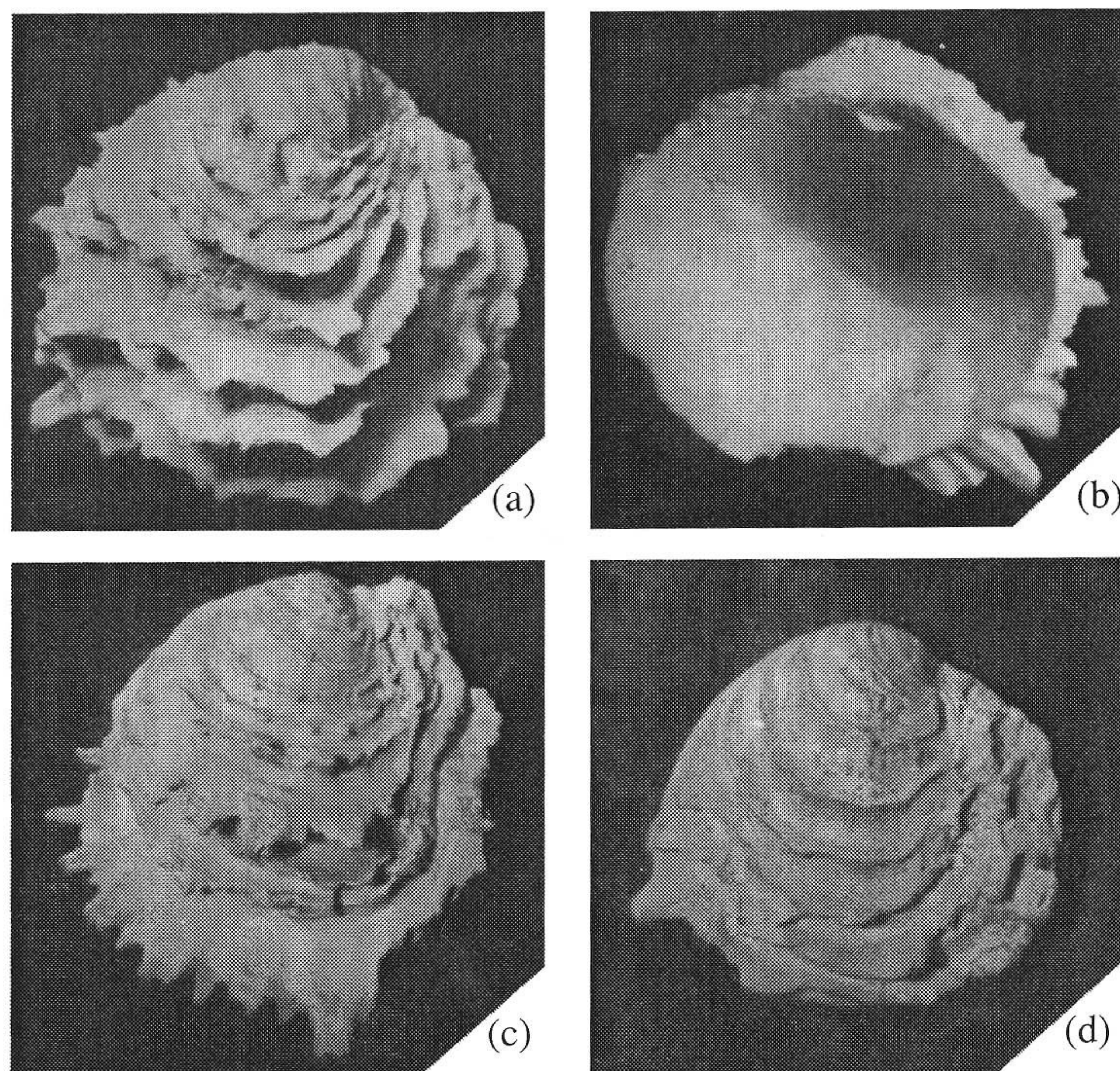


Fig. 4. *Chama deplanata* sp. nov., $\times 1.4$: (a and b) holotype GMKTU, no. M-5/1, free valve; Rybal'skii quarry, Dnepropetrovsk, Ukraine; Upper Eocene: (a) external and (b) internal views; (c) specimen GMKTU, no. M-5/2, free valve, externally; Rybal'skii quarry, Dnepropetrovsk, Ukraine; Upper Eocene; (d) specimen GMKTU, no. Ip-5/9, free valve, externally; InGOK quarry, town of Ingulets, Dnepropetrovsk Region, Ukraine; Middle Eocene.

high and 6 mm wide. The anterior scar is up to 10 mm high and 5 mm wide. The internal surface of both valves is ornamented by numerous small pits 0.05 mm in diameter.

Measurements, mm (free valves):

Specimen GMKTU, no.	L	H	W	H/L	W/H
holotype M-5/1	27.8	24.8	7.2	0.89	0.29
M-5/3	23.9	25.1	7.1	1.05	0.28
M-5/9	19.2	18.6	4.6	0.97	0.25

Comparison. The new species is distinguished by its unique ornamentation, i.e., the presence of the radial furrows on the anterior area of the free valves and the folds on remaining surface and by the absence of concentric ribs and plates on the surface of the lower valves.

Material. 54 valves from the type locality.

Chama (Chama) petala Berezovsky, sp. nov.

Etymology. From the Greek *petalon* (plate).

Holotype. GMKTU, no. M-6/1, left valve; Rybal'skii quarry, Dnepropetrovsk; Upper Eocene, Mandrikovka Beds.

Description (Fig. 5). The shell is up to 50 mm high. The left (free) valve is moderately convex. The

outlines of the valve are very changeable, they vary from circular to irregularly oval. The elongation index is 0.96–1.36 (on average, 1.10), convexity is 0.22–0.44 (on average, 0.34). The valve is covered by high concentric plates decorated with spines. The plates of the umbo are densely spaced; the intervals between them are about 0.5–2.0 mm; ventrally, the intervals between plates increase to 4–5 mm. The valves are 25–30 mm long and have 15–19 such plates. The edges of the plates are spiny. The spines are of two types, i.e., (1) long and wide and (2) short and narrow. Usually, the spines of the two types alternate. The bases of the long and short spines are 3 and about 1 mm wide, respectively. The long spines gradually narrow and have a flat upper side and a slightly convex lower side; a shallow median furrow extends along each side. The furrow on the upper side is slightly deeper and wider than that on the lower side. The spine height varies from 3 to 7 mm or even more. The short spines lack furrows, are needle-shaped, and are up to 3 mm long. The spaces between the plates are covered by radial folds, the lower facets of which end with spines. The folds are 2.5 mm wide and spaced at a distance of 2–5 mm from each other. The upper facets of the plates are smooth.

Tooth 2 is arched, thin, low, and up to 8 mm long and 1.5 mm wide. Its lower facet is decorated by fine transverse ridges. The nymph is lamellar, arched, as long as tooth 2, and slightly higher than the latter. The socket lies below tooth 2; it is irregularly oval in outlines, up

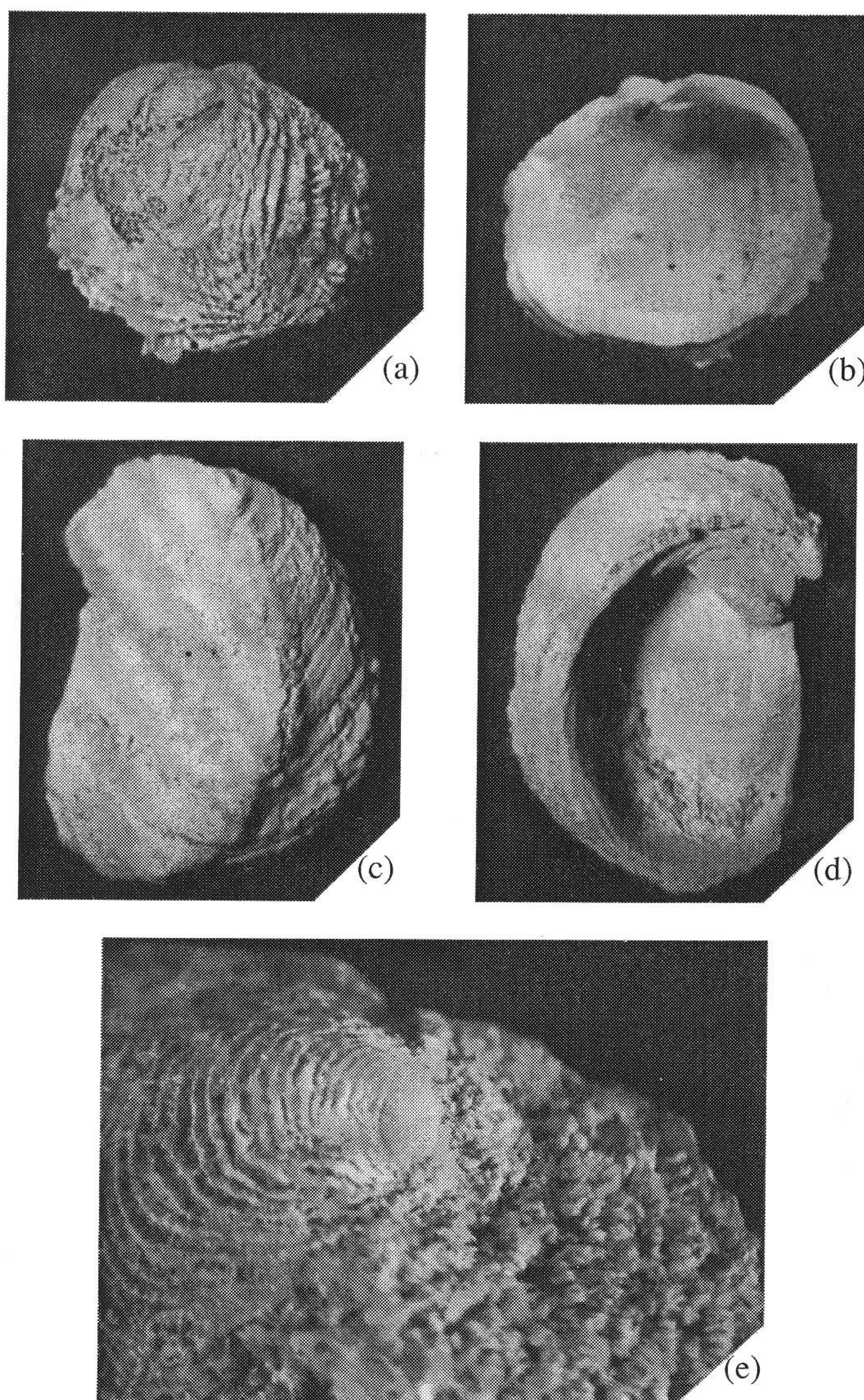


Fig. 5. *Chama petala* sp. nov.; Rybal'skii quarry, Dnepropetrovsk, Ukraine; Upper Eocene: (a and b) holotype GMKTU, no. M-6/1, free valve, $\times 1.4$: (a) external and (b) interior views; (c and d) specimen GMKTU, no. M-6/25, attached valve, $\times 1.4$: (c) external and (d) internal views; and (e) specimen GMKTU, no. M-6/26, ornamentation pattern of the umbilical area of free valve, $\times 7.5$.

to 5 mm long, and 3 mm high. The interior surface is covered by numerous small pits of about 0.1 mm in diameter. The lower (attached) valve is unknown.

Measurements, mm (free valves):

Specimen GMKTU, no.	L	H	W	H/L	W/H
holotype M-6/1	35.6	34.5	15.0	0.97	0.44
M-6/9	26.6	24.0	7.0	0.90	0.29
M-6/7	20.2	27.1	9.0	1.36	0.33

Comparison. The valves with broken or eroded upper parts of the plates resemble *C. calcarata* Lmk. (Cossmann and Pissarro, 1904–1906, pl. 20, fig. 76-5); however, they are distinguished by the radial folds that are more than two times wider. The new species differs

from *C. boriesi* Donc. and *C. custugensis* (Donc.) (Doncieux, 1911, p. 104, pl. 15, fig. 26) from the Lutetian of southern France by the presence of radial folds over the entire valve surface rather than within only the interrib spaces on the umbilical area.

Occurrence. Middle–Upper Eocene of Ukraine.

Material. 35 valves from the type locality and from the coal sand and gray sand of the InGOK quarry (town of Ingulets).

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