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## A new species of large pinnid pelecypods from the Korytnica basin (Middle Miocene; Holy Cross Mountains, Poland)

**ABSTRACT:** A new species of large pelecypods of the family Pinnidae, Leach, 1819, viz. *Atrina radwanskii* sp. n., is reported from marly sands making up the upper part of the Middle Miocene (Badenian) sequence of the Korytnica basin (Holy Cross Mountains, Central Poland). Some remarks on the ecology and life habitat of these large pelecypods are also presented.

### INTRODUCTION

The large pelecypods, described in the present paper, were found by Docent A. Radwański in a small sand-pit at Chomentów near Korytnica on the southern slopes of the Holy Cross Mountains, Central Poland. In this sand-pit there are exposed sandy marls and overlying red-algal (lithothamnian) limestones, they all making up the upper part of the sedimentary sequence that fills the Middle Miocene (Badenian) Korytnica basin (cf. Radwański 1969, Bałuk & Radwański 1977). The fauna of these sands was presented by Kowalewski (1930), Friedberg (1930) and Radwański (1969), and its environmental significance discussed by Radwański (1969, 1970, 1977a, b).

### SYSTEMATIC DESCRIPTION

Class **Bivalvia** Linnaeus, 1758 (Buonanni, 1681)

Subclass **Pteriomorpha** Beurlen, 1944

Order **Mytiloida** Férussac, 1822

Superfamily **Pinnacea** Leach, 1819

Family **Pinnidae** Leach, 1819

Genus **ATRINA** Gray, 1842

*Atrina radwanskii* sp. n.

(Pls 1—4)

1969. *Pinna pectinata brocchii* d'Orbigny; A. Radwański, pp. 93, 107, and Pl. 42, Fig. 1.

*Holotype*: The specimen presented in Pl. 1; housed in Museum of the Earth (Polish Academy of Sciences) in Warsaw, and kept under the catalogue number MZ VIII M1-776.

*Type locality*: Chomentów, 21 km SSW of Kielce, southern slopes of the Holy Cross Mountains, Central Poland.

*Type horizon*: Middle Miocene (Badenian).

*Derivation of the name*: In honour of Docent A. Radwański, University of Warsaw, who found the investigated specimens.

*Diagnosis*: Shell very large, ham-shaped, strongly inequilateral; its posterior margin rounded; no median ridge is present; sculpture consists only of concentric lines, and any radial ribs are missing.

*Material*: Four specimens (Pls 1-4) from marly sands exposed at Chomentów (upper part of the Korytnica sequence — cf. Bałuk & Radwański 1977).

*Description*. — The shells are ham-shaped, very large, subtriangular in outline. The largest specimen is c 250 mm long, 170 mm high and  $\phi$  70 mm thick. The valves are thick, up to 5.0 mm, and they are composed of prismatic calcite (mesostracum). The valves are narrower in the anterior part; slightly curved dorsal and ventral margins form a rounded, short anterior margin; no such acute angle is present as in the most of the Pinnidae. Posterior margin is rounded. The outer surface is covered only with concentric lines, the traces of which are discernible also on the moulds.

*Remarks*. — In the present writer's opinion, the investigated specimens from Chomentów cannot be assigned to any of the hitherto recognized pelecypod species. Generally, to some extent they are similar to the representatives of the genus *Pinna* to which they were previously assigned by Radwański (1969; cf. synonymy), from which they differ, however, by the absence of the median ridge, as well as in the sculpture and the thickness of valves, the characters being typical (cf. Cox & Hertlein 1969) of the genus *Atrina* Gray, 1842.

All species of the genus *Pinna* described from the European Miocene are characterized by median ridge provided with radial ribs above and concentric lines below (cf. e.g. Friedberg 1936, Kojumdjieva 1960). The investigated specimens display only concentric lines, and have no trace of the median ridge. All the Miocene species of *Pinna* have also much thinner valves, measuring up to 2.0 or 2.5 mm (cf. Hörnes 1870, p. 373; Friedberg 1936, p. 200), except of the specimens from sandy deposits at Kalksburg near Vienna and described as "*Pinna Brocchii* d'Orb." by Hörnes (1870, p. 373), their valves being up to 8.0 mm thick. The specimen from Kalksburg figured by Hörnes (1870, Pl. 50, Fig. 1; *non* Fig. 2) is characterized by the absence of the median ridge, and by having only concentric lines in its sculpture. Very similar is also the shell assigned as "*Pinna cf. ferelaevis* (Cossmann-Peyrot)" from the Miocene marls at Istres (Bouches-du-Rhône) in France, and reported by Boekschoten (1967, p. 315, Text-fig. 5).

The present writer believes that the above discussed specimens from Kalksburg (cf. Hörnes 1870, Pl. 50, Fig. 1) and Istres (cf. Boekschoten 1967, Text-fig. 5) may belong to the here introduced new species, *Atrina radwanskii* sp. n., though they differ slightly in more obtuse angle formed by dorsal and ventral margins. This new species is the only hitherto recognized Miocene species of the genus *Atrina*.

On the other hand, fragmentarily preserved shells from the Helvetian deposits of the Aquitanian Basin in France, and described by Cossmann & Peyrot (1912-1914, pp. 266-267, Pl. 11, Fig. 9) as *Atrina ferelaevis*, differ from the new species, *Atrina radwanskii* sp. n., in having their sculpture really typical of the genus *Pinna*.

## REMARKS ON ECOLOGY

The investigated specimens of *Atrina radwanskii* sp. n. from the Chomentów environment probably lived almost completely buried in a soft, sandy sediment. All of them have been found in life position, with their dorsal margin upwards, situated either almost horizontally, or slightly inclined, as indicated by Radwański (1969, Text-fig. 33; 1970, Text-fig. 4; 1977a, Text-fig. 1).

All other pelecypods from this environment, e.g. large *Crassostrea gryphoides* (Schlotheim) lived on the bottom under the stormy conditions of a very shallow environment; their shells are generally broken and even partially bouldered (Radwański 1969, 1970). The isolated valves of *Crassostrea gryphoides* or their clusters were commonly inhabited by epibionts, the most important of which were polychaetes *Polydora hoplura* (Claperède), and less so *Polydora ciliata* (Johnston), sponges *Cliona celata* Grant and boring pelecypods *Gastrochaena* sp. associated with the serpulids, bryozoans and acorn barnacles (Radwański 1969).

Contrary to that, the specimens of *Atrina radwanskii* sp. n. have usually no traces of activity of any epibionts, which proves their endobenthic mode of life. Only one incompletely preserved specimen (Pl. 4) is encrusted by a group of acorn barnacles (*Balanus* sp.) in the posterodorsal part of the shell (cf. Radwański 1969, Pl. 42, Fig. 2), which testifies that this very specimen lived partly exposed, not having been quite buried in the sediment. The orientation of these barnacles, all of which have their carinal plates pointing the same direction, was the basis for the previous, right conclusions (Radwański 1969) on the dorsally-upward orientation of the discussed pelecypods during their lifetime.

The above discussed specimen of "*Pinna* cf. *ferrelaevis*" figured by Boekschoten (1967, Text-fig. 5) in a supposed life orientation with its beak downwards, is here considered as living really in the same position as the investigated specimens from Chomentów.

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**NOWY GATUNEK DUŻYCH MAŁŻY, *ATRINA RADWANSKII* SP. N.,  
Z PIASKÓW CHOMENTOWA**

(Streszczenie)

W pracy opisano nowy gatunek jednego z największych małży miocenu Polski, *Atrina radwanskii* sp. n., należącego do rodziny Pinnidae Leach, 1819. Badane okazy (pl. 1—4) znalezione zostały przez docenta A. Radwańskiego w marglistych piaskach odsłaniających się w Chomentowie koło Korytnicy (por. Radwański 1969, 1970, 1977a, b); oznaczone one były poprzednio (Radwański 1969, 1970) jako *Pinna pectinata brocchii* d'Orbigny.

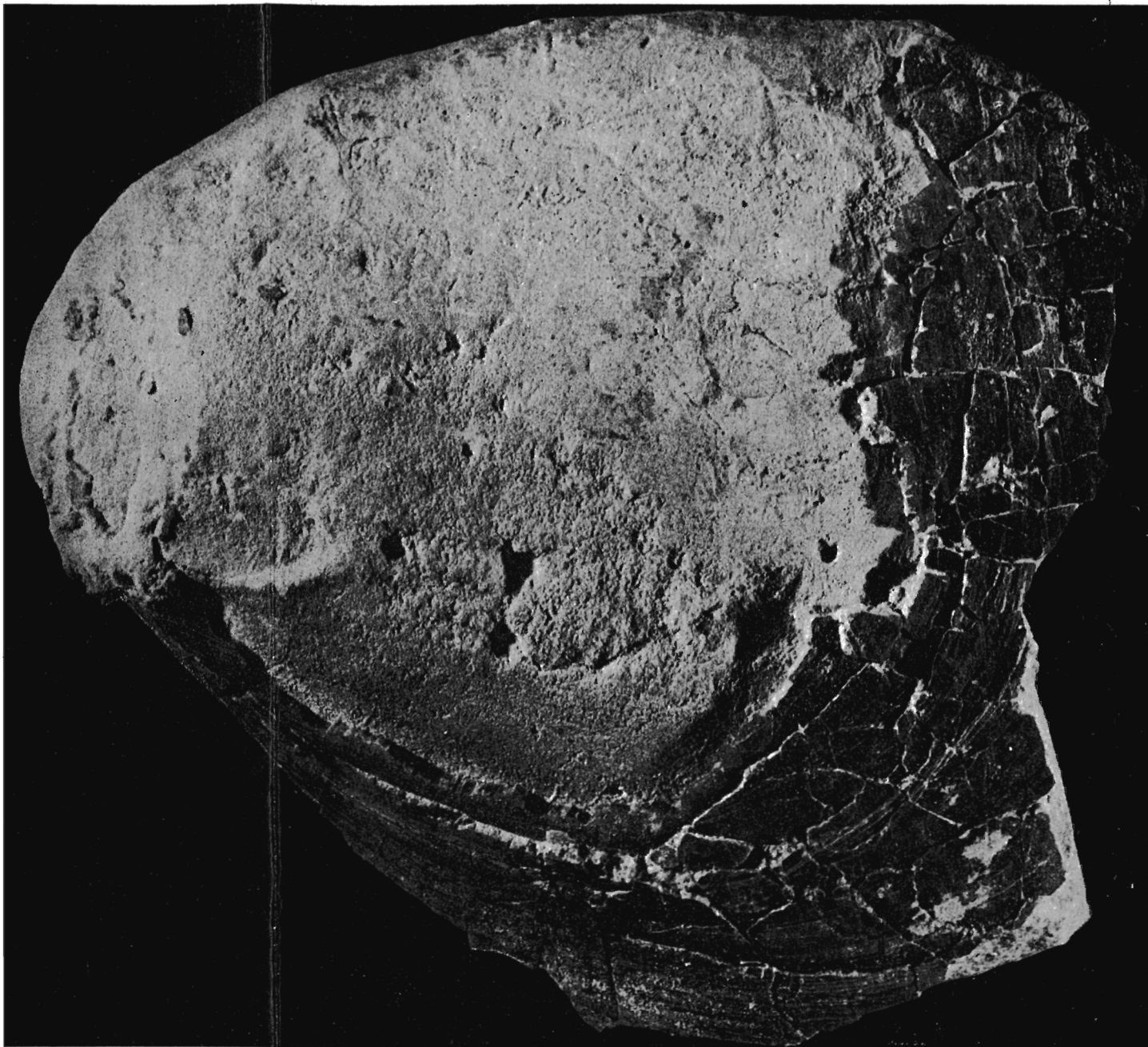
Gatunek *Atrina radwanskii* sp. n. różni się od innych przedstawicieli rodziny Pinnidae brakiem krawędzi dzielącej skorupy muszli na dwie części charakteryzujące się odmienną rzeźbą oraz grubością muszli. Spośród form mioceńskich do nowo ustanowionego gatunku należą przypuszczalnie również okazy z Kalksburga w Basenie Wiedeńskim (por. Hörnes 1870, pl. 50, fig. 1; *non* fig. 2) oraz z Istres w Basenie Rodanu (por. Boekschoten 1967, fig. 5).

Badane okazy z Chomentowa zostały znalezione w pozycji przyżyciowej, usytuowane krawędzią dorsalną do góry (por. pl. 1—4; oraz Radwański 1969, fig. 33; 1970, fig. 4; 1977a, fig. 1). Żyły one najprawdopodobniej zagrzebane w piaszczystym podłożu, częściowo wystając jednak ponad jego powierzchnię, na co wskazuje lokalne obrastanie grzbietowo-tylnej części ich muszli przez pąkle, *Balanus* sp. (por. pl. 4; oraz Radwański 1969, pl. 42, fig. 2).

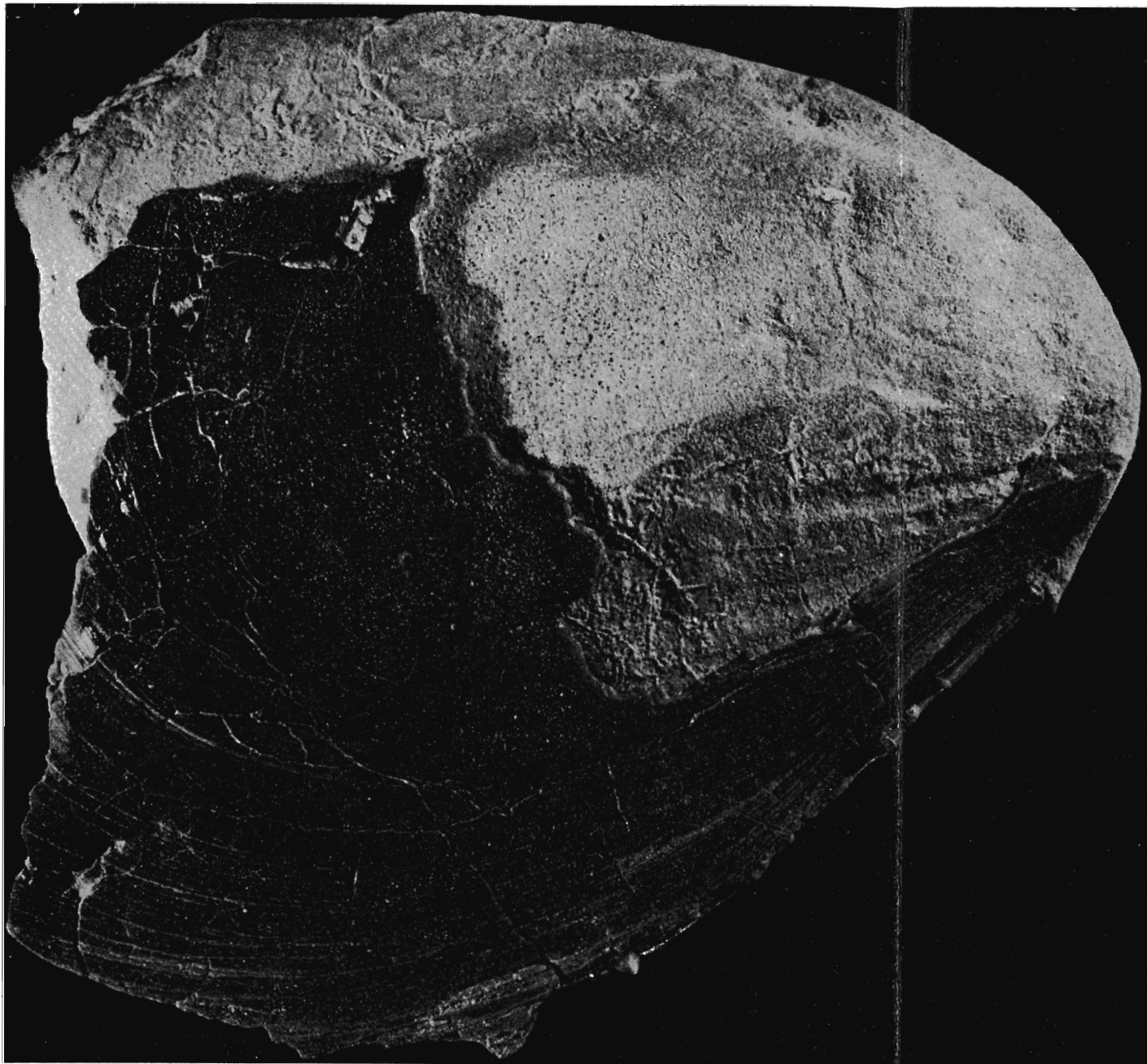
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*Atrina radwanskii* sp. n.; holotype, right-valve view (specimen No. MZ VIII Ml-776), Chomentów; orientation of the shell such as supposed life position; nat. size.

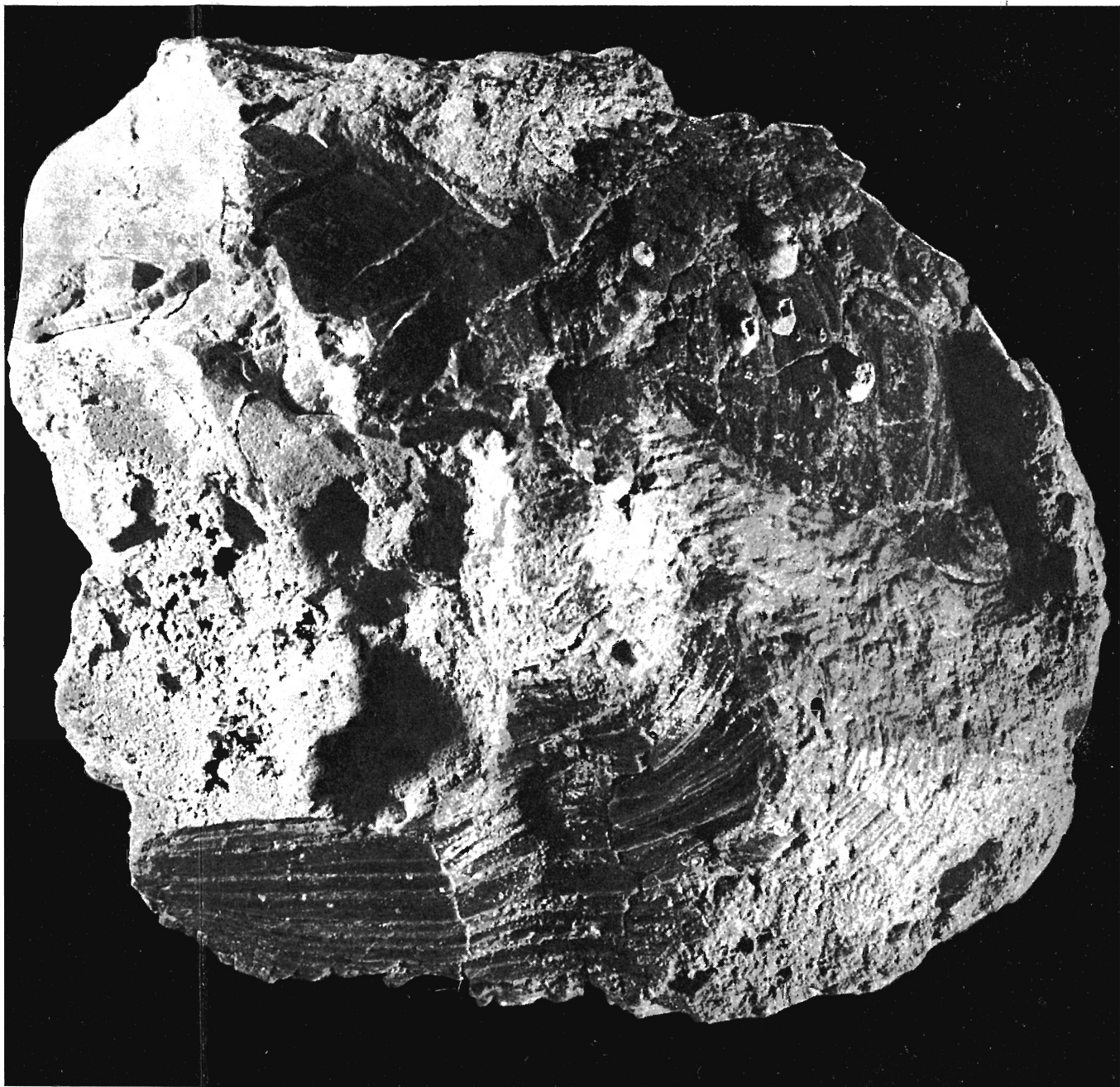


*Atrina radwanskii* sp. n.; paratype (specimen No. MZ VIII M1-777), Chomentów; left-valve view (cf. Pl. 3); orientation of the shell such as supposed life position; nat. size.



*Atrina radwanskii* sp. n.; paratype (specimen No. MZ VIII Ml-777), Chomentów; right-valve view (cf. Pl. 2); orientation of the shell such as supposed life position; nat. size.





*Atrina radwanskii* sp. n.; paratype (specimen No. MZ VIII M1-778), Chomentów; posterodorsal part of the shell with a group of acorn barnacles, *Balanus* sp. (this is the specimen presented by Radwański 1969, Pl. 42, Fig. 1—2); nat. size.