

Two new genera of Radiolitidae (Balabania n. gen., Kurtinia n. gen.) From Turkey

Türkiye'de bulunan iki yeni Radiolitidae cinsi (Balabania n. gen., Kurtinia n. gen.)

NECDET KARACABEY - ÖZTÜMER Maden Tetkik ve Arama Enstitüsü, Ankara

ABSTRACT: Descriptions of two new genera (Balabania and Kurtinia) and their five new species (B. acuticostata, B. elongata, B. densicostata, B. melitenensis, nad K. hemispherica) found in Maestrichtian of Malatya region have been given.

ÖZ: Malatya bölgesi Maestrihtiyen'inde bulunan iki yeni cins (Balabania, Kurtinia) ve onların beş yeni türü (B. acuticostata, B. elongata, B. densicostata, B. melitenensis, ve K. hemispherica)nın tanımlaması verilmiştir.

Introduction

In the recent years many geologists like Pisoni C., Kurt M., Yılmaz S., Yoldaş R., Özbudak N. have worked in Balaban, Hekimhan, Akpınar, Darende regions of Malatya area and collected lots of samples of the Rudistid fauna (fig. 1). After the examination of these collections two new genera and their five species of the Radiolitidae have been established. In this publication the descriptions of these new genera and species and their figures have been given.

Systematic study

Order : Rudistida Lamarck, 1819
 Family: Radiolitidae Gray, 1848
 Genus : *Balabania* n. gen.

Derivatio nominis: From the type locality, Balaban.
 Genoholotype: *Balabania acuticostata* n. gen. n. sp.
 Type level : Maestrichtian

Diagnosis

Upper valve capuloid, the beak eccentric and commonly inclined towards cardinal region. E and S siphonal bands, as distinct swellings, continue from commissure to the beak. Shell wall three layered, from the exterior to the inward, layers of lamellar, middle and pseudocanal. Pseudocanals pyriform, fusiform and subrectangular in shape.

Lower valve conical or cylindrical. Surface generally with thin and acute longitudinal ribs and weak transversal growth lamellae. Siphonal bands with unequal width and or-

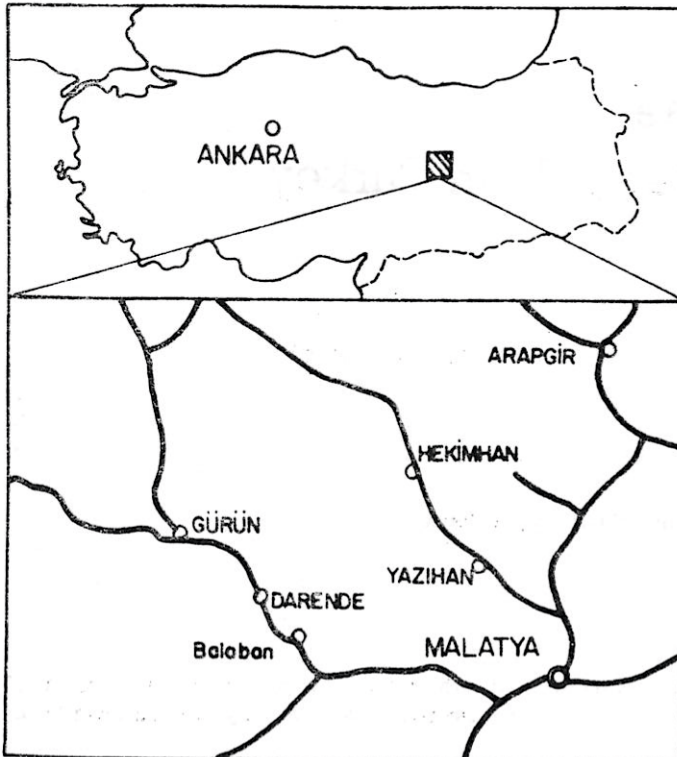


Figure 1: Location map.

Sekil 1: Yer bulduru haritası.

namented by curved up growth lamellae. Interband flat or groove. In the cross-section prismatic layer thick. Ligamental ridge well developed commonly with a strongly widened head.

Comparison and Remarks

Balabania n. gen. resembles *Neoradiolites* Milovanovic with its eccentric beak which is located at the cardinal region and its shell structure of the lower valve. It differs from *Neoradiolites* by having the pseudocanal layer on the upper valve, after the middle layer in inward direction. This property has not been mentioned in the *Neoradiolites* descriptions (Milovanovic 1935 a and b; Pasic 1957; Charvet, Decrouez and Polsak 1976).

Balabania n. gen. also resembles *Colveraia* Klinghardt by their general shape, by having the pseudocanal layer at the inner side of the middle layer and by the thickness of the shell wall of the lower valve (plate IV, figure 9). It differs from *Colveraia* with the beak of the upper valve which is inclined to the antero-dorsal side of the cardinal region instead of the siphonal region as in *Colveraia*. Also, a very long ligamental ridge and special structure at E and S region, seen in cross-section of the lower valve of *Colveraia*, differs it from *Balabania* n. gen.

In spite of the cited differences we could say that among the other Radiolitid genera only *Colveraia* shows a similarity to *Balabania* by the presence of the pseudocanal layer at the upper valve (Karacabey-Öztemür 1974; Moore 1969).

Balabania acuticostata n. sp.

(plate I, figure 1-6; plate IV, figure 1-4)

Derivatio nominis: because of the ornamentation of the lower valve with acute costae.

Material and Depository: Holotype and one sample from Darende, two samples from Hekimhan represented by complete valves. Holotype is deposited at the Museum of Mineral Research and Exploration Institute of Turkey with no. 1090. Type locality: Holotype, NE Kurtini Hill, Balaban, Darende. Type level: Maestrichtian.

Description

Lower valve is low conical. The diameter at commissure is 7,5 cm. The end of the cone is partly broken away. The height of the broken lower valve, measured at siphonal region, is 9 cm. The surface is ornamented with very sharp and 1-2 mm, thick costae and grooves 2-4 mm wide. Some of the grooves bears more or less distinct thin costules. Costae and grooves both are crossed partly by tightly superposed growth lamellae. These lamellae are not well marked near the siphonal region and they form spine-like protuberances. In cardinal region they are thickened and imbricated upward. They become horizontal near the commissure. The siphonal region is well preserved at the upper part of the valve (plate I, figure 6). E, as a flat band, has 1,5 cm width. It shows tightly arranged and curved up growth lamellae. S, as a deep groove, has 0,5 cm width. The depth of the groove decreases towards the end of the cone and it has the same kind of growth lamella as E. The prismatic layer, in the cross-

tangential section, shows same characteristics as Neoradiolites (Milovanovic 1934, 1935 b) plate IV, figure 1-3).

In the cross-section, passing through 2 cm below the commissure, we have observed the following characteristics (plate I, figure 5): The maximum thickness of the prismatic layer is 2 cm. The ligamental ridge has a short stem and large head on it which is suddenly widened 3 or 4 times more at anterior side than posterior (figure 2). A very thin, filliform trace lies between the ligamental ridge and the periphery.

The anterior accessory cavity O' and the posterior accessory cavity O are fairly big. The anterior cardinal tooth B', which is proportionally small compared to the rather large body cavity, approximately has the same size as posterior cardinal tooth B. The myophore apophyses ma, mp are thin and located near the inner border. mp is elongated near the S.

Upper valve is capuloid in shape with very eccentric beak (plate I, figure 3). This valve entirely covers the lower valve. The beak is on the same line and 1,5 cm above the commissure and 3 cm apart of the ligament towards anterior (measured at commissure). On the lower part of the valve, long ribs arranged radially in 1 cm width, correspond to groves of the lower valve. On the sample from Hekimhan, we have observed, in addition to these ribs, slightly distinct costules reaching the beak at the anterior side. Siphonal bands are subequal and bordered in both sides with thin costae. The shell wall, observed in cross-section, is composed, from the periphery to the inward, of 3 layers which are lamellar, middle and pseudocanal layer (plate I, figure 1). Thick lamellar layer, composed of numerous thin lamellae, and thin

middle layer can be observed in tangential section (plate I, figure 2). The pseudocanals are radially arranged and make generally one row all around the pseudocanal layer. Their general shape is fusiform and their sizes are approximately equal with few exceptions. Three or four pseudocanals have been counted in one centimeter. On longitudinal section of Darende specimen, it is observed that the pseudocanals are elongated near the apex (plate IV, figure 4).

The two specimens from Hekimhan differ from the holotype by slender stem of ligamental ridge and the flat S band in spite of groove.

Comparison and Remarks

The beak position of the upper valve differs *B. acuticostata* n. sp. from the other species of *Balabania*. One row of pseudocanals arranged radially is the common characteristic of *B. acuticostata* and *B. elongata* n. sp., but in *B. elongata* they are tightly arranged. These two species can be distinguished also by the structure of their siphonal bands and interband (figure 2).

Association

B. acuticostata is found with *Colveraia variabilis* Kling., *Joufia reticulata* Boehm, *Kurtinia hemispherica*, n. gen. n. sp., *Actaeonella* aff. *gigantea* d'Orb., and microfossils like *Ophthalmidiidae*.

***Balabania elongata* n. sp.**
(plate II, figure 1-6)

Derivatio nominis: having an elongated lower valve.

	B a l a b a n i a n. gen.				Kurtinia n. gen.
Species Tür	<i>B. acuticostata</i> n. sp.	<i>B. elongata</i> n. sp.	<i>B. densicostata</i> n. sp.	<i>B. melitenensis</i> n. sp.	<i>K. hemispherica</i> n. sp.
Shape Biçim	Conical Konik	Cylindrical Silindirik	Cylindrical Silindirik	Conical Konik	Conical Konik
Upper valve Üst kavku					
Cross-section of the U. valve Ü. kavkının enine kesiti					
Siphonal region of the lower valve Alt kavkının sifonal bölgesi					
Ligamental ridge Ligament çıkıntısı					

Figure 2: Comparison of the species of *Balabania* n. gen. and *Kurtinia* n. gen.

Şekil 2: *Balabania* n. gen. ve *Kurtinia* n. gen. türlerinin karşılaştırması.

Material and Depository: Two well preserved valves of holotype (plate II, figure 1-4), and a paratype (plate II, figure 5,6). Holotype is deposited at the Museum of Mineral Research and Exploration Institute of Turkey with no. 1047.

Type locality : Darende.

Type level : Maestrichtian.

Description

Lower valve is cylindrical, lower top is slightly curved towards the siphonal region and the end is broken. In this case length of valve is 17 cm. The antero-posterior diameter measured at commissure, is 5,5 cm, and the dorso-ventral diameter is 4,7 cm. The surface is ornamented with fine and spaced longitudinal costae which are usually 1 mm thick and rarely 2 mm. Grooves between costae are shallow and their width is 2-5 times more compared to the costae width. One or two costules are found in these grooves. These costae and grooves are transversed in three places by lamellae which make strong zigzags. The siphonal region can be easily distinguished from the other parts (plate II, figure 1). The siphonal band E is in the form of a deep groove in 8 mm width and covered with very thin growth lamellae. The S is in the shape of a band and has 5 mm width and also covered with very thin growth lamellae. S is bordered at two sides by very thin costule. Interband, as a deep groove, has 7 mm width and bears four very thin costules (figure 2).

The shape of the cross-section, passing 2 cm below the commissure, is subcircular (plate II, figure 4). The thickness of the prismatic layer is maximum 21 mm (measured at anterior). The ligamental ridge is 4,5 mm long and its stem has 1 mm width. The inner side of the head which is enlarged on both sides (maximum at anterior) is divided into two lobes by a depression. B', B cardinal teeth are rather big for the diameter of the shell, B' is bigger than B and is 13 mm long. Myophore apophyses are fairly developed; mp reaches to the interband, ma has the same length as mp, but is more massive. The N tooth of the lower valve is closely facing the ligamental ridge by the base of its triangular shape. Body cavity becomes smaller because of the well development of the cardinal teeth and myophore apophyses.

Upper valve is cap-like and completely covers the lower valve. The apex is located at the anterior of the ligament and 1,5 cm inward from the valve border (plate II, figure 3). The surface is ornamented with very fine concentric striae but on the lower part of the cap there are radially arranged, rather large, less distinguishable costae which correspond to the grooves of the lower valve. The ligament, on the surface, is marked by a very thin costule which extends from periphery to the apex. At the siphonal region the E and S bands have equal width and are bordered at their sides by fine costules. These bands are indistinct near the apex. Interband, as a shallow groove, has the same width as siphonal bands. The cross-section, passing 3 mm above the commissure, shows, from the exterior to the inward, the lamellar layer (4 mm), middle layer (2,5 mm) and pseudocanal layer (5-6 mm) (plate II, figure 2). Pseudocanals have generally equal size of elongated fusiform on the posterior, but on the anterior but on the anterior they are short almost 1/2 of the pseudocanals of the posterior. They are radially arranged on one row all over the layer. Eight pseudocanals have been counted in one centi-

meter. They completely occupy the space between cardinal teeth, myophore apophyses and middle layer. Cardinal teeth and myophore apophyses are massive and shifted towards the center due to the pseudocanals. Therefore the body cavity is smaller. Rather long ligamental ridge is bifurcated at its distal end. The lower valve of the paratype is dorso-ventrally flattened during the fossilization. Therefore it is seen larger in plate II, figure 6 than its original size.

Comparison and Remarks

New species resemble *B. densicostata* n. sp. with its cylindrical lower valve and to *B. acuticostata* n. sp. with the shape and disposition of the pseudocanals of the upper valve. But *B. elongata* completely differs from these species by its apex position of the upper valve and by the structure of the siphonal region of the lower valve.

Association

It is found with *B. melitenensis* n. sp.

***Balabania densicostata* n. sp.**
(plate III, figure, 1-4)

Derivatio nominis: (plate III, figure 1-4 Because of the dense costae on the surface of the lower valve.

Material and Depository: Holotype (plate III, figure 1-3) and another sample from Akpınar (yazihan, Hekimhan) (plate III, figure 4) with lower and upper valves. Holotype is deposited at the Museum of Mineral Research and Exploration Institute of Turkey with no. 1081.

Type locality: Holotype, south of Kirankaya Hill, Hekimhan.

Type level: Maestrichtian.

Description

Lower valve is cylindrical. Its lower end is broken away, its original length must have been about 16 or 17 cm. The shell surface is covered with dense costae of rarely 1 mm, commonly 2 mm of width (plate III, figure 1). The intercostal areas are as longitudinal grooves with 1 mm width or less. The growth lamellae are well marked on the upper and lower parts of the valve. These lamellae, near commissure, on the costae and on their intervals form strong zigzag pattern and they are imbricated. On the cardinal region, a rather thick and sharp rib lying from the commissure to the apex mark the ligament. Siphonal bands (E, S) and Interband (I) can be seen clearly (plate III, figure 3). E is flat with 13 mm width and ornamented with growth lamellae curved upward. This band is limited with a thin costule in both sides. S is also flat with 5 mm width and it is separated into two equal parts by a narrow longitudinal groove. It is also limited, as E band, with a thin costule in both sides and ornamented also with growth lamellae curved upward. I is also flat, it has 4 costae which are the same size of the other costae but widely spaced. A cross-section of the lower valve, passing 20 mm below the commissure, shows the prismatic layer about 8-11 mm wide (plate III, figure 2). The ligamental ridge is composed of a thin stem of 4 mm long and a fan shaped head of 3,5 mm width. On the posterior part of the head there is a slit which extends up to the stem. This slit and the top

of the head is covered with a brown colored material (remnant of organic ligament materil) (figure 2). The posterior accessory cavity O is very small and the anterior's O' is 4 times larger than O. The anterior tooth B' is well developed and it is twice bigger than B. Only small and circular ma can be observed as myophore apophyses. These characteristics have led us to think that the anterior elements are more developed than the posterior. The N tooth takes place between the B, B' teeth and on the L direction. On the inner edge of the shell wall, corresponding to S, a very slight bulge can be seen.

Upper valve is like a depressed cap of 1,5 cm height. Valve is inclined towards the antero-dorsal side. Apex, which is not well preserved, seem to reach the commissure or slightly above of it. The beak, in this position, is 1,8 cm apart from the ligamental costule towards anterior. Siphonal bands, as two slight convexities, lie towards the beak. A cross-section, made from the upper valve and passing near the commissure, shows well the pseudocanal layer which is located inward of the outer shell wall (lamellar and middle layer). Radially arranged pseudocanals are nearly touching the middle layer. They are pyriform with the pointed side outward and the large and curved side inward of the shell. Calcareous plates lying between the pseudocanals are separated from the inner to outward by three consecutive dichotomy which cause three kinds of pseudocanals differing from each other with their length. The longest one is 8,5 mm. Towards the anterior and posterior the kind of pseudocanals decrease and finally it continues as one row of uniform pseudocanals all around the rest. The same disposition is also observed on the cross-section made from the sample collected from Akpınar (plate III, figure 4).

Comparison and Remarks

Pseudocanals disposition of our species resemble *Colveraia variabilis* Kling. pseudocanals disposition, but differs from it by well pointed end of the pseudocanals which are truncated in *C. variabilis*.

It resemble to *Balabania elongata* n. sp. by its cylindrical lower valve, but it differs from *B. elongata* by the structure of the siphonal region, shape of the upper valve and the shape and disposition of the pseudocanals.

Association

It is associated with *Balabania* sp., *Colveraia* sp., and *Hippuritella variabilis* Munier-Chalmas.

Balabania melitenensis n. sp. (plate III, figure 5-7)

Derivatio nominis: from the old name of the city Malatya. Material and Depository: Holotype with well preserved lower and upper valves at the Museum of Mineral Research and Exploration Institute of Turkey with no. 1053.

Type locality: Darende, Malatya.
Type level: Maestrichtian.

Description

Lower valve is conical, the height, up to the broken end of the upper valve, is 9 cm. The cross-section of the holotype

is 6,5 x 8 cm in size. The surface is ornamented with non prominent costae and shallow grooves. Costae are thin and tightly arranged on the anterior and are thick and have very large interval between them on the posterior part. The growth lamellae are indistinct. Siphonal band E large, 17 mm, and flat; band S is narrower, 12 mm, and also flat. Interband is rather a deep groove with 7 mm of width. On the surfaces of the three bands the transversal growth lines can be partly observed. The shape of the cross-section, passing 1,5 cm below the commissure is a circle elongated towards the antero-dorsal side (plate III, figure 6). The maximum thickness of the prismatic layer is 12 mm. This layer shows lamellar structure in some places (mixed texture) The disposition of the polygonal cells is irregular; towards the inner part of the prismatic layer their wall become thicker and are radially arranged. This disposition sometimes continues from the inner border to the middle of the prismatic layer or sometimes up to the periphery. Even they form radial bands with a few cell rows. On the inner border, just opposite of the siphonal band E, a wide bulge towards the body cavity can be seen. Its texture does not show any differentiation. Ligamental ridge has a head which is strongly enlarged towards anterior and posterior, supported on a rather thin stem. The anterior tooth is very well developed, and it is easily distinguished from the posterior tooth by its thin and long shape. The length of the posterior tooth is about the half of the anterior's. The anterior accessory cavity O' is bigger than the posterior accessory cavity O because of the differences of these teeth.

Upper valve is in 2 cm height and it is strongly inclined towards antero-dorsal region (plate III, figure 7). The beak overlapping the commissure and descends about 1 cm below of it. The shell surface is rather eroded that only E can be distinguished as a large rib. The shell structure, in cross-section, passing 2-3 cm above the commissure, shows the generic characteristics; but the shape of the radially arranged pseudocanals is different from the other species. They are subrectangular with rounded corners. These pseudocanals making a regular row at anterior and posterior, fill the area which take place between the myophore apophyses and middle layer (plate III, figure 5). The pseudocanals, lying between E and S siphonal bands, show different pattern because of the dichotomic separation of the plates between the pseudocanals. The dichotomic separation cause the formation of alternately arranged of two kinds, short and long canals of pyriform shape with the thinner part inward (figure 2). We could not observe the shape and disposition of the pseudocanals at the cardinal region. As we have one specimen we would like to keep the beak and its region.

Comparison and Remarks

This new species can be easily distinguished from the other species of the genus by having the beak strongly recurved and overlapping the commissure line. It can resemble *B. densicostata* n. sp. with the dichotomic separation of the plates between the pseudocanals on the siphonal region. But it differs from *B. densicostata* by having only two kinds of pseudocanals instead of three. On both species the form of these pseudocanals are pyriform but in our new species their pointed end is inward. Another difference is the convexity of E towards body cavity on the inner border of the prismatic layer.

Association

This fossil is collected together with *B. elongata* n. sp. from the same bed.

Genus: *Kurtinia* n. gen.
(plate IV, figure 5-8)

Derivatio nominis: After the name of the type locality, Kurtini Hill.

Genoholotype: *Kurtinia hemispherica* n. gen. n. sp.
Type level: Maestrichtian.

Diagnosis

Upper valve hemispherical, apex eccentric, somewhat towards to the antero-dorsal margin. Siphonal bands, especially S, cause large convexity from margin to apex. Shell wall three layered: outer lamellar layer, middle canal layer containing a single row of canals, and inner pseudocanal layer. Shell surface contains circular orifices of rather dense, small, broken tubular excrescences.

Lower valve conical, surface covered with dense, fine, longitudinal costae, partly prominent growth lamellae and small orifices of very rare tubular excrescences. Outer layer, in cross-section, shows prismatic structure consisting of small polygonal cells. E and S very close to each other and make bulges to the body cavity on inner margin. Any particular structure which indicates real pseudopillars is missing on that part of prismatic layer. L well developed and bears a thin stem with a very elongated head towards anterior.

Comparison and Remarks

New genus can be compared to the genera *Pseudopolyconites* Milovanovic, *Fundinia* Sladic-Trifunovic, *Colveraia* Klinghardt, *Joufia* Böhm, and *Balabania* n. gen.

Although *Kurtinia* resembles *Pseudopolyconites* with its tubular excrescences existing on both valves and siphonal bands E, S which make bulges towards the body cavity on inner margin. But, *Kurtinia* completely differs from *Pseudopolyconites* with having less tubular excrescences, with the structure of the outer layer of the lower valve, also with the position of the siphonal bands and especially shell structure of the upper valve (Milovanovic 1934, 1935 b, 1937).

Kurtinia shows similarities to *Fundinia* with the presence of the tubular excrescences on the lower valve; with the polygonal cells of the outer layer of the lower valve; with prismatic texture of ligamental ridge and with a ligament marked on the shell surface by a deep groove. But it is distinguished from *Fundinia* by its closely located siphonal bands E,S instead of setting widely apart as in *Fundinia* also they have different forms. The upper valve of *Fundinia* is not mentioned in the original description, so that the comparison has been done only with the lower valve (Sladic-Trifunovic 1977).

The resemblance to *Joufia* has been established with the presence of the canal layer on upper valve. It is completely similar, especially to *Joufia cappadociensis* (Cox), with its canal layer which is located inside of the lamellar layer and this canal layer has a single row of canal extending up to the apex (Karacabey-Öztemür 1974). The presence of the

pseudocanal layer of the new genus, located inside of the canal layer, is the main difference with *Joufia*.

Kurtinia resembles *Colveraia* and *Balabania* n. gen. with its structure of the upper valve (Milovanovic 1937, Moore 1969). From out to inward the presence of the lamellar, middle, and pseudocanal layers is the common feature of the three genera. A row of canal in middle layer and presence of tubular excrescences on both valve are the most important features that distinguish the new genus from the two mentioned above (figure 2). It differs from *Colveraia* also by its beak shifted towards the antero-dorsal region instead of into the siphonal region as in *Colveraia*.

Kurtinia hemispherica n. sp.
(plate IV, figure 5 - 8)

Derivatio nominis: After the form of the upper valve.
Material and Depository: well preserved holotype is deposited at the Museum of Mineral Research and Exploration Institute of Turkey with no. 1058.

Type locality: NE of Kurtini Hill, Balaban, Darende.
Type level: Maestrichtian.

Description

Upper valve is very convex, almost hemispherical. The apex is eccentric and occurs in 2 cm distance to the antero-dorsal margin and 3,5 cm in the anterior of the ligamental groove. Accidentally the apex is depressed 0,5 cm inward. At the part where the antero-posterior margin is situated, very close to the apex, the two valves, at commissure, are drawn 1,5 cm upwards. On that point, between the commissure and the apex, a shallow groove on the upper valve and a deep groove corresponding it on lower valve exist (plate IV, figure 5). At siphonal region, the commissure makes an upward folding of 1,5 cm height (plate IV, figure 6). Here two different costae mark the siphonal bands. The largest one correspond to band E and the narrow correspond to band S. The periphery of the upper valve is ornamented with lamellae and the rest with rugosity. When the latter part examined closely it shows a perforated structure with numerous pores smaller than 1 mm in diameter. At the eroded parts of the valve, the short, thin and canal-like extensions of that pores can be observed in the lamellar layer. We accept that those are tubular excrescences. In addition, the shell is surrounded by radial, weak undulations. The shape of the cross-section, passing through 1 cm above the commissure, is almost circular (plate IV, figure 7). The shell structure is fairly interesting: at the periphery there is a lamellar layer of 2,5-3 mm thick consisting of very thin lamellae. The following layer is canal layer which contains a row of circular, elliptical and triangular shaped canals which are regularly arranged close to the exterior of the canal layer. The distance between these canals is suequal to their diameter. In the thin section the walls of the canals are seen as fine, concentric lamellae. A layer with generally subrectangular shaped pseudocanals, follows the canal layer. It is called pseudocanal layer. Radially oriented and matrix filled pseudocanals are separated from each other by fine, radial plates. In the plate IV, figure 8, the pseudocanals at posterior, fills completely the part between canal layer and posterior myophore apophysis as a single row. At radial and tangential sections of the shell, some small

cavities are seen in the lamellar layer and even in the canal layer which are suspected to belong to the orifices on the shell. As we have one specimen, it could not be possible for us to study the tubular excrescences of the upper valve in detail. Lower valve is conical. The diameter is 5,5 cm, the height at anterior is 8 cm. The ornamentation consists of 1 mm thick longitudinal costae; intervals thicker than costae and partly prominent but spaced growth lamellae. L is marked by a rather deep groove. Siphonal region prominently raised up at commissure. The flat band E is 13 mm wide and it has approximately 5-6 costae over it like other peripheral costae. The band S, as a groove, has 1 cm width and it seems that it has 2-3 costules on the surface. Interband is 0,7 cm wide and ornamented with fine costae. At antero-dorsal region there is a deep groove extending to apex which corresponds to the upper valve shallow groove (plate IV, figure 5). In the thin section, passing through 1,5 cm below of the commissure, the shell wall has been observed as a very thin cortex which is preserved mostly in the intervals due to the erosion and a prismatic layer of 13 mm thick at posterior and 5 mm at anterior which is composed of small and generally hexagonal, sometimes rectangular, and rarely triangular prisms. On the inner border of the prismatic layer too small prisms are formed one row at cardinal region and two rows at siphonal region. At siphonal region towards the body cavity, two large and close swellings mark the E and S. L is formed by a very long and fine stem and a head strongly elongated towards anterior. (figure 2). The head and the stem have a very small but distinguishable prismatic texture. A fine fibrous structure connects the base of L to periphery. B' and B cardinal teeth are symmetric according to L. B' is more developed than B. Although the surrounding of the myophore appophysis ma is not well distinct, but there is small trace of it close to the inner border. mp is not observed. The thick prismatic layer presents some cavities that their number changes between 5-7, the biggest is 5-6 mm long, circular or oval in section and filled with matrix. They are surrounded by a lamellar wall. Some of these cavities show a suture structure on their inner border. Some of the cavities have small tube reaching to the exterior, seems for us being the communication canals which are the inner part of the tubular excrescences on the shell surface. Although this structure reminds the prismatic layer in *Fundinia biscopulata* Sladic-Trifunovic, the number of the tubular excrescences are less and irregularly arranged in the new species.

Association

Our specimen has been found together with *Colveria variabilis* Kling., *Joufia reticulata* Böhm, *Actaeonella aff. gigantea* d'Orb., *Balabania acuticostata* n. sp., and *Balabania* sp.

ÖZET: Malatya bölgesi Maestrichtiyen'inde bulunan iki yeni cins (*Blabania*, *Kurtinia*) ve onların beş yeni türü (*B. acuticostata*, *B. elongata*, *B. densicostata*, *B. melitenensis* ve *K. hemispherica*)nın tanımlaması verilmiştir.

Balabania n. gen. de kapuşon biçimindeki üst kavkı tepesi eksantrik durumda olup kardinal bölgeye doğru kaçmıştır. Kabuk duvarı üç tabakadan oluşmuştur: lamelli, orta ve psödokanal. Psödokanalların şekli iğ şeklinde, armut şeklinde veya dikdörtgenimsi olabilir. Alt kavkı, konik veya silindirik şekillidir. Yüzey, genellikle ince ve keskin boyuna kotlar ve enine büyüme lamelleri ile süslüdür. Sifonal bandlar eşit genişlikte değildir ve ince büyüme lameller ile örtülüdür. İnterband yassı veya oluk şeklindedir. Kabuk duvarı prizmatik sokuludur. İyi gelişmiş ligament genellikle genişlemiş bir başa sahiptir. *Balabania* n. gen., *Neoradiolites*'e çok benzer, ondan üst kavkıda psödokanal bulunması ile farklıdır. Keza, üst kavkı şekli ve tepe durumu, özellikle psödokanalların varlığı ile *Colveria*'ya benzer. Ondan, üst kavkı tepesinin kardinal bölgeye yaklaşmış olması ile farklıdır. Yeni cins, üst kavkı ve psödokanalların şekli ve alt kavkı sifonal bölge yapısı bakımından birbirinden farklı üç tür içerir.

Kurtinia n. gen. de üst kavkı çok bombe olup tepe antero-dorsal kenara yaklaşmıştır. Kavkı duvarı, lamelli, kanallı orta tabaka ve psödokanal tabakasından oluşmuştur. Psödokanalların varlığı ile *Balabania* cinsine çok benzerse de şekillerinin farklı oluşu ile ondan ayrılır. Orta tabaka, *Joufia cappadociensis* (Cox) teki gibi bir sıra kanal kapsar. Bu özellik onu *Joufia* cinsine yaklaştırmakla beraber *Balabania* n. gen. den uzaklaştırır.

REFERENCES

- Charvet, J., Decrouez, D. et Polsak, A., 1976, Le crétécé du Foniakos (Argolide, Grèce): Examen paléontologique, répercussions stratigraphiques, paléogéographiques et tectoniques: Archives des sciences, Genève, 247-257.
- Karacabey-Öztemür, N., 1974, Sur une nouvelle espèce de *Colveria* Klinghardt et une nouvelle sous-espèce de *Joufia* Boehm en Turquie: Bull. of the MTA, Ankara, 82, 78-85.
- Milovanovic, B., 1934, Contribution à la connaissance de la structure de la couche externe des Rudistes: Bull. du serv. Géol. du Roy. de Yougoslavie, Belgrade, 4, 1, 223-262.
- Milovanovic, B., 1935 a, Sur les Rudistes maestrichtien dans la partie orientale de la péninsule Balkanique: Geologica Balkanica, Sofia, 1, 3, 127-137.
- Milovanovic, B., 1935 b, Les nouveaux Rudistes de la Serbie: Acad. Roy. Serbe, Belgrade, B, 3, 1-42.
- Milovanovic, B., 1937, Sur les excroissances tubulaires à la surface de la coquille du genre *Pseudopolyconites* Mil.: Ann. Géol. de la péninsule Balkanique, Belgrade, 14, 97-130.
- Moore, R.C., 1969, Treatise on Invertebrate Paleontology, N, 2, 6, 803-817.
- Pasic, M., 1957, Biostratigraphische verhältnisse und tektonik der oberkreide in der weiteren umgebung von Kosjeric (West Serbien), Belgrad.
- Sladic-Trifunovic, M., 1977, A new radiolitid genus from the senonian sediments of Fundina (Montenegro) and Povelja (Brac Island): Ann. Géol. de la péninsule Balkanique, Belgrade, 41, 221-226.

Explanation of symbols in the plates

uv	: Upper valve
lv	: Lower valve
b	: Summit
E	: Anterior siphonal band
S	: Posterior siphonal band
L	: Ligamental ridge
B'	: Anterior cardinal tooth
B	: Posterior cardinal tooth
ma	: Anterior myophore apophysis
mp	: Posterior myophore apophysis
ll	: Lamellar layer
ml	: Middle layer
pel	: Pseudocanal layer
pc	: Pseudocanals
pl	: Prismatic layer
D	: Body cavity
ipl	: Internal zone of the prismatic layer
g	: Groove on the lower valve tending towards the summit
O', O	: Anterior and posterior accessory cavities

Levhalaradaki simgelerin açıklanması

uv	: Üst kavkı
lv	: Alt kavkı
b	: Tepe
E	: Ön sifon bandı
S	: Arka sifon bandı
L	: Ligament çıkıntısı
B'	: Ön kardinal diş
B	: Arka kardinal diş
ma	: Ön kas çıkıntısı
mp	: Arka kas çıkıntısı
ll	: Lamelli tabaka
ml	: Orta tabaka
pel	: Psödokanal tabakası
pc	: Psödokanallar
pl	: Prizma tabakası
D	: Gövde boşluğu
ipl	: Prizma tabakasının iç zonu
g	: Alt kavkıda tepeye doğru uzanan oluk
O', O	: Ön ve arka tali boşluklar

PLATE I.

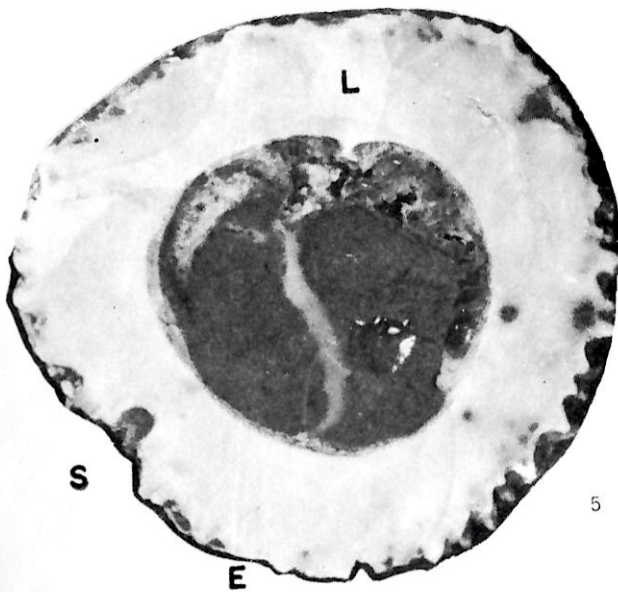
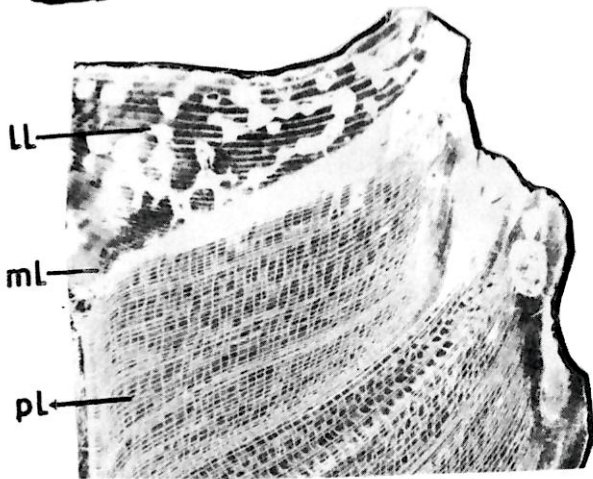
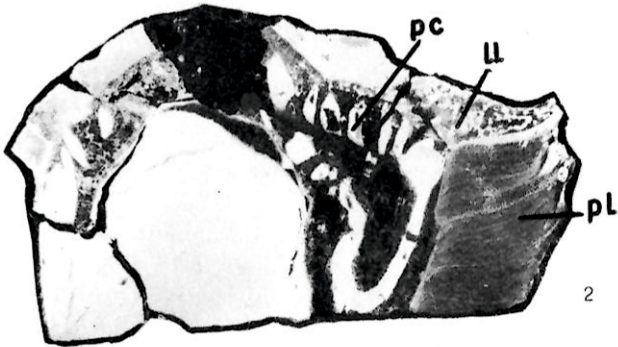
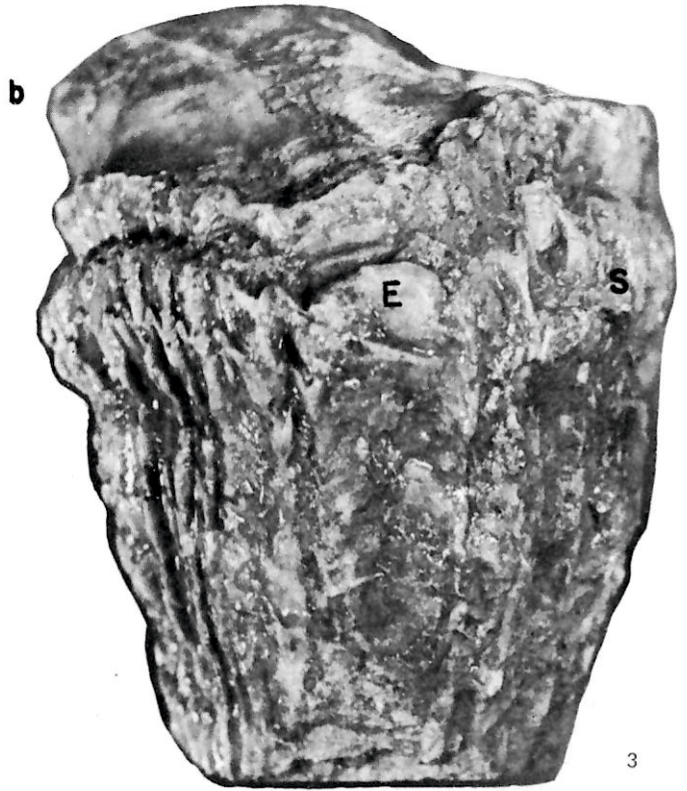
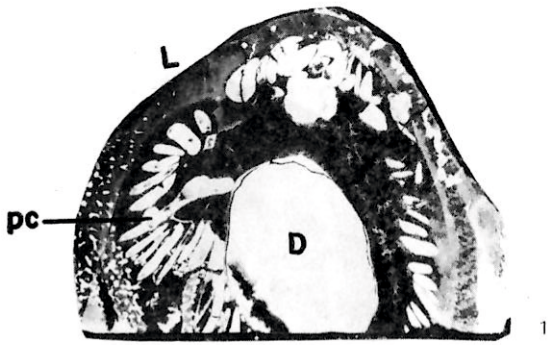
Balabania acuticostata n. gen. n. sp.

- Figure 1: Upper valve, cross-section, holotype, X 1
 Figure 2: Upper and lower valve, tangential section, holotype, X 1
 Figure 3: Upper and lower valve, external view, holotype, X 1
 Figure 4: Partly enlarged of figure 2, X 4,4
 Figure 5: Lower valve, cross-section, holotype, X 1
 Figure 6: Lower valve, view of the siphonal region, holotype, X 1

LEVHA I.

Balabania acuticostata n. gen. n. sp.

- Şekil 1: Üst kavkı, enine kesit, holotip, X 1
 Şekil 2: Üst ve alt kavkı, teğetsel kesit, holotip, X 1
 Şekil 3: Üst ve alt kavkı, dıştan görünüm, holotip, X 1
 Şekil 4: Şekil 2 nin kısmen büyütülmüşü, X 4,4
 Şekil 5: Alt kavkı, enine kesit, holotip X 1
 Şekil 6: Alt kavkı, sifonal bölgenin görünümü, holotip, X 1



1

2

4

5

3

6

PLATE II.

Balabania elongata n. s.p.

- Figure 1: Upper and lower valve, view of the siphonal region, holotype X 1
Figure 2: Upper valve, cross-section, holotype, X 1,6
Figure 3: Upper valve, holotype, X 1
Figure 4: Lower valve, cross-section, holotype, X 1
Figure 5: Upper valve, holotype, X 1
Figure 6: Upper and lower valve, external view of the siphonal region, paratype X 1

LEVHA II.

Balabania elongata n. sp.

- Şekil 1: Üst ve alt kavkı, sifonal bölgenin görünümü, holotip, X 1
Şekil 2: Üst kavkı, enine kesit, holotip, X 1,6
Şekil 3: Üst kavkı, holotip, X 1
Şekil 4: Alt kavkı, enine kesit, holotip, X 1
Şekil 5: Üst kavkı, holotip, X 1
Şekil 6: Üst ve alt kavkı, sifonal bölgenin dıştan görünümü, paratip, X 1

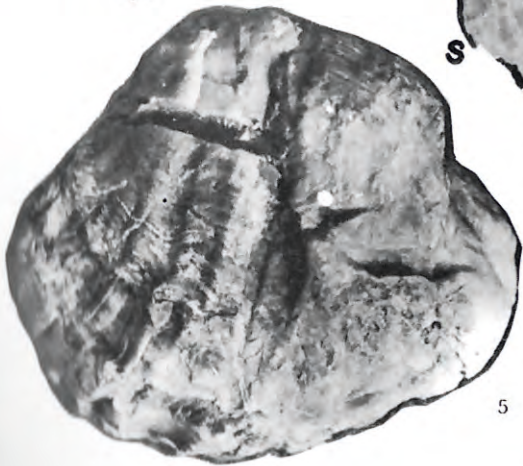
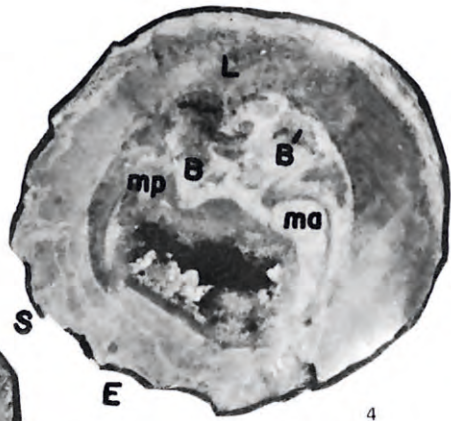
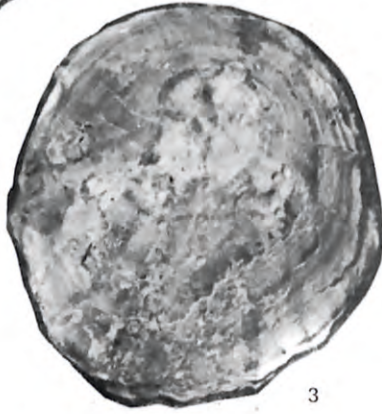
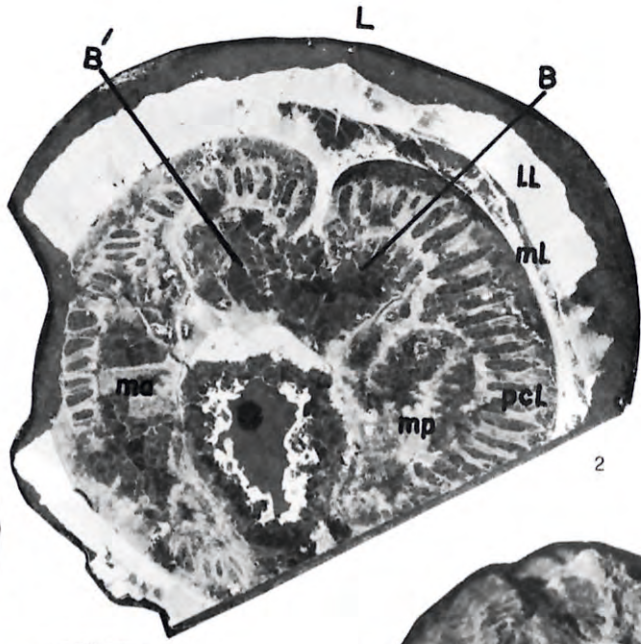


PLATE III.

Balabania densicostata n. sp.

- Figure 1: Upper and lower valve, external view, holotype, X 1
Figure 2: Lower valve, cross-section, holotype, X 1
Figure 3: Upper and lower valve, view of the siphonal region, holotype, X 0,7
Figure 4: Upper valve, cross-section (slightly oblique), specimen from Yazihan, X 2

Balabania melitenensis n. sp.

- Figure 5: Upper valve, cross-section, holotype, X 1
Figure 6: Lower valve, cross-section, holotype, X 1
Figure 7: Upper and lower valve, anterior view, holotype, X 1

LEVHA III.

Balabania densicostata n. sp.

- Şekil 1: Üst ve alt kavkı, dıştan görünüm, holotip, X 1
Şekil 2: Alt kavkı, enine kesit, holotip, X 1
Şekil 3: Üst ve alt kavkı, sifonal bölgenin görünümü, holotip X 0,7
Şekil 4: Üst kavkı, enine kesit (hafifçe eğik). Yazihan nümunesi, X 2

Balabania melitenensis n. sp.

- Şekil 5: Üst kavkı, enine kesit holotip, X 1
Şekil 6: Alt kavkı, enine kesit, holotip X 1
Şekil 7: Üst ve alt kavkı, önden görünüm, holotip, X 1

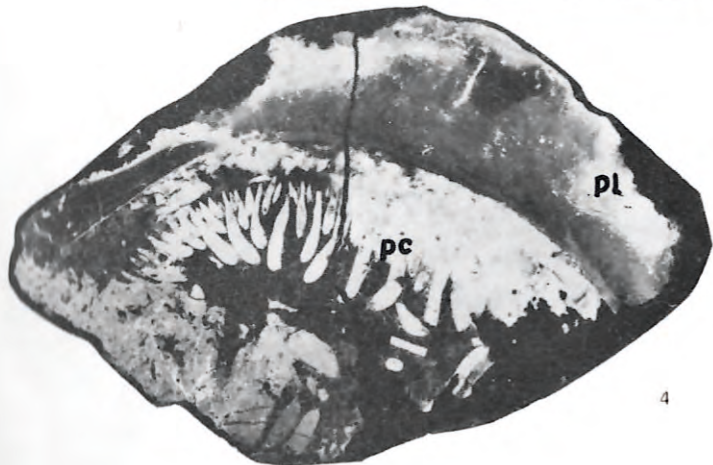
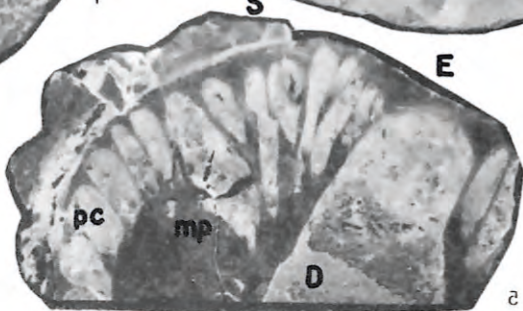
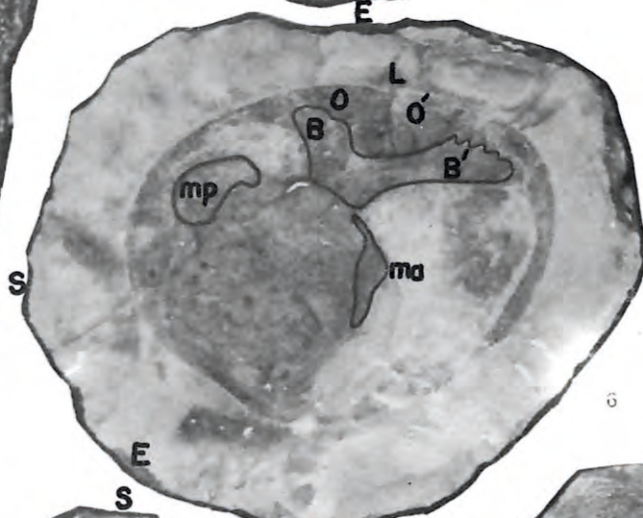
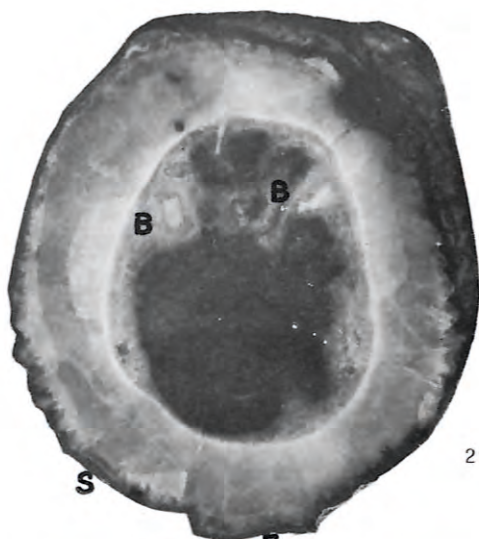


PLATE IV

Balabania acuticostata n. sp.

- Figure 1: Lower valve, longitudinal section of the prismatic layer, holotype, X 20
Figure 2: Lower valve, cross-section of the prismatic layer, holotype, 12.
Figure 3: Lower valve, cross-section of the prismatic layer, holotype, X 3,5
Figure 4: Upper valve, longitudinal section, holotype, X 1

Kurtinia hemispherica n. gen. n. sp.

- Figure 5: Upper and lower valve, anterior view, holotype, X 1
Figure 6: Position of the commissure in the siphonal region, holotype, X 1
Figure 7: Lower valve, cross-section, holotype, X 1
Figure 8: Upper valve, cross-section, holotype, X 1

Colveraia variabilis Klinghardt

- Figure 9: Upper valve, tangential section, X 1

LEVHA IV

Balabania acuticostata n. sp.

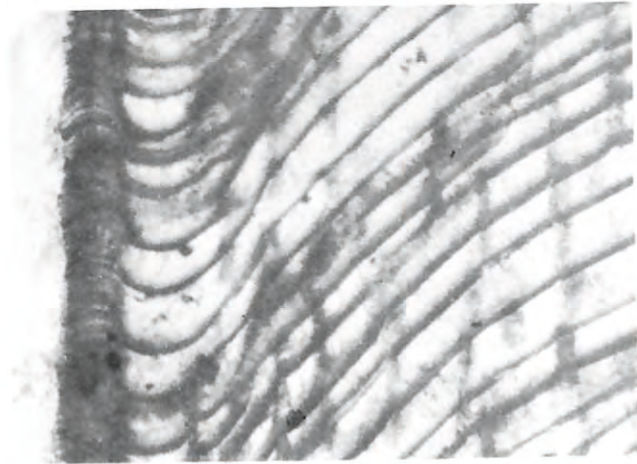
- Şekil 1: Alt kavkı, prisma tabakasının boyuna kesiti, holotip, X 20
Şekil 2: Alt kavkı, prisma tabakasının enine kesiti, holotip, X 12
Şekil 3: Alt kavkı, prisma tabakasının enine kesiti, holotip, X 3.5
Şekil 4: Üst kavkı, boyuna kesit, holotip, X 1

Kurtinia hemispherica n. gen. n. sp.

- Şekil 5: Üst ve alt kavkı, önden görünüm, holotip, X 1
Şekil 6: Sifonal bölgede komissürün durumu, holotip, X 1
Şekil 7: Alt kavkı, enine kesit, holotip, X 1
Şekil 8: Üst kavkı, enine kesit, holotip, X 1

Colveraia variabilis Klinghardt

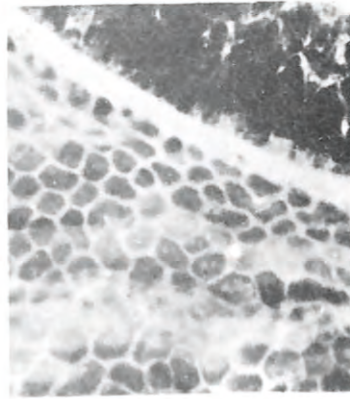
- Şekil 9: Üst kavkı, teğetsel kesit, X 1



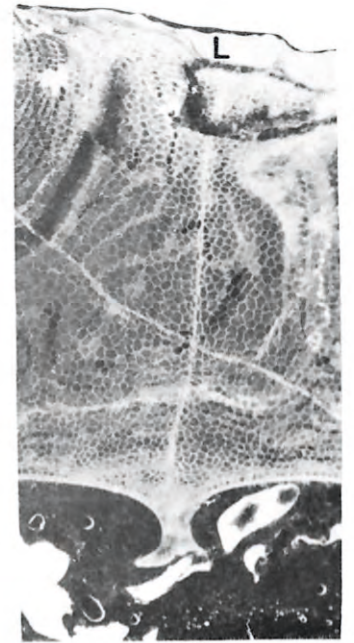
ipl

pl

1



2

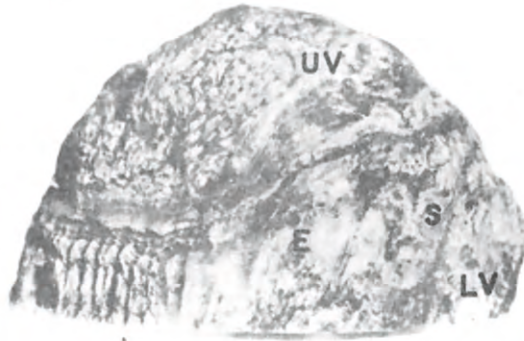


L

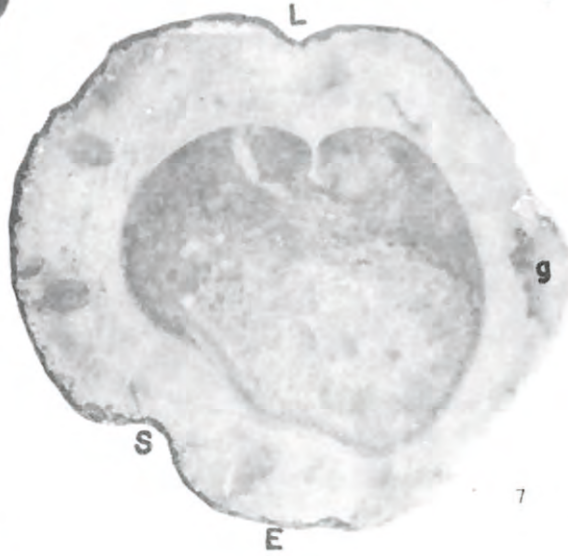
3



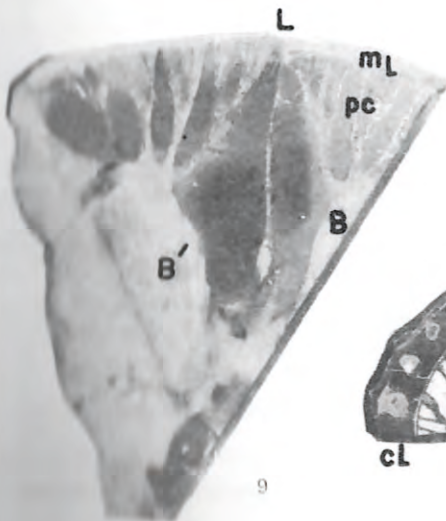
5



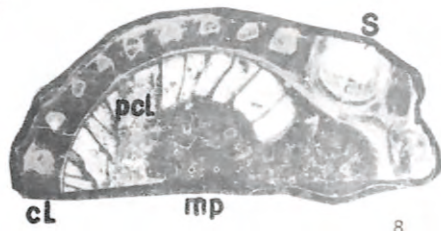
6



7



9



8



4