

Description of six new species of the *Alveolina* found in the South of Polatlı (sw Ankara) region

Güney Pölatlı (GB ANKARA) bölgesinde bulunan altı yeni Alveölin türünün tanımlamaları

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ABSTRACT: Six new species of *Alveolina* are described from the Polatlı region. *Alveolina polathensis* n.sp. (Upper Ilerdian), *A. blumenthali* n.sp. (Middle Ilerdian) belong to the group of *Alveolina ellipsoidalis*; *A. bayburtensis* n.sp. (Middle-Upper Cuisian), *A. sakaryaensis* n.sp. (Middle Ilerdian) belong to the group of *Alveolina Canavarii*; *A. ankaraensis* n.sp. (Middle Ilerdian) belong to the group of *Alveolina pasticillata*; *A. haymanaensis* n.sp. (Lower Cuisian) belong to the group of *Alveolina elUptica*.

ÖZ: Polatlı bölgesinden, yeni altı *Alveolina* türlerinin tanımlamaları yapılmıştır. Bunlardan *Alveolina polathensis* n.sp. (Üst Üerdien), *A. blumenthali* n.sp. (Orta İlerdiyen), *Alveolina ellipsoidalis* gurubunun; *A. bayburtensis* n.sp. (Orta-Üst Kürziyen), *A. sakaryaensis* n.sp. (Orta İlerdiyen), *Alveolina canavarii* gurubunun; *A. ankaraensis* n.sp. (Orta İlerdiyen), *Alveolina pasticillata* gurubunun; *A. haymanaensis* n.sp. (Alt Kūziyen) *Alveolina elliptica* gurubunun türleridir.

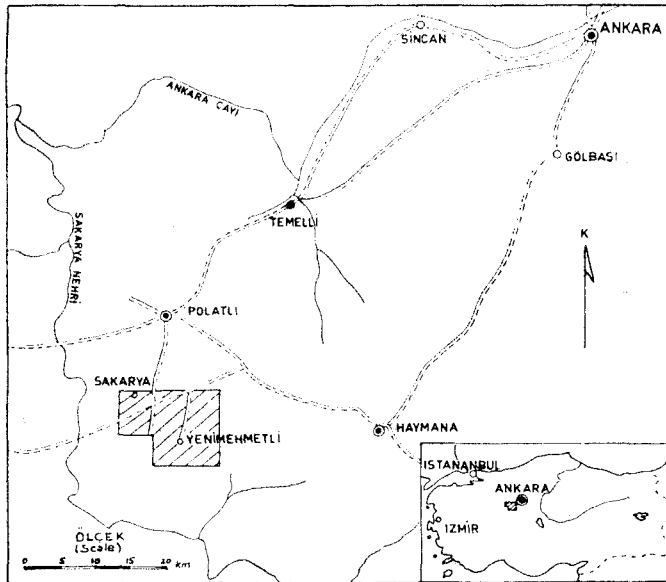


Figure 1: location map.

Sebil 1: Ter bldnru haritası.

INTRODUCTION

Six new species of *Alveolina* have been described in the specimens collected from the south of Polatlı (SW ANKARA), (figure 1).

The stratigraphy of the south of Polatlı region is given by the present author (Sirel, 1975).

The specimens are deposited at the paleontological section of Mineral Research and Exploration Institute of Turkey, Ankara.

SYSTEMATIC STUDY

Order : FORAMINIFERIDA Eichwald 1830

Family : ALVEOLINIDAE Ehrenberg 1829

Genus : ALVEOLINA d'Orbigny 1826

Alveolina polatliensis n.sp.

(plate n, figure 1, 3, 4, 6)

Derivatio-nominis: Polatlı, a county of Ankara.

Holotype: (P.6), plate II, figure 1, 4, 6.

Paratype: (P.7), plate II, figure 3.

Material: 3 free samples obtained from the very soft clayey limestone.

Type locality: South of Polatlı, Sakarya village.

Type level: Upper Ilerdian, Kirkkavak formation, Ranikot-halia nuttalli zone.

Diagnosis

Test elongated oval, indice of prolongation (ratio of axial diameter to equatorial diameter) 2, 3, basal layer very thin in the first 2-3 and last 4-5 whorls, very small chamberlets with generally oval cross-section.

Description

Microspheric Form.

External Characters. Test is elongated oval, axial diameter 7,3 - 9,1 mm, equatorial diameter 3,1 - 3,9 mm and indice of prolongation 2,3. 22.23 whorls are counted in an axial diameter of 9,1 mm.

Internal Characters. Proloculum is very small, the first 1-2 whorls are coiled in mdlioline (triloculina) shape. In the following 4 whorls, basal layer is very thin, thickness of the basal layer are smaller than the height of the chamberlets, the cross-sections of the chamberlets are oval in shape and their height are smaller than their width. The following 9 whorls are coiled loosely along the polar axis, axial thickening of the basal layer is 4-7 times thicker than the height of the chamberlets, chamberlets are very small and their cross-sections are oval to rounded in shape. The last 4-5 whorls are coiled tightly, the axial thickening of the basal layer are smaller than the height of the chamberlets, the chamberlets are small, their cross-sections are generally oval in shape and their height are greater than their width.

Comparissons and Remarks

Alveolina polathensis n.sp. resembles by its external shape to the microspheric form of *A. rutimeyeri* Hottinger and *A. corbarica* Hottinger, but it differs from them, by having tightly coiling $d\ell$ the spire and more delicate internal structure.

Alveolina blumenthali n.sp.

(plate I, figure 5)

Derivatio-nominis: This name is dedicated to the geologist M. Blumenthal who has great contributions on the geology of Turkey.

Holotype: (P.5), plate I, figure 5.

Material: Only one free sample of alveolina obtained from the very soft clayey limestone.

Type locality: South of Polatlı, Sakarya village.

Type level: Middle Ilerdian, Kirkkavak formation, *Alveolina ellipsoidalis* - *A. cucwmiformnte* zone.

Diagnosis

Test oval, indice of prolongation 1,5, coiling tightly, 1-2 whorls which follow the first 10 whorls flosculinized, chamberlets small and arranged closely.

Description

Microspheric Form.

External Characters. Test is oval, axial diameter 6,6 mm, equatorial diameter 4,4 mm and indice of prolongation 1,5. It is counted 18 whorls for an axial diameter of 6,6 mm.

Internal Characters. Proloculum was not obtained. In the first 10 whorls, the coiling is regular and tight, the basal layer is very thin, the cross-sections of the chamberlets are oval and generally their height is greater than their width. In the following 1-2 whorls, spire interval increase suddenly dn width and this corresponds to the flosculinization period of the test.

In the following 8 whorls, the spire intervals becomes narrower and stays constant till the last whorl, the basal layer is very thin, the height of the chamberlets are greater than the thickness of the basal layer, the cross-sections of the chamberlets are generally subrectangular in shape and their height are greater than their width.

Comparissons and Remarks

This new species resembles to *Alveolina agrigentina* Sorrentina by its coiling pattern; but it differs from *A. agrigentina* by having an external oval shape, greater chamberlets and having also more thinner basal layer in the flosculinization stage. It resembles also to the microspheric form of *A. ellipsoidalis* Schwager by its external oval shape but it differs from the later by having 1-2 flosculinized whorls.

Alveolina bayburtensis n.sp.

(plate I, figure 1-3)

1960 *Alveolina* aff. *canavarti* Checchia - Rispoli, Hottinger, tsxt figure 68 e.

Derivatio-nominis: Bayburt, a village of Polatlı, Ankara.

Holotype: (P.1), plate I, figure 1.

Paratype: (P.2,3), plate I, figure 2-3.

Material: 10 free samples obtained from the very soft sandy limestone.

Type locality: South of Polatlı, Bayburt village.

Type level: Middle Upper Cuisian, Eskipolatlı formation, *Alveolina* aff. *lehneri* - *A. canavarii* zone.

Diagnosis

Test cylindrical in shape, poles fairly depressed inward, indice of prolongation 1,3 - 1,4, proloculum very big and spheric, its average diameter about 790 μ chamberlets very small and arranged very closely.

Description

Macrospheric Form.

External Characters. Test is cylindrical, the poles are fairly depressed inward. The axial diameter is 7,3 - 7,8 mm, equatorial diameter 4,9 - 5,7 mm, and indice of prolongation 1,3 - 1,4. It is counted 7 whorls for an axial diameter of 7,8 mm (in holotype).

Internal Characters. Proloculum is spheric, very large and its diameter varies between 725-825 μ . All of the whorls which follow the proloculum show flosculinization. The basal layer of all of the whorls are very thick along the polar (axial) and equatorial axis. The chamberlets are very small and arranged very closely. The cross-sections of the chamberlets are rounded but in the last 3 whorls, they become oval and their height are greater than their width.

Comparisons and Remarks

Alveolina bayburtensis n.sp. is distinguished from *A. canavarii* Checchia - Rispoli by its external shape and by having very small chamberlets arranged closely. In addition *A. bayburtensis* n.sp. has a thicker basal layer. Also it differs from *A. laxa* Hottinger by having coarser internal texture because holotype of *A. bayburtensis* n.sp. has 7 whorls in an axial section of 7,8 mm while holotype of *A. laxa* has 10 whorls in an axial section of 4,7 mm. *A. bayburtensis* n.sp. differs from *A. sakaryaensis* n.sp. by its external shape and by having loosely coiling of the spire.

Alveolina sakaryaensis n.sp.

(plate n, figure 5; plate HI, figure 4)

Derivatio-nominis: Sakarya, a village of Polatli, Ankara.

Holotype: (P.8), plate H, figure 5.

Paratype: CP.9), plate in, figure 4.

Material: 3 free samples obtained from the very soft clayey limestone.

Type locality: South of Polatli, Sakarya village.

Type level: Middle Ilerdian, Kirkkavak formation, *Bani kothalia couisensis* zone.

Diagnosis

Test oval, indice of prolongation 1,6, coiling tight, proloculum very big.

Description

Macrospheric Form.

External Characters. Test is oval, The axial diameter is 5,6 - 6,5 mm, equatorial diameter 3,6 - 3,8 mm and indice of prolongation 1,6. It is counted 11 whorls for an axial diameter of 5,6 mm.

Internal Characters. Proloculum is very big and ovate in shape, sometimes is double. The diameter of megalosp-

here of holotype is about 350X590 μ . The first 2-3 whorls which follow the proloculum are coiled tightly, the basal layer is very thin, thickness of the basal layer is smaller than the height of the chamberlets, the chamberlets are irregular in shape. The following 4-5 whorls are coiled loosely along the polar axis, the axial thickening of the basal layer is 3-4 times thicker than the height of chamberlets, the chamberlets are very small and arranged closely, their cross-sections are oval and their height are greater than their width. In the last 4-5 whorls, the axial thickening of the basal layer becomes narrower and stays constant till the last whorl.

Comparisons and Remarks

Alveolina sakaryaensis n.sp. is distinguished from *A. canavarii* - *A. ciafaloi* Checchia - Rispoli by its delicate internal texture. *A. sakaryaensis* n.sp. has larger amount of whorl within a small diameter, i.e. in an axial section of 5,6 mm *A. sakaryaensis* n.sp. has 11 whorls while *A. canavarii* has 9 whorls in an axial section of 7,5 mm and *A. ciafaloi* has 8 whorls in an axial section of 6,3 mm. *A. sakaryaensis* n.sp. differs from *A. bayburtensis* n.sp. by its external shape and having more delicate internal texture.

Alveolina ankaraensis n.sp.

(plate I, figure 4,6)

Derivatio-nominis: Ankara, capital city of Turkey.

Holotype: (P.4), plate I, figure 4,6.

Material: 2 free samples obtained from the very soft clayey limestone.

Type locality: South of Polatli, Sakarya village.

Type level: Middle Ilerdian, Kirkkavak formation, *A. ellipsoidalis* - *A. cucumiformis* zone.

Diagnosis

Test subspheric, coiling very tight in the Krst 17 whorls and flosculinization in last 2 whorls.

Description

Microspheric Form.

External Characters. Test is subspheric, axial diameter 4,1 mm, equatorial diameter 3,7 mm and indice of prolongation 1,1. It is counted 19 whorls for an axial diameter of 4,1 mm.

Internal Characters. Proloculum is subspheric and very small, the diameter of the megalosphere is about 45 μ . The first 17 whorls are coiled very tightly, the basal layer is very thin, the chamberlets are small and arranged closely, their cross-sections are generally rounded. The height of the chamberlets are greater than the thickness of the basal layer. Last 2 whorls are flosculinized, the thickness of the basal layer is 3-6 times thicker than the height of the chamberlets. The cross-sections of the chamberlets are various in shape.

Comparisons and Remarks

Alveolina ankaraensis n.sp. is easily distinguished from the all other species of spheric *Alveolina* by its external shape and having 17 whorls which are coiled very tightly and having last 2 flosculinized whorls.

Alveolina haymanaensis n.sp.

(plate n, Figure 2; plate m, figure 1-3)

Derdvatio-nominis: Haymana, a county of Ankara.

Holotype: (P.10), plate H, figure 2; plate III, figure 1.

Paratype: (P.11-12), plate in, figure 2-3.

Material: 4 free samples obtained from the very soft clayey limestone.

Type locality: South of Polatlı, Sakarya village.

Type level: Lower Cuisian, Eskipolatlı formation, *Num. mulites planulattCs-Alveolina oblonga* zone.

Diagnosis

Test oval, indice of prolongation 1,5, coiling very tight.

Description

Microspheric Form.

External Characters. Test is oval, axial diameter 9 - 9,5 mm, equatorial diameter 6 - 6,3 mm and indice of prolongation 1,5. It is counted 25 - 26 whorls for an axial diameter of 9,5 mm.

Internal Characters. Proloculum is very small (can not be measured) the first 1-2 whorls are coiled in milioline shape. The following 5 whorls are coiled tightly, the basal layer is very thin, the tickness of the basal layer is smaller than the height of the chamberlets and the cross-sections of

the camberlets are rounded. The following 7-8 whorls are coiled loosely along the polar axis, the axial thickening of the basal layer is 2-3 times thicker than the height of the chamberlets, the cross-sections of he chamberlets are oval and their height are greater than their width. In the last 12-13 whorls, spire interval becomes narrower and stays constant till the last whorl along the polar and equatorial axis, the chamberlets are arranged closely, their cross-section are subrectangular in shape and their height are greater than their width. The thickness of the basal layer is smaller than the height of the chamberlets.

Macrospheric Form.

External Characters. Test is oval, axial diameter 8,6 mm, equatorial diameter 5,5 mm and indice of prolongation 1,5. It is counted 15 whorls for an axial diameter of 8,6 mm.

Internal Characters. Proloculum is ovate, the diameter of the megalosphere is about 334X 448 p. The first 3 whorls are coiled tightly, the basal layer is very thin, the cross-sections of the chamberlets are rounded and the height of the chamberlets is greater than the thickness of the basal layer. The other characters of the macrospheric form are the same of the microspheric form.

Comparisons and Remarks

Alveolina haymanaensis n.sp. is easily distinguished from the all other species of alveolina by its external oval shape and by having tightly coiling of the spire.

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CITED REFERENCES

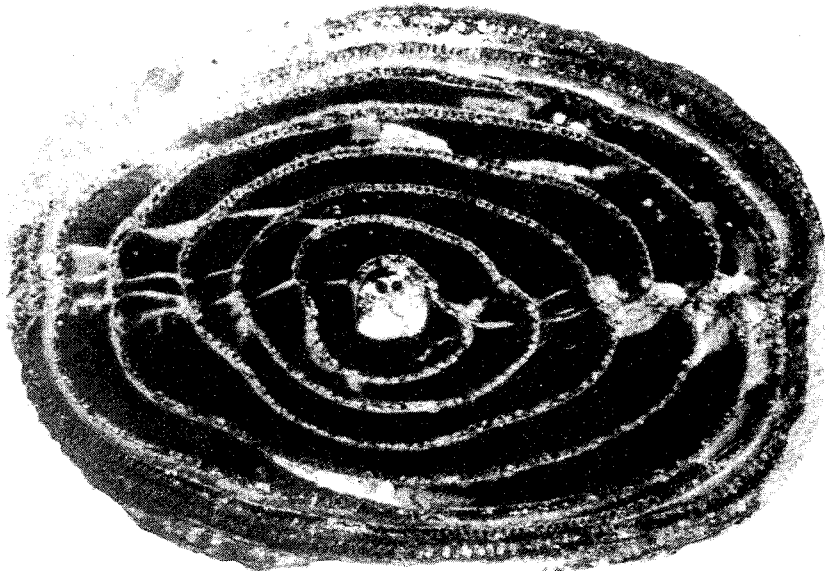
- Hottinger, L., 1960. Recherches sur les alveolines du Paléogène et de l'Eocène: Mem. Suisse de Paléont., Basel, 75-76, 1-236.
Sirel, E., 1975. Polatlı (GB Ankara) güneyinin stratigrafisi: Türkiye Jeol. Kur. Bült., Ankara, 18, 2, 181-192.

PLATE I

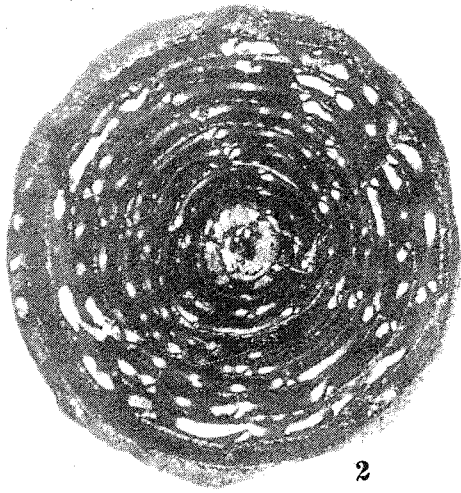
- Figure 1: *Alveolina bayburtensis* n.sp. axial section, macrospheric form, holotype (P.1), X 14.
Figure 2: *A. bayburtensis* n.sp., equatorial section, macrospheric form, paratype (P.2), X 11
Figure 3: *A. bayburtensis* n.sp., axial section, macrospheric form, paratype (P.3), X 12,5
Figure 4: *A. ankaraensis* n.sp., axial section, microspheric form, holotype (P.4), X 20.
Figure 5: *A. blumenthali* n.sp., axial section, microspheric form, holotype (P.5), X 12,5
Figure 6: *A. ankaraensis* n.sp., axial section, containing the first 8-9 whorls of the holotype, X 190

LEVHA I

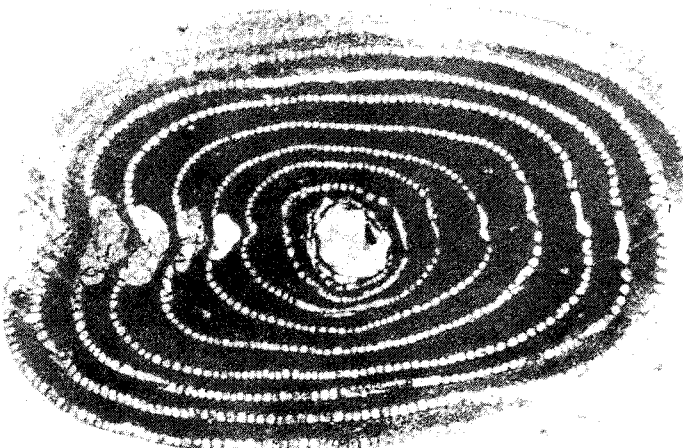
- Şekil 1: *Alveolina bayburtensis* n.sp., eksenel kesit, makrosferik şekil, holotip (P.1), X 14
Şekil 2: *A. bayburtensis* n.sp., eksenel dik kesit, makrosferik şekil, paratip (P.2), X 11
Şekil 3: *A. bayburtensis* n.sp., eksenel kesit, makrosferik şekil, paratip (P.3), X 12,5
Şekil 4: *A. ankaraensis* n.sp., eltsenel kesit, mikrosferik şekil, holotip (P.4), X 20
Şekil 5: *A. blumenthali* n.sp., eksenel kesit, mikrosferik şekil, holotip (P.5), X 12,5
Şekil 6: *A. ankaraensis* n.sp., holotipin ilk 8-9 turlarını içeren eksenel kesit, X 190



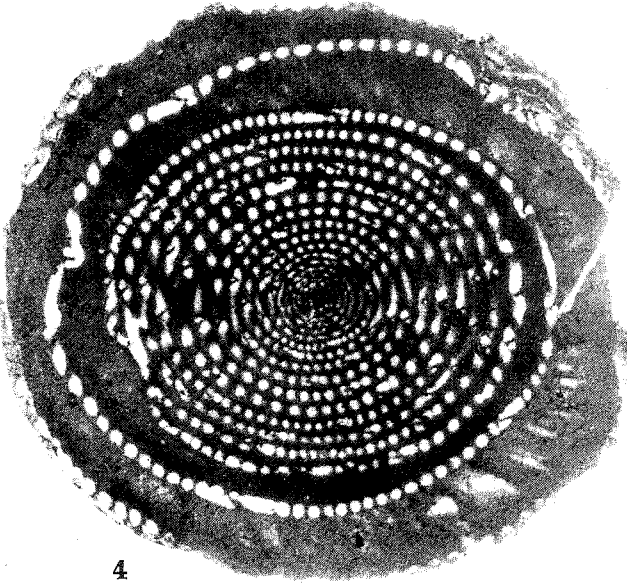
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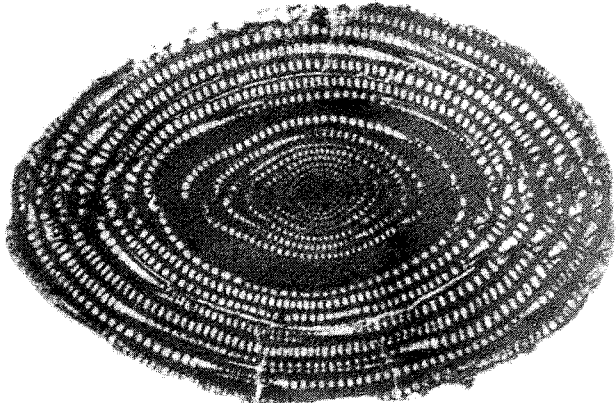
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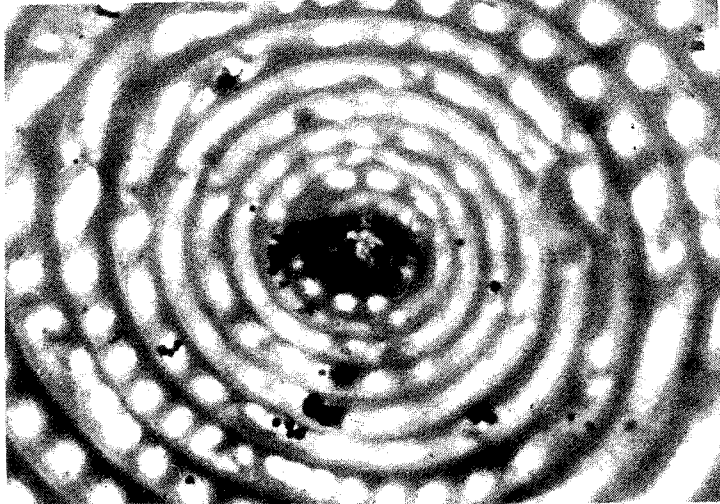
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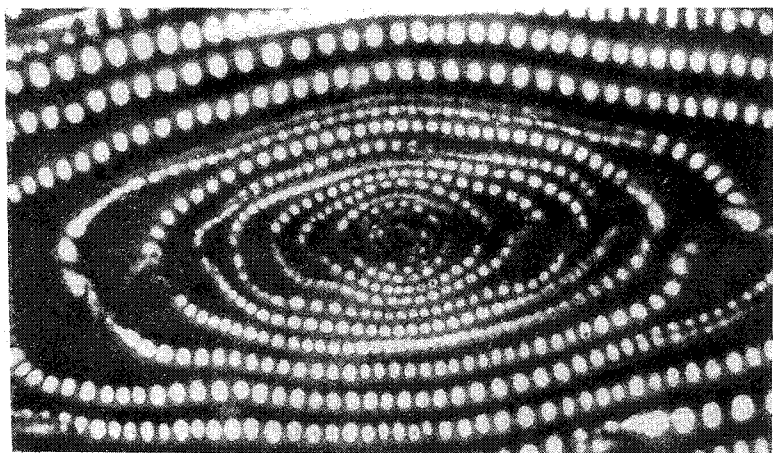
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PLATE D

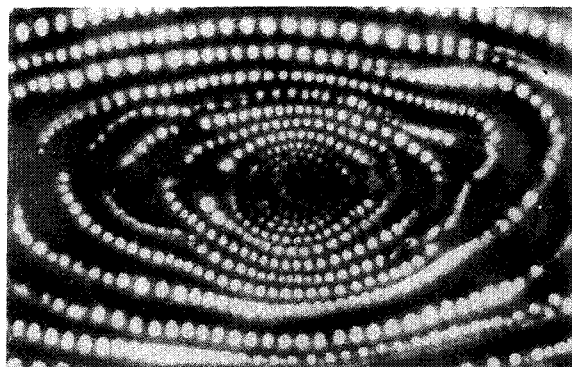
- Figure 1: *Alveolina polathensis* n.sp., axial section, containing¹ the first 13 whorls of the holotype, microspheric form, X 41.
- Figure 2: *A. haymanaensis* n.sp., axial section containing the first 13 whorls of the holotype, microspheric form, X 42.
- Figure 3: *A. polathensis* n.sp., axial section, microspheric form, paratype (P.7), X 15.
- Figure 4: *A. polathensis* n.sp., axial section, containing the juvenile stage of the holotype, microspheric form, X 90.
- Figure 5: *A. sakaryaensis* n.sp., axial section, macrospheric form, holotype (P.8), X 18.
- Figure 6: *A. polathensis* n.sp., axial section, microspheric form, holotype (P.6), X 13,5.

LEVHA II

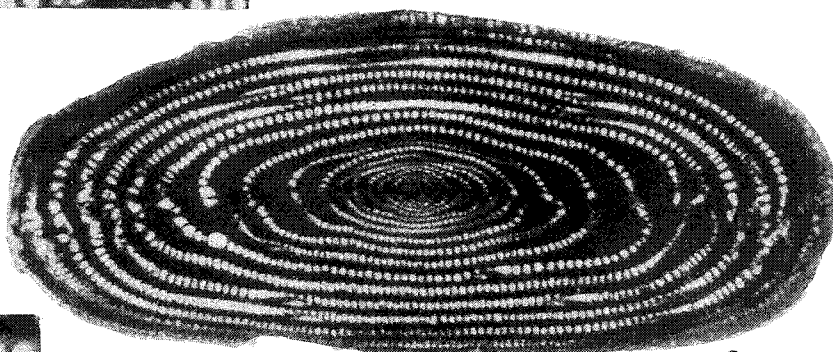
- Şekil 1: *Alveolina polathensis* n.sp., holotipin ilk 13 turlarını içeren eksenel kesit, mikrosferik şekil, X 41,
- Şekil 2: *A. haymanaensis* n.sp., ho'otipin ilk 13 turlarını içeren eksenel kesit, mikrosferik şekil, X 42.
- Şekil 3: *A. polathensis* n.sp., eksenel kesit, mikrosferik şekil, paratip (P.7), X 15.
- Şekil 4: *A. polathensis* n.sp., holotipin genç çağını içeren eksenel kesit, mikrosferik şekil, X 90.
- Şekil 5: *A. sakaryaensis* n.sp., eksenel kesit, makrosferik şekil, holotip (P.8), X 18.
- Şekil 6: *A. polathensis* n.sp., eksenel kesit, mikrosferik şekil, holotip (P.6), X 13,5.



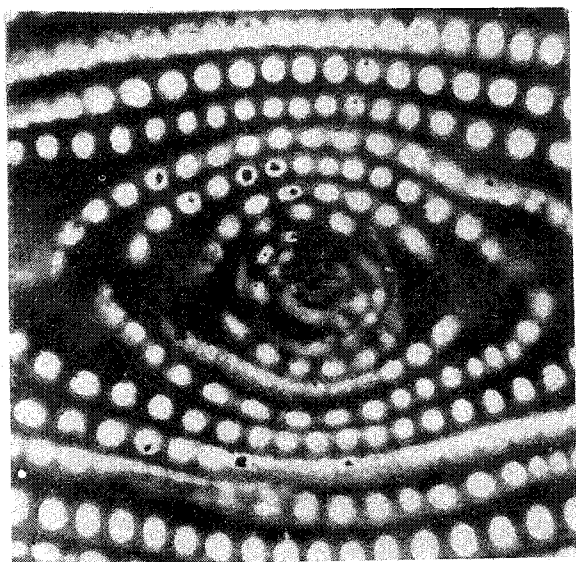
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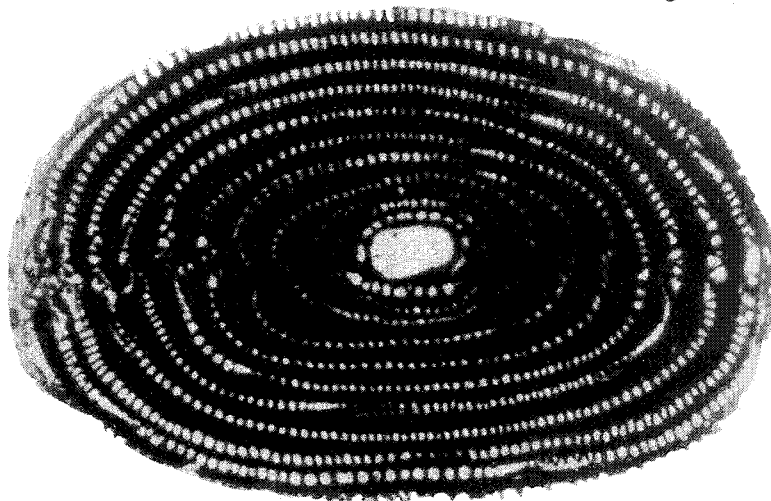
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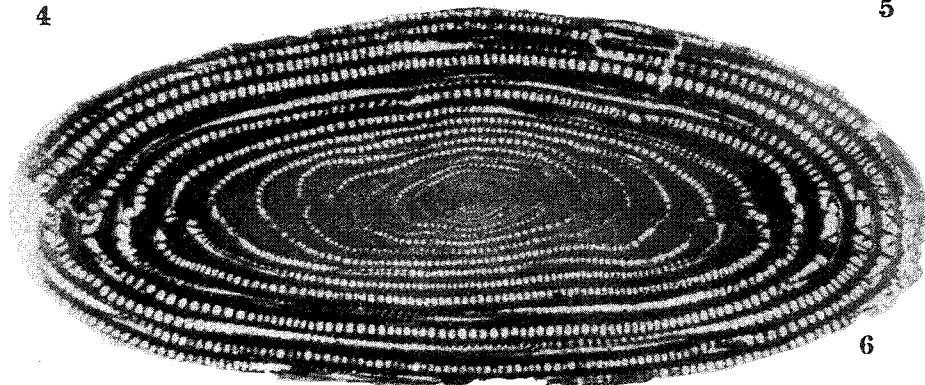
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PLATE IH

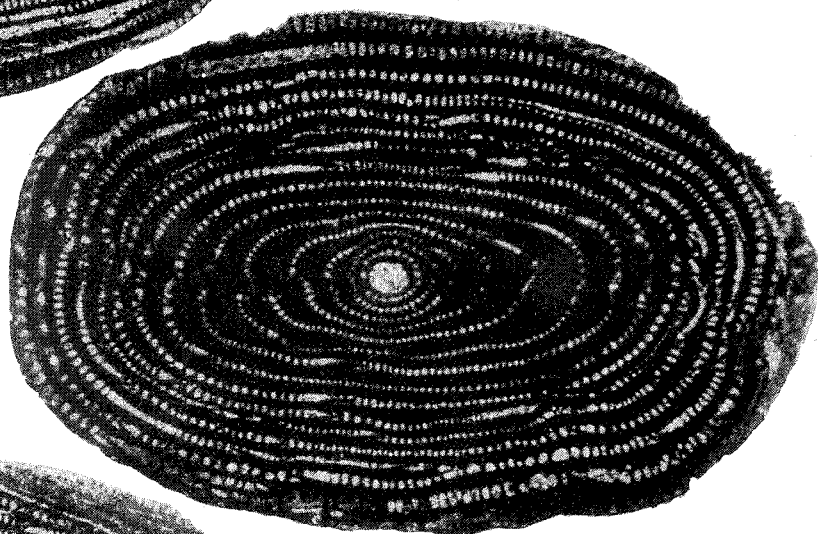
- Figure 1: *Alveolina haymanaensis* n.sp., axial section, microspheric form, holotype (P.10), X 11,5.
Figure 2: *A. haymanaensis* n.sp., axial section, macrospheric form, paratype (P.11), X 13.
Figure 3: *A. haymanaensis* n.sp., axial section, microspheric form, paratype (P.12), X 13.
Figure 4: *A. sakaryaensis* n.sp., axial section, macrospheric form, holotype (P.9), X 17.

LEVHA III

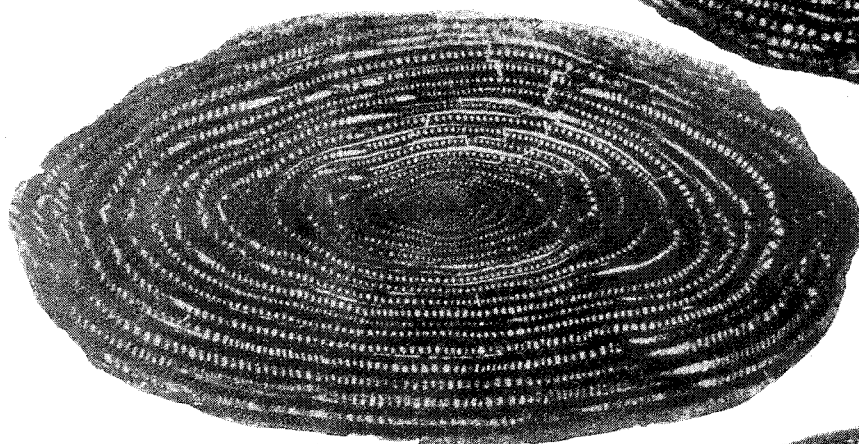
- Şekil 1: *Alveolina haymanaensis* n.sp., eksenel kesit, mikrosiferik şekil, holotip (P.10), X 11,5.
Şekil 2: *A. haymanaensis* n.sp., eksenel kesit, makrosiferik şekil, paratip (P.11), X 13.
Şekil 3: *A. haymanaensis* n.sp., eksenel kesit, mikrosiferik şekil, paratip (P.12), X 13.
Şekil 4: *A. sakaryaensis* n.sp., eksenel kesit, makrosiferik şekil, paratip (P.9), X 17.



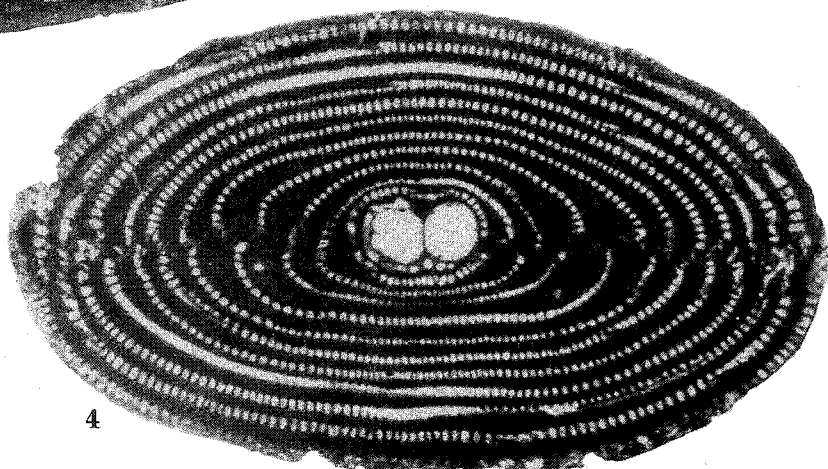
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