

## Description Of Sivasella N. Gen, (Foraminifera) From The Maestrichtian Of Sivas (Central Turkey)

*Sivas Maestrihtiyen'indeki Sivasella n. gen. (Foraminifera) cinsinin tan*

ERCÜMENT SİREL *Maden Tetkik ve Arama Enstitüsü, Ankara*  
HATİCE GÜNDÜZ *Maden TetMk ve Arama Enstitüsü, Ankara*

ABSTRACT: Description of *Sivasella monolateralis* n. gen. n. sp. in Maestrichtian of Şarkışla (SW Sivas) region is given.

ÖZ: Şarkışla (GB Sivas) bölgesi Maestrihtiyen'inde bulunan *Sivasella monolateralis* n. gen, sp/in tanımı verilmiştir.

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## INTRODUCTION

This new genus of the family Orbitoididae has been discovered in the hard sandy limestone. The sample has been collected by Siyamı Özer from the Maestrichtian of Şarkışla (SW Sivas) (figure 1). Investigated sandy lime-stone sample was very hard, for this reason it was not possible to obtain free individuals. The present study is based on the examination of 54 thin sections.

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

## SYSTEMATIC STUDY

Order: FORAMINIFERIDA, Eichwald 1830  
Family: ORBITOIDIDAE, Schwager 1876  
Genus: SIVASELLA n. gen.  
Type species *Sivasella monolateralis* n. gen. n. sp.

## Diagnosis

Test free, low conical, concava-convex in shape, the one side of the test with hyaline filling material, the other side with lateral chambers, wall imperforate hyaline calcareous, equatorial and lateral chambers arcuate in shape, average diameter 0,94 mm, dimorphism present.

## Description

Test free, low conical, concava-convex and rather small. Diameter is 0,72 -1,32 mm, central thickness (height) is about 0,33 mm. Structure of the wall is imperforate hyaline calcareous. The surface of the one side of the test is covered by the filling material. The structure of the filling material is pure hyaline calcareous. Its thickness decreases from center to periphery. In the other side of the test is observed lateral chambers, their shape is arcuate. Embryonic apparatus of the macrospheric forms are very large and possibly bilocular as the *Hellenocyclina* apparatus (Dupeuble, Neumann, Villain, 1972). They are surrounded by thick imperforate wall. The equatorial chambers which round the

embryonic apparatus are arcuate and the chamber's communications are made by stolons (figure 2).

## Comparison and Remarks

Because of the similarities of embryonic apparatus and stolons, this new genus is placed in family Orbitoididae. This new genus resembles to *Hellenocyclina* (Reichel 1949) by its embryonic chambers and stolons but it clearly from differs it by having lateral chambers.

## Stratigraphic occurrence

Maestrichtian of Sivas (Central Turkey).

*Sivasella monolateralis* cap.

(plate I, figure 1-10; plate II, figure 1-8; plate III, figure 1-8).

Derivatio-nominis: Sivas, a city from the central Turkey.

Holotype: (Si. 3), plate I, figure 3.

Palatype: (Si. 2, 6, 7, 8, 9, 10, 12, 15, 18, 19, 23, 25), plate I, figure 2, 6-10; plate II, figure 2, 5, 8; plate III, figure 1, 5, 7.

Material: 50 specimens in the hard sandy limestone.

Type locality: Kışla village, South east of Şarkışla (SW Sivas).

Type level: Maestrichtian.

## Description

Microspheric Form.

External characters. Test is free, low conical, concava-convex.

Structure of the wall is imperforate hyaline calcareous.

Measurements (mm, in 20 specimens)

	Maximum	Minumum	Average
Diameter	1,62	0,87	1,19
Thickness of the filling material	0,084	0,036	0,054
Central thickness with filling material (height)	0,34	0,24	0,30
Central thickness without the filling material	0,29	0,19	0,23

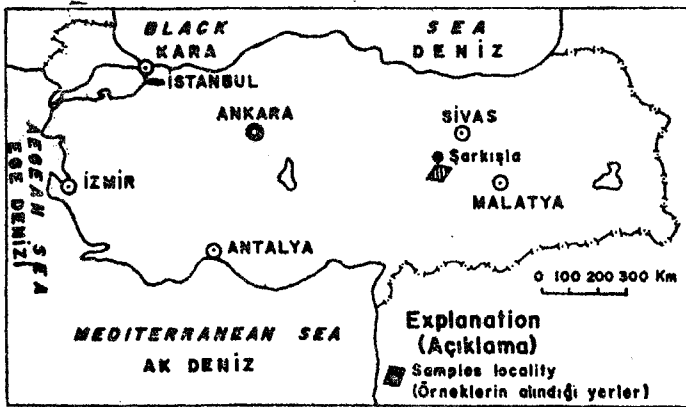


Figure 1: Location map.

Şekil 1: Yer bulduru haritası



Figure 2: Schematic drawings of *Sivasella monolateralis* n. gen. n. sp. (Si. 27), Showing equatorial chambers and stolons, X 166

Şekil 2: *Sivasella monolateralis* n. gen. n. sp. nin ekvatoryal localarını ve stolonlarını gösteren şematik çizimi, (Si. 27), X 166

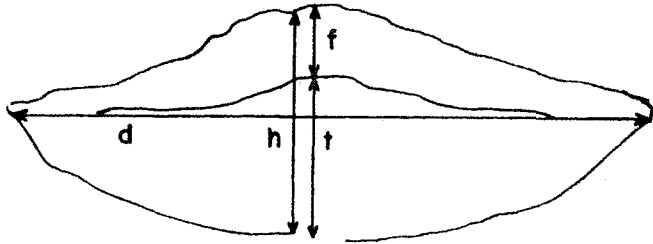
Diameter/height ratio varies between 3,6-4,8 (diameter, thickness of the filling material, and the central thickness is shown in figure 3).

**Axial section.** This section is very characteristic and important for the new genus. Because, the genus can be distinguished very easily from the other genera by its axial section. Internal texture of the microspheric forms are more delicate than the macrospheric forms. One side of the test is covered by the filling material. The structure of the filling material is pure hyaline calcareous and its thickness decreases from center to periphery. Embryonic chambers are very small, subspheric in shape. Their average diameter is about 56  $\mu$ , sometimes they can be seen double (plate I, figure 9) its diameter is about 24X36  $\mu$ . Equatorial chambers can be observed at the basal part of the filling material and they are arranged from center to periphery along the filling material. Their shape is arcuate as the Orbitoides chambers. In the second side of the test there are many lateral chambers which are arranged very irregularly. They are not well visible in our samples, therefore it was not possible to obtain the relationship between those lateral chambers and the equatorial chambers. The shape of the equatorial chambers are arcuate.

**Equatorial section.** Embryonic chambers cannot be observed in the equatorial section of the microspheric form but equatorial chambers are arcuate as the Orbitoides chambers. Chamber's communications are made by stolons.

**Macrospheric form.**

**External characters.** Test is free, low conical, concava-convex. Structure of the wall is imperforate hyaline cal-



**d = Diameter (Çap)**

**f = Thickness of the filling material  
(Dolgu maddesinin kalınlığı)**

**h = Central thickness with filling material  
(Dolgu maddesi ile birlikte merkezi kalınlık)**

**t = Central thickness without the filling material  
(Dolgu maddesiz merkezi kalınlık)**

**Figure 3:** Schematic picture of the diameter, thickness of the filling material, central thickness with filling material and central thickness without the filling material of *Sivasella monolateralis* n. gen. n. sp.

**Sekil 3:** *Sivasella monolateralis* n. gen. n. sp. nin çapını, dolgu maddesinin kalınlığını, dolgu maddesi ile birlikte merkezi kalınlığını gösteren şematik resim.

careous. They are found rather abundant as they are compared to the microspheric forms.

Measurements (mm, in 20 specimens)

	Maximum	Minimum	Average
Diameter	1,03	0,57	0,69
Thickness of the filling material	0,10	0,09	0,07
Central thickness with filling material (height)	0,33	0,18	0,26
Central thickness without the filling material	0,25	0,12	0,19

Diameter/height ratio varies between 2,7 - 3,1.

**Axial section.** Embryonic chambers are generally single and subspheric in shape. Its diameter is about 35  $\mu$ .

The other characters of the macrospheric form are the same of the microspheric form.

**Equatorial section.** Embryonic apparatus of the macrospheric form of *Sivasella monolateralis* n. sp. is very large and possibly bilocular without periembryonic chamber. Diameter of the embryonic chambers are 23X30X35  $\mu$ . They are surrounded by 12  $\mu$  thick imperforate wall. Equatorial chambers are arcuate with stolons, the equatorial chamber's communications are made by stolons (figure 2).

#### Association.

This new species has been found in hard sandy lime-stone with a rich foraminifera composed of *Siderolites calcitrapoides* Lamarck, *Orbitoides* cf. *medius* (d'Arch.), *Lepidorbitoides* sp., *Omphalocyclus* sp., *Sulcoperculina* sp.,

*Globotruncana* sp..

**Acknowledgement**

The Authors would like to express sincere thanks to Mrs. M. Neumann, Mr. J. Sigal and Mr. O. Bignot for their valuable comments.

#### CITED REFERENCES

- Dupeuble, P. A., Neumann, M. and Villain, J. M., 1972, A propos du genre *Hellenocyclina* Reichel: *Revue de Micropaleontologie*, Paris, 15, 1, 3-11.
- Reichel, M., 1949, Sur un nouvel Orbitoide du Cretace superieur MI lenique: *Ecloga Geol. Helv.*, 42, 2, 480-485 .

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7.6.1977

Düzeltilmiş yazının geldiği tarih:  
1.12.1977

Yayıma verildiği tarih:  
1.12.1977

## PLATE I

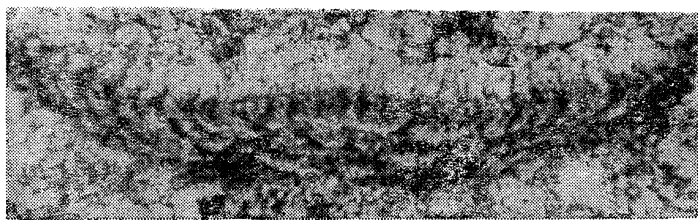
Sivasella monolateralis n. gen. n.sp.

- Figure 1: Subaxial section, macrospheric form, (Si. 1), X 102  
Figure 2: Axial section, microspheric form, paratype, (Si. 2), X 55  
Figure 8: Axial section, macrospheric form, holotype, (Si. 3), X 148  
Figure 4: Subaxial section, microspheric form, (Si. 4), X 70  
Figure B: Subaxial section, microspheric form, (Si. 5), X 50  
Figure 6: Axial section, macrospheric form, paratype, (Si. 6), X 90  
Figure 7: Axial section, macrospheric form, paratype, (Si. 7), X 106  
Figure 8: Axial section, microspheric form, paratype, (Si. 8), X 91  
Figure 9: Axial section, microspheric form, paratype, (Si. 9), X 58  
Figure 10: Axial section, macrospheric form, paratype, (Si. 10), X 106

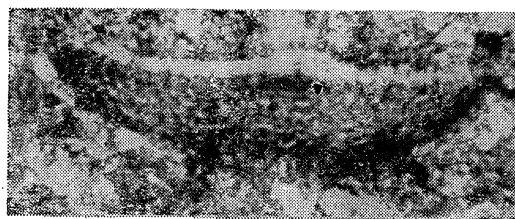
## LEVHA I

Sivasella monolateralis n. gen. n. sp.

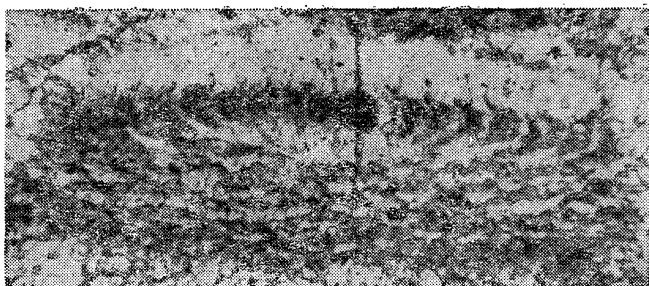
- Şekil 1: Eksene yakın bir düzlemden geçen kesit, makrosferik şekil, (Si. 1), X 102  
Şekil 2: Eksenel kesit, mikrosferik şekil, paratip, (Si. 2), X 55  
Şekil 3: Eksenel kesit, makrosferik şekil, holotip, (Si. 3), X 148  
Şekil 4: Eksene yakın bir düzlemden geçen kesit, mikrosferik şekil, (Si. 4), X 70  
Şekil 5: Eksene yakın bir düzlemden geçen kesit, mikrosferik şekil, (Si. 5), X 60  
Şekil 6: Eksenel kesit, makrosferik şekil, paratip, (Si. 6), X 90  
Şekil 7: Eksenel kesit, makrosferik şekil, paratip, (Si. 7), X 106  
Şekil 8: Eksenel kesit, mikrosferik şekil, paratip, (Si. 8), X 91  
Şekil 9: Eksenel kesit, mikrosferik şekil, paratip, (Si. 9), X 53  
Şekil 10: Eksenel kesit, makrosferik şekil, paratip, (Si. 10), X 106



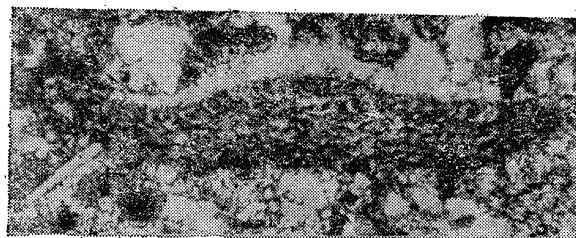
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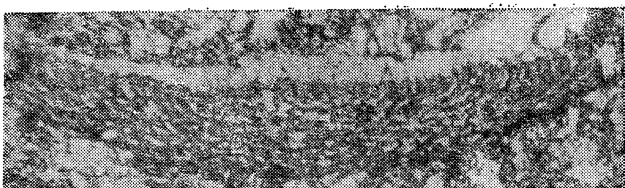
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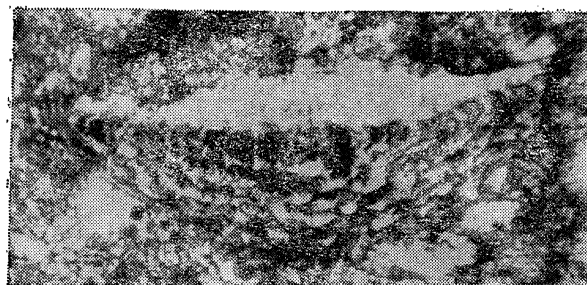
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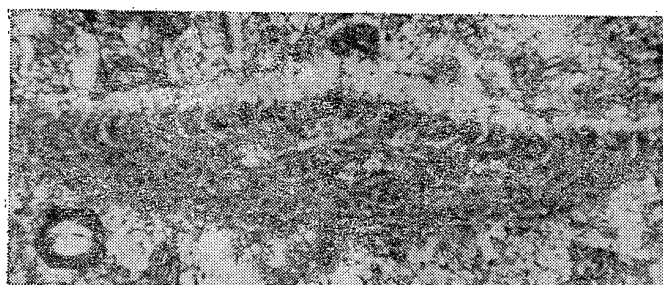
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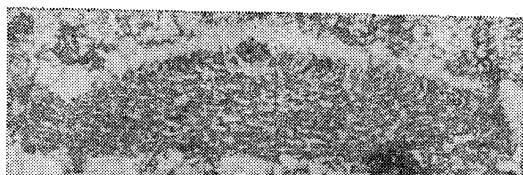
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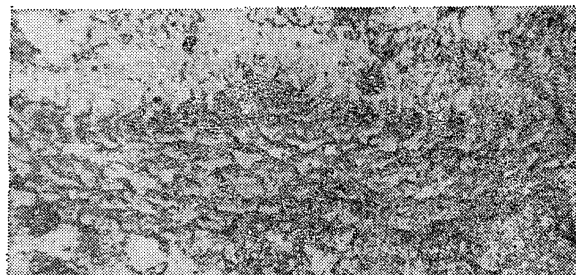
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## PLATE II

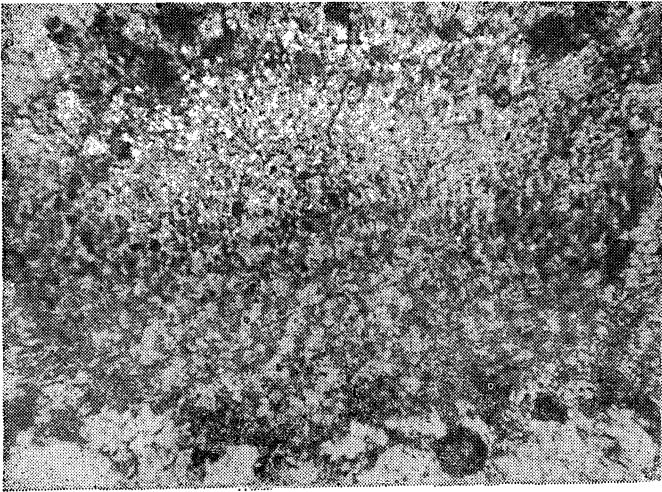
*Sivasella monolateralis* n. gen. n. sp.

- Figure 1: Subequatorial section, slightly oblique, microspheric form, (Si. 11), X 79  
 Figure 2: Subequatorial section, slightly oblique, macrospheric form, paratype, (Si. 12). X 187  
 Figure 3: Subaxial section, (Si. 13), X 47  
 Figure 4: Sandy limestone with *Sivasella monolateralis* n. sp., (Si. 14), X 57  
 Figure 5: Axial section, macrospheric form, paratype, (Si. 15), X 73  
 Figure 6: Subaxial section, microspheric form, (Si. 16), X 66  
 Figure 7: Subequatorial section, slightly oblique, macrospheric form ,(Si. 17), X 170  
 Figure 8: Equatorial section, macrospheric form, paratype, (Si. 18), X 128

## LEVHA II

*Sivasella monolateralis* n. gen. n. sp.

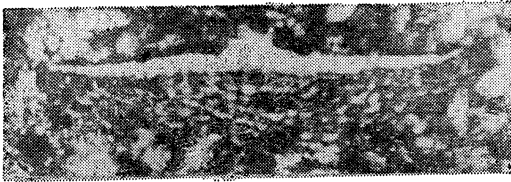
- Şekil 1: Hafifçe eğik subekvatoryal kesit, mikrosferik şekil, (Si. 11). X 79  
 Şekil 2: Hafifçe eğik subekvatoryal kesit, makrosferik şekil, paratip, (Si. 12), X 187  
 Şekil 3: Eksene yakın bir düzlemden geçen kesit, (Si. 13), X 47  
 Şekil 4: *Sivasella monolateralis* n. sp. 11 kumlu kireçtaşı, (Si. 14), X 57  
 Şekil 5: Eksenel kesit, makrosferik geldi, paratip, (Si. 15), X 73  
 Şekil 6: Eksene yakın bir düzlemden geçen kesit, mikrosferik şekil, (Si. 16), x66  
 Şekil 7: Hafifçe eğik subekvatoryal kesit, makrosferik şekil, (Si. 17), X 170  
 Şekil 8: Ekvatoryal kesit, makrosferik şekil, paratip, (Si. 18), X 128



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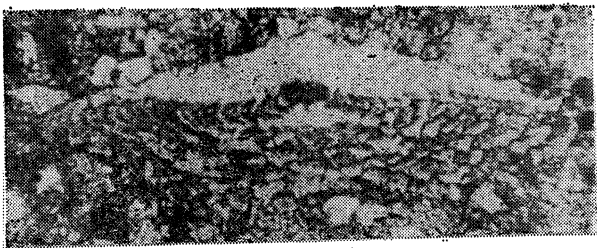
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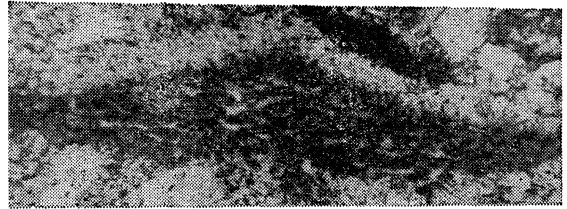
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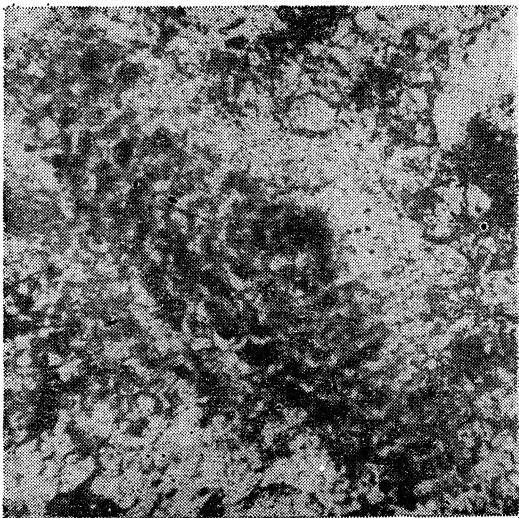
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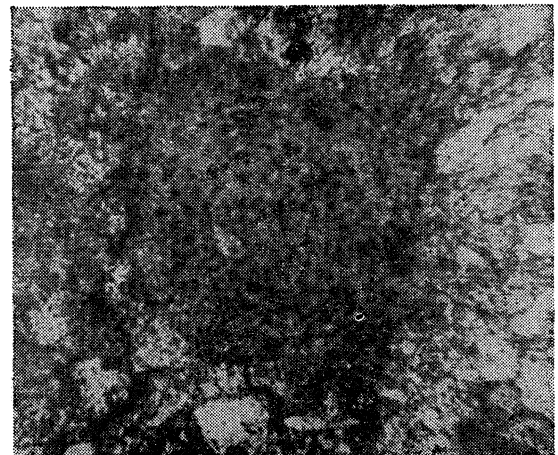
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**PLATE III****»ivasella monolateralis n. gen. n. sp.**

- Figure 1: Embryonic apparatus, macrospheric form, paratype, (Si. 19), X 197  
Figure 2: Axial section, macrospheric form, (Si. 20), X 137  
Figure 3: Axial section, macrospheric form, (Si. 21), X 120  
Figure 4: Subequatorial section, slightly oblique, macrospheric form, (Si. 22), X 143  
Figure 5: Axial section, macrospheric form, paratype, (Si. 23), X 82  
Figure 6: Sandy limestone with Orbitoides and Sivasella monolateralis n. sp. (Si. 24) X 22  
Figure 7: Embryonic apparatus, macrospheric form, paratype, (Si. 26), X 103  
Figure 8: Axial section, microspheric form, (Si. 26), X 61

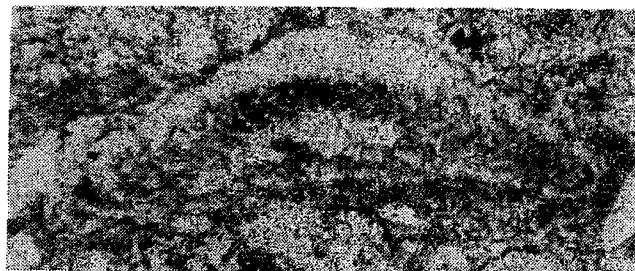
**LEVHA III****Sivasella monolateralis n. gen. n. sp.**

- Şekil 1: Üs localı embriyonik cihaz, makrosiferik şekil, paratip, (Si. 19), X 197  
Şekil 2: Eksenel kesit, makrosiferik şekil, (Si. 20), X 137  
Şekil 3: Eksenel kesit .makrosiferik şekil, (Si. 21), X 120  
Şekil 4: Hafifçe eğik subkvatoryal kesit, makrosiferik şekil, (Si. 22), X 143  
Şekil 5: Eksenel kesit, makrosiferik şekil, paratip, (Si. 23), X 82  
Şekil 6: Sivasella monolateralis n. sp. ve Orbitoides'li kumlu kireçtaşı, (Si. 24), X 22  
Şekil 7: Embriyonik cihaz, makrosiferik şekil, paratip, (Si. 25), X 103  
Şekil 8: Eksenel kesit, mikrosiferik şekil, parotip, (Si. 26), X 61

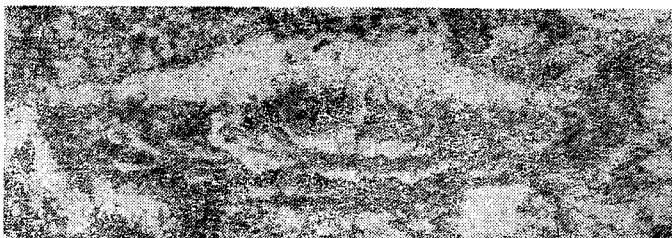




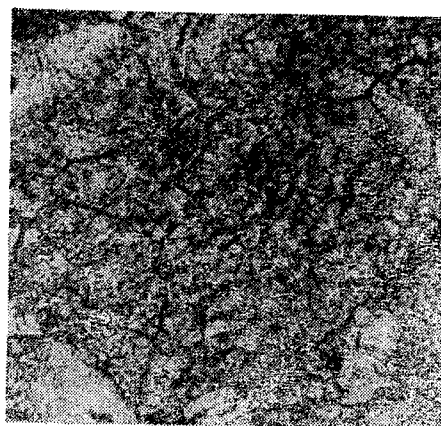
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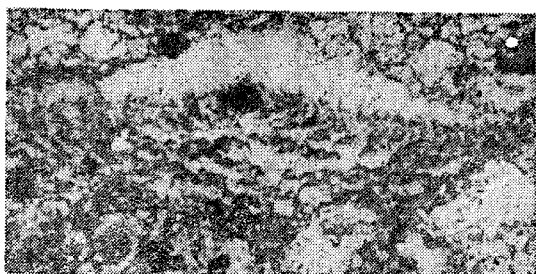
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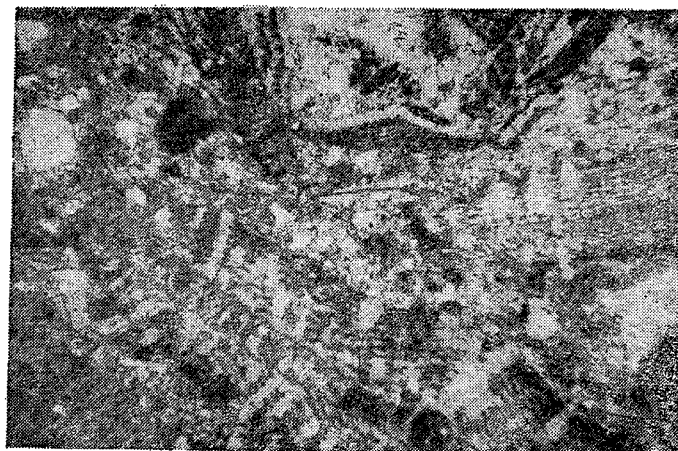
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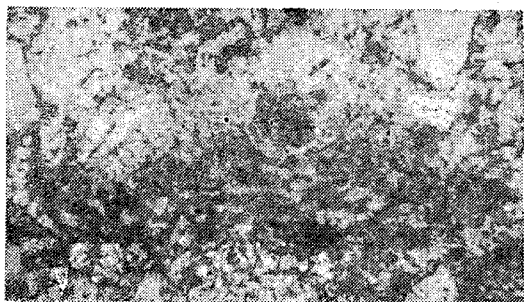
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