Türkiye Jeoloji Kurumu Bülteni, c. 21, 159-164, Ağustos 1978
*Bulletin of the Geological Society of Turkey, v. 21, 159-164, August 1978*

# Description of a new specises of Polydiexodina from Northeast of Elmadağ (Ankara Turkey)*

Elmadağ (Ankara) Kuzeydoğu'sunda bulunan yeni bir Palydiexodina türünün tamım

YAVUZ OKAN *Ankara Üniversitesi Fen Fakültesi JeolojuStratigrafi Kürsüsü*

ABSTRACT : In this investigation, the description of Polydiexiodina erki n. sp. is given which is found abundantly in Upper Permian limestones, and calcareous arenites cropping out at Gensirt hill which is located in NE Elmadağ:. The samples were taken from Late Palaezoic sequence determined in thin sections, and the new species compared with the other well known Polydiexodina species.

ÖZ : Bu çalışmada, Elmadağ Kuzeydoğusunda yer alan Gen sırt tepede yaygın olarak görülen Üst Permiyen kireçtaşı ve kalkerli arenitlerinde çok bol olarak bulunan Polydiexodina erki n. sp. türünün tanımı yapılmaktadır. Genç Paleozoyik serilerinden alman örnekler, incekesitleri yapılarak incelenmiş ve yeni tür, bilinen diğer Polydiexodina türleriyle karşılaştırılmıştır.

(*) This paper is presented in The Sixth Congress of T.B.T.A.K.

## INTRODUCTION

The area of investigation is situated 41 km northeast of Ankara. Upper Permian sediments crop out widely in the area. The samples were collected from the series between Gensirt and Küçükgensırt hills, which are located 3,5 km NE of Elmadağ (figure 1).

The aim of this investigation is to describe Polydiexodina erki n. sp. which were found abundantly in these sediments.

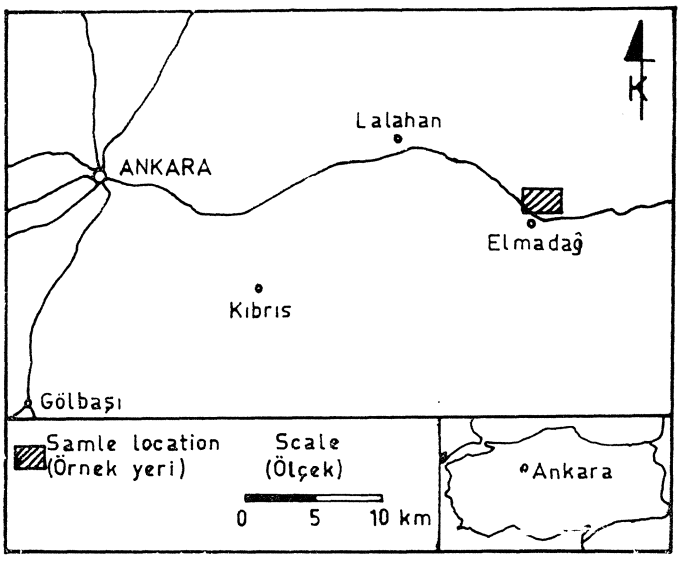



Figure 1: Location map.

Şekil I: Yer btılduru haritası.

## MATERIAL AND METHOD

The material of this study is 35 rock samples, which were taken from Upper Permian rocks in order to prepare special thin sections. The 16 thin sections containing axial, equatorial and tangential sections of the new species are used to describe for Polydiexodina erM n. sp..

## STRATIGRAPHY

The oldest stratigraphic unit in the area is Carboniferous flyseh which contain no fossils. Permian cons'sts of limestones and calcerous arenites. Between these two units, an albite diabase layer 15-20 m thick is present. The strikes and dips of strata are very similar for both Carboniferous flyseh and Permian limestones, which is nearly EJW/50°N.

Lower and Middle Permian limestones are gray, hard, and pelletoidal (Folk, 1959), and 75-80 m thick. These limestones contain Textularia sp., Paleotextularia sp., Ostracoda shell sections, and Nodosinella digitata Brady, which ranges from Lower to Middle Permian (Cummings, 1955), (figure 2). The Upper Permian faune is richer than the Lower and Middle Permian, and shows an epibole. The strata which contain the epibole, are 3,5»4 m thick, dark colored, ferrous, thin bedded, and rich in fossils. These rocks are absolutely calcareous arenites (Grabau, 1904 in Petti John and others, 1972), and contain P. erki n. sp., Permodiseus sp., Giomospira sp., and Yanghienia sp..

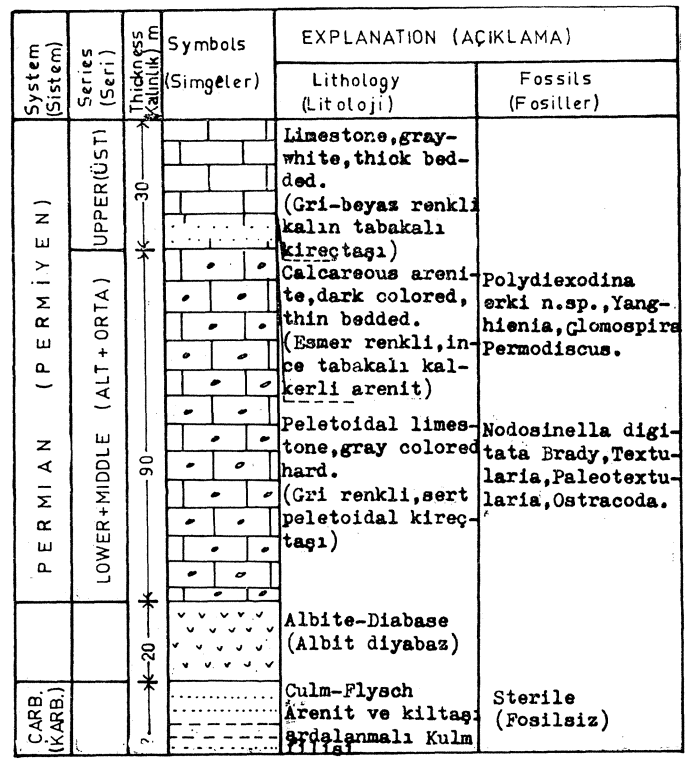



Figure 2: Schematic columnar section for Gensirt tepe (WE Elmadağ) region.

Şekil 2: Gensirt tepe (İD Elmadağ) yöresine özgü şematik dikme kesit.

After the epibole zone of P. erki n.sp., the fossil density decreases while the limestone strata thicknesses increase upward in the sequence. Upper Permian ends with an erosion surface. Ldthic-arenites (Williams and others, 1954 in Petti John and others, 1972) overlie this erosion surface containing 80 percent Lower, Middle, and Upper Permian limestone fragments, and assumed as Triassic deposits.

## PALEONTOLOGY

Systematic Study-

Order : FORAMÎNÎFERÎDA Eichwald 1830

Family : FUSULINIDAE Möller 1878

Sub Family : SCHWAGERININAE Dunbar and Henbest 1930

Genus : POLYDIEXODINA Dunbar and Skinner 1931

Polydiexodina erki n.sp.,

(Holotype: plate I, figure 1-4; plate II. figure 1-5)

Derivatio-nominis : The species is dedicated to A. Suat Erk, Head of the Department of the Geology and Stratigraphy, Faculty of Science, University of Ankara, Turkey.

Type locality : Gensirt, and Küçükgensırt hills, NE of Elmadaf.

Type level : Upper Permian.

Diagnosis

The tests are very long and wide, proloculi is also very big, the whorl of fifth volution is reduced.

Description

Internal Characters. The shape of tests are long, cylindrical, and gently concave-convex, with rounded poles. All of the determined specimens are A form. The lenghths of tests are between 23.10-40.00 mm with an average of 26.80 mm in thin sections (table 1).

The widths of tests which are between 3.26-6.10 mm. with an average of 4.10 mm in thin sections, are more than the other Polydiexodina species.

Form ratios are 3.39-6.79, and average is 5.22.

P. erki n. sp. was observed generally having 9 volutions, but sometimes appears being 7, 8, or 9 1/2 volutions in thin sections.

The whorl height of new species is 0.196 mm in first volution, and 0.321 mm in ninth volution. The most important character is decreasing of the whorl height in fifth volution, and increasing again after sixth volution.

Wall thicknesses were observed 0.037 mm in first volution, and 0.086 mm in ninth volution. Wall thicknesses increase regularly from the first to the last volution.

Septal counts counted in 5 specimens, which are 20 in the first, 51 in the fifth, and 78 in the ninth volutions, and they also increase regularly from the beginning to the end.

The area of 10 alveoli measured between 0.156-0.260 mm in 16 specimens, which formedwall structure.

Proloculi is rather wide than the other Polydiexodina species. The diameter of proloculus are measured between 0.648-1.376 mm in 13 specimens. The proloculus of 7 specimens are wider than 1 mm. The average width of proloculi is 1.018 mm. Thus we can say, the wall of proloculus of P. erki n, sp. were well developed than other Polydiexodina species.

Generally, the median tunnels are seen after fourth volution. The average of tunnel angles are between 33-35 degrees. However, supplementary tunnels are not seen exactly, they are observed in two lines in the 4 specimens.

Figure 3 shows the measurements of the new species compared to other Polydiexodina species.

Similarities and Differences

In spite of some similarities, P. erki n. sp. differs from P. bithynica Erk (Erk, 1942') by wider tests, and heigher whorl. The septal counts of volutions of the new species are more than the other Polydiexodina species. A form P. erki n. sp. has a wider proloculi than A form of other Polydiexodina species. The B form of the new species could not be seen. In addition, the area of 10 alveoli also wider than the others, and for this reason P. erki n. sp. can be distinguished easily by its voluminous wall structure.

All the studied material is from Elmadağ area,, and they are in the collections of the Department of Geology-Stratigraphy, Faculty of Science, University of Ankara (Turkey).

| Specimen (Örnek) | Length(Boy) mm | Width (Genişlik) mm | Form ratio (Şekil oranı) | Volutions (Sarılımlar) | Proloculi ø mm (İlk loca) | 10 alveoli (10 alveol) mm |
|---|---|---|---|---|---|---|
| 148.1.1 | 33.00 | 5.50 | 6.00 | 8 | ----- | 0.208 |
| 148.1.2 | 27.50 | 6.00 | 4.58 | 9 | 0.756 | 0.260 |
| 148.1.3 | 26.20 | 4.70 | 5.57 | 8 | ----- | 0.254 |
| 148.1.4 | ----- | 6.10 | ----- | 7 | 0.672 | 0.241 |
| 148.2.1 | 20.00 | 5.90 | 3.39 | 9 | 1.248 | 0.208 |
| 148.2.2 | ----- | 3.26 | ----- | 4 ? | 1.184 | 0.185 |
| 148.2.3 | 21.30 | 5.10 | 4.18 | 8 | 0.961 | 0.202 |
| 148.3.1 | 31.90 | 4.70 | 6.79 | 8 | ----- | 0.208 |
| 148.3.2 | ----- | 2.98 | ----- | 4 ? | 1.280 | 0.202 |
| 148.3.3 | ----- | 4.81 | ----- | 8 | 1.376 | 0.202 |
| 148.6.1 | 29.10 | 4.78 | 6.09 | 9 | 0.648 | 0.195 |
| 148.6.2 | ----- | 4.60 | ----- | 9 | 0.928 | 0.208 |
| 148.9.1 | ----- | 4.70 | ----- | 9 | 0.790 | 0.175 |
| 153.1.1 | 29.00 | 5.70 | 5.09 | 9 | 1.152 | 0.156 |
| 153.2.1 | 27.90 | 5.25 | 5.31 | 9 1/2 | 1.120 | 0.176 |
| 152.1.1 | ----- | 5.95 | ----- | 9 1/2 | 1.120 | 0.169 |

**Table 1: The summary table of P. erki n. sp. showing microscopical measurements.**

**Çizelge 1: P. erki n. sp.'ye özgü mikroskobik ölçüleri gösteren özet çizelge.**

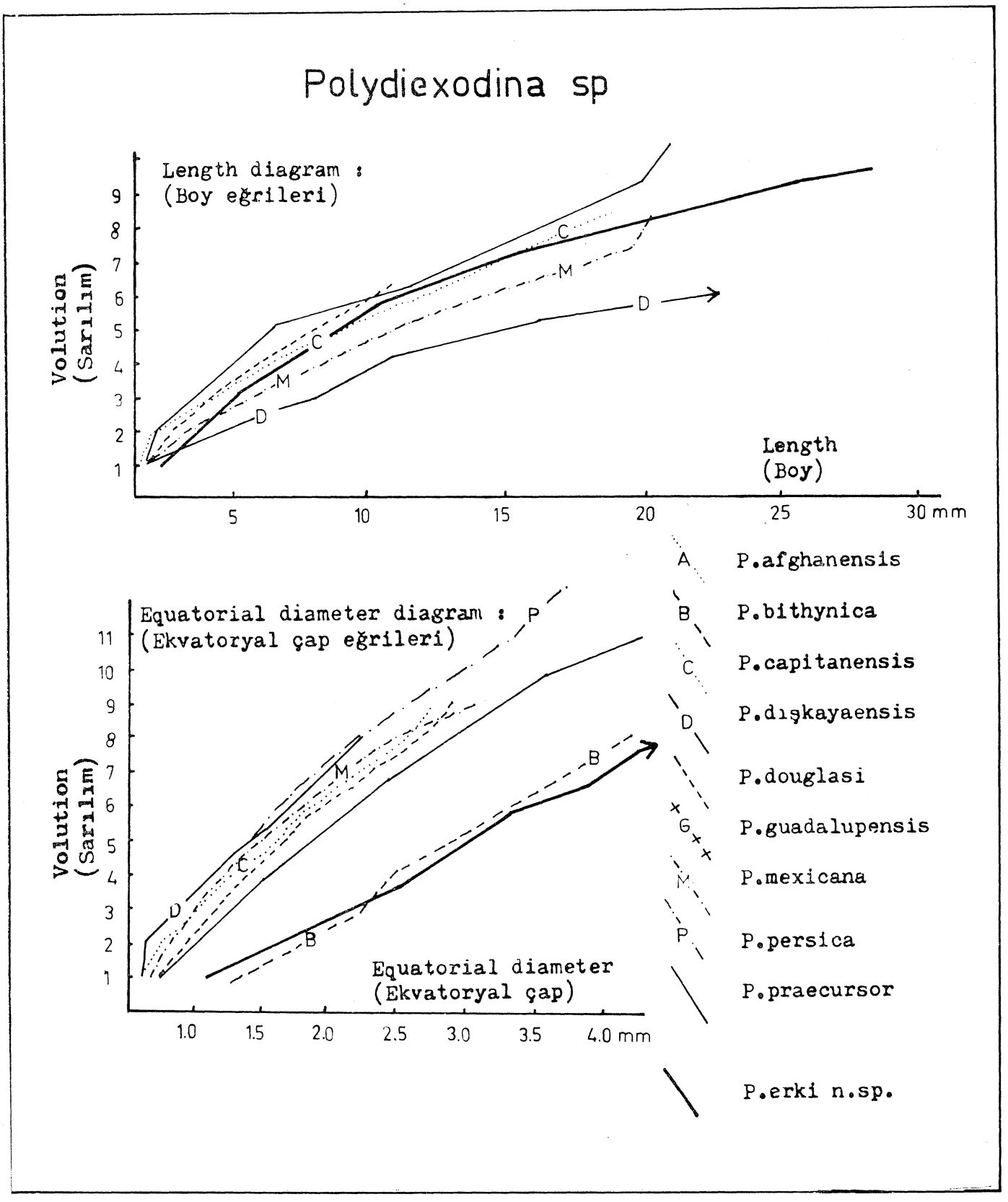



**Figure 3:** The comparison diagrams for Polydiexodina species (after Lloyd, 1963).

**Şekil 3:** Polydiexodina türlerine özgü kıyaslama eğrileri (Lloyd, 1963'den).

**ACKNOWLEDGEMENT**

**The author would like to express h:s thanks to Dr. A. Suat Erk for his help and cooperation.**

**Manuscript received: December, 1977**

**CITED REFERENCES**

Cummings, R.H. 1955, Nodosinella Brady, 1876, and associated Upper Palaeozoic genera: Micropaleontology, 1, 3, 221-238.

Dunbar, CO., and Skinner, J.W., 1931, New Fusulinid genera from the West of Texas: Am. Jour. Sci., 22, 252-268.

Erk, A.S., 1942, Etude geologique de la region entre Gemlik et Bursa **(Turquie):** Mineral Research and Exploration Institute of Turkey Publication, Ankara, 296 p.

Folk, E.L., 1959, Practical petrographic classification of limestones: Am. Assoc. Petroleum Geologists Bull., 43, 1, 1-38.

Lloyd, A.J.i, 1963, Fusulinids from the Zinnar Formation (Lower Permian) of Northern Iraq: Jour. Paleontology, Tulsa. Okla., 37, 4, 891-896.

Petti John, F.S., Hotter, P.E., and Siever, R., 1972, Sand and Sandstone: Springer Verlag, Berlin, Heidelberg, New York, 162-174.

## PLATE I

Figure 1: *Polydiexodina erki* n. sp., axial section, holotype **(148.1.1.)**
Figure 2: *Polydiexodina erki* n. sp., axial section, holotype (148.10)
Figure 3: *Polydiexodina erki* n. sp., equatorial section, holotype **(152.1.1.)**
Figure 4: *Polydiexodina erki* n. sp., tangential section, (148.6.2)

## LEVHA I

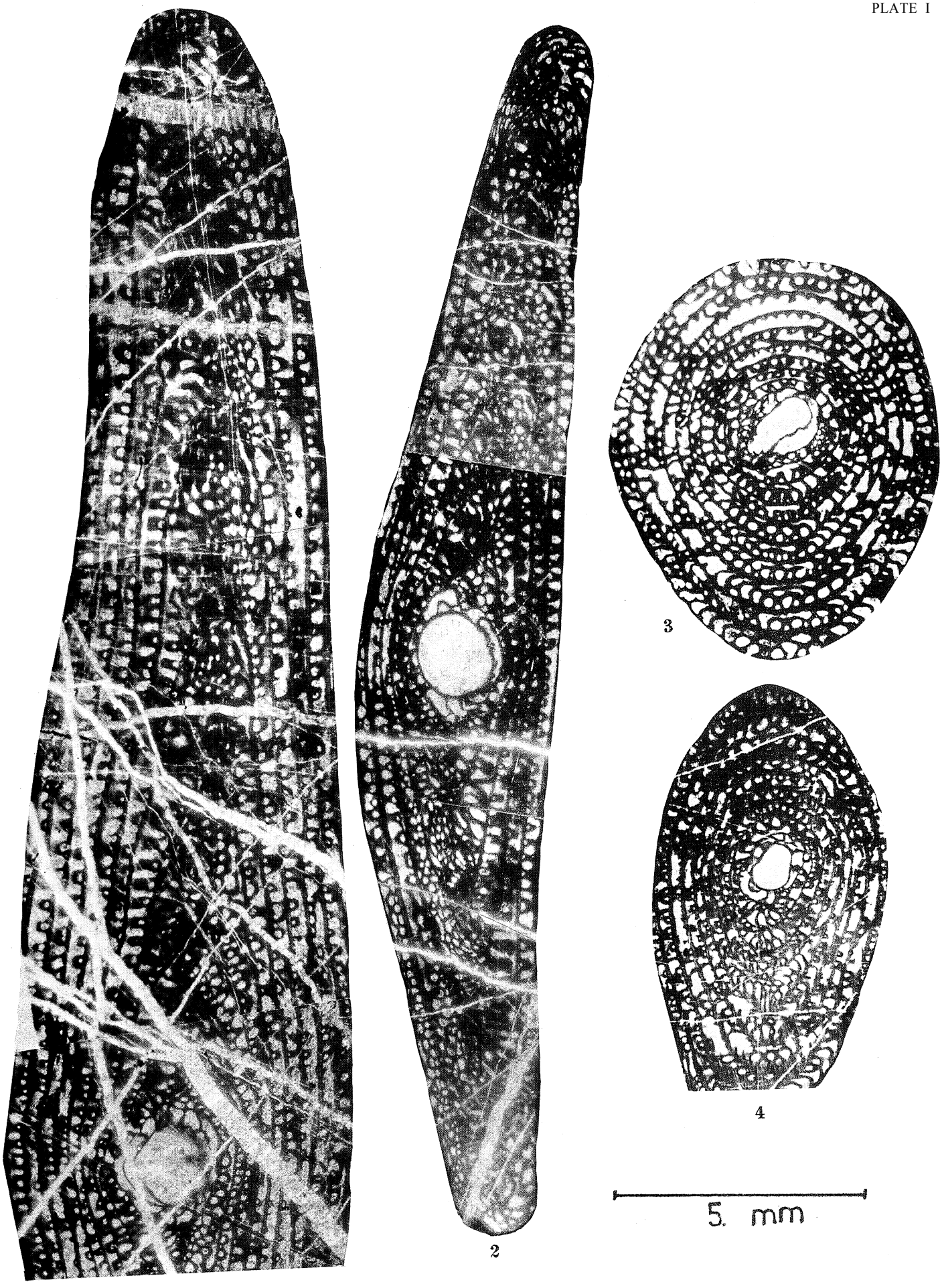
ŞekU. 1: *Polydiexodina erki* n. sp., eksenel kesit, holotip (148.1.1)
Şekil 2: *Polydiexodina erki* n. sp., eksenel kesit, holotip (148.10)
Şekil 3: *Polydiexodina erki* n. sp., eksene dik kesit, holotip (152.1.1)
Şekil 4: *Polydiexodina erki* n. sp., teğetsel kesit, (148.6.2)

## PLATE II

Figure 1: *Polydiexodina erki* n. sp., equatorial section, containing proloeuli of the holotype (152.1.1)
Figure 2: *Polydiexodina erki* n. sp., tangential section, containing sinuousness (153.2.1)
Figure 3: *Polydiexodina erki* n. sp., tangetial section, containing upright sections of alveoli (148.3.1)
Figure 4: *Polydiexodina erki* n. sp., axial section, containing decrease of whorl height of fifth volution (153.1.1)
Figure 5: *Polydiexodina erki* n. sp., equatorial section, shows all structure (152.1.1)

## LEVHA II

Şekil 1: *Polydiexodina erki* n. sp., holotipin ilk locasını içeren eksene dik kesit (152.1.1)
Şekil 2: *Polydiexodina erki* n. sp., bölme dalgalanmalarını içeren teğetsel - kesit (153.2.1)
Şekil 3: *Polydiexodina erki* n. sp., alveollerin dikey kesitlerini içeren teğetsel kesit (148.3.1)
Şekil 4: *Polydiexodina erki* n. sp., beşinci sanlımdaki daralmayı içeren eksenel kesit (153.1.1)
Şekil 5: *Polydiexodina erki* n. sp., kabuk yapısını içeren eksene dik kesit (152.1.1)

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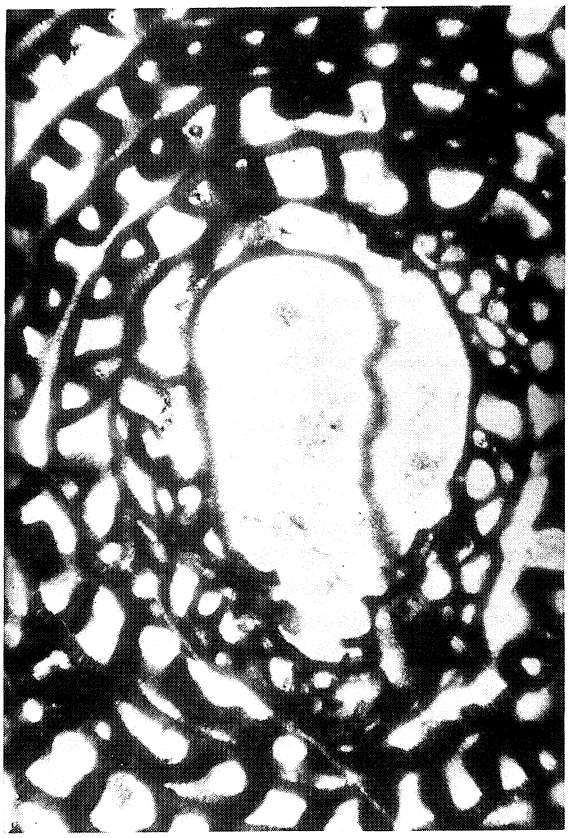


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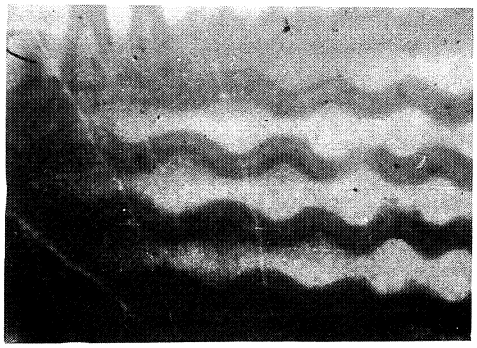

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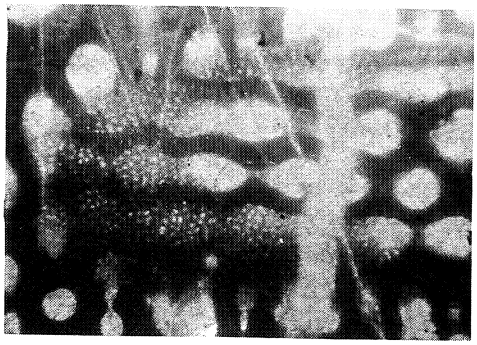

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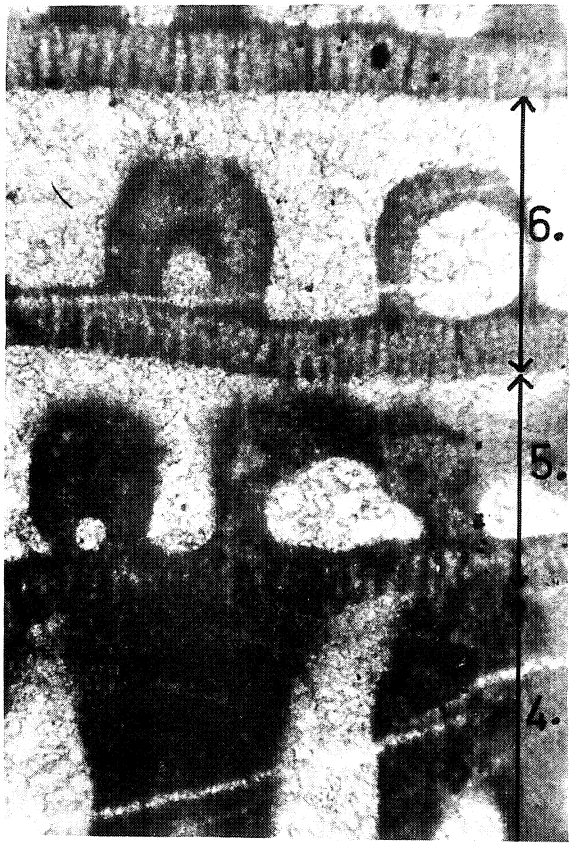


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