OCCURRENGES OF LASIODISG1DAE IN ANATOLIA

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INTRODUCTION

Reichel (1945) described two new genera of Foraminifera from Permian limestones of Greece : *Lasiodiscus* and *Lasiotrochus,* without placing them in any family. Later, Miklukho-Maklaj (1954) described new species referred to Reichel's *Lasiodiscus,* from Permian sediments of the Northern Caucasus. In 1956, Reitlinger proposed the erection of a new family, the Lasiodiscidae, to include, together with Reichel's genera *Lasiotrochus* and *Lasiodiscus,* the previously described genera *Howchinia* Cushman and *Monotaxinoides* Brashnikova & Jarceva, which were placed among the Tetrataxidae and also a new genus *Eolasiodiscus.*

It may be worth mentioning that all the genera of this family are known only from thin-sections of hard rocks and that, up to date, no free specimens could be obtained. Therefore, all the generic and specific determinations were based only on the informations supplied by those sections. In this paper, the authors present some specimens of *Lasiotrochus* and *Lasiodiscus,* found in two regions of Turkey:

a) from West Anatolia, in Middle Carboniferous and Permian limestones, and

b) from the vicinity of Ankara, in Middle Permian limestones.

The respective faunas of these two areas will be discussed separately.

I

NW ANATOLIAN LASIODISCIDAE

by : T.F.J. DESSAUVAGIE

In the vicinity of İvrindi, Balıkesir, was found an outcrop of Middle Carboniferous limestone, which contains a rich microfauna, previously not known from the Paleozoic of Turkey. Among the Foraminifera, several species of Lasiodiscidae were observed in thin-sections.

We take the opportunity of this paper to mention also some Lasiodiscidae of the Permian, found in the same region.

Lasiotrochus sp.

Text-fig. 1; Pl. I-c

Description. — Test consisting of a proloculum and a second tubular chamber, showing a trochoid coiling and ten volutions. The first five volutions are planispiral; the others are bending sharply backwards and form a low cone with a wide apical angle. The dorsal side consists of a hyalino-radial layer, which fills up the central cavity and forms a flat plane with the last whorl. The ventral side shows tubular appendices, which converge towards the axis of coiling. These appendices have been observed only on the first six volutions of the spiral chamber. They may have been destroyed by corrosion or erosion on the outer volutions. Diameter of the test (at the last whorl) : 0.486 mm. Height of proloculum to the base of the cone : 0.258 mm. Length of the tubular appendices : 0.051 mm.

Fig. 1 - *Lasiotrochus* sp. (115 ×)
Axial section

Relations and differences- — Reichel's genotype, *Lasiotrochus tatoiensis,* is the only previously described species of this genus. A comparison of measures shows that the test of our specimen is wider and lower than in the genotype and the planispiral part of the tubular chamber is much longer.

Our *Lasiotrochus* might represent a new species, but we lack enough material to decide on this matter.

Occurrence- — Çan, province of Çanakkale, West Anatolia.

Stratigraphic level. — Permian limestone.

Lasiodiscus sp. cf. granifer REICHEL

Text-fig. 2 a, b

Description. — Small round proloculum with a diameter of 0.023 mm. Second tubular chamber showing a planispiral coiling, with eight volutions. This tubular chamber is crescent-shaped in our oblique sections. The dorsal face is covered by a clear hyaline layer, consisting of short pillars and merging into the clear hyaline, outer layer of the spiral-wall. The microgranular, inner layer forms tubular appendices at the ventral face, converging towards the axis of coiling. Between these appendices, supplementary orifices in the spiral-wall were observed. Only oblique sections were available.

Relations and differences. — This specimen resembles *Lasiodiscus granifer* Reichel, described from Upper Permian in Greece. The tubular appendices are shorter in our material, but this might be due to erosion of these delicate projections. Reichel's holotype is an oblique section; therefore no accurate comparison with another oblique section is possible. Supposing, that in our case, we are cutting the axis of coiling under an angle of approximately 60°, a hypothetical reconstruc-

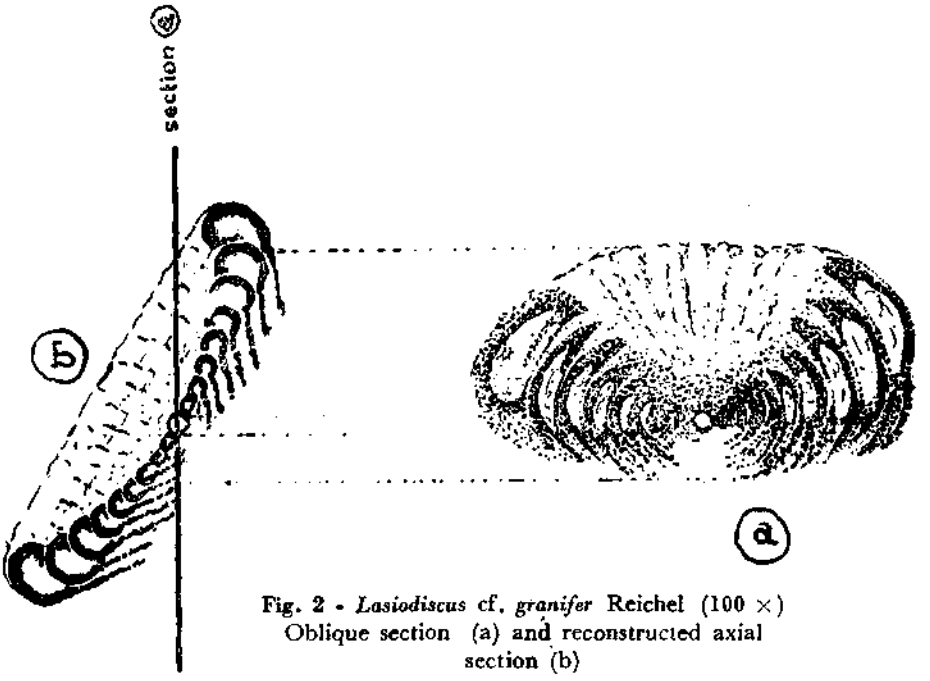

Fig. 2 - *Lasiodiscus* cf. *granifer* Reichel (100 ×)
Oblique section (a) and reconstructed axial section (b)

tion of the axial section would show a flat ventral face and a dorsal face (much more concave than in the reconstructed axial section of *Lasiodiscus granifer* R.), which produces a hyaline layer with an approximate thickness of 0.07 mm.

Occurrence. — Bursa, West Anatolia.

Stratigraphic level. — Upper Permian limestone.

Lasiodiscus sp.

Text-fig. 3; Pl. I-d

Description.— Small test with a planispiral coiling. Diameter : 0.248 mm. Proloculum not observed. Tubular chamber consisting of six volutions, which are kidney-shaped in our sections. Ratio (height/width) : 2.5. Wall gray, microgranular, single-layered. The ventral side of the spiral chamber shows supplementary apertures between the tubular appendices, which converge to the axis of coiling. The upper part of the test is covered by a dark-gray homogeneous layer.

Fig. 3 - *Lasiodiscus* sp. (245 ×)
Axial section

Relations and differences- — Our specimen resembles *Lasiodiscus planus* Miklukho-Maklaj but differs by, a) a minor number of volutions, b) the aspect of the dorsal cover, in which no structure can be seen and c) a rapid increase of the height of the spiral-chamber.

Our specimen differs from *Lasiodiscus minor* Reichel by the indistinct hyaline dorsal cover and by less compact tubular appendices.

Occurrence. — Bozviran, province of Balıkesir, West Anatolia.

Stratigraphic level. — Lower Carboniferous limestone.

Lasiodiscus sellieri n. sp.

Text-fig. 4,9; Pl. I-a, b; Pl. II-a, b, c, d

Sections of reference : Fig. 4, 5, 6, 7 (Pl. II-a, b, c, d)

The original sections of reference are deposited under no. D1-28-1, 2 in the paleontological collection of the M.T.A. Institute, Ankara.

Description. — Proloculum spherical, with a diameter of 0.02 mm. Second chamber, tubular, undivided, with a planispiral coiling.

In the first two volutions, the chamber is cylindrical, with a diameter 1/3 of that of the proloculum. The spiral-chamber develops 7-10 volutions, increasing regularly in size. The diameter of the test is 0.320-0.382 mm. After the first two volutions, the next ones are laterally flattened, giving in the sections kidney-shapes through the whorls. Form-ratio of the last whorl (height/width) : 2. The upper surface of the spiral chamber is almost flat, the lower surface is concave. The last volution sometimes is not in the general plane of coiling.

The chamber wall consists of a clear, hyaline, outer layer and a dark-gray microgranular, inner layer.

At the dorsal side of the spiral, except at the last whorl, a hyaline cover, 0.015-0.035 mm thick, may be observed. The outer, hyaline layer of the chamber has its origin in this cover and runs down to the ventral side; this is clearly visible in the last 4-5 volutions. At the ventral side, the granular inner layer of the chamber wall forms a series of weakly developed tubular appendices (length 0.015 mm), which converge towards the axis of coiling. Supplementary apertures exist at the ventral side between the appendices. No appendices were observed on the first 2-3 volutions. The thickness of the dorsal hyaline-radial cover shows a certain variability in several specimens. In some cases, the last whorl is not situated in the general plane of coiling.

Typical for this new species are: a) the pronounced shape of the spherical proloculum, b) the small size and cylindrical shape of the first volutions contrasting with the lateral compressed later volutions and c) the shortness of the tubular appendices.

Relations and differences. —- *Lasiodiscus sellieri* resembles *Lasiodiscus granifer* Reichel from which it differs by its smaller size and the much shorter tubular appendices. It resembles also *Eolasiodiscus donbassicus* Reitlinger, from which it differs by its distinct hyaline cover and the presence of the tubular appendices.

The species is dedicated to our colleague paleontologist J.M. Sellier de Civrieux.

Occurrence. — Bozviran, province of Balıkesir, West Anatolia.

Stratigraphic level. — Middle Carboniferous limestone.

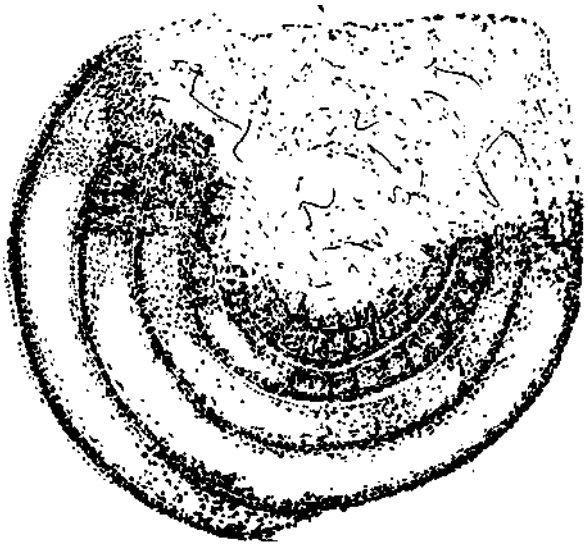

Fig. 4 - *Lasiodiscus sellieri* n. sp. (245 ×)
Equatorial section, showing supplementary apertures on planispiral chamber

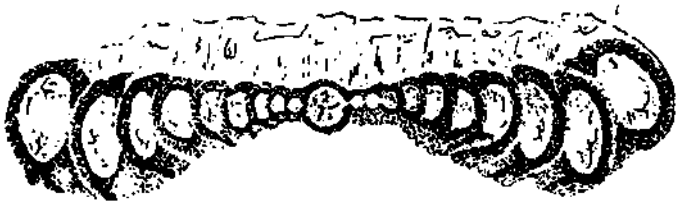

Fig. 5 - *Lasiodiscus sellieri* n. sp. (245 ×)
Axial section. Last volution is not in the general plane of coiling

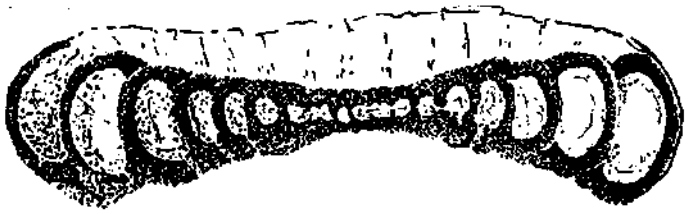

Fig. 6 - *Lasiodiscus sellieri* n. sp. (245 ×)
Section parallel to the axis

Fig. 7 - *Lasiodiscus sellieri* n. sp. (245 ×)
Axial section

Fig. 8 - *Lasiodiscus sellieri* n. sp. (245 ×)
Section parallel to the axis of an immature specimen with six volutions of the spiral

Fig. 9 - *Lasiodiscus sellieri* n. sp. (245 ×)
Oblique section

Faunal association. — Other Foraminifera, which occur together with *Lasiodiscus sellieri,* were observed, such as :

Permodiscus rotundus Chernysheva (Pl. IV-b)
Aljutovella cf. *aljutovica* Rauzer (Pl. IV-a)
Tetrataxis sp. (Pl. IV-e)
Bradyina cf. *samarica* Reitlinger (Pl. IV-f)
Tuberitina bulbacea Galloway & Harlton (Pl. IV-c, d)

II

OCCURRENCE OF LASIODISCIDAE IN THE ANKARA REGION

By : Zeki DAĞER

Some specimens of Lasiodiscidae were observed in thin-sections of a Middle Permian limestone in the vicinity of Ankara.

Lasiodiscus cf. **medusa** MIKLUKHO-MAKLAJ

Text-fig. 10; Pl. III-a

Description. — Test consisting of a large rounded proloculum and a long tubular chamber, which shows a planispiral coiling. Diameter of the test: 0.23 mm. Diameter of the proloculum : 0.037 mm.

The spiral chamber wall has a microgranular inner layer and a clear, hyaline outer layer. Five volutions may be observed. The dorsal side of the spiral chamber is covered by a hyaline layer, consisting of short pillars, perpendicular to the surface. This hyaline material merges into the outer clear wall of the spiral. At the ventral side, tubular appendices are observed on the microgranular layer. These converge towards the axis of coiling, halfways bending outwards. They are approximately as long as the height of the spiral-chamber. Between the tubular appendices, supplementary apertures exist in the wall of the spiral.

Fig. 10 - *Lasiodiscus* cf. *medusa* Miklukho-Maklaj (245 ×)
Axial section

Relations and differences- —*Out* specimen is smaller than that of *Lasiodiscus medusa;* it could represent an immature form of that species, since it has only five, instead of ten volutions.

Occurrence. — Ankara, Turkey.

Stratigraphic level . — Middle Permian limestones.

Lasiodiscus planus MIKLUKHO-MAKLAJ

Text-fig. 11; Pl. III-b

Description. — Test consisting of a small proloculum and a long tubular chamber with a planispiral coiling of 11 volutions. Diameter of the test : 0.41 mm. Diameter of the proloculum : 0.026 mm.

The dorsal side of the spiral is covered by a hyaline layer, from which originates the outer clear layer of the spiral-wall. At the ventral side of the test tubular appendices are observed, converging towards the axis of coiling. On the last two volutions, no appendices are present. Several supplementary apertures exist in the spiral-wall, between the appendices.

Relations and differences.— Our specimen agrees with the original description of *Lasiodiscus planus.*

Occurrence. — Ankara, Turkey.

Stratigraphic level. — Middle Permian limestone.

Fig. 11 - *Lasiodiscus planus* Miklukho-Maklaj (245 ×)
Axial section

Fig. 12 - *Lasiodiscus* cf. *divergens* Reichel (245 ×)
Oblique section

Lasiodiscus cf. divergens REICHEL

Text-fig. 12; Pl. III-c

Description- — The spiral chamber shows four volutions, with several tubular appendices. Diameter of the test : 0.35 mm.

Only oblique sections were obtained; they are not favorable for an accurate comparison with the description of Reichel's species; however, in its general aspect, our specimen resembles *Lasiodiscus divergens* Reichel.

Faunal association- — The above-mentioned Lasiodiscidae were found in association with the following Foraminifera :
Slaffella, Schubertella, Schwagerina, Endothyra, Glomospira and *Palaeolingulina.*

Occurrence- — Ankara, Turkey.

Stratigraphic level- — Middle Permian limestone.

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EXPLANATION OF PLATES

PLATE I

Fig. a — *Lasiodiscus sellieri* n. sp. and *Tuberitina bulbacea* Galloway & Harlton (245 X)
Oblique sections.
Middle Carboniferous of Bozviran, Balıkesir.

Fig. b — *Lasiodiscus sellieri* n. sp. (215 X)
Section parallel to the axis.
Middle Carboniferous of Bozviran, Balıkesir.

Fig. c — *Lasiotrochus* sp. (115 x)
Axial section.
Permian of Çan, Canakkale.

Fig. d — *Lasiodiscus* sp. (245 X)
Axial section.
Middle Carboniferous of Bozviran, Balıkesir.

PLATE II

Fig. a, c — *Lasiodiscus sellieri* n. sp. (245 X)
Axial sections.
Middle Carboniferous of Bozviran, Balıkesir.

Fig. b — *Lasiodiscus sellieri* n. sp. (245 X)
Equatorial section.
Middle Carboniferous of Bozviran, Balıkesir.

Fig. d — *lasiodiscus sellieri* n. sp. (215 X)
Section parallel to the axis.
Middle Carboniferous of Bozviran, Balıkesir.

PLATE III

Fig. a — *Lasiodiscus* cf. *medusa* Miklukho-Maklaj (245 X)
Axial section.
Middle Permian of Ankara.

Fig b — *Lasiodiscus planus* Miklukho-Maklaj (245 X)
Axial section.
Middle Permian of Ankara.

Fig. c — *Lasiodiscus* cf. *divergens* Reichel (245 X)
Oblique section.
Middle Permian of Ankara.

PLATE IV

Fig. a — *Aljutovella* cf. *aljutovica* Rauzer (245 x)
Axial section.
Middle Carboniferous of Bozviran, Balıkesir.

Fig. b — *Permodiscus rotundus* Chernysheva (243 X)
Axial section.
Middle Carboniferous of Bozviran, Balıkesir.

Fig. c, d — *Tuberitina bulbacea* Galloway & Harlton (245 X)
Longitudinal sect on through two chambers of an attached form (c) and an oblique section (d).
Middle Carboniferous of Bozviran, Balıkesir.

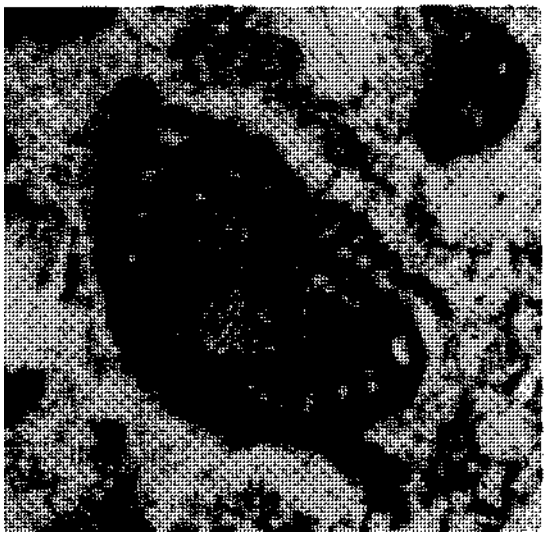
Fig. e — *Tetrataxis* sp. (245 X)
Axial section of an attached triangular test.
Middle Carboniferous of Bozviran, Balıkesir.

Fig. f — *Bradyina* cf. *samarica* Retlinger (245 x)
Axial section, showing thin wall and two volutions.
Middle Carboniferous of Bozviran, Balıkesir.

a

b

c



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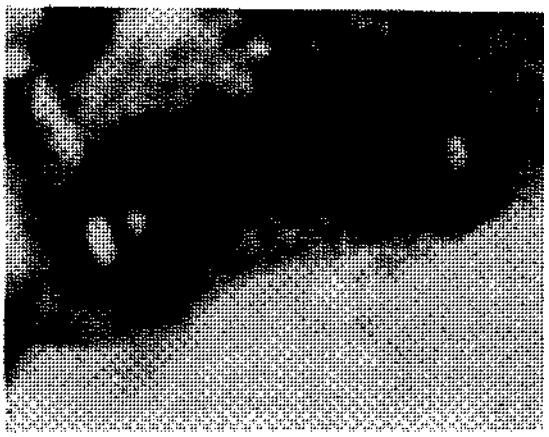

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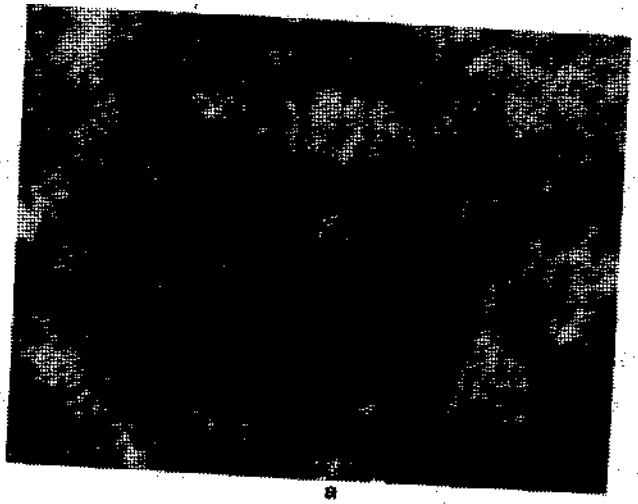

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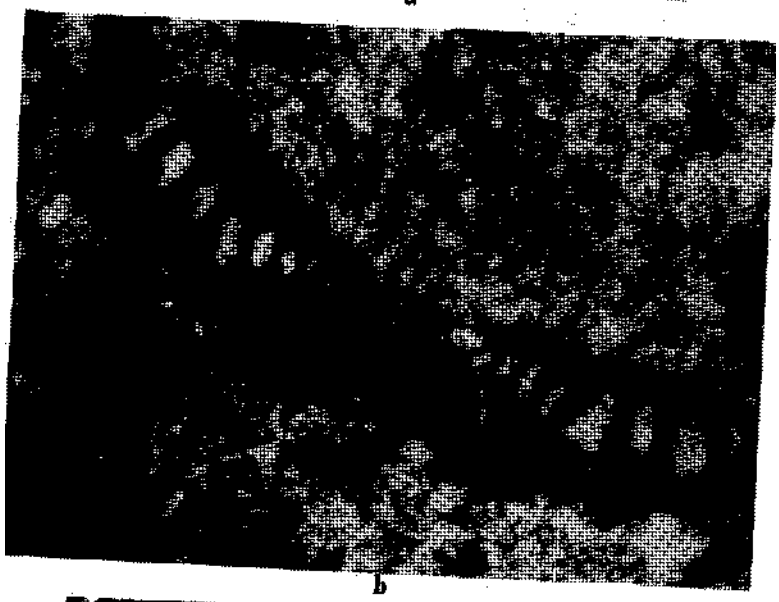

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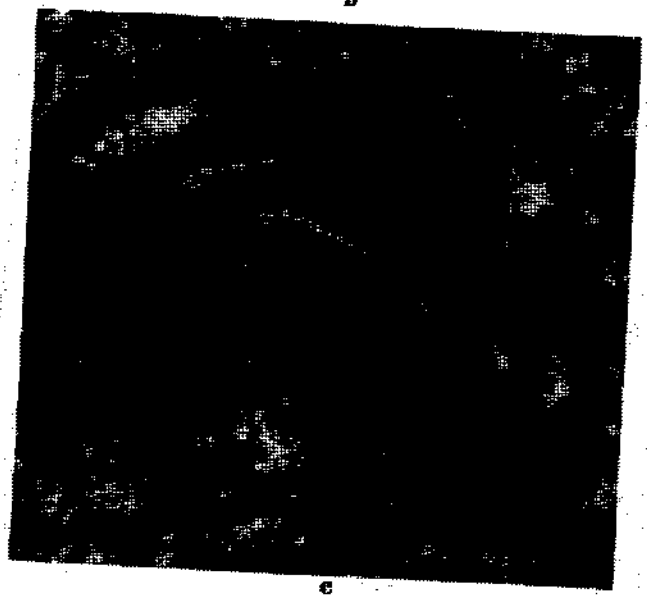

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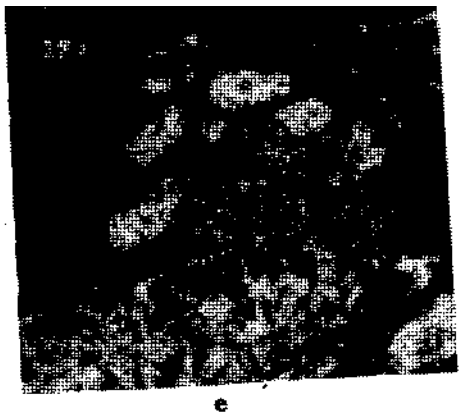

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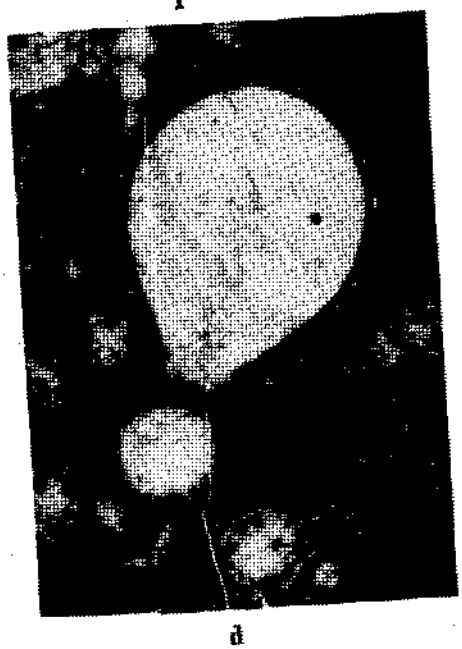

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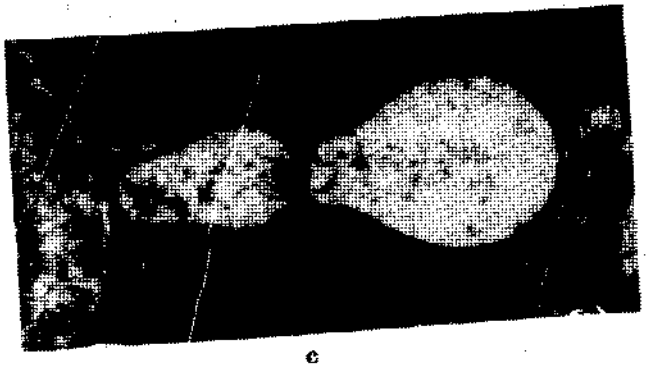

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