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SOME FORAMINIFERA FROM THE APTIAN-ALBIAN PASSAGE OF NORTHERN SPAIN

BY

J. HOFKER Jr.

INTRODUCTION

During the summer of 1962, the author collected many *Orbitolina*-bearing samples in northern Spain with financial support of the "Molengraaff Fonds".

One of the samples also was rich in other conspicuous foraminifera, which deserve a description.

The sample was collected along the road Solares-Ramales, Province of Santander, at km 22,5, form the base of the section described by the author (1963, p. 194, fig. 7A); it is deposited at the Rijksmuseum van Geologie en Mineralogie, Leiden, Netherlands, bearing registration number 115062. The numbered holotypes and paratypes also are deposited at this museum.

The sample contains the following foraminifera:

Orbitolina lenticularis (Blumenbach), form-groups II and III.
Simplorbitolina manasi Ciry & Rat.
Coskinolinella daguini Delman & Deloffre.
Haplophragmoides greigi (Henson).
Haplophragmoides cenomana (Cuvillier & Szakall).
Textulariella minuta n. sp.
Spiroplectammina sp.
Textularia sp.
Gaudryina alisana n. sp.
Citharina strigillata (Reuss).
Eponides sp.
Gyroidinoides gracillima Ten Dam.

Part of this fauna is typical for the Vinport-facies of southwestern France, and has also been reported from other localities in France and Spain.

Little stratigraphic work has been done on the Lower Cretaceous of northern Spain, but in France this Vinport-facies seems te be well-dated as base of the Albian (Delman & Deloffre, 1961, p. 171, 172).

The foraminifera of the sample indicate a similar age, although the margin has to be somewhat larger, because only few guide-forminifera are present. Thus, the sample is dated as the upper part of the Aptian or base of the Albian.

SYSTEMATIC DESCRIPTIONS

The species belonging to the genera *Orbitolina* and *Simplorbitolina* have already been described in detail by the author (Hofker, 1963).

Genus COSKINOLINELLA Delmas & Deloffre, 1961

Coskinolinella daguini Delmas & Deloffre

Plate I, figs. 1—9, text fig. 1

Coskinolinella daguini Delmas & Deloffre, 1963, Revue Micropal., Vol. 4, nr. 3, pl. 167, fig. 1, pl. 1 fig. 1—8.

Description: Test microgranular calcareous, finely arenaceous, imperforate; form low conical, dorsal side convex, ventral side concave, apical angle about 120—150°; the test starts with a proloculus of about 20 μ in diameter, adding flat chambers which are rapidly increasing in width, forming a flat trochospiral; after about two whorls the chambers become subdivided by partitions growing from the dorsal wall; at this stage the chambers are semilunar, they rapidly become discoidal and cover the lower part of the initial spiral; later chambers annular and lying at the lower periphery of the previous chambers; size up to about 1,5 mm; aperture in the nepionic spiral interio-marginal, not observed in later chambers because of the intricate structure of the neanic chambers.

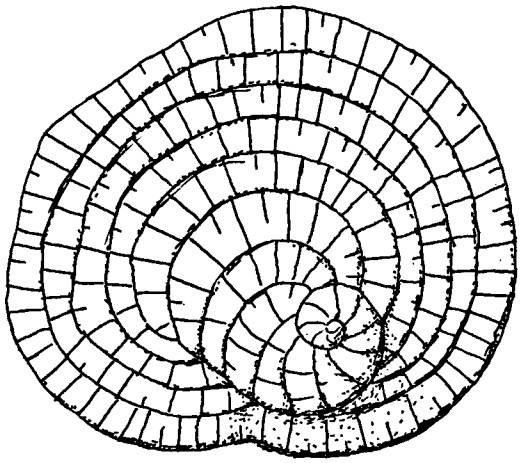

Fig. 1

Coskinolinella daguini Delmas & Deloffre, dorsal side of adult specimen, 95 ×.

Remarks: The authors of *Coskinolinella* thought it to be related to *Coskinolinoides texanus* Keijzer. The adult test of *C. texanus*, however, consists of co-axially arranged saucer-shaped chambers with a distinct peripheral trough and pillars in the central part, none of which has been found in *Coskinolinella*. Young specimens of *C. daguini* only showing a spiral with undivided chambers, hardly could be distinguished from *Haplophragmoides cenomana* (Cuvillier & Szakall). Therefore, as the initial spiral shows all the diagnostic characteristics, the author assigns *Coskinolinella* to the family Lituolidae, although it can not yet be specificated to which subfamily it belongs. Apart from the subdivisions in the neanic chambers and the test material, it lacks all the characteristics of the family Orbitolinidae (Hofker, jr., 1963, p. 234) to which Delmas & Deloffre assigned it with some hesitance.

Distribution:
France: Aquitanian Basin, base of the Albian, or Aptian-Albian passage (Delmas & Deloffre, 1961, p. 170).
Spain: ENPENSA-consession N of Vitoria, (Aptian-) Albian (Durif, in: Cuvillier, 1964, p. 124).
— Province of Santander, Puerto de Las Alisas, Aptian-Albian passage (abundant) (Hofker, 1963, p. 194, sample 115062).
— Province of Huesca, 50 m N of Pallerol, Upper Aptian or Lower Albian (rare) (Hofker, 1963, p. 191, sample 115035).
— Province of Barcelona, about 3 kms S of Villafranca del Panadés, quarry of "Els Cirerers", along the road to Sitges, Upper Aptian or Lower Albian (samples by J. Ferrer, Barcelona).

Genus HAPLOPHRAGMOIDES Cushman, 1910

Haplophragmoides greigi (Henson)

Plate II figs. 1—7, plate III figs. 1—3

Cyclammina greigi Henson, 1948. Larger Imp. Foram. SW Asia, p. 13, pl. XIII, figs. 9, 11, 15, 16, 17.

Description: Test microgranular calcareous, finely arenaceous, outer wall radially crystallized, giving a somewhat labyrinthic appearance, surface slightly rough; planispirally coiled, involute; form lenticular; margin rounded, somewhat lobate; sutures slightly curved, depressed, numbering six to ten in the megalospheric generation and up to fifteen in the microspheric; usually there are three whorls in megalospheric specimens and five in microspheric ones; aperture a simple horizontal slit at the base of the apertural face (interio-marginal); often the septa of the last chambers are absent; microspheric generation starting with a proloculus of about 0,01 mm in diameter, megalospheric generation with a proloculus of about 0,05 mm; diameter of the test about 0,6—0,8 mm, thickness about 0,3—0,4 mm.

Remarks: The species was originally assigned to the genus *Cyclammina* Brady, 1879, but because of the slit-like interio-marginal aperture and the general form of the test (see Maync, 1952, p. 43), it should be assigned to *Haplophragmoides* Cushman, 1910. Henson actually did not observe the aperture (1948, p. 13), but suggested it being interio-marginal, because of the depression found at the junction of the septa with the margin of the previous whorl. The comparison of Henson's photographs 9 and 11 on pl. XIII with the present material, shows, that the spanish forms are identical.

Distribution:
Arabia: Qatar Peninsula, Dukhan No. 2 Well; in basal Cretaceous limestones and shales, just above the horizon of *Pseudocyclammina lituus* (Yokoyama) (Henson, 1948, p. 13).
Spain: Province of Santander, Puerto de Las Alisas, Aptian-Albian passage (abundant).
— Province of Lérida, Sierra de Montsech, about 800 m SE of Rubies, probably Upper Aptian of Lower Albian.

— Province of Barcelona, about 3 kms S of Villafranca del Panadés, quarry of "Els Cirerers", along the road to Sitges, Upper Aptian or Lower Albian (sampled by J. Ferrer, Barcelona).

Haplophragmoides cenomana (Cuvillier & Szakall)

Plate III fig. 4, text fig. 2

Daxia cenomana Cuvillier & Szakall, 1949, Foram. d'Aquitaine, p. 8, pl. 2 figs. 4, 5, 6.

Description: Test microgranular calcareous, finely arenaceous; planispirally coiled, involute; form lenticular, flat; margin even, slightly rounded; sutures curved, slightly depressed, numbering 12—20; about 3—4 whorls; aperture an interiomarginal short horizontal slit in the initial whorls, becoming circular in later chambers; diameter of the test about 0,5 mm in the present sample, up to 1,5 mm in other samples.

Remarks: "*Daxia*" *cenomana* was assigned to the genus *Haplophragmoides* Cushman 1910 by Maync (1952, p. 36, 47), although it was done with some hesitance; the author has a similar opinion of its taxonomic position.

Distribution: H. cenomana seems to be widely distributed in the Aptian, Albian and Cenomanian of southern Europe.

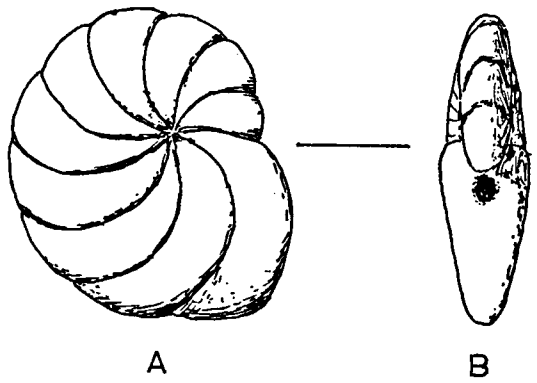

Fig. 2

Haplophragmoides cenomana (Cuvillier & Szakall), A: side view, B: apertural view, 60 ×.

Genus TEXTULARIELLA Cushman, 1927

Textulariella minuta, n. sp.

Plate III fig. 5, 6, pl. IV fig. 1—9

Textulariella sp., Cuvillier, 1956, pl. XXX—2.

Description: Test microgranular calcareous, finely arenaceous; form conical, apical angle about 60°, circular in horizontal section; test starting with a short spiral of about 3 chambers, including the proloculus, adult test consisting of semidiscoidal

bi-serially arranged low chambers, subdivided by radial partitions extending from the cone-surface inwards; aperture a horizontal slit situated at the centre of the cone-base, having a length of about one third of the maximum diameter of the chamber; height about 0,2—0,5 mm, maximum diameter equal or slightly larger than the height.

Holotype: Nr. 115178 (pl. III fig. 5).

Paratypes: Nrs. 115179 and 115180 (resp. pl. IV fig. 3 and fig. 5).

Remarks: Textulariella is distinguished from other known species of *Textulariella* by its small size, the absence of coarse agglutinated material and the simple straight form of the partitions in the chambers.

Distribution:
Spain: Province of Santander, Puerto de Las Alisas, road Solares-Ramales, km. 22,5 (type-locality), Aptian-Albian passage.
— Province of Lérida, Sierra de Montsech, about 800 m SE of Rubies, in compact limestone; probably Upper Aptian or Lower Albian.
— Province of Huesca, 50 m N of Pallerol, Upper Aptian or Lower Albian.
— Province of Barcelona, about 3 kms S of Villafranca del Panadés, quarry of "Els Cirerers", along the road to Sitges, Upper Aptian or Lower Albian (sampled by J. Ferrer, Barcelona).
France: Basses Pyrénées, Orthez, upstream from the Pont Neuf, left bank, isolated block in the Gave, 10 m downstream from the upstream end of the island, detrital limestone (Cuvillier, 1956, pl. XXX-2). Cuvillier dated the sample as Vracconian, but because of the dubious origin of the block, this age is questionable.

Genus SPIROPLECTAMMINA Cushman, 1927

Spiroplectammina sp.

Plate V fig. 3

The apertural face of the test is lozenge-shaped, with acute angles. The longitudinal section is similar to the one depicted by Dufaure (1959, pl. 2 fig. 20) and which was identified by him as "*Tritaxia* sp. probable".

Genus TEXTULARIA Defrance, 1824

Textularia sp.

Plate V fig. 4

Test elongate, juvenile test tapering, after about 7 chambers obtaining a constant or somewhat decreasing diameter; circular in cross-section; chambers lobulate; sutures depressed, septa at about 120° to the surface of the test; aperture a short horizontal slit at the inner margin of the last formed chamber.

Genus GAUDRYINA d'Orbigny, 1839

Gaudryina alisana, n. sp.

Plate V figs. 5, 6, 8

Description: Wall finely arenaceous, surface rough; test tapering, greatest width near the apertural face; triserial part triangular in section, with acute angles and straight or slightly convex sides; biserial part almost quadrate in section, with acute angles and slightly convex sides; septa perpendicular to the cone-surface, convex; aperture a short slit on the inner margin of the last formed chamber, chamber septa bending inwards at the aperture; height about 0,3—0,5 mm, maximum diameter about 0,2—0,3 mm.

Holotype: Nr. 115181 (pl. V fig. 5).

Derivation of name: After its type-locality at the Puerto de Las Alisas.

Distribution:

Spain: Province of Santander, Puerto de Las Alisas, road Solares-Ramales, km. 22,5 (type-locality), Aptian-Albian passage.

Genus CITHARINA d'Orbigny, 1829

Citharina strigillata (Reuss)

Vaginulina (Citharina) strigillata Reuss, 1846, Verstein. Böhm. Kreideform., vol. 2, p. 106, pl. 24 fig. 29.

Only one complete specimen and two fragments have been found in the sample.

Genus GYROIDINOIDES Brotzen, 1942

Cyroidinoides gracillima Ten Dam

Plate V figs. 1, 2

Gyroidinoides gracillima Ten Dam, 1947, Geol. & Mijnb., Vol. 3, p. 8, pt. 27, fig. 4.

Only four complete specimens resembling the Dutch forms were found.

Genus EPONIDES Montfort, 1808

Eponides sp.

Plate V fig. 7

This small species of *Eponides* seems to be widely distributed in the Aptian-Albian of Southern Europe, although in each sample in which it was found by the author, it appeared to be rare.

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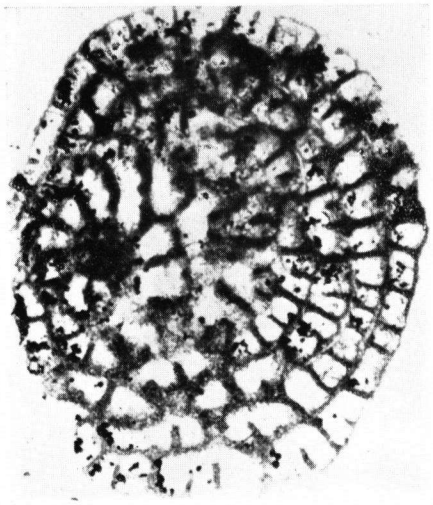
PLATES

PLATE I

All figures are of *Coskinolinella daguini* Delmas & Deloffre: fig. 3; 200 ×, all other figures 100 ×.

Fig. 1, 3, 6, 9: Horizontal sections through the initial spiral; fig. 3 is an enlargement of fig. 6, and shows the proloculus.

Fig. 2, 4, 5, 6, 7: vertical (axial) sections.



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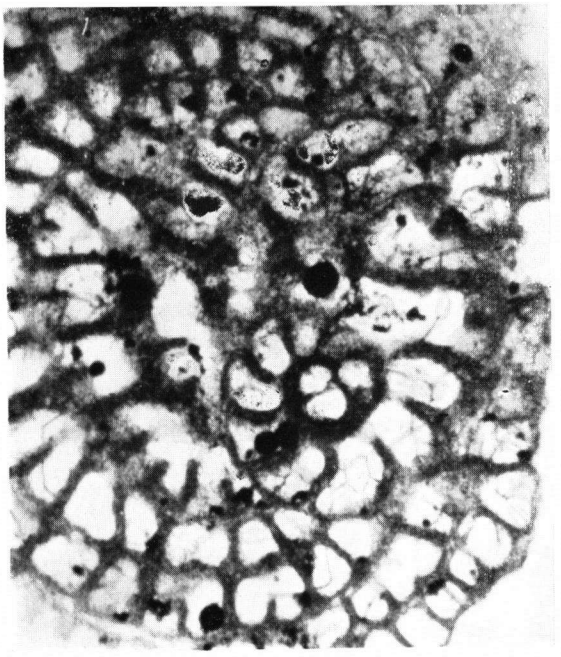

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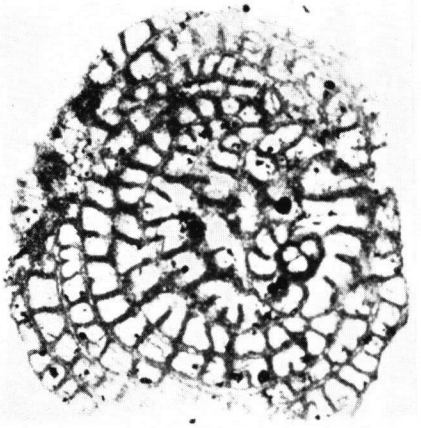

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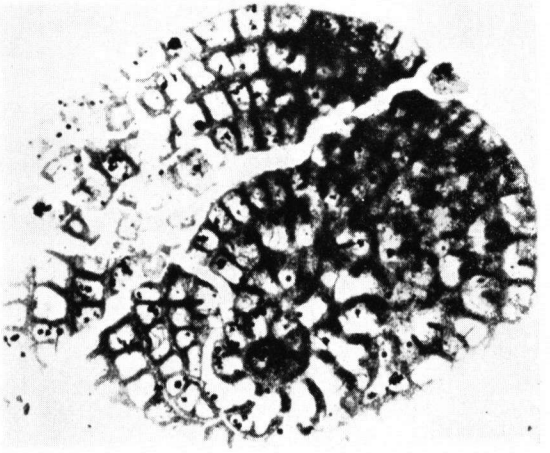

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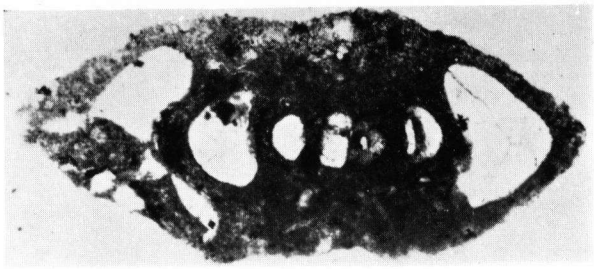
PLATE II

All figures show megalospheric specimens of *Haplophragmoides greigi* (Henson) and have an enlargement of 100 ×.

Fig. 1, 2, 4: axial sections.

Fig. 3, 5, 6, 7: equatorial sections.



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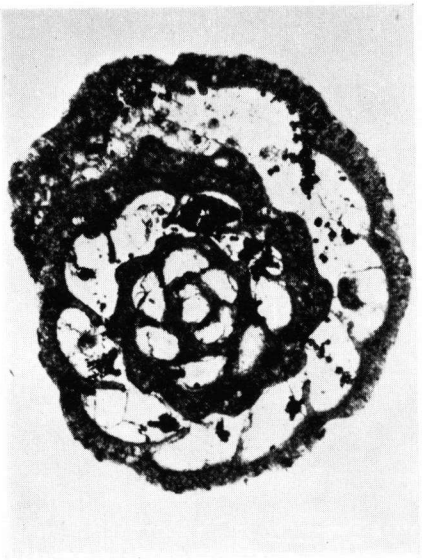

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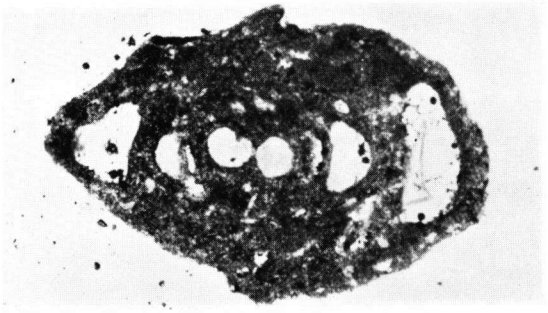

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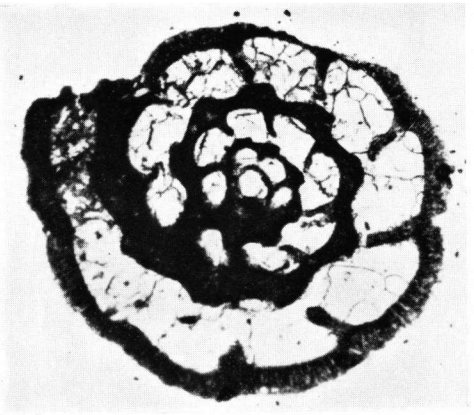

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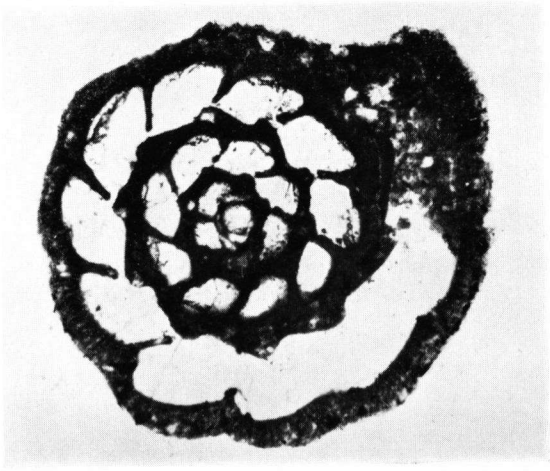

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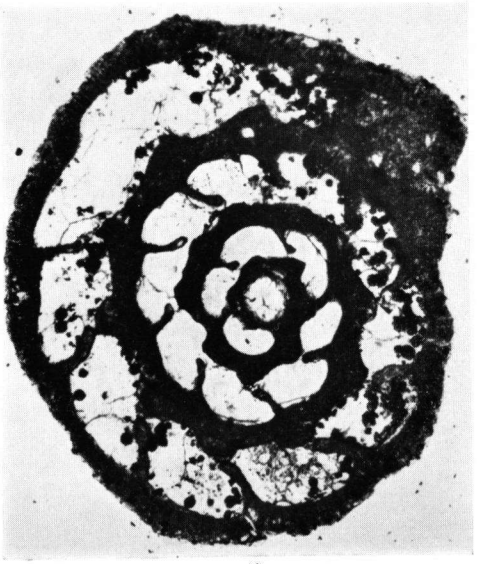

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PLATE III

Fig. 1. Equatorial section of *Haplophragmoides greigi* (Henson), megalospheric specimen, 110 ×

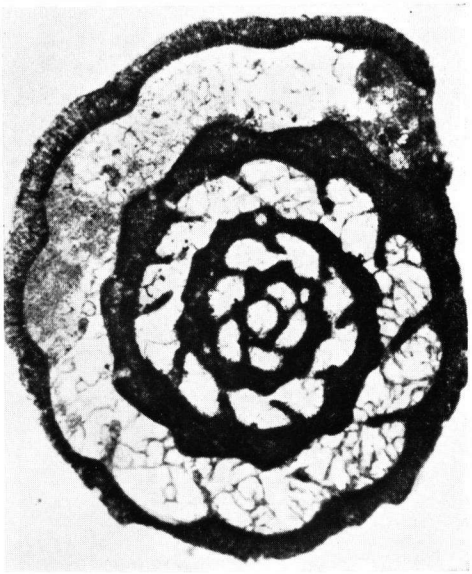
Fig. 2. Equatorial section of *H. greigi*, microspheric specimen, 75 ×.

Fig. 3. Equatorial section of *H. greigi*, megalospheric specimen, 150 ×.

Fig. 4. Equatorial section of *H. cenomana* (Cuvillier & Ssakall), 150 ×.

Fig. 5. *Textulariella minuta* n. sp., axial section oblique to the direction of the apertural slit, 150 ×.

Fig. 6. *T. minuta*, axial section at right angles to the direction of the apertural slit, 150 ×.



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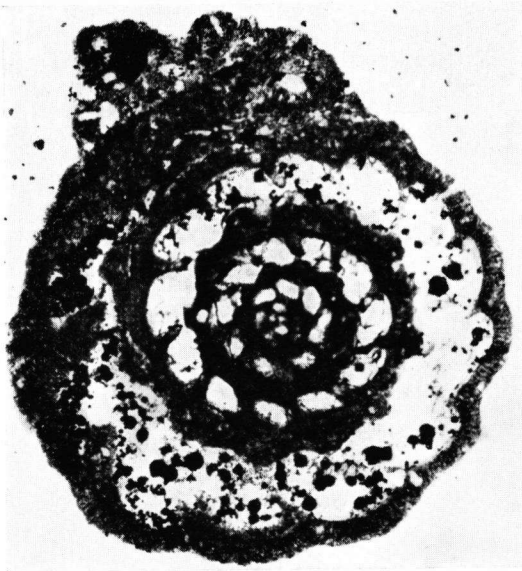

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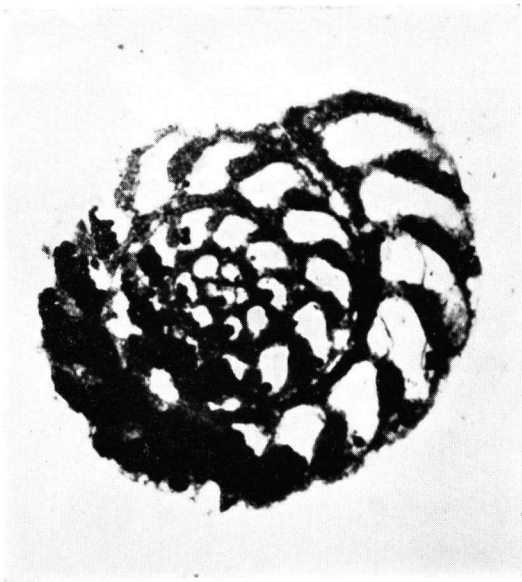

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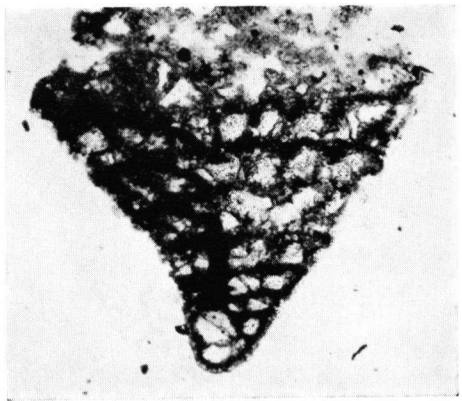

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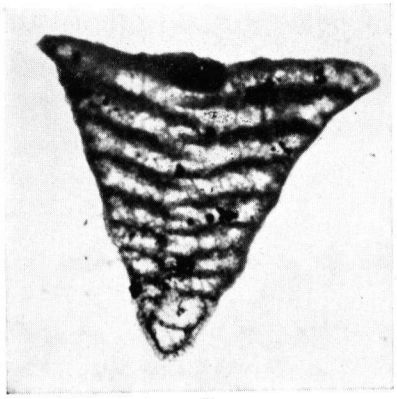

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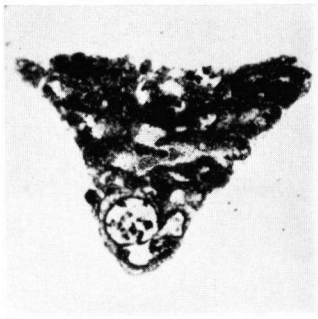
PLATE IV

All figures are of *Textulariella minuta* n. sp.; fig. 5: 200 ×, all other figures 150 ×

Fig. 1, 2, 3, 5. Axial sections; fig. 3: sectioned just through the apertural slit.

Fig. 4. Tangential section.

Fig. 6, 7, 8, 9. Horizontal sections, showing the radial partitions.



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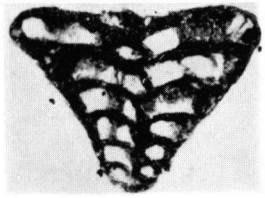

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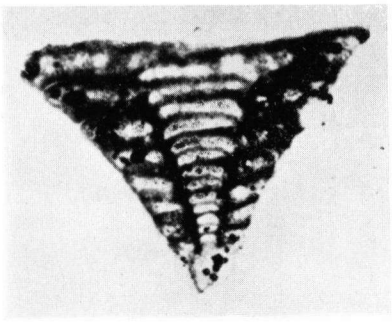

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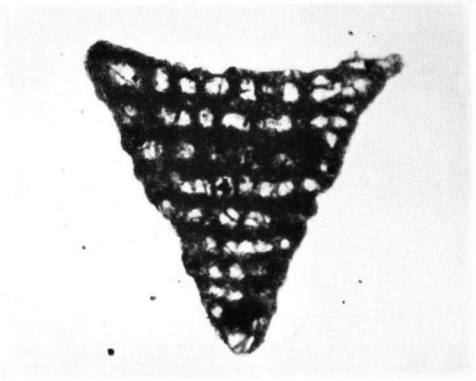

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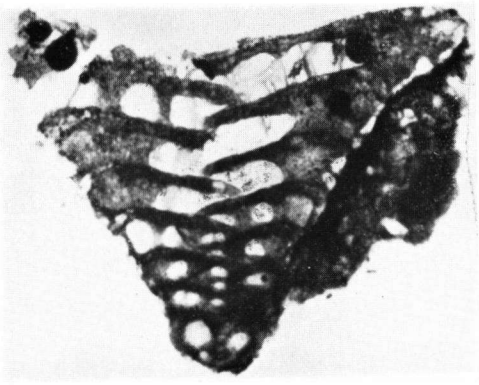

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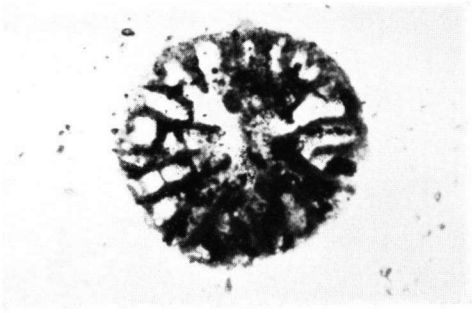

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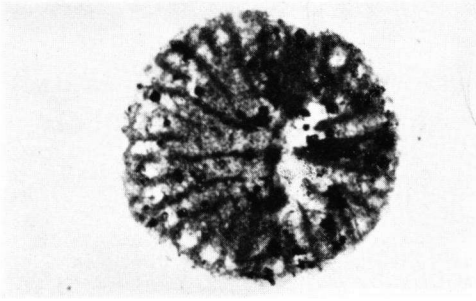

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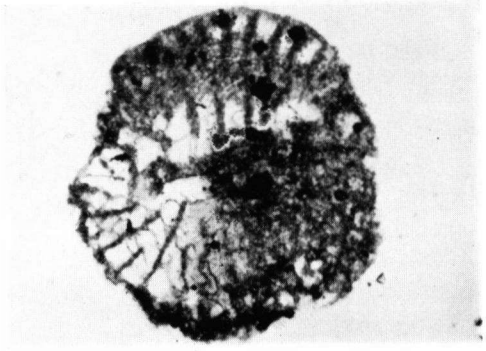

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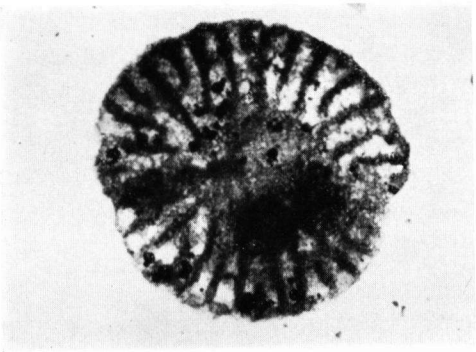

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PLATE V

Fig. 1. *Gyroidinoides gracillima* Ten Dam, axial section, 200 ×.

Fig. 2. *G. gracillima*, horizontal section just below the proloculus, 150 ×.

Fig. 3. *Spiroplectammina* sp., longitudinal section, 150 ×.

Fig. 4. *Textularia* sp., longitudinal section, 150 ×.

Fig. 5. *Gaudryina alisana* n. sp., longitudinal section, 150 ×.

Fig. 6. *G. alisana* n. sp., horizontal section through the biserial part, showing the bending inwards of the septa at the aperture, 150 ×.

Fig. 7. *Eponides* sp., axial section, 200 ×.

Fig. 8. *G. alisana*, horizontal section through the triserial part, 150 ×.

Fig. 9. *Citharina strigillata* (Reuss), longitudinal section, 75 ×.

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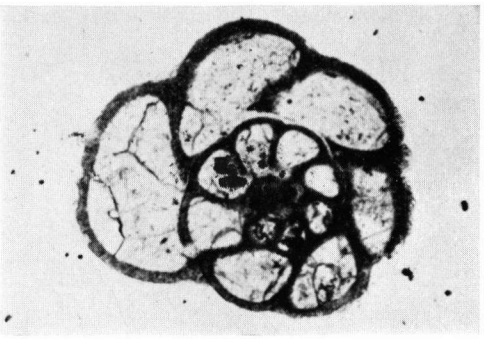

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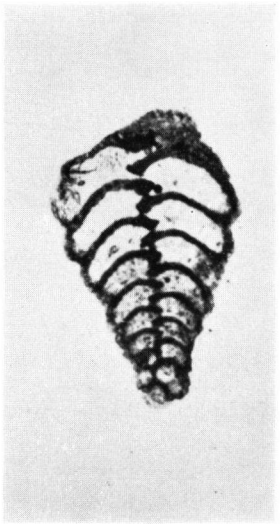

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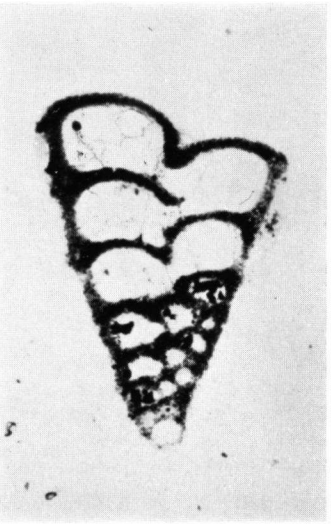

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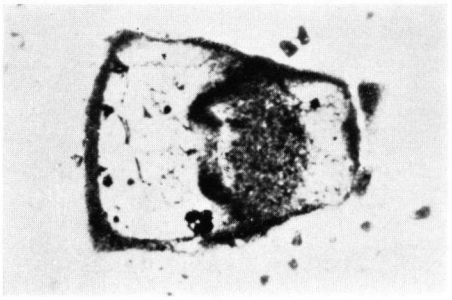

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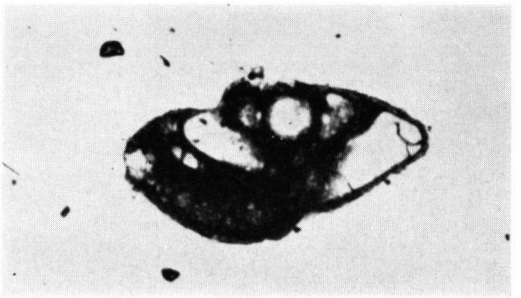

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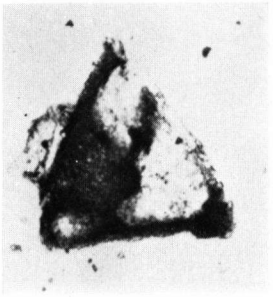

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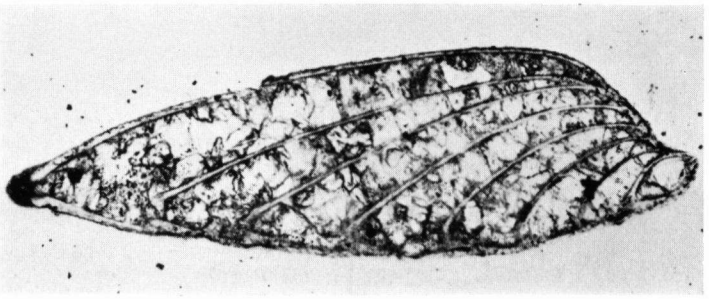

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