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TWO NEW SPECIES OF OSTRACODS  
FROM THE CENTERFIELD LIMESTONE  
OF WESTERN NEW YORK

BY  
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MUSEUM OF PALEONTOLOGY  
UNIVERSITY OF MICHIGAN  
ANN ARBOR

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13. Notes on Two Ordovician Ostracods from Estonia, by Robert V. Kesling. Pages 259-272, with 1 plate.
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## TWO NEW SPECIES OF OSTRACODS FROM THE CENTERFIELD LIMESTONE OF WESTERN NEW YORK

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### INTRODUCTION

Two new species of ostracods have been recovered from the Centerfield limestone member of the Ludlowville shale of the Middle Devonian Hamilton group in western New York. One belongs to the hollinid genus *Abditoloculina* and the other to the beyrichiid genus *Treposeella*. They are the first species of *Abditoloculina* and *Treposeella* reported from rocks younger than the Middle Devonian Onondaga limestone.

The author is grateful to Mr. Raymond R. Hibbard of Buffalo, New York, for his generous gifts of washed samples of Centerfield limestone, from which some of the specimens were obtained. Dr. L. B. Kellum, Dr. G. M. Ehlers, and Dr. C. A. Arnold offered helpful criticism of the typescript. The plates were prepared with special photographic equipment provided by the Horace H. Rackham School of Graduate Studies of the University of Michigan.

All specimens are catalogued and deposited in the Museum of Paleontology of the University of Michigan.

### LOCALITIES

1. Field exposure on the north side of Sumner Road, just west of Simons Road, 2 miles northeast of Darien, Genesee County, New York. Samples collected by Raymond R. Hibbard in 1947 and 1952.
2. Cut of the Delaware, Lackawanna, and Western Railway, 1½ miles west of East Bethany, Genesee County, New York. Samples collected by Raymond R. Hibbard and Robert V. Kesling in 1953.

## SYSTEMATIC DESCRIPTIONS

Phylum ARTHROPODA

Class CRUSTACEA

Order OSTRACODA

Superfamily Beyrichiacea

Family Hollinidae Swartz, 1936

Genus *Abditoloculina* Kesling, 1952

*Type species.*—By original designation, *Abditoloculina insolita* Kesling, 1952, p. 765.

***Abditoloculina pulchra*, sp. nov.**

(Pl. I, Figs. 1–19)

*Female.*—Carapace small, suboval to subelliptical in lateral view, elongate subtriangular in dorsal view, and subtrapezoidal to subhexagonal in end view. Left valve slightly larger than right; overlap distinctly L/R around the free edge, but not conspicuous. Hinge line straight, about seven-eighths as long as the carapace. Anterior border subround with radius of curvature approximately equal to two-thirds the height of the carapace; ventral border gently curved with radius greater than the height; and posterior border subround with radius of curvature about equal to one-half the height. Anterior and ventral parts of the free edge hidden in lateral view by the frill.

L1 a low, short lobe near the anterior corner, sloping parallel to the anterodorsal part of the free border, ventrally confluent with the rest of the valve, dorsally terminating as a low blunt projection extending slightly above the hinge line. L2 a subspherical knob in the dorsal half of each valve, its diameter about equal to one-fourth the height of the valve, its dorsal edge separated from the hinge line by a distance equal to one-eighth the height; anteriorly, dorsally, and posteriorly bounded by sulci, ventrally by a semisulcus; a low blunt projection on its posterodorsal edge. L3 a subspherical bulb extending a little above the hinge line, its diameter equal to one-third the height of the valve; a low blunt projection on its posterodorsal edge. In dorsal view (Pl. I, Fig. 3), L2 and L3 project distally about equal distances from the hinge line, but L1 extends only half as far as L2 or L3. The posterior part of the valve slopes gently from L3 to the rear part of the free border.

S1 short, very narrow, dorsally confluent with S2 around the upper edge of L2. S2 extending from the hinge line to the middle of the valve, deepest in its ventral half. A semisulcus along the rear edge of L3. A large hollow spinelike spur in the ventral half of each valve, just below the front edge

of L3 and above the frill, curved, projects outward and backward, terminating in a blunt tip. An unusual dumbbell-shaped spur in the anteroventral part of each valve below S1 extends onto the frill; its dorsal prominence is at the junction of the frill and the rest of the valve and its ventral prominence near the distal edge of the frill.

Velate structure in each valve continuous from the anterior to the posterior region, consisting of a frill in the anterior and ventral parts and a low velate ridge in the posterior part. Frill, in lateral view, with eight convex nodes, each marking the position of a loculum inside. The dumbbell-shaped spur located between the third and fourth nodes. A narrow crest along the distal edge of the frill, posteriorly continuous with the velate ridge. Velate ridge extending from the frill almost to the dorsal border. Each of the eight loculi has a round or oval opening surrounded by a distinct low crest. A marginal structure of small, low, partly fused papillae, extends from corner to corner.

Anterior cardinal angle 120 degrees. Posterior cardinal angle slightly less.

Surface ornamented with shallow punctae, closely spaced, forming a reticulation. Ornamentation on the lobes, spinelike spur, dumbbell-shaped spur, and frill much less distinct than on rest of the lateral surface.

Dimensions of a complete carapace, holotype No. 30497: length, 0.88 mm.; height, 0.54 mm.; and width (between tips of two spinelike spurs), 0.62 mm. Width, exclusive of spurs, 0.39 mm.

*Male*.—General shape, lobation, and ornamentation as in female. No frill. Velate structure complex, consisting of two parts in each valve: (1) Anterior part, a short velate ridge from the middle of the anterior border to the posterior tip of the front spur. On the distal ventral surface of the spur, very near its posterior end, the ridge divides to surround a small elliptical area (Pl. I, Fig. 15), giving the appearance of a shallow loculus. (2) Posterior part, a long velate ridge, not joined to the anterior part, nearly parallel to the free edge, its anterior end proximal to the loculus-like structure and its posterior end in the central posterior area of the valve; the section along the ventral part of the valve broad, but the one along the posteroventral part low and inconspicuous. The ends of the spurs are broken off in many valves. In the valves that lack the end of the front spur, the part of the velate structure that resembles a loculus is also missing.

Dimensions of an almost complete carapace, allotype No. 30498: length, 0.85 mm.; height, 0.47 mm.; and width, exclusive of the spurs, 0.38 mm.

*Immature instar*.—One almost complete carapace, an instar younger

than the adult. General shape, lobation, and ornamentation like adult male. L3 proportionately smaller than that of adult. Posterior part of valve with greater swing than adult. L2 and L3 lacking the small blunt projection on posterodorsal edge.

Dimensions of an almost complete carapace, paratype No. 30500: length, 0.72 mm.; height, 0.41 mm.; and width, exclusive of spurs, 0.31 mm.

*Remarks.*—*Abditoloculina pulchra*, sp. nov., closely resembles *A. insolita* Kesling (1952, pp. 767–68, Pl. 111, Figs. 7–14), the type species, but differs from it in the details of several structures. *A. pulchra* has a large knoblike L2, a dumbbell-shaped anterior spur, no spine behind the L3, and eight loculi in each female valve. *A. insolita* has a small elongate nodelike L2, a curved spinelike anterior spur, a small spine on the dorsal border midway between L3 and the posterior corner, and seven loculi in each female valve. Furthermore, ornamentation in *A. pulchra* is deeper and more distinct than that in *A. insolita*.

The name is derived from Latin *pulcher* (“pretty”) and refers to the attractive appearance.

*Types.*—Holotype, a complete female carapace, No. 30497; allotype, a male carapace, No. 30498; paratypes, a crushed male carapace and an immature carapace, Nos. 30499–30500.

#### Family Beyrichiidae Ulrich, 1894

##### Subfamily Treposellinae Henningsmoen, 1954

*Type genus.*—*Treposella* Ulrich and Bassler, 1908.

*Remarks.*—The ostracods of the subfamily Treposellinae are of particular interest, because they are the last species known of the family Beyrichiidae, which flourished in both North America and Europe during the Silurian period and declined rapidly during the Devonian. Unlike the Silurian species, which were so numerous and prolific that valves of beyrichiid ostracods are major constituents in many rock layers, the Devonian species are few and none is represented by many specimens. Ostracods of this subfamily differ from members of the other beyrichiid subfamilies (the Beyrichiinae, Kloedeniinae, and Zygobolbinae), in having the brood pouch ventral or posteroventral instead of anteroventral. *Bolbiprimitia* Kay (1940, p. 252), from the Tonoloway formation, seems to be the ancestor of the later genera, including *Treposella* Ulrich and Bassler (1908, p. 314), *Hibbardia* Kesling (1953b, pp. 19–20), and *Phlyctiscapha* Kesling (1953a, p. 222). Sulcation within the subfamily is extremely varied. *Bolbiprimitia* is unisulcate, with a long narrow S2; *Treposella* is bisulcate, but the S1 is very shallow; *Hibbardia* is unisulcate, with a deep pit at the

ventral end of S2; and *Phlyctiscapha* is nonsulcate. Relationships among these genera are not, however, demonstrated by progressive changes in sulcation.

Genus *Treposella* Ulrich and Bassler

*Type species*.—By designation of Ulrich and Bassler, 1908, p. 314, *Beyrichia lyoni* Ulrich, 1891, p. 190, Pl. 14, Figs. 2a-c, 3.

***Treposella stellata*, sp. nov.**

(Pl. II, Figs. 1-3; Pl. III, Figs. 1-6)

*Female*.—Valve subelliptical. Hinge line straight. Anterior border round, with radius of curvature equal to a little more than half the height of the valve; ventral border curved, with radius of curvature equal to the height; and posterior border incomplete (in the only specimen) and sub-round with radius of curvature equal to about two-thirds the height.

L1 a low lobe, ventrally confluent with the ventral part of the valve, dorsal end curved backward to a point above the center of L2. L2 a rounded node, with diameter equal to about one-third the height of the valve, in the anterocentral area. L3 a large lobe, bounded in front by S2, but posteriorly sloping to rear of valve without a distinct boundary, dorsal tip extending slightly above the hinge line as a bluntly rounded hump. S1 a shallow C-shaped groove, dorsally confluent with S2 around the upper edge of L2 and ventrally confluent with S2 between L2 and the brood pouch. S2 wider and deeper than S1, extending from the dorsal border to the upper edge of the brood pouch. Two shallow grooves in L3, sloping slightly, nearly longitudinal, concave upward, placed similarly to those in the L3 of *Beyrichia tuberculata* (Klöden); dorsal groove very shallow, sloping forward and downward across the middle of L3; ventral groove parallel to the dorsal groove, sloping downward to the junction of the brood pouch and the lateral surface of the valve. In the only female valve available, there is an elliptical calcareous mass attached antero-ventrally to L2 and anterodorsally to the brood pouch. This is regarded as an adhering foreign object.

Brood pouch large, wide, and elongate, filling most of the ventral part of the valve, extending from a position below L1 to below L3 and ventrally overhanging and obscuring a portion of the frill; subtriangular in cross section, with upper and lower surfaces convex, so that it projects sharply outward from the rest of the valve. A low round ridge lies along the junction of the upper and lower surfaces of the pouch, extending from the anterior end to the posterior part and terminating in a short, blunt spine or spur. There are several equally spaced, very shallow scooplike

depressions on the surface of the brood pouch along the upper edge of the ridge.

Frill broad, striate, apparently extending from corner to corner; ventral part flared outward and seemingly partly fused with the ventral side of the brood pouch. Approximately 60 striae; those in the anteroventral and ventral parts of the frill more distinct than the others. Low, indistinct crests on the striae, concentric with the edge of the frill, form with the striae a modified reticulation.

Brood pouch with most of its surface finely granular, but with a few inconspicuous threadlike undulating longitudinal striae on the upper half. The rest of the lateral surface ornamented with a reticulation of polygonal meshes. Most of the meshes are regular hexagons, some pentagons, and a few irregular. Within each interstice of the reticulation, short, acuminate little crests point inward from the surrounding mesh, so that it appears to contain a stellate pit. The little crests are slightly below the level of the mesh and some originate from the corners of the polygon and others from the sides. There is no correlation between the number of crests and the number of sides of a mesh.

Submarginal denticles between the frill and the free edge of the valve, small, short, and closely spaced.

Dimensions of incomplete left valve, holotype No. 30501: length about 1.98 mm.; height, 1.27 mm.; and width, 0.79 mm.

*Male*.—Valves more elongate than those of female. General lobation and ornamentation as in female. No brood pouch. L2 not as sharply defined as that of the female, anteroventrally and ventrally confluent with rest of lateral surface. L3 with two distinct grooves, with dorsal groove broader than the ventral; the ventral groove distinct, limited to L3 and anteriorly not confluent with the lower end of S2. The ventral part of the valve evenly arched, sloping gently to its junction with the frill.

Frill broad, particularly in the posteroventral and posterior part; striate, with striae very prominent in the anteroventral and ventral region; flared strongly outward anteroventrally and ventrally; thick in the anteroventral and thin and delicate in the posterior part.

Ornamentation indistinct or absent in the anterior corner region of the lateral surface.

Dimensions of incomplete right valve, allotype No. 30502: length, 1.92 mm.; height, 1.08 mm.

*Immature instar*.—One left valve, three instars younger than the adult. If an adult is assumed to be in the ninth instar, this immature valve is in the sixth. Valve more acuminate posterodorsally than that of adult male, with strong swing in the posterior region. Ornamentation as



in adult, meshes only slightly smaller and not proportionate to the area of the valve in lateral view. A distinct furrow in L3, about two-thirds the distance from the dorsal border to the frill, long, curved parallel to the posteroventral and posterior borders, extending to the dorsal border; furrow apparently corresponding to the ventral furrow in L3 of adult valve. The posteroventral and posterior part of the frill is broken, but seems not to have been proportionately as broad as in adult male.

Dimensions of a left valve, paratype No. 30504: length, 0.90 mm.; height, about 0.49 mm.

*Remarks.*—Although the species is known only from incomplete valves, many fragments of valves were found with the unusual ornamentation of this species. It would seem, therefore, either that the valves are very fragile or that they were transported for a great distance before burial. Reconstructions of the right valve of a female, male, and immature specimen in the sixth instar are shown in Plate II. They are based on the specimens illustrated in Plate III. The calcareous mass securely cemented to the holotype just above the front end of the brood pouch (Pl. III, Fig. 1) has not been included in the drawing (Pl. II, Fig. 1), since it is not considered a part of the female valve.

*Treposella stellata*, sp. nov., differs from *Treposella lyoni* (Ulrich), the type species and the only one of the genus previously described. The interstices of the reticulation in *T. stellata* have short little crests connected to the mesh, whereas those in *T. lyoni* are unornamented; the brood pouch in the female valve of *T. stellata* is subtriangular in cross section, granular, and bears a round ridge along its distal edge, that of *T. lyoni* is round in cross section, ornamented with a reticulation similar to that on the lateral surface, and has no ridge; and the male frill in *T. stellata* seems to be much broader, particularly in the posteroventral and posterior parts, than that of *T. lyoni*.

The name is derived from Latin *stellatus* ("starred") and refers to the ornamentation in the interstices of the reticulation. The ornamentation is unique among fossils, so that the species can be identified even from small fragments.

*Types.*—Holotype, a female left valve, No. 30501; allotype, a male right valve, No. 30502; paratypes, a male right valve and an immature left valve, Nos. 30503–30504.

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**PLATES**

## EXPLANATION OF PLATE I

(All figures  $\times 40$ )

- Abditoloculina pulchra*, sp. nov. . . . . 274
- FIGS. 1-6. Right lateral, left lateral, dorsal, ventral, anterior, and oblique views of a complete female carapace. Holotype No. 30497. Locality 1.
- FIGS. 7-11. Left lateral, right lateral, dorsal, ventral, and oblique views of an almost complete male carapace. Allotype No. 30498. Ends of both spurs on the right valve and the front spur on the left valve are missing. Locality 1.
- FIGS. 12-15. Left lateral, right lateral, dorsal, and ventral views of a crushed male carapace. Paratype No. 30499. Only the front spur on the left valve is complete. Locality 1.
- FIGS. 16-19. Right lateral, dorsal, ventral, and anterior views of an immature carapace one instar younger than the adult. Paratype No. 30500. The rear spur on each valve is broken. Locality 1.

PLATE I

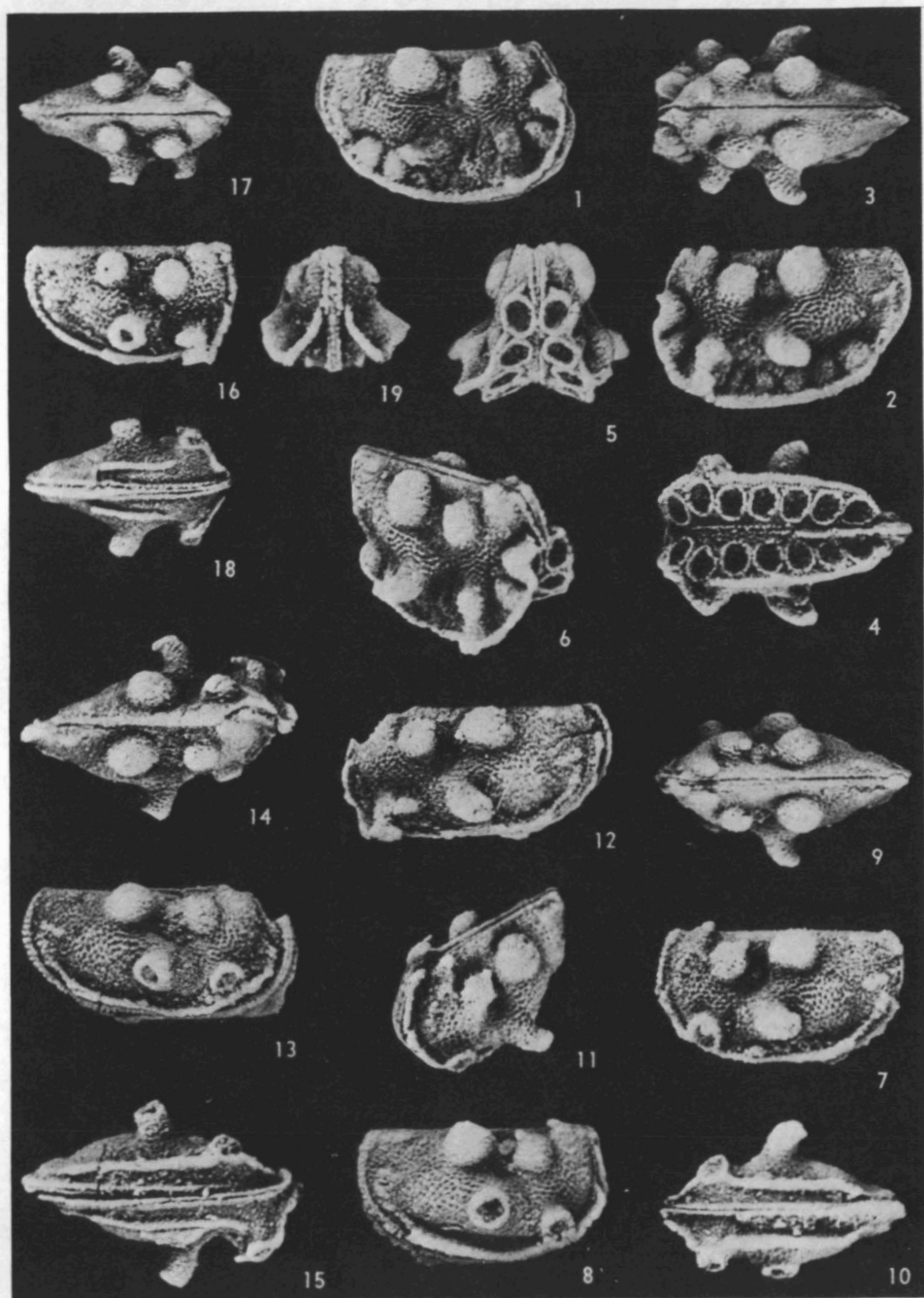
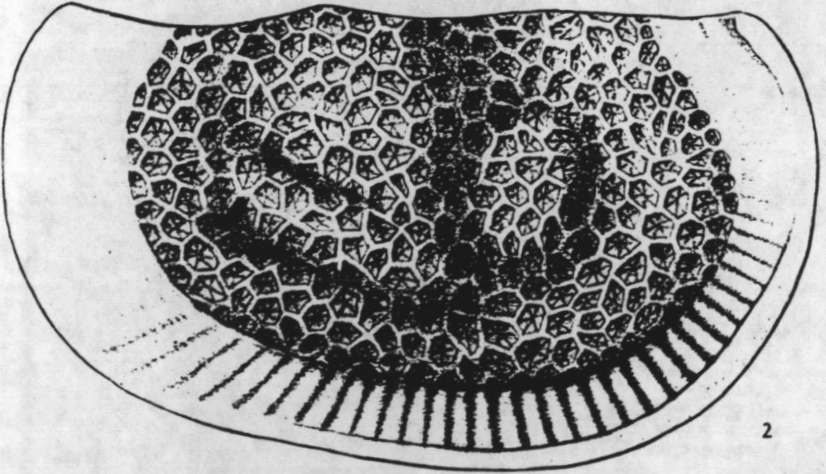
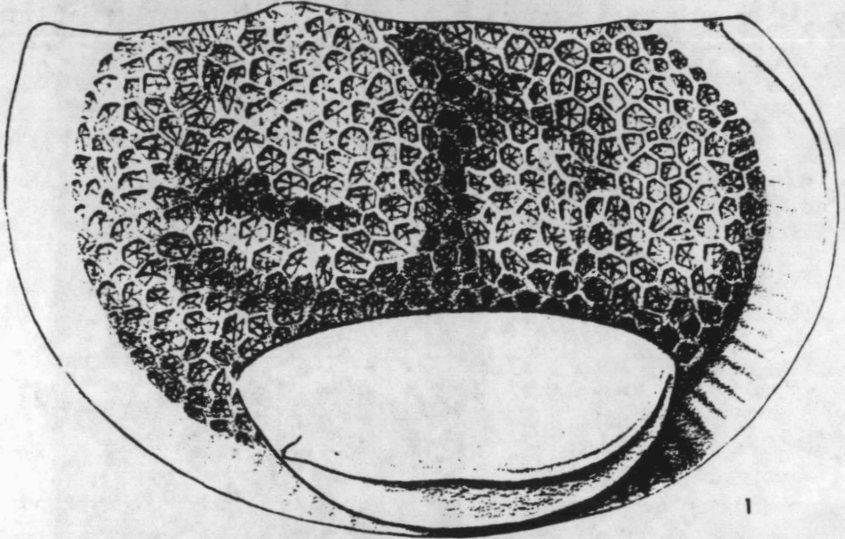


PLATE II



## EXPLANATION OF PLATE II

(All figures  $\times 56$ )

*Trepostella stellata*, sp. nov. .... 277

FIGS. 1-3. Reconstructions of an adult female, an adult male, and an immature right valve, as seen in lateral view, based on the specimens in Plate III. The calcareous mass above the front end of the brood pouch on the only female valve (Pl. III, Fig. 1) is assumed to be foreign; hence, it is not included in the sketch. The posterodorsal part of the frill in the male valve is a projection of the curve of the posteroventral part of the frill in the allotype (Pl. III, Figs. 4, 6).

## EXPLANATION OF PLATE III

(All figures  $\times 30$  except as indicated)

- Treposesella stellata*, sp. nov. .... 277
- FIGS. 1-2. Lateral and ventral views of a female left valve. Holotype No. 30501. Posterodorsal part of the frill is missing and the rest is poorly preserved. Calcareous mass above the front end of the brood pouch is assumed to be foreign. Locality 1.
- FIG. 3. Lateral view of a male right valve. Paratype No. 30503. Parts of frill missing. Locality 2.
- FIGS. 4, 6. Lateral views of a male right valve. Allotype No. 30502. The specimen, which was broken into four pieces, is cemented together. Anterodorsal and posterodorsal parts of the frill missing. Locality 1. Figure 6,  $\times 60$ .
- FIG. 5. Lateral view of an immature left valve three instars younger than the adult. Paratype No. 30504. Distal parts of the frill missing. Locality 2.



PLATE III

