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QUASILLITID AND ALANELLID OSTRACODS
FROM THE CENTERFIELD LIMESTONE OF
WESTERN NEW YORK

BY

ROBERT V. KESLING, EMADEDDIN KAVARY,
ROBERT S. TAKAGI, JOHN R. TILLMAN, and
GEORGE R. WULF



MUSEUM OF PALEONTOLOGY
THE UNIVERSITY OF MICHIGAN
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VOLS. II-XIV. Parts of volumes may be obtained if available.

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2. Quasillitid and Alanelid Ostracods from the Centerfield Limestone of Western New York, by Robert V. Kesling, Emadeddin Kavary, Robert S. Takagi, John R. Tillman, and George R. Wulf. Pages 15-31, with 4 plates.

QUASILLITID AND ALANELLID OSTRACODS FROM THE
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INTRODUCTION

THE OSTRACODS listed and described in this paper, from the Centerfield limestone of the Middle Devonian Ludlowville formation in western New York, are classified as two families, eight genera, and ten species, of which one genus and one species are new. They were contained in material collected by Robert V. Kesling and the late Raymond R. Hibbard.

The only previous publications on the ostracod fauna of the Centerfield limestone are by Coley (1954), Kesling (1955), and Kesling and Sohn (1958). Representatives of the family Quasillitidae have been described also from the following Middle Devonian formations: the Wanakah shale (Swartz and Oriel, 1948) and the Windom shale (Stover, 1956) of western New York; the Hungry Hollow formation (Coryell and Malkin, 1936) of southern Ontario; the Bell shale (Van Pelt, 1933), the Genshaw formation (Kesling and Kilgore, 1952), and the Norway Point formation (Kesling and Weiss, 1953) of northeastern Michigan (see Chart 1 for correlations). Representatives of the family Alanellidae have been described from the Centerfield (Kesling and Sohn, 1958) and occur also in the Hungry Hollow formation.

Each of the species of quasillitid ostracods described here, without exception, has been reported from the Hungry Hollow formation of southern Ontario (Chart 1). They are *Euglyphella sigmoidalis* (Jones), *E. projecta* Coryell and Malkin, *E. compressa* Coryell and Malkin, *Bufina elata* Coryell and Malkin, *Jenningsina catenulata* (Van Pelt), *Quasillites obliquus* Coryell and Malkin, *Ropolonellus papillatus* Van Pelt, *Rudderina extensa* Coryell and Malkin. Thus, the ostracod fauna indicates the Center-

field limestone is a direct equivalent of the Hungry Hollow formation, and confirms their correlation, which had been established on macrofossils.

This paper is a contribution to the study of the Raymond R. Hibbard Collection. Mr. Hibbard deposited many specimens in the Museum of Paleontology during the last thirty years. After his death in 1957 the

		NE. MICHIGAN					S. ONTARIO					W. NEW YORK									
MIDDLE DEVONIAN	ERIAN SERIES	CAZENOVIAN	TROUGHNOGA GROUP													WINDOM FM.					
																KASHONG SH.					
																LUDLOWVILLE FM.	TICHENOR LS.				
				NORWAY POINT FM.					IPPERWASH LS.					WANAKAH SH.							
																LEDYARD SH.					
										PETROLIA SH.					CENTERFIELD LS.						
							WIDDER FM.														
							FOUR MILE DAM LS.					HUNGRY HOLLOW FM.									
							ALPENA LS.					ARKONA SHALE	LEVANNA SHALE								
							NEWTON CREEK LS.														
							GENSHAW FM.														
							FERRON POINT FM.														
						ROCKPORT QUARRY LS.															
						BELL SHALE															

CHART 1. Correlation chart of some Middle Devonian rocks of northeastern Michigan, southern Ontario, and western New York.

Museum acquired his private collection of Paleozoic invertebrates with the aid of grants from the University of Michigan Development Council and from the National Science Foundation (G-5858). The catalogue numbers are those of the Museum of Paleontology.

LOCALITIES

Collections were made from the following localities of Centerfield limestone exposures:

LOCALITY

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 Railroad, 1½ miles west of East Bethany, Genesee County, New York. Samples collected by Robert V. Kesling and Raymond R. Hibbard in 1952.

SYSTEMATIC DESCRIPTIONS

Phylum ARTHROPODA

Class CRUSTACEA

Order OSTRACODA

Family Quasillitidae Coryell and Malkin, 1936, emend. Henningsmoen, 1953

Genus *Euglyphella* Warthin

Type species.—*Strepula sigmoidalis* Jones, 1890a, p. 11, Pl. 2, Fig. 4, by designation of Warthin, 1934, p. 220.

Euglyphella sigmoidalis (Jones)

(Pl. I, Figs. 1-4)

Strepula sigmoidalis Jones, 1890a, p. 11, Pl. 2, Fig. 4; Grabau and Shimer, 1910, p. 350, Fig. 1660o.

Strepula plantaris Jones, 1890b, p. 540, Pl. 20, Figs. 8a-b.

Octonaria percarinata Van Pelt, 1933, p. 335, Pl. 39, Figs. 52-54.

Euglyphella sigmoidalis Warthin, 1934, p. 220, Pl. 1, Fig. 21; Bassler and Kellett, 1934, pp. 37, 311, Fig. 16; Coryell and Malkin, 1936, p. 7, Fig. 17; Shimer and Shrock, 1944, p. 681, Pl. 286, Fig. 7; Warthin, 1945, Card 78, Fig. B; Wright, 1948, p. 101, Pl. 12, Figs. 36-37; Kesling and Kilgore, 1952, p. 10, Pl. 3, Figs. 30-36; Kesling and Weiss, 1953, p. 58, Pl. 4, Figs. 12-15.

Remarks.—As compared with specimens of *E. sigmoidalis* (Jones) described by Kesling and Kilgore (1952) from the Genshaw formation of northeastern Michigan, those illustrated here appear to be immature instars. They are smaller and do not possess a bifurcation of the postero-dorsal part of the outer ridge.

Occurrence.—Locality 1.

Illustrated specimens.—One carapace, No. 35459, and one left valve, No. 35460.

Euglyphella projecta Coryell and Malkin

(Pl. I, Figs. 5-24; Pl. IV, Figs. 8-19)

Euglyphella projecta Coryell and Malkin, 1936, p. 7, Fig. 18; Warthin, 1945, Card 77; Stover, 1956, p. 1131, Text-fig. 6.

Measurements.—Averages of twelve carapaces: length, 0.92 mm.; height, 0.50 mm.; and width 0.40 mm.

Remarks.—The ventral margin of *Euglyphella projecta* is usually slightly concave in the central part. On some specimens the anterior cardinal angle of the left valve is almost a right angle, but on most the anterior margin is rounded and cannot be measured exactly. Nomenclature of the ridges (Fig. 1) follows that proposed by Stover (1956) for *E. deltella*. The anterodorsal angle of the outer ridge of most valves is about 120 degrees, but in a few is about 110. The ornamentation in the area bounded by the upper and lower segments of the inner ridge and the posterior part of the outer ridge of the left valve varies from a small

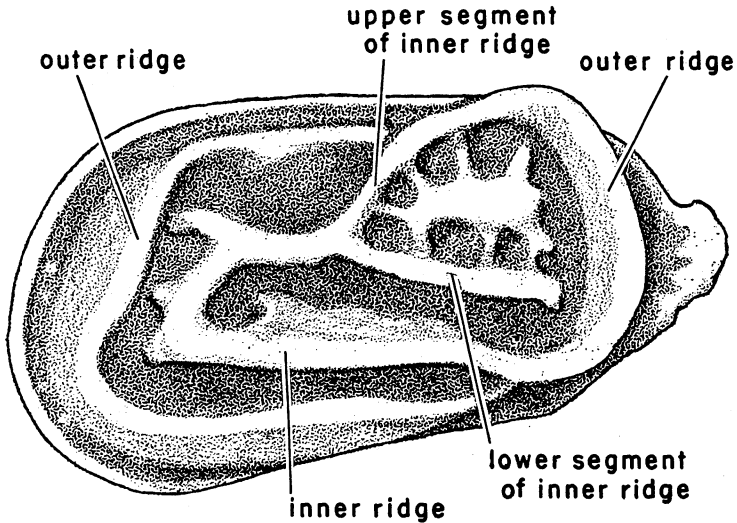


FIG. 1. Left valve of *Euglyphella projecta* Coryell and Malkin labeled with the terminology of ridges used in this paper.

horizontal bar with strong radiating projections to a triangular ridge with a small pit in its center and weak projections (compare Pl. I, Figs. 16 and 18, with Pl. I, Figs. 6 and 20). The hinge of the left valve of *E. projecta* (Pl. IV, Fig. 12) is similar to that of *E. deltella* Stover (1956, Text-fig. 4). In the anterocentral region bars extending forward from the anterior end of the inner ridge are not present on *E. deltella*. In *E. projecta* the bar most strongly developed is that which extends from the anterodorsal angle of the inner ridge. Probably, *E. projecta* is the direct ancestor of *E. deltella*.

Occurrence.—Localities 1 and 2.

Types.—Hypotypes, 15 carapaces, Nos. 35461–35470, 35530–35531, 35533–35535, and a left valve, No. 35532.

Euglyphella compressa Coryell and Malkin

(Pl. I, Figs. 25-42; Pl. IV, Figs. 20-27)

Euglyphella compressa Coryell and Malkin, 1936, p. 7, Fig. 19; Warthin, 1945, Card 74, Fig. 19; Wright, 1948, p. 101, Pl. 13, Fig. 2; Kesling and Weiss, 1953, p. 58, Pl. 4, Fig. 16.

Euglyphella jenningsi Coryell and Malkin, 1936, p. 8, Fig. 20; Warthin, 1945, Card 75, Fig. 20.

Revised description.—Carapace elongate, subquadrate in lateral view. Left valve larger than right with overlap strongest along anterodorsal margin. Hinge line and dorsal border slightly arcuate; ventral border concave in central portion. Posterior and anterior borders rounded; posterior border strongly tuberculate, anterior flange papillate. Left valve with a very short, blunt spine at the junction of dorsal and anterior borders.

Surface ornamented with two well defined ridges: an anterior ridge paralleling the anterior border, and an S-shaped ridge on the centroposterior region (Fig. 2). Dorsal ridge less developed. S-shaped ridge composed of the following parts: a centrodorsal ridge, a posterior ridge, a posterocentral ridge, a subordinate ridge, and a ventral ridge. Anterocentral ridge between the subordinate ridge and the anterior ridge. Several less prominent ridges showing considerable variability within the loops enclosed by the S-shaped ridge. Low swelling present in the anterior portion of the area bounded by the central and ventral parts of the S-shaped ridge. Ventral portion of the anterior ridge and the ventral ridge often connected by one or more weak ridges. Blunt spines at the junction of the centrodorsal and posterior ridges and at the extreme posterior end of the ventral ridge. Ornamentation on the right valve similar to that on the left with the exception of the dorsal ridge, which on the right valve is much closer to the dorsal border.

Measurements.—Angle of inclination of axis to hinge line approximately 15 degrees. Greatest height located approximately one-fifth the length from the anterior end. Greatest width approximately one-fifth the length from the posterior end. Average dimensions of three well preserved specimens: length, 1.03 mm.; height, 0.63 mm.; and width, 0.44 mm.

Remarks.—A comparison of the terminology of ridges in *Euglyphella compressa* and *E. asapha* is given in Table I. Although the general pattern differs slightly in the two species, equivalent ridges can be distinguished. The ridge pattern on *E. asapha* is not as strongly developed and the surface is more papillate than on *E. compressa*. The dorsal ridge on *E. compressa* appears to correspond to a row of tubercles on *E. asapha*. The anterodorsal spines and the posteroventral flange on the left valve of *E. compressa* is less pronounced than that on *E. asapha*. Probably, *E. compressa* is the direct ancestor of *E. asapha*.

Occurrence.—Locality 1.

Types.—Hypotypes, 16 carapaces, Nos. 35471–35479, 35536–35542.

Genus *Bufina* Coryell and Malkin

Type species.—By original designation, *Bufina elata* Coryell and Malkin, 1936, p. 8.

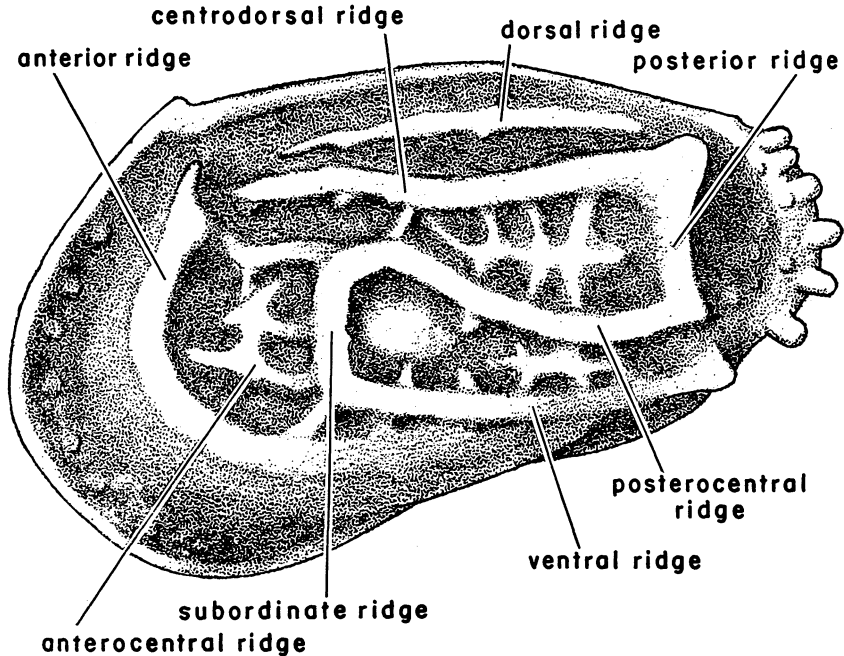


FIG. 2. Left valve of *Euglyphella compressa* Coryell and Malkin labeled with the terminology of ridges used in this paper.

Bufina elata Coryell and Malkin

(Pl. IV, Figs. 1–7)

Bufina elata Coryell and Malkin, 1936, p. 8, Fig. 22; Warthin, 1945, Card 72, Fig. 22.

Remarks.—The orientation used in the original description was reversed dorsal for ventral and anterior for posterior. The original figure is upside down.

Occurrence.—Locality 1.

Types.—Hypotypes, two complete carapaces, Nos. 33525 and 33529; one right valve, No. 35526; and two left valves, Nos. 33527 and 33528.

Genus *Jenningsina* Coryell and Malkin

Type species.—*Graphiodactylus catenulatus* Van Pelt, 1933, p. 333, Pl. 39, Figs. 31–32, by designation of Coryell and Malkin, 1936, p. 19.

Jenningsina catenulata (Van Pelt)

(Pl. II, Figs. 25–36)

Graphiodactylus catenulatus Van Pelt, 1933, p. 333, Pl. 39, Figs. 31–32; Moore, Lalicker, and Fischer, 1952, p. 533, Fig. 10.

Jenningsina catenulata Coryell and Malkin, 1936, p. 20, Fig. 35; Wright, 1948, p. 126, Pl. 16, Fig. 20; Kesling and Weiss, 1953, p. 62, Pl. 4, Figs. 40, 41, 44–49; Stover, 1956, p. 1122, Pl. 116, Figs. 16–26.

TABLE I
COMPARISON OF TERMINOLOGY OF RIDGES IN *Euglyphella asapha* STOVER
AND *E. compressa* CORYELL AND MALKIN

<i>Euglyphella compressa</i> (This paper)		<i>Euglyphella asapha</i> (Stover, 1956, Text-fig. 2)
	Anterior	Outer (anterior part)
S-shaped ridge	Centrodorsal	Central dorsal <i>plus</i> upper segment of outer ridge
	Posterior	Outer (posterior part)
	Postero-central	Lower segment of outer ridge
	Subordinate	Subordinate
	Ventral	Outer (ventral part)
	Anterocentral	Anterocentral
	Dorsal

Remarks.—Most specimens in lateral view are subrectangular to subreniform, with ornamentation consisting of ridges diverging posteriorly. One specimen (Pl. II, Figs. 27–28), however, varies markedly in having a smooth reniform outline with fine ridges diverging for only a short distance and then converging again near the posterior border; this atypical specimen is here retained in the species.

Occurrence.—Locality 2.

Types.—Hypotypes, two carapaces, Nos. 35494 and 35498, two right valves, Nos. 35493 and 35495, and two left valves, Nos. 35496 and 35497.

Genus *Quasillites* Coryell and Malkin

Type species.—By original designation, *Quasillites obliquus* Coryell and Malkin 1936, p. 18.

Quasillites obliquus Coryell and Malkin

(Pl. II, Figs. 1-24; Pl. IV, Figs. 28-34)

Quasillites obliquus Coryell and Malkin, 1936, p. 18, Figs. 36, 36a; Turner, 1939, pp. 25-26, Pl. I, Figs. 15, 18; Kesling and Weiss, 1953, p. 62, Pl. 4, Figs. 50-51.*Measurements.*—The average size for adult specimens is length, 1.2 mm.; height, 0.66 mm.; and width, 0.60 mm. The average size for the small specimens is length, 0.81 mm.; height, 0.52 mm.; and width, 0.46 mm.*Remarks.*—The specimen described by Coryell and Malkin (1936, p. 18, Figs. 36, 36a) was oriented incorrectly; the anterior end in their orientation should have been called posterior. The smaller specimens of our collection (Pl. II, Figs. 1-4; Pl. IV, Figs. 31-34) are immature instars.*Occurrence.*—Locality 1.*Types.*—Hypotypes, 16 complete carapaces, Nos. 35480-35483, 35485-35492, 35543-35544, and 35546-35547.Genus *Ropolonellus* Van Pelt*Type species.*—By original designation, *Ropolonellus papillatus* Van Pelt, 1933, p. 339.*Ropolonellus papillatus* Van Pelt

(Pl. III, Figs. 19-34)

Ropolonellus papillatus Van Pelt 1933, p. 339, Pl. 39, Figs. 29-30; Coryell and Malkin, 1936, p. 6, Figs. 15; Warthin, 1945, Card 82, Figs. 15, 29-30; Kesling and Weiss, 1953, p. 63, Pl. 4, Figs. 37-38.*Measurements.*—The average of six carapaces: length, 0.78 mm.; and height, 0.40 mm.*Remarks.*—The specimens described by Van Pelt (1933, p. 339) were incorrectly oriented; the anterior end in her orientation should be called the posterior.*Occurrence.*—Locality 2.*Types.*—Hypotypes, six complete carapaces, Nos. 35509-35512, 35515, and 35516; one right valve, No. 35514, and one left valve, No. 35513.Genus *Rudderina* Coryell and Malkin*Type species.*—By original designation, *Rudderina extensa* Coryell and Malkin, 1936, p. 6.*Rudderina extensa* Coryell and Malkin

(Pl. III, Figs. 1-18)

Rudderina extensa Coryell and Malkin, 1936, p. 6, Fig. 16; Wright, 1948, p. 100, Pl. 12, Fig. 35.*Remarks.*—A row of very small papillae occurs along the anteroventral and posteroventral borders of the right valve.*Occurrence.*—Locality 2.

Types.—Hypotypes, five carapaces, Nos. 35499–35501, 35503, and 35507; five right valves, Nos. 35502, 35504–35506, and 35508.

Family Alanellidae Bouček, 1936

Genus *Alanella* Bouček

Type species.—By original designation, *Alanella bohemica* Bouček, 1936, p. 71.

Alanella devonica Kesling and Sohn

(Figure 3)

Alanella devonica Kesling and Sohn, 1958, pp. 522–23, Pl. 78, Figs. 1–17, text-figs.

Occurrence.—Localities 1 and 2. We have also found this species in the Hungry Hollow formation near Thedford, Ontario.

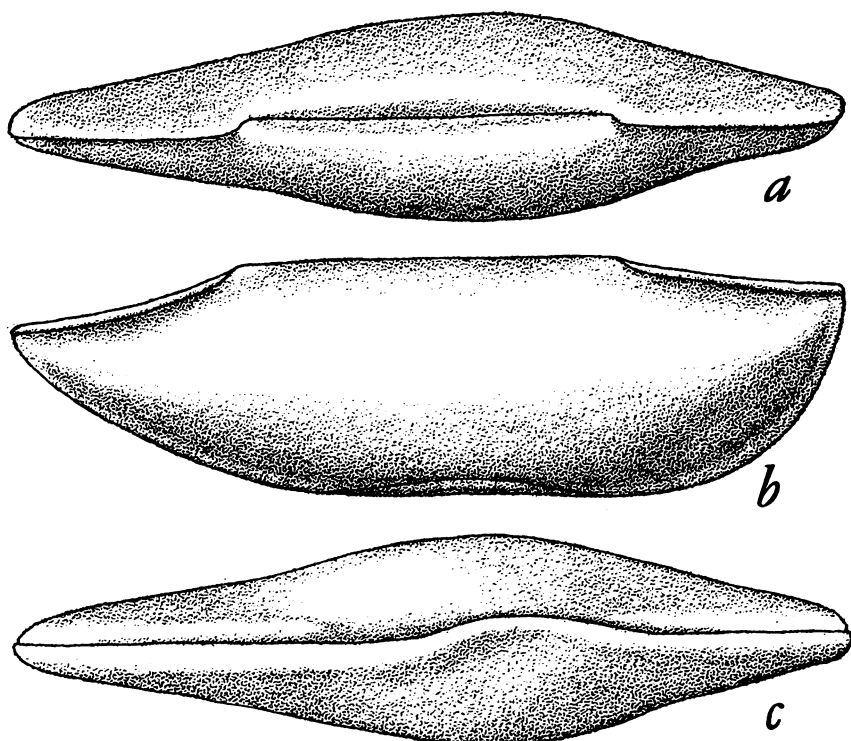


FIG. 3. Dorsal, right lateral, and ventral views of *Alanella devonica* Kesling and Sohn.

Rhysomagis, gen. nov.

Type species.—*Rhysomagis dichelomota*, sp. nov.

Description.—Carapace elongate, rectangular in lateral view, nearly equivalved. Hinge line straight, depressed below the dorsal border. Central portion of hinge without structure or overlap; terminal portions with grooves on right valve and presumably corresponding ridges on the left valve. Left valve slightly larger with a strong toothlike projection at each corner, fitting into conspicuous indentations in the right valve, forming an unusual kind of overlap. Left valve overlapping right along central part of ventral border. Shallow sulcus located about one-fourth the length behind the anterior border.

Remarks.—*Rhysomagis* is included in the Alanellidae because it resembles *Alanella*, the only other known genus of this family (compare Figs. 3 and 4) in the following characteristics: depressed hinge line, hinge consisting of grooves in the right valve, and overlap on the anterodorsal, posterodorsal, and centroventral borders. *Rhysomagis* differs from *Alanella* in the following respects: the anterior third of each valve contains a distinct sulcus, and the ends of each valve are blunt instead of pointed. *Rhysomagis* resembles representatives of the Quasillitidae, (for example, *Parabufina* and *Euglyphella*) with respect to the posterior ridge. It differs from them mainly in having grooves in the hinge of the right valve instead of the left.

The name of this genus is derived from the Greek ρυσοσ ("wrinkled") and from μαγις ("kneaded dough") and refers to the configuration of the carapace.

Rhysomagis dichelomota, sp. nov.

(Fig. 4; Pl. III, Figs. 35–49; Pl. IV, Figs. 35–42)

Description.—Carapace elongate, rectangular in lateral view and nearly square in end view. Dorsal border straight, ventral border slightly concave in central part. Greatest height in anterior one-third of carapace. Greatest width just anterior to center. Greatest length, along the axis, more than $2\frac{1}{4}$ times the greatest height. Hinge line straight, depressed below the dorsal border, central portion without structure or overlap, terminal portions with grooves on right valve and (presumably) corresponding ridges on the left valve. Left valve slightly larger with strong toothlike projections overlapping right valve on anterodorsal and posterodorsal corners (Fig. 4). Left valve overlapping right along central part of ventral border. A vertical sulcus occurs on the anterior one-third of each valve extending from near the dorsal border downward to the central part. Two horizontal grooves confluent with this sulcus, the upper one nearly straight, separated from the dorsal margin by a narrow ridge, and the lower one sinuous,

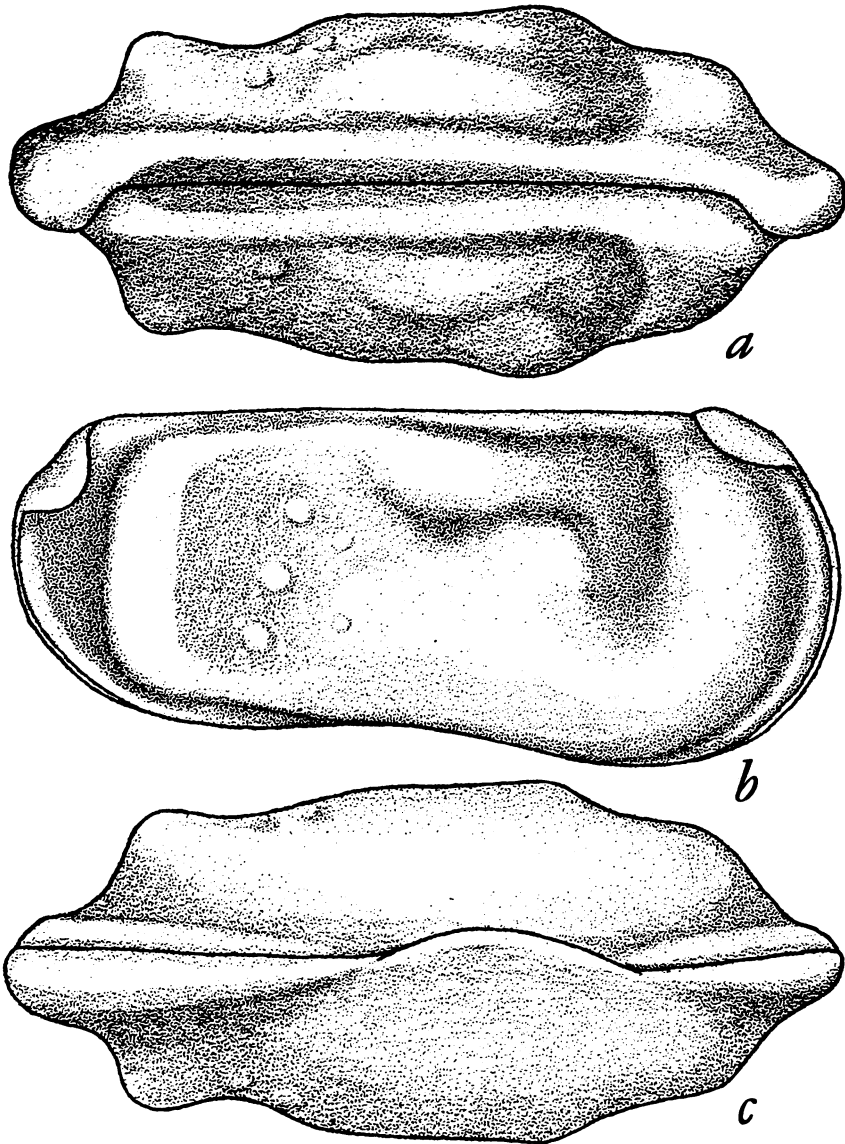


FIG. 4. Dorsal, right lateral, and ventral views of *Rhysomagis dichelomota*.

located just above the center of the valve. Vertical ridge in the posterior region with low extensions directed anteriorly; extensions near and parallel to the dorsal and ventral borders, terminating at about the middle of the

length. Ridge near and parallel to the anterior border, lower and narrower than the posterior ridge. In some specimens, a few small tubercles more or less restricted to the posterior half of each valve.

Measurements.—Average dimensions of illustrated specimens: length, 0.96 mm.; height, 9.42 mm.; and width, 0.31 mm.

Remarks.—The name of this species is derived from δι- (“two, double”) and χηλωμωτος (“notched”), and refers to the anterodorsal and posterodorsal notches in the right valve.

Occurrence.—Locality 2.

Types.—Holotype, a complete carapace, No. 35517; paratypes, ten complete carapaces, Nos. 35518–35523, 35548–35551, and one right valve, No. 35524.

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PLATE I

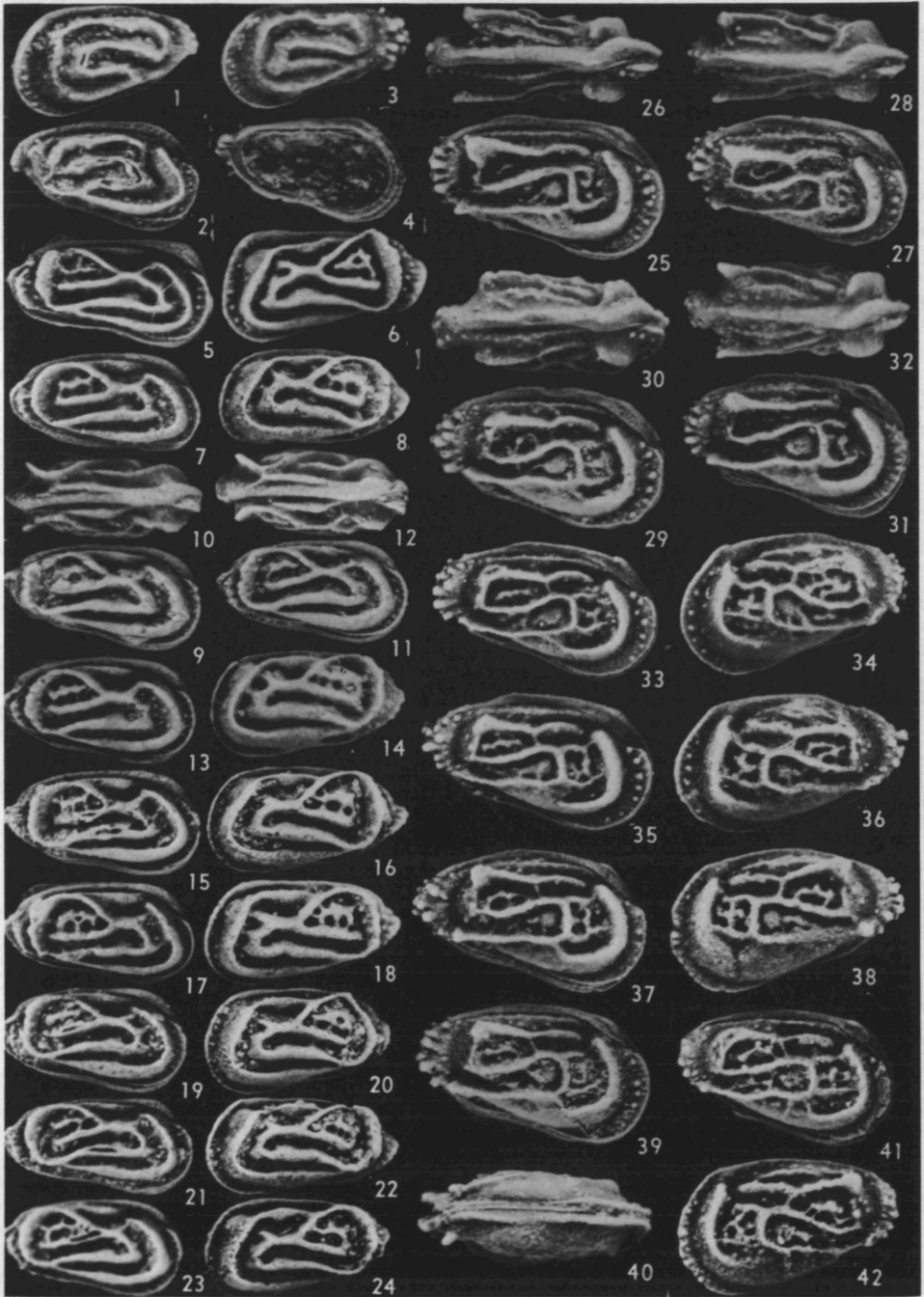


PLATE II



EXPLANATION OF PLATE II

(All figures $\times 30$)

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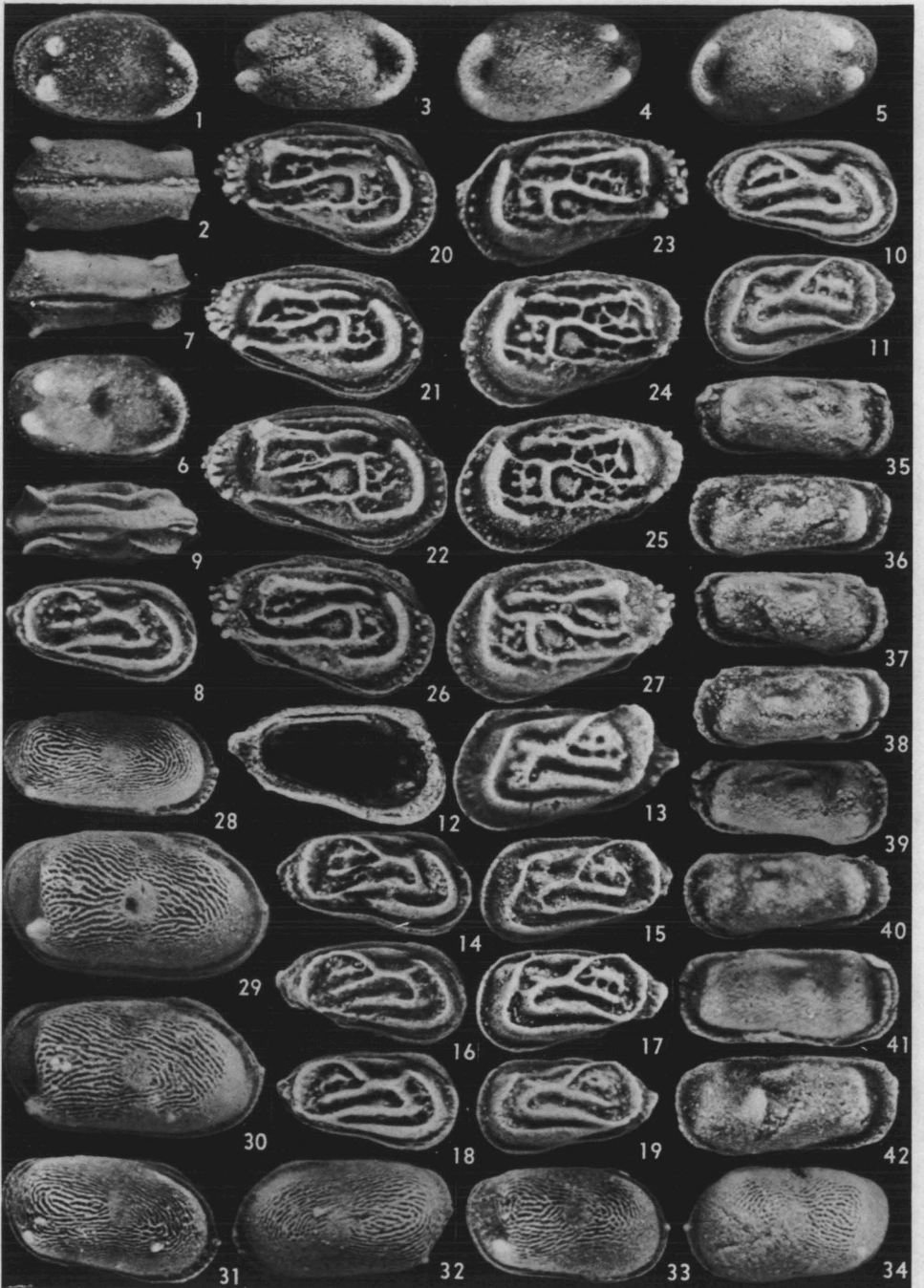
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PLATE III



PLATE IV



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