✦ ✦ ✦ ✦

Geological Sciences

✦ ✦ ✦ ✦

OCCURRENCE AND SIGNIFICANCE OF CERTAIN MICRO-FAUNA IN THE ORDOVICIAN OF OKLAHOMA AND ELSEWHERE

R. W. Harris
University of Oklahoma

The adaptation of microscopic fossils to economic use is a classical example of the application of purely scientific work to commercial advantage.

The microfauna of the Ordovician involves *Foraminifera*, *Conodonts*, *Bryozoa*, and *Ostracoda*. *Ostracoda* and *Bryozoa* form the major part

of the fauna. *Foraminifera* are *rare*. The *arenaceous* type, when present, may be recovered from acid residues of the limestones and shales. Several of the Viola forms are figured on Pl. I, Figs. 1 to 5 inclusive. *Conodonts* are not uncommon and, when present, form good index fossils.

Following is a list of the index fossils with respective characteristics and range designated:

Eridoconcha Ulr. and Bass. (Marker of *Ordovician* of United States). Two species described from Decorah and Maysville of Minn. and Ohio.

Eridoconcha magnus Harris; Pl. 2, Figs. 2a, b, (Bromide-Tulip Creek of Oklahoma). Small carapace, thick, compact umbonate form with short hinge line and narrow, high growth rings.

Aparchites perforata Harris; Pl. 3, Fig. 3, (Oil Creek of Oklahoma). Small, rounded, slightly umbonate carapace with coarse punctuations near the central region.

Isochilina bulbosa Harris; Pl. 3, Fig. 10, (Joins of Oklahoma). Small, straight-hinged, convex carapace with posterior swing and short, bulbous ridge situated ventrally, posterior to the center.

Primitiopsis basslerl Harris; Pl. 3, Figs. 1a, b. (Bromide-Tulip Creek of Oklahoma). Small, straight-hinged, gently convex forms with reticulate surface, median muscle scar, and posterior flanges.

Bromidella reticulata Harris; Pl. 3, Fig. 6, (Bromide of Oklahoma). Small, straight-hinged form with dorsal ridge, node, and sulcus and ventral flange; distinctly spinose.

This form is significant in its ornamentation. (Spinoisty, nodosity, extreme punctation, or any other exaggeration of parts is generally recognized as a fore-runner to extinction. Such ornamentation on a form represents the last grand dissipation of energy and serves as excellent characteristics for a good index fossil.)

Leperditia fabulites (Conrad); Pl. 2, Fig. 9. Very large, straight-hinged, backward swinging form with eye-spot; thickest point below center.

Very abundant in the "Glade" limestone of Lavergne, Lebanon, and other localities in Tennessee; "Central" limestone at Murfreesboro, Tenn. Birdseye limestone at Highbridge, Ky., Dixon, Ill., Beloit, Wis., Minneapolis, Minn,; Black River of Canada; McClish of Oklahoma.

Halliela labiosa Ulrich; Pl. 2, Fig. 5. Small, practically straight-hinged, semi-circular form with medium dorsal depression and reticulate ornamentation in concentric rings. Occurs in Trenton near Cannon Falls, Minn; Decorah of Iowa; and Bromide of Oklahoma.

Krausella arcuata Ulrich; Pl. 3, Fig. 4. Small, elongate form with arched hinge line, convex carapace and posterior extremity drawn out practically on a line with the ventral border; left valve overlaps distinctly. Occurs in lower third Trenton shales at Minneapolis, Minn.; lower Trenton at Mineral Point, Wis.; Lowville at High Bridge, Ky.; Platteville of Dixon, Ill.; Bromide of Arbuckles, and Wichitas of Oklahoma.

Bythocypris cylindrica (Hall); Pl. 2, Figs. 3a, b. Small, elongate form with arched hinge line and narrow posterior end; evenly convex. Lower beds of Cincinnati Group at Cincinnati, Ohio; Trenton of Ind., Tenn., Ky., Minn., N. Y., Ontario and Manitoba, Canada; Bromide and Viola of Oklahoma.

Ceratopsis chambersi (Miller); Pl. 2, Fig. 7. Small, straight-hinged, gently convex, tri-lobed form with serrated spine rising near postero-dorsal edge and extending above hinge line. Black River and Trenton of Minneapolis, Minn.; Eden of Cincinnati, Ohio and vicinity; Eden of N. Y.; Viola of Oklahoma.

Eurychilina ventrosa Ulrich; Pl. 2, Fig. 6. Small, practically straight-hinged, sulcated form with postero-dorsal node, peripheral flange, and large bulbous ventral brood pouch. Occurs in Galena shales at Cannon Falls, Minn.; Prosser from Kenyon, Minn.; Bromide from Wichita Mountains of Oklahoma.

Eurychilina reticulata Ulrich; Pl. 3, Fig. 2. Small, straight-hinged, sulcated form with reticulate surface and marginal keel radially lined. Occurs in lower third of Trenton of Fillmore Co., Minn.; Mohawkian from St. Paul, Minn.; Black River of N. Y.; Bromide of Oklahoma.

Bythocypris arcta (Ulrich); Pl. 3, Fig. 8. Small, elongated, coarsely punctuate form with narrow posterior end. Occurs in Galena shales from Goodhue Co., Minn.; Trenton (Prosser) from Cannon Falls, Minn.; Decorah of Iowa and Wis.; exact species not yet discovered in Oklahoma.

Leperditella inflata (Ulrich); Pl. 2, Fig 8. Small, straight-hinged leperditoid form with faint median depression and posterior inflation of carapace laterally and above hinge line. Occurs in Birdseye (Chazy) limestone near bottom of gorge at Highbridge, Ky.; Bromide of Oklahoma.

Dicranella bicornis Ulrich; Pl. 3, Fig. 7. Small, straight-hinged, semi-circular form with peripheral keel and a pair of angular horns projecting above hinge line. Occurs in middle third of Trenton shales from Minneapolis and St. Paul, Minn.; Bromide of Oklahoma.

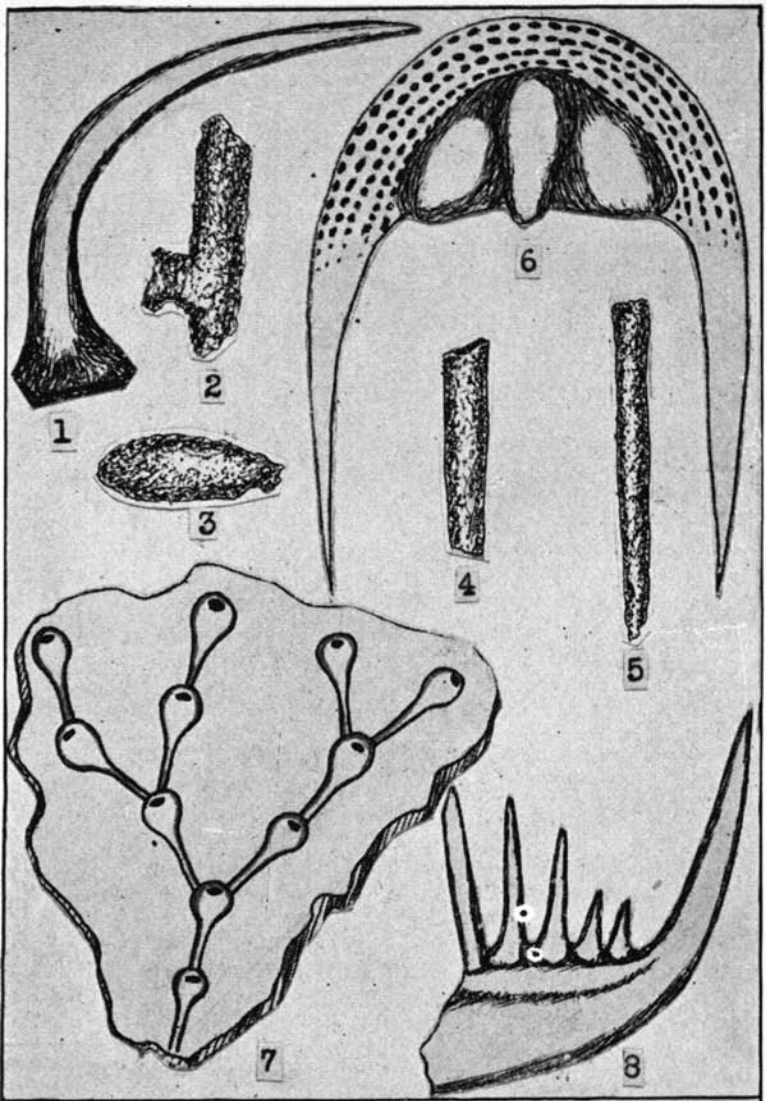
Schmidtella umbonata Ulrich; Pl. 3, Figs. 9a, b. Small, umbonate, practically circular form; strongly convex dorsally; heart-shaped in end view. Occurs in Decorah shale of St. Paul and Cannon Falls, Minn.; Bromide of Oklahoma.

Ulrichia initialis Ulrich. Pl. 3, Fig 5. Tiny, straight-hinged, backward swinging form characterized by dorsal central nodes and other nodes near the margins. Occurs in Decorah shale at Mineapolis, Minn., Bromide of Oklahoma.

On Pl. 1, Figs, 1 and 8, are presented sketches of two genera and species of Conodonta occurring as "index fossils" in the Simpson, Ordovician of Oklahoma.

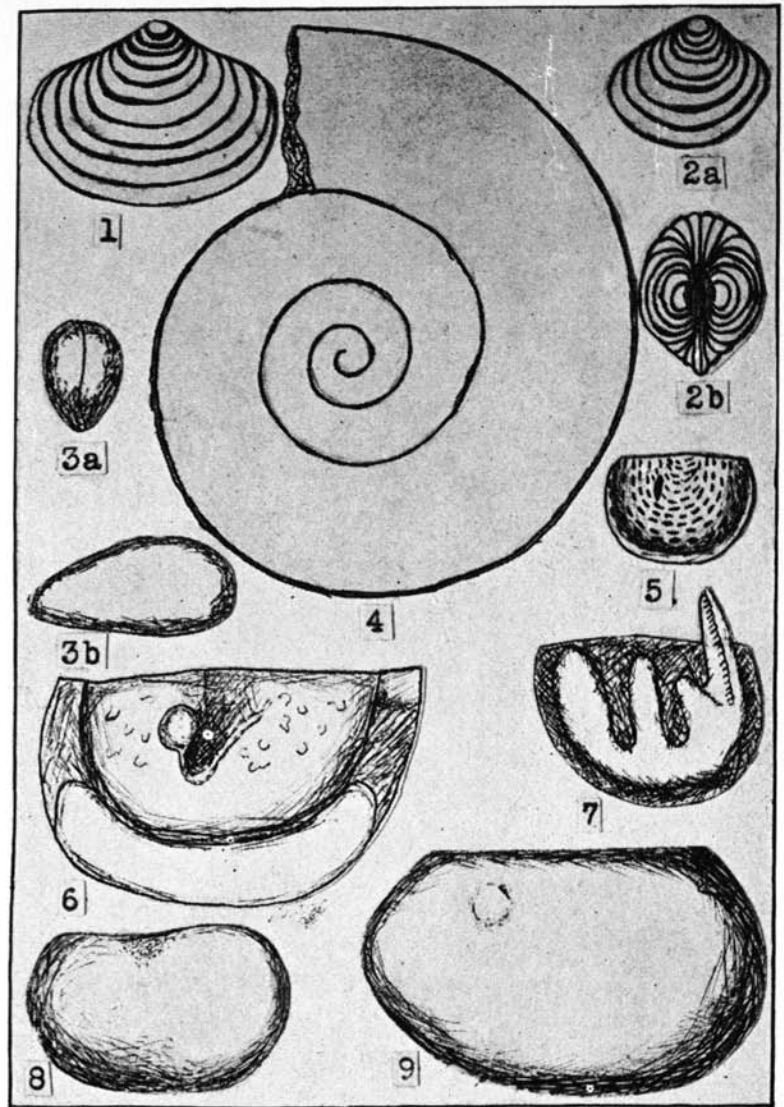
On Pl. 1, Fig. 6, I have sketched the cephalon of the "lace-collar" Trilobite *Cryptolithes tesselatus* (Green). Although this is a megascopic fossil, we are able to recognize fragments of the lace collar from well cuttings and thus identify the form. Inasmuch as it is a common form in the upper Viola below the Fernvale in Oklahoma, it is a good index microscopic "bug." It ranges from the Trenton to Maysville in Va., Ky., Ohio, N. J., Pa., and Canada.

The last form presented is a wide-ranged Gastropod *Maclurites magna* Lesseur. Pl. 2, Fig. 4, a mid-Chazy marker. It occurs in the Lenoir lime of Ala.; Chazy (Mid Stone River) of Vt., Tenn., Va., Md., Pa., N. Y., etc.; it occurs in the Oil Creek and McClish of Oklahoma.

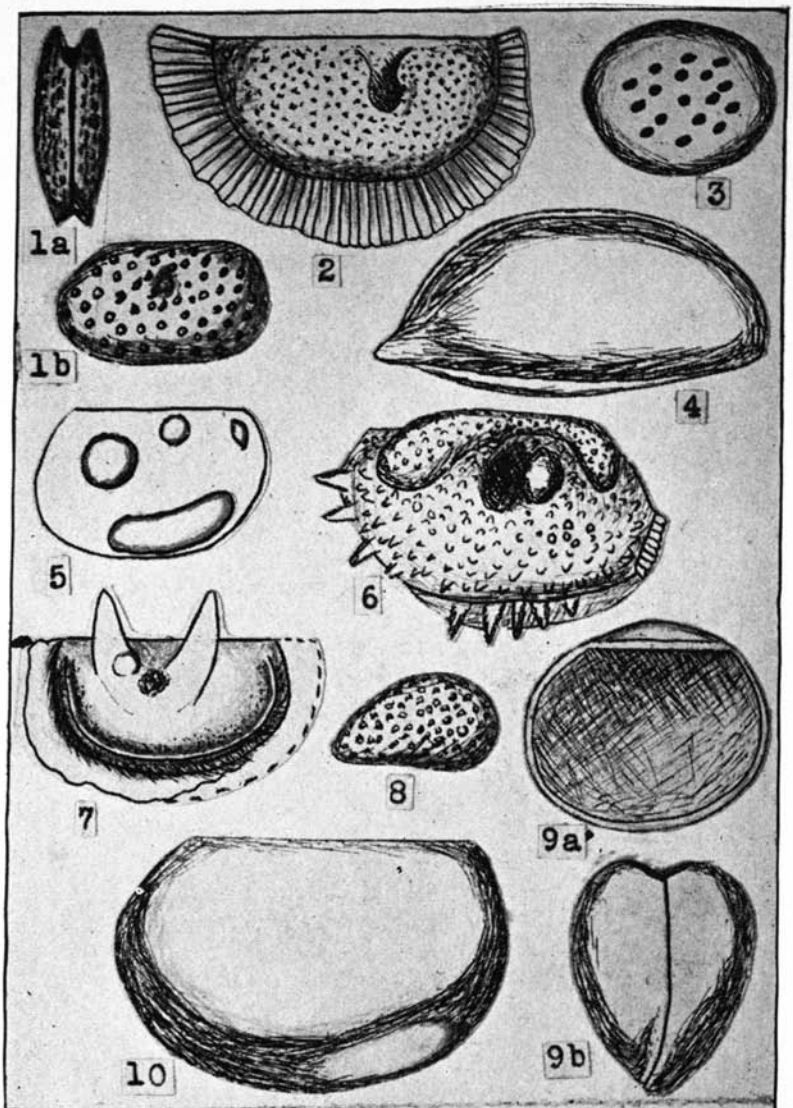


P11

1 Drepanodus arcuatus Pander X50
2 Rhabsammina mica Moreman X25
3 Tholosina elongata Moreman X50
4 Bathysiphon exiguus Moreman X100
5 Hyperammina minuta Moreman X100
6 Cryptolithus tesselatus Green X4½
7 Corynotrypa delicatula (Ulrich) X50
8 Prionodus aculeatus Stauffer X55



Pl. 2	1 Eridoconcha magnus Harris	X 15
	2 Eridoconcha simpsoni Harris	X 35
	3 Bythocypris cylindrica (Hall)	X 20
	4 Maclurites magna Lesueur	X 1/3
	5 Hallicla labiosa Ulrich	X 20
	6 Eurychilina ventrosa Ulrich	X 20
	7 Ceratopsis chamberlini (Miller)	X 20
	8 Leperditella inflata (Ulrich)	X 20
	9 Leperditia fabulites (Conrad)	X 5



P13

1	Primitiopsis bassleri Harris	X33
2	Eurychilina reticulata Ulrich	X20
3	Aparchites perforata Harris	X33
4	Krausella arcuata Ulrich	X33
5	Ulrichia initialis (Ulrich)	X40
6	Bromidella reticulata Harris	X35
7	Dicranella bicornis Ulrich	X20
8	Bythocypris arcia (Ulrich)	X20
9	Schmidtella umbonata Ulrich	X35
10	Isochilina bulbosa Harris	X30

RANGE SHEET OF SOME ORDOVICIAN MICRO-FORMS FROM OKLAHOMA AND ELSEWHERE

	Okla.	Minn.	Wis.	Ala.	Tenn.	Ky.	Ohio	Ind.	Ill.	Va.	Md.	N. J.	Pa.	N. Y.	Vt.	Can.	Baltic Provinces	Rus.
BRYOZOA																		
Corynotrypa delicatula	Bro	BlR			Stone River to Richmond in U. S.													MOrd
Monotrypa magna	Bro		BlR					BlR	Ltm									
Pachydictya occidentalis	Bro	BlR																
Prasopora simulatrix	Bro				Black River-Trenton of U. S.													
Rhinidictya mutabilis	Bro	BlR			Decorah of Iowa													MOrd
Stictoporella cribrosa	Bro	BlR																MOrd
OSTRACODA																		
Leperditia fabulites	McL		BlR		StR	B'eye			B'eye									
Halliela labiosa	Bro	Gal																
Krausella arcuata	Bro	BlR	BlR			LB'eye			P'vle									
Bythocypris cylindrica	Vio	Rch			Rch	Rch	Rch	Rch						Rch		Rch		
		BlR					Edn	Edn						Trn				
Ceratopsis chambersi	Vio	Trn																
Eurychilina ventrosa	Bro	Gal												BlR				
Eurychilina reticulata	Bro	BlR																
Bythocypris arcta		Trn	Dec															
Leperditella inflata	Bro					StR												
Dicranella bicornis	Bro	Dec																
Primitiopsis bassleri	Bro																	
Schmidtella umbonata	Bro	BlR			Low													
Ulrichia initialis	Bro	Dec																
Bromidella reticulata	Bro																	
Eridoconcha simpsoni	TC																	
Eridoconcha magnus	OC																	
Aparchites perforata	OC																	
Isochilina Bulbosa	Jn																	
TRILOBITA																		
Cryptolithes tesselatus	Vio					Trn	Trn			Trn		Trn	Trn	Trn		Trn		
CONODONTA																		
Drepanodus arcuatus	OC					Chazy of U. S.												LOrd
Prionodus aculeatus	TC																	
GASTROPODA																		
Maclurites magna	McL & OC			L'Oir	StR	Mid-Chazy				StR	StR		StR	StR	StR			

LEGEND: Edn—Eden; Rch—Richmond; Trn—Trenton; Vio—Viola of Okla.; Gal—Galena; BlR—Black River; MOrd—Middle Ordovician; Bro—Bromide of Okla.; Dec—Decorah; Low—Lowville; P'vle—Platteville; TC—Tulip Creek of Okla.; StR—Stone River; McL—McClish of Okla.; B'eye—Birdseye; L'Oir—Lenoir; OC—Oil Creek; LOrd—Lower Ordovician; Jn—Joins of Okla.