

ART. LV. — *New Phyllopod Crustaceans from the Devonian of Western New York*; by JOHN M. CLARKE, Smith College.  
With a Plate (unnumbered.)

*Estheria pulex*, n. sp. Plate, fig. 4.

IN examining some fragments of soft, olive-colored shale from near the base of the Hamilton proper, in Miles' Gully, Hopewell, Ontario Co., I have detected the above representative of this extremely interesting genus. The little carapaces are never more than  $\frac{2}{3}$  mm in width and  $\frac{1}{2}$  mm in length, and may be described as having the ventral margin nearly semi-circular, the beak central or very slightly anterior, hinge line sloping laterally. The surface is marked by six, or in the largest seven, concentric ridges which are very broad with narrow intervening furrows. There appears to be no more elaborate sculpturing of the carapaces than Jones has figured for his species *E. membranacea*, which is the simplest of any as yet noticed.

It is interesting to notice that this *Estheria*, the first ever found below the Trias in America and nowhere at so low an horizon as this, resembles in its sub-central beak, its outline and surface markings, this species just referred to, *E. membranacea* Jones, from the Old Red of Caithness, while all others figured by that author (Mon. Esth. Paleontogr. Soc., vol. xviii) are from higher horizons, have the beak anterior, and the outline of the carapace more nearly sub-trigonal.

All recent *Estheriæ* are found in fresh, or, in possible cases, brackish waters. In some general remarks in this connection Jones has said that "seeing that *Estheriæ* appear in pools and ditches of rain-water, it is not unlikely that pools of fresh water temporarily formed on a flat sea-shore may have been inhabited

by *Estheriæ*, destined to be quickly buried in the first wind-drift of sand on the return of high tide." We can not prove from this species, *E. pulex*, the presence of fresh-water deposits in the Hamilton, but the evidence is fairly in favor of brackish water pools, guarded from the action of the waves of the open ocean and depositing a smooth muddy bottom. Associated with these clannish little fellows are undescribed species of *Beyrichia*, *Leperditia*, *Entomis*, with a species of *Discina* not identified, and this association, omitting the *Discina*, is not an impossible one for such a brackish water pond. Even the *Discina* itself is not a serious objection to it, as I have found but a single example, which may have been washed in either as a dead shell, or as a live one, and if the latter, may have soon yielded to its unfavorable environment and died, or have adapted itself to the change and have lived on in an abnormal condition, as this specimen seems to prove.

*Spathiocaris*, n. g. ( $\sigma\pi\acute{\alpha}\theta\eta$ =a spathe.) Plate, figs. 1, 2, 3.

Carapace in one piece (?), oblong-elliptical; dimensions when normal, length : width :: 3 : 2. Anterior and posterior marginal curvature of the same value except near the sides of the fissure on the posterior extremity where for a short distance the outline becomes rectilinear. The central portion of the carapace elevated, the apical point being nearly a focus of the ellipse, and from this point starts a cleft extending backward and regularly widening to the posterior margin. No evidence of dorsal suture except in the fact that when flattened laterally, as many specimens are, the line of folding is usually straight from apex to anterior margin, but there is no external mark of a commissure in the ornamentation lines on the surface. It has for several years been a matter of some doubt to myself, whether this fossil should be looked upon as crustacean, which I now believe it to be, or some new form of Discinoid brachiopod which it very closely resembles, but my reasons for believing it the former lie in the fact that while I have in my possession thirty specimens, all that have as yet been found and all from a layer only a few inches in thickness, they show a great variation in size from a length of four to sixty millimeters, a fragment of an unusually large individual showing a probable length of even eighty or ninety millimeters, which is not a fact to expect from the Discinoid brachiopods; and, moreover, every specimen that is well preserved shows the cleft in the carapace, so that among them all there is no evidence of the ventral or non-fissured valve which we should expect to find if the animal had been brachiopodous. The genus *Discinocaris* described by Woodward from the Moffat shales of Dumfriesshire (Quart. Jour. Geol. Soc., vol. xxii), agrees with *Spathiocaris* in the

anchoylosis of the lateral valves and its wide, wedge-shaped cleft, but differs in the presence of the "rostrum" or plate acting as another valve to cover the cleft, and also in its more nearly circular outline.

The ornamentation of the surface of the carapace in this species, *S. Emersonii*, n. sp., consists of low concentric ridges which never lose their continuity, but contiguous ridges are more closely appressed on the sides than at the extremities of the valves. At the edges of the cleft these lines show a tendency to a retral bending.

Radiating lines from the apex of the cleft to the margin cover the anterior portion of the carapace and give to this part a strong decussate sculpturing which is rarely noticeable along the margins of the cleft. I am not satisfied that I have seen the abdominal arthromeres of this species, though it will be only a matter of time for their detection.

The geological horizon in which this occurs, the Portage, is usually regarded as barren of fossils in New York, but is showing under careful scrutiny many facts of paleontological interest and bids fairly especially in the direction of the phyllopod crustacea.

From Naples, Ontario Co., N. Y.

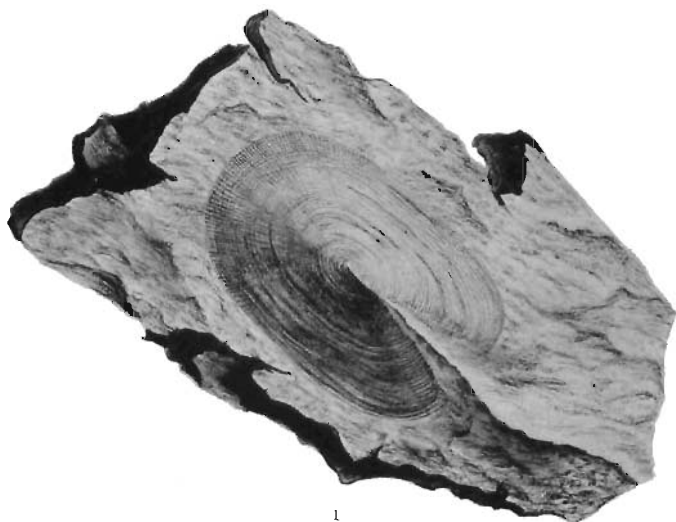
Fig. 1. *Spathiocaris Emersonii*, shows the carapace free from compression but with an unusually central apex.—Fig. 2. The same, young.—Fig. 3. The same, showing by lateral compression the usual position of the apex and length of the abdominal cleft, as well as the position of the possible dorsal suture.

*Lisgocaris*, n. g. (λίσγος=a shovel.)

Carapace in one piece, without evidence of dorsal suture. Periphery sub-pentagonal, lateral edges parallel, making sharp angles with the two anterior edges. Anterior edges re-entrantly curved and meeting in the axis of the carapace. As in the genus *Spathiocaris*, there is an abdominal cleft beginning centrally and at the highest point of the carapace, which is considerably elevated, and widening to the posterior margin.

This species, *L. Lutheri*, has the surface of the carapace concentrically marked with fine, crowded, impressed lines. No evidence of abdominal arthromeres. This is a very delicate form measuring three by two millimeters, which has been found near the base of the Hamilton proper in the same horizon as *Estheria pulex*. It belongs to the apus type of the phyllopods with *Peltocaris* Salter, *Discinocaris* Woodward, and *Spathiocaris*.

Northampton, Mass.



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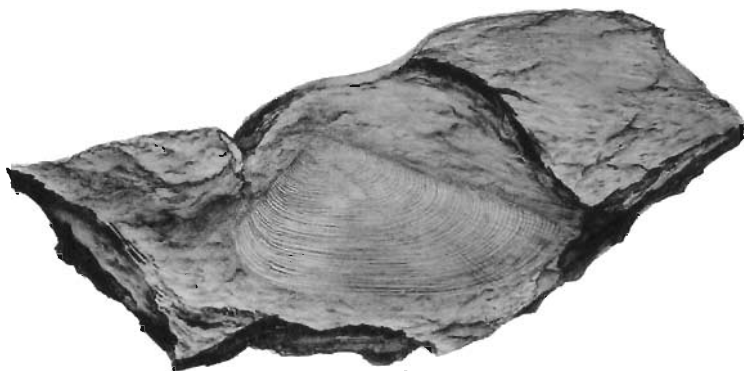
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J. M. C. & R. L. A. DEL.

ARTOTYPE, E. BIERSTADT, N. Y.

1. 2. 3. *Spathiocharis Emersoni* Clarke

4. *Estheria pulex* ..

5. *Lisgocaris Lutheri* ..