

fine specimens from the original localities that I will exchange with museums and collectors for specimens or publications new to my collections.

NOTES ON THE NAIAD FAUNA OF THE UPPER MISSISSIPPI RIVER.*

BY N. M. GRIER.

I. On the Anatomy of *Lampsilis higginsii* Lea.

Ortmann (1) is inclined to suspect that this species is merely a local form of *L. orbiculata* Hildreth, the form of very large rivers with muddy bottom, rather than the northern representative of that species, which some consider to be distinctly southern. Examination of the soft parts of *higginsii*, obtained while in the service of the United States Bureau of Fisheries, convinces me of the conformity of *higginsii* with descriptive material given for the genus *Lampsilis* by Simpson (3), and by Ortmann for *L. orbiculata* (2).

The most important point of resemblance between these two species is the common possession of a mantle flap greatly resembling that in *L. ventricosa*, and which obtains its greatest development in the female. As such a structure in *higginsii* seems to have been overlooked, detailed description of it follows. The papillae on the posterior border of the mantle obtain the greater development, those situated anteriorly being quite stunted when present. At the beginning of the posterior half of the mantle edge, the latter thickens to form a grooved flap which shortly attains a width three times that of the adjacent portions of the mantle edge, but which narrows down above the anal opening to a width equal to that of the anterior edge of the mantle. The greatest thickness is obtained at a

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1. Ortmann, A. R., "Notes upon the Families and Genera of Najades". *Annals of Carnegie Museum*, Vol. VIII, 1912, p. 353.
2. *Ibid.*, "Monograph of the Najades of Pennsylvania, Part III". *Memoirs Carnegie Museum*, Vol. VIII, No. 1, 1919, p. 324.
3. Simpson, C. T., "Descriptive Catalogue of the Naiades". B. Walker, Detroit, pp. 77-78.

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point approximately $\frac{3}{4}$ of the distance along the mantle edge from the anterior end, where the edge is produced into a triangular process, directed somewhat anteriorly, and which is in the line with the anterior edge of the post-adductor muscle. Above, this process is spotted with a medium brown color, and its edge is produced into papillae which become finer towards the coarser ones of the branchial and anal regions. Below, the coloration appears confined to a strip widest near the vertex of the process described, and is succeeded posteriorly by the papillae previously mentioned.

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THE ANATOMY OF CERTAIN MUSSELS FROM THE UPPER TENNESSEE.

BY A. E. ORTMANN, PH. D.

In the Proc. Americ. Philos. Soc. 57, 1918, pp. 521-526, the present writer has published a Synopsis of the Naiades, or freshwater mussels of the upper Tennessee drainage, assigning each species its proper place in the system. But in some of them the observations on the anatomy forming the basis for the taxonomic arrangement have not been given. It is the purpose of the present paper to furnish these data, together with additional remarks on species treated previously.

I am sorry that I am compelled to introduce again nomenclatorial changes without fully supporting them; but this will be done in another paper.

FUSCONAIA PILARIS (LEA), F. PILARIS LESUEURIANA (LEA), F. PILARIS BURSA-PASTORIS (WRIGHT). (See Ortmann, l. c., pp. 527-529.)

Anatomy: *F. bursa-pastoris* (Wr.) in NAUTIL. 27, 1918, p. 90 (incomplete, no gravid females at hand).

Gravid females have been found subsequently on the following dates: May 11, 13, 14, '13; May 20, 22, 23, '14; July 7, 8, 13, '13. They belong in part to the var. *bursa-pastoris*, in part to the var. *lesueuriana*, but none have been found belonging to