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Land and Fresh Water

MOLLUSCA

In the Vicinity of New Philadelphia.

— A —

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Contribution to the Natural History of

Tuscarawas Co., Ohio.

— BY —

V. STERKI, M. D.

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BEOBACHTER PRINT, New Philadelphia, Ohio.

1894.

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CLARK COUNTY
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TUSCARAWAS County lies wholly in the coal measures. Rather steep hills, up to several hundred feet high, with horizontal layers, and valleys in all directions, are the result of erosion from an ancient high plateau. The main drainage is that of the Tuscarawas river, through the Muskingum, a tributary of the Ohio. In the north a good part of the surface is covered with glacial drift, and more southward the valleys, originally much deeper, are partly filled up with it. Thus the bottom of the river, and of the creeks coming from the north, is coarse gravel and sand, while in those of a southeastern direction it is silt and sand. In spite of all search no remains of mollusca from the glacial epoch have been found in the gravel bed so far.

New Philadelphia, in about the centre of the county, is at about 930 feet above sea level, and 330 feet above the level of Lake Erie.

The original woods are cleared away more and more every year; this is not only injurious to the climate, but, what is of special interest in connection with our subject, destructive to molluscan life. Severe winters with little protection from snow, prolonged dry "spells" in summer are the consequences, and the small and smaller parcels of forest remaining are unable to retain the humidity of soil and air necessary for our land mollusca. Thus certain species have become quite rare, and some of them may even be extinguished in a near future in many sections. Thus e. g. *Zon. multidentatus* Binn. has been collected sparingly at Goshen, on the steep slope above the canal, prior to 1886; but since then no specimens could be found.

For fresh water gastropoda the conditions are not very favorable, as there are no lakes nor extensive swamps; yet a good number of species have been found. They are subject to many changes, as also in other parts of the country. A species may occur, and even abound, in a certain locality, a pool, or ditch, where specimens, respectively their young,

or fry, had been brought by floods or migrating birds, and after a few years become scarce or disappear altogether with the drying up or some other change in the nature of their habitat.

The Pelecypoda (mussels) are represented by a good number of species and forms, especially in the Tuscarawas river. As the Ohio canal is running in its vicinity almost all along, and connects its waters with those of the Cuyahoga river, it is of interest to compare their faunas. While the canal is inhabited by no species not found in the river, there are some which present more or less different forms, such as *Unio rubiginosus*, *Margaritana complanata* and *Anodonta ferussaciana*. Of 40 species of Unionidae living in our vicinity, 38 were found in the river, and 14 of these also in the canal.

In this connection it is of interest to compare the lists of Unionidae of the three rivers, Cuyahoga, Mahoning and Tuscarawas, as published by Mr. Geo. W. Dean.* As to the latter there are some differences, as will be found by looking over the following list. [*Unio perplexus* slipped into Mr. Dean's list by a mistake; *Unio pustulatus* may live in our river further south.]

Almost all Unionidae are badly eroded, especially on the beaks, so that quite young specimens must be used for the study of the umbonal sculpture. A disease attacking the shells of many Unionidae, especially at the hinges, and badly disfiguring or nearly destroying them, is observed very frequently. The species most commonly and badly affected are *Unio lens*, *circulus*, *rangianus*; *Anodonta edentula*. Microscopic examination has been made in different species, and will be carried further.

The following list, approximately complete, and notes are the result of ten years' careful collecting and studying. To Mr. Chas. T. Simpson, of the U. S. National Museum, I am indebted for the verification of a number of species, especially *Amnicola* and *Goniobasis*; to Prof. B. Shimek, of the Iowa State University, for the examination of the *Ancyli*.

* The Nautilus, IV, p. 20-22.

1. *MACROCYCLIS CONCAVA* Say. Rather common.
2. *LIMAX CAMPESTRIS* Say. Common.
3. *HYALINIA FULIGINOSA* Griffith. Decidedly scarce.
4. *HYALINIA RATIATULA* Gray. Common; most examples are mature before winter.
5. *HYALINIA WHEATLEYI* Bld. Rather scarce; Goshen.
6. *HYALINIA* ———. A single specimen found near Midvale Station, in July 1893. A form probably undescribed, seen also from the Alleghanies.
7. *HYALINIA INDENTATA* Say. Rather common.
8. *HYALINIA FERREA* Mse. Very rare; Midvale.
9. *HYALINIA MILIUM* Mse. Common; not found in a bog, where *Hyalinia exigua* and *Punctum pygmaeum* were common.
10. *HYALINIA MINUSCULA* Binn. Rather scarce; a small form.
11. *HYALINIA EXIGUA* Stimpson. Common.
12. *ZONITOIDES NITIDUS* Muell. Not common.
13. *ZONITOIDES ARBOREUS* Say. Very common; somewhat variable. Anatomic examination showed it to be a *Zonitoides*.
14. *ZONITOIDES INTERTEXTUS* Binn. Not common.
15. *ZONITOIDES LIGERUS* Say. Common; the small variety found also in Pennsylvania and Michigan. A form at Stillwater.
16. *ZONITOIDES SUPPRESSUS* Say. Scarce.
17. *ZONITOIDES MULTIDENTATUS* Binn. Very rare; Goshen; no more found since 1886.
18. *CONULUS FULVUS* Muell. Common.
19. *CONULUS STERKII* DALL. Rare; Goshen, where the first specimens were found in 1885. Has been seen from W. Va., N. C., Tenn., Ala., La. This is the smallest of our land shells.
20. *TEBENNOPHORUS CAROLINENSIS* Bosc. Rather common and variable.
21. *PALLIFERA DORSALIS* Binn. Rather scarce. Not only jaw and radula, besides other features of the anatomy, but also the mode of life characterize it as a decidedly distinct genus.
22. *HELICODISCUS LINEATUS* Say. Common.

23. "PUNCTUM" PYGMÆUM Drap. Very common.
24. PATULA STRIATELLA Anch. Very common in some places.
25. PATULA PERSPECTIVA Say. Common.
26. PATULA ALTERNATA Say. Rather scarce in the "bush"; common on the bank at the city. An inverse specimen has been found.
27. PATULA SOLITARIA Say. Scarce; Blicktown and one mile southeast of New Philadelphia.
28. VALLONIA PULCHELLA Muell. Not common. A form with milky white, opaque shell has been found in the city.
29. VALLONIA EXCENTRICA Sterki. Few specimens in drift on the Tuscarawas river.
30. POLYGYRA (MESODON) ALBOLABRIS Say. Not common.
 - a. var. MINOR. A peculiar, small, thin-shelled form is found on the bank above the river.
31. POLYGYRA THYROIDES Say. Rather common.
32. POLYGYRA MULTILINEATA Say. Not common, and generally rather small; Blicktown; larger at Stillwater.
33. POLYGYRA PROFUNDA Say. Scarce; Blicktown, Goshen.
34. POLYGYRA MITCHELLIANA Lea. Quite scarce; low grounds southeast of New Philadelphia.
35. POLYGYRA PENNSYLVANICA Green. Scarce; near Zoar Station; two miles southeast of the city; variable in color.
36. POLYGYRA (TRIODOPSIS) FALLAX Say. Not common; albin specimens are found occasionally. (This is the species commonly so named.)
37. POLYGYRA TRIDENTATA Say. Common; several specimens without any teeth on the peristome were collected, which represent not a variety, but merely a deficient form.
38. POLYGYRA PALLIATA Say. Scarce.
39. POLYGYRA INFLECTA Say. Rather scarce.
40. POLYGYRA (STENOTREMA) MONODON Rack., var. FRATERNA Say. Rather common.

41. *POLYGYRA HIRSUTA* Say. Common; rather variable in size; albin specimens were found.
42. *STROBILOPS LABYRINTHICUS* Say. Woods, not scarce.
43. *STROBILOPS VIRGO* Pils. Rare; on a hill meadow near New Philadelphia. Doubtless a different species, with a wide geographical distribution.
44. *PUPA FALLAX* Say. Scarce; found only at New Philadelphia. It is believed by some conchologists that this species — and group — might better be ranged under *Buliminus*.
45. *PUPA CORTICARIA* Say. Scarce.
46. *PUPA ARMIFERA* Say. Rather common.
47. *PUPA CONTRACTA* Say. Common.
48. *PUPA CURVIDENS* Gld. Common.
 - a. var. *GRACILIS* Sterki. Scarce, New Philadelphia. A peculiar form intermediate in shape between the type and *Pupa holzingeri* Sterki. It has also been seen from Rhode Island, Tennessee and Alabama.
49. *PUPA PENTODON* Say. Not common; with and without a denticle between the parietal fold and the columella; examples from wet places are small and short ovoid (f. *curta*.)
50. *PUPA EDENTULA* Drap. (*Vertigo simplex* Gould.) Not common. Specimens were found high, with the last whorl wider (like var. *gredleri* Clessin, or some *alticola* Ingers).
51. *VERTIGO (ANGUSTULA) MILIUM* Gld. Rather common.
52. *VERTIGO GOULDII* Binn. Rare; Goshen.
53. *VERTIGO TRIDENTATA* Wolf. Rather scarce; Goshen, Stonecreek (bog, with Nos. 54 and 54 a) and other places.
54. *VERTIGO VENTRICOSA* Mse. Wet places, not common; Blicktown, bog in Stonecreek Valley.
 - a. var. *ELATIOR*, n. A form not described: larger and more elevated than *ventricosa*, ovate to oblong-ovate, with a rather pointed apex; a strong callus in the palatal wall, into which the plicae merge, a strong, tooth-like lamella in the base. The two

forms appear to be quite different; but in a bog, in Stone Creek valley, they were found together, and with intermediate specimens, so that the present form seems to be a var. of *ventricosa*. Seen from New York, Michigan, Ohio, and West to Montana, while the type is known in the East, also to Michigan and Ohio, and southward in the Alleghanies, to North Carolina.

55. *VERTIGO OVATA* Say. Moist and wet places, not very common.
56. *CIONELLA (FERUSSACIA) LUBRICA* Mueller. Not common, in woods.—Westerlund (*Fauna III*, p. 148) says: "M. Bourguignat, and some with him, consider this species the *Helix subcylindrica* of Linnaeus. This is at least very doubtful; for L. says of his snail that it is living in fresh water, and is "pallida, anfr. 4, apice obtusissimo, rotundato, apertura ovali, margine exteriori reflexo"—characters which are not applicable to our species. It is better, consequently, to use Mueller's name.
57. *SUCCINEA OVALIS* Gld. Common, variable.
58. *SUCCINEA* — ?. Rare.
59. *SUCCINEA AVARA* Say. Common; variable in size and color of the shell.
60. *CARYCHIUM EXIGUUM* Say. Common.
a. — (var.?) *EXILE* Ad. Common; more in dry, elevated situations. The internal lamella, on the columella is formed quite differently from that in the type.
61. *LIMNAEA COLUMELLA* Say. Not common.
62. *LIMNAEA PALUSTRIS* Muell. (*elodes* Say). Common in some places. Most specimens have a strong, rose colored lip when mature. Specimens hatched in August, in a small aquarium, were fully grown in midwinter.
63. *LIMNAEA DESIDIOSA* Say. Rather common, variable.
a. var. or f. —, small, scalaroid; very rare.
64. *LIMNAEA HUMILIS* Say. Common.
65. *LIMNAEA UMBILICATA* Ad. ? (var.) Very rare.
66. *PLANORBIS TRIVOLVIS* Say. Common.

67. *PLANORBIS LENTUS* Say. Not common. Intermediate forms seem to exist between this and the preceding.
68. *PLANORBIS BICARINATUS* Say. Common.
69. *PLANORBIS CAMPANULATUS* Say. Rather rare; pools two miles southeast of New Philadelphia.
70. *PLANORBIS DILATATUS* Gould. Common.
71. *PLANORBIS DEFLECTUS* Say. Scarce.
72. *PLANORBIS* —. Rather scarce; pools and ditches.
73. *PLANORBIS EXACUTUS* Say. Not common.
 - a. var. *RUBELLUS*, n. A very peculiar form, quite different from the type: small (diam. 4.5 mill.), reddish horn colored; the whorls are comparatively much narrower than in the type, the umbilicus is wider and less deep. Stone Creek Valley, near Od- bert's station.
74. *PLANORBIS PARVUS* Say. Common everywhere; variable in size, coloration and thickness of the shell.
75. *PLANORBIS CIRCUMLINEATUS* Tryon. Rare; swamp on the Ohio canal, southeast of Blake's Mills.
76. *PLANORBIS ALBUS* Muell. Rare. Swamp on the Ohio canal.
77. *PLANORBIS (PLANORBULA) ARMIGERUS* Say. Common. Its jaw (main piece) is of a peculiar form, arcuate, with a projecting median part on the cutting edge, as in Zonitidae; lateral parts very narrow and thin, barely perceptible.
78. *GUNDLACHIA "MEEKEANA* Stimpson? Agrees better with *G. californica*". Found in a small pond, or pool, at Goshen station, in April, 1891; about 200 were collected. In November of the same year, and in April, 1892, none could be found; the water had nearly dried up. Very probably this interesting mollusk had been brought to the place by migrating birds, a few years previous, but seems to have spread from there, as two specimens were found in another pool, about two miles distant, in June, 1894, (one of them a dead shell).
79. *ANCYLUS* ? Scarce in some pools along the C., L. &

W. R. R. A peculiar form, showing some resemblance with Gundlachia.

80. *ANCYLUS DIAPHANUS* Hald. Common, especially in the Tuscarawas river. Variable, as there are specimens with a low and blunt apex.
81. *ANCYLUS TARDUS* Say. Not very common, in the river and Stillwater creek; variable.
82. *ANCYLUS RIVULARIS* Say. Very common, especially in the river.
- a. var. ? larger, and different otherwise; scarce, in pools.
83. *ANCYLUS* — ? Not scarce, in the river; a very peculiar, small species, only 2 mill. long, narrow, with the sides parallel, high.
- a. ? var. of the preceding ? Somewhat larger, outline elliptic.
- The North American Ancyli need a careful revision, with anatomic examination.—Not to Prof. B. Shimek, as said in the introduction, but to Mr. Chas. T. Simpson, of the U. S. National Museum, I am indebted for looking over some of our Ancyli.
84. *BULINUS HYPNORUM* Lin. Not common, variable in size and shape.
85. *PHYSA HETEROSTROPHA* Say. Very common and variable. An albin specimen has been found.
- a. var. *GYRINA* Say. Common; also intermediate specimens.
- b. var. (?) —. Very small (6—7 mill. high), near Denison.
86. *PHYSA* —. Tuscarawas river and Ohio canal. It has been taken for *Ph. heterostropha*; but there are decided anatomic differences; also the shell is different.
87. *MELANTHO INTEGRATA* Say. Common in the Tuscarawas river and Ohio canal; inverse specimens not rare, and the soft parts in them are also inverse.
88. *SOMATOGYRUS ISOGONUS* Say. Rare, in the same places.
89. *AMNICOLA DECISA* Hald. Rare.
90. *AMNICOLA ORBICULATA* Lea. Common, especially in the Ohio canal and mill race on the river.

91. *AMNICOLA PARVA* Lea. Ohio canal, not common.
92. *AMNICOLA CINCINNATIENSIS* Anth. Ohio canal, very rare.
93. *POMATIOPSIS LAPIDARIA* Say. Common in some places; Blicktown along the canal. It has hardly ever been found in the water, and even in rather dry places, crawling on the ground, on wood and dead leaves.
94. *BITHYNELLA OBTUSA* Say. Ohio canal at Blake's Mills, rare.
95. *PLEUROCERA LABIATUM* Lea. River, rare.
96. *GONIOBASIS LIVESCENS* Mke., var. *LITHASIOIDES* Lea. River, very common.
97. *GONIOBASIS GRACILIOR* Anth. var. —. River, common; variable.
98. *GONIOBASIS PULCHELLA* Anth. River, not common; resembles closely the younger examples of the preceding.
99. *GONIOBASIS DEPYGIS* Say. Little Stillwater creek.
100. *VALVATA TRICARINATA* Say. Common everywhere.
a. f. *BICARINATA*, with the type.
101. *UNIO LIGAMENTINUS* Lam. Very common in the Tuscarawas river. A single specimen was found in the canal. Variable in size, shape and color; with and without green rays; the dry shells of a specimen weigh 23 ounces. Young, with byssus 4—6 inches long, are found not very rarely, attached to stones or dead shells.
102. *UNIO RECTUS* Lam. Not rare in the river; large; in the young, the nacre is purple colored, in the adult, white. *U. rectus* is not incrustated, like the other species, probably owing to a peculiar, strongly adherent, waxlike, blakish coat on the epiconch. One specimen, female, is 184 mill. long.
103. *UNIO LUTEOLUS* Lam. Common in the river and creeks; large and beautiful in the Ohio canal; a coarse, short form, very much inflated and badly eroded, in the Little Stillwater creek. Prefers still water and muddy bottom.
104. *UNIO SUBOVATUS* Lea. Common in the river; vari-

able; some older, large specimens have lost the epiconch all over. In some the nacre is rose colored; one shell has three well formed cardinal teeth in either valve.— A very peculiar observation has been made on a large female specimen. It was in sand, under about ten inches of clear, quiet water; the posterior, protruding part of its mantle, was widely expanded and regularly undulating, waving, probably to produce an increased current of water for the benefit of the embryos in the branchial uteri. This is the first and only time I noticed this movement, which, however, must be further observed, as it could not be such an exceptional phenomenon.

105. *UNIO MULTIRADIATUS* Lea. River, not rare.
106. *UNIO RANGIANUS* Lea. River, rather scarce.
107. *UNIO IRIS* Lea. River, rather scarce.
108. *UNIO NOVI EBORACI* Lea. River, not rare. This and the preceding, while rather different in the extreme forms, are nearly related and some specimens seem to be intermediate.
109. *UNIO FABALIS* Lea. River, not scarce; the female average smaller than the male. In July, 1893, an adult male was found with a byssus thread.
110. *UNIO PARVUS* Barnes. Scarce in the river; common in the Ohio canal. At the margin of the posterior part of the mantle, there is a comparatively large pallial eye on either side.
111. *UNIO LENS* Lea. Common in the river, sometimes with the nacre purple. The branchial uteri are of the same type as in *U. ligamentinus*, *subovatus*, *multiradiatus*, etc.; this and the corresponding difference in shape of the shells with the sexes, as well as characters of the hinge, range *U. lens* under a group with those species, while in the outer appearance of the shell it shows similarities with the *coccineus*, etc., group.
112. *UNIO CIRCULUS* Lea. Common in the river. This is one of our most peculiar shells. (Identified by Mr. Chas. T. Simpson.)

113. *UNIO RUBIGINOSUS* Lea. Common in the river and in the Ohio canal; in the latter a peculiar form with the valves flattened; nacre milky white to salmon colored. Some specimens resemble closely the following.
114. *UNIO COCCINEUS* Hild. Rather common in the river; variable; nacre white, or salmon colored, to deep pink. The larger specimens have constantly some undulations below their middle.
115. *UNIO PYRAMIDATUS* Lea. River, not common; some specimens very large; nacre white to deep pink colored.
116. *UNIO SUBROTUNDUS* Lea. River, very common; decidedly variable. In some specimens the beaks are very prominent, even so that extreme forms closely resemble *U. pyramidatus*, while others are hardly distinguishable from large *U. coccineus*; the soft parts, however, and also the nacre are characteristic enough to separate them. The following are the most remote from the type:
- a. var. *KIRTLANDIANUS*. Rather thin, flat, with the outline somewhat subquadrate.
 - b. var. —. With remarkably regular, rather strong striae of growth; found only in some localities, and little connected with the type; the beaks are very massive and in some exs. quite anterior.
117. *UNIO AESOPUS* Green. River, rare at New Philadelphia; frequent two miles above Canal Dover; little variable.
118. *UNIO CLAVUS* Lam. River, not common.
119. *UNIO PUSTULOSUS* Lea. River, common; variable; some specimens are almost covered with warty prominences, while others show scarcely a trace of them; some are much inflated, others very little so. All four branchiæ are charged with embryos, as in the other species of the group.
120. *UNIO VERRUCOSUS* Barn. River, scarce, large.
121. *UNIO UNDULATUS* Barn. River and Ohio canal, common. Some specimens show only traces of the undulations, while in others they are very pronounced.

122. *UNIO TUBERCULATUS* Barn. River, rather common; the larger creeks.
123. *UNIO GIBBOSUS* Barn. Common in the river; rare in the Ohio canal.
 - a. f. *ARCTIOR* Lea. Not common, nacre white or salmon colored; also intermediate specimens between the type and this form, which is hardly to be regarded even as a variety.
124. *UNIO CYLINDRICUS* Say. River, rare. One large and well formed specimen has none of the characteristic prominences. Another is peculiar in coloration, having crowded, fine, dark green with few light green radial lines, showing nothing of the characteristic pointed markings.
125. *UNIO TRIANGULARIS* Barn. River, common.
126. *UNIO PHASEOLUS* Hildr. River, very common. Compared with its size, this species has a very thick and heavy shell.
127. *UNIO IRRORATUS* Lea. River, common; nacre white or pink colored.
128. *UNIO PRESSUS* Lea. River and Ohio canal, scarce. The branchial uteri were found to occupy the anterior halves of the outer branchiæ. It shows decided relations with the following species.
129. *MARGARITANA RUGOSA* Barn. River, common; Ohio canal, scarce.
130. *MARGARITANA COMPLANATA* Barn. River, scarce, small; Ohio canal, common and quite large; Little Stillwater creek.
131. *MARGARITANA MARGINATA* Say. River, common; burrowing deep in the soil, with a long, beautifully orange colored foot.
132. *MARGARITANA DELTOIDEA* Lea. River and Ohio canal, rather common.
133. *MARGARITANA HILDRETHIANA* Lea. River, very rare.
134. *MARGARITANA DEHISCENS* Say. River, rather scarce.
135. *ANODONTA EDENTULA* Say. Common in the river; creeks; scarce in the canal.

- a. var. PAVONIA Lea. River, rare.
An. edentula, with its allied forms, such as the following, is, I believe, at least as nearly related with Margaritana, as with the typical Anodonta.
136. ANODONTA FERUSSACIANA Lea. Ohio canal, scarce; river, a small, peculiar form.
 137. ANODONTA CORPULENTA Lea. Clay pit pools near the tile factory, New Philadelphia; large, much inflated; one specimen is $7\frac{1}{2}$ inches long.
 138. ANODONTA SALMONEA Lea. River and Ohio canal, common.
 139. ANODONTA DECORA Lea. Little Stillwater creek, above Dennison. (Also in a ditch at Burton City, Wayne Co., Ohio, Tuscarawas drainage.)
 140. ANODONTA IMBECILLIS Say. Scarce in the river; very common in the Ohio canal. Many specimens have fine undulations in rows near the middle of the valves. In very young specimens, the glochidium shell is distinctly visible on the umbones.
 141. SPHAERIUM SIMILE Say. Common in the clay pit pools near the tile factory; rare in the river.
 142. SPHAERIUM STAMINEUM Conr. River, Ohio canal and mill races on them, very common; very variable, especially as to striation.
 143. SPHAERIUM OCCIDENTALE Prime. Rather common in pools and ditches; scarce in the river and canal. A small, thin shelled form in a small pond near Dennison. It has been found in large numbers, living and propagating in low grounds of the Tuscarawas valley, under wood, dead leaves, etc., where water is standing only for a few days or weeks in a year; a small form, with strong lines of growth.
 144. SPHAERIUM TRANSVERSUM Say. Rather common in the river and Ohio canal; young specimens are found all the year round.
 145. SPHAERIUM PARTUMEIUM Say. Common. It is noteworthy that almost every small pond, pool or ditch, sometimes only a few rods distant from each other, has its own, peculiar, rather constant form.

146. *SPHAERIUM SECURIS** Prime. var. *CARDISSUM*
Prime, Pools and ditches. Few specimens are
mature in spring and early summer; most are
small to half grown, but from last year, as evident
from the thick, dark deposit and algae growing on
the shells; *Sph. partumeium* living in the same
places with them, are clean, or little coated.
147. *PISIDIUM ABDITUM* Hald. Common; variable.
a. var. —. Smaller, more inflated.
148. *PISIDIUM VARIABILE* Prime. Scarce; near New
Philadelphia; pool on the river.
149. *PISIDIUM COMPRESSUM* Prime. Common in the
river, the creeks and the Ohio canal; variable in
shape and striation.
150. *PISIDIUM* —. n. sp. River; common in some
places. Of the same general appearance with *P.*
compressum, together with which it is found, but
constantly different: smaller, of a somewhat differ-
ent shape, finer, but sharper striated, color more
greenish-horn, nacre thinner, transparent, colorless,
not white; there are also differences in the hinge.—
May be looked for in other sections, as a few spec-
imens were seen from Herkimer County, N. Y.
151. *PISIDIUM CRUCIATUM* Sterki. Tuscarawas river,
with the preceding. Found for the first time in
October and November, 1891, and again, though
scarce, in fall, 1893.—Mr. E. W. Roper, after seeing
it, agreed that it was a new species, of a peculiar
type. It is very small, its length hardly exceeding
two millimeters. Probably it has been found else-
where, but taken for the young of some other spe-
cies.

* This is often written "securis"; the word is evidently not the adjective securis (securis), but the noun securis (hatchet).



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