

REPRINTS OF RARE ARTICLES ON MOLLUSCA. -- S. P. Hildreth, 1828, "Observations on, and descriptions of the Shells, found in the waters of the Muskingum River, Little Muskingum and Duck Creek, in the vicinity of Marietta, Ohio." --- American Journal of Science, vol. 14, pp. 276-291, 2 pls. (Reprinted with permission of the Editor of the American Journal of Science, Dr. John Rodgers).

ART. VII. - Observations on, and descriptions of the Shells, found in the waters of the Muskingum River, Little Muskingum and Duck Creek, in the vicinity of Marietta, Ohio; by S. P. HILDRETH,\* M. D.

ALTHOUGH the river Ohio abounds in shells of the same genera as those about to be described, yet they have so generally been noticed by writers on natural history, while those living in the above streams and more immediately within the bounds of the State, have not received attention; that my observations have been confined to those streams almost exclusively.

\*Dr. Hildreth, having with great propriety, made Mr. Barnes his authority for his descriptions, it was thought proper to communicate this memoir to that gentleman, in MS. - along with the drawings, and such of the latter have been engraved as were not among those contained in volumes 6 and 7 of this Journal, to which the reader is referred, for the figures now omitted. We have taken the liberty to add, in the form of notes, a few of the remarks of Mr. Barnes, communicated by our request. -- Editor.

From the variety of form, color, and outward appearance of bivalves, the most careless observer could not but be struck with their beauty, and led to admire their rich pearly luster, and variegated surface. But the more carefully they are inspected, the more beauties he will find to attract his attention and to call forth his wonder. The beds of many of our streams are strewn with the open valves of the numerous family of the Unios; and where the waters are transparent, like those of the Muskingum, they, with the interspersed pebbles, afford all the rich variety and tessellated appearance of a Roman pavement. -- Their beauties were not unknown, or neglected by that ancient race of men who once inhabited the pleasant vales of Ohio; as the valves of some of the most interesting kinds are often found buried in mounds, intermixed with other articles considered as valuable by the builders of those venerable monuments of the dead. They must also have been deemed very valuable as an article of food; as we find vast beds of the calcined shells, in the banks of the river, usually several feet below the present surface, and near them a hearth of stones with ashes and fragments of deer and fish bones promiscuously interspersed. - In those seasons of the year, when the waters were low, and game scarce, they no doubt constituted a large portion of their food. Some of the species are very fine eating,

(page 277)

and much admired by the lovers of shell fish at the present day, particularly the *Unio ellipticus*, and *Alasmodonta complanata*, which are very large, and in the month of September abound in fat, to the extent of one or two ounces of clear oil in a single individual. In the early settlement of this vicinity, shells were much used for the manufacture of lime, being burnt in piles of alternate strata of logs and shells; and affording an article of the greatest purity and whiteness. They were in such abundance that a single individual could collect twenty five or thirty bushels in a day -- But at present, I think they are less numerous, being destroyed in the low stages of water by hogs, which become very fond of them and will spend whole days in the water searching for their favorite food; many times preferring them to corn, which they have been known to leave, and go in search of the more luscious clam. They have also other harrasing enemies in the Muskrats; which collect vast heaps of shells at the mouths of their favorite retreats, in the vicinity of some sunken log, on which they sit and feast upon the choicest of the molluscous race. It is also said that the white perch make use of the more thin shelled varieties, for food; being provided with strong bony plates, thickly studded with smooth round teeth, and placed in the back part of the fauces, well calculated to perform the office of "nut crackers." The favorite haunts of most of the genera are about the heads and sides of sand bars and islands, where they can nestle in the sand and coarse gravel; other kinds prefer the rocky ripples, where they can lie under the projecting edges of the loose stones; in the latter situations, are found most of the crested or winged varieties, which probably accounts for the fact, that very few of the older subjects are found with crest perfect, but generally mutilated and broken. As to their manner of propagating the species, I have been able to learn but little from my own observations, or by enquiries amongst fishermen, or others much about our rivers; and except in one or two varieties, have derived but little aid

from writers on Conchology. From the fact, that the young from the size of a pin head, to that of a pea, are found in great numbers in the sand and soft ooze at the bottom of our streams, where the water is still and calm, I am led to believe, that they are male and female, and propagated by a seminal fluid, in the manner of the finny tribe. But this is only a conjecture, which further observations may confirm or refute.

(page 278)

I have as yet noticed but one variety of *Unio* valve, in our streams; neither have I been able to collect all the species of the bivalve, as I have heard of several, which are not in my collection. -- The description of most of my shells is taken from the observations of Mr. Barnes, published in the 6th vol. of the *Journal of Science*; a gentleman who deserves much credit for his devotedness to American natural history.

Remarks. -- My collection is generally made up of living subjects; and the color, &c. for the drawings, selected from several individuals of the same species. -- The drawings were executed by Mr. Sala Bosworth, a young self taught artist of Marietta.

## GENUS UNIO.

Generic character, from M. Lamarck.

"Shell transverse, equivalve, inequilateral, free; beaks decorticated, somewhat carious; posterior muscular impression compound; hinge with two teeth in each valve; the cardinal one short, irregular simple; or divided into two, substriated; the other elongated, compressed, lateral, extending beneath the corslet. Ligament exterior."

Remarks. -- Not expecting by these observations to throw much light on the study of Conchology, but only to describe the shells in this

vicinity, I shall not divide the genus into classes, or parts, but go on as they are numbered in the drawings - the measure is by inches and decimals.

NO. 1. UNIO CRASSUS. - Fig. 1.

A. outside of the shell, C. inside.

Shell very thick, tumid; cardinal teeth lobed, angulated; posterior cicatrix deep and rough. -- Hab. Muskingum.

Length, 3 inches; breadth, 4 inches; diameter 2 do.

Shell very thick, and oval - rounded behind, slightly angulated before; epidermis light brown; surface waved; beaks projecting; cardinal teeth deeply sulcated; anterior-cicatrix striated; cavity of the beaks capacious, but not deep; naker, (or inside of the shell) pearly white and iridescent.

Remark. -- It is a very common shell, and abounds in varieties.

NO. 2. UNIO ELLIPTICUS. - Fig. 2.

Shell regularly oval; thick, convex, glabrous, beaks depressed; teeth elevated, triangular, striated. -- Hab. Muskingum.

(page 279)

Length, 3.5; breadth, 5.00; diameter, 2.125.

Shell long before, short behind, equally rounded at both extremities; beaks slightly projecting; ligament elevated above the beaks; epidermis dark brown, lighter in young specimens, and obscurely rayed -- waved on the center of the disks, and wrinkled transversely; teeth deeply divided, elevated and striated; anterior cicatrix wrinkled, posterior cicatrix rough behind and smooth before; cavity of the beaks moderate and angulated; naker pearly and beautifully iridescent on the forepart.

Remarks. -- I have a great many specimens of this shell, from very young to old; they are remarkably uniform in their proportions. Its good qualities for eating, are said to be equal to those of any other shell in these streams.

NO. 3. UNIO CUNEATUS. -- Fig. 3.

Shell ovate, wedge shaped, thick, gibbous; disks swelled; a side view of the shell bearing a strong likeness to the head of the bald eagle; lateral teeth thick; inside a rich rose color. -- Hab. Muskingum.

Length, 3.00; breadth, 4.4; diameter, 2.00.

Shell elongated and subtriangular, thick and ponderous; anterior side narrowed, thin, angulated, wedge shaped, compressed; umboes large and elevated, beaks low and distant, much decorticated; anterior lunule, long heart shaped, with an elevated ridge running from the beaks to the anterior basal margin, and projecting on that part - basal margin slightly rounded and arcuated before; anterior margin narrow and angulated; posterior margin rounded and broad; epidermis blackish brown; surface wrinkled transversely. Cardinal teeth deeply divided and sulcated; lateral teeth long, thick and striated; cicatrices deep; cavity of the beaks small and rounded; naker a rich rose color and iridescent.

NO. 4. UNIO UNDULATUS. - Fig. 4.

Shell rhombic ovate, with numerous waving folds radiating from the beaks.

Length, 4.00; breadth, 5.25; diameter, 2.00. -- Hab. Duck Creek.

Shell thick, obtusely rounded, behind, emarginate before; beaks slightly elevated; hinge margin sub-alated, compressed, carinated with a furrow on each side; anterior dorsal margin sub-truncate; epidermis blackish brown and finely

(page 280)

wrinkled transversely; oblique folds, deeply indenting the anterior margin, furrows largest and deepest on the center of the disks and extending to the anterior basal margin, decussating the oblique waves; large oblong tubers below the beaks; cardinal teeth sulcated and cre-nated; posterior cicatrix very rough and shallow; naker pearly, irregularly spotted with olive, and most beautifully iridescent from the termination

of the ligament to the anterior basal margin, affording the richest display of colors, in which violet and purple predominate, of any shell in my collection.

No. 5. UNIO Plicatus. - Fig. 5

Shell sub-quadrangular, tumid with distant oblique folds; hinge margin elevated, compressed, carinated. -- Hab. Muskingum.

Length, 2.8; breadth, 2.9; diameter, 17.

Shell thick, posterior side short, obtusely rounded; anterior side compressed wedge shaped; beaks very prominent and projecting backwards as far as the posterior side; ligament elevated and passing between the beaks; hinge margin higher than the beaks; epidermis greenish; surface glabrous, deeply folded; indenting the anterior basal edge; cardinal teeth, sulcate, crenate, lateral in the left valve, curved, and extending up back of the cardinal tooth; posterior cicatrix rough and deep; cavity of the beak deep and extended backwards; naker white, iridescent on the fore part, and tinged with gold color on the corslet and anterior edge.

Remarks. -- This shell does not correspond, in all particulars, with Mr. Barnes's Plicatus, but still I think it the same. It will stand erect very firmly when placed on the posterior side.

No. 6 & 7. UNIO UNDATUS. -- Figs. 6 and 7, two varieties.

Shell sub-orbicular, very tumid; waved; lateral teeth, two in each valve. White variety, length 2.25; breadth, 2.5; diameter, 1.5. -- Hab. Muskingum.

Shell thick, disks swelled behind, depressed before; beaks projecting backwards nearly as far as the posterior side, elevated and recurved, with the ligament passing between them; anterior lunule long heart shaped; disks waved trans-

versely from the beaks to the base; basal margin rounded behind, compressed in the middle, angulated slightly before; epidermis horn color or light chestnut; surface finely wrinkled and glabrous; cardinal teeth deeply sulcated and crenated; lateral teeth, two in each valve; muscular impressions deep and posterior one rough; naker pearly white and iridescent. Variety 7 is smaller than the other, and of a rich pink, or deep flesh color on the inside; both varieties will stand erect, on the posterior side, and are neat, handsome shells.

No. 8. UNIO VERRUCOSUS PURPUREUS.

-- Fig. 8.

Shell nearly circular, sub-truncate before, irregularly tuberculated; tubercles transversely compressed; inside purple.

Length, 3.5; breadth, 3.6; diameter, 1.9; (larger than the figure.) -- Hab. Muskingum.

Shell very thick; rounded behind, sub-truncate before; beaks elevated, ligament deeply inserted; hinge margin nearly strait, compressed, alated; basal margin rounded; epidermis light brown, surface of the anterior part studded with transversely compressed tubercles; cardinal teeth very deeply sulcated, broad, and crenated; cavity of the beaks very deep, compressed and directed backwards; posterior muscular impression very rough, anterior one compound; naker bluish purple, and iridescent.

No. 9. UNIO VERRUCOSUS ALBUS.

-- Fig. 9.

The exterior of this shell is much like that of No. 8; its form is sub-triangular, and angulated before; surface waved transversely, tubercles round and standing on the tops of the waves; cardinal teeth much smaller, and posterior cicatrix deeper; naker pearly white, and iridescent on the fore part; it is a most beautiful shell. -- Hab. Muskingum.

No. 10. UNIO NODOSUS. -- Fig. 10.

Shell sub-quadrangular, emarginate before, knotted, ridged, corrugated, lateral tooth terminating abruptly.

\* Mr. Barnes, we are informed, considers it as a variety of the following. -- Ed.

Length, 2.725; breadth, 3.25; diameter, 1.7. -- Hab. Duck Creek.

Shell thick, short and obtusely rounded behind; beaks elevated, and approximate; with the ligament passing between them; anterior lunule compressed, alated; hinge margin strait; anterior dorsal, rounded; anterior margin,

(page 282)

projecting; anterior basal, arcuated; basal and posterior margins, rounded; epidermis, greenish brown; corrugated and tuberculated over the center and anterior parts of the shell; tubercles large near the center of the disks, and very fine and beautiful on the beaks; wrinkled across the transverse striae on the anterior lunule, giving it a feather shaped appearance; a broad, elevated, and nodulous ridge extending from the beaks to the anterior margin, and projecting in front; cardinal teeth sulcated and deeply crenated; lateral teeth, short, thick, rough and terminating abruptly, muscular impressions nearly smooth, and the sulcus in the cardinal tooth as deep as the bed of the posterior cicatrix; cavity, deep and angular; naker, a rich pearl color, tinged with blue, and iridescent on the fore part; a very beautiful shell in its exterior, and not less admirable on the inside.

No. 11. UNIO TUBERCULATUS. -- Fig. 11.

Shell, long ovate; surface, corrugated, waved tuberculated, ribbed, disks compressed; base arcuated.

Length, 3.00; breadth, 5.00; diameter, 1.5. -- Hab. Duck Creek.

Shell, thick and rugged; anterior side compressed, narrowed, thin; posterior side, rounded, short, obtuse and broader than the anterior; beaks flat, and far back; ligament higher than the beaks; hinge margin, nearly strait, elevated, compressed; anterior dorsal, emarginate; anterior basal, emarginate; anterior margin rounded; epidermis, dark brown; surface, thinly and irregularly tuberculated; tubercles, elongated longitudinally; an elevated ridge extending from

the beaks and projecting on the anterior basal edge; irregular nodulous undulations, radiating from the elevated ridge to the hinge and anterior margins; cardinal teeth, crenated; lateral teeth, long and beautifully formed; posterior cicatrix, deep, and anterior half rough; cavity, angular, compressed and directed backwards; naker, pearly white, with spots of greenish, and most splendidly iridescent with purple, violet and gold, on the fore part.

No. 12. UNIO RUGOSUS. -- Fig. 12.

Shell, broad ovate; surface, tuberculated, ribbed, waved, disks swelled, base falcated.

Length, 1.6; breadth 1.8; diameter, 1.2.; specimen small. -- Hab. Muskingum.

(page 283)

Shell, narrowed and thin before; rounded and wider behind, beaks slightly elevated; hinge margin, compressed, carinate; basal margin, falcated, emarginate and compressed; anterior margin, rounded; epidermis, dark brown; surface, rough and scaly; waved transversely, having distant, irregular, transversely compressed tubercles; a broad nodulous ridge, extending from the beaks to the anterior basal edge, and projecting on that part; small oblique waves radiating from the ridge to the hinge and anterior dorsal margins; cardinal teeth, sulcated; lateral teeth, striated; posterior cicatrix, deep and not very rough; cavity of the beaks, angular, compressed and directed backwards; naker, white and moderately iridescent.

No. 13. -- UNIO CYLINDRICUS.

Fig. 13.

Shell, much elongated transversely, sub-cylindrical; disks, flattened, beaks not much elevated; teeth, sulcated obliquely.

Length, 1.5; breadth, 3.5; diameter, 1.2. -- Hab. Muskingum.

Shell, thick, and elongated before; ligament much depressed between the valves; hinge margin, strait and elevated; anterior dorsal margin,

truncate and emarginate; posterior dorsal, rapidly narrowed; posterior margin, rounded and shortened; anterior margin, rounded; anterior basal, projecting; basal margin, shortened and arcuated; epidermis, olivaceous, wrinkled transversely, and maculated with deep green pyramidal spots, with the base inverted between the wrinkles; a broad nodulous ridge, extending from the beaks to the anterior basal margin, and projecting in front; with small elevations radiating from the ridge to the hinge and anterior dorsal margins; cardinal teeth, deeply crenated; lateral teeth, long and well defined; cavity of the beaks, deep, and directed backwards; posterior cicatrix, deep and rough; naker, pearly white, with colored spots; beautifully iridescent on the fore part.

Remark. -- I have every size of this shell, from one inch to full grown.

No. 14. UNIO PHASEOLUS. -- Fig. 14\*

Shell, long ovate, thick; disks, rather flattened, ligament higher than the beaks; beaks, depressed and decorticated.

(page 284)

Length, 2.00; breadth, 3.5; diameter, 1.4.

-- Hab. Muskingum.

Shell, thick and ponderous; anterior side, narrowed, thin, angulated; beaks, low; anterior lunule, carinated; basal margin, arcuated; anterior margin, narrow and rounded; dorsal margin, higher than the beaks; posterior margin, rounded and slightly gaping; epidermis, light olive and finely wrinkled transversely; cardinal teeth, rather small, lightly sulcated, and finely crenated; lateral teeth, very broad and thick; posterior muscular impression rough and deep; anterior one, deep and striated; naker, pearly; cavity of the beaks, shallow, and inner surface marked with several deep folds, running obliquely from the cardinal teeth to the anterior

\* White variety of Cuneatus, No. 3. (D.H.B.)

-- Ed.

margin.

Remark. -- Quite a common shell in the Muskingum.

NO. 15. UNIO ORBICULATUS. --

Fig. 15.

Shell, nearly round; inflated, beaks somewhat prominent, broad and directed backwards; anterior lunule, broad heart shaped; cardinal teeth, elevated, angulated.

Length, 2.5; breadth, 2.5; diameter, 1.75.

-- Hab. Muskingum.

Shell, nearly orbicular; anterior margin, broad, and slightly rounded; posterior, short and narrow; disks, much inflated; dorsal margin, lightly rounded, and basal margin the same; ligament, thick and elevated, passing between the beaks; beaks, a little projecting, distant and decorticated; epidermis, a dark chestnut on the center of the disks, passing into a light brown as it approaches the margin; surface lightly waved on the upper part of the disks, and finely wrinkled below, transversely; cardinal teeth, direct, elevated and deeply sulcated; lateral teeth, thick and prominent; posterior cicatrix, deep, and rough before; anterior cicatrix, broad, finely waved; striated and beautifully iridescent; cavity, broad and deep; naker, flesh color, and very iridescent with purple and violet.

Remarks. -- This shell is a variety of the crassus; but differs so much from any I have seen that it deserves notice.

No. 16. UNIO FOLIATUS, Fig. 16.

Shell, shaped like a grape leaf, surface waved; disks, swelled; base, arcuated, and anterior margin deeply emarginate.

(page 285)

Length, 2.00; breadth, 2.00; diameter, 1.12.

-- Hab. Ohio.

Shell, compressed and deeply emarginate before; rounded and projecting behind; beaks flat and eroded; ligament, more elevated than the

beaks, and passing between them; hinge margin, broad and strait; anterior dorsal margin, projecting; anterior margin, emarginate; anterior basal, projecting; basal margin, arcuated; two elevated ridges, extending from the beaks, and projecting on the anterior dorsal and basal margins, with a broad furrow between; epidermis, dark olive; waved transversely, and obscurely rayed with green, across the waves; cardinal teeth small, and that in the right valve deeply sulcated; lateral teeth, short and thick; posterior or cicatrix, deep and smooth; anterior one, strongly impressed and rough behind; cavity, broad and shallow; naker, white, tinged with a beautiful pea green; iridescent on the fore part.

Remarks. -- Having but one specimen of this shell, I am unable to determine whether it is a new variety, or only a "lusus naturae."

\* In Mr. Barnes's opinion it is new and distinct.  
-- Ed.

No. 17. UNIO ALATUS. -- Fig. 17.

Shell ovately triangular; hinge margin elevated into a large wing; valves growing together on the back of the ligament, inside purple.

Length, 4.5; breadth, 6.5; diameter, 1.7.

-- Hab. Duck Creek.

Shell moderately thick, disks flat and compressed, long before and short behind; beaks depressed; ligament concealed between the valves; hinge margin nearly strait; anterior dorsal, emarginate; anterior margin, rounded and broad; posterior margin, rounded and narrow; surface deeply wrinkled; teeth elevated and crenate; anterior cicatrix, very broad; posterior composed of three distinct impressions, and also a row of very small impressions across the cavity of the beaks; naker, red-purple, very brilliant, and most splendidly iridescent on the forepart.

Remarks. -- It is difficult to procure a perfect specimen, of a full grown subject, the wing being more or less mutilated. The figure of this specimen has been drawn with great care,

(page 286)

and I believe is a faithful representation of the individual designed. The inner surface of some shells, is sprinkled over with small grains, like mustard seed in size, while others are nearly or quite free from them, as is the case with the present shell.\*

\*We are informed by Mr. Barnes, that they may be procured in abundance at Ticonderoga. -- Ed.

No. 13. UNIO PRAELONGUS. -- Fig. 18.

Shell much elongated transversely, narrow, thick, tumid, beaks flat, lateral tooth long, thin; inside white, tinged with green or purple.

Length, 2.25; breadth, 5.6; diameter, 1.9.

-- Hab. Duck Creek.

Shell, very long oval; anterior side somewhat pointed; posterior side short rounded, obtuse; beaks depressed; ligament elevated above the beaks; basal margin slightly compressed; when young, rounded; epidermis, blackish brown, wrinkled transversely, and rayed obscurely; naker, white, and tinged with spots of green, or purple under the beaks, with a row of small muscular impressions in the cavity; posterior cicatrix deep and not very rough; iridescent on the forepart.

No. 19. UNIO GIBBOSUS. -- Fig. 19.

Shell, elongated transversely, thick and gibbous; lateral tooth thick, incurved, inside purple.

Length, 2.00; breadth, 4; diameter, 1.1.00.

-- Hab. Muskingum.

Shell, much elongated transversely, thick and heavy; rapidly narrowed and rostrate before, narrow and rounded behind; disks somewhat compressed; anterior side much produced; beaks flat; ligament elevated; anterior dorsal margin, depressed and flattened; basal margin, nearly strait; epidermis, dark brown, deeply wrinkled transversely; naker, purple; teeth, crenate; lateral tooth, thick and rough, and folded over towards the inside of the shell; posterior cicatrix,

deep, and rather rough; so deep that in old specimens, it is often worn through on this part.

No. 20. *UNIO RADIATUS*. -- Fig. 20.

Shell; ovate, thin, finely striated, glossy, rayed, within bluish white. †

† In Mr. Barnes's opinion, a young *Ventricosus*, and not the true *Radiatus*. -- Ed.

(page 287)

Length, 2.00; breadth, 3.5; diameter, 1.4.

-- Hab. Duck Creek.

Shell, thin and fragile; anterior side, broad; disks, convex; beaks, slightly elevated, and approximate; ligament, elevated; hinge margin, elevated, compressed, carinate; basal margin, a little shortened; in young shells, rounded; anterior margin, narrow; posterior, broad and rounded; anterior dorsal, subtruncate; epidermis, greenish yellow, rayed with dark green, and finely striated transversely; surface, smooth and glossy; cardinal teeth, crenated and long; cavity of the beaks, small; posterior muscular impression, broad; naker, bluish white, or pearl color.

Remarks. -- This is a very neat, and handsome shell - outer surface remarkably clean, and free from parasitic plants\* -- It is said to be very superior for eating.

\*Because it is young. Mr. Barnes. - Ed.

No. 21. *UNIO OVATUS*. -- Fig. 21.

Shell, roundish ovate, convex, umboes elevated, beaks recurved, and approximate; anterior lunule, flattened; teeth, crest-like, elevated.

Length, 3.75; breadth, 5.00; diameter, 2.25.

-- Hab. Muskingum.

Shell, broader before, and narrower behind the beaks; thin and translucent when young; and not thick when old; disks, swelled; umboes, prominent; ligament, partly concealed; anterior lunule flattened, and fuscous, becoming lamellar with striae and wrinkles; epidermis, yellowish,

or horn color; surface, glabrous and shining, deeply wrinkled, and rayed in young subjects; cardinal teeth, crest like, elevated, compressed, oblique, nearly on a line with the anterior dorsal margin; lateral teeth, short and elevated; cicatrices, smooth and polished; cavity, large and somewhat angular; naker, pearly white.

Remarks. -- This is one of the most common shells in the Muskingum, and remarkably uniform in its appearance. I think it a near relation of the *gracilis*.

No. 22. *UNIO TRIANGULARIS*.

-- Fig. 22.

Shell, triangular, gibbous inflated, rayed, gaping, anterior slope, flattened, ribbed, cancellate; inside, white.

(page 288)

Length, 1.25; breadth, 2.00; diameter, 1.1.

-- Hab. Duck Creek.

Shell, moderately thick, acutely angulated before, obtuse, and somewhat angulated behind; disks, inflated; anterior slope, flattened, very broad, ribbed longitudinally, and wrinkled transversely; beaks, one third from posterior extremity, decorticated, approximate, and somewhat elevated; anterior lunule, oval heart shaped, in the smaller, and perfectly heart shaped in the larger specimens; basal margin, a little depressed near the anterior extremity; anterior margin, angulated; posterior margin, rounded and broad; epidermis, yellowish green, rayed with dark green, finely striated transversely, and with from three to six, more conspicuous transverse wrinkles; anterior slope, marked with longitudinal ribs, which are beautifully cancellated; ribs, projecting and forming a dentated edge; cardinal teeth, two in each valve, compressed and crenulate; lateral teeth, short, projecting, and terminating abruptly; naker, bluish white, slightly iridescent.

No. 23. *UNIO GRACILIS*. -- Fig. 23.

Shell, ovately triangular, very thin and fragile; hinge margin, elevated; ligament, concealed.



Length, 2.5; breadth, 3.5; diameter, 1.25.

-- Hab. Little Muskingum.

Beaks, depressed and placed far back; ligament, between the valves, and covered; anterior lunule, distinct; hinge margin, elevated into a large wing, in the perfect specimens; epidermis, sea green, wrinkled and striated transversely, glabrous; cardinal teeth, very small, scarcely projecting; lateral teeth, very thin and delicate; naker, bluish white, tinged with violet, and beautifully iridescent.

Remark. -- This shell is but a small specimen of the *gracilis*, in these waters. I have heard of one three times the size -- the wing is much mutilated. The contour of the shell, independent of the wing, is much like that of the *alatus*. It is a more delicate shell, and inside more beautifully irised, if possible -- not a common shell in this vicinity, as I have but one specimen.\*

The above, are all the specimens of the *U-*nio, that have as yet fallen under my notice; but as my researches have

\*It is abundant in Lake Champlain. (D. H. B.)  
-- Ed.

(page 289)

been but partial, I have no doubt, of being able to add a number more to my collection.

#### ALASMODONTA.

##### Generic Character.

Shell, transverse, equivalve, inequilateral, free; beaks, decorticated; posterior muscular impression, compound; hinge, with prominent cardinal teeth in each valve, but without lateral teeth.

No. 24. ALASMODONTA RUGOSA. --

Fig. 24.

Length, 2.25; breadth, 4.10; diameter, 1.20.

-- Hab. Little Muskingum.

Shell, oblong oval, about equally broad, before and behind; beaks, very slightly elevated, wrinkled and decorticated, wax color beneath; ligament, external, and rather higher than the beaks; anterior lunule, distinct, with a slightly elevated ridge, extending from the beaks to the anterior basal margin; basal margin, a little shortened, or nearly strait, the other margins rounded; epidermis, chestnut brown, with a silky luster; surface of the anterior part folded in a pinnate form; folds deeper and larger as they approach the anterior basal margin; curved upwards, and extending to the hinge, indenting the edge, and appearing on the inside; teeth large and elevated, having in some specimens, a curved appearance; cicatrices, smooth; cavity, small; naker, pale flesh colored in the center, pearly on the margin, with a narrow border of dark chocolate; surface, glossy, with a rich blue tinge, over the fimbriated portion of the shell.

Remarks. -- I have several specimens of this shell, young and old -- in some, the teeth are much deformed, but the valves are equal and uniform.

No. 25. ALASMODONTA COMPLANATA. --

Fig. 25.

Shell, ovately quadrangular; hinge margin, elevated into a large wing; valves, connate; ligament, concealed; wing, pinnate.

Length, 4.75; breadth, 5.9; diameter, 1.75.

-- Hab. Duck Creek.

Shell, short behind; disks, much flattened; beaks, slightly projecting; ligament, between the valves; anterior lunule, much compressed, and folded across the traverse wrinkles;

(page 290)

hinge margin, elevated into a large wing, which is pinnated, or folded; forming an obtuse angle with the post dorsal margin; basal margin, rounded; anterior dorsal, arcuated; anterior margin, truncate; posterior, rounded; epidermis, dark brown, with a tinge of red below the beaks; surface, wrinkled; slightly elevated ridges and fur-

rows extending from the beaks, to the anterior margin; teeth, elevated, sulcated, and radiating from the beaks; cicatrices, smooth; cavity, small and angular; naker, bluish white, and iridescent on the forepart, with a border of rich reddish brown, on the margin.

Remarks. -- I have several specimens of this shell, in all of which the wing is folded, in some, very beautifully -- generally found in ripples, or rapid water, and rocky bottom.

#### GENUS ANODONTA

##### Generic Character.

Shell transverse, with three obsolete muscular impressions, hinge simple; destitute of teeth.

##### No. 26. ANODONTA UNDULATA. --

Fig. 26

Shell very thin, not thicker than brown paper; convex, nearly oval; epidermis greenish, or olivaceous, darker on the umbo; obscurely rayed and striated longitudinally; rays lighter than the general surface; distantly waved transversely, waves appearing on the inside; beaks prominent, acute, approximate; slightly decorated, wax color beneath; ligament partly concealed; hinge margin rectilinear; anterior dorsal margin compressed and angulated; anterior margin sub-truncated; posterior margin

rounded and projecting; basal margin ovally rounded; surface glossy and polished; destitute of cardinal or lateral teeth; naker light cerulean, tinged with violet; cavity capacious; basal and anterior margins bordered with a broad line of rich brown.

Length, 1.75; breadth, 3.00; diameter, 1.25. -- Hab. Little Muskingum. A very delicate and beautiful shell.

The only specimen of univalve, is figured No. 27, and was found in the Little Muskingum; it is the largest I have seen of that species, smaller ones being very common. -- It appears to belong to the genus *Paludina*, species *Decisa*; as described in *American Conchology*, plate 2. fig. 6. -- It is 1.5 in length, and 1.00 in diameter.

Closing Remarks. -- In the above list of shells there are four varieties, which I have not seen described, and have ventured to

(page 291)

give them specific names, viz. *Orbiculatus*, *Phaseolus*, and *Foliatus*, of the *Unios*; and *Undulata*, of the genus *Anodonta* -- my other descriptions are generally copied from Mr. Barnes, except in particulars where my specimens differed from his. The subject is in a manner new to me, and lacks the finish of an experienced workman.

EDITORIAL NOTE. This paper is accompanied by two plates which are not reproduced here as it is nearly impossible, judging by previous experience, to obtain satisfactory reproduction by the means available to STERKIANA.

A. L.