ON SOME MOLLUSCA KNOWN TO OCCUR IN INDIANA.

A SUPPLEMENTARY PAPER TO CALL'S CATALOGUE.

BY W. S. BLATCHLEY AND L. E. DANIELS.
INTRODUCTORY.

In the Twenty-fourth (1899) Annual Report of this Department, Dr. R. E. Call published an extensive paper entitled "A Descriptive, Illustrated Catalogue of the Mollusca of Indiana." In this paper he described, and for the most part figured, 184 species of land and fresh water shells from different parts of the State. During the past two years, Mr. L. E. Daniels, one of the authors of this paper, has spent the months from April to November in the field, collecting shells and other forms of life for the State Museum. As a result of his research, 91 species and varieties of mollusca not listed by Call have been taken in the State. In the present paper we publish descriptions of each of these and note the localities in which they have been taken. The descriptions are, for the most part, copied from the works of Binney, Say, Pilsbry, Baker, Sterki, and other special students of mollusca. The nomenclature and general arrangement of the land shells is that of Pilsbry's "Classical Catalogue with Localities of the Land Shells of America North of Mexico."

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A Supplementary Paper to Call's Catalogue.

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Family HELICIDÆ.

1. Vallonia costata Muller.

"Small, depressed convex, rather solid, umbilicated; surface shining, with regular membranous ribs of good size, the intercostate spaces being finely striate; color reddish horn; periphery a trifle angled; sutures deeply impressed; whorls three and one-half, rapidly increasing, the last expanding and descending, somewhat angular on the periphery; spire flat, apex finely striate; aperture nearly circular, a little oblique, flattened above, angular below; peristome reflected, white, terminations approaching and connected by a thin callus; umbilicus open, large, spreading, exhibiting all the volutions. Greater diameter, 2.70 mm.; lesser, 2.25 mm.; height, 1.30 mm."—Baker.

Range.—Quebec to Washington, west to Colorado.

Indiana Localities.—A few specimens were taken beneath the bark of logs in a marsh at the south end of Lake Maxinkuckee, Marshall County. A number labeled "Indiana" are in the State Museum collection. This species is distinguished from V. pulchella by its numerous heavy ribs and darker color.

2. Polygyra leporina (Gould).

"Shell with a partially covered umbilicus, depressed, orbicular, thin, reddish horn-color, delicately striated, and, when fresh, having a delicate down on its surface; spire depressed, composed of five slightly convex whorls, the last of which is obtusely angular at its
upper portion; base convex, excavated at the umbilical region, with
a minute, partially covered umbilicus; aperture oblique, lunate;
peristome incumbent, rose-colored, reflexed, bearing on
its dilated basal edge two expanded teeth, separated
by a deep, narrow fissure, its terminations joined by
a quadrate, erect, oblique lamella, whose upper edge
is joined to the upper angle of the aperture by a
thread-like callus; an internal, fulcrum-like tubercle,
with uneven outer edge on the base of the shell.
Greater diameter, 6 mm.; lesser, 5.5 mm.; height, 3
mm.”—Binney.

Range.—Southern Indiana through Kentucky and Tennessee to
Georgia, Missouri and Texas.

Indiana Localities.—In this State leporina was first taken in Henry
County by E. Pleas.* Mr. Daniels has taken it one-half mile east of
New Harmony, Posey County, and near North Vernon, Jennings
County. In both places it occurs in small numbers beneath logs,
near the borders of woods.


“Shell rimately umbilicated, discoidal, depressed above, convex be-
low, light horn-color, sparingly hirsute, with separated rib-like striae;
spire planulate; whorls five, gradually increasing, the upper ones
rounded, smoother, the last convex, plane below, scrobiculated, and
with an insulated, smooth, prominent bulge behind the peristome,
deflected at the aperture; rimation level, at first grooved, showing
one and a half whorls, and ending in a narrow umbilicus; aperture
subreniform, very oblique, contracted; peristome white, thickened,
not reflected, continuous, its terminations approached, joined by a
prominent, excavated, heavy, somewhat flexuose, emarginate, tongue-
like callus, projecting almost across the aperture; within the columellar margin of the peristome is an
erect, blunt, stout denticle (its inner end continued
back within the aperture into an erect lamella joining the
inner wall), somewhat overlapping and thus partially concealing from view a smaller, more deeply
seated, erect, obtuse, stout denticle on the right margin
of the peristome; an internal transverse tubercle on
the base of the shell. Greater diameter, 7 mm.; lesser,
6 mm.; height, 3 mm.”—Binney.

* The Nautilus, October, 1893, p. 68.
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Range.—Alabama, Kentucky, Georgia and Tennessee.

Indiana Localities.—Beneath drift on the north bank of the Ohio River, near Clarksville, Floyd County.

4. **Polygyra fraudulenta** Pilsbry.

"Differs from *P. tridentata* in having a compact shell of a reddish brown color (varying to white in some localities); the spire is low—convex, composed of six closely coiled whorls, the last being notably deflexed in front and strongly constricted behind the lip. The aperture is strongly ‘dished’ or basin shaped; the outer lip bears a broad tongue-shaped, inflected tooth, situated at the position of the periphery of the shell. The middle part of the basal lip bears a small squarish tubercle, which is often laterally compressed. The parietal wall bears an elevated oblique blade which is typically almost straight and never much curved. Greater diameter, 15 mm.; lesser, 13.50 mm.; height, 8.50 mm."—*Pilsbry.*

Range. — Ontario, Canada, to Michigan and Illinois, south to Georgia.

Indiana Localities.—This is the species called *P. fallax* Say by Stein and Call. *Fallax* occurs only east of the Alleghanies. *P. fraudulenta* probably occurs throughout the State, having been taken in Posey, Lawrence, Tippecanoe, Marion and Laporte counties. It occurs beneath logs and flat stones in rather moist situations.

4a. **Polygyra palliata-obstricta** (Say).

The following remarks regarding the relation existing between the nominal species *P. palliata* and *P. obstricta* (Say) were prepared by Mr. H. A. Pilsbry, to whom a series of specimens collected in Posey County was submitted.

“A series of 18 specimens from Grand Chain, Posey County, taken by Mr. Daniels in bottom land near the Wabash River, and in its flood plain shows a complete series of transitions from *palliata* to *obstricta*. These supposed species have been separated not only on account of the acute keel of *obstricta*, and its absence in *palliata*,

![Fig. 3. Apertures of Polygyra. (After Pilsbry).](image-url)
but more because of the rough epidermis of the latter.* This series, so far as I can see, shows intergradation in the development of the cuticular processes, as well as in the contour of the shell.

"A few of the specimens agree almost exactly with Say's type specimen of *palliata*, the periphery being moderately angular, the angle disappearing on the last third or fourth of the whorl; and the surface, besides having low, coarse striæ, bears numerous cuticular asperities, as though a loose cuticle had been pinched up into many little points, and more or less wrinkled in consequence between them. (See a, Fig. 4.)

"Most of the shells are decidedly more acutely angular at the periphery than typical *palliata*, but have essentially the same sculpture (b, Fig. 4). A few of the specimens (c, Fig. 4) have the peripheral keel acute, and reduced to an angle only on the latter part of the whorl, and there is a distinct tendency of the cuticle to pucker into spiral lines between the rib-striae; such ill-developed spirals being characteristic of *P. obstricta*. In some of these specimens the keel projects a little above the sutures, as usual in *P. obstricta*. They are similar to shells of the latter species found in the hills, about half a mile distant from the locality of the *palliata-obstricta* series. No sharp line, however, can be drawn between the bluntly angular, the sharply angular and the strongly carinate shells; all intergradations occur, even in the small series.

"As only *obstricta* was found in the hills, the question naturally arises, whether *obstricta* is a form of *palliata* dependent upon station. This is apparently negatived by the wide distribution of *palliata* in the northern States, where it inhabits both lowland and mountains, in alluvial, limestone and sandstone tracts, and is not accompanied by *obstricta*, and indeed not varying toward strongly angular or carinate forms over most of its area. A simpler view seems to be that while *P. palliata* occupies an area generally north of that of *P. obstricta* there is a broad belt of territory common to the two, in some parts of which intergradation takes place, or, in other words, remnants of a variable, undifferentiated, parent race still exist.

Fig. 4a. Showing distribution of certain species of Mollusca in Posey County.
“None of the Indiana shells I have seen are strictly referable to the variety carolinensis of Lea. That, in my opinion, is probably another remnant of the race ancestral to obstricta, but a little diversely modified.

“Further collections of the species under consideration should be made in as many localities as possible throughout the States where palliata and obstricta coexist, with full notes on the local conditions. It seems likely that more solid conclusions than those now attainable should result from the study of ample material.”

5. POLYGYRA monodon (Rackett). Plate I, Fig. 2.

“Subglobose, solid, umbilicate or imperforate; surface covered with very fine, oblique growth lines which are so minute as to be scarcely visible even when viewed with a powerful glass; the surface is also set with short hairs scattered over the whorls; nuclear whorls smooth; periphery rounded; sutures well impressed; color yellowish to reddish horn; whorls five to five and a half, closely coiled, flatly rounded, the last gibbous on the last half, and constricted behind the peristome; spire somewhat elevated in some specimens, but flat in others, convex; aperture narrowly lunate, no teeth or notches on the peristome; parietal wall with a long, narrow, more or less elevated tooth, which begins near the center of the parietal wall and extends generally to the umbilical region in a line parallel with the basal reflection of the peristome; peristome white, thick, reflected; umbilicus widely open, or wholly imperforate; the region strongly depressed; base of shell rounded, with a transverse internal tubercle. Greater diameter, 9 mm.; lesser, 8.25 mm.; height, 5.25 mm.”—Baker.

This is the shell formerly known as leaiii Ward. It was originally described from Alpena County, Michigan. The larger, more hirsute form, with umbilicus frequently partly closed or wholly imperforate and described by Call and others as Stenotrema monodon, has been shown by Pilsbry to be Say’s H. fraterna, and it is now known as P. monodon fraterna. (Plate I, Fig. 1.) The range of P. monodon is from Minnesota and Michigan south and southwest to Tennessee and Kansas.

Indiana Localities.—Stein mentioned the present species under the name leaiii, from Posey County. Mr. Daniels has found it to be quite common about the swamps bordering the larger lakes of northern Indiana, notably those near lakes Wawasee and Tippecanoe, Kosciusko County; Maxinkuckee, Marshall County; James, Steuben County, and Lake Manitou, Fulton County. It occurs beneath chips,
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rubbish and fallen grasses and weeds, about the margins of the lakes. It has also been taken in grassy swales near Hammond and Pine, Lake County. It occurs in a semi-fossil state in thick loess deposits near New Harmony, Posey County.

Family PUPIDÆ.

6. **STROBILOPS LABYRINTHICA (Say).**

This species as described by Call (p. 382 of his Catalogue) included two others which had previously been separated by Pilsbry* chiefly by the number and length of the internal lamellae of the basal and outer walls of the body whorl. His table used in their separation is as follows:

**KEY TO THE SPECIES OF STROBILOPS.**

a. Internal lamellae on floor of body whorl two or three, short; color dark brown; one parietal fold conspicuously emerging from aperture. Form elevated conoidal. ................. *S. labyrinthica* Say.

aa. Internal lamellae on floor and adjacent side walls of body whorl six or more.

b. Six long lamellae; two parietal folds emerging; color white or pale brownish; form elevated. ................. *S. virgo* Pilsh.

bb. About eight short lamellae arranged in a curved radial series; color dark brown; form elevated. ................. *S. affinis* Pilsh.

The description of *S. labyrinthica* as limited by Pilsbry is herewith included.

"Shell umbilicated, elevated conoidal; brownish horn-color with strong ribs above, below nearly smooth; spire obtuse; whorls wider than high, regularly increasing in size from apex to aperture; body whorl obtusely angulate at the periphery, flattened below, impressed around the narrow umbilicus; aperture rounded above, basal margin flattened; peristome narrowly reflected, thickened; parietal wall with three revolving, deeply entering parallel lamellae, the central further within the aperture and less developed, one conspicuously emerging from the aperture; two or three short internal lamellae on base of body whorl. Greater diameter, 2.25 mm.; height, 1.75 mm."—Walker.

7. **STROBILOPS VIRGO Pilsh.**

"Shell umbilicated, globosely elevated; white or pale brownish in color; finely and closely ribbed above, ribs subobsolete on the base;

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* The Nautilus, September, 1893, p. 57.

67—Geol.
spire high, dome-shaped; whorls five and a half, narrow, almost as high as wide, body whorl somewhat angled at the periphery, rounded below, impressed around the umbilicus, which is a mere perforation; aperture lunately rounded; peristome narrow, thickened, reflected; two parietal folds conspicuously emerging; six long lamellae on the base and outer wall of body whorl. Greater diameter, 2.25 mm.; height, 2 mm."—Walker.

S. virgo has been taken in small numbers from beneath logs and rubbish in ravines and moist places near Cannelton, Perry County; New Harmony, Posey County; Princeton, Gibson County; Wyan­dotte, Crawford County, and Lake Maxinkuckee, Marshall County.

8. Strobilops affinis Pilsbry.

"Shell umbilicated, obtusely elevated; dark brown; finely and closely ribbed above, ribs lighter below; spire obtusely elevated; whorls five and a half, rather narrow, higher than wide, body whorl obtusely angled at the periphery, somewhat flattened, but rounded below, impressed around the umbilicus, which is rounded and deep; aperture lunately rounded; peristome thickened, narrowly reflected; about eight short lamellae arranged in a forwardly curved radial series from the axis across the base and up the outer wall of the body whorl. Greater diameter, 2½ mm.; height, 2.50 mm."—Walker.

In Indiana S. affinis has been found near Lake James, Steuben County; Tippecanoe Lake, Kosciusko County, and Mitchell, Lawrenceburg, Wyandotte and Huntingburg, in southern Indiana. It is said to be very abundant at many localities in New York and Ohio.

9. Bifidaria procera (Gould). Plate I, Fig. 3.

"Cylindrical, long, shining; surface covered with well marked, oblique lines of growth, the apex smooth; color brownish or chestnut horn; whorls six, convex, the last three about equal in size and the first three rapidly diminishing to the nucleus, making an obtuse apex; sutures deeply impressed; aperture ovate or semi-circular, higher than wide; there are generally five teeth placed as follows: One on the parietal wall, large and somewhat compressed, long and bifid at the end; one on the columella, near the upper third, short, conical; a third on the upper third of the outer lip, thick, conical, short; a fourth on the base of the peristome, long, sharp; and a fifth placed behind the columella tooth, large and massive; peristome rather widely reflected, thickened, bluish white; terminations approaching and joined by a callus; umbilicus small, open. Length, 2.50 mm.; diameter, 1.00 mm.; aperture length, 0.50 mm."—Baker.
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Range.—Eastern United States west to Minnesota and south to Texas and South Carolina.

Indiana Localities.—This mollusk has been taken in this State only near Hamer's Cave, two miles east of Mitchell, Lawrence County, and near Connersville, Fayette County. At the former locality Mr. Daniels found a half dozen beneath flat stones, associated with *B. armifera*, *contracta* and *pentodon*.

10. **Vertigo morsei** Sterki.

“Shell large (for the group), cylindrical-turriculate, with a rather acute apex, imperforate rimate, with few obsolete strich of growth, shining, translucent; whorls six, rather slowly and regularly increasing, the last scarcely higher than the penultimate and rather narrower, somewhat sloping toward the base, slightly ascending at the aperture; suture deep; aperture lateral, scarcely oblique, comparatively small; inferior and palatal well rounded, the latter with an angular impression and slightly protracted in about its middle, the upper half more strongly curved, peristome everted; on the palatal wall, at some distance from and parallel with the margin, a moderate crest, behind it a deep and large impression over the palatal folds, and in front of it a groove corresponding with the impression at the auricle; inside the crest there is a distinct callus of the same color as the shell; apertural lamellae and folds typically nine; three on the parietal wall (the same as in *V. ovata*) the largest whitish; two on the columella, the superior strong, vertical above, then in an angle turning horizontally, the inferior horizontal, lamelliform, thin, high and directed obliquely upward; basal small, sometimes double, rarely O; palatals high, and rather long, curved and directed upward; suprapalatal small, nodule-like. Greater diameter, 1.3 mm.; lesser diameter, 0.8 mm.; height, 2.7 mm.”*—Sterki.

Known heretofore only from Kent County, Michigan, and Sandusky, Ohio.

This handsome little mollusk occurs in numbers about the margins of Lakes James, Tippecanoe and Maxinkuckee; where it lives beneath rubbish, such as fallen weeds, grass stems, and pieces of wood. It is found associated with *Vertigo ovata*, *Polygyra monodon* and the two species of *Strobilops* above mentioned.

*The Nautilus, December, 1894, p. 89.*
Family ZONITIDÆ.

11. Omphalina lævigata (Pfeiffer).

"Shell somewhat convex, oftener depressed; epidemris greenish horn-color, shining, thin; whorls five, rather flattened, rapidly enlarging, with beautiful and regular oblique striae and revolving microscopic lines, the last whorl expanding toward the aperture, not descending; aperture transverse, broadly lunar, ample, with a testaceous deposit within; peristome thin, acute, straight, extremities approaching, its lower extremity inserted into the center of the base and somewhat reflected; base smooth, perforate. Greater diameter, 18 mm., lesser, 15 mm.; height, 9 mm."—Binney.

A southern species whose range is given by Pilsbry as "North Carolina to St. John's Valley, Florida, west to Arkansas and western Louisiana."

In Indiana, Mr. Daniels found it in small numbers near Grand Chain, and Mt. Vernon, Posey County; Cannelton, Perry County, and Laurel, Franklin County. It occurs in dry upland woods beneath logs.

12. Vitrea cellaria (Mull.).

"Shell very much depressed, thin, fragile, pellucid; epidermis light greenish-horn color, smooth, highly polished; whorls five, slightly rounded, with minute and almost imperceptible oblique striae; aperture not dilated, its transverse diameter the greatest; umbilicus moderate, regularly rounded, deep; base rounded, thickened within by a testaceous deposit, bluish-white; peristome simple, acute. Greater diameter, 13 mm.; lesser diameter, 11.5 mm.; height, 5 mm."—Binney.

Introduced from Europe. Said to be quite common in the seaports of the Atlantic and Pacific coasts, and occasionally found inland in greenhouses.
In Indiana it has been noted only at Laporte, where it occurs in numbers beneath boards on the floor of a greenhouse. It does not seem to be harmful to the growing plants.

13. *Vitrea hammonis* (Ström). Plate I, Fig. 4.

“Small, depressed, thin, umbilicated; surface shining, the lines of growth well marked, impressed, more or less equidistant; color brownish-horn, transparent; periphery rounded; sutures well impressed; whorls four, rapidly enlarging, the last half of the last whorl very rapidly enlarging as it approaches the aperture; spire flat or a trifle convex; aperture large, transversely rounded, somewhat expanded; peristome simple, with thickened edge; umbilicus small, round, deep, showing several of the volutions, the umbilical region strongly concave; base of shell convex. Greater diameter, 4.25 mm.; lesser diameter, 3.75 mm.; height, 2.50 mm.”—Baker.

Range.—North Carolina to Colorado, northwest through the northern States and British America.

Although not mentioned by Call, this is a rather common shell in Indiana, having been taken in a dozen or more localities. It occurs with *Zonitoides arboreus* (Say) under dead leaves and rotten logs, in open, usually moist woods. Specimens labeled “Indiana” were in the State Museum collection under the name of *Zonites viridulus* Menke. It was also listed by Pleas from Henry County.
14. **Vitrea wheatleyi** (Bland).

“Shell umbilicated, depressed, thin, shining, pellucid, brownish horn-color, finely striated; spire subplanulate; suture slightly impressed; whorls little convex, the last more convex at the base, rapidly increasing, at the aperture scarcely descending; umbilicus pervious; aperture depressed, obliquely lunate; peristome simple, acute, the margins approximating, joined by a thin callus. Greater diameter, 5 mm.; lesser, 3.5 mm.; height, 2 mm.”—Binney.

A southern species known chiefly from near Knoxville, Tennessee, and northern Alabama, though recorded by Sterki from Pennsylvania, Indiana and Michigan.

In the State Mr. Daniels has found it in small numbers associated with *Zonitoides arboreus*, the preceding and the next species, near New Harmony, Huntingburg, Brookville and Indianapolis.

15. **Vitrea indentata** (Say). Plate I, Fig. 5.

“Shell subperforated, flattened, thin, pellucid; epidermis highly polished, corneous; whorls rather more than four, rapidly enlarging, with regular, sub-equidistant, radiating, impressed lines, which on the body whorl extend to the center of the base, outer whorl expanding toward the aperture; suture well impressed; aperture rather large, transverse; peristome simple, acute, very thin, at its inferior extremity terminating at the center of the base of the shell; umbilicus none, but the umbilical region is indented. Greater diameter, 5 mm.; lesser diameter, 4.5 mm.; height, 2.5 mm.”—Binney.

This species may be distinguished from *V. hammonis*, which it most resembles, by its subperforate umbilicus and peculiar equidistant impressed striae. Its range as given by Pilsbry, is Dakota to New Mexico and Ontario to Florida.

It occurs in numbers throughout Indiana, in company with *Z. arboreus* and the two preceding species; having been taken at nearly every locality where collections were made.

16. **Vitrea capsella** (Gould).

“Shell quite small, planorboid, pellucid, glistening, amber-colored; spire nearly plane, composed of about six and a half closely revolving, flattened whorls; surface with distant, impressed, radiating striae; suture margined; aperture narrow, semilunar; peristome simple, not thickened by callus within; base perforated by a deep,
rather small, funnel-shaped umbilicus. Greater diameter, 5 mm.; height, 2.5 mm."—Binney.

This is another species of southern range which has been found near Huntingburg and New Harmony by Mr. Daniels, where it occurs sparingly under dead leaves in the edges of woods. It has not before been recorded north of the Ohio River, its range as given by Pilsbry being Virginia and Kentucky to Alabama. Dr. Sterki, who identified the species, states that the Indiana specimens "have a rather wide umbilicus."

17. *Euconulus chersinus* Say.

"Shell subglobose-conic, pale yellowish white, pellucid, convex beneath; volutions about six, wrinkles not distinct; spire convex-elevated; suture moderate; body whorl slightly carinated on the middle; mouth nearly transverse, unarmed, the two extremities nearly equal; labrum simple; umbilicus none."—Say. Pilsbry adds: "Outlines of spire quite convex; whorls six and a half, appearing very closely coiled, as seen from above, the last only faintly angular, though in immature shells it is carinated. The base is quite convex and the umbilical perforation very narrowly open. Greatest diameter, 2.8 mm.; height, 3 mm." Baker says that *E. chersinus* "is a shell with a much more turreted spire and more closely coiled whorls than *E. fulvus* (Mull.). The teeth of the two species are widely different, *fulvus* having the formula 21-1-28, while *chersinus* has 18-1-18."

Specimens of this little mollusk, identified by Sterki and verified by Pilsbry, were taken from beneath bark and leaves in moist places near New Harmony, Huntingburg and North Vernon; also in a cypress swamp in Knox County, and near Pine, Lake County. It has heretofore been known only from Georgia and Florida.

18. *Zonitoides nitidus* (Muller). Plate I, Fig. 6.

"Orbicularly depressed, thin, umbilicated; surface shining, covered with rather strong lines of growth; color smoky-horn; periphery rounded; sutures impressed; whorls five, convex, regularly increasing, except the last, which is very large in proportion, and obtusely
angled on the periphery as it approaches the aperture; spire rather elevated, convex; aperture lunate, oblique; peristome simple, acute, the basal margin bow-shaped; terminations of aperture not approaching; umbilicus round, broad, deep, exhibiting the volutions to the apex; base of shell concave about the umbilicus, convex on the last whorl. Greater diameter, 6 mm.; lesser diameter, 5 mm.; height, 4 mm."—Baker.

This is a common mollusk in northern Indiana, where it occurs about the margins of a number of the larger lakes, usually in company with Polygyra monodon. Its general range includes the northern United States and southern British America.

19. ZONITOIDES MINUSCULUS (Binney).—Plate I, Fig. 7.

"Small, depressed, thin, umbilicated; surface shining, lines of growth strong; color white, periphery rounded; sutures deeply impressed; whorls four, convex, slowly and regularly increasing in size; spire almost flat, a trifle convex; aperture very nearly circular, not expanded; peristome simple, acute, the basal margin rounded; terminations of aperture not approaching; umbilicus very large, deep, exhibiting all the volutions to the apex; columella with a thin, testaceous deposit; base of shell convex. Greater diameter, 1.50 mm.; lesser diameter, 1.30 mm.; height, 0.75 mm."—Baker.

Occurs commonly in the State, having been taken in six widely separated localities. It is found in company with Z. arboreus and allied species beneath the bark of logs, and rubbish in damp woods.

20. ZONITOIDES LEVISCULUS (Sterki).

"Of the size and general appearance of Z. minusculus but differs in being much depressed. The spire is entirely flat or very little elevated. The whorls are markedly wider, from the nucleus; in specimens of the same size one-half to one less in number, very gradually increasing, and flatter above and below. The surface appears smooth and polished, and only with a strong magnifier radiating lines are seen. The umbilicus is rather wider in the adult, and the curvature of the whorl to the umbilicus is quite abrupt, appearing almost angular. The shell is colorless, glassy while fresh, and when weathered appears more milky white, while minusculus then is more chalky."—Sterki.

Specimens from Dr. Sterki, collected by E. Pleas near Dunreith, Henry County, Indiana, are in the State Museum. It is known otherwise from two localities in Texas, and from northwestern Ohio.

"Shell widely umbilicated, depressed, transparent, shining, white, with a greenish tinge, marked with distinct and regular striae of growth and microscopic revolving lines; the latter more conspicuous below; spire but slightly elevated; whorls three, rounded, rapidly increasing, the last planulate above, widely umbilicated below; aperture very oblique, subcircular, remote from the axis; peristome simple, acute, its terminations somewhat approached, that of the columella not reflected. Greater diameter, 1.5 mm.; height, 0.5 mm."—Binney.

The range of this species is from Ontario to Florida and west to Kentucky and Indiana. In this State it has been taken only near Princeton, Gibson County, where a few specimens were secured.

22. *Agriolimax agrestis* (L.).

"Color varying from whitish through every shade of cinereous and gray to black, and through various shades of yellowish or amber-color to brownish, and sometimes irregularly spotted with small black points or dots; eye peduncles and tentacles darker than the general surface, sometimes black; mantle sometimes mottled with a lighter color; base of foot sallow white; sheath of eye peduncles indicated by black lines extending backward from their base under the edge of the mantle. Body when in motion cylindrical, elongated, terminating acutely, the sides toward its posterior extremity compressed upwards, so as to form a short carina or keel; foot very narrow. Mantle oblong-oval, fleshy, convex, and prominent, rounded at both extremities, equaling in length one-third of the length of the body, its surface marked by prominent, irregularly waved, concentrical lines and furrows having their center on the posterior part, and its edges free throughout the whole circumference. Upper surface of the body marked with longitudinal lines or shallow furrows,
darker than the general surface, sometimes black, anastomosing with each other, and forming a sort of network; between the reticulated lines are narrow, irregular, oblong plates, or smooth, flattened tubercles, giving the surface the appearance of a mosaic work, with lines of dark cement; reticulations less distinct on the sides and disappearing toward the base; a prominent tubercular ridge extends from between the eye peduncles backward to the mantle, with a furrow on each side. Eye peduncles cylindrical, about one-eighth the length of the body, with small, black, ocular points on the superior part of the terminal bulb; tentacles immediately under, very short. Respiratory foramen near the posterior lateral edge of the mantle, large, surrounded with a whitish border. Orifice of rectum immediately adjacent, but a little above and anterior to the respiratory foramen. Foot narrow; locomotive band bounded by two distinct longitudinal furrows. Generally about 25 mm. in length, but when fully grown nearly 50 mm.”—Binney.

This slug has been taken in numbers about Laporte, Indiana, where it occurs beneath logs, stones and rubbish in damp localities. It is an Old World species, introduced by commerce, and is common about Boston and other Atlantic seaports.

Family ENDODONTIDÆ.

23. PUNCTUM PYGMÆUM Drap. Plate I, Fig. 8.

"Subglobose, rather strong, umbilicated; surface dull or shining, marked by numerous strong, rounded, elevated striae and very fine spiral lines, which are stronger on the base than elsewhere; color reddish or brownish; periphery rounded; sutures very deeply impressed, especially between the last two whorls; whorls four, convex, regularly and gradually increasing in size; spire elevated, convex; aperture somewhat oblique, crescentic, ample; peristome simple, rather solid; columella subreflected, the terminations of the aperture widely separated; umbilicus wide, deep, showing all the volutions to the apex. Greater diameter, 1 mm.; height, 0.50 mm.”—Baker.

Range.—Northern United States and southern Canada, south to Texas and west to California. Taken near Seymour, Jackson County, and Vawter Park, Kosciusko County, beneath chips and chunks in open woods.
24. *Sphyridium edentulum* (Drap.)

"Shell minute, cylindrical, obtuse at apex, smooth, chestnut color; whorls five, well rounded, separated by a deep suture; aperture circular; the peristome nearly continuous, simple or scarcely everted, except at its columellar margin, where it partially conceals a small umbilicus; no trace of a tooth has been detected in any specimen. Length, 1.6 mm.; breadth, half as great."

—Binney.

This is a northern form whose range is given by Pilsbry as Ontario to Vancouver’s Island. It was found in numbers on the leaves of the Ostrich fern in a dense marsh on the border of Clear Lake, Steuben County; and in a tamarack swamp near Vawter Park, Kosciusko County.

Family **SUCCINIDÆ**.


"Shell oblong, ovate, thin, shining, finely striate; color golden; whorls three, the last broad, dilated; aperture below expanded, striae of growth marked. Length, 12 to 13 mm."—Calkins.

This form was originally described from the banks of the Calumet River, Cook County, Illinois. Mr. Daniels found it common on aquatic grasses about the Half Moon Pond, Posey County, and the cypress swamp, Knox County, Indiana.

Family **AURICULIDÆ**.

26. *Carychium exile* H. C. Lea. Plate I, Fig. 9.

"Similar to *C. exiguum* (Say) but differing in the following particulars: the shell is elongated instead of cylindrical; there are five and a half whorls; the aperture is just one-third the length of the shell, instead of over one-third, and the surface is regularly and very distinctly striated. Length, 1.75 mm.; width, 0.75 mm.; aperture length, 0.50, width, 0.35 mm."—Baker.

This shell is by many conchologists considered a synonym of *C. exiguum* Say. Baker, however, regards them as probably distinct. In Indiana it has been taken near Vawter Park, Kosciusko County, and Berry Lake, Lake County.
Family LIMNÆIDÆ.

27. **LIMNÆA STAGNALIS APPRESSA** Say. Plate I, Fig. 10.

"Elongated (or oval), ventricose at the anterior end, thin, color yellowish-horn to brownish-black; surface shining, growth lines numerous, crowded, more or less elevated, crossed by numerous fine, impressed spiral lines; apex smooth, brownish horn-color; whorls six and a half, rapidly increasing, all but the last two rather flat sided; last whorl very large, considerably dilated and inflated; spire long, pointed, acute, occupying about half the length of the entire shell (sometimes very short); sutures distinct, sometimes impressed; aperture large, broadly ovate, dilated, particularly at the upper part; peristome thin, acute, in some specimens thickened by an internal callus; lower part rounded; columella crossed in the middle by a heavy plait, which starts from the base of the aperture and runs obliquely into the aperture of the shell about 10 mm. from the junction of the peristome to the body whorl; there is a spreading callus on the columellæ and labrum, which completely covers the umbilicus. Length, 57 mm.; width, 24 mm.; aperture length, 31 mm., width, 14.50 mm."—Baker.

This large and handsome Limnæid ranges through North America from the Atlantic to the Pacific. It is found generally in stagnant ponds and rivers about decaying vegetation. In Indiana it has been taken at Turkey Lake, Kosciusko County; in the Kankakee River, Laporte County, and in a pond near Millers, Lake County.

28. **LIMNÆA REFLEXA KIRTLANDIANA** Lea. Plate I, Fig. 11.

"Turreted, thin, irregularly striate, pale horn-color, imperforate; spire attenuated; sutures impressed; whorls six, slightly convex; aperture narrow-elliptical. Diameter, .26; length, .70 of an inch."—Lea.

This variety of *L. reflexa* has been taken by F. C. Baker near Roby, Lake County, Indiana.

29. **LIMNÆA PALUSTRIS MICHIGANENSIS** Walker. Plate I, Fig. 12.

"This form of *L. palustris* is characterized by the aperture being about one-half the total length, the outer lip is thickened within by a bluish white callus edged with brownish black; this shows as a white longitudinal band on the outside of the shell; spire acute, sutures impressed. Length, 17 mm.; width, 7 mm.; aperture length, 8.50 mm.; width, 4 mm."—Baker.

Occurs in numbers near Calumet Lake, Lake County, and Tippecanoe and Turkey lakes, Kosciusko County. Found in small streams
and rivers, ponds and lakes, attached to floating sticks and submerged water plants; often in low ground after the water has receded.

30. *Limpnea caperata umbilicata* Adams. Plate I, Fig. 13.

"Ovate, solid, translucent; color yellowish or brownish horn; surface shining, growth lines fine and numerous; shell encircled by raised spiral lines; whorls five, very convex, the last whorl inflated, occupying from one-half to three-fifths of the total length of the shell; spire short, obtuse; conic, sutures much impressed; aperture roundly ovate, one-half to three-fifths the length of the shell, the terminations rounded; peristome thin, sharp, thickened inside by a reddish deposit; columella strong, reflected over the narrowly open umbilicus; columella with a small fold. Length, 6 mm.; width, 4 mm.; aperture length, 3.50 mm.; width 2 mm."—Baker.

This variety has been taken by Baker in a swale near Liverpool, Lake County, Indiana. He states that "*umbilicata* is doubtless a form of *caperata*, but seems distinct enough to constitute a separate variety characterized by a short spire and swollen whorls."

31. *Limpnea catascopium* Say. Plate I, Fig. 14.

"Rather solid, ovate, inflated; color light horn to blackish; surface dull to shining, lines of growth numerous, fine, crowded, wavy, crossed by numerous impressed spiral lines; apex small, rounded, chestnut colored; whorls five, rounded, subinflated, the last large and somewhat inflated; spire sharp to obtuse, conic; sutures impressed; aperture roundly ovate, large, from half to three-fourths the length of the entire shell, rounded below; somewhat narrowed above; peristome thin, sharp, thickened by a light, whitish callus just within the edge; columella oblique, with a heavy plait across the middle; the lower part of the columella has a flexure caused by the heavy plait; the lower part of the peristome and the whole of the columella is sometimes covered with a heavy coating of white, testaceous material, which is reflected over the umbilicus, completely closing it. Length, 15 mm., width, 7.50 mm.; aperture length, 8 mm., width, 4.50 mm."—Baker.

This species ranges from New England to Utah, and British America to Virginia. In Indiana it has been taken in Calumet Lake, Lake County, by Baker, who also separated specimens from a large lot named *L. palustris* belonging to the State Museum. It has also been taken in Henry County by Pleas, and is listed by Stein as "not common."
32. *Lymnaea columella* Say. Plate I, Fig. 15.

“Ovate, somewhat pointed, thin, fragile, transparent; color light greenish or yellowish horn; surface shining, covered with rather coarse growth lines, and encircled by impressed spiral lines; whorls four, rounded, rapidly enlarging, the last one three times the size of the rest of the shell; spires sharply conic, rather short; apex small, very dark brown; sutures impressed; aperture oval, dilated, expanded at the lower part; the aperture varies from long and narrow to wide and somewhat expanded; peristome thin, acute; columella narrow, twisted; terminations of peristome connected by a thin callus; umbilicus generally closed but sometimes very narrowly perforate where the callus is not fully developed; the columella is so narrow that a view may be taken from the base nearly to the apex, as in *Succinea retusa*. Length, 16 mm.; width, 8.50 mm.; aperture length, 11.40 mm., width, 6 mm.”—Baker.

Ranges from New England to Iowa and from Canada to Georgia. It occurs in small ponds and bays of lakes where the water is more or less stagnant and where water-lilies are abundant. In Indiana it has been taken at Bass Lake, Starke County, and in Grassy Creek, Kosciusko County.

33. *Lymnaea woodruffi* Baker. Plate I, Fig. 16.

“Ventricose, very much inflated, solid; color, greenish-horn or olivaceous; surface shining, growth lines distinct; rough in some specimens, crossed by numerous fine impressed spiral lines; apex small, rounded, light horn-colored; whorls three to four, rounded, inflated, the last occupying nearly the whole of the shell; spire depressed; sutures impressed; aperture very large, roundly ovate, occupying about four-fifths of the length of the entire shell, roundly shouldered at the upper part; peristome thin, sharp; columella thickened, spreading, with a plait or fold in the middle; the lower part of the aperture is expanded, the columella callus, making a ridge which is reflected over the umbilical region; umbilicus open, deep. Length, 11.50 mm., width, 8 mm.; aperture length, 8 mm., width, 4.75 mm.”—Baker.

This mollusk occurs in abundance along the lower end of Lake Michigan, having been taken in numbers opposite Pine, Millers and Michigan City. It inhabits rather deep water. Its principal distinguishing characters “are its very short spire, rapidly increasing and swollen whorls, and its roundly oval aperture with its broad shoulder at the upper part.”
34. **Planorbis hirsutus** Gould.

"Shell small, somewhat transparent, of a brownish yellow color; both sides concave, the left rather more than the right, but the concavity is there more limited by the presence of a sub-angular ridge on the outer whorl; whorls three, the outer one rapidly increasing; surface exhibiting traces of revolving lines when denuded, but usually covered with a dark pigment or epidermis, bristling with rigid hairs which are arranged in close revolving lines; lines of growth very faint; aperture sub-oval, oblique, its diameter from side to side shorter than in the opposite direction; its plane very oblique. Long diameter, one-fifth inch, short diameter, one-fifteenth inch."—W. G. Binney.

This little fresh water univalve occurs in a number of the lakes of the northern third of the State and in their outlets; especially those which contain much aquatic vegetation. It is found attached to immersed stems and leaves of pond-weed (Potamogeton), water-lilies, cat-tails, etc. It is especially common in Grassy Creek, which connects Tippecanoe and the Barbee lakes, Kosciusko County.

35. **Planorbis umbilicatellus** Cockerell.

"Shell somewhat flat above, but slightly sunk in the center, convex below, grayish white, somewhat glossy, closely and distinctly striate in the line of growth, with stronger ridges at intervals, most visible on the under side. Periphery rounded, but slightly compressed at each side. Suture rather deep. Aperture oblique and somewhat cardiform. Umbilicus deep and narrowly funnel-shaped. Whorls four and a half, compact, gradually increasing in size and faintly keeled or angulated on upper side. Diameter, 6.5 mm.; height, 2 mm."—Cockerell.

This little mollusk occurs with the above on aquatic vegetation. In Indiana it has as yet been taken only in Tippecanoe Lake. The specimens were identified by Sterki. It will probably be found in most, if not all, of the lakes of the State, its small size having caused it to be overlooked in the past.

36. **Segmentina armigera** (Say).

"Dextral, flat, somewhat carinated above and below the periphery; color pearl white to reddish brown, sometimes black; surface smooth, shining, lines of growth very fine, oblique; apex sunken below the level of the whorls, very small and rounded; whorls four, regularly and
slowly increasing, obtusely carinated above and below the rounded periphery; spire concave, exhibiting all the whorls; sutures impressed; base of shell rounded; umbilicus round, deep, rather wide, concave, showing nearly all the volutions; aperture sub-ovate, a trifle oblique, armed with five teeth, one on the parietal wall long, thin, S-shaped, extending in an oblique direction from a point near the upper carination of the body-whorl to a point near the lower carination; three on the peripheral wall, the two upper ones being prominent, short, thick and triangular, and the lower one more or less lamelliform and situated on the base of the aperture, and one small conic tooth near the superior junction of the peristome with the body-wall; peristome thin, acute, slightly thickened inside, the superior margin a trifle produced; interior of aperture pearly white, with a band of reddish just within the aperture extending parallel to the edge of the aperture. In some specimens there is a sixth tooth, small, acute, elevated, just below the large one on the parietal wall; this, however, is not always developed. Length, 2.75 mm., width, 6 mm.; aperture length, 2.25 mm., width, 1.50 mm.”—Baker.

A common mollusk throughout the State; in the southern part occupying the smaller streams and swamps, especially those of the Wabash Valley; while in the northern part it is found in the swamps bordering the lakes. It is usually found clinging to submerged sticks, stones and aquatic plants. In Carr’s Slough, White County, it has been taken by thousands.

Family ANCYLIDÆ.

37. ANCYLUS RIVULARIS Say.

“Small, depressed conic, fragile, sides nearly parallel, a trifle round but narrowed posteriorly; anterior slope long, convex, with a decided ‘hump’ toward the apex; posterior slope short, concave; sides convex; apex prominent, elevated, obtuse, directed posteriorly and a little to the right side; the apex divides the shell into about three equal parts, one posterior and two anterior; aperture as large as the shell, narrowed posteriorly; peristome entire, simple, acute; color light horn; interior of aperture whitish. Length, 3 mm., width, 2 mm.; height, 1.25 mm.”—Baker.

“This small but distinct species may be known by its almost
straight lateral outline and its apex, which is directed posteriorly and to the right side. It is quite abundant, but is almost always overlooked owing to its peculiar shape and inconspicuous habitat. The animal is very slow in movement and progresses similarly to Planorbis; it is able to turn its body half way around without moving its shell. The buccal organs can be plainly seen while the animal is feeding.”

In Indiana rivularis has been taken in the sloughs near Millers, Lake County, by F. M. Woodruff, and in Bass Lake, Starke County, by L. E. Daniels. It is found on decaying aquatic vegetation.

38. Ancylus parallelus Haldeman.

“Shell pale, thin, and delicate; lengthened, sides subrectilinear, diverging slightly forwards; apex rather sharp, conspicuous, with two-fifths of the shell posterior to it. Dimensions—Length, 0.25, width, 0.15, height, 0.08 inch.”—Adams.

Occurs in numbers in Bass Lake, Starke County, usually on submerged decaying stems of the water-lily.


“Elevated, thin, transparent, horn-colored, with a yellowish brown epidermis; aperture ovate, conspicuously wider anteriorly, in many (especially young) specimens slightly reniform by a barely perceptible in-curving of the right margin, the anterior, left and posterior margins regularly rounded, the right slightly in-curved, straight, or but slightly convex; apex somewhat acute, elevated, strongly deflected posteriorly and to the right, and curved downward, in most specimens quite overhanging the posterior right margin of the shell; the apical portion of the shell (one-half or more) is strongly laterally, or rather, obliquely, compressed, a character which makes the young appear proportionally much narrower than the adults; the anterior slope of the shell is long and strongly convex, the posterior being short and concave. The surface is marked by fine lines of growth. Length, 3.10 mm.; width, 1.70 mm.; height, 1.10 mm.”—Shimek.

Known by its very oblique shell, the apex in some individuals, fairly overhanging the margin. Found with the preceding in Bass Lake. Has also been taken at Rock Island and near Joliet, Illinois. It and other species of Ancylus were determined by Dr. Sterki.
40. **Ancylus fuscus** Adams.

"Shell thin, transparent without the epidermis, not much elevated, elliptical moderately curved at the sides; epidermis brown, visible through the shell, giving it the appearance of having the same color, thick, rough, slightly extending beyond the margin of the shell; apex obtuse, moderately prominent, scarcely behind the middle, inclining to the right so as to have only two-fifths of the width on that side. Length, .31 inch; width, .22 inch; height, .05 inch."—W. G. Binney.

Easily distinguished by its epidermis. Allied to *A. rivularis* Say, but the latter is much more narrow, with its sides straight and its apex more acute. Taken only in Grassy Creek, between Barbee and Tippecanoe lakes, Kosciusko County. Known heretofore from Massachusetts and Ohio.

41. **Ancylus diaphanus** Haldeman.

"Shell thin in texture, diaphanous, very wide, nearly circular, depressed; apex obtuse, almost central! Slope scarcely convex. Color very pale olivaceous, translucent, aperture white. Distinguished by its circular and flattened form, and central inconspicuous apex. Length, 5.5 mm.; width, 4.5 mm.; height, 2 mm."—Haldeman.

Specimens in the State Museum marked "Indiana." Recorded heretofore from Ohio and Wisconsin.

Family **Physidae**.

42. **Physa sayi** Tappan. Plate I, Fig. 17.

"Sinistral, polished, ovate, whorls five to five and one-half; spire elevated, very acute, the whorls moderately convex; color light horn to light chestnut; sculpture consisting of rather coarse growth lines, crossed by numerous fine, impressed spiral lines, giving the surface of the shell a wavy appearance, as figured for *P. gyrina*; sutures slightly impressed, bordered as in *heterostropha*; protoconch consisting of one and one-half smooth, glossy whorls of a dark chestnut color; aperture very large, long oval, three-fourths to four-fifths the length of the whole shell; peristome thin, generally not very much thickened within, whitish, sometimes bordered with reddish; columella slightly twisted and covered with a spreading callus; the lower part of the aperture is somewhat produced. Length, 19 mm.; width, 12 mm.; aperture length, 14 mm.; width, 6 mm."—Baker.
Resembles *P. ancillaria* Say, but that form is more inflated, has the outer lip more spreading and the body whorl more swollen; the spire being always much shorter and the whorls more convex than in *sayi*. This mollusk occurs in ponds, slow-flowing streams and lakes, where it may be found adhering to immersed vegetation or crawling over the muddy bottoms. In Indiana it has been taken in Turkey and Tippecanoe lakes, Kosciusko County, being rather common in the latter. It was originally described from Lake Pipin, Portage County, Ohio.

43. **Physa rhomboidea** Crandall.

“Shell rhomboid-ovate, large, heavy, robust, yellowish horn-color to pale yellowish brown, texture fine, surface undulating and shining when not covered with a dark coating, spire elevated, acute with dark brown tip, whorls five convex, sutures much impressed, aperture ovate, lip simple, not expanded, sometimes a little compressed, thickened on inner margin with reddish-brown callus, columella well covered with heavy deposit continuing and extending from the lip. On many of them the columella is folded so as to form a narrow umbilicus.

“It is distinguished by its robust appearance, deep sutures, constricted aperture and umbilicus which will be found in a large part of them. It is more like *P. solida* Philippi than any other species. Length, 16 mm.; diameter, 9 mm.”—Crandall.

A southern form, before recorded from Missouri, Arkansas and New Mexico. Taken in Indiana only in the cypress swamp, Knox County.

44. **Physa gyrina elliptica** Lea. Plate I, Fig. 18.

“Differing from typical *gyrina* in being more elliptical, having a shorter, more rounded spire, and hence more convex whorls, the spire, as described by Tryon, ‘with the outline not elevated above a continuation of the general curve of the body.’ The shell is also more solid and the outer lip thicker, with a very heavy, bluish-white callus. The surface sculpture is the same as in *gyrina*. Length, 12 mm., width, 7.50 mm.; aperture length, 9 mm., width, 3.75 mm.”—Baker.

This form has been taken in Indiana only in the cypress swamp, Knox County.
46. **Physa integra** Haldeman. Plate I, Fig. 19.

"Oval, whorls four and one-half to five; spire short, pointed, the whorls convex; sutures well marked, sometimes bordered by a faint white line; color varying from light yellowish-horn to pale brown; sculpture as in **gyrina**, the lines being very deep and the wrinkled ridges very convex; protoconch consisting of one and one-half smooth, rounded, wine-colored whorls; aperture oval, rather wide, produced at the anterior end, about two-thirds the length of the entire shell; peristome thin, thickened within the aperture by a heavy white or yellowish-white callus, which shows through the shell very plainly; it is never bordered by a color stripe; the callus of two or three former peristomes may always be seen on the body whorl and sometimes one or two on the spire; columella broad, flat, white, a callus spreading over the parietal wall. Length, 12 mm., width, 8 mm.; aperture length, 7.50 mm., width, 3 mm."—Baker.

Quite common in Lake Michigan, near Michigan City; also in a large spring near Wyandotte, Crawford County. Baker says that in his experience "it is more common than **sayi** but less so than **gyrina**."

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46. **Lithasia obovata biconica** Pilsbry MS.

"The adult shell is more lengthened than **obovata**, and more or less biconic, rapidly tapering toward both ends from the middle, which, while not angular, is prominent; the penultimate whorl decidedly higher than in **obovata**, and the aperture is distinctly shorter in shells of the same size. The last whorl slopes steeply below the suture, and is not swollen there. Length, 16; diameter, 10.5; length of aperture, 10 mm. (truncate adult). Length, 17.5; diameter, 12; length of aperture, 11.2 mm. (truncate adult). Length, 19; diameter, 10; length of aperture, 10.2 mm. (truncate adult). Length, 18.5; diameter, 9.5; length of aperture, 10 mm. (truncate adult).

"Wabash River in Gibson County, Indiana, at the Southern Railroad bridge abutment opposite Mt. Carmel, Illinois.

"The adult of **L. obovata** is bluntly oval in outline; the penultimate whorl is short, and the last whorl is puffed out below the suture, as in Fig. 23, representing a shell from the Ohio River at Louisville.

"None of the numerous synonyms of **L. obovata** seem to have been based upon this biconic form, which seems sufficiently distinct to
require a name to signalize its deviation from the type. I may mention that Mr. Bryant Walker has examined the specimens and regards them distinct from obovata, though related to that species.”—Pilsbry.

Fig. 23. Lithasia obovata biconica Pilsbry MS. a, Lithasia obovata biconica; b, Lithasia obovata.

47. PLEUROCERA ALVEARE (Conrad).

“Shell short conical, ventricose; whorls flattened, with a line of wide compressed tubercles at the base of the penultimate whorl; body whorl angulated; angle armed with prominent tubercles; base hardly convex, with about five prominent lines; aperture obliquely elliptical; less than half the length of the shell. The spire is very regularly conical, and the base strongly ribbed.”—Conrad.

A number of specimens are in the State Museum, labeled “Indiana.” Mr. Daniels has taken it in the Wabash River, in Gibson County, opposite Mt. Carmel, Illinois.

48. GONIOBASIS LOUISVILLENSIS Lea.

“Shell smooth, fusiform, dark horn-color, without bands; spire short; sutures regularly impressed; whorls about five, somewhat convex; aperture, rather large, long elliptical, white within; outer lip acute, slightly sinuous; columella white, thickened above and twisted. Operculum ovate, reddish-brown, rather thin, with the polar point on the left, near the base. Diameter, .25; length, .56 of an inch.

“This shell is somewhat like G. depygis Say, from the same locality; but is much shorter in the spire and has a differently formed aperture.”—Lea.

G. louisvillensis is quite common at the Falls of the Ohio, just above New Albany, on the Indiana side, from which locality it was
originally described. Specimens taken by Dr. J. H. Lemon and presented to the State Museum, were identified by Bryant Walker.

49. **Goniobasis gracilior** (Anthony).

"Shell conical, smooth and shining, color dark brown, texture light; whorls about eight, upper ones nearly flat, the last is usually slightly constricted beneath the suture, and beneath this stricture on the periphery of the last whorl revolve one or two broad bands of yellowish-green; sutures impressed, and of a paler color than the rest of the shell; aperture small, pyriform, and inwardly ornamented with alternate bands of a dark ruby color and translucent white, which render this part of the shell peculiarly lively and beautiful; outer lip sinuate; columella dark brown, arcuate, and produced into a distinct sinus. Diameter, 7 mm., length, 19 mm.; length of aperture, 6 mm., width, 5 mm.

"This is a very distinct and beautiful species, remarkable for its long, slender form, its polished surface, and for a profound stricture on the body-whorl of many of the specimens, though this last character is not always present; when it is present it furnishes a mark by which this species can be readily distinguished from any other."—Anthony.

A common species in Lake Wawasee, Kosciusko County, and Lake Manitou, Fulton County, occurring on the bottom close to shore in water a foot or two in depth. Originally described from lakes in Starke County, Ohio.

50. **Goniobasis brevispira** Anthony.

"Shell small, elongate, ovate, truncate, rather solid, plain, shining, brownish-green, paler at the sutures; whorls 4–5, convex, somewhat declining at the sutures; aperture ovate; lip dilated before, sinuated behind. Length, 3 mm.; width, 7.5 mm."—Anthony.

Taken in numbers from a large spring near Wyan- dotte, Crawford County, and in the Tippecanoe River, in Carroll County. Occurs probably in many of the clearer, rapid flowing streams of the State.

51. **Goniobasis indianensis** Pilsbry, MS.

"Shell similar in form to *G. semicarinala* (Say), and of the light dirty horn-color and somewhat transparent texture prevalent in that
species. Sculpture consisting of one prominent keel above the suture, with two or three acute threads between it and the suture above. This sculpture becomes obsolete on the later whorls, and in adult shells is very faint or not visible on the last whorl, which is well rounded. In immature shells the major keel is peripheral on the last whorl, and there are several minor ones below it. In some individuals the smooth stage supervenes at an earlier age than in others, and the sculpture of keel and threads may then be lost by erosion when the full size of the shell is attained. Adults measure, length, 15 mm.; diameter, 6.3 to 7 mm.

"Blue River, Wyandotte, Crawford County, Indiana.

"This form is intermediate between G. semicarinata (Say) and G. porrecta (Lea). It differs from the former in the plurality of spiral keels and their greater prominence and longer persistence, while in porrecta the spiral sculpture is much better developed and ordinarily persists to the adult stage."
—Pilsbry.

Mr. Daniels found this form quite common about the old mill dam near Wyandotte Cave. It was clinging to the stones in the swift running water below the dam.

Family AMNICOLIDÆ.

52. BYTHINIA TENTACULATA L. Plate I, Fig. 20.

"Globose, rather thick, transparent to opaque; color ranging from yellowish to greenish, sometimes brownish; surface shining, smooth, lines of growth very fine; sutures very deeply impressed; whorls five, convex, the last rapidly enlarging and equaling all the others combined; spire elevated, broadly conic; apex small, round, reddish brown; aperture broadly rounded-ovate, narrowed above; peristome thin, rounded, simple, continuous, thickened a little on the inside, bordered all around with yellowish; base of shell rounded, imperforate. Length, 9.50 mm., width, 6 mm.; aperture length, 4.50 mm., width, 3 mm.

"May be easily distinguished by the size of the last whorl, which more than equals in length that of all the rest.
The species was introduced into this country many years ago and is now found from Vermont and New York to Wisconsin. It is particularly abundant in Lake Michigan. While in motion, the animal of *Bythinia* is rather slow, the tentacles move about nervously and the rostrum is thrust out to its fullest extent. Thus far it has been collected only in Lake Michigan.”—Baker.

Taken in numbers opposite Michigan City, Millers and Pine. Occurs on the bottom of the lake attached to sticks, stones and other submerged objects.

53. **Amnicola lustrica** Pilsbry.

“Narrow (for the genus), thin, translucent; color waxy, light brownish or greenish; surface smooth and shining, lines of growth very fine, but distinct when viewed with a lens; sutures very deeply impressed; spire elevated, conical; whorls five, rounded, regularly increasing in size; aperture roundly ovate, slightly angled above, waxy inside; peristome continuous, thin, appressed to the body whorl only for a short distance near the upper terminations; base broadly rounded, with a narrow and deep umbilicus. Operculum similar to that of *A. limosa*. Length, 4 mm., width, 2 mm.; aperture length, 1.50 mm., width, 1.10 mm.”—Baker.

Ranges from New York to Illinois and Massachusetts. Taken at Berry Lake, Lake County, by Baker, and Wawasee and Tippecanoe lakes by Daniels.

54. **Amnicola walkerii** Pilsbry.

“Thin, narrowly umbilicate, conic, shaped like *Lyogyrus brownii* Carpenter; slightly yellowish corneous; thin, smooth, with faint growth-lines. Whorls four, very convex, separated by deeply constricting sutures, the last whorl rounded below; apex obtuse. Aperture oblique, rather small, mainly basal, a little longer than wide, but nearly circular, the inner margin a trifle straightened above; peristome continuous, in contact with the preceding whorl for an extremely short distance above. Operculum amnicoloid. Height, 3 mm., diameter, 2 mm.; length of aperture, 1 ¼ mm., width, 1 ¼ mm.”—Baker.

Originally described from High Island Harbor, Lake Michigan. Since taken at Grand Rapids, Michigan, and Joliet, Illinois. A number were found in Grassy Creek, Kosciusko County, by Daniels.
55. **Amnicola emarginata** Kuster.

“Small, globose, rather solid; color, different shades of green; surface smooth, polished, lines of growth very faint; sutures well marked; apex very obtuse; comprising one and one-half whorls; when viewed from the front the shell appears to have a truncated spire; spire very broadly truncate-conic; whorls four to four and one-half, very convex; aperture nearly round, appressed to the body whorl; peristome continuous, rather thick, simple; base rounded, with a small umbilicus. Length, 4 mm., width, 2 mm.; aperture length, 1.50 mm., width, 1.10 mm.

“This species at first sight might be taken for *A. lustrica*, but the spire is very obtuse, while that of *lustrica* is acute, and the last whorl is appressed to the body-whorl, at the aperture in *obtusa*, while in *lustrica* it is entirely free.”—Baker.

Range from New York west to Iowa and Winnipeg, Canada, south to Kentucky. Taken in Indiana only in beach drift along Lake Michigan opposite Millers, Lake County, by Baker.

56. **Paludestrina nickliniana** Lea.

“Elongately ovate, turreted; color greenish-horn; surface shining, lines of growth numerous, crowded, raised so as to roughen the surface of the shell; sutures deeply impressed; whorls four to four and one-half, very convex; spire elevated, rather sharply conical; apex small, round, almost concealed in the volution of the second whorl; aperture roundly ovate; peristome sharp, a little thickened on the inside, continuous, the columnellar lip being covered with a raised callus which connects the terminations; base of shell rounded; umbilical region rimate and indented. Length, 4.25 mm., width, 2 mm.; aperture length, 1.25 mm., width, 1 mm.

“Nickliniana is a common little species, easily recognized by its narrow, turreted shell and well rounded whorls. The animals are gregarious, congregating together by hundreds. Frequently a piece of water-cress will be found literally black with the shells of this species.”—Baker.

Berry Lake, Lake County, by Baker.
Family VALVATIDÆ.

57. VALVATA SINCERA Say. Plate I, Fig. 21.

"Depressed, more or less discoidal, rather solid; color brownish, transparent to opaque; surface shining, lines of growth numerous, regular, crowded, sometimes encircled by a few spiral lines; apex large, round, almost concealed in the succeeding whorls; spire very flat, almost discoidal; whorls three and one-half, rounded, rapidly increasing, the last considerably deflected; sutures impressed; aperture round, continuous, whitish or brownish inside; peristome rather thick, simple, continuous, the columellar portion being simply pressed against the body whorl; base rounded, umbilicus round, deep, exhibiting all the volutions. Length, 2.25 mm., width, 6 mm.; aperture length, 2.10 mm., width, 2.10 mm.

"This is a very common species, easily distinguished by its discoidal form and rounded whorls. Like the Limnæids, it delights to float on the surface of the water, shell downwards. It is very active, and not at all timid in captivity."—Baker.

Occurs in numbers in the beach drift along the south shore of Lake Michigan, opposite Michigan City, Millers and Pine.

58. VALVATA BICARINATA Lea.

"Depressed, solid, orbicular; horn-colored above and whitish beneath; surface shining, lines of growth distinct; apex large, horn-colored; spire much depressed, flattened; whorls three and one-half to four, rapidly increasing; the carinae are normally two in number, but a third is frequently developed; one carina encircles the shoulders of the whorls and one the middle of the base, the periphery being sharply rounded; sutures pronounced; aperture rounded, angled more or less by the carinae, continuous as in tricarinata; base keeled; umbilicus widely opened. Length, 3.50 mm., width, 5 mm.; aperture length, 2 mm., width, 2 mm.

Bicarinata should be considered a distinct species from tricarinata, since the shells of the two forms are always distinguishable, tricarinata being elevated, the width equaling the height, while bicarinata is depressed and the height is four-fifths of the width. The former is normally tricarinata while the latter is bicarinata, although both bi- and tricarinate forms occur in both species. In tricarinata the upper surface slopes upwards from the carina to the suture, while in bicarinata it slopes downwards, giving the upper surface a concave appearance."—Baker.
MOLLUSCA KNOWN TO OCCUR IN INDIANA.

Occurs in Lake Michigan, along the borders of Lake, Porter and Laporte counties. The form *normalis* Baker has been taken opposite Millers, Lake County. It "differs from *bicarinata* in being tricarinate, the middle carina very strong and placed on the periphery."

Family VIVIPARIDÆ.

59. CAMPELOMA OBESA Lewis.

"Obesely-ovate, very ventricose; whorls five, convex, spire short-conic, sutures well impressed, aperture ovate. Dark olivaceous, bluish-white within the aperture. Length, 32 mm.; diameter, 20 mm.

"This species much resembles a half-grown *ponderosa*, but is more regularly oval in its outline and of lighter texture. It is regularly distinguished by its very ventricose, rounded form and dark olive green color."—Lewis.

This species occurs abundantly in the canal and White River, near Indianapolis. Specimens identified by Bryant Walker.

Family SPHÆRIIDÆ.

60. SPHÆRIUM VERMONTANUM Prime.

"Shell very oblique, tumid, inequilaterial, full; anterior margin abrupt, posterior drawn out to an angle, basal slightly curved; beaks large, full, prominent, placed very much toward the anterior, in which direction they are slightly inclined; sulcations coarse, moderately regular; epidermis light green; ligament conspicuous; valves solid, interior light blue; hinge-margin much curved, broad; cardinal teeth strong, representing the letter V reversed; lateral teeth elongated, strong. Length .56; width, .37; diameter, .25 inches."—Prime.

Collected by Baker in Lake Michigan, opposite Millers, Lake County.

61. SPHÆRIUM SIMILE Say. Plate II, Fig. 1.

"Large, inflated, rather solid, almost equilateral, transversely oval; umbones depressed, inflated, placed a trifle anterior to the center of the shell, marked by heavy ridges, but not so coarse as in *stamineum*;
dorsal margin very nearly straight, ventral border broadly curved; anterior and posterior margins almost equal, the posterior a little longer than the anterior, the two margins rounded; umbonal slopes rounded; surface shining, growth lines coarse; color dark brown, sometimes with a reddish tinge; ligament weak, very dark horn or black; cardinal teeth small, a single, long, stout, elevated, arched tooth in the right valve, and two stout, elevated teeth in the left valve, the upper tooth being short and curved and the lower tooth long and almost straight; lateral teeth double in the right and single in the left valve, short, elevated, lamellar, nearly straight; muscle scars and pallial line faintly impressed; nacre bluish; cavity of the beaks shallow. Length, 16.50 mm.; height, 11.75 mm.; breadth, 9 mm.

“The hinge teeth are arranged very peculiarly in this species, the laterals being in a direct line with the cardinals, and not at right angles to them, as in the previous species. It is one of the largest of the genus and distinguished from the related species by its transversely oval outline, its peculiarly placed teeth, and its umbonal marking, which is intermediate between solidulum and stamineum. The umbones are also placed very near the center of the shell.”—Baker.

Common in Lake Wawasee, Kosciusko County. Occurs also in Lake Maxinkuckee, and in the Wabash River near New Harmony, Posey County.

62. SPHERIUM FABALI Prime. Plate II, Fig. 2.

“Of good size, transversely oval, somewhat compressed, almost equilateral, thin and fragile to quite solid; anterior and posterior margins rounded; ventral margin curved; dorsal margin slightly curved; umbones depressed, almost flush with the hinge line, placed near the center of the shell and quite heavily marked and regular; umbonal slopes gently rounded; surface smooth and shining in young or half grown specimens but dull in old examples; lines of growth typically very coarse and distinct, but finer in some specimens; color light green, yellowish or blackish, the latter a marked character in old specimens; ligament weak, color varying with the shell; cardinal teeth small, those in the left valve unequal, one placed near the dorsal margin and extending from the latter to a point midway between the dorsal and ventral margins of the hinge plate, and one placed near the ventral margin of the hinge plate; the dorsal tooth is nearly straight while the ventral tooth is very arcuate; in the
right valve there is a single, large, arched tooth which extends from
the center to the ventral border of the hinge plate, it is large at
either end and small in the middle; lateral teeth double in the right
and single in the left valve, rather small, elevated, pyramidal, slight-
ly curved; hinge line rather solid; muscle scars indistinct; cavity of
the beaks shallow; anterior bluish. Length, 11 mm., height, 9 mm.;
breadth, 5.50 mm.”—Baker.

Taken by Baker at Millers, Lake County, of which locality he
writes: “This interesting region, at the extreme southern end of
Lake Michigan, is said by Professor Garriott to be the most wind-
swept locality in the Chicago area. This fact accounts for the enor-
mous quantity of sea wrack which lines the shore at this point and
which is not to be found in such profusion anywhere else along the
shore. This sea wrack has proven prolific collecting ground for
molluscan life.”

Also taken by Daniels opposite Michigan City and in the Wabash
River at New Harmony, Posey County.

63. **Sphærium occidentale** Prime. Plate II, Fig. 3.

“Small, inflated, fragile, equilateral; umbones prominent but not
much elevated, inflated, placed centrally, marked by very fine lines;
dorsal and ventral margins rounded; anterior and posterior margins
rounded; umbonal slopes rounded; surface shining, marked by very
fine lines of growth; color light horn, sometimes darker; ligament
as usual; cardinal teeth small, a single, elevated, lamellar, curved
tooth in the right valve, the posterior curve of which is longer than
the anterior and is club shaped, and two teeth in the left valve, that
near the ventral border of the hinge plate being elevated and pyra-
midal, that on the dorsal border being long, lamellar, depressed, and
curved, as in the preceding species; lateral teeth short, elevated,
curved, single in the left and double in the right valve; muscle scars
scarcely discernible; cavity of the beaks shallow; nacre light purplish
or bluish. Length, 7.50 mm.; height, 7 mm.; breadth, 4.50 mm.

“This species is distinguished by its oval outline, which is more
regular than that of any other Sphærium found in Indiana. It is
very common, and when found at all is usually represented by hun-
dreds of individuals.”—Baker.

Taken by Mr. Daniels in the Kankakee River, at Shelby and River-
side; in Tippecanoe Lake, Kosciusko County, and in the cypress
swamps of Knox County.
64. Sphærium Flavum Prime.

"Shell transversely rounded, compressed, equilateral, delicate, margins generally rounded, the posterior a little distended; beaks central, not full, more or less depressed; valves very slight, interior whitish; sulcations pretty deep, regular; epidermis light, of a greenish-yellow color; cardinal teeth small, in the shape of the letter V reversed; lateral teeth elongated. Length, 0.43; height, 0.31; diameter, 0.18 inches.

"This is a very slight and delicate species, quite distinct from any others."—Prime.

Known heretofore from Lake Superior, near Sault Ste. Marie. Taken by Daniels in Lake Wawasee, Kosciusko County, and from the beach of Lake Michigan, near Pine and Millers, Lake County. Identified by Sterki.

65. Calyculina Truncata Linsley. Plate II, Fig. 4.

"Very fragile, small, inflated, almost equilateral, rhombic-ovate, translucent; umbones prominent, elevated, full, calyculate, approximating, placed centrally, smooth and shining; dorsal margin straight; ventral margin broadly rounded; anterior margin rounded; posterior margin sharply truncated, rounded on the ventral part; umbonal slopes rounded; surface smooth and shining, lines of growth very fine; color light yellowish green or greenish horn with a zone of yellow bordering the ventral margin of the valve; ligament weak, light horn-color; cardinal teeth small, a single, elevated, lamellar, arched tooth in the right valve, and two teeth in the left valve, the ventral tooth pyramidal, elevated, the dorsal tooth long, lamellar, curved and elevated; lateral teeth long, lamellar, elevated, straight, one in the left valve and two in the right valve; muscle scars scarcely visible; cavity of the beaks shallow; nacre light bluish with a yellow zone on the ventral border. Length, 9.25 mm., height, 7.50 mm., width, 5 mm.

"This species is very like S. transversa, but is shorter in comparison, with its height, is rhombic in form and the beaks are placed centrally. The two species belong to a natural group of which transversa is the leading form."—Baker.

Ranges from New England west to Illinois and Wisconsin and south to Kentucky.

Occurs in lakes Wawasee and Tippecanoe, Kosciusko County, and in the cypress swamps of Knox County.
66. Calyculina securis Prime. Plate II, Fig. 5.

“Small, fragile, but stouter than the two previous species, inflated, inequilateral, rhombic-orbicular; umbones elevated, full, much inflated, calyculate, approximate, placed a trifle anteriorly; marked by very fine lines of growth; dorsal margin arched; ventral margin rounded; anterior margin rounded, posterior truncated; umbonal slopes rounded, sub-angulate posteriorly; surface shining, lines of growth very faint; color varying from bright yellow to greenish horn, sometimes very dark horn; ligament as usual; cardinal teeth very small, a single, long, elevated, lamellar, arched tooth in the right valve, which has a large pyramidal projection near the anterior end giving the hinge the appearance of a double tooth, and two teeth in the left valve, one near the ventral margin of the hinge plate, elevated, pyramidal, and one near the dorsal border, lamellar, depressed, curved, extending diagonally toward the ventral border; lateral teeth long, lamellar, elevated, slightly curved, one in the left valve and two in the right; muscle scars faint; cavity of the beaks deep; nacre bluish white, darker near the postero-ventral portion, lighter in yellowish specimens. Length, 6 mm.; height, 5 mm.; width, 3 mm.

“A species at once distinguished by its rhombic-orbicular outline and inflated beaks and shell. It is the smallest Spharium found in Indiana, and is wider in proportion to its length than any other species.”—Baker.

Range same as preceding. Common in Grassy Creek and in Lake Wawasee, Kosciusko County.

67. Calyculina rosacea Prime.

“Shell small, rounded-oval, fragile, translucent, subequilateral, somewhat compressed, margins generally rounded; beaks nearly central, slightly inclined toward the interior, calyculate, approximate at apex; valves—very slight, a little convex in the region of the umbones; striae regular, hardly visible; epidermis shiny, reddish-brown; hinge-margin nearly straight, delicate, narrow; cardinal teeth nearly obsolete, lateral teeth slight, elongated. Length, .25; width, .18; diameter, .15 inches.”—Prime.

Common in Grassy Creek. A few specimens were also secured in Lake Wawasee.
68. **Pisidium compressum** Prime.

“Shell solid, very oblique, trigonal, triangular, subequilateral, very much drawn up in the region of the beaks, inflated in adult; anterior side a little longer, narrower, produced at the end, posterior broader, sub-truncate; beaks placed a little posteriorly, small, raised, with a wing-shaped appendage on the summits, distant; striae distinct, regular; epidermis very variable, yellow, gray or chestnut color; valves solid, varying in inflation, interior light blue; hinge thick; cardinal teeth small, robust, compressed, disposed in the shape of the letter V reversed; lateral teeth distinct, short, strong, placed at an obtuse angle with the hinge proper. Length, .16; width, .14; diameter, .09 inches.”—**Prime**.

Ranges across the continent. Occurs in Lake Wawasee and Grassy Creek, Kosciusko County; Bass Lake, Starke County, and Lake Maxinkuckee, Marshall County, from all of which localities it has been collected by Daniels.

69. **Pisidium obtusale** (Lam.?) C. Pfr.

“Mussel roundish-oval, very much inflated, under the lens extremely finely striate, near the inferior margin with a few deeper striae and generally with strong lines of “year-growth,” with a strong shell, shining, yellowish to grayish horn-colored; superior and inferior margins rather strongly curved, but each one perceptibly less curved toward the anterior; posterior margin strongly curved, anterior part not much longer, little attenuated, broadly rounded, outlines without any angles; beaks broad, prominent, near the middle of the mussel; the valves join at a right or somewhat obtuse angle at the inferior margin; hinge plate narrow, left valve with the exterior cardinal tooth very short, fine, covering half of the inner one, lateral teeth approximate to the cardinals; right valve with the cardinal tooth little curved, thickened posteriorly; animal with syphon depressed-conical, wide at the base, anteriorly* narrow, truncate. Longitude, 3.5; altitude, 2.5; diameter, 2.3 mm. Europe, north of the Alps. (**P. obtusale** is rather variable in size).—Westerland. (Translated.)

The present Indiana specimens measure: Longitude, 3.5 to 3.7; altitude, 3.2; diameter, 2.5 to 2.7 mm.”—**Sterki**.

Taken in numbers in a spring near Lake James, Steuben County.

* Evidently means “posteriorly.”
70. **Pisidium nov-eboracense** Prime.  
"Shell rounded-oval, very inequilateral, inflated, margins rounded; anterior side considerably produced, narrower; beaks situated posteriorly, large, full, prominent; valves comparatively slight, interior light blue; striae irregular; epidermis variable, generally greenish-yellow or brown; hinge-margin a little curved; hinge slight, narrow; cardinal teeth double, very small; lateral teeth elongated. Length, .35; width, .18; diameter, .13 inches. —Prime.

Collected in Lake Wawasee, Grassy Creek and Bass Lake, by Mr. Daniels. This and other species of Pisidium and Sphaerium identified by Sterki.

71. **Pisidium variabile** Prime. Plate II, Fig. 6 (enlarged).  
"Small, solid, inflated, inequilateral, oblique; umbones very much elevated; full, very prominent, placed posteriorly, smooth and polished to the naked eye but marked by fine lines when viewed with a lens; all margins rounded, the anterior being somewhat pointed or triangular and quite long, while the posterior is short and very broadly rounded; umbonal slopes rounded, the anterior subexcavated; surface shining, marked by rather heavy, regular growth lines; color varying from light yellow or straw to greenish or brownish, with a zone of light or dark color near the ventral margin; in some specimens two zones are present, while in others the zone is hardly visible; ligament small and weak; cardinal teeth small, a single long, arched tooth in the right valve, and two more or less pyramidal teeth in the left valve; the right valve tooth is constricted in the center of the arch and gradually enlarges toward the distal end of the arch, the right arm of arch being the longer and reaching nearly to the base of the hinge plate; the upper left valve tooth is somewhat gourd-shaped, beginning small at the upper margin of the hinge plate and gradually enlarging to about the center of the plate; the lower left valve tooth is large, solid and pyramidal; lateral teeth elevated above the valve edge, triangular; the entire hinge plate about the lateral teeth is enlarged, thick and heavy; cavity of the beaks deep and full; nacre bluish-white, shining. Length, 4.50 mm.; height, 4.50 mm.; breadth, 3.10 mm." —Baker.

With the last two species in the lakes and streams mentioned.

72. **Pisidium politum** Sterki.  
"Mussel of medium size, well inflated, rather high, beaks slightly posterior, rather high and prominent, not full but well rounded; scutum and scutellum slightly marked. Superior margin rather
short, rather strongly curved; inferior well curved, more so in front than behind; posterior margin distinctly truncated, with a well marked angle where joining the superior, and a less marked, rounded angle where joining the inferior margin; anterior end forming a slight but distinct angle situated rather high up. Surface very finely, irregularly striated, polished; whitish or straw colored, often leaden-grayish on the beaks, or even all over. Shell moderately thick, nacre whitish; muscular insertions not very distinct; hinge of essentially the same type as that in Pis. abditum. Length, 4.7 mm., height, 4 mm., diameter, 2.9 mm.”—Sterki.

Recorded from Ohio, Pennsylvania, Michigan, Minnesota and Illinois. Taken in numbers in Grassy Creek, Kosciusko County, by Daniels.

73. Pisidium vesiculare Sterki.

“Mussel small, ovoid, very inequipartite, somewhat oblique, strongly inflated; beaks very posterior, moderately prominent; margins all well rounded, or the scutum forming a very slight angular projection; color yellowish to brownish horn; surface slightly striated, polished, often with a few coarser lines of growth; shell thin, translucent; nacre rather glassy, colorless; hinge rather small, markedly short; cardinal teeth lamellar, the right moderately curved with its anterior end thicker; anterior left distinctly directed upward, curved, often angular; posterior, oblique, moderately curved; groove between them narrow and deep; lateral teeth situated very close to the cardinals, short, especially those in the left valve abrupt, high; ligament short. Length, 2.3 mm.; height, 1.9 mm.; diameter, 1.7 mm.”—Sterki.

One specimen taken from the stomach of a catfish (Amiurus nebulosus Raf.) from Bass Lake, Starke County.

74. Pisidium pauperculum Sterki.

“Mussel of moderate size, rather oblique, moderately to rather strongly inflated; beaks slightly posterior, moderately large and prominent, rounded; scutum and scutellum slightly marked; edges acute or acutish, not pinched; superior and inferior margins moderately curved, posterior well rounded or slightly truncated, joining the inferior without any marked angle; antero-superior margin sloping, oblique, slightly curved, meeting the inferior at an angle situated rather inferior, more distant in the adult than in younger examples; surface very finely striated, polished; color pale or yellowish to greenish-horn, sometimes whitish or straw in old specimens; shell
thin, translucent; hinge moderately strong; cardinal teeth of the right valve moderately curved, its posterior end thickened, those of the right valve lamellar, almost equal, the superior rather short, slightly oblique and little curved; lateral teeth rather strong; ligament short, thin. Length, 3.2 mm.; height, 2.7 mm.; diameter, 1.9 mm.”—Sterki.

A common species east of the Mississippi River. Occurs in numbers in Lakes Wawasee and Maxinkuckee.

75. **Pisidium scutellatum** Sterki.

“Mussel of medium size, rather high, oblique, markedly protracted downward in its anterior part, well rounded, rather strongly inflated; beaks much posterior, rather large, prominent, rounded; superior margin short, little curved, or almost straight, scutum and scutellum well marked, forming projecting angles; the other margins well curved, or the posterior very slightly truncated, anterior end well rounded, or with a slight indication of an angle; surface polished, with irregular striae and some coarse lines of growth; shell thin, transparent, of a yellowish-horn to amber color, often grayish or brownish-horn in old specimens, and whitish on the beaks; nacre glassy, inner surface microscopically rugulose; hinge fine, short, cardinal teeth lamellar, the one in the right valve moderately curved, its posterior end thicker; the inferior in the left valve curved, the superior little so or almost straight; lateral teeth very short, very abrupt, pointed, thin, little projecting into the cavity of the mussel; ligament small. Length, 4 mm.; height, 3.6 mm., diameter, 2.8 mm.”—Sterki.

Recorded heretofore from Michigan, Minnesota and Montana. Taken by Daniels in Lost Lake, Marshall County.

76. **Pisidium splendidulum** Sterki.

“Mussel small, well inflated, rather ovoid in outline, scutum and scutellum rather well marked, the former often prominent; beaks slightly posterior, somewhat prominent, moderately large, rounded; color pale to deep horn, surface polished, with very fine, somewhat irregular striae; shell thin, transparent; hinge rather fine but well formed, plate narrow; cardinal teeth longitudinal, lamellar, the right one rather long, slightly curved, most so at both ends, more or less thickened at the posterior end, and often with a groove; the two in the valve nearly
equal, parallel, little curved, the superior is anterior for about one-third of its length; lateral teeth comparatively strong, all projecting into the interior of the mussel, pointed; ligament rather long. Length, 2.8 mm.; height, 2.4 mm., diameter, 1.7 mm."—Sterki.

Common in Grassy Creek and Lake Wawasee, Kosciusko County; also taken from the stomach of a catfish captured in Bass Lake, Starke County.

77. PISIDIUM ROPERI Sterki.

"Mussel rather large, strongly inflated when mature, very little so when young; oblong to ovoid in outline, margins regularly curved, with no projecting angles (in the adult); scutum and scutellum scarcely marked; beaks moderately posterior, very broad, surface somewhat glossy, with irregular, not sharp, striae and some strongly marked lines of growth; color of the dry shell straw to yellowish-horn, often with one to several fine, concentric lines of purple; shell rather thin, nacre whitish, muscle insertions scarcely marked, hinge comparatively fine and short; cardinal teeth quite small; the right one moderately curved, slightly thickened at the posterior end; the left ones very short; the inferior slightly angular, truncated or pointed on top, the superior sometimes almost obsolete; lateral teeth short, small, scarcely projecting into the interior; ligament rather fine. Length, 5.5 mm., height, 4.4 mm., diameter, 3.8 mm."—Sterki.

Ranges from Maine to California. Taken in Grassy Creek and Tippecanoe Lake, Kosciusko County; also recorded from Danville, Indiana, by Sterki.

78. PISIDIUM MEDIANUM Sterki.

"Mussel of rather small size, elliptical in outline, much inflated, often of somewhat irregular growth; superior and inferior margins moderately curved, posterior well rounded, or with a slight angle above, anterior rounded or slightly truncated obliquely; beaks rather in the middle, slightly directed toward the posterior, rather high, prominent over the hinge margin; scutum and scutellum very slightly marked; surface with very fine, crowded striae, somewhat shining, light horn to yellowish or straw colored; shell thin, nacre colorless, muscle insertions barely perceptible; hinge fine, plate narrow; cardinal teeth lamellar, slightly curved, the right one in its posterior part somewhat thicker, simple or with a fine, longitudinal groove; lateral teeth pointed, the outer ones of the right valve comparatively large; ligament fine. Length, 3.5 mm.; height, 2.8 mm., diameter, 2.3 mm."—Sterki.

Common in Michigan and Wisconsin. A number were taken from the stomachs of catfish caught in Bass Lake, Starke County.
79. PISIDium tenuissimum Sterki.

"Rather small, little to strongly oblique, moderately to rather well inflated, with the edges usually acutish, elongated or rather short, rhomboid to oblong-ovoid in outline; hinge margin little inferior, moderately curved, posterior end rounded or sub-truncate obliquely in a postero-anterior direction with a rounded angle above; anterior more or less curved, truncate obliquely with the rounded-angular end inferiorly, or the whole anterior part rather regularly parabolic, with the end in the longitudinal median line; beaks slightly posterior, somewhat broad, moderately elevated over the hinge line, somewhat mammillar; surface very finely, almost regularly striated, highly polished; color horn to smoky, or to greenish, or to light grayish; shell very thin, translucent; hinge very fine, plate very narrow, cardinal teeth very small, short, thin, scarcely or slightly curved; those of the left valve very close together, longitudinal-parallel, the upper little posterior; lateral teeth rather long, markedly straight, slender, thin, with short cusps; also the outer ones in the right valve quite distinct; ligament fine. Length, 3.4 mm.; height, 2.8 mm.; diameter, 2.1 mm."—Sterki.

Recorded heretofore from a number of lakes in Michigan. Taken by Daniels at Bass Lake and Lake Maxinkuckee.

80. PISIDium affine Sterki.

"Rather large, well-inflated, slightly oblique, beaks somewhat posterior, large and prominent in full-grown, broad and quite low in young specimens, rounded or slightly flattened on top; superior and inferior margins moderately curved; posterior sub-truncate, with slightly marked angles above and below; supero-anterior forming one regular curve from the beaks to the anterior end, which is low situated and well-rounded; surface distinctly and somewhat irregularly striated, with some coarser lines of growth, dull or somewhat shining; color lighter or darker grayish horn to plumbeous or brownish with a few irregular darker zones corresponding with the lines of growth, and often with fine darker mottlings, usually with a broad lighter zone along the margins; the young are pale horn or straw colored; shell moderately thick, nacre whitish, muscle insertions little; hinge rather stout, plate rather broad; cardinal teeth long, not very strong, the right one curved, its free edge often indented in the middle, its posterior end somewhat thicker, with a fine groove, the left anterior tooth curved, the posterior slightly so, oblique, rather behind the anterior, each covering the other for half their lengths; lateral teeth stout, rather long, their cusps short and somewhat
pointed, the outer ones on the right valve of good size; ligament rather long and stout. Length, 6 mm.; height, 5 mm., diameter, 4 mm."—Sterki.


81. Pisidium Sargentii Sterki.

"Mussel of medium size, somewhat oblique, well inflated; beaks not much posterior, rounded or slightly flattened on top, well prominent over the hinge margin; the latter slightly curved in the adult, almost straight in the young and half-grown, with projecting, not or hardly rounded angles at the scutum and scutellum, which are slightly to well marked, narrow; posterior margin sub-truncate above, passing into the well rounded inferior with an uninterrupted curve, or with a slightly marked, rounded angle, more so in the young; supero-anterior margin little to moderately curved, sloping from the projecting angle at the scutellum to the rounded anterior end; surface regularly and rather coarsely striated, dull, rarely somewhat shining in older specimens; epiconch thin and often worn off, pale horn-colored in the young, lighter to darker grayish to brownish in older specimens, usually with a lighter zone along the margins; shell moderately thick, nacre glassy, colorless to white or bluish, muscle insertions distinct; hinge stout, plate rather broad, cardinal teeth well formed, short, the right one rather strongly curved, its posterior end thickened and grooved; the left anterior angular, stout, the posterior small, oblique; lateral teeth rather short, stout, their cusps short, pointed, the outer ones in the right valve well formed; ligament short, strong. Length, 5 mm.; height, 4.4 mm.; diameter, 3.4 mm.

"New York to Ohio, Michigan, Illinois and Minnesota, rather common in creeks, rivers and small lakes."—Sterki.

Taken from the stomachs of catfish captured in Bass Lake.

82. Pisidium Strengi Sterki.

"Mussel of moderate size, regularly inflated, rather short; beaks slightly posterior, small, narrow, approximate, somewhat projecting over the hinge margin; superior and inferior margins well curved, the supero-anterior slightly so and forming a steep slope to the somewhat angled anterior end; the posterior end sub-truncate; scutum and scutellum indistinct; angles in front of and behind the beaks slight, rounded; shell rather thin, translucent; surface very finely striate, appearing smooth, with a few fine, irregular lines of growth, and with a slight, dull gloss; color of epiconch pale horn shading
into grayish, whitish or yellowish; nacre almost glassy, muscle scars very slight; hinge fine, plate narrow; cardinal teeth small, thin; the right one curved, its posterior end deeply cleft, the left anterior curved or almost straight, the posterior short, oblique; lateral teeth small, somewhat pointed, the outer ones of the right valve quite small but distinct; ligament small. Length, 4 mm.; height, 3.7 mm.; diameter, 2.6 mm.”—Sterki.

Ranges from Michigan to New York, Ohio and Indiana, a number of the type specimens having been taken by Daniels from the stomachs of catfish caught in Bass Lake, Starke County.

Family UNIONIDÆ.

83. TRUNCILLA SAMPSONII (Lea).

“Shell smooth, oblique, inflated, very much swollen at the um­bones, emarginate behind, round before, very inequilateral; valves thick, slightly thicker before; beaks prominent, swollen, incurved, slightly undulate at the tips; epidermis yellowish, covered with green rays; cardinal teeth rather large, erect and corrugate; lateral teeth thick, short, corrugate and nearly straight; nacre silver white and slightly iridescent.”—Lea.

Call regarded this species as a variety of perplexus; but Simpson, in his “Synopsis of the Naiades,” lists it as distinct. Specimens are in the State Museum labeled “Wabash River,” and Daniels has taken it in that river at Grand Chain, Posey County.

84. LAMPSILUS OVATUS Say.

“Shell subovate, convex, not remarkably thick, horn-color, not radiated; flattened and fuscous on the anterior margin; beaks decor­ticated, placed nearer central; umbo prominent; within parlaceous; cavity of the beaks capacious; primary teeth very oblique, almost parallel to the posterior margin and much compressed. Length, three inches; breadth, four inches.”—Say.

Specimens in the State Museum marked “Ohio River” were prob­ably taken by Dr. Stein in that stream, near Mt. Vernon, Posey County. Say mentioned it as “inhabiting the Ohio River and its tributary streams.”

85. LAMPSILIS FALLACIOSUS Smith. Plate II, Fig. 7.

“Shell elongate elliptical, subsolid, inflated, rounded in front, and ending in a rather sharp point behind, at two-thirds of the height of the shell, with a moderate, rounded posterior ridge; beaks not
prominent, their sculpture consisting of a few delicate parallel ridges, somewhat doubly looped, the hinder loops generally open behind; epidermis very smooth and shining, ashy straw color, often brownish on the back of the shell, generally feebly rayed with green; female shell decidedly swollen in the postbasal region, so that the base line is often incurved in front of the swelling; teeth rather delicate, there being one compressed pseudo-cardinal and one lateral in the right valve, and two pseudo-cardinals and two laterals in the left; beak cavities not deep; nacre brilliant, silvery. Length, 90 mm.; height, 40 mm.; diameter, 32 mm.

“This species has generally been confounded with its near ally, Lampsis anodontoides Lea. It is smaller, more inflated, and in every way a more delicate form than the latter; it is not so high, the epidermis is brighter and more glossy, and generally rayed. The post-basal inflation of the female is usually more pronounced, and the posterior point is higher than in anodontoides. The latter is usually more yellow or tawny than fallaciosus, and is, on the whole, a heavier shell.” — Simpson.

Occurs in the upper Mississippi drainage; south to the Cumberland and Arkansas rivers. In Indiana it has been taken by Daniels only in the Tippecanoe River, Carroll County. Specimens in the State Museum are marked “Wabash River, Indiana.”

86. Lampsis lienosus Conrad.

“Shell elliptical, inflated, slightly furrowed or contracted from beak to base; substance of the shell thickened toward the base; posterior dorsal and posterior basal margin rounded, extremity sub-angled; beaks pointed, approximate, slightly prominent, with interrupted undulations; concentric lines prominent; epidermis dark olive, obscurely rayed, wrinkled on the margins; cardinal teeth double in both valves, slightly compressed, oblique, striated; nacre varying from bluish white to deep salmon or purple; cavity most capacious under the umbonal slope. The color of the interior is remarkably inconstant, but a purple approaching to salmon is the most prevailing tint, and the margin is bluish-white.” — Conrad.

Measurements of Indiana specimens: Length of male, 55 mm., female, 46 mm.; height, male, 31 mm., female, 26 mm.; diameter, male, 19 mm., female, 18 mm.

Common in the canal and White River at Indianapolis. Dr. Stein probably had this species in mind when he listed U. nasulus Say from the same locality, as the latter species occurs only in the St. Lawrence Drainage. Lienosus is a southern species, Marion County being the most northern point from which it has been recorded.
87. **Lampsilis nigerrimus** Lea.

"Shell smooth, elliptical, rather convex, inequilateral, rounded behind; substance of the shell rather thin; beaks small, slightly prominent, undulated at the tip; ligament rather long and thin; epidermis shining, black, striate, in the young radiate all over the disk; marks of growth rather distant; posterior slope compressed into a small carina; umbonal slope slightly raised and rounded; cardinal teeth rather large, somewhat compressed, oblique, acuminate, crenulate and double in both valves; lateral teeth long, lamellar, somewhat curved and separated from the cardinal tooth; anterior cicatrices distinct; posterior cicatrices confluent; dorsal cicatrices placed near the edge of the plate and on the cardinal tooth; cavity of the shell rather shallow; cavity of the beaks shallow and subrotund; nacre white and very iridescent. Length, 1.3; height, 2.2; diameter, .7 inches.

"All the adults, male and female, of which I have many specimens, are very black and apparently without rays, but when held up to a strong light, delicate obscure rays may be observed, particularly about the umbonal slope. In the individuals of one-third growth and less, the epidermis is dark-green and covered with rays. The female differs much in outline from the male, and is much inflated on that portion of the disk which tends to the posterior basal margin. This enlargement makes that margin obliquely truncate."—Lea.

A southern form, whose range is recorded as "Alexandria, Louisiana to Eastern Texas." Listed by Stein from the White River. Taken by Daniels in that stream, near Rockford, Jackson County, where it is common. Identified by Simpson.

88. **Lampsilis blatchleyi** Daniels*. Plate III.

"Shell long, elliptical or obovate, compressed, thin, inequilateral, slightly gaping behind; beaks low, but little inflated, pointed, with minute nodulous sculpture; dorsal and basal outlines lightly curved; anterior end somewhat narrowed, rounded; posterior end rounded and lightly and obliquely subtruncate above; surface with singular growth lines; epidermis somewhat concentrically wrinkled, projecting beyond the border of the shell, yellow green with faint green rays; pseudo-cardinals rudimentary, smooth, subcompressed; laterals straight, single in the right valve, partly double in the left; nacre brilliant, iridescent, having a somewhat coppery lustre in the cavities, becoming very thin and greenish at the edges. Length, 45 mm., height, 21 mm., diameter, 10 mm. Length, 40 mm., height, 17 mm., diameter, 8.5 mm."—Daniels.

* Nautilus, XVI, 1902, p. 13.
Wabash River, Section 32, Linn Township, Posey County, Indiana. Found only on gravel bars in swiftly running water. Fourteen specimens were collected in August, 1901. (For exact locality, see map, page 583.)

Five or six additional specimens were taken at the same place in August, 1902, the largest of which had the following dimensions: Length, 56 mm., height, 25 mm., diameter, 14 mm.

89. ANODONTA CORPULENTA Cooper.

“Shell large, inflated, thin to rather solid, slightly inequilateral, subrhomboid, rounded in front and on the base; hinge line slightly curved; dorsal wing somewhat prominent in young shells, ending in an angle behind at the obliquely truncate dorsal slope; posterior ridge rather low; umbal region very full; beaks with coarse folds which are somewhat doubly looped; surface sub-shining, with strong, irregular growth lines, olive or greenish olive, sometimes having lighter or darker bands; dorsal slope usually having two or three faint dark rays; nacre bluish or reddish. Length, 170 mm.; height, 115 mm.; diameter, 70 mm. Length, 158 mm., height, 116 mm.; diameter, 66 mm.

“Generally less elongated and having the umbal region more inflated than the varieties of A. grandis, and as a rule it is more rhomboid in outline. It is very close to A. stewartiana, but the latter is usually more elongated, is darker colored, and is normally covered with a somewhat dusky epidermis.”—Simpson MS.

Range.—Missouri River; Upper Mississippi River Drainage, east to Indiana. Common in Clear Lake, Laporte County. Identified by Simpson.

90. ANODONTA KENNICOTTI Lea.

“Shell smooth, elliptical, somewhat inflated, inequilateral, obtusely angular behind and round before; substance of the shell rather thin; beaks prominent, pointed and granular at the tips; ligament long, thin and dark brown; epidermis varying from pale yellow to dark brown, without rays, with eight or ten rather close lines of growth; umbal slope raised and rounded; posterior slope rather narrow, elliptical, slightly carinate, with two indistinct lines in each valve from the tips to the margin; anterior cicatrices confluent and very slightly impressed; posterior cicatrices confluent, large and scarcely perceptible, dorsal cicatrices placed over the center of the cavity of the beaks; cavity of the shell rather deep and wide; cavity of the beaks shallow and very obtusely angular, nacre bluish white
MOLLUSCA KNOWN TO OCCUR IN INDIANA.

and iridescent. Length, 1.2; height, 1.9; diameter, .7 inches. —Lea.

A northern species whose range, according to Simpson, is the "Upper and Middle St. Lawrence System; northwest into the McKenzie Drainage." Taken by Daniels in Lake Wawasee, Kosciusko County, where it occurs in marly deposits in shallow water.

91. QUADRULA PYRAMIDATA Lea.

"Shell sub-pyramidal, longitudinal, inequilateral, anterior part swollen recurvly from the beaks to the basal margin, compressed at posterior margin, slightly depressed anterior to umbonal slope; substance of the shell very thick in the region of the teeth and beaks, thin at posterior margin; beaks very much elevated, recurved and incurved; epidermis very dark brown and finely wrinkled; cardinal teeth large, crenate and deeply impressed in the left valve, single and emerging from a pit in the right; lateral teeth long, slightly curved, distinct from the cardinal teeth and pointing toward the basal margin; anterior cicatrices distinct, the great one forming a deep pit; posterior cicatrices distinct, the smaller one being placed at the end of the lateral tooth; dorsal cicatrices situated on the under part of the cardinal tooth; cavity of the beaks deep and angulated; nacre beautifully flesh-colored, very rarely white. Length, 2.3; height, 2.1; diameter, 1.7 inches."—Lea.

Ohio, Cumberland and Tennessee River Systems. Taken by Daniels in the Wabash at Terre Haute and Lafayette, and in the Tippecanoe River, in Carroll County.

92. QUADRULA SUBROTUNDA Lea.

"Shell suborbicular, nearly equilateral, subventricose; substance of the shell thick, somewhat thinner behind; beaks thick and elevated; ligament rather short and thick; epidermis yellow and smooth in the region of the beaks; brown and finely wrinkled towards the margin; interrupted rays pass from the beaks and are very visible over the umbones, but are lost in the wrinkles before they reach the margin; cardinal teeth thick and crenate; lateral teeth short, thick and very slightly curved; posterior and anterior cicatrices both distinct; dorsal cicatrices situated on the under side of the cardinal teeth; cavity of the beaks deep and angulated; nacre pearly white and iridescent. Length, 1.6; height, 1.6; diameter, 1.1 inches.

"This is perfectly distinct from any described species and seems peculiar in its yellow beaks and brown margin; as well as in the
beautiful interrupted rays which pass over the umbones, leaving the anterior and posterior slopes usually of a yellow color. In form it approaches *U. ebenus*.”—Lea.

Ohio, Cumberland and Tennessee River Systems; west to Arkansas and north to Wisconsin. Occurs plentifully at many different stations in the Wabash River and also in the Tippecanoe.

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EXPLANATION OF PLATES.

PLATE I.

**Fig. 1.** Polygyra monodon fraterna Say.
2. Polygyra monodon Rackett.
4. Hilea hammonis (Strom.)
5. Hilea indentata Say.
6. Zonitoides nitidus (Muller).
8. Punctum pygmaeum Drap.
10. Limnaea stagnalis appressa Say.
11. Limnaea reflexa kirtlandiana Lea.
12. Limnaea palustris michiganensis Walker.
13. Limnaea coperata umbilicata Adams.
14. Limnaea catascopium Say.
15. Limnaea columnella Say.
16. Limnaea woodruffi Baker.
17. Physa sayi Tappan.
18. Physa gyrina elliptica Lea.
19. Physa integra Haldeman.
20. Bythinia tentaculata L.

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PLATE II.

**Fig. 1.** Sphaeria similis Say.
2. Sphaeria fabae Prime.
5. Calyculina secatis Prime.
6. Pisidium variabile Prime (enlarged).
7. Lampsilis fallaciosus (Smith).

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PLATE III.

*Lampsilis blatchleyi* Daniels.
Fig. 7. *Lampsilis fallaciosus* (Smith).
Plate III.

*Lampsilis blatchleyi* Daniels.
A CHECK LIST OF INDIANA MOLLUSCA, WITH LOCALITIES.

By L. E. Daniels.

The following is a list of the Mollusca with localities which were known to occur in Indiana on January 1, 1903, 276 species in all. The nomenclature of the land shells is that of Pilsbry's catalogue, mentioned in the introduction to the preceding paper. That of the Unionidae is Simpson's "Synopsis of the Naiades, or Pearly Fresh Water Mussels," published in Vol. XXII of the Proceedings of the U. S. National Museum. Where the name used in Call's "Catalogue of the Mollusca of Indiana" differs from that of the present list, Call's name follows in italics and in parenthesis. Representatives of all but a half dozen of the species are in the State Museum.

Family HELICIDÆ.

Sub-family HELICINÆ.

1. Vallonia pulchella (Mull.).
   Indianapolis, Mitchell and Arlington; common in southeastern Indiana.

2. Vallonia costata (Mull.).
   Arlington, Marshall County.

Sub-family POLYGYRINÆ.

3. Polygyra leporina (Gld.).
   New Harmony, Posey County; North Vernon, Jennings County; Dunreith, Henry County (Pleas.); Gibson County (Stein).

   Clarksville, Floyd County.

5. Polygyra tridentata (Say). (Triodopsis tridentata Say).
   Found all over the State.
6. POLYGYRA FRAUDULENTA Pils.  (Triodopsis fallax Say).
   Not Polygyra fallax (Say), which is an eastern species, according to Pilsbry.
   Mt. Vernon, Lafayette, Laporte and Indianapolis.

7. POLYGYRA INFLECTA Say.  (Triodopsis inflecta Say).
   Abundant in nearly all parts of the State.

8. POLYGYRA PROFUNDA (Say).  (Mesodon profundus Say).
   Indianapolis, Corydon, Lawrenceburg, Brookville, Lower Wabash Valley.

9. POLYGYRA ALBOLABRIS (Say.)  (Mesodon albolabris Say).
   All over the State.

10. POLYGYRA EXOLETA (Binn).  (Mesodon exoletus Binn.)
    Common over the southern two-thirds of the State.

11. POLYGYRA MULTILINEATA (Say).  (Mesodon multilineatus Say).
    All over the State in suitable localities.

12. POLYGYRA PALLIATA (Say).  (Triodopsis palliata Say).
    All over the State.

13. POLYGYRA OBSTRUCTA (Say).  (Triodopsis obstricta Say).
    Grand Chain and New Harmony, Posey County.

14. POLYGYRA APPRESSA (Say).  (Triodopsis appressa Say).
    New Harmony, Mt. Vernon, Lawrenceburg, Cannelton and Wyandotte.

15. POLYGYRA ELEVATA (Say).  (Mesodon elevatus Say).
    All over the State.

16. POLYGYRA PENNSYLVANICA (Green).  (Mesodon pennsylvanicus Green).
    Brookville, Lafayette and Brookston.

17. POLYGYRA THYROIDES (Say).  (Mesodon thyroideus Say).
    All over the State.

18. POLYGYRA CLAUSA (Say).  (Mesodon clausus Say).
    Brookville, Lafayette, De Long. Over nearly all of the State.

19. POLYGYRA MITCHELLIANA (Lea).  (Mesodon mitchellianus Lea).
    Brookville.

20. POLYGYRA STENOTREMA (Fer.).  (Stenotrema stenotremum Fer.).
    Madison, Lawrenceburg; common at Wyandotte.
21. **Polygyra Hirsuta** (Say). *Stenotrema hirsutum* Say.
All over the State.

22. **Polygyra Monodon** (Fack.). *Stenotrema leasi* Ward.
Arlington, Marshall County; Pine and Hammond, Lake County; Rochester; near the lakes in Kosciusko and Steuben counties.

All over the State.

**Family Pupidae.**

23. **Strobilops Labyrinthica** (Say). *Strobila labyrinthica* Say.
Brookville, North Vernon, Princeton, Huntingburg, Cannelton; New Harmony, Posey County; cypress swamps, Knox County.

24. **Strobilops Virgo** (Pils.).

25. **Strobilops Affinis** Pils.
Lawrenceburg, Mitchell, Wyandotte; New Harmony, Posey County; Cannelton, Perry County; Huntingburg; near Lake James, Steuben County, and Tippecanoe Lake, Kosciusko County.


27. **Bifidaria Armifera** Say. *Leucochila armifera* Say.


29. **Bifidaria Procera** Gld.
Mitchell, Connersville (Walker).

30. **Bifidaria Corticaria** (Say). *Leucochila corticaria* Say.
Grand Chain, New Harmony; Morgan County. Dunreith (Pleas).
31. **Bifidaria holzingeri** Sterki.
   Dunreith (Sterki).

32. **Bifidaria curvidens** Gld.
   Wolf Lake, Lake County (Baker); Henry County and Connersville (Sterki). Dunreith (Pleas).

33. **Bifidaria pentodon** Say. *(Pupilla pentodon Say).*

34. **Vertigo milium** Gld.
   Lake James, Steuben County; Vawter Park, Brookville and Lawrenceburg (Call). Dunreith (Pleas).

35. **Vertigo ovata** Say.
   Tippecanoe Lake, Kosciusko County; Lake James, Steuben County; Arlington. Dunreith (Pleas). Lawrenceburg and Indianapolis (Call).

36. **Vertigo morsei** Sterki.
   Near Tippecanoe Lake, Kosciusko County; Lake Maxinkuckee, Marshall County, and Lake James, Steuben County.

37. **Vertigo Gouldi** Binn.
   Henry County and Connersville (Sterki); Dunreith (Pleas).

38. **Vertigo tridentata** Wolf.
   Danville (Walker); Dunreith (Pleas).

Family **Achatinidae**

39. **Cochlicopa lubrica** (Mull.). *(Ferussacia subcylindrica* Linn.)*
   New Harmony, Indianapolis, Wolf Lake, Lake County (Baker); northern half of the State (Call).

Family **Circinariidae** Pilsbry.

40. **Circinaria concava** (Say). *(Macrocyclis concava* Say).*
   All over the State.
Family ZONITIDÆ.
Sub-family ZONITINÆ Pilsbry.

41. OMPHALINA FULIGINOSA (Griff.). \(Zonites fuliginosus\) (Griff.).
   Grand Chain, Posey County; Mitchell and Wyandotte; Dunreith (Pleas); Corydon, Madison and Bloomington (Call).

42. OMPHALINA FRIABILIS (W. G. B.). \(Zonites friabilis\) W. G. B.
   Cypress swamps, Knox County.

43. OMPHALINA LEVIGATA (Pfr.).
   Grand Chain and Mt. Vernon, Posey County; Cannelton and Laurel.

44. OMPHALINA INORNATA (Say). \(Zonites inornatus\) Say.
   Laurel, Corydon, Madison and Lawrenceburg (Call).

45. VITREA CELLARIA (Mull.)
   Laporte (in greenhouse).

46. VITREA HAMMONIS (Strom.).
   Laurel, Indianapolis, Arlington, De Long, Vawter Park; Lake James, Steuben County, and cypress swamps, Knox County.

47. VITREA WHEATLEYI (Bland).
   New Harmony, Brookville, Huntingburg and Indianapolis.

48. VITREA INDENTATA Say.

49. VITREA CAPSELLA (Gld.).
   New Harmony, Posey County; and Huntingburg, Dubois County.

50. EUCONULUS FULVUS (Mull.). \(Zonites fulvus\) Drap.
   Arlington, Brookville, North Webster; Lake James, Steuben County, and Tippecanoe Lake, Kosciusko County.

51. EUCONULUS CHERSINUS Say.
   New Harmony, North Vernon, Huntingburg; Pine, Lake County; Morgan County, and cypress swamps, Knox County.

70—Geol.
Sub-family ARIOPHANTINÆ Pilsbry.

52. **Zonitoides nitidus** (Mull.).
   Vawter Park, Tippecanoe Lake and North Webster, Kosciusko County; Arlington and De Long, Marshall County; Lake James, Steuben County.

53. **Zonitoides arborescens** (Say). (Zonites arborescens Say).
   All over the State.

   Seymour and Indianapolis. Wabash and Terre Haute (Call).

55. **Zonitoides minusculus** (Binn.).
   Wolf Lake, Lake County (Baker); Mitchell, Huntingburg, Grand Chain, Seymour and Vawter Park.

56. **Zonitoides labiatus** (Sterki).
   Dunreith, Henry County.

57. **Zonitoides milium** (Morse).
   Princeton, Gibson County.

58. **Gastrodonta intertexta** (Binn.). (Zonites intertextus Binn.).
   Grand Chain and Mt. Vernon, Posey County; Mitchell, Wyanotte; southeastern Indiana (Call).

59. **Gastrodonta demissa** (Binn.).
   Wolf Lake, Lake County (Baker).

60. **Gastrodonta ligerus** (Say). (Zonites ligerus Say).
   Grand Chain and New Harmony, Posey County.

61. **Gastrodonta internus** (Say). (Zonites internus Say).
   Cannelton and Wyanotte.

Family LIMACIDÆ.

62. **Limax flavus** L.
   Lawrenceburg (Call).

63. **Agriolimax agrestis** (L.).
   Laporte County.

64. **Agriolimax campestris** (Binn.).
   Common.
Family PHILOMYCIDÆ.

65. PHILOMYCUS CAROLINENSIS (Bosc.). (Tebenophorus carolinensis Bosc.).
   Over nearly all the State.

Family ENDODONTIDÆ.

66. PYRAMIDULA ALTERNATA (Say). (Patula alternata Say).
   All over the State.

67. PYRAMIDULA SOLITARIA (Say). (Patula solitaria Say).

68. PYRAMIDULA PERSPECTIVA (Say). (Patula perspectiva Say).
   All over the State.

69. PYRAMIDULA STRIATELLA (Anth.). (Patula striatella Anth.).
   Indianapolis, Brookville, Lawrenceburg, Corydon, Lafayette.

70. HELICODISCUS LINEATUS (Say).

Sub-family PUNCTINÆ.

71. PUNCTUM PYGMÆUM (Drap.).
   Seymour, Jackson County, and Vawter Park, Kosciusko County.

72. SPYRADIUM EDENTULUM (Drap.).
   Near Clear Lake, Steuben County, and Vawter Park, Kosciusko County.

Family SUCCINIDÆ.

73. SUCCINEA RETUSA Lea. (Succinea ovalis Gld.).
   Kosciusko, Marshall, Laporte, Steuben and Lake counties.

74. SUCCINEA CALUMETENSIS Calkins.
   Half Moon Pond, Posey County, and cypress swamps, Knox County.

75. SUCCINEA OVALIS Say. (Succinea obliqua Say).
   Arlington and De Long, Fulton County.

76. SUCCINEA AVARA Say.
   Kosciusko, Laporte and Whitley counties.
Family AURICULIDÆ.

77. CARYCHIUM EXIGUUM Say.
    Tippecanoe Lake and Vawter Park, Kosciusko County; Lawrenceburg, New Albany and Indianapolis (Call).

78. CARYCHIUM EXILE H. C. Lea.
    Vawter Park, Kosciusko County; Berry Lake, Lake County (Baker).

Family LIMNÆIDÆ.

Sub-family LIMNÆINÆ.

79. LIMNÆA STAGNALS APPRESSA Say.
    Turkey Lake, Kosciusko County; Lake Michigan, Millers; Kankakee River, Laporte County.

80. LIMNÆA REFLEXA Say. (Limnophy.sa reflexa Say).
    Hammond, Millers, near Lake Michigan; Kankakee River, Laporte County. Common in northern Indiana.

80a. L. REFLEXA KIRTLANDIANA Lea.
    Roby, Lake County.

81. LIMNÆA PALUSTRIS Mull. (Limnophy.sa palustris Mull.).
    Turkey and Tippecanoe lakes, Kosciusko County; Carr's Slough, White County, and cypress swamps, Knox County.

81a. L. PALUSTRIS MICHIGANENSIS Walker.
    Tippecanoe and Turkey lakes, Kosciusko County; Calumet Lake, Lake County (Baker).

82. LIMNÆA CAPERATA Say. (Limnophy.sa caperata Say).
    Hammond, North Vernon, Calumet Lake and Roby (Baker).

82a. L. CAPERATA UMBILICATA Adams.
    Liverpool, Lake County (Baker).

83. LIMNÆA CATASCOPIUM Say.
    Calumet Lake, Lake County (Baker).

84. LIMNÆA COLUMELLA Say.
    Bass Lake, Starke County; Grassy Creek, Kosciusko County.

85. LIMNÆA WOODRUFFI Baker.
    Lake Michigan at Pine, Millers and Michigan City.
86. **Limnea humilis** Say. (*Limnophyes humilis* Say).

Turkey and Tippecanoe lakes, Kosciusko County; Bass Lake, Starke County; Round Lake, Whitley County, and Lake Maxinkuckee, Marshall County.

87. **Limnea desidiosa** Say. (*Limnophyes desidiosa* Say).

Grassy Creek, Kosciusko County. All over the State (Call).

Sub-family **Planorbinae**.

88. **Planorbis trivolvis** Say. (*Helisoma trivolvis* Say).

All over the State.

89. **Planorbis truncatus** Miles.

George Lake, Lake County (T. Jenson).

90. **Planorbis bicarinatus** Say. (*Helisoma bicarinata* Say).

Lake Michigan, Michigan City; Lake James, Steuben County; Bass Lake, Starke County; Clear Lake, Laporte County.

91. **Planorbis campanulatus** Say. (*Planorbella campanulata* Say).

Common over the northern part of the State.

92. **Planorbis exacutus** Say. (*Menetus exacutus* Say).

Bass Lake, Starke County; Turkey Lake and Grassy Creek, Kosciusko County; Cedar Lake, Lake County; Lawrenceburg and Ft. Wayne (Call).

93. **Planorbis parvus** Say. (*Gyraulus parvus* Say).

Bass Lake, Starke County; Lake Maxinkuckee, Marshall County; Cedar Lake, Lake County; Lake James, Steuben County; Grassy Creek, Kosciusko County, and Pine Lake, Lake County.

93a. P. parvus circumstriatus Tyhoh.

Lake Maxinkuckee, Marshall County.

94. **Planorbis hirsutus** Gld.

Grassy Creek, Tippecanoe Lake and Turkey Lake, Kosciusko County; Cedar Lake, Lake County; Bass Lake, Starke County.

95. **Planorbis deflectus** Say. (*Gyraulus deflectus* Say).

Grassy Creek, Kosciusko County.

96. **Planorbis umbilicatellus** Cockerell.

Tippecanoe Lake, Kosciusko County.
97. *Segmentina armigera* Say.

Carr's Slough, White County; cypress swamps, Knox County; Turkey and Tippecanoe lakes, Kosciusko County; Lake Maxinkuckee, Marshall County; Lake James, Steuben County.

Family *ANCYLIDÆ*.

98. *Ancylus rivularis* Say.

Bass Lake, Starke County; Liverpool, Lake County (Baker).


Bass Lake, Starke County.

100. *Ancylus shimekii* Pils.

Bass Lake, Starke County.


Grassy Creek, Kosciusko County.

102. *Ancylus diaphanus* Hald.

In State Museum, marked Indiana.

103. *Ancylus tardus* Say.

Grassy Creek, Kosciusko County; Ohio River, Lawrenceburg; Wabash and Maumee rivers (Call).

Family *PHYSIDÆ*.

104. *Physa heterostropha* Say.

New Harmony, Posey County; Tippecanoe and Turkey lakes, Kosciusko County.

105. *Physa ancillaria* Say.

Logansport; Collection Indiana State University from Turkey Lake, Kosciusko County (Call).


Turkey and Tippecanoe lakes, Kosciusko County.


Cypress swamps, Knox County.


New Harmony, Wyandotte, Indianapolis, cypress swamps, Knox County.
CHECK LIST OF INDIANA MOLLUSCA.

109. **P. gyrina elliptica** Lea.
Cypress swamps, Knox County.

110. **Physa intergra** Hald.
Wyandotte; Lake Michigan at Michigan City.

111. **Apexa hypnorum** Linn. (*Bulinus hypnorum* Linn.).
Tippecanoe Lake and Vawter Park, Kosciusko County; Hammond, Lake County; Brookston, White County.

Family **PLEUROCERIDÆ**.

112. **Lithasia obovata** Say.
Falls of the Ohio River; Lawrenceburg (Call).

112a. **L. obovata biconica** Pilsbry.
Wabash River, Gibson County.

113. **Angitrema armigera** Say.
Wabash River, Grand Chain, Posey County; Knox County.
Common.

114. **Angitrema verrucosa** Raf.
Wabash River, New Harmony, common; Ohio River, Lawrenceburg (A. C. Billups).

115. **Pleurocera undulatum** Say.
Wabash River, Gibson and Posey counties. Common.

116. **Pleurocera moniliferum** Lea.
Wabash River, Gibson County.

117. **Pleurocera canaliculatum** Say.
Wabash River, Gibson and Posey counties; Ohio River, New Albany.

118. **Pleurocera subulare** Lea.
Manitou Lake, Rochester; Tippecanoe Lake, Kosciusko County; Wabash River, Terre Haute; Eel River, North Manchester.

119. **Pleurocera elevatum** Say.
Ohio River at "The Falls", and Lawrenceburg.

120. **Pleurocera alveare** Conrad.
Wabash River, Gibson County.
121. **Goniobasis cubicodes** Anthony.

Blue River, Wyandotte; Big Indian Creek, Corydon; Wabash River, Huntington (Call).

122. **Goniobasis depygis** Say.

Falls of the Ohio. Specimens in State Museum marked Wabash River.

123. **Goniobasis livescens** Menke.

Lake Maxinkuckee, Marshall County; Bass Lake, Starke County; St. Mary's and Maumee and Ft. Wayne (Call).

124. **Goniobasis infantula** Lea.

Falls of the Ohio near Shippingport (Call).

125. **Goniobasis pulchella** Anthony.

Big Indian Creek, Corydon; Blue River, Wyandotte; White River, Indianapolis.

126. **Goniobasis interlineata** Anthony.

Christy Creek, type locality.

127. **Goniobasis intersita** Hald.

Swan Creek, type locality (Mrs. Say).

128. **Goniobasis semicarinata** Say.

Small streams flowing from Hamer's Cave at Mitchell; Muscatatuck River, North Vernon.

129. **Goniobasis louisvillensis** Lea.

Falls of the Ohio.

130. **Goniobasis gracilior** Anthony.

Turkey Lake, Kosciusko County; Manitou Lake, Rochester.

131. **Goniobasis brevispira** Anthony.

Tippecanoe River, Carroll County; Sharp's Spring, Wyandotte.

132. **Goniobasis indianaensis** Pilsbry.

Blue River, Wyandotte, Crawford County.

133. **Anculosa costata** Anthony.

Ohio River, New Albany.
134. **Anculosa trilineata Say.**  
Ohio River, Lawrenceburg. Described from the Falls of the Ohio.

135. **Anculosa prærosa Say.**  
Ohio River, Lawrenceburg; Falls of the Ohio. Common.

  Family **AMNICOLIDÆ.**  
  Sub-family **BYTHININÆ.**

136. **Bythinia tentaculata Linne.**  
Lake Michigan at Pine, Millers and Michigan City.

  Sub-family **HYDROBIINÆ.**

137. **Amnicola limosa Say.**  
Lake Michigan, Michigan City; Bass Lake, Starke County; Tippecanoe Lake, Kosciusko County; Cedar Lake, Lake County.

137a. A. limosa parva Lea.  
Turkey and Tippecanoe lakes, Kosciusko County; Bass Lake, Starke County.

137b. A. limosa porata Say. (Amnicola porata Say).  
Tippecanoe Lake, Kosciusko County; Bass Lake, Starke County.

138. **Amnicola lustrica Pils.**  
Turkey and Tippecanoe lakes, Kosciusko County; Lake Maxinkuckee, Marshall County; Berry Lake, Lake County (Baker).

139. **Amnicola walkerí Pils.**  
Grassy Creek, Kosciusko County.

140. **Amnicola cincinnatiensis Anthony.**  
Lake Michigan at Millers.

141. **Amnicola emarginata Kuster. (Bythinella obtusa Lea).**  
Lake Michigan at Millers.

142. **Paludestrina nickliniana Lea.**  
Berry Lake, Lake County.
143. **SOMATOGYRUS SUBGLOBOSUS** Say. (Somatogyrus isogonus Say).
Ohio River, Lawrenceburg; George Lake, Lake County (Baker).

144. **SOMATOGYRUS INTEGER** Say.
Ohio River near Madison; Ohio River, Charleston (Call).

145. **POMATIOPSIS LAPIIDARIA** Say.
Indianapolis, Seymour, Lawrenceburg, Calumet Lake, Lake County.

Family VALVATIDÆ.

146. **VALVATA SINCERA** Say.
Lake Michigan, Millers and Michigan City.

147. **VALVATA TRICARINATA** Say.
Lake Michigan at Millers; Grassy Creek, Kosciusko County; Lake James, Steuben County; Lake Maxinkuckee, Marshall County; Cedar Lake, Lake County.

147a. **V. TRICARINATA CONFUSA** Walker.

147b. **V. TRICARINATA UNICARINATA** De Kay.

147c. **V. TRICARINATA SIMPLEX** Gld.
Cedar Lake, Lake County.

148. **VALVATA BICARINATA** Lea.
Lake Michigan.

148a. **V. BICARINATA NORMALIS** Walker.
Lake Michigan, Millers.

Family VIVIPARIDÆ.

149. **VIVIPARA SUBPURPUREA** Say.
Wabash River, Grand Chain, Posey County; Big Creek and Hovey's Lake, Posey County; Wabash River, Knox County; Ohio River, Mt. Vernon.

150. **VIVIPARA CONTECTOIDES** Binney.
Bass Lake, Starke County; Foote's Pond, Gibson County; Dan's Pond, Knox County; Lake Michigan, Millers.

151. **VIVIPARA INTESTEXTA** Say.
Cypress swamps, Knox County; Wabash River, Knox and Gibson counties.
152. **Campeoloma Ponderosum** Say.
   Wabash River, Lafayette, Terre Haute, New Harmony; Ohio River, Mt. Vernon; Muscatatuck River, North Vernon.

153. **Campeoloma Subsolidum** Anthony.
   Wabash River, Lafayette, Terre Haute; Kankakee River, Riverside; Eel River, North Manchester.

154. **Campeoloma Decisum** Say.
   Bass Lake, Starke County; Kankakee, St. Mary's, St. Joseph and Maumee rivers (Call).

155. **Campeoloma Rufum** Hald.
   Tippecanoe and Turkey lakes, Kosciusko County; Pine and Stone lakes, LaPorte County; Lake Michigan, Millers. Lafayette, Indianapolis, Huntington and Ft. Wayne (Call).

156. **Campeoloma Integrum** De Kay.
   Webster Lake, Kosciusko County; Clear Lake, Steuben County; Lake Michigan, Millers.

157. **Campeoloma Obea** Lewis.
   White River and Canal at Indianapolis.

158. **Lioplax Subcarinata** Say.
   Wabash River, Grand Chain, Posey County; White, Ohio and Blue rivers (Call).

**Family Sphæriidæ.**

159. **Sphærium Vermontanum** Prime.
   Lake Michigan, Millers.

160. **Sphærium Solidulum** Prime.
   Muscatatuck River, North Vernon.

161. **Sphærium Stamineum** Con.
   White River, Indianapolis; Muscatatuck River, North Vernon; Lake Michigan, Michigan City; Tippecanoe and Turkey lakes, Kosciusko County.

162. **Sphærium Striatinum** Lam.
   Tippecanoe Lake, Kosciusko County; Muscatatuck River, North Vernon; Corydon.
163. **Sphaerium simile** Say. (*Sphaerium sulcatum* Lam.).
   Turkey Lake, Kosciusko County; Lake Maxinkuckee, Marshall County; Wabash River, New Harmony.

164. **Sphaerium Fabale** Prime.
   Lake Michigan, Michigan City; Wabash River, New Harmony.

165. **Sphaerium occidentale** Prime.
   Kankakee River, Laporte County; cypress swamps, Knox County; Tippecanoe Lake and pond at Vawter Park, Kosciusko County.

166. **Sphaerium rhomboideum** Say.
   Turkey Lake, Kosciusko County; Lake Michigan at Millers.

167. **Sphaerium flavum** Prime.
   Turkey Lake, Kosciusko County; variety from Lake Michigan at Millers.

168. **Calyculina transversa** Say. (*Sphærium transversum* Say.)
   Big Creek, Posey County; Wabash River, New Harmony.

169. **Calyculina truncata** Linsley.
   Turkey and Tippecanoe lakes, Kosciusko County.

170. **Calyculina securis** Prime.
   Grassy Creek, Tippecanoe and Turkey lakes, Kosciusko County.

171. **Calyculina partumelum** Say. (*Sphærium partumelum* Say).
   Grassy Creek, Kosciusko County.

172. **Calyculina rosacea** Prime.
   Grassy Creek and Turkey Lake, Kosciusko County.

173. **Pisidium abditum** Hald.
   Berry Lake and Millers (Baker); Ohio and Wabash rivers, Brookville (Call).

174. **Pisidium virginicum** Bourg.
   English Lake, Kankakee River.

175. **Pisidium rotundatum** Prime.
   Grassy Creek, Tippecanoe and Turkey lakes, Kosciusko County.
176. **Pisidium compressum** Prime.
   Grassy Creek and Turkey Lake, Kosciusko County; Bass Lake, Starke County; Lake Maxinkuckee, Marshall County; Kankakee River and Danville.

177. **Pisidium danielsi** Sterki (Ms.).
   Spring near Lake James, Steuben County.

178. **Pisidium obtusale** C. Pfr.
   Spring near Lake James, Steuben County.

179. **Pisidium nov-eboracense** Prime.
   Grassy Creek and Turkey Lake, Kosciusko County; Bass Lake, Starke County.

180. **Pisidium variabile** Prime.
   Bass Lake, Starke County; Turkey Lake, Kosciusko County; Lake Maxinkuckee, Marshall County; English Lake, Kankakee River.

181. **Pisidium idahoense** Roper.
   Lake Michigan, Millers.

182. **Pisidium politum** Sterki.
   Grassy Creek, Kosciusko County.

183. **Pisidium vesiculare** Sterki.
   Bass Lake, Starke County.

184. **Pisidium pauperculum** Sterki.
   Lake Maxinkuckee, Marshall County; Bass Lake, Starke County; Turkey Lake, Kosciusko County.

185. **Pisidium scutellatum** Sterki.
   Lost Lake, Marshall County.

186. **Pisidium splendidulum** Sterki.
   Grassy Creek and Turkey Lake, Kosciusko County; Bass Lake, Starke County.

187. **Pisidium roperi** Sterki.
   Grassy Creek and Tippecanoe Lake, Kosciusko County; Danville (Sterki).

188. **Pisidium medianum** Sterki.
   Bass Lake, Starke County.
   Bass Lake, Starke County; Lake Maxinkuckee, Marshall County.

190. *Pisidium affine* Sterki.
   Turkey Lake, Kosciusko County.

   Bass Lake, Starke County.

   Bass Lake, Starke County.

   Berry Lake, Lake County (Baker).

Family **UNIONIDÆ**.

   Tippecanoe, Wabash, Blue, White, Muscatatuck and Eel rivers.

   Wabash River, Lafayette; White River, Marion County, Ohio River (Stein).

196. *Truncilla foliata* Hild. (*Unio foliatum* Hild.).
   Ohio and Wabash rivers (Stein).


   Wabash River, New Harmony; Ohio River (Stein).

198a. T. *perplexa rangiana* Lea.
   Wabash River, Lafayette; Tippecanoe River, Monticello; White River (Stein).

   Wabash River; Grand Chain, Posey County.

   White, Wabash and Tippecanoe rivers; Tippecanoe Lake, Kosciusko County.
201. **Lambsilis ventricosus** Barnes. (*Unio ventricosus* Barnes; *Unio subovatus* Say).  
Common all over the State.

202. **Lambsilis capax** Green. (*Unio capax* Green).  
Wabash River, New Harmony and Grand Chain; Ohio River.

203. **Lambsilis ovatus** Say.  
Wabash River, Terre Haute, Lafayette; Ohio River.

204. **Lambsilis multiradiatus** Lea. (*Unio multiradiatus* Lea).  
Wabash, Tippecanoe, Blue, White, Eel and Ohio rivers; Tippecanoe Lake.  Common.

205. **Lambsilis luteolus** Lam. (*Unio luteolus* Lam.).  
Common all over the State.

206. **Lambsilis ligamentinus** Lam. (*Unio ligamentinus* Lam.).  
Common all over the State.

207. **Lambsilis orbiculatus** Hild. (*Unio orbiculatus* Hild.).  
Wabash River, Terre Haute; Ohio River.

208. **Lambsilis anodontoides** Lea. (*Unio teres* Raf.).  
Kankakee, Eel, Tippecanoe, White, Wabash and Ohio rivers.

209. **Lambsilis fallaciosus** Simpson.  
Wabash River, Lafayette; Tippecanoe River, Carroll County.

210. **Lambsilis rectus** Lam. (*Unio rectus* Lam.).  
Common in all the rivers of the State.

211. **Lambsilis subrostratus** Say. (*Unio subrostratus* Say).  
Wabash, Eel and Ohio rivers; Foote’s Pond, Gibson County; Tippecanoe Lake, Kosciusko County; Lake Maxinkuckee, Marshall County; Manitou Lake, Fulton County.

212. **Lambsilis lianosus** Con.  
White River and canal at Indianapolis.  Abundant.

213. **Lambsilis nigerrimus** Lea.  
White River, Rockford.

All over the State.

215. **Lambsilis ellipsiformis** Con. (*Unio spatulatus* Lea).  
Salt Creek, Porter County; Ohio, Wabash and Eel rivers (Call).
216. **Lampsilis parvus** Barnes. (*Unio parvus* Barnes).
   White River, Indianapolis; Wabash River, New Harmony; 
   Big Indian Creek, Corydon.

217. **Lampsilis glans** Lea. (*Unio glans* Lea).
   White River, Rockford; Tippecanoe Lake, Kosciusko County; 
   Wabash River, New Harmony.

218. **Lampsilis alatus** Say. (*Unio alatus* Say).
   Wabash, Ohio, Kankakee and White rivers. Common.

219. **Lampsilis gracilis** Barnes. (*Unio gracilis* Barnes).

220. **Lampsilis levissimus** Lea. (*Unio levissimus* Lea).
   Wabash River, Terre Haute, Lafayette and New Harmony; 
   Ohio River.

221. **Lampsilis leptodon** Raf. (*Unio leptodon* Raf).
   Wabash River, New Harmony, Lafayette and Terre Haute.

222. **Lampsilis Blatchleyi** Daniels.
   Wabash River, Grand Chain, Posey County.

223. **Obovaria retusa** Lam. (*Unio retusa* Lam.).
   White River, Indianapolis, Rockford; Wabash River, Lafayette, 
   Terre Haute, New Harmony.

   Ohio, Wabash, Tippecanoe, White and Eel rivers.

225. **Obovaria lens** Lea.
   Ohio, Wabash, Tippecanoe, White and Eel rivers.

   Wabash River, Lafayette, Terre Haute, New Harmony; Ohio 
   River, New Albany.

227. **Plagiola securis** Lea. (*Unio securis* Raf.).
   Wabash River, Lafayette, Terre Haute, New Harmony, 
   Grand Chain; Ohio River, New Albany.

228. **Plagiola elegans** Lea. (*Unio elegans* Lea).
   Ohio, Wabash, Tippecanoe, White and Kankakee rivers.

229. **Plagiola donaciformis** Lea. (*Unio donaciformis* Lea).
   Ohio, Wabash, White and Tippecanoe rivers.
230. TRITOGONIA TUBERCULATUS Barnes. (*Unio tuberculatus* Barnes).
    Common in the Ohio and lower Wabash rivers; White River, Rockford; Blue River, Crawford County.

231. CYPROGENTA IRRORATA Lea. (*Unio irroratus* Lea).
    Ohio, Wabash and White rivers. Common.

232. OBLIQUARIA REFLEXA Raf. (*Unio cornutus* Raf.).
    Common in the Ohio, Wabash and White rivers.

233. Ptychobranchus phaseolus Hild. (*Unio phaseolus* Hild.).
    Ohio, Wabash, Tippecanoe and White rivers; Tippecanoe Lake, Kosciusko County.

234. STROPHITUS EDENTULUS Say. (*Anodonta edentula* Say; *A. wardiana* Lea).
    Common in all the larger streams in the State; Tippecanoe Lake, Kosciusko County.

234a. S. EDENTULUS PAVONIUS Lea.
    Wabash, Tippecanoe and White rivers; Big Indian River, Corydon.

235. ANODONTA IMBECILLS Say.
    Ohio, Wabash and White rivers; Lily Lake, Laporte.

236. ANODONTA SUBORRICULATA Say.
    Dan's Pond, Knox County; Foote's Pond, Gibson County, rare; Wier's Lake, Posey County, common; White River, Rockford.

237. ANODONTA GRANDIS Say. (*Anodonta salmonia* Lea).
    Rivers and ponds throughout the State.

237a. A. GRANDIS FOOTIANA Lea.
    Turkey Lake, Kosciusko County; Manitou Lake, Fulton County.

238. ANODONTA CORPULENTA Cooper.
    Clear Lake, Laporte.

239. ANODONTA KENNICOTII Lea.
    Turkey Lake, Kosciusko County.

240. LASTENA LATA Raf. (*Anodonta dehiscens* Say).
    Ohio, Wabash and Tippecanoe rivers.

241. ANODONTOIDES FERUSSACIANUS Lea.
    Lake Michigan, Millers.
   Wabash River; Berry Lake, Lake County (Baker).

   Wabash River, Lafayette, Terre Haute and New Harmony; ponds in Posey County.

   Wabash, White and Tippecanoe rivers.

244. *Symphynota costata* Raf. (*Margaritana rugosa* Barnes).
   Wabash, Ohio, White, Tippecanoe, Blue, Kankakee and Eel rivers.

   Common in all the rivers of the State.

   Lake Maxinkuckee, Marshall County; Moots Creek, White County; Big Indian River, Harrison County; Salt Creek, Porter County; Wolf Lake (Baker).

   In nearly all of the rivers and several of the lakes and ponds.

   Wabash River, Grand Chain, Posey County; White River, Rockford.

249. *Margaritana monodonta* Say.
   Grand Chain, Posey County; Falls of the Ohio near New Albany (Call).

250. *Unio gibbosus* Barnes.
   Common in the larger streams of the State; Turkey and Tippecanoe lakes, Kosciusko County; Lake Maxinkuckee, Marshall County.

251. *Unio crassidens* Lam.
   Ohio, Wabash and Tippecanoe rivers.

252. *Unio tetralasmus* Say.
   Ohio and Wabash rivers (Call).

   Montour’s Pond, Knox County.
253. **Pleurobema clava Lam.** *(Unio clavus Lam.)*
   Wabash River, Lafayette, Terre Haute, New Harmony; Tippecanoe River.

254. **Pleurobema Æsopus Green.** *(Unio cyphus Raf.)*
   Tippecanoe River, Monticello; Wabash River, Lafayette, Terre Haute and New Harmony; Ohio River, New Albany.

255. **Pleurobema cicatricosa Say.** *(Unio varicosus Lea)*
   Wabash River.

255a. **Quadrula plicata Say.** *(Unio plicatus Le Sueur)*
   Common in the Ohio and lower Wabash rivers.

256. **Quadrula undulata Barnes.**
   Ohio, Wabash, White, Eel, Blue and Tippecanoe rivers.

257. **Quadrula hero6 Say.** *(Unio multiplicatus Say)*

258. **Quadrula cylindricus Say.** *(Unio cylindricus Say)*
   Common in the Ohio, Wabash, White, Eel and Tippecanoe rivers.

259. **Quadrula metanevra Raf.** *(Unio metanevra Raf.)*
   Ohio, Wabash, White and Blue rivers.

260. **Q. metanevra wardii Lea.**
   Wabash River.

261. **Quadrula lachrymosa Lea.** *(Unio lachrymosus Lea)*
   Wabash River, Terre Haute and New Harmony; Ohio River.

262. **Quadrula fragosa Conrad.** *(Unio fragosus Conrad)*
   Wabash River, Gibson County.

263. **Quadrula pustulosa Lea.** *(Unio pustulosus Lea)*
   Common in the Ohio, Wabash, White and Tippecanoe rivers.

264. **Quadrula cooperiana Lea.** *(Unio cooperianus Lea)*
   Wabash River.

265. **Quadrula pustulata Lea.** *(Unio pustulatus Lea)*
   Wabash River, Terre Haute and New Harmony; Ohio River, Mt. Vernon.

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*This is not a variety of Pleurobema cicatricosa Say. The number was accidentally omitted in the text, and the number 255a has been given it for that reason.*
266. QUADRULA RUBIGINOSA Lea. *Unio rubiginosus* Lea.

Common in all of the streams and most of the lakes of the State.


Tippecanoe Lake, Kosciusko County; Ohio, Wabash, Blue, Tippecanoe and White rivers.

268. QUADRULA OBLIQUA Lam. *Unio obliquus* Lam.

Wabash River, Terre Haute and New Harmony; Ohio River.

269. QUADRULA COCCINEA Con. *Unio coccineus* Lea.

Wabash River, Terre Haute and New Harmony; Ohio River, Mt. Vernon.

270. QUADRULA SOLIDA Lea. *Unio solidus* Lea.

Wabash River, Terre Haute and New Harmony; Ohio River, Mt. Vernon.

271. QUADRULA PLENA Lea.

Wabash River, Terre Haute, New Harmony and Lafayette; Tippecanoe River, Carroll County.

272. QUADRULA PYRAMIDATA Lea.

Tippecanoe River, Carroll County, common; Wabash River, Lafayette and Terre Haute.

273. QUADRULA SUBROTUNDA Lea.

Wabash River, Lafayette, Terre Haute, New Harmony; Tippecanoe River, Carroll County.

274. QUADRULA EBENUS Lea. *Unio ebenus* Lea.

Wabash River, Terre Haute and Grand Chain, Posey County; Knox County, White River.


Common in all the streams of the State.

276. QUADRULA GRANIFERA Lea. *Unio graniferus* Lea.

Ohio River.