

**Synonymy of the species of STREPOMATIDÆ, a Family of Fluviatile Mollusca,
inhabiting North America.**

Part I.

BY GEORGE W. TRYON, JR.

The following synonymy of the very numerous species of North American shells, heretofore considered Melanians, is offered as the result of a year's study of the extensive collections of the Smithsonian Institution and of the Academy of Natural Sciences, as well as those of Messrs. Lea, Haldeman, Anthony, and Gould, together with my own, and several smaller collections.

The present publication is preliminary to that of a complete illustrated Monograph of the Family, prepared at the request of the Smithsonian Institution, (the MSS. of which is nearly completed); and is intended to invite criticism.

Naturalists are requested to communicate to the author, without delay, any information they may possess regarding any of the species.

As many of these species, being rare, have not been sufficiently studied to determine satisfactorily their true position with regard to allied forms, or in other words, their range of variation, it is particularly requested that Naturalists residing near localities inhabited by the *Strepomatidæ*, would collect and transmit to the Smithsonian Institution, extensive suites of specimens, for which, if desired, a named suite will be returned.

Family *STREPOMATIDÆ*, Haldeman.

Strepomatidæ, Hald., Proc. Acad. Nat. Sci., Sept. 1863.

Melaniana, Lam., Extr. d' un Cours., 1812. Hist. Anim. Sans. Vert., vi. p. 163, 1822. Edit. 2, viii. p. 425, 1838. Deshayes, Encyc. Meth., iii. p. 431 and 553, 1832. Reeve, Zool. Proc., p. 76, 1841. Conch. Syst., ii. p. 119, 1842. Sowerby, Conch. Man., Ed. 2, p. 187, 1842. Catlow, Conch. Nomenc., p. 185, 1845.

Melanidæ, (part) Latreille, Fam. Nat., 1825. Lea, Proc. Philos. Soc., iii. p. 164, 1843.

Melanianæ, (part) Swainson, Malacol., p. 198, 340, 1840.

Melaniadæ, (part) Gray, Syn. Brit. Mus., 1840. Turton's Manual, ed. 2, p. 79, 85. Zool. Proc., part 15, p. 152, 1847.

Melaniidæ, (part) Adams, Genera, p. 293, 1854.

Oeriphasinæ, Gill, Proc. Acad. Nat. Sci., p. 34. 35, Feb. 1863.

Synopsis of Genera.

A. Aperture produced into a more or less obvious canal in front. *Trypanostomoid Section.*

1. Shell fusiform, inflated, spire and canal produced, columella without deposit of nacre..... Genus *Io*, Lea.
Shell conical or oval, canal not so much produced..... Subgenus *Pleurocera*, Raf.
2. Shell oval, or turbiniform, or fusiform, with a revolving row of nodules on the periphery, canal short. Columella callously thickened above and below..... Genus *Angitrema*, Hald.
Shell oval or oblong, smaller, either smooth or adorned with nodules around the upper portion of the body whorl..... Subgenus *Lithasia*, Hald.
Canal retrorse..... Subgenus *Strephobasis*, Lea.

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B. Aperture merely angulated in front, with no canal, and the columella perfectly plain, not twisted, frequently callously thickened above. *Goniobasis* Section.

3. Shell heavy, oval, oblong, or turritid,
aperture entire above..... Genus *Goniobasis*, Lea.

4. Aperture with a sutural, pleurotomose
slit above..... Genus *Schizostoma*, Lea.

C. Aperture entire and rounded in front.

5. Shell oval, heavy, columella callously
thickened above..... Genus *Anculosa*, Say.

Genus *IO*, Lea.

Io, Lea, Trans. Phil. Soc., iv. p. 122, 1831. Sowerby, Conch. Man. 2d Edit., p. 167, 1842. DeKay, Moll. New York, p. 103, 1843. Hermannson, Indicis Generum Malacozoorum, p. 562, 1846.

Io, Lea, (sp.) Gray, Proc. Zool. Soc., pt. 15, p. 153, 1847. Jay, Catalogue, 4th Edit., p. 277, 1852. H. and A. Adams, Genera i. p. 299. Chenu, Man. de Conchyl. i. p. 290, 1859. Anthony, Proc. Acad. Nat. Sci., p. 69, 1860. Reeve, Monog. *Io*, April, 1860. Binney, Check List, June, 1860. Brot, Cat. Syst. des Mélaniens, p. 29, 1862.

Melafusus, Swainson, Malacol. p. 201, 341, 1840. Woodward, Manual, p. 131, 1851.

Fusus, (sp.) Say, Jour. Acad. Nat. Sci., 1st series, v. pt. 1, p. 129, Nov., 1825.

Melania, (sp.) Catlow and Reeve, Conch. Nomencl., 1845.

SPECIES.

A. Shell smooth or only slightly tuberculate.

1. *I. fluvialis*, Say.

Fusus fluvialis, Say, Jour. Acad. Nat. Sci., v. p. 129, Nov. 1825. Conrad, New Fresh Water Shells, p. 12.

Io fluvialis, Say, Binney, Check List, No. 400.

Pleurocera fluvialis, Say, Haldeman, Iconog. Encyc., ii. p. 84.

Io fluvialis, Say, Woodward, Manual, t. 8, f. 27. Hanley, Conch. Misc., t. 6, f. 50. Reeve, Monog. *Io*, t. 1, f. 5. Brot, List, p. 29.

Io fusiformis, Lea, Phil. Trans., iv. p. 122, t. 15, f. 37. a. b. Obs., i. p. 132. Ravenel. Cat., p. 11. Reeve, Monog. *Io*, t. 1, f. 6. DeKay, Moll. N.Y., p. 103. Wheatley, Cat. Shells U. S., p. 28. Jay, Cat. 4th Edit., p. 277. Troost, Cat.

Io tenebrosa, Lea, Philos. Proc., ii. p. 34, April, 1841. Phil. Trans., ix. p. 17. Obs. iv. p. 17. Wheatley, Cat. Shells U. S., p. 29. Binney, Check List, No. 404.

Io verrucosa, Reeve, Monog. *Io*, t. 1, f. 2, April, 1860. Brot, List, p. 29.

2. *I. inermis*, Anthony.

Io inermis, Anthony, Proc. Acad. Nat. Sci., Feb. 1860, p. 70. Binney, Check List, No. 401. Reeve, Monog. *Io*, t. 3, f. 21.

Io lurida, Anthony, Reeve, Monog. *Io*, t. 3, f. 20.

B. Shell spinose.

3. *I. spinosa*, Lea.

Io spinosa, Lea, Philos. Trans., v. p. 112, t. 19, f. 79. Obs., i. p. 224. Troost, Cat. Wheatley, Cat. Shells U. S., p. 29. Jay, Cat. 4th Edit., p. 277. Binney, Check List, No. 402. Reeve, Monog. *Io*, t. 1, f. 7.

Io gibbosa, Anthony, Reeve, Monog. *Io*, t. 3, f. 17.

Io recta, Anthony, Reeve, Monog. *Io*, t. 3, f. 21.

Io rhombica, Anthony, Reeve, Monog. *Io*, t. 3, f. 16.

1863.]

4 *I. brevis*, Anthony.

Io brevis, Anthony, Proc. Acad. Nat. Sci., Feb. 1860, p. 69. Binney, Check List, No. 399. Reeve, Monog. Io, t. 1, f. 4.

Io Spirostoma, Anthony, Proc. Acad. Nat. Sci., Feb. 1860, p. 70. Binney, Check List, No. 403. Reeve, Monog. Io, t. 1, f. 1.

5. *I. turrita*, Anthony.

Io turrita, Anthony, Proc. Acad. Nat. Sci., Feb. 1860, p. 69. Binney, Check List, No. 405. Reeve, Monog. Io, t. 3, f. 19.

Spurious Species.

Io nodosa, robusta, variabilis, Spillmanii, modesta, viridula, gracilis, nobilis, of Lea.

These are species of *Pleurocera*.

Subgenus PLEUROCERA, Rafinesque.

Pleurocera, Rafinesque, Jour. de Phys. Bruxelles, tome 88, p. 423, 1819. Blainville, Dict. Sc. Nat., xxxii. p. 236, 1824, xli. p. 376, 1826, Man. Malacologie, p. 441, 1825. Rang, Man. Conchyl. p. 374, 1829. Menke, Syn. Method, Edit. 2, p. 43, 1830. Ferussac, Bull. Zool., p. 93, 1835. Sowerby, Conch. Man. Edit. 2, p. 231, 1842. Hermannson, Indicis Gen. Malacoz., i. p. 296, 1846. Haldeman, Iconog. Encyc., p. 84.

Ceriphasia, Swainson, Malacol., p. 204, 342, 1840. Gray, Syn. Brit. Mus., 1844. Hermannson, Indic. Gen. Mal., i. p. 208, 1846. Gray, Zool. Proc. pt. 15, p. 153, 1847. H. and A. Adams, Genera, Recent, Moll. i. p. 297, 1854. Chenu, Manuel de Conchyl. i. p. 288, 1859.

Telescopella, Gray, Proc. Zool. Soc., pt. 15, p. 153, 1847.

Elimia, (part) H. and A. Adams, Genera, i. p. 300, 1854. Chenu, Man. de Conchyl. i. p. 290, 1859.

Megara, (part) H. and A. Adams, Genera, i. p. 306, 1854. Chenu, Man. de Conchyl. i. p. 293, 1859.

Trypanostoma, Lea, Proc. Acad. Nat. Sci., p. 169, April 1862. Jour. Acad. Nat. Sci., 2d ser. v. pt. 3, p. 268, March, 1863. Obs., ix. p. 90, March, 1863.

Melania, (sp.) of authors. Binney, Check List. Reeve, Monog. Mel., Nov., 1859, to June, 1861. Brot, Cat. Syst., p. 30, 1862.

SPECIES.

A. *Tuberculate*.1. *P. alveare*, Conrad.

Melania alveare, Conrad, New Fresh Water Shells, p. 54, t. 4, f. 7, 1834. DeKay, Moll. N. Y., p. 94. Wheatley, Cat. Shells U. S., p. 24. Jay, Cat. 4th Edit., p. 272. Binney, Check List, No. 11. Brot, List, p. 30. Hanley, Conch. Misc., t. 8, f. 74.

Megara alveare, Conrad, Chenu, Manual, i. f. 2022.

Melania torquata, Lea, Philos. Proc., ii. p. 242, Dec., 1842. Philos. Trans. ix. p. 27. Obs., iv. p. 27. Wheatley, Cat. Shells U. S., p. 27. Binney, Check List, No. 271.

Melania pernodosa, Lea, Philos. Proc. iv. p. 105, Aug., 1845. Philos. Trans. x. p. 66, t. 9, f. 49. Obs., iv. p. 66, t. 9, f. 49. Binney, Check List, No. 202.

Melania nupera, Say, (young) American Conchol. pt. 1, t. 8, middle figure.

Melania producta,* Lea, Philos. Proc., ii. p. 243, Dec., 1842. Philos. Trans., ix. p. 28. Obs., iv. p. 28. Wheatley, Cat. Shells, U. S., p. 26. Binney, Check List, No. 217. Brot, List, p. 36.

Melania grossa,* Anthony, Proc. Acad. Nat. Sci., p. 59, Feb., 1860. Brot, List, p. 40. Reeve, Monog. f. 411.

* *M. productum* and *grossa* are the young of a large variety of *alveare*.

2. *P. Foremani*,* Lea.

Melania Foremani, Lea, Philos. Proc., ii. p. 242. Philos. Trans., ix. p. 27. Obs., iv. p. 27. Binney, Check List, No. 111. Brot. List, p. 30. Reeve, Monog., f. 432.

Melania Foremanii, Lea, Wheatley, Cat. Shells, U. S., p. 25.

3. *P. undulatum*,† Say.

Melania undulata, Say, New Harmony Dissem., p. 261. Reprint, p. 17. Binney's Edit., p. 142. Reeve, Monog., f. 307. Haldeman, Am. Jour. Sci., xlii. p. 216, Dec., 1841. Anthony's List, 1st and 2d Edit. DeKay, Moll. N. Y., p. 92. Wheatley, Cat. Shells U. S., p. 27. Jay, Cat., 4th Edit., p. 275. Binney, Check List, No. 281. Brot. List, p. 31. Hanley, Conch. Misc., t. 1, f. 10. Catlow, Conch. Nomenc. p. 189.

Megara undulata, Say, Chenu, Man. Conchyl. i. f. 2025,

4. *P. excuratum*, Conrad.

Melania excurata, Conrad, New Fresh Water Shells, p. 49, t. 4, f. 6, 1834. Anthony, List, 1st and 2d Edit. Jay, Cat., 4th Edit., p. 273. DeKay, Moll. N. Y., p. 96. Binney, Check List, No. 103.

Melania excurvata,‡ Conrad, Wheatley, Cat. Shells U. S., p. 25.

Melania rotata, Reeve, Monog. Mel., sp. 306. Brot. List., p. 31.

Io Spillmanii,§¶ Lea, Proc. Acad. Nat. Sci., p. 394, 1861. Jour. Acad. Nat. Sci., v. pt. 3, p. 348, t. 39, f. 215. Obs. ix. p. 170.

5. *P. moniliferum*,|| Lea.

Trypanostoma moniliferum, Lea, Proc. Acad. Nat. Sci., p. 172, 1862. Jour. Acad. Nat. Sci., v. pt. 3, p. 295, t. 36, f. 125, March, 1863. Obs., ix. p. 117.

Io nodosa, Lea, Proc. Acad. Sci. p. 393, 1861. Jour. Acad. Nat. Sci., v. pt. 3, p. 346, t. 39, f. 212, March, 1863. Obs., ix. p. 168.

Io variabilis,¶¶ Lea, Proc. Acad. Nat. Sci., p. 393, 1861. Jour. Acad. Nat. Sci., v. pt. 3, p. 347, t. 39, f. 214, March, 1863. Obs., ix. p. 169.

6. *P. nobile*, Lea.

Melania nobilis, Lea, Philos. Proc., iv. p. 165, Aug., 1845. Philos. Trans. x. p. 65, t. 9, f. 48. Obs., iv. p. 65. Binney, Check List, No. 179.

7. *P. robustum*,** Lea.

Io robusta, Lea, Proc. Acad. Nat. Sci., p. 393, 1861. Jour. Acad. Nat. Sci., v. pt. 3, p. 346, t. 39, f. 213, March, 1863. Obs. ix. p. 168.

B. *Sulcate*.††8. *P. canaliculatum*, Say.

Melania canaliculata, Say, Jour. Acad. Nat. Sci., ii. p. 175, January, 1821.

* = *Prasinatum*, Conrad?

† = *Canaliculatum*, Say?

‡ The typical *excuratum* differs widely enough from *undulatum* Say, but there exist intermediate forms of a nature to perplex the naturalist. Among these may be mentioned *ponderosum*, Anth., (*dux*, Lea) with the tubercles and canal nearly obsolete, and the revolving striae very faint, so that the surface of the shell appears at first sight to be flat and smooth; also *annuliferum*, Con., in which the revolving lines are more strongly developed. These shells partake of one general type, and form a natural group of closely related species at the least.

§ Juvenile shell.

¶ Not so narrow in its proportions as *excuratum*, more frequently banded, and having the upper whorls of the spire smooth, whereas in *excuratum* they are striate. This difference is more apparent in comparing young specimens.

¶¶ Juvenile shell.

** Not so much angled on the periphery as *undulatum*, with the inferior portion of the body whorl longer and more convex. It bears the same general relation to *undulatum* as *Troostii* does to *canaliculatum*; and the four may be but one species.

†† The deep sulcus which distinguishes Mr. Say's *Melania canaliculata* in its typical form, shades off so gradually into a smooth flattened surface, that not only is it difficult to arrange the species of this group, but it is even doubtful whether many of the species which are placed in other groups are really distinct.

- Binney's Reprint, p. 65. Binney, Check List, No. 45. DeKay, Moll. N. Y., p. 94. Wheatley, Cat. Shells U. S., p. 24. Ravenel, Cat., p. 11. Jay, Cat., 4th Edit., p. 273. Anthony, List, 1st and 2d Edit. Kirtland, Report Zool. Ohio, p. 174. Catlow, Conch. Nomenc., p. 185. Brot, List, p. 30. Reeve, Monog. Mel., sp. 304.
- Ceriphasia canaliculata*, Say, Chenu, Manuel, Conchyl. i. f. 1959.
- Melania conica*,* Say, Jour. Acad. Nat. Sci., ii. p. 176, January, 1821. Binney's Reprint, p. 70. Binney, Check List, No. 65. Reeve, Monog. Mel., sp. 252. DeKay, Moll., N. Y., p. 95. Ravenel, Cat., p. 11. Haldeman, Monog. Limniades, No. 7, p. 4 of Cover. Brot, List, p. 30. Kirtland, Rep. Zool. Ohio, p. 174. Anthony, List, 1st and 2d Edit. Jay, Cat., 4th Edit., p. 273. Wheatley, Cat. Shells U. S., p. 24. Catlow, Conch. Nomenc., p. 186.
- Melania substricta*,† Haldeman, Suppl. to Monog. of Limniades.
- Strombus Sayi*, Wood, Index Testaceol. Suppl., t. 4, f. 24.
- Melania Sayi*, Wood. Short and Eaton, Notices, p. 82. Anthony, List, 1st and 2d Edit.
- Melania Sayi*, Ward. Wheatley, Cat. Shells U. S., p. 27.
- Melania Sayii*, Ward. Kirtland, Rept. Zool. Ohio, p. 174. Jay, Cat., 4th Edit., p. 274. Higgins, Cat., p. 7.
- Melania Sayii*, Deshayes, Catlow, Conch. Nomenc., p. 188.
- Melania exarata*, Menke, Syn. Meth., p. 135, 1830. Binney, Check List, No. 100.
- Melania ligata*, Menke, Syn. Meth., p. 136, 1830. Binney, Check List, No. 162.
- Melania auriscalpium*, Menke, Syn. Meth., p. 136, 1830. Binney, Check List, No. 25.
9. *P. filum*,‡ Lea,
Melania filum, Lea, Philos. Proc., iv. p. 165. Philos. Trans., x. p. 62, t. 9, f. 41. Obs., iv. p. 62. Binney, Check List, No. 109. Brot, List, p. 30. Reeve, Monog. Mel., sp. 402?
Elimia filum, Lea, Chenu, Man. Conchyl. i. f. 1980.
10. *P. ponderosum*,§ Anthony.
Melania ponderosa, Anthony, Proc. Acad. Nat. Sci., Feb., 1860, p. 59. Binney, Check List, No. 213. Brot, List, p. 59.
Trypanostoma dux, Lea, Proc. Acad. Nat. Sci., p. 170, 1862. Jour. Acad. Nat. Sci., v. pt. 3, p. 283, t. 36, f. 105. Obs., ix. p. 105.
11. *P. olivaceum*, Lea.
Trypanostoma olivaceum, Lea, Proc. Acad. Nat. Sci., p. 172, 1862. Jour. Acad. Nat. Sci., v. pt. 3, p. 290, t. 36, f. 117. Obs., ix. p. 112.
12. *P. Troostii*,|| Lea.
Trypanostoma Troostii, Lea, Proc. Acad. Nat. Sci., p. 171, 1862. Jour. Acad. Nat. Sci., v. pt. 3, p. 285, t. 36, f. 107. Obs., ix. p. 107.
Trypanostoma viride,¶ Lea, Proc. Acad. Nat. Sci., p. 172, 1862. Jour. Acad. Nat. Sci., v. pt. 3, p. 291, t. 36, f. 119. Obs., ix. p. 113.
Trypanostoma ligatum,** Lea, Proc. Acad. Nat. Sci., p. 171, 1862. Jour. Acad. Nat. Sci., v. pt. 3, p. 288, t. 36, f. 114. Obs., ix. p. 110.

* Juvenile shell.

† Proposed under the impression that *conica* was preoccupied.

‡ Distinguished from *canaliculatum* by its more elevated spire, more prominent carina, and flattened whorls. It almost entirely replaces *canaliculatum* in the waters of Tennessee, and if specifically identical with that species, must at least be distinguished as a local variety.

§ Appears to be doubtfully distinct from *canaliculatum*, *excuratum*, &c. It is doubtful, indeed, whether the whole group contains more than one species.

|| More inflated and more convex than *canaliculatum*, with the inferior half of the body whorl longer and more convex.

¶ ** Young shells of *Troostii* in different stages of growth.

13. *P. moriforme*, Lea.

Trypanostoma moriforme, Lea, Proc. Acad. Nat. Sci., p. 172, 1862. Jour. Acad. Nat. Sci., v. pt. 3, p. 290, t. 36, f. 118. Obs., ix. p. 112.

14. *P. Pybasii*, Lea.

Trypanostoma Pybasii, Lea, Proc. Acad. Nat. Sci., p. 172, 1862. Jour. Acad. Nat. Sci., v. pt. 3, p. 289, t. 36, f. 115. Obs., ix. p. 111.

15. *P. Showalterii*, Lea.

Trypanostoma Showalterii, Lea, Proc. Acad. Nat. Sci., p. 172, 1862. Jour. Acad. Nat. Sci., v. pt. 3, p. 293, t. 36, f. 122. Obs., ix. p. 115.

C. Angulate, striate below the periphery.

16. *P. Thorntonii*,* Lea.

Trypanostoma Thorntonii, Lea, Proc. Acad. Nat. Sci., p. 170, 1862. Jour. Acad. Nat. Sci., v. pt. 3, p. 284, t. 36, f. 106. Obs., ix. p. 106.

17. *P. infrafasciatum*, Anthony.

Melania infrafasciata, Anthony, Proc. Acad. Nat. Sci., p. 57, Feb., 1860. Binney, Check List, No. 148. Brot. List, p. 30. Reeve, Monog. *Melania*, sp. 301.

18. *P. Postellii*,† Lea.

Trypanostoma Postellii, Lea, Proc. Acad. Nat. Sci., p. 171, 1862. Jour. Acad. Nat. Sci., v. pt. 3, p. 286, t. 36, f. 110. Obs., ix. p. 108.

19. *P. incurvum*,‡ Lea.

Trypanostoma incurvum, Lea, Proc. Acad. Nat. Sci., p. 171, 1862. Jour. Acad. Nat. Sci., v. pt. 3, p. 286, t. 36, f. 109. Obs., ix. p. 108.

20. *P. Alabamense*,§ Lea.

Trypanostoma Alabamense, Lea, Proc. Acad. Nat. Sci., p. 171, 1862. Jour. Acad. Nat. Sci., v. pt. 3, p. 288, t. 36, f. 113. Obs., ix. p. 110.

21. *P. Florencense*,|| Lea.

Trypanostoma Florencense, Lea, Proc. Acad. Nat. Sci., p. 171, 1862. Jour. Acad. Nat. Sci., v. pt. 3, p. 287, t. 36, f. 112. Obs. ix. p. 109.

22. *P. canalitium*, Lea,

Trypanostoma canalitium, Lea, Proc. Acad. Nat. Sci., p. 175, 1862. Jour. Acad. Nat. Sci., v. pt. 3, p. 292, t. 36, f. 121. Obs., ix. p. 114.

23. *P. Clarkii*,¶ Lea.

Trypanostoma Clarkii, Lea, Proc. Acad. Nat. Sci., p. 171, 1862. Jour. Acad. Nat. Sci., v. pt. 3, p. 285, t. 36, f. 108. Obs., ix. p. 107.

24. *P. Anthonyi*, Lea.

Trypanostoma Anthonyi, Lea, Proc. Acad. Nat. Sci., p. 172, 1862. Jour. Acad. Nat. Sci., v. pt. 3, p. 293, t. 36, f. 123. Obs., ix. p. 115.

25. *P. prasinatum*, Conrad.

Melania prasinata,** Conrad, Am. Jour. Sci., 1st ser. xxv. p. 342, t. 1, f. 14, January, 1834. Jay, Cat., 4th Edit., p. 274. Binney, Check List,

* This species is shorter in the canal, has broader bands, and wants the tubercles of *moniliferum*, which it otherwise much resembles.

† Distinguished from *infrafasciatum* by its whorls being more flattened, and by its narrow form.

‡ Differs from *Postellii* by its singularly incurved edge of the outer lip.

§ Very distinct from the preceding two species in the more developed spire and canal.

|| Inhabits the waters of Indiana, also. No. 20, (*Alabamense*) may prove to be the young of this species.

¶ Doubtfully distinguished from *canalitium* by its broader proportions, better developed carina and recurved canal.

** The figure given by Mr. Conrad is not a good representation of this species.

- No. 216. Brot, List, p. 33. Catlow, Conch. Nomenc., p. 188. DeKay Moll. N. Y., p. 98. Reeve, Monog. Melania, sp. 403,
Melania incrassata, Anthony, Ann. Lyc. N. Y., vi. p. 99, t. 2. f. 17, March, 1854. Binney, Check List, No. 144. Brot. List, p. 34.
Trypanostoma Hartmanii, Lea, Proc. Acad. Nat. Sci., p. 173, 1862. Jour. Acad. Nat. Sci., v. pt. 3, p. 270, t. 36, f. 80. Obs. ix. p. 92.
Trypanostoma Jayi, Lea, Proc. Acad. Nat. Sci., p. 173, 1862. Jour. Acad. Nat. Sci., v. pt. 3, p. 270, t. 36, f. 81. Obs., ix. p. 92.
26. *P. tortum*, Lea.
Trypanostoma tortum, Lea, Proc. Acad. Nat. Sci., p. 174, 1862. Jour. Acad. Nat. Sci., v. pt. 3, p. 275, t. 36, f. 89. Obs., ix. p. 97.
27. *P. dignum*, Lea.
Trypanostoma dignum, Lea, Proc. Acad. Nat. Sci., p. 273, 1862. Jour. Acad. Nat. Sci., v. pt. 3, p. 350, t. 39, f. 219. Obs., ix. p. 172.
- D. Carinate, striate *Pleuroceræ*.
28. *P. bicostatum*, Anthony.
Melania bicostata, Anthony, Proc. Acad. Nat. Sci., p. 56, February, 1860. Binney, Check List, No. 33. Brot. List, p. 30. Reeve, Monog. Melania, sp. 246.
Melania rigida,* Anthony, Proc. Acad. Nat. Sci., p. 62, February, 1860. Binney, Check List, No. 229. Reeve, Monog. Melania, sp. 270.
29. *P. subulare*, Lea.
Melania subularis, Lea, Philos. Trans., iv. p. 100, t. 15, f. 30. Obs., i. p. 110, t. 15, f. 30. Ravenel, Cat., p. 11. DeKay, Moll. N. Y., p. 92, t. 7, f. 138. Wheatley, Cat. Shells U. S., p. 27. Jay, Cat., 4th Edit., p. 275. Binney, Check List, No. 257. Brot, List, p. 35. Reeve, Monog. Melania, sp. 428. Whiteaves, Canad. Naturalist, viii. p. 102, April, 1863.
30. *P. subulæforme*, Lea.
Trypanostoma subulæforme, Lea, Proc. Acad. Nat. Sci., p. 174, 1862. Jour. Acad. Nat. Sci., v. pt. 3, p. 289, t. 36, f. 116. Obs., ix. p. 111.
31. *P. Henryanum*,* Lea.
Trypanostoma Henryanum, Lea, Proc. Acad. Nat. Sci., p. 272, 1862. Jour. Acad. Nat. Sci., v. pt. 3, p. 351, t. 39, f. 222. Obs., ix. p. 173.
32. *P. Lewisii*,† Lea.
Trypanostoma Lewisii, Lea, Proc. Acad. Nat. Sci., p. 172, 1862. Jour. Acad. Nat. Sci., v. pt. 3, p. 292, t. 36, f. 120. Obs., ix. p. 114.
33. *P. annuliferum*, Conrad.
Melania annulifera, Conrad, New Fresh Water Shells, p. 51, t. 8, f. 2, 1834. Jay, Cat., 4th Edit., p. 272. Binney, Check List, No. 17. DeKay, Moll. N. Y., p. 94. Wheatley, Cat. Shells U. S., p. 24. Brot. List, p. 30. Catlow, Conch. Nomenc., p. 185. Reeve,* Monog. Melania, sp. 308.
Melania annulata, Conrad, Jay, Cat., 2d Edit., p. 455.
Melania Ordiana, Lea, Philos. Proc., ii. p. 242, Dec., 1842. Philos. Trans. ix. p. 26. Obs., iv. p. 26. Wheatley, Cat. Shells U. S., p. 26. Binney, Check List, No. 191. Brot, List, p. 30.
34. *P. Brumbyi*, Lea.
Melania Brumbyi, Lea, Philos. Trans., x. p. 298, t. 30, f. 5. Obs., v. p.

* Juvenile shell,

† Probably the young of *subulæforme*.‡ This may only be a striate form of *elevatum*, Say.§ Mr. Reeve's figure represents the variety described by Mr. Lea as *Mel. Ordiana*.

54. Binney, Check List, No. 40. Brot. List, p. 30. Reeve, Monog. *Melania*, sp. 277.

35. *P. Currierianum*, Lea.

Trypanostoma Currierianum, Lea, Proc. Acad. Nat. Sci., p. 155, May, 1863.

E. *Plicate Pleuroceras*.

36. *P. Sycamorénse*, Lea.

Trypanostoma Scyamorénse, Proc. Acad. Nat. Sci., p. 175, 1862. Jour. Acad. Nat. Sci., v. pt. 3, p. 283, t. 36, f. 104. Obs., ix. p. 105.

37. *P. plicatum*, Tryon.

Pleurocera plicatum, Tryon, Proc. Acad. Nat. Sci., Oct., 1863.

F. *Smooth, Angulate Pleuroceræ*.

38. *P. elevatum*,* Say.

Melania elevata, Say, Jour. Acad. Nat. Sci., ii. p. 176, Jan'y, 1821. Binney, Reprint, p. 70. Binney, Check List, No. 97. Jay, Cat., 4th Edit., p. 273. Lapham, Cat. Moll. Wisconsin, p. 368. DeKay, Moll. N. Y., p. 96. Wheatley, Cat. Shells U. S., p. 25. Catlow, Conch. Nomenc., p. 186. Brot. List, p. 30. Reeve, Monog. *Melania*, sp. 442.

Ceriphasia elevata, Say, Chenu, Manuel, i. f. 1961.

Melania elongata, Lea, Philos. Trans., iv. p. 121, t. 15, f. 29. Obs., i. p. 130. Troost, Cat. Binney, Check List, No. 99. Wheatley, Cat. Shells U. S., p. 25. Brot. List, p. 30.

Ceriphasia elongata, Lea, Chenu, Manuel, i. f. 1959.

39. *P. gradatum*, Anthony.

Melania gradata, Anthony, Ann. Lyc. N. Y., vi. p. 112, t. 3, f. 12, March, 1854. Binney, Check List, No. 130. Brot. List, p. 30. Reeve, Monog. *Melania*, sp. 261.

Melania eximia,† Anthony, Ann. Lyc. N. Y., vi. p. 107, t. 3, f. 7, March, 1854. Binney, Check List, No. 106. Brot. List, p. 58. Reeve, Monog. *Melania*, sp. 408.

Trypanostoma curtatum, Lea, Proc. Acad. Nat. Sci., p. 155, May, 1863.

40. *P. aratum*, Lea.‡

Melania aratum, Lea, Philos. Proc., ii. p. 242, Dec., 1842. Philos. Trans., ix. p. 24. Obs., iv. p. 24. DeKay, Moll. N. Y., p. 98. Brot. List, p. 30.

Melania exarata, Lea, Philos. Proc. ii. p. 14, Feb., 1841. Philos. Trans., viii. p. 183, t. 6, f. 44. Obs., iii. p. 21. Troost, Cat. Binney, Check List, No. 101. Catlow, Conch. Nomenc., p. 186.

41. *P. lativittatum*, Lea.

Trypanostoma lativittatum, Lea, Proc. Acad. Nat. Sci., p. 273, 1862. Jour. Acad. Nat. Sci., v. pt. 3, p. 352, t. 39, f. 223. Obs., ix. p. 174.

41, a. *P. strictum*, Lea.§

Trypanostoma strictum, Lea, Proc. Acad. Nat. Sci., p. 272, 1862. Jour. Acad. Nat. Sci., v. pt. 3, p. 352, t. 39, f. 224. Obs., ix. p. 174.

42. *P. modestum*, Lea.

Io modesta, Lea, Proc. Acad. Nat. Sci., p. 394, 1861. Jour. Acad. Nat. Sci., v. pt. 3, p. 348, t. 39, f. 216. Obs., ix. p. 170.

* *Lewisii* may prove to be a variety of this species.

† Juvenile shell.

‡ = Preceding?

§ *P. lativittatum* has a line below the angle of the periphery, which this species has not.

43. *P. Lea ii*, Tryon.*

Io viridula, Lea, Proc. Acad. Nat. Sci., p. 394, 1861. Jour. Acad. Nat. Sci., v. pt. 3, p. 349, t. 39, f. 218. Obs., ix. p. 171.

44. *P. fastigiatum*, Anthony.

Melania fastigiata, Anthony, Ann. N. Y. Lyc., vi. p. 113, t. 3, f. 13, March, 1854. Binney, Check List, No. 103. Brot. List, p. 30. Reeve, Monog. Melania, sp. 302.

45. *P. Tuomeyi*, Lea.

Trypanostoma Tuomeyi, Lea, Proc. Acad. Nat. Sci., p. 171, 1862. Jour. Acad. Nat. Sci., v. pt. 3, p. 287, t. 36, f. 111. Obs., ix. p. 109.

46. *P. gracile*, Lea,

Io gracilis, Lea, Proc. Acad. Nat. Sci., p. 394, 1861. Jour. Acad. Nat. Sci., v. pt. 3, p. 349, t. 39, f. 217. Obs., ix. p. 171.

47. *P. Spillmanii*, Lea.

Trypanostoma Spillmanii, Lea, Proc. Acad. Nat. Sci., p. 173, 1862. Jour. Acad. Nat. Sci., v. pt. 3, p. 271, t. 36, f. 82. Obs., ix. p. 86.

48. *P. planogyrum*, Anthony.

Melania planogyra, Anthony, Ann. Lyc. N. Y., vi. p. 111, t. 3, f. 11, March, 1854. Binney, Check List, No. 207. Brot. List, p. 30. Reeve, Monog. Melania, sp. 382.

49. *P. pyrenellum*, Conrad.

Melania pyrenella, Conrad, New Fresh Water Shells, p. 52, t. 8, f. 5, 1834. DeKay, Moll. N. Y., p. 99. Wheatley, Cat. Shells U. S., p. 26. Binney, Check List, No. 226. Brot. List, p. 30. Reeve, Monog. Melania, sp. 303.

50. *P. Conradi*,† Tryon.51. *P. regulare*, Lea.

Melania regularis, Lea, Philos. Proc., ii. p. 12, Feb., 1841. Philos. Trans., viii. p. 170, t. 5, f. 16. Obs., iii. p. 8. DeKay, Moll. N. Y., p. 94. Higgins, Cat. Troost, Cat. Jay, Cat., 4th Edit., p. 274. Wheatley, Cat. Shells U. S., p. 26. Binney, Check List, No. 227. Catlow, Conch. Nomencl., p. 188. Brot. List, p. 30.

Ceriphasia regularis, Lea, Chenu, Manuel, i. f. 1956.

52. *P. validum*, Anthony.

Melania valida, Anthony, Proc. Acad. Nat. Sci., p. 59, Feb., 1860. Binney, Check List, No. 282. Brot. List, p. 33. Reeve, Monog. Melania, sp. 317.

G. Smooth species, not angulated.

53. *P. glandulum*, Anthony.

Melania glandula, Anthony, Proc. Acad. Nat. Sci., p. 60, Feb., 1860. Binney, Check List, No. 124. Brot. List, p. 39. Reeve, Monog. Melania, sp. 393.

Melania glans, Anthony, Ann. N. Y. Lyc., vi. p. 123, t. 3, f. 23. March, 1854.

54. *P. Christyi*,† Lea.

* The name *viridula* being preoccupied by Mr. Anthony, I gladly avail myself of the opportunity to dedicate this species to a gentleman who, by his immense labors pursued during a period of nearly forty years, with their splendid results, has done more for the science of Conchology, than any other American Naturalist.

† This name is proposed for a long slender species, with flattened whorls and brown color, which Mr. Anthony has extensively distributed as *pyrenellum*, Conrad. Mr. Lea has regarded it as doubtfully identical with his *elongatum*.

‡ Distinguished from *labiatum* principally by its more ponderous, flattened volutions.

- Trypanostoma Christyi*, Lea, Proc. Acad. Nat. Sci., p. 173, 1862. Jour. Acad. Nat. Sci., v. pt. 3, 272, t. 36, f. 83. Obs., ix. p. 94.
55. *P. labiatum*,* Lea.
Trypanostoma labiatum, Lea, Proc. Acad. Nat. Sci., p. 173, 1862. Jour. Acad. Nat. Sci., v. pt. 3, p. 272, t. 36, f. 84. Obs., ix. p. 94.
Trypanostoma pallidum, Lea, Proc. Acad. Nat. Sci., p. 174, 1862. Jour. Acad. Nat. Sci., v. pt. 3, p. 275, t. 36, f. 90. Obs., ix. p. 97.
56. *P. neglectum*, Anthony.
Melania neglecta, Anthony, Ann. Lyc. N. Y., p. 128, t. 3, f. 29, March, 1854. Binney, Check List, No. 173. Brot. List, p. 34. Currier, Shells of Grand River Valley, Mich., 1859. Reeve, Monog. *Melania*, sp. 247.
57. *P. vestitum*, Conrad.
Melania vestita, Conrad, New Fresh Water Shells, p. 57, t. 8, f. 12, 1834. DeKay, Moll. N. Y., p. 101. Wheatley, Cat. Shells U. S., p. 27. Binney, Check List, No. 287. Brot. List, p. 31. Reeve, Monog. *Melania*, sp. 322.
Melania mucronata,† Lea, Proc. Acad. Nat. Sci., p. 119, 1861.
Trypanostoma mucronatum, Lea, Jour. Acad. Nat. Sci., v. pt. 3, p. 277, t. 36, f. 93. Obs., ix. p. 99.
58. *P. strigosum*, Lea.
Melania strigosa, Lea, Philos. Proc., ii. p. 13, Feb., 1841. Philos. Trans., viii. p. 175, t. 5, f. 24. Obs., iii. p. 131. DeKay, Moll., N. Y., p. 95. Troost, Cat. Binney, Check List, No. 250. Wheatley, Cat. Shells U. S., p. 27. Catlow, Conch. Nomenc., p. 188. Brot. List, p. 38. Reeve, Monog. *Melania*, sp. 320.
59. *P. tenebrocinctum*, Anthony.
Melania tenebrocincta, Anthony, Proc. Acad. Nat. Sci., p. 58, Feb., 1860. Binney, Check List, No. 266. Brot. List, p. 31. Reeve, Monog. *Melania*, sp. 271.
Trypanostoma parvum, Lea, Proc. Acad. Nat. Sci., p. 174, 1862. Jour. Acad. Nat. Sci., v. pt. 3, p. 276, t. 36, f. 91. Obs., ix. p. 98.
60. *P. Vanuxemii*, Lea.
Trypanostoma Vanuxemii, Lea, Proc. Acad. Nat. Sci., p. 175, 1862. Jour. Acad. Nat. Sci., v. pt. 3, p. 280, t. 36, f. 98. Obs. ix. p. 102.
61. *P. Chakasahaense*, Lea.
Trypanostoma Chakasahaense, Lea, Proc. Acad. Nat. Sci. p. 175, 1862. Jour. Acad. Nat. Sci., v., pt. 3, p. 280, t. 36, f. 99. March, 1863. Obs. ix. p. 102.
62. *P. Knoxense*, Lea.
Trypanostoma Knoxense, Lea, Proc. Acad. Nat. Sci., p. 175, 1862. Jour. Acad. Nat. Sci., v. pt. 3, p. 281, t. 36, f. 101. Obs. ix., p. 103.
63. *P. altipetum*, Anthony.
Melania altipeta, Anthony, Ann. N. Y. Lyc., vi. p. 87, t. 2, f. 5. Binney, Check List, No. 442. Brot. List, p. 34. Reeve, Monog. *Mel.*, sp. 280.
64. *P. hastatum*, Anthony.
Melania hastata, Anthony, Ann. N. Y. Lyc., vi. p. 85, t. 2, f. 3, March, 1854. Binney, Check List, No. 136. Brot. List, p. 31. Reeve, Monog. *Mel.*, sp. 394.

*Larger than *neglectum*, Anth., also more convex, lighter in color and differing in the form of the canal. The typical *pallidum* in Mr. Lea's collections appears distinct, but I have seen numerous specimens collected in different parts of Ohio which connect the two species.

† Having seen author's types of *vestitum*, I have no doubt that *mucronatum* is the same species. Mr. Lea's description refers to the shell when not fully grown; it is curious that in his description he mentions six whorls, and in his "Remarks" he gives it eight, while his figure exhibits ten.

65. *P. Lyonii*, Lea.
Trypanostoma Lyonii, Lea, Proc. Acad. Nat. Sci., p. 155, May, 1863.
66. *P. viridulum*, Anthony.
Melania viridula, Anthony, Ann. Lyc. N. Y., vi. p. 84, t. 2, f. 2, March, 1854. Binney, Check List, No. 293. Brot. List, p. 31. Reeve, Monog. Mel., sp. 243.
67. *P. unciale*, Haldeman.
Melania uncialis, Hald., Monog. Limniades, No. 4, p. 3 of Cover, Oct. 5, 1841. Jay, Cat. 4th Edit., p. 275. Binney, Check List, No. 279. Brot. List, p. 37. Reeve, Monog. Mel. sp. 435.
68. *P. sugillatum*,* Reeve,
Melania sugillata, Reeve, Monog. Mel., sp. 319, September, 1860. Brot. List, p. 31.
69. *P. striatum*, Lea.
Trypanostoma striatum, Lea, Proc. Acad. Nat. Sci., p. 173, 1862. Jour. Acad. Nat. Sci., v. pt. 3, p. 294, t. 36, f. 124. Obs. ix., p. 116.
Trypanostoma rostellatum, Lea, Proc. Acad. Nat. Sci., p. 272, 1862. Jour. Acad. Nat. Sci., v. pt. 3, p. 353, t. 39, f. 225. Obs. ix., p. 175.
70. *P. Knoxvilleense*,† Lea.
Trypanostoma Knoxvilleense, Lea, Proc. Acad. Nat. Sci., p. 173, 1862. Jour. Acad. Nat. Sci., v. pt. 3, p. 274, t. 36, f. 87. Obs. ix., p. 96.
71. *P. Whitei*, Lea.
Trypanostoma Whitei, Lea, Proc. Acad. Nat. Sci., p. 173, 1862. Jour. Acad. Nat. Sci., v. pt. 3, p. 272, t. 36, f. 85. Obs. ix., p. 95.
72. *P. attenuatum*, Lea.
Trypanostoma attenuatum, Lea, Proc. Acad. Nat. Sci., p. 174, 1862. Jour. Acad. Nat. Sci., v. pt. 3, p. 274, t. 36, f. 88. Obs. ix., p. 96.
73. *P. Estabrookii*, Lea.
Trypanostoma Estabrookii, Lea, Proc. Acad. Nat. Sci., p. 173, 1862. Jour. Acad. Nat. Sci., v. pt. 3, p. 273, t. 36, f. 86. Obs. ix., p. 95.
74. *P. modestum*, Lea.
Trypanostoma modestum, Lea, Proc. Acad. Nat. Sci., p. 174, 1862. Jour. Acad. Nat. Sci., v. pt. 3, p. 276, t. 36, f. 92. Obs. ix., p. 98.
75. *P. luteum*, Lea.
Trypanostoma luteum, Lea, Proc. Acad. Nat. Sci., p. 273, 1863. Jour. Acad. Nat. Sci., v. pt. 3, p. 350, t. 39, f. 220. Obs. ix., p. 172.
Trypanostoma Carolinense, Lea, Proc. Acad. Nat. Sci., p. 273, 1862. Jour. Acad. Nat. Sci., v. pt. 3, p. 351, t. 39, f. 221. Obs. ix., p. 173.
76. *P. curvatum*, Lea.
Melania curvata, Lea, Philos. Proc. ii., p. 243. Philos. Trans. ix., p. 28. Obs. ix., p. 28. Wheatley, Cat. Shells U. S., p. 25. Brot. List, p. 30. Binney, Check List, No. 81.
77. *P. simplex*, Lea.
Trypanostoma simplex, Lea, Proc. Acad. Nat. Sci., p. 174, 1862. Jour. Acad. Nat. Sci., v. pt. 3, p. 277, t. 36, f. 94. Obs. ix., p. 99.
78. *P. bivittatum*, Lea.
Trypanostoma bivittatum, Lea, Proc. Acad. Nat. Sci., p. 175, 1862. Jour. Acad. Nat. Sci. v. pt. 3, p. 279, t. 36, f. 97. Obs. ix., p. 101.

* This shell appears to be very closely allied to *unciale*, judging from the figure.

† I doubt whether this is distinct from *Sycamorensense*.

79. *P. trivittatum*, Lea.

Trypanostoma trivittatum, Lea, Proc. Acad. Nat. Sci., p. 175, 1862. Jour. Acad. Nat. Sci., v. pt. 3, p. 282, t. 36, f. 102. Obs. ix., p. 104.

80. *P. turgidum*, Lea.

Melania turgida, Lea, Philos. Proc. ii. p. 82, Oct. 1841. Philos. Trans. ix., p. 18. Wheatley, Cat. Shells U. S., p. 27. Binney, Check List, No. 278. Brot. List, p. 33.

81. *P. minor*, Lea.

Trypanostoma minor, Lea, Proc. Acad. Nat. Sci., p. 174, 1862. Jour. Acad. Nat. Sci., v. pt. 3, p. 278, t. 36, f. 95. Obs. ix., p. 100.

82. *P. pumilum*, Lea.

Trypanostoma pumilum, Lea, Proc. Acad. Nat. Sci., p. 174, 1862. Jour. Acad. Nat. Sci., v. pt. 3, p. 279, t. 36, f. 96. Obs. ix., p. 101.

83. *P. Tennesseeense*, Lea.

Trypanostoma Tennesseeense, Lea, Proc. Acad. Nat. Sci., p. 175, 1862. Jour. Acad. Nat. Sci. v. pt. 3, p. 281, t. 37, f. 100. Obs. ix., p. 103.

84. *P. trochulus*, Lea.

Trypanostoma trochulus, Lea, Proc. Acad. Nat. Sci., p. 175, 1862. Jour. Acad. Nat. Sci., v. pt. 3, p. 282, t. 37, f. 103. Obs. ix., p. 104.

Genus ANGITREMA, Haldeman.

Angitrema, Haldeman, Cover of No. 2, Monog. Limniades, Jan. 1841.

Potadoma, Swainson, sp. H. & A. Adams, Genera i., p. 299, 1854.

Glotella, Gray, Zool. Proc., pt. 15, p. 154, 1847.

Io, Lea, (sp.) H. & A. Adams, Genera, i. p. 299, 1854. Chenu, Man. Conchyl. i. p. 290, 1859. Reeve, Monog. Io, April, 1860. Brot, Syst. Cat. Mel., p. 29, 1862.

Lithasia, Haldeman, sp. H. & A. Adams, Genera of Recent Mollusca, i. p. 308, 1854.

Anculotus, Say, (sp.), Jay, Cat. Shells., 4th Edit., p. 276, 1850.

Melania, (sp.) Authos.

A. *Body whorl with a coronal of tubercles.*1. *A. geniculata*, Haldeman.

Lithasia geniculata, Haldeman, suppl. to No. 1, Monog. of Limniades, Oct. 1840. Binney, Check List, No. 299.

Anculotus geniculatus, Haldeman, Jay, Cat. Shells, 4th Edit., p. 276. Hanley, Conch. Misc. t. 5, f. 41. Reeve, Monog. Anculotus t. 1, f. 7.

Leptoxis geniculata, Haldeman, Brot, List, p. 24.

Lithasia genicula, Lea, Wheatley, Cat. Shells U. S., p. 28.

2. *A. salebrosa*, Conrad.

Melania salebrosa, Conrad, New Fresh Water Shells, p. 51, t. 4, f. 5, 1834.

Chenu, Reprint, p. 24, t. 4, f. 13. Dekay, Moll. N. Y., p. 100. Wheatley, Cat. Shells U. S., p. 26. Jay, Cat. 4th Edit., p. 274.

Anculotus salebrosus, Conrad, Reeve, Monog. Anc. t. 1, f. 6, (bad figure.)

Leptoxis salebrosa, Conrad, Brot. List, p. 25.

Lithasia salebrosa, Conrad, Binney, Check List, No. 303.

3. *A. subglobosa*, Lea.

Lithasia subglobosa, Lea, Proc. Acad. Nat. Sci., p. 55, Feb. 1861. Jour. Acad. Nat. Sci., v. pt. 3, p. 261, t. 35, f. 70. Obs. ix., p. 83.

4. *A. Tuomeyi*, Lea.

Lithasia Tuomeyi, Lea, Proc. Acad. Nat. Sci., p. 55, Feb. 1861. Jour. Acad. Nat. Sci., v. pt. 3, t. 35, f. 68. Obs. ix., p. 81.

Anculotus Florentianus, Lea, Reeve, Monog. Anc. t. 1, f. 4.

A. *Body whorl encircled above the aperture by two rows of tubercles, of which the inferior one is most prominent.*

5. *A. Jayana*, Lea.

Melania Jayana, Philos. Proc. ii. p. 83. Philos. Trans. ix., p. 20. Obs. iv., p. 20. Wheatley, Cat. Shells U. S. p. 25. Jay, Cat. Shells, 4th Edit., p. 274. Binney, Check List, No. 154.

Io Jayana, Lea, Brot. List, p. 29.

Melania robulina, Anthony, Bost. Proc. iii., p. 363, Dec. 1850. Binney, Check List, No. 230.

Io robulina, Anthony, Reeve, Monog. Io, species 15.

C. *Body whorl with a central row of tubercles.*

6. *A. rota*, Reeve.

Io rota, Reeve, Monog. Io, species 13, April, 1860. Brot, List, p. 29.

7. *A. armigera*, Say.

Melania armigera, Say, Jour. Acad. Nat. Sci., 1st ser., ii. p. 178, Jan. 1821.

Binney's Reprint, p. 71. Binney, Check List No. 21. Dekay, Moll.

N. Y., p. 93. Jay, Cat. 4th Edit., p. 272. Troost. Cat. Wheatley, Cat.

Shells, U. S., p. 24. Catlow, Conch. Nomenc. p. 185. Hanley, Conch.

Misc. *Melania*, t. 7, f. 60.

Io armigera, Say, Reeve, Monog. Io, fig. 11.

8. *A. Duttoniana*, Lea.

Melania Duttoniana, Lea, Philos. Proc., ii. p. 15. Philos. Trans., viii. p. 189, t. 6, f. 54. Obs. iii., p. 26. Catlow, Conch. Nomenc. p. 186. Binney,

Check List, No. 92. Jay, Cat. 4th Edit., p. 273.

Io Duttoniana, Lea, Reeve, Monog. Io, fig. 9. Brot. List, p. 29.

Io fasciolata, Reeve, Monog. Io, fig. 14.

9. *A. stygia*, Say.

Melania stygia, Say, New Harmony Dissem., p. 261, Aug. 28, 1829. Reprint, p. 17. Binney's Reprint, p. 142. Binney, Check List, No. 251.

Wheatley, Cat. Shells U. S., p. 27. Jay, Cat. 4th Edit., p. 275. Dekay,

Moll. N. Y., p. 93. Reeve, Monog. Mel. sp. 400. Brot. List, p. 40.

Melania tuberculata, Lea, Philos. Trans. iv., p. 101 t. 15, f. 31. Obs. i., p.

111. Dekay, Moll. N. Y., p. 93. Wheatley, Cat. Shells. U. S., p. 27.

Binney, Check List, No. 277. Jay, Cat., 4th Edit., p. 275. Catlow,

Conch. Nomenc. p. 189.

Juga tuberculata, Lea, Chenu, Man. Conchyl. i. f. 2017.

Melania Spixiana, Lea, Philos. Trans. vi. p. 93. Obs., v. p. 93.

Melania nodata, Reeve, Monog. Mel. fig. 422.

10. *A. funiculata*, Reeve.

Io funiculata, Reeve, Monog. Io, t. 2, f. 8. April, 1860. Brot, List, p. 29.

11. *A. lima*, Conrad.

Melania lima, Conrad, New Fresh Water Shells, p. 54, t. 8, f. 8, 1834.

Chenu, Reprint. Dekay, Moll., N. Y. p. 97. Wheatley, Cat. Shells

U. S., p. 26. Jay, Cat. 4th Edit., p. 274. Catlow, Conch. Nomenc.

p. 187. Brot, List, p. 33.

Anculotus lima, Conrad, Reeve, Monog. Anc. t. 1, f. 1.

Lithasia lima, Conrad, Binney, Check List, No. 300.

12. *A. verrucosa*, Rafinesque.

Pleurocera verrucosa, Rafinesque, Annals of Nature, p. 11, 1820.

Melania nupera, Say, New Harmony Dissem. p. 260. Amer. Conch. Pt. 1.

t. 8, f. 1, 2. Binney's Reprint, p. 157, t. 8. Chenu's Reprint p. 16.

t. 2, f. 3. Dekay, Moll. N. Y. p. 97. Wheatley, Cat. Shells. U. S. p. 26.

Brot. List, p. 40. Jay, Cat. Shells, 4th Edit. p. 274.

[Nov.

Anculotus nuperus, Say, Reeve, Monog. Anc. t. 1, f. 5.

Lithasia nupera, Say, Binney, Check List, No. 302.

Melanopsis semigranulosa, Deshayes, Encyc. Meth. Vers. ii. p. 438. Lamarck, Anim. Sans. Vert. 2d edit. vii. p. 491.

Sub-genus LITHASIA, Haldeman.

Lithasia, Haldeman, Supp. to Monog. Limniades, No. 1, Oct. 1840. Binney, Check List, Feb. 1860. Lea, Proc. Acad. Nat. Sciences, p. 54, Feb., 1861. Lea, Jour. Acad. Nat. Sci. v, p. 258 and 354, Mar. 1863. Observations ix. p. 80 and 176.

Lithasia, Haldeman, (part.), H. & A. Adams, Genera 1, p. 308, Feb. 1854.

Lithasia, Lea, 1845, Chenu, Man. Conchyl. i. p. 296, 1859.

Megara (part.) Adams, Genera, i. p. 306, Feb. 1854.

Anculotus (part.) Say, Gray, Genera, Zool. Proc. pt. 15, p. 153, 1847. Reeve, Monog. Ancul., Apr., 1860.

Anculosa and *Melania* (Sp.) Auct.

SPECIES.

A. Shell large, oval, inflated.

1. *L. fuliginosa*, Lea.

Melania fuliginosa, Lea, Philos. Proc. Philos. Trans. viii. p. 170, t. 5, f. 17. Obs. iii. p. 8. DeKay Moll. N. Y., p. 94. Troost, Cat. Wheatley, Cat. Shells, U. S. p. 25. Binney, Check List, No. 113. Catlow, Conch. Nomenc., p. 186. Brot. List, p. 40. Reeve, Monog. Melania, sp. 401.

2. *L. Florentiana*, Lea.

Melania Florentiana, Lea, Philos. Proc. Philos. Trans. viii. p. 188, t. 6, f. 53. Obs. iii. p. 26. DeKay, Moll. N. Y., p. 99. Wheatley, Cat. Shells U. S., p. 25. Binney, Check List, No. 110. Catlow, Conch. Nomenc., p. 186. Brot. List, p. 40.

3. *L. venusta*, * Lea.

Melania venusta, Lea, Philos. Proc. Philos. Trans. viii. p. 187, t. 6, f. 52. Obs., iii. p. 25. DeKay, Moll. N. Y., p. 99. Jay, Cat. 4th Edit. p. 275. Troost, Cat. Wheatley, Cat. Shells U. S., p. 27. Binney, Check List, No. 285. Catlow, Conch. Nomenc. p. 189. Brot. List, p. 40. Reeve, Monog. Mel., sp. 315.

4. *L. dilatata*, Lea.

Lithasia dilatata, Lea, Proc. A. N. S., p. 55, 1861. Jour. A. N. S., v. pt. 3, p. 260, t. 35, f. 69. Obs. ix. p. 82.

5. *L. imperialis*, Lea.

Lithasia imperialis, Lea, Proc. A. N. S., p. 55, 1861. Jour. A. N. S., v. pt. 3, p. 258, t. 35, f. 67. Obs. ix. p. 80.

B. Shell small, compact oval-elliptical.

6. *L. vittata*, Lea.

Lithasia vittata, Lea, Proc. A. N. S., p. 273, 1862. Jour. A. N. S., v. pt. 3, p. 354, t. 35, f. 67. Obs. ix. p. 176.

7. *L. Showalterii*, † Lea.

Lithasia Showalterii, Lea, Proc. A. N. S., p. 188, 1850. Jour. A. N. S., v. pt. 3, p. 262, t. 35, f. 72. Obs. ix. p. 84.

Melania Showalterii, Lea, Reeve, Monog. sp. 423. Brot, List. p. 33.

* More cylindrical, lighter colored, and more ponderous, though not so large as *L. Florentiana*.

† More cylindrical than *vittata*, with the aperture wider, lip more curved, and the spine shorter and more rapidly acuminate.

8. *L. nuclea*, Lea.

Lithasia nuclea, Lea, Proc. A. N. S., p. 188, 1860. Jour. A. N. S., v. pt. 3, p. 263, t. 35, f. 73. Obs. ix. p. 85. Binney, Check List, No. 301.

Melania nuclea, Lea, Reeve, Monog., sp. 423. Brot. List., p. 33.

9. *L. nucleola*, Anthony.

Melania nucleola, Anthony, Proc. Boston, Soc. N. H. iii. p. 360, Dec. 1850. Binney, Check List, No. 181. Brot. List, p. 40. Reeve, Monog. sp. 348.

10. *L. undosa*, Anthony,

Melania undosa, Anthony, Ann. N. Y. Lyc., vi. p. 124, t. 3, f. 25, Mar. 1854. Binney, Check List, No. 280. Brot. List p. 39. Reeve, Monog. Mel. sp. 447.

Melania varinodosa, Anthony, MSS. Reeve, Monog. sp. 268. Brot. List, p. 39.

11. *L. obovata*, Say.

Melania obovata, Say, New Harmony Dissem. No. 18, p. 276, Sept. 9, 1829. Reprint, p. 18, 1840. Binney's Reprint, p. 143. DeKay, Moll. N. Y. p. 98. Wheatley, Cat. Shells U. S., p. 26. Catlow, Conch. Nomenc. p. 188. Jay, Cat., 2d Edit. p. 45.

Anculotus obovatus, Say, Jay, Cat. 4th Edit., page 276. Reeve, Monog. Mel. fig. 21.

Leptoxis obovata, Say, Hald. Monog. Lept. p. 2, t. 1. f. 27—34. Binney, Check List, No. 374. Brot. List p. 25.

Lithasia obovata, Say, Chenu, Manuel i. f. 2056—8.

Anculosa obovata, Say, Wheatley, Cat. Shells U. S., p. 26.

Melania Hildrethiana,* Lea, Philos. Proc. Philos. Trans. viii. p. 164, t. 5, f. 1. Obs. iii. p. 2, t. 5, f. 1. DeKay, Moll. N. Y., p. 92. Wheatley, Cat. Shells U. S., p. 25. Binney, Check List, No. 138. Catlow, Conch. Nomenc. p. 187.

12. *L. consanguinea*, Anthony.

Melania consanguinea, Anthony, Ann. N. Y. Lyc. vi. p. 125, t. 3, f. 26, Mar. 1854. Binney, Check List, No. 66. Brot. List, p. 39.

Anculotus consanguineus, Anthony, Reeve, Monog. Anc. sp. 2.

C. *Shell obliquely flattened.*

Melania compacta, Anthony, Ann. N. Y. Lyc., vi. p. 122, t. 3, f. 22, Mar. 1854. Binney, Check List, No. 62. Brot. List, p. 32. Reeve, Monog. sp. 343.

14. *L. obliqua*, Anthony, MSS.D. *Shell sub-cylindrical.*15. *L. brevis*, Lea.

Melania brevis, Lea, Philos. Proc. ii. p. 242. Philos. Trans. ix. p. 26. Obs. iv. p. 26. Wheatley, Cat. Shells U. S. p. 24. Binney, Check List, No. 38. Brot. List, p. 32. Reeve, Monog. sp. 344.

Anculosa solida, Lea, Phil. Proc. ii. p. 243. Philos. Trans. ix. p. 29, t. 9, f. 29. Obs. iv. p. 29. Wheatley, Cat. Shells U. S. p. 28.

Leptoxis solida, Lea, Binney, Check List, No. 384. Brot. List, p. 25.

Milania trivittata, Reeve, Monog. sp. 420.

* Young Shell.

16. *L. fusiformis*, Lea.

Lithasia fusiformis, Lea, Proc. A. N. S. p. 54, 1861. Jour. A. N. S., v. pt. 3, p. 261, t. 35, f. 71. Obs. ix. p. 71.

17. *L. Downiei*, Lea.

Lithasia Downiei, Lea, Proc. A. N. S., p. 273, 1862. Jour. A. N. S., v. pt. 3, p. 354, t. 39, f. 227. Obs. ix. p. 176.

Sub-Genus STREPHOBASIS, Lea.

Strophobasis, Lea, Proc. Acad. Nat. Sci. p. 96, Apr. 1861. Jour. A. N. S., v. pt. 3, p. 264 and 355. Obs. ix. p. 86, 177.

Megara, (sp.) H. & A. Adams, Genera i. p. 306, Feb. 1854.

A. *Shell ovate-conical*.1. *Strophobasis curta*, Haldeman.

Melania curta, Haldeman, Monog. Limniades, No. 3, p. 3 of Cover. Binney Check List, No. 80. Brot. List, p. 32. Reeve, Monog. sp. 345.

Melania solida, Lea, Philos. Proc. iv. p. 9, f. 27. Obs. iv. p. 57. Binney, Check List, No. 245. Brot. List, p. 31. Reeve, Monog. Melania, f. 454.

Stropholasis solida, Lea, Jour. A. N. S., v. pt. 3, p. 266, t. 35, f. 77. Obs. ix. p. 88.

2. *Strophobasis pumila*, Lea.

Melania pumila, Lea, Philos. Proc. iv. p. 166, Aug. 1845. Philos. Trans. x. p. 60, t. 9, f. 36. Obs. iv. p. 60. Binney, Check List, No. 223. Brot. List. p. 33. Reeve, Monog. sp. 446.

3. *Strepho. carinata*, Lea.

Strophobasis carinata, Lea, Proc. A. N. S. p. 273, 1862. Jour. A. N. S., v. pt. 3, p. 355, t. 39, f. 228. Obs. ix. p. 177.

B. *Shell cylindrical*.4. *Strepho. olivaria*, Lea.

Strophobasis olivaria, Lea, Proc. A. N. S., p. 273, 1862. Jour. A. N. S., v. pt. 3, p. 356, t. 39, f. 229. Obs. ix. p. 178.

5. *Strepho. plena*, Anthony.

Melania plena, Anthony, Ann. Lyc. N. H. New York, vi. p. 121, t. 3, f. 21, Mar. 1854. Binney, Check List, No. 210. Brot. List, p. 33. Reeve, Monog. Mel. sp. 450.

Strophobasis Spillmanii, Lea, Proc. A. N. S., p. 96, 1861. Jour. A. N. S. v. pt. 3, p. 264, t. 35, f. 74. Obs. ix. p. 86.

6. *Strepho. cornea*, Lea.

Strophobasis cornea, Lea, Proc. A. N. S., p. 96, 1861. Jour. A. N. S., v. pt. 3, p. 265, t. 35, f. 75. Obs. ix. p. 87.

7. *Strepho. corpulenta*, Anthony.

Melania corpulenta, Anthony, Ann. Lye. N. H., vi. p. 127, t. 3, f. 28, Mar. 1854. Binney, Check List, No. 70. Brot. List, p. 32.

8. *Strepho. bitæniata*, Conr.

Melania bitæniata, Conrad, New Fresh Water Shells, p. 52, t. 8, f. 6, 1834. DeKay, Moll. N. Y., p. 94. Wheatley, Cat. Shells U. S., p. 24. Binney, Check List, No. 34. Brot. List, p. 32. Hanley, Conch. Misc. t. 8, f. 73.

Anculotus bitæniatus, Conrad, Reeve, Monog. Anculotus t. 3, f. 25.

Strophobasis Clarkii, Lea, Proc. A. N. S., p. 66, 1861. Jour. A. N. S., v. pt. 3, p. 265, t. 35, f. 76. Obs. ix. p. 87.



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