STERKIANA

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ADDENDA ON MUSSEL VS. MUSCLE

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In issue No. 4 of STERKIANA (May, 1961) I discussed in considerable detail the use of the spellings 'mussel' and 'muscle' in reference to bivalve mollusks. Most of the controversy has revolved about the 'mussel shoals' (officially the Muscle Shoals) of the Tennessee River. However, the confusion has been world-wide and apparently the variation of spelling has come about for different reasons. In general, use of the spelling 'muscle' is an old and obsolete form whereas 'mussel' is more recent and preferred. Since publication of my report, a number of other instances of the use of this term have come to my attention which are sufficiently interesting to place on record.

In 1746 John Bartram published a paper in the *Philosophical Transactions* (43: 157-159) entitled 'Containing some observations concerning the saltmarsh muscle, the oyster banks, and the freshwater muscle of Pennsylvania.' Apparently this was the common spelling for bivalves at that time. In 1820 Caleb Atwater, in his 'Description of the antiquities discovered in the State of Ohio and other western states' (*Trans. and Coll. Amer. Antiquarian Soc.*, vol. 1, p. 114 and 226), wrote of finding 'muscle shells' in Indian graves.

On 11 September 1859 Alpheus Hyatt wrote to Frederic W. Putnam from the banks of the Kentucky River. Both of these young men were students of Louis Agassiz at Harvard University. Hyatt, on a collecting trip, sent notes to Putnam on specimens shipped to the Agassiz Museum. In reference to the bivalves Hyatt wrote, 'The muscles are from shoals 2 to 2½ miles above Hickman's Landing up Kentucky River--I know localities where one man and myself can load a boat with muscles in 6 hours.' Another correspondent of Putnam was F.A. Stratton who wrote from Chattanooga, Tennessee, 17 July 1877, that certain archaeological specimens were found among 'muscle shells.' Another archaeologist, Ernest Volk, wrote to Putnam, who was then Curator of the Peabody Museum of American Archaeology and Ethnology at Harvard University, 23 November 1891, concerning an excavation in New Jersey reporting that 'This pit had no traces of any muscle shells.' Putnam repeated this spelling in his official report to Director-General George Davis of the World's Columbian Exposition for which the excavation was made.

In a report on 'Artificial shell deposits in New Jersey' published by Charles Rau (*'Annual Report, Smithsonian Institution* for 1864: 370-374. 1865), the familiar blue mussel, *Mytilus edulis* was referred to with the modern spelling of 'mussel.' Two years later, however, D.G. Brinton writing on the 'Artificial

shell deposits of the U. S.' (*ibid.* for 1866: 356-358. 1867) recorded his observations on the Tennessee River at 'The Muscle Shoals, and ItheyI are composed almost exclusively of the shells of the freshwater muscle *(Unio virginiana,* Lamarck?) -- The Tennessee muscle is margaritiferous, etc.'

In his report of the *Greely Arctic Expedition* (1884), A. W. Greely makes reference to a body of water named Muscle Bay (p. 25). In his volume on the 'Archaeology of Ohio' (1903), M. C. Read, in describing the use of shells both fresh and salt water, stated that, 'Fresh water muscles were used as knives and scrappers, as spoons and cups.' Strangely enough, however, at the end of the book he makes a reference to 'Mussel Shoals' of Tennessee using the preferred spelling for bivalves! Since Read was a naturalist, he undoubtedly knew that 'mussel' was the current spelling for river clams and his use of the spelling 'muscle' in the same volume is difficult to understand especially since he went contrary to the popular and official spelling of Muscle Shoals.

S. S. Berry entitled a paper he published in the *Nautilus* (26: 130. 1913) as 'A list of Mollusca from Musselshell Valley, Montana.' The river and valley in Montana apparently have always been spelled as 'Musselshell.' In 1930 Calvin Goodrich adopted the official spelling for his paper on 'Goniobasis in the vicinity of Muscle Shoals' (Occ. Papers Mus. Zool., Univ. Mich. No. 209: 1-125).

In the U.S. Coast Pilot for the Atlantic Coast (St. Croix River to Cape Cod, 4th edition. 1941) appears the name 'Muscle Ridge Channel,' and on the revised map of the U.S. Coast and Geodetic Survey (Map 243, East Coast Mass., Ipswich Bay to Gloucester Harbor) prepared in 1958, the name Muscle Point was retained in spite of the fact that other recent maps have used the spelling 'Mussel Point' and the road way to this promontory has always been known as Mussel Point Road. Oddly enough the *Gloucester* (Massachusetts) *Daily Times* issue of 7 July 1967 refers to Muscle-Point, reverting to the obsolete spelling which had never been used locally.

Nearly all current authors use the preferred spelling of 'mussel.' For example, R. P. Patterson entitled a report 'Notched Mussel Shells from a site at Marietta, Ohio' *(Ohio Archaeologist* 12: 98-99. 1962). Stansbery has been among those who prefer the unofficial title of Mussel Shoals, but in his report to the American Malacological Union, he used both spellings to avoid confusion, viz. 'The Mussel (Muscle) Shoals of the Tennessee River revisited' *(Annual Rept. Amer. Malac. Union* for 1964: 25-28). This seems to be a good compromise. The following year, however, on the program of the Ohio Academy of Science (74th Annual Meeting, 1965) he designated the famous locality simply as the 'Mussel Shoals of the Tennessee River.'

I know of only one current use of the term for bivalve mollusks where the obsolete spelling 'muscle shell' is used. In a display of the Archaeology of Ohio at the Cleveland Natural Science Museum there is a label which reads 'Whittlesey Culture sites often yield large numbers of muscle shells with a central perforation.' Probably there will always be some variation in the spelling for the common name of bivalves.

MANUSCRIPT RECEIVED MAY 29, 1967

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THIRTY-THIRD ANNUAL MEETING
AMERICAN MALACOLOGICAL UNION
OTTAWA, ONTARIO, CANADA
JULY 31 - AUGUST 4, 1967

It is the custom to publish a full account of the meetings in the AMU Annual Reports and this will be done again this year by the able secretary, Mrs. Margaret C. Teskey. With her permission, the following notes are published here for the convenience of members of the AMU and readers of STERKIANA.

Arrangements for the meeting were in the capable hands of a local committee consisting of Arthur Clarke, Jr. and Mrs. Clarke, co-chairmen; E.L. Bousfield, Mrs. A. H. Macpherson, Mrs. R. V. Smith, Mrs. J. H. Rick, Miss Maryl Weatherburn, and Mrs. A. S. Weatherburn.

Housing was in the dormitories of Carleton University where some of the sessions were also held in the fine Theatre Room of the Tory Building. One session was held in the auditorium of the National Museum of Canada and the annual banquet was held at the Riverside Hotel, where members in attendance were the guests of the National Museum of Canada.

Council met Monday July 31 and the business meeting took place during the Wednesday afternoon session at the National Museum of Canada.

New officers elected are: President: A. H. Clarke, Jr.; Vice-President: Joseph Rosewater; Second Vice-President (chairman, AMU-PD): Gale G. Sphon, Jr. Secretary: Margaret C. Teskey; Treasurer: Mrs. H. B. Baker; Publications Editor: Morris K. Jacobson. Councillors - at-large: Harold D. Murray, David H. Stansbery, Dorothy Beetle, and Dan Steger. Our secretary was elected to Life Membership, a well-deserved honor.

The 1968 meetings will be held in Corpus Christi, Texas, exact time to be announced later.

Attendance reached 167 registered members, which constitutes a record.

Papers presented are listed in the order of appearance in successive sessions.

MONDAY, JULY 31

DAVID H. STANSBERY (Ohio State Museum and Ohio State University)--Growth and Longevity of Naiads from Fishery Bay in western Lake Erie.

ADLAI B. WHEEL, Sr. (Syrscuse, New York) -- Small Beginnings.

ARTHUR H. CLARKE, Jr. (NATIONAL Museum of Canada) -- The Mollusca of Sable Island, Nova Scotia.

ROBERT ROBERTSON (Academy of Natural Sciences of Philadelphia) -- Hosts, spermatophores, and the systematics of some eastern *Odostomia*, s.l. (Pyramidellidae).

DOROTHY RAEIHLE (Elmhurst, N.Y.) --Notes on captive *Leucozonia nassa* Gmelin, *Chaetopleura apiculata* Say, and *Ischnochiton floridanus* Pilsbry.

JOSEPH P. E. MORRISON (United States National Museum) --- Mexican Pearly Fresh Water Mussels.

TUESDAY, AUGUST 1

PAUL CHANLEY (Virginia Institute of Marine Science, Wachapreague, Virginia) -- Bivalve larval development types.

WILLIAM H. HEARD (Florida State University, Tallahassee) -- Seasonal reproduction in the Lampsilinae (Pelecypoda: Unionidae).

KENNETH J. BOSS (Museum of Comparative Zoology, Harvard University) -- Notes on the evolution of *Spengleria* (Gastrochaenidae: Bivalvia).

IRENE LUBINSKY (University of Manitoba) -- Distribution and growth rates of the edible mussel, *Mytilus edulis* L. in the Canadian Arctic.

MARCEL OUELLET (Université d'Ottawa) -- A Correlation of postglacial molluscan succession and Radiocarbon-dated pollen sequence from Atkins Lake, Ontario.

MRS. A. H. MacPHERSON (National Museum of Canada)--Distribution of Arctic marine gastropods.

ARTHUR H. CLARKE, Jr. (National Museum of Canada) -- Zoogeographic and evolutionary patterns in northern Lymnaeidae and Planorbidae.

GEORGE E. RADWIN (United States National Museum) -- Notes on the Taxonomy and Zoogeography of the Columbellidae.

HUGH J. PORTER and CHARLES E. JENNER (University of North Carolina Institute of Marine Sciences and University of North Carolina, Department of Zoology) -- Notes on the molluscan fauna off the coast of North Carolina.

DONALD R. SHASKY (Redlands, California) -- The San Juan Expedition to the Gulf of Tehuantepec.

TUESDAY EVENING, AUGUST 1

FREDERICK A. ALDRICH (Director, Marine Sciences Research Laboratory, Memorial University, St. John's, Newfoundland) -- *Architeuthis*, the Giant Squid.

This was a special address on a rare animal, given by an expert who has probably seen more giant squids than anyone presently alive and has undoubtedly dissected more of them than any malacologist. Dr. Aldrich held his audience spellbound for an hour, showing magnificently clear kodachromes of his catches and dissections and explaining them in lucid and humorous fashion.

WEDNESDAY, AUGUST 2

VERA KING FARRIS (Museum of Zoology, University of Michigan) -- Dissociation and reorganization of molluscan tissues.

HENRY VAN DER SCHALIE and GARY PACE (Museum of Zoology, University of Michigan) -- The Freshwater Mollusca of Taiwan (Formosa).

THOMAS J. GILMOUR (Department of Biology, University of Saskatchewan)

(Continued on page 51)

ish line below the suture. The aperture is about one-third the length of the shell.

I have great pleasure in naming this species after my friend Dr. Spillman. — *Lea.*

This species appears to me to be very closely allied to *pyrenellum* on one side and to *elevatum* on the other side.

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.

Description.— Shell conical, rather smooth, thick; of a dull, dark horn-color, unrelieved by any other except a rather indistinct, brown band, revolving near the base of each whorl, immediately below which a raised, rounded, subcrenulated ridge revolves between it and the suture below; spire much but not acutely elevated, with a nearly rectilinear outline; whorls ten to eleven, flat or concave, and with a well-impressed, channelled suture; aperture small, rhomboidal, diaphanous, exhibiting the dark band of the exterior through its substance very faintly, far within; columella deeply curved, not indented, thickened at base; outer lip angularly curved, extended forwards; sinus rather broad, not deep.

Fig. 199.

Diameter, ·46 inch (12 millim.); length, 1·37 inches (34 millim.). Length of aperture, ·40 inch (10 millim.); breadth of aperture, ·24 inch (6 millim.).

Habitat.—Alabama.

My cabinet.

Observations.—A stout species which most resembles *M. regularis*, Lea, in general appearance, from which, however, its concave whorls, elevated carina, and dark band will readily distinguish it. It has not the channelled body-whorl of *M. canaliculata*, Say, nor the convex, subangulated upper whorls which distinguish that species.

The lines of growth are very coarse and prominent, and extending over the raised line near the base of the whorls, give the latter an interrupted or subcrenulated appearance.—*Anthony.*

The figure is from the original type.

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. Müller, Synopsis, p. 45.

Description.— Shell elevated, with flattened whorls, having an obsolete spiral line on each; suture impressed; body-whorl angulated; angle defined by a prominent line; base hardly convex, labrum angulated near the centre; aperture patulous; columella obtusely rounded at the base.

Fig. 200.

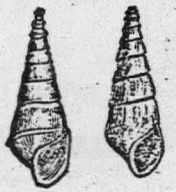
Observations.—Inhabits streams in North Alabama. The aperture is remarkably patulous, and the labrum profoundly angulated.—*Conrad.*

The figure is that of Conrad's type in the collection of the Academy of Natural Sciences.

50. P. Conradii, Tryon.

Description.— Shell narrow, lengthened, with nine flattened whorls, which are angulated in the middle of the body and just above the suture of the spire. Dark brown, smooth, apical whorls, slightly carinate. Aperture small, not produced below, fuse short, scarcely perceptible.

Fig. 201. Fig. 202.



Diameter, ·36; length, 1 inch.

Habitat.—Tennessee. — *Tryon.*

This shell has been distributed very extensively in cabinets under the name of *Melania pyrenella*, Conrad. It is, however, a much narrower species and darker in color.

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. Nomenc., p. 183. Brot, List. p. 30.

Ceriphasia regularis, Lea, Chenu, Manuél, i, f. 1956. Adams, Genera, i, 297.

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Description.— Shell smooth, conical, rather thick, dark horn-colored; spire elevated; sutures somewhat impressed; whorls flat; aperture small, whitish.

Fig. 203.

Habitat.—Oconee District, Tennessee; Dr. Troost.

Diameter, ·40; length, 1·22 inches.

Observations.—This species has a regularly increasing and elevated spire. Neither of the three before me has perfect tip. The number of whorls must be about ten. The aperture is about one-fourth the length of the shell.— *Lea.*

Apparently very closely related to *pyrenella*, Conrad, but appears to be a heavier shell and not so strongly angulated.

The figure is a copy of that of Mr. Lea.

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.

Description.— Shell ovate-conic, smooth, olivaceous, thick; spire obtusely elevated, decollate; whorls flat, only about six remaining; sutures distinct; lines of growth very strong, amounting to varices on the body-whorl; aperture ovate, bluish-white within; columella strongly curved or indented about the middle, white; sinus well developed at base; body-whorl obscurely, concentrically striate, the striæ forming faint nodules where they intersect the varices.

Fig. 204.

Habitat.—Tennessee.

Observations.—This species may be compared with *M. tenebro-cincta* herein described; from that species it may be distinguished by its more robust form, uniform, dark, olivaceous color and the absence of the dark bands so conspicuous in that species. It has a very solid, compact form, and this with its regular, uniform size up to the point of decollation, may serve to distinguish it from all others.— *Anthony.*

Figure 204 is from Mr. Anthony's original type specimen.

52 a. P. cylindraceum, Lea.

Trypanostoma cylindraceum, Lea, Proc. Acad. Nat. Sci., p. 4, 1864. Jour. Acad. Nat. Sci., vi, p. 142, t. 73, f. 57, 1867.

Description.— Shell smooth, cylindrical, rather thick, banded or without bands; spire rather raised; sutures irregularly impressed; whorls flattened, slightly impressed, swollen below the sutures; aperture rather small, rhomboidal; outer lip acute, somewhat sinuous; columella thickened, incurved and twisted.

Fig. 205.

Habitat.—Roane County, East Tennessee.

Diameter, ·41; length, 1·4 inches.

Observations.—I have three specimens of this pupæform species before me. Two of them are of a light horn-color; the third has a dark-brown band over more than two-thirds of the whorls, above which along the sutures it is yellow. In this specimen, the base of the columella is purple and the interior is purplish. In all the three specimens the body-whorl is impressed; above the periphery, amounting almost to a channel. It is allied to *parvum* and *moriforme* (nobis) but is larger and more cylindrical than the first, and smaller and less pyramidal than the latter. The aperture is about one-third the length of the shell. The apices were too much eroded to ascertain the number of whorls, but there are probably about eight.— *Lea.*

52 b. P. Roanense, Lea.

Trypanostoma Roanense, Lea, Proc. Acad. Nat. Sci., p. 4, 1864. Jour. Acad. Nat. Sci., vi, p. 142, t. 23, f. 52, 1867.

Description.—Shell smooth, obtusely conical, thick, banded or without bands; spire obtuse; sutures impressed; whorls flattened, swollen below the sutures; aperture rather small, rhomboidal; outer lip acute, sinuous; columella whitish, thickened and very much twisted.

Fig. 206.

Habitat.—Roane County, East Tennessee.

Diameter, ·41; length, ·80? inch.

Observations.—This species is allied to *cylindraceum*, but differs in being shorter and wider in proportion. It differs also in the form of the bands where they exist. Two of the six specimens before me have a single narrow band below the middle, and one has a second

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band above the middle. All the specimens have apices so much eroded that the number of whorls cannot be correctly ascertained. There may be six or seven. The aperture is probably more than one-third the length of the shell.—*Lea.*

Notwithstanding the differences pointed out by Mr. Lea, I suspect that this and *cylindraceum* will prove to be one species.

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.

Description.— Shell ventricose-conic, smooth, thick, dark-olive; spire acuminate, but not elevated; whorls eight, convex, rapidly converging to the apex; body-whorl very large, rounded beneath; sutures well defined, white; aperture not large, elliptical, within dark-purple; columella indented near the base; sinus well developed.

Fig. 207.

Diameter, ·38 inch (10 millim.); length, ·75 inch (19 millim.). Length of aperture, ·34 inch (9 millim.); breadth of aperture, ·16 inch (4 millim.).

Habitat.—Tennessee.

Observations.—A plain sombre-looking species with no very remarkable distinguishing characters except its large, bulbous form, and dark, purple mouth. It cannot be compared with any other species. The whorls are slightly shouldered, with a very narrow, whitish, sutural region.—*Anthony.*

The specific name "*glans*," first used by Mr. Anthony, being preoccupied, he changed it to *glandula*. It is a curious species, resembling *Jayi*, Lea, in the channel of the aperture, but is much more inflated.

The figure is from Mr. Anthony's type specimen.

53 a. P. subrobustum, LEA.

Trypanostoma subrobustum, LEA, Proc. Acad. Nat. Sci., p. 4, 1864. Jour. Acad. Nat. Sci., vi, p. 141, t. 23, f. 50, 1867.

Description.— Shell smooth, pyramidal, dark horn-color, thick; spire pyramidal and elevated; sutures impressed; whorls about nine, flattened; aperture small, rhomboidal; outer lip sharp and very sinuous; columella thickened and very much twisted.

Fig. 208.

Operculum ovate, dark-brown, with polar point near the base on the left side.

Habitat.— Holston River, at Knoxville, East Tennessee.

Diameter, ·61; length, 1·25 inches.

Observations.—A single specimen only, with an imperfect outer lip and much eroded spire, was received. This is greatly to be regretted, as such a fine large species ought to be well represented. This specimen has no bands and is without striæ. It belongs to the group of which *Hartmanii* may be considered the type, but may be distinguished by its being a larger and more robust species, with a much larger body-whorl. The aperture is about one-third the length of the shell.—*Lea.*

54. P. Christyi, LEA.

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.

Description.— Shell smooth, elongately conical, somewhat thick, horn-color, rarely banded; spire very much elevated; sutures regularly impressed; whorls about ten, slightly convex; aperture small, subrhomboidal, whitish within; outer lip acute, sinuous; columella white and twisted.

Fig. 209.

Operculum subovate, dark-brown, with polar point near to the basal margin.

Habitat.—Cane Creek, Tennessee; Prof. D. Christy.

Diameter, ·48; length, 1·12 inches.

Observations.—I am indebted to the late Joseph Clark for many specimens from the above habitat, brought by Prof. Christy. It is allied to *Estabrookii*, herein described, but it is a larger and heavier shell, has a larger aperture, a much more twisted

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columella and is of a darker horn-color. One of the specimens is somewhat carinate on the body-whorl, and has a more developed channel. The form of the channel is very like to *Melania* (*Trypanostoma*) *regularis* (nobis) but it is not so cylindrical nor so green. The aperture is about the third of the length of the shell. I name this after Prof. David Christy, Hamilton, Butler Co., Ohio, who collected many fine shells in East Tennessee and North Carolina, which he kindly gave to Mr. Clark.—*Lea.*

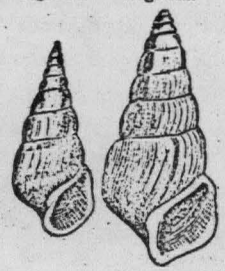
This species may be distinguished from *labiatum* principally by its more ponderous proportions and more flattened volutions.

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.

Description.—Shell smooth, acutely conical, rather thick, shining, greenish horn-color; spire attenuate, sharp-pointed; sutures regularly impressed: whorls about ten, somewhat convex, carinate towards the beak, the last rather large; aperture rather small, rhomboidal, whitish within; outer lip sharp, thickened towards the margin, very much dilated and very sinuous; columella whitish, thickened below and much twisted.

Fig. 210. Fig. 211.



Operculum subovate, dark brown, rather thin, with the polar point near the middle towards the base.

Habitat.—Big Miami River, Ohio; J. Clark.

Diameter, ·43; length, ·98 inch.

Observations.—A number of these were sent to me some years since, by Mr. Clark. They were supposed to be *Melania neglecta*, Anth., but they are not very closely allied to the species which Mr. Anthony sent to me under that name, nor are they like his figure, nor will they answer to his description. This species has a remarkably expanded outer lip, unusually thickened inside of the edge. It is nearly allied to *Whitei* herein described, but may be distinguished by being not quite so attenuate, having rather more convexity in the whorls, having a larger outer lip and slightly differing in the cut of the open channel at the base. The aperture is three-tenths the length of the shell.—*Lea.*

55 a. P. univittatum, LEA.

Trypanostoma univittatum, LEA, Proc. Acad. Nat. Sci., p. 112, 1864. Jour. Acad. Nat. Sci., vi, p. 145, t. 23, f. 58, 1867.

Description.—Shell obtusely carinate, pyramidal, somewhat thick, pale olive, shining, with a single band; spire elevated; sutures impressed; whorls flattened; aperture rather small, rhomboidal, whitish within, obscurely single-banded; outer lip acute, much curved; columella thickened below and very much twisted.

Fig. 212.

Habitat.—Cahawba River, Alabama.

Diameter, ·45; length, 1·2 inches.

Observations.—A single specimen was received by Dr. Hartman from Dr. Showalter and kindly lent to me for description. It seems to be most nearly allied to *T. Anthonyi* (nobis), but it is a smaller species, without the striæ and obscure sulcations of that species, and it has a band which I have never observed in *Anthonyi*, and probably a less number of whorls. It is also somewhat allied to *Hartmanii* (nobis), but not so elevated, and it is smaller. When *Hartmanii* is banded, it always has, I believe, two. This specimen of *univittatum* has a single band above the periphery which is observable on all the whorls above. The apex being eroded, I cannot state the number of whorls, but they seem to be about eight. The aperture is about one-third the length of the shell.—*Lea.*

Certainly very closely allied both to *subrobustum* and *Christyi*.

55 b. P. pallidum, LEA.

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.

Description.—Shell smooth, attenuately conical, rather thick, pale horn-color; spire very much raised; sutures very much impressed; whorls eleven, slightly convex, somewhat geniculate above; aperture rather small, subrhomboidal, white within; outer lip sharp, sinuous; columella white and very much twisted.

Operculum subovate, light chestnut-brown, with the polar point on the left near the basal margin.

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Habitat.—Niagara Falls, New York, St. Lawrence at Montreal; E. Billings, Esq.

Diameter, ·46; length, 1·36 inches.

Observations.—Many years since I found two specimens of this species above the Falls, on the New York side. They were accompanied with *Melania* (*Trypanostoma*) *Niagarensis* and *subularis* (nobis). I hesitated when I described the above two, whether this was a new species. There is no doubt in my mind now. It is nearest allied perhaps to *Melania* (*Trypanostoma*) *Sayi*, Ward, but it is a more slender species and has a higher spire and more whorls. The aperture is rather more than the fourth of the length of the shell.—*Lea.*

Fig. 213. Fig. 214.

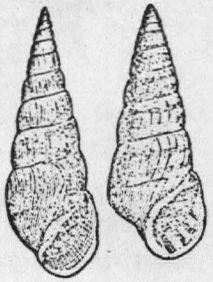

Fig. 213 is a copy of Mr. Lea's figure; the banded shell (fig. 214) is from an Ohio specimen named by Mr. Anthony "*M. neglecta.*"—See remarks on that species.

The "*Melania Sayi*, Ward" quoted above by Mr. Lea is doubtless intended to be *Melania* (*Strombus*) *Sayi*, Wood (Index Testaceologicus), as Dr. Ward never published a species under that name. Mr. Lea has, however, entirely mistaken the characters of this species, *his* shell being the *neglecta* of Anthony, while the true *M. Sayi* is a *canaliculatum*, as will appear by reference to the Index Testaceologicus, Supplement, t. 4, f. 24.

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.

Description.—Shell conical, rather thin, light yellow; whorls ten, upper ones nearly flat, with a slight ridge revolving just above the suture. This ridge disappears as it approaches the penult whorl, but two of them become visible on the last whorl, which is subangulate. Sometimes the last whorl is encircled by two dark brown bands, of which the uppermost is also visible throughout the upper whorls, covering the ridge above mentioned; sutures impressed; aperture ovate, of a delicate rosy hue within; outer lip waved; columella nearly straight, twisted, roseately recurved into a deep sinus.

Diameter, ·38 inch (10 millim.); length, ·90 inch (23 millim.). Length of aperture, ·33 inch (8 millim.); breadth of aperture, ·18 inch (4½ millim.).

Habitat.—Great Miami River, near Dayton, Ohio.

Fig. 215.

Observations.—A fine large species, which seems to exhibit considerable variation, both in form and coloring. The banded varieties are among our most beautiful species, while we also find those which are of a plain, delicate horn-color, or with bands but faintly indicated by an almost imperceptible difference of color in the interior of the mouth, which in these specimens is generally, and in the banded specimens occasionally, tinged with a delicate rosy hue.—*Anthony.*

The light horn-colored variety alluded to by Mr. Anthony has since been separated by Mr. Lea as *T. labiatum*. It is certainly distinct as the whorls are more swollen, shell larger, color different, as is also the aperture. The two figures are from Mr. Anthony's types.

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. Müller, Synopsis, p. 47.

Melania mucronata, Lea, Proc. Acad. Nat. Sci., p. 117, 1861.

Trypanostoma mucronatum, Lea, Jour. Acad. Nat. Sci., v, pt. 3, p. 277, t. 36, f. 93. Obs., ix, p. 99.

Description.—Shell subulate, subturreted; volutions nine, each angulated below the middle; suture deeply impressed; epidermis smooth, polished, horn-colored, with a dark band revolving below the angle of each whorl; whorls near the apex acutely carinated.

Fig. 217.

Observations.—Inhabits small streams in Greene County, Alabama, among the grass which grows on the rocks. The shell is always coated with a deposit which obscures its characters.—*Conrad.*

The following is the description of

T. mucronatum.—Shell smooth, awl-shaped, thin, diaphanous, straw-yellow; spire extended, pointed; sutures slightly impressed; whorls

six, flattened above; aperture rather small, ovately rhombic, yellowish-white within; outer lip acute, sinuous; columella slightly thickened at the base, subeffuse and somewhat recurved.

Operculum ovate, spiral, light brown, with the polar point on the inner side near to the base.

Fig. 218.

Habitat.—Big Prairie Creek, Alabama; E. R. Showalter, M. D.

Diameter, ·36; length, ·98 inch.

Observations.—This is an acuminate species with about eight, regular, graceful whorls, which are towards the apex usually carinate. There are five specimens before me, all without bands. One of them has on the upper whorls, a disposition to take on a brownish color. This species is allied to *Melania* (*Goniobasis*) *Ocoëensis* (nobis). It is not quite so subulate, has not quite so many whorls and the aperture is not so quadrate. The aperture is not quite three-tenths the length of the shell.—*Lea.*

Mr. Lea's description and figure refer to this species not quite fully grown. It is curious that in his description he mentions six whorls, in his observations he gives it eight, while his figure exhibits ten.

I have before me a suite of over one hundred specimens from North Alabama, collected by Dr. Showalter, and presented to the Smithsonian Institution by Dr. Jas. Lewis. About half of them are banded. I have also author's types from Haldeman's collection and collection of the Academy of Natural Sciences. Fig. 217 is one of the latter. Fig. 218 represents Mr. Lea's original figure.

57 a. P. lugubre, LEA.

Melania lugubris, LEA, Philos. Proc. iv, p. 166, August, 1845. Philos. Trans. x, p. 58, t. 9, f. 29. Obs. iv, p. 58. BINNEY, Check List, No. 184. BROT, List, p. 31.
Melania spurca, LEA, Philos. Proc. iv, p. 166, Aug., 1845. Philos. Trans., x, p. 59, t. 9, f. 31. Obs. iv, p. 59. BINNEY, Check List, No. 248. BROT, List, p. 31.
Melania modesta, LEA, Am. Philos. Trans., x, p. 85, t. 9, f. 34, 1847.

Description.—Shell smooth, rather acutely conical, rather thick, dark-brown; spire rather elevated; sutures widely impressed; whorls flattened; aperture small, rhomboidal, within bluish, angular below.

Habitat.—Alabama.

Diameter, ·37; length, ·85 of an inch.

Observations.—A single specimen only of this species was received by Major LeConte: There are no strong characters to separate it, but it is certainly different from any with which I am acquainted. Like the *canaliculata*, Say, it is auger-shaped on the right lip, but it is a much smaller shell, and without the sulcations of that species. There is an angle on the middle of the whorl which causes the sutures to be rather wide and marked. The apex being eroded, the number of whorls cannot be ascertained—probably eight. The aperture is about one-third the length of the shell.—*Lea.*

Fig. 219.

The following, described at the same time as the above, is an undoubted synonyme.

Melania spurca.—Shell smooth, pyramidal, somewhat thick, dark brown; spire somewhat elevated; sutures slightly impressed; whorls eight, flattened; aperture small, rhomboidal, angular at the base, within white.

Fig. 220.

Habitat.—Alabama.

Diameter, ·43; length, ·98 of an inch.

Observations.—This species, of which only a single one was received by Major LeConte, has no striking character, but cannot be placed with any other with which I am acquainted. It is very regular in its form, with a patulous, auger-shaped outer lip, the margin of which is quite sinuous. The aperture is nearly one-third the length of the shell. It more nearly resembles *M. regularis* (nobis), than any other species, but is not so large or solid a shell.—*Lea.*

Mr. Reeve's figure does not represent this species at all. I give a copy of Mr. Lea's figure.

I also place in the synonymy of this species

Melania modesta.—Shell smooth, conical, somewhat fusiform, rather thin, black, spire rather elevated; sutures linear; whorls flattened, the last angular in the middle; aperture elliptical, rather large, within dark.

Habitat.—Chattahoochee River at Columbus, Georgia.

Diameter, ·28; length, ·67 of an inch.

Observations.—A single specimen of this species came from Dr. Boykin, with some others which I published some years since. This one was deferred in the hopes of getting more for comparison. In

outline and color, it is very closely allied to a shell I described, from Tennessee, under the name of *tenebrosa*. It differs from it in having the aperture less distended, in having an angle on the middle of the whorl and in being more fusiform. The apex being eroded, the number of whorls cannot be ascertained; there are about seven. The aperture is nearly one-half the length of the shell. The bands are so broad and dark as to give, in this specimen, a black appearance to the whole shell, except at the termination of the whorl, where the outer lip is yellow.—*Lea.*

Fig. 221.

The figure is copied from Mr. Lea's plate. Reeve's figure does not represent this species.

57 b. P. abruptum, Lea.

Melania abrupta, Lea, Philos. Proc., iv, p. 165. Philos. Trans., x, p. 59, t. 9, f. 32. Obs. iv, p. 59, t. 9, f. 32. Binney, Check List, No. 2. Brot, List, p. 37. Reeve, Monog. Melania, sp. 397.
Leptoxis abrupta, Lea, Adams, Genera, i, p. 307.

Description.— Shell smooth, short, conical, rather thick, yellowish; spire very short; sutures linear, whorls seven, flattened; aperture large, ovate, within whitish.

Fig. 222.

Habitat.—Alabama.

Diameter, ·3; length, ·64 of an inch.

Observations.—This species in size and form is somewhat allied to *M. Nicklinіana* (nobis), but has the spire more elevated and is not reddish. The two specimens before me, have each two purple bands. This character may be frequent without being constant. The aperture is nearly half the length of the shell.—*Lea.*

Figured from Mr. Lea's plate.

57 c. P. tortum, Lea.

Melania torta, Lea, Philos. Proc. iv, p. 165, Aug., 1845. Philos. Trans., x, p. 58, t. 9, f. 30. Obs. iv, p. 58. Binney, Check List, No. 272. Brot, List, p. 39. Reeve, Monog. Melania, sp. 377.

Description.— Shell smooth, club-shaped, rather thick, dark brown; spire obtuse; sutures impressed; whorls convex; aperture large, elliptical; columella twisted.

Habitat.— Big Creek, Lawrence County, Tennessee.

Diameter, ·36; length, ·73 of an inch.

Observations.— There were eight specimens of this species submitted to my examination by Mr. Clark, of Cincinnati. In general outline and size, it very closely resembles *M. Warderiana* (nobis), but differs from the specimens of that species which have come under my notice in not being carinate, and in having a more twisted columella. The apices of the individuals now before me are slightly eroded, and the number of the whorls may be seven or eight. One of the specimens has small folds near the apex, decussating striæ. The inside is bluish-white, one of the specimens having a brown mark at the columella. The aperture is nearly one-half the length of the shell. Over the whole surface there are small, irregular ridges. The body-whorl is very long.—*Lea.*

Fig. 223.

This species differs from all the others of this group in the great acumination of the upper part of its spire. In young shells (in which state only, the spire is perfect) the spire is narrowly subulate for the first few whorls, then suddenly expands into a bulbous form.

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.

Description.—Shell smooth, acutely turreted, thin, pale yellow, striate above; spire drawn out; sutures impressed; whorls nine, flattened; aperture small, elliptical, angular at the base, within bluish.

Fig. 224.

Habitat.—Holston River, Tennessee.

Diameter, ·27; length, ·85 of an inch.

Observations.—This species is somewhat like the *teres* herein described. It may be distinguished, however, at once, by its flattened whorls and darker color.—*Lea.*

The figure is a copy of Mr. Lea's.

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59. P. pictum, LEA.

Melania picta, LEA, Philos. Proc., ii, p. 82, Oct., 1841. Philos. Trans. ix, p. 19. Obs. iv, p. 19. WHEATLEY, Cat. Shells U. S., p. 26. BINNEY, Check List, No. 205. REEVE, Monog. Melania, sp. 290.
Melania picturata, REEVE, Errata to Monog. Melania. BROT, List, p. 38.

Description.—Shell smooth, obtusely conical, thick, subfusiform, greenish, banded; spire rather elevated; sutures impressed, above furrowed; whorls eight, flattened; aperture elongated, trapezoidal; columella incurved. Fig. 225.

Habitat.—Holston River, East Tennessee.

Diameter, ·30; length, ·70 of an inch.

Observations.—The four specimens before me have each three bands, which with the yellowish tint below the sutures give the shell a lively appearance. The superior whorls are disposed to be bicarinate, and the lower carina being covered with the whorl below, causes a furrow along the suture. The aperture is more than one-third the length of the shell, angular at the base, with rather a large sinus.—*Lea.*

The figure is copied from Reeve.

Mr. Anthony has placed specimens in my cabinet with the habitat Alabama, affixed.

60. P. spinalis, LEA.

Melania spinalis, LEA, Am. Philos. Trans., x, p. 89, t. 9, f. 42, 1847.

Description.—Shell carinate, acutely conical, rather thin, yellow, double-banded; spire elevated; sutures ploughed out; whorls flattened; aperture small, ovate, angular at the base, white within. Fig. 226.

Habitat.—Alabama.

Diameter, ·33; length, ·96 of an inch.

Observations.—A single specimen only was submitted to me, and this not very perfect. It is a peculiar shell in its general appearance, the color being of an unusually bright yellow, with two broad, distinct bands, one immediately above the middle of the whorl, and the other below. The superior part of the whorl is darker than that below. The number of whorls cannot be given, the apex being broken. There were probably nine or ten. The aperture is about one quarter the length of the shell.—*Lea.*

If an opinion founded on a single specimen, such as Mr. Lea has described, be admissible, I would suggest the too close resemblance of this shell to Conrad's *vestitum* (Lea's *mucronatum*).

61. 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. 35, f. 91. Obs., ix, p. 98.

Description.—Shell conic ovate, smooth, rather thick; spire rather obtusely elevated; whorls 6–7, nearly flat, but with an obtuse carina below the middle of each, and one more decided between that and the suture; aperture well marked, and with a pale band near it; lines of growth decided; aperture linear, ovate, within dusky, and having two dark bands there; sinus very decided. Fig. 227.

Habitat.—Tennessee.

Observations.—Compared with *M. valida* (nobis), it is smaller, less robust, more slender, and may also be distinguished from that plain species by its more lively exterior. The dark brown band or bands contrast finely with the general color of the shell, and with a light band near the sutures.—*Anthony.*

The following is Mr. Lea's description.

T. parvum.—Shell smooth, somewhat thick, conical, horn-color, banded or without bands; spire conoidal; sutures regularly impressed; whorls eight, flattened; aperture small, rhomboidal, within whitish; outer lip acute, somewhat sinuous; columella slightly thickened below and twisted. Fig. 228.

Habitat.—Knoxville; President Estabrook: and French Broad River, Tennessee; J. Clark.

Diameter, ·34; length, ·94 inch.

Observations.—I have three specimens of this small species from French Broad River, and one from Knoxville. They are all perfect, and have two bands, one broad and well defined, the lower one obsolete. It is disposed to be slightly angular on the periphery. The aperture is about one-third the length of the shell. This is among the few small species of this genus. In outline and general appearance it is allied to *T. Hartmanii*, herein described, but

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it is a very much smaller species and cannot be easily confounded with it.—*Lea.*

Figure 227 is from Mr. Anthony's type specimen. Figure 228 is a copy of Mr. Lea's figure quoted above.

62. 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.

Description.—Shell smooth, conical, yellowish, double-banded or without bands; spire obtusely conical; sutures impressed; whorls six, somewhat convex; aperture rather small, subrhomboidal, whitish within; outer lip acute, sinuous; columella thickened below and much twisted.

Habitat.—South Carolina; Prof. L. Vanuxem.

Diameter, ·28; length, ·69 inch.

Observations.—Among other species of the *Melanidæ* given to me a long time since by my friend, the late Prof. Vanuxem, were four specimens of this. Three of them are double-banded inside and out. The fourth has no appearance of bands. One of them is about half grown and perfect to the apex. The outer lip is somewhat thickened and expanded. It is somewhat like *bivittatum*, herein described, but it differs in having a higher spire, is not so wide proportionally, and is not highly polished or so yellow as that species. The aperture is more than one-third the length of the shell.—*Lea.*

Fig. 229.

Figured from Mr. Lea's plate. Too closely allied to the preceding.

63. P. Chakasahaense, Lea.

Trypanostoma Chakasahaense, Lea, Proc. Acad. Nat. Sci., p. 175, 1863. Jour. Acad. Nat. Sci., v, pt. 3, p. 280, t. 36, f. 99. March, 1863. Obs., ix. p. 102.

Fig. 230.

Description.—Shell smooth, conical, brownish-green, rather thin, double-banded; spire somewhat attenuate; sutures very much impressed; whorls about eight, convex, carinate above; aperture small, rhomboidal, white and banded within; outer lip sinuous; columella incurved, thickened below and very much twisted.

Habitat.—Chakasaha River, Mississippi; Wm. Spillman, M. D.

Observations.—Of eight specimens received from Dr. Spillman, three of them had transverse striæ on the periphery of the whorls reaching to the last whorl, on which two raised striæ are noticeable. In general outline and size it is near to *parvum*, herein described, but differs in being flatter on the whorls, in the bands being more distant, and in having a less twisted columella. It reminds one of *M. gracilis*, Anth., but has many distinctive characters. The aperture is about one-third the length of the shell.—*Lea.*

The figure is copied from Mr. Lea's plate.

64. 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.
Trypanostoma corneum, Lea, Proc. Acad. Nat. Sci., p. 112, 1864. Jour. Acad. Nat. Sci., vi, p. 148, t. 23, f. 63, 1867.

Description.—Shell conical, smooth, horn-colored, thick; spire elevated; whorls about ten, small, convex, the upper ones carinate, or only striate; sutures distinctly impressed; aperture small, elliptical, banded within; a small but distinct sinus, with an acute termination at base.

Fig. 231.

Habitat.—Raccoon Creek, Vinton County, Ohio.

Diameter, ·24 inch (6 millim.); length, ·62 inch (16 millim.). Length of aperture, ·21 inch (5 millim.); breadth of aperture, ·10 inch (2½ millim.).

Observations.—A very graceful, rather slender species, with somewhat of a club-shaped form by its bulbous body-whorl. Two specimens only are before me; one has a narrow band at the base of the body-whorl; the other has an additional band on the penultimate, faintly indicated also on the upper whorls of the spire.

It may be compared with *M. conica*, Say, but is more elevated, the whorls are more narrow and crowded, as well as more numerous than in that species, and the aperture much smaller, being only about one-fourth the length of the shell.

From *M. neglecta* it differs by its more slender form, smaller and more condensed whorls, and by its entirely different aperture. The apical whorls seem to be slightly folded.—*Anthony.*

This species is almost entitled to a place in the striate division of *Pleurocerœ*, the lines being generally crowded on all

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except the lower whorl. The figure is from Mr. Anthony's type.

The following is Mr. Lea's description of

Trypanostoma corneum.—Shell striate, exserted, thin, semi-transparent, pale horn-color; spire raised; sutures regularly impressed; whorls eight, somewhat convex; aperture elongate, narrow, elliptical, whitish within; outer lip acute and very sinuous; columella thin and twisted.

Habitat.—Tennessee.

Diameter, ·27; length, ·76 inch.

Observations.—Two specimens were sent to me some years since by Mr. Anthony. I do not know from what part of Tennessee they came. In these two specimens, all the whorls but the body-whorl have six or ten transverse striæ. The base is prolonged almost into a channel, and thus approaches the genus *Io*. In outline and color it is allied to *T. venustum*, herein described, but differs in not being fusiform, in having a larger aperture, and in having striæ. The aperture is more than one-third the length of the shell.—*Lea.*

Fig. 232.

Either Mr. Anthony sent these specimens *before* describing *altipetum*, or else he must have forgotten his own species.

65. P. Ocoëensis, Lea.

Melania Ocoëensis, Lea, Philos. Proc. ii, p. 12, Feb., 1841. Philos. Trans., viii, p. 169, t. 5, f. 13. Obs. iii, p. 7. DeKay, Moll. N. Y., p. 94. Troost, Cat. Shells Tennessee. Brot, List, p. 38. Wheatley, Cat. Shells U. S., p. 26. Catlow, Conch. Nomenc. p. 188.
Melania Ocoëensis, Lea, Binney, Check List, No. 166.
Potadoma Ocoëensis, Lea, Chenu, Man. de Conch., i, f. 1969.
Potadoma Ocoëensis Lea, Adams, Genera, i, p 299.

Description.—Shell smooth, conical, somewhat thick, dark horn-colored; spire obtuse, towards the apex lined; sutures impressed; whorls somewhat convex; aperture small, ovate, bluish.

Fig. 233.

Habitat.—Ocoee District, Tennessee; Dr. Troost.

Diameter, ·32; length, ·92 of an inch.

Observations.—Five specimens are before me, all of which are more or less decollate. None of them have bands. Oblique, irregular striæ may be observed more or less on all those which I have examined.—*Lea.*

Mr. Reeve's figure decidedly does not represent this species. The identity of *Ocoëensis* with *tenebro cinctum*, Anth., is scarcely doubtful.

66. 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.

Description.—Shell conical, smooth, rather solid, dark chestnut, spire rather obtusely elevated; whorls 8–9 in number, slightly convex, with occasional delicate spiral striæ, the upper ones subcarinate; body-whorl subcarinate, with a narrow yellowish band beneath the angle; sutures moderately impressed, yellowish; aperture small, pyriform, purple within; columella and outer lip much twisted together, forming a broad, rather deep, reflexed sinus at base.

Fig. 234.

Diameter, ·30 inch (7½ millim.); length, ·90 inch (23 millim.). Length of aperture ·30 inch (7½ millim.). Breadth of aperture ·16 inch (4 millim.).

Habitat.—Alabama.

Observations.—A fine symmetrical species, which seems to have no affinities so close as to be easily confounded with any other. Its most prominent characters, perhaps, are the nearly uniform diameter of the two or three lower whorls, while above these the spire curves more rapidly to the rather acute apex, and the dark purple aperture. These two points will readily serve to distinguish it.—*Anthony.*

Figured from Mr. Anthony's type.

The habitat given above is probably erroneous as Mr. Anthony's tablet is marked "Tennessee" and I have a number of specimens collected by Prof. Haldeman in Holston River, S. W. Virginia. I doubt if it be distinct from *aratum*, Lea, also an inhabitant of the Holston.

67. P. Lyonii, Lea.

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

Description.—Shell smooth, conical, greenish horn-color, without bands; spire somewhat raised; sutures impressed; whorls about six, convex; aperture rather small, rhomboidal, whitish within; outer lip acute, very sinuous; columella white, thickened below and twisted.

Operculum ovate, very dark brown, with the polar point on the basal margin at the left.

Habitat.—Cumberland River near the Ford, north side of the mountain, and Big Creek, south of mountain, at Cumberland Gap, Tenn.

Diameter, ·32; length, ·85 inch.

Observations.—Quite a number of specimens were sent to me by Major Lyon, from both the above habitats. They are all very much the same in color and size, and none are banded. None were perfect at the apex, but the upper whorls, I think, from indications in a few specimens will be found to be carinate. It is between *Christyi* and *modestum* (nobis). From the former it differs in having the base of the columella less twisted, in having a smaller aperture, and having the whorls more convex. From the latter it differs in being a smaller species, being darker and having a less expanded outer lip. The aperture is about one-third the length of the shell. I name this after Major S. S. Lyon, of the Engineer Corps of the U.S. Army, being collected by him during the campaign, last year, to Cumberland Gap, East Tennessee, where he obtained several new *Melanidæ*.—*Lea.*

Fig. 235.

68. 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.

Description.— Shell conical, smooth, rather thick; olive-green; spire much elevated; whorls eight or nine, slightly convex; sutures impressed; aperture elliptical, small, within whitish; outer lip much waved or auger-shaped, extending forward at base, and forming a broad sinus in that region.

Fig. 236.

Diameter, ·35 inch (9 millim.); length, 1 inch (26 millim.). Length of aperture, ·32 inch (8 millim.); breadth of aperture, ·16 inch (4 millim.).

Habitat.—Tennessee.

Observations.—Somewhat like *M. Saffordi*, Lea, but is clearly distinguishable by its more elongated form, its greater number of whorls and size and color of aperture. Differs from *M. regularis*, Lea, by its less number of whorls, and their convexity, as well as by its peculiar green color.—*Anthony.*

This is one of the few species of *Strepomatidæ* which in the absence of all other distinguishing characters rests its specific weight on color alone. It is a very common species and exceedingly uniform in all of its characters.

The figure is from Mr. Anthony's type.

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., v, p. 272, 1862. Jour. Acad. Nat. Sci., v, pt. 3, p. 353, t. 39, f. 225. Obs., ix, p. 175.

Description.—Shell striate, subulate, rather thin, horn-color; spire raised; sutures impressed; whorls about eight, somewhat convex, the last rather small; aperture small, subrhomboidal, whitish within; outer lip acute, very sinuous, expanded; columella somewhat thickened and very sinuous.

Fig. 237.

Habitat.—Florence, Alabama; B. Pybas.

Diameter, ·31; length, ·95 inch.

Observations.—Nearly a dozen of this species were received among a number of small shells from Mr. Pybas. It is not an attractive species, being dull horn-color and without bands. The upper whorls are covered with revolving striæ which rarely extend to the last one, except a single one on the upper part of this whorl. It has much the form and size of *Melania* (*Trypanostoma*) *strigosa* (nobis), but may at once be distinguished by the difference in the form of the aperture, the base of the columella of *striatum* being rounded, while *strigosa* is nearly straight. The length of the aperture is about three-tenths the length of the shell.—*Lea.*

Fig. 238.

The figure is from Mr. Lea's plate. I can detect no specific difference between this and the following:—

T. rostellatum.—Shell striate, attenuate, rather thin, horn-color, without bands; spire raised; sutures very much impressed; whorls eight, slightly convex; aperture small, rhomboidal, whitish within; outer lip very sinuous; columella bent in and very much twisted.

Operculum ovate, dark brown, with the polar point near the base on the left.

Habitat.—Florence, Alabama; Rev. G. White.

Diameter, ·30; length ·88 inch.

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Observations.—Quite a number of this species were among the shells sent to me by Mr. White, collected by him in the northern part of Alabama some years since. It was supposed to be a variety of *Melania* (*Goniobasis*) *proxima*, Say, but the form of the aperture is quite different, having an expanded outer lip. It is also larger, some specimens being nearly an inch long, and it has not a carina, but usually three striæ, the middle one of which rises almost to a carina. In some specimens there is only a single stria, sometimes two, ordinarily three, and rarely four. Usually the upper stria is continued on the lower whorl, extending to the aperture, but rarely any of the others. The aperture is about two-sevenths the length of the shell. It is allied to *Whitei*, herein described, but is a smaller species and differs in color, striæ and in the aperture.—*Lea.*

Figure 238 is a copy of that given by Mr. Lea.

70. P. Knoxvillense, Lea.

Trypanostoma Knoxvillense, 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.

Description.—Shell smooth, subulate, rather thin, pale horn-color; spire attenuately conical, sharp pointed; sutures regularly impressed; whorls ten, slightly convex, carinate towards the apex, the last somewhat constricted; aperture small, subrhomboidal, white within; outer lip acute, sinuous; columella thickened below and a little twisted.

Fig. 239.

Habitat.—Knoxville, Tennessee; President Estabrook.

Diameter, ·50; length, ·80 inch.

Observations.—A single specimen only of this species was received from President Estabrook. It is closely allied to *Estabrookii*, herein described, but may be distinguished by the form of the inferior part of the columella and the channel being more drawn backwards. It is a smaller species, of rather lighter horn-color and the whorls are rather more bulging. The aperture is less than one-third the length of the shell.—*Lea.*

Figured from Mr. Lea's plate. I doubt whether this is distinct from *Trypanostoma Sycamorense*, Lea, which, like this, is described from one specimen only.

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.

Description.—Shell smooth, attenuately conical, somewhat thick, dark horn-color; spire very much raised; sutures regularly impressed; whorls about nine, slightly convex; aperture small, subrhomboidal, whitish within; outer lip acute, sinuous; columella thickened below and twisted.

Fig. 240.

Habitat.—Lafayette County and Marietta, Georgia; Rev. G. White: Farland's Creek, Mississippi; Dr. Spillman: and Tennessee; J. G. Anthony.

Diameter, ·34; length, 1·8 inches.

Observations.—From the four habitats I have sixteen specimens. There is very little difference between them. The tips are either striate or carinate. It is nearly allied to *Estabrookii*, herein described, but it is a smaller species, with a smoother and darker epidermis, and has a smaller aperture and more twist at the base of the columella. The aperture is about three-tenths the length of the shell. I am indebted for many specimens, to the Rev. George White, after whom I name the species.—*Lea.*

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.

Description.—Shell smooth, subulate, rather thin, horn-color; spire attenuate; sutures impressed; whorls nine, scarcely convex, the last small, aperture small, rhomboidal, white within; outer lip acute, very sinuous; columella slightly thickened and twisted.

Fig. 241.

Operculum small, ovate, dark brown, with the polar point near the base.

Habitat.—Lafayette, Georgia; Rev G. White: and Tennessee; Dr. Hartman.

Diameter, ·38; length, 1·02 inches.

Observations.—Only two specimens have come under my observation. One is not full grown. In size and general outline this species has a very strong resemblance to *Melania strigosa* (nobis), but it differs much in the aperture and the direction of the base of the columella.

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The aperture is quite rhombic, like *Melania Alexandrensis* (nobis). The apical whorls are carinate and the aperture is about one-fifth the length of the shell.—*Lea.*

Figured from Mr. Lea's plate.

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.

Description.—Shell smooth, attenuately conical, rather thin, horn-color; spire very much raised, carinate towards the apex; sutures impressed; whorls about ten, convex; aperture small, sub-rhomboidal, whitish within; outer lip acute, subsinuous; columella white and twisted.

Fig. 242.

Operculum subovate, dark brown, with polar point near to the basal margin.

Habitat.—East Tennessee; President Estabrook and Bishop Elliott: near Cleveland, Tennessee; Prof. Christy: and Monroe County, Tennessee; J. Clark.

Diameter, ·38; length, 1·11 inches.

Observations.—A number of specimens were received from the above mentioned habitats; all varying very little. It is closely allied to *Christyi* herein described, but while it nearly agrees in color, it is usually smaller and has more convex whorls. These are, in some specimens, more inflated on the lower part. It has a strong resemblance to *M. strigosa* (nobis), but is larger and the aperture is more twisted at the base of the columella. The aperture is about one-fourth the length of the shell. I have great pleasure in naming this species after my deceased friend, President Estabrook of Knoxville, from whom I first received it many years since.—*Lea.*

Figured from Mr. Lea's plate. Allied to *P. subulæforme*, Lea, and to *unciale*, Hald. Indeed, in taking an enlarged view of specific values, all these shells would fall into one species. It is a remarkable and suggestive fact, that the examination of specimens from hitherto unsearched localities generally tends to diminish the number of species, by furnishing connecting links, rather than to increase them.

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.
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.

Description.—Shell smooth, conical, rather thin, greenish horn-color; spire somewhat raised; sutures linear; whorls about seven, somewhat convex, the last somewhat compressed; aperture rather small, subrhomboidal, bluish-white within; outer lip acute, sinuous, expanded; columella slightly thickened below and twisted.

Fig. 243.

Habitat.—Chilogita Creek, Blount County, Tennessee, J. Clarke.

Diameter, ·32; length, ·80 inch.

Observations.—I have had a number of this species for some years and had considered it a variety of *Melania* (*Goniobasis*) *dubiosa* (nobis), but the difference in the outer lip, which is much more expanded and some other characters, render it specifically different. The expanded outer lip, which is slightly thickened towards the edge, resembles that of *Whitei*, herein described, but it has a longer channel and is not so truncate at the base. It also differs in being a shorter species with a less number of whorls. None of the specimens before me have bands. There is a disposition on the apical whorls to be carinate. None of the specimens were perfect at the apex. Every one was purplish above. The aperture is about one-third the length of the shell. It is a very different shell from *Melania* (*Goniobasis*) *modesta* (nobis).—*Lea.*

Figured from Mr. Lea's plate.

The following is evidently the same species.

T. Knoxense.—Shell smooth, conical, ferruginous or banded, rather thick, spire rather attenuate, pointed; sutures impressed; whorls eight, slightly convex, carinate above; aperture small, white or brown within; outer lip sharp, sinuous, expanded; columella slightly thickened and twisted.

Fig. 244.

Habitat.—Flat Creek, Knox County, Tennessee; Prof. D. Christy.

Diameter, ·31; length, ·76 inch.

Observations.—About a dozen of this little species were sent to me

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some years since by my deceased friend, Joseph Clark. They were collected by Prof. Christy. There is great variety in the color of these specimens. Some are entirely ferruginous, others have a single light line under the sutures, others again have two well defined rather broad brown bands. It is closely allied to *Vanuxemii*, herein described, from South Carolina, but differs in having a larger aperture and a higher spire. The aperture is about one-third the length of the shell.—*Lea.*

The figure is a copy of that given by Mr. Lea.

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. 173.
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.

Description.—Shell smooth, obtusely conical, rather thick, straw color, without bands, sharp pointed; spire obtusely conical; sutures impressed; whorls eight, somewhat convex; aperture rather small, rhombic, pale straw color within; outer lip sharp, sinuous, thickened near the margin; columella bent in, thickened and twisted below.

Fig. 245.

Habitat.—South Carolina? Prof. L. Vanuxem.

Diameter, ·34; length, ·75 inch.

Observations.—Two specimens of this pretty little species were found among many shells long since given to me by my friend, the late Prof. Vanuxem. It is allied to *Vanuxemii* (nobis), but may at once be distinguished by being without bands, and being a larger and yellow species. The aperture is rather more than one-third the length of the shell.—*Lea.*

Figured from Mr. Lea's plate.

I cannot distinguish specifically the following:—

Trypanostoma Carolinense.—Shell smooth, conical, rather thick, horn-color; spire obtusely conical; sutures impressed; whorls seven, slightly convex; aperture rather small, rhomboidal, whitish or brownish within; outer lip sharp, sinuous; columella bent in, thickened and twisted.

Habitat.—South Carolina; Prof. L. Vanuxem.

Diameter, ·34; length, ·76 inch.

Observations.—Among the mollusca brought long since by my friend, the late Prof. Vanuxem, were about a dozen of this little species. The district of the State was not given with the habitat. In some of the specimens there is a disposition to put on a purplish mark on the inside of the base of the columella. In most of the specimens there is a pale light line immediately below the suture. This species is allied to *simplex*, herein described, but may be distinguished by its being more slender, being a darker horn-color, and in having a more elongated aperture. The aperture is about one-third the length of the shell.—*Lea.*

Fig. 246.

Figured from Mr. Lea's plate.

76. P. curvatum, Lea.

Melania curvata, Lea, Philos. Proc. ii, p. 243. Philos. Trans. ix, p. 23. Obs. ix, p. 23. Wheatley, Cat. Shells, U. S., p. 25. Brot, List, p. 30. Binney, Check List, No. 81.
Gyrotoma curvata, Say, ? Adams, Genera, i, p. 305.

Description.—Shell obtusely carinate, somewhat pyramidal, rather thick, dark horn-color; spire somewhat elevated; sutures impressed; whorls eight, convex; aperture small, curved, whitish.

Fig. 247.

Habitat.—Tennessee.

Diameter, ·40; length, ·73 inch.

Observations.—The two specimens before me vary very little in all their characters. This is a very distinct species, resembling more, perhaps, *M. conica*, Say, than any other. The whorls are close, and about the middle are placed two or three obscure carinæ, which cause a slightly impressed channel. The aperture is small, being a little more than one-third the length of the shell. The outer lip is sharp and very much curved, causing the base of the columella to be twisted. In one of the specimens an obscure band near the base in the interior may be observed.—*Lea.*

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.

Description.—Shell smooth, conical, rather thick, yellowish-olive; spire rather elevated; sutures somewhat impressed; whorls eight,

somewhat convex, the last somewhat constricted; aperture small, constricted, rhomboidal, whitish within; outer lip acute, sinuous; columella thickened below and twisted.

Habitat.—Cincinnati, Ohio; T. G. Lea.

Diameter, ·33; length, ·76 inch.

Observations.—Among a large number of young *Melania* (*Trypanostoma*) *canaliculata* and *conica*, Say, sent by my brother, long since, I found eight specimens of this small species. All seem to be full grown and are very nearly of the same size. They may be at once distinguished from *canaliculata* by their being much smaller, being much more narrow and having no channel or furrow on the middle of the whorl. The aperture is also much smaller. It differs entirely from *conica* in the whorls, which regularly decrease to the apex, while in that species they decrease rapidly to the apex, which is sharp-pointed. The aperture is about one-third the length of the shell. None of these specimens have bands; one is slightly brownish inside towards the base. This is very different from Mr. Say's *Melania simplex.*—*Lea.*

Fig. 248.

The figure is a copy of that given by Mr. Lea.

78. 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.

Description.—Shell smooth, obtusely conical, inflated, thick, banded; spire short, pointed at the apex; sutures slightly impressed; whorls seven, flattened; aperture small, trapezoidal; columella thickened, white.

Habitat.—Holston River, East Tennessee.

Diameter, ·35; length, ·55 inch.

Observations.—This is a very short and thick species, having a very large body-whorl disposed to be obtusely angular at the middle. The number of bands varies. One of the specimens has a single one, another has two bands, and five have five bands, there being seven specimens before me. That with a single band is of a bright yellow; the others are of a greenish-yellow. The aperture is nearly one-half the length of the shell, and twisted at the base.—*Lea.*

This species appears to be very closely allied to *T. minor*, Lea.

79. 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.

Description.—Shell smooth, obtusely conoidal, rather thick, yellowish, banded; spire obtusely conical; sutures much impressed; whorls seven, somewhat convex, the last large; aperture large, subrhomboidal, white and usually banded within; outer lip acute, sinuous; columella incurved, thickened below and slightly twisted.

Fig. 249.

Habitat.—Tennessee; Prof. Troost.

Diameter, ·32; length, ·54 inch.

Observations.—Four specimens were found among a number of young shells from Prof. Troost. It is a modest little species which might easily be taken for a young *Melania conica*, Say. It is most nearly allied to *bivittata*, herein described, but may be distinguished by being wider in proportion, having a shorter spire, being less polished, and not so bright a yellow. It differs also in the brown bands being much less distinctly marked, the upper whorls showing none, while the other is beautifully banded to the apex. The two species differ in columella, *minor* having nearly half of it perpendicular, while *bivittata* has that portion twisted backwards. The bands seem to be uncertain in this species, one having two bands, two having one band and the other having no band. The aperture is nearly half the length of the shell.—*Lea.*

It is very probable that this is the juvenile of some described species.

80. 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.

Description.—Shell smooth, shining, conoidal, rather solid, yellowish-green, double-banded; spire obtusely conical; sutures much impressed; whorls seven, somewhat convex, the last very large; aperture rather large, rhomboidal, whitish and double banded within; outer lip acute, sinuous; columella thickened below and very much twisted.

Habitat.—Tennessee; Prof. Troost.

Diameter, ·38; length, ·71 inch.

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Observations.—Two specimens of this small species came with *bivittatum*, herein described, mixed with the young of other species. It is rather larger than it and, although very close, may be distinguished by difference of size, being more pyramidal, having a darker epidermis, and in the aperture being more rhombic. Two bands only are visible on the exterior, but the interior of the larger displays a third close to the base of the columella, making a spiral turn round it. The aperture is about three-eighths of the length of the shell. It is very different from *Melania pumila* (nobis) described in Trans. Am. Phil. Soc. v. x, p. 86, which indeed belongs to the genus *Lithasia*.—*Lea.*

Fig. 250.

81. P. opaca, ANTHONY.

Melania opaca, ANTHONY, Proc. Acad. Nat. Sci., p. 58, Feb. 1860. BINNEY, Check List, No. 189. BROT, List p. 38. REEVE, Monog. Melania, sp. 384.
Melania iostoma, ANTHONY, Proc. Acad. Nat. Sci., p. 62, February, 1860. BINNEY, Check List, No. 152. BROT, List, p. 31. REEVE, Monog. Melania, sp. 351.
Melania nigrostoma, Anthony, REEVE, Monog. Melania, sp. 463, 367. BROT, List, p. 38.
Trypanostoma Tennesseénse, 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.

Melania iostoma. — Shell ovate conic, smooth; spire obtusely elevated; whorls about six, subconvex; body-whorl exhibiting uncommonly strong lines of growth, curved and varicose; color, greenish-olive, shining; sutures distinct; body-whorl strongly but not sharply angulated on the middle, aperture broad ovate, within light purple, which becomes very deep on the columella, which is regularly rounded; outer lip somewhat produced, and having a well developed sinus at base.

Fig. 251.

Habitat.—Tennessee.

Observations.—This species approaches nearest in form and color *M. glans* (nobis), now changed to *glandula*, from which it differs in being less globular, of a lighter color generally, and by the angulated body-whorl. Compared with *M. pinguis*, Lea, it is less obese, more elongate and has not the rapidly attenuating spire of that species. From all others it is readily distinguished.—*Anthony.*

The following species, which is figured from a type specimen also, will, I am confident, prove to be the young of *iostoma*.

Melania nigrostoma, Anthony.—Shell conically ovate, deep purple-black within and without, whorls five, flatly sloping, smooth, the last rather stout, obtusely angled in the middle; aperture ovate.

Fig. 252.

Anthony, manuscript.

Habitat.——?

Observations.—A dense purple-black species, received from Mr. Anthony with the above name, without habitat.—*Reeve.*

Mr. Reeve first figured this species by mistake (No. 367) as *nigrina*, Lea.

Melania opaca.—Shell ovate, thick, smooth, of a dark brown color; spire short, composed of about six convex whorls; body-whorl large, subangulated in the centre; sutures indicated by a narrow lighter line, and very distinct; aperture ovate, livid within; columella indented, and tinged with purple; outer lip a little curved; sinus not remarkable.

Fig. 253.

Habitat.—Alabama.

Observations.—A dusky inconspicuous shell of no great beauty. Only two specimens have ever come under my notice, but I am persuaded, nevertheless, that they are distinct—cannot well be compared with any other species. More smooth than *M. athleta* (nobis) and devoid of ribs, which that species has. Its dark, dirty brown color down to about the middle of the body-whorl, and pale olive-green underneath, together with its purple columella, may sufficiently distinguish it.—*Anthony.*

An examination of Mr. Anthony's type specimen of *opaca* convinces me that the species is the same as *iostoma*. Mr. Lea agrees with me that his *Pl. Tennesseénse* described below is a synonyme.

Pl. Tennesseénse. — Shell smooth, obtusely conical, very much inflated, rather thick, dark brown; spire short and very obtuse, sutures impressed; whorls about six, convex; aperture large, subrhomboidal, dark within; outer lip acute, much expanded below; inflected and very sinuous: columella very much thickened below, and twisted.

Fig. 254.

Habitat.—Tennessee; Drs. Troost and Currey: Lebanon County, Tennessee; J. M. Safford.

Diameter, ·47; length, ·84 inch.

Observations.—I have four specimens of this species. The two

larger have been in my possession for a long time. They are from Dr. Troost, and are more inflated. While the older part is dark brown, the newer part is dark green, and the interior partakes of these colors. The specimen from Mr. Safford is rather smaller and browner, is purplish within and is thickened on the outer lip near the base. All have a light line under the suture. That from Dr. Currey is about half grown, and has two broad bands. The largest specimen is figured, the lower part of the specimen is more expanded than the others, and is very remarkable in this respect. In outline it is allied to *M. pinguis* (nobis), but differs much in the form of the aperture. The aperture is nearly half the length of the shell.—*Lea.*

82. 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.

Description.—Shell smooth, top-shaped, very much swollen, yellow, single banded below; spire very obtuse; sutures impressed; whorls six, flattened above and inflated below; aperture large, rhomboidal, whitish and single-banded within; outer lip acute, sinuous; columella thickened below and very much twisted.

Fig. 255.

Habitat.—Holston River, Tennessee; Prof. G. Troost.

Diameter, ·37; length, ·49 inch.

Observations.—A single specimen of this pretty little species was received from Prof. Troost, a long time since, with *Melania turgida* (nobis), but it is a very different species, having a more characteristic auger-shaped mouth, and this specimen has a single band, while four specimens of *turgida* have each five bands. It is also top-shaped while the *turgida* is globose. It is not easily confounded with any other species, being wider for its length than any other *Trypanostoma* with which I am acquainted. The aperture is full one-half the length of the shell, and the body-whorl is nearly two-thirds the length of the whole shell.—*Lea.*

83. P. napoideum, LEA.

Trypanostoma napoideum, LEA, Proc. Acad. Nat. Sci., p. 112, 1864. Jour. Acad. Nat. Sci., vi, p. 143, t. 23, f. 54, 1867.

Description.—Shell smooth, obtusely conical, rather thick, horn-color, without bands; spire short, pointed at the apex; sutures

impressed; whorls seven, slightly convex above, the last one very much inflated; aperture large, subrhomboidal, white within; outer lip acute, sinuous; columella thickened below and very much twisted.

Habitat.—Tennessee.

Diameter, ·30; length, ·51 inch.

Observations.—This is one of the many species sent to me long since by my excellent friend the late Prof. Troost. There were but two specimens, and as they had very much the aspect of young *Melania conica*, Say, I refrained from describing them in hopes that others would be received. Feeling satisfied that it is a distinct species, I propose the name from its round, short form, somewhat like a turnip. One of the specimens has a purple spot at the base of the columella; the other is devoid of it. The aperture is quite one-half the length of the shell.—*Lea.*

Fig. 256.

Goniobasic Section.

Genus GONIOBASIS, LEA.

Goniobasis, LEA, Proc. Acad. Nat. Sci., p. 262, May, 1862. Jour. Acad. Nat. Sci., v, pt. 3, p. 217, March, 1863. Obs. ix, p. 39.

Ceriphasia (sp.), Swainson, H. and A. ADAMS, Genera, i, p. 298, Feb., 1854. CHENU, Man. de Conchyl., i, p. 290, 1859.

Pachycheilus (sp.), Lea, H. and A. ADAMS, Genera, i, p. 298, Feb., 1854.

Potadoma (sp.), Swainson, H. and A. ADAMS, Genera, i, p. 299, Feb., 1854. CHENU, Man. de Conchyl., i, p. 290, 1859.

Elimia (sp.), H. and A. ADAMS, Genera, i, p. 300, Feb., 1854. CHENU, Man. de Conchyl., i, p. 290, 1859.

Melasma (sp.), H. and A. ADAMS, Genera, i, p. 300, Feb., 1854. CHENU, Man. de Conchyl., i, p. 292, 1859.

Hemisinus (sp.), Swainson, H. and A. ADAMS, Genera, i, p. 302, Feb. 1854.

Juga (sp.), H. and A. ADAMS, Genera, i, p. 304, Feb., 1854. CHENU, Man. de Conchyl., i, p. 293, 1859.

Megara (sp.), H. and A. ADAMS, Genera, i, p. 306, Feb., 1854. CHENU, Man. de Conchyl., i, p. 293, 1859.

Pleurocera, Rafinesque, HALDEMAN, Proc. Acad. Nat. Sci., p. 274, 1863.

Melania (sp.), AUCT.

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SPECIES.

A. Shell spirally ridged.

1. G. procissa, ANTHONY.

Melania procissa, ANTHONY, Ann. Lyc. Nat. Hist. N. Y., vi, p. 109, t. 3, f. 9, March, 1854. BINNEY, Check List, No. 213. BROT, List, p. 59. REEVE, Monog. Melania, sp. 342.

Description.—Shell ovate, rather thick, brown; whorls supposed to be about five, rather convex; body-whorl surrounded by about five carinæ, of which two central ones are more prominent; sutures linear; aperture large, ovate, exhibiting the elevated ridges on the body-whorl, as linear, brown bands seen through the substance of the shell; columella rounded, deeply indented, having a small purple spot below the middle, with a slight sinus at the base.

Fig. 257.

Diameter, ·35 inch (9 millim.); length, ·56 inch (14 millim.). Length of aperture, ·28 inch (7 millim.); breadth of aperture, ·18 inch (4½ millim.).

Habitat.—Alabama.

Observations.—The only specimen I have is somewhat mutilated, but seems nevertheless perfectly distinct; the only known species with which I can compare it is *M. sulcosa*, Lea, which is a much thinner and more elevated species. The aperture of the present shell is also proportionally much larger, and the number of whorls less, for, though injured in that part, the rapid diminution of the whorls does not indicate an elevated spire; the number of raised lines on the body-whorl is also less, and they are rather very elevated *costæ* than *striæ* as in Mr. Lea's species.—*Anthony.*

This species, at first sight very distinct, may be only a lengthened variety of Mr. Anthony's *Ancülosa canalifera;* and the latter is perhaps a variety of *A. carinata*, Bruguière (*dissimilis*, Say). The locality given is probably incorrect, as the shell has the aspect of the North Carolina *Strepomatidæ* rather than those of Alabama.

B. Shell tuberculate or nodulous.

2. G. varians, LEA.

Melania varians, LEA, Proc. Acad. Nat. Sci., p. 120, 1861.
Goniobasis varians, LEA, Jour. Acad. Nat. Sci., v, pt. 3, p. 219, t. 34, f. 2, March, 1863. Obs. ix, p. 41.

Description.—Shell smooth, plicate or striate, raised conical, rather thick, yellowish or pale brown, banded; spire raised; sutures impressed; whorls seven, flattened above; aperture rather small, elliptical, whitish and banded within; outer lip acute; columella whitish, incurved, obtusely angular at the base.

Fig. 258.

Habitat.—Coosa River, Alabama; Dr. Showalter and Dr. Budd.

Diameter, ·40; length, 1·4 inches.

Observations.—I have a number of specimens before me, some of which have been in my possession for several years. They are allied to *Melania Haysiana* (nobis), and I formerly thought they were a mere variety of that species; but the numerous and fine specimens sent to me, of various ages and forms, by Dr. Showalter, satisfy me that the species is quite distinct. It is very variable, some being smooth and beautiful, while others are plicate and others again roughly striate, with a shoulder below the sutures, giving it quite a different aspect. The aperture is more than one-third the length of the shell. It usually has four bands, but in some individuals there are none and others have one, two, three or four.—*Lea.*

Fig. 259.

The first figure is a copy of Mr. Lea's; the other figure is from a specimen belonging to the Smithsonian Institute. This latter appears to be the typical form of the species.

3. G. Hydeii, CONRAD.

Melania Hydeii, CONRAD, New Fresh Water Shells. p. 50, t. 8, f. 1, 1834. REEVE, Monog. Melania, sp. 248. DEKAY, Moll. N. York, p. 93. WHEATLEY, Cat. Shells, U. S. p. 25. BINNEY, Check List, No. 141. Conrad, MÜLLER, Synopsis, p. 44.
Melania Hydei, Conrad. JAY, Cat. Shells, 4th edit., p. 273. BROT, List, p. 32. HANLEY, Conch. Misc. t. 1, f. 3.
Melania Hydii, Conrad, CATLOW, Conch. Nomenc., p. 187.

Description.—Shell conical, rather elevated; whorls flattened, with

spiral acute tuberculated lines, one or two only on each whorl of the spire, and about four on the body-whorl, the inferior one plain; aperture elliptical.

Fig. 260.

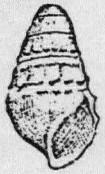


Fig. 261.

Observations.—Inhabits rocks in the Black Warrior River, south of Blount's Springs, Alabama, and is very abundant. It is remarkable for its distant tuberculated lines. Young specimens are olive, with a purple band on each whorl, and are without tubercles; the body-whorl is angulated, and carinated.

It is named in honor of Mr. William Hyde, an industrious and excellent conchologist.—*Conrad.*

4. G. decorata, ANTHONY.

Melania decorata, ANTHONY, Proc. Acad. Nat. Sci., p. 55, Feb., 1860. REEVE, Monog. Melania, sp. 251. BINNEY, Check List, No. 83. BROT, List, p. 32.
Goniobasis Tryoniana, LEA, Proc. Acad. Nat. Sci., p. 272, 1862. Jour. Acad. Nat. Sci., v, pt. 3, p. 342, t. 38, f. 207, March, 1863. Obs., ix, p. 164, t. 38, f. 207.
Goniobasis granata, LEA, Proc. Acad. Nat. Sci., p. 272, 1862. Jour. Acad. Nat. Sci. v, pt. 3, p. 343, t. 38, f. 209, March, 1863. Obs., ix, p. 165.

Description.—Shell short, thick, ovate; whorls about five, but truncate as to show only two or three remaining; whorls prominently ribbed and intersected by revolving striæ, forming nodules where they cross each other; dark bands also revolve around the whorls, giving them a highly decorative appearance, columella often thickened by a callous deposit; sinus small.

Fig. 262.

Habitat.—Oostenaula River, Georgia.

Observations.—I collected some two hundred specimens of this species in Oostenaula River, Georgia, in 1853, I then supposed they would prove to be merely the young of *M. cælatura*, Conr. Closer examination and comparison, however, have convinced me that they are not identical. Many of the specimens are decidedly mature, and differ from *cælatura* by the greater regularity of their folds, which are also interrupted by a revolving raised line near the sutures, and by their dark bands and less elongate form; cannot well be compared with any other.—*Anthony.*

Fig. 263.

The following are the descriptions of the species believed to be synonymes.

Goniobasis Tryoniana.—Shell granulose or striate, subfusiform, yellowish-brown or dark brown, thick, robust, banded, rarely not banded; spire obtusely conical; sutures irregularly impressed: whorls about six, the last very large; aperture very large, ovately rhomboidal, much banded within; outer lip subcrenulate, scarcely sinuous; columella slightly bent in and scarcely twisted.

Fig. 264.

Operculum ovate, rather thick, dark brown, with the polar point near the left margin, above the base.

Habitat. — Oostenaula, near Rome; Bishop Elliott: Etowah River, Georgia; J. Postell: and Oconee River and Tennessee River; Rev. G. White.

Diameter, ·52; length, 1·01 inches.

Observations.—I have a number of specimens from the above various habitats, and they vary very much. Some are more obtuse than others, and some are tuberculate, while others are only transversely striate, close striæ often covering the whole surface. Usually the bands do not show on the outside, often giving the surface a clouded appearance, while in the interior usually the bands are well marked and sometimes number as many as eight, but sometimes the aperture is entirely white; rarely the whole is purple inside, in which case the exterior is very dark brown. The base of the columella is usually yellowish outside. It is somewhat allied to *Melania* (*Goniobasis*) *Coosaensis* (nobis), but that species is more constricted and has a narrow aperture. The aperture is nearly one-half the length of the shell. I name this species after Mr. G. W. Tryon, Jr., who has done much to promote the study of malacology.—*Lea.*

Goniobasis granata.—Shell granulose, striate below, fusiform, banded, rather thick, shining, inflated, olivaceous or reddish; spire depressed; sutures irregularly impressed; whorls about five, flattish, the last one very large; aperture large, ovately rhomboidal, much twisted.

Fig. 265.

Operculum ovate, rather thin, dark brown, with the polar point near to the left margin above the base.

Habitat.—Etowah River, near Canton, Georgia; Bishop Elliott and Rev. G. White.

Diameter, ·36; length, ·70 inch.

Observations.—A number of specimens were sent to me by Bishop Elliott and the Rev. Mr. White; some are much more granulate than

others, which are transversely striate with rugose granulations. When perfectly granulate there are three or four rows of beautiful small nodes surrounding the whorls. There are usually seven bands well marked inside, but obscure on the exterior. A single specimen is entirely brownish-purple inside. It is rarely without color; usually there is a small yellowish spot at the base of the columella outside. Those sent by Mr. White are all olive-green and without an iron deposit. Those from Bishop Elliott were all covered with the black oxide of iron, which on being removed exhibit a rubiginose color, and do not show much color in the bands. In outline it is near to *Melania* (*Goniobasis*) *bellula* (nobis), but is more inflated and is striate and granose. The aperture is about one-half the length of the shell. —*Lea.*

This species is a good one but has unfortunately not been properly distinguished from *cœlatura*, Conrad.

Mr. Anthony's description of *decorata* applies to the juvenile form only, but his name has priority and must be adopted. Mr. Anthony has misunderstood the range of characters of the species, and some of the specimens labelled *decorata* by him are the young of *cœlatura*. Mr. Lea's type figure of *Tryoniana*, which is here copied, exhibits the mature form, but he has made his description to cover both this roughly granose species and the smoother *cœlatura*. Indeed, some of the shells which he has presented to me are really *cœlatura*.

Mr. Lea's *granata* is a young shell and is in all respects identical with Mr. Anthony's species. The original figure is copied. Luckily in the present instance a number of lots of specimens, numbering several hundred individuals in all, have enabled me to make the above decisions with confidence.

There is a wide range of variation in color, form, texture and ornamentation in this species.

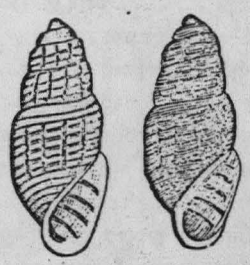
5. G. cælatura, Conrad.

Melania cælatura, Conrad, Proc. Acad. Nat. Sci., iv, p. 134, Feb., 1849. Jour. Acad. Nat. Sci., i, pt. 4, p. 278, t. 38, f. 3, Jan., 1850. Binney, Check List, No. 58. Brot, List, p. 32. Reeve, Monog. Melania, sp. 245.
Goniobasis Tryoniana, Lea, Description in part.

Description.—Ovate-oblong, turreted; volutions six, with longitudinal ribs and unequal prominent revolving lines, subnodulous where

they cross the ribs; the ribs on the body-whorl do not reach the middle; the color ochraceous and brown; aperture narrow, elliptical; labium with interior brown bands; superior part of columella somewhat callous.

Fig. 266. Fig. 266a.



Habitat.—Savannah River.—*Conrad.*

Mr. Lea's description of *Tryoniana* includes this species. Fig. 266 is a copy from Conrad's plate. It is readily distinguished from the preceding species by being narrower, more fusiform and closely nodulously striate; the tuberculations not being so well developed as in *decorata*. As mentioned before, Mr. Anthony has distributed the young of this species under the latter name.

6. G. Stewardsoniana, Lea.

Goniobasis Stewardsoniana, Lea, Proc. Acad. Nat. Sci., p. 272, 1862. Jour. Acad. Nat. Sci., v, pt. 3, p. 344, t. 38, f. 210, March, 1863. Obs. ix, p. 166.

Description.—Shell granulate, transversely striate, subfusiform, thick, shining, inflated, green or brown, without bands; spire very obtuse; sutures impressed; whorls slightly convex; aperture very large, ovately rhomboidal, white within; outer lip sharp, slightly sinuous; columella bent in, thickened above and below and twisted.

Fig. 267.

Habitat.—Knoxville, Tennessee; B. W. Budd, M.D.
Diameter, ·42; length, ·70 inch.

Observations.—Two specimens, one perfect, the other with little more than the body-whorl, were given to me long since by Dr. Budd, to whom I am indebted for many fresh water *mollusca* of our Western and Southwestern States, one of which, properly belonging to this genus, I called *Melania Buddii*. Of the two specimens before me, the younger is almost entirely perfect, and presents a fine, smooth, dark green epidermis with transverse striæ, which on the upper part of the whorls are broken up into granulations. These striæ are raised and rounded, and are darker than the ground. The old specimen is of a rusty color, having been covered with oxide of iron. The aperture is more than half the length of the shell. There is some resemblance of this shell to *Melania* (*Gonio-*

Fig. 268.

basis) *Hydei*, Con., but that is conical, having a high granular spire. I name this after my friend Thomas Stewardson, M.D., to whom I am indebted for many fine specimens of our Southern mollusca.—*Lea.*

I at first considered this shell the young of *cælatura*, but have finally concluded that it is distinct. The surface is ridged around, the ridges being fretted, disposing to tuberculation; the shell is very solid and generally dark green and polished. A figure of the adult satisfactorily exhibits the differences between it and *cælatura*.

7. G. flavescens, LEA.

Goniobasis flavescens, LEA, Proc. Acad. Nat. Sci., p. 271, 1862. Jour. Acad. Nat. Sci., v, pt. 3, p. 339, t. 38, f. 202, March, 1863. Obs. ix, p. 161.

Description.—Shell striate, sometimes granulate and folded, subcylindrical, yellowish, thick; spire obtusely conical; sutures irregularly impressed; whorls slightly convex, the last very large; aperture large, subrhomboidal, banded or white within; outer lip sharp, scarcely sinuous; columella bent in, very much thickened above and twisted.

Fig. 269.

Operculum ovate, rather thick, brown, with the polar point near the left margin above the base.

Habitat.— Oconee and Tennessee Rivers, Tennessee; Rev. G. White.

Diameter, ·43; length ·97 inch.

Observations.—Quite a number of specimens were sent to me by Mr. White, and among them there is great variation. They are allied on one side to *Tryoniana*, herein described, and on the other to *Melania* (*Goniobasis*) *brevis* (nobis.) It is a larger species than the latter, and smaller and more cylindrical than the former. Brown bands are more or less observable in the interior of about half the specimens before me. The callus above is usually thick and often colored. One specimen only is entirely brown inside. The aperture is more than one-third the length of the shell, none have the apex sufficiently perfect to ascertain the number of whorls. There are probably about six. There is a close affinity between this and *Melania* (*Goniobasis*) *Holstonia* (nobis), which, however, is more robust, of a different color and more granulate.—*Lea.*

8. G. occata, HINDS.

Melania occata, HINDS, Ann. and Mag. Nat. Hist. xiv, p. 9. Zool. Voy. Sulphur. Moll. ii, p. 56, t. 15, f. 5. CATLOW, Conch. Nomenc., p. 188. BROT, List, p. 34. LEA, Proc. Acad. Nat. Sci., p. 81, April, 1856. REEVE, Monog. Mel., sp. 267.
Juga occata, Hinds, CHENU, Man. de Conchyl., i, f. 2016.
Melania Shastaensis, Lea, REEVE, Monog. Mel. sp. 318.

Description.—Shell ovate, elongate, lutescent; whorls few, rounded, grooved, intermediate ridges narrow, acute; spire eroded above the fourth whorl; aperture cærulescent.

Fig. 270.

Habitat.—River Sacramento, California.

Observations.—The rounded whorls are ploughed into numerous furrows and the intervening ridges are comparatively narrow and keel-shaped; the lower part of the aperture is somewhat dilated, and slightly disposed to elongate in the manner of *Io.*—*Reeve.*

Mr. Reeve, and Dr. Brot following him, have fallen into the error of quoting *Shastaensis* as a synonyme through that prolific source of error "an authentic specimen." The figure of "*Shastaensis*" given by Reeve from a specimen in the collection of Mr. Cuming is finer than any specimen of *occata* that I have seen. The species varies in form very much.

9. G. catenaria, SAY.

Melania catenaria, SAY, Jour. Acad. Nat. Sci., ii, p. 379, Dec. 1822. BINNEY, Reprint, p. 111. BINNEY, Check List, No. 52. REEVE, Monog. Melania, sp. 336. DEKAY, Moll. N. York, p. 93. WHEATLEY, Cat. Shells U. S. p. 24. GIBBES, Rep't. S. Carolina, p. 19. JAY, Cat. 4th edit., p. 273. CATLOW, Conch. Nomenc. p. 185. BROT, List, p. 34.
Elimia catenaria, Lea, ADAMS, Genera, i, p. 300.
Melania sublirata, CONRAD, Jour. Acad. Nat. Sci., 2nd ser. i, pt. 4, p. 277, t. 38, f. 1. Jan. 1850. BROT, List, p. 37. REEVE, Monog. Melania, sp. 339.

Description.—Shell conic, black; whorls seven or eight, slightly undulated transversely, and with eight or nine revolving, elevated lines, of which the four or five superior ones are almost interrupted between the undulations.

Fig. 271.

Length less than half an inch.

Habitat.—South Carolina.

Observations.—The essential specific character resides in the catenated appearance of the superior revolving lines of the whorls, resulting from their being more prominent on the undulations which they

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cross, than between them, where they are often obsolete. This species was sent to me by Mr. Stephen Elliot, who obtained it in Limestone Springs, St. John's, Berkley.—*Say.*

The shell described by Mr. Say is a quite young one — as is evident from an inspection of the figure, which is drawn from the original type, now in the possession of Jno. G. Anthony. Mr. Lea described under the same name a species from Georgia, but Prof. Haldeman (Monog. Limniades, Cover No. 6) called attention to the fact that the name was preoccupied by Say, and Mr. Lea subsequently changed his name to *catenoides.*

Fig. 272. Fig. 273.

That the following is the adult of this species cannot be doubted.

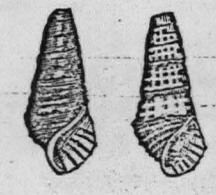
Melania sublirata. — Elongate-conoidal; volutions six, the sides flattened above; whorls of the spire with a carinated angle near the base of each, and longitudinally ribbed; ribs not prominent; upper whorls with two distant revolving lines on each; base of the body-whorl striated, the upper portion of body-whorl obscurely ribbed; color olivaceous with obscure brown bands.

Habitat.—Savannah River.—*Conrad.*

10. G. Floridensis, Reeve.

Melania Floridensis, Reeve, Monog. Melania, sp. 334. Brot, List, p. 34.

Fig. 274. Fig. 275.



Description.—Shell somewhat pyramidally turreted, blackish-olive, whorls seven to nine, broadly sloping, then slightly angled, longitudinally indistinctly plaited, corded throughout with fine noduled ridges; aperture ovate, a little effused at the base.

Habitat.—Florida.

Observations. — Sculptured throughout with fine corded ridges which are noduled on crossing the rather obscure longitudinal plaits.—*Reeve.*

11. G. catenoides, Lea.

Melania catenaria, Lea, Proc. Philos. Soc. i, p. 289, Oct. 1840 (preoc.).
Melania catenoides, Lea, Philos. Trans. viii, p. 228, t. 6, f. 60. Obs., iii, p. 66. DeKay, Moll. N. Y. p. 101. Wheatley, Cat. Shells U. S. p. 24. Jay, Cat. 4th edit., p. 273. Binney, Check List, No. 53. Catlow, Conch. Nomenc. p. 185. Brot, List, p. 34. Reeve, Monog. Melania, sp. 298.
Elimia catenoides, Lea, Chenu, Man. de Conchyl. i, f. 1982. Adams, Genera, I, p. 300.

Description.—Shell granulate, elevated, conoidal, livid; apex folded; sutures small; aperture ovate.

Fig. 276. Fig. 277.

Fig. 278. Fig. 279.

Habitat. — Chattahoochee River, Columbus, Geo.

Diameter, ·43; length, ·93 of an inch.

Observations. — This species differs from the *M. Boykiniana*, in being without tubercles and carina. The colored revolving hair-like lines are numerous and, being pitted, present the appearance of a chain. Some of the old specimens are quite black, while the younger ones are green or yellow. In some cases where the apex is eroded or worn off and the shell black and old, it looks like *M. Virginica* (Say), as no grains can be observed.—*Lea.*

12. G. Etowahensis, Lea.

Melania Etowahensis, Lea, Reeve, Monog. Mel. sp. 426, May, 1861.
Goniobasis Canbyi, Lea, Proc. Acad. Nat. Sci., p. 271, 1862. Jour. Acad. Nat. Sci., v, pt. 3, p. 340, t. 38, f. 204, March, 1863. Obs., ix, p. 162.

Description.—Shell tuberculate, plicate, transversely striate below, turreted, thin, brown or pale brown, maculate; spire turreted; sutures, irregularly impressed; whorls seven, carinate, with compressed tubercles on the periphery; aperture small, rhomboidal, spotted within; outer lip crenulate, sinuous; columella bent in and very much twisted.

Fig. 280.

Habitat.—Lake Monroe, Florida; W. Canby: and Etowah and Tennessee Rivers, Georgia; J. Postell.

Diameter, ·35; length, ·76 inch.

Observations.—Several bleached specimens were collected by Mr. Canby of Wilmington, Delaware, from Enterprise, on Lake Monroe. Mr. Postell sent me two perfect specimens from Etowah River,

Georgia, and a bleached one from the Tennessee River. All these specimens are without variation. There are usually five revolving striæ below and two above that round the periphery, which make compressed tubercles where they are crossed. These folds are bright brown, nearly red on their left side, and give a maculate appearance to the whole shell. These maculations are visible on the inside. The compressed, sharp tubercles almost constitute spines, and, on first looking at this shell, one is reminded of *Melania spinulosa*, Lam., but it cannot be confounded with that species. In outline and in most of its characters it is allied to *Hallenbeckii*, herein described, but it is much smaller, and differs in being maculate instead of banded. The aperture is about one-third the length of the shell. I dedicate this to my friend, Mr. Canby, who kindly brought me some specimens.—*Lea.*

I presume it was Mr. Lea's first intention to describe this species under the name of *Etowahensis*, as specimens are before me, which that gentleman sent to Mr. Anthony under the latter name. Mr. Reeve's description, which it is unnecessary for us to reproduce here, is drawn up from Mr. Anthony's specimen. The figure, which is copied from the original one, gives but a faint idea of this beautifully variegated species, which for gracefulness of contour stands unrivalled.

It is doubtful whether this species is really distinct from *papillosa*, Anth. In the young shells, particularly, it is extremely difficult to draw a line of distinction between the two.

13. G. Hallenbeckii, Lea.

Goniobasis Hallenbeckii, Lea, Proc. Acad. Nat. Sci., p. 271, 1862. Jour. Acad. Nat. Sci., v, pt. 3, p. 339, t. 38, f. 203, March, 1863. Obs., ix, p. 161.
Melania Hallenbeckii, Lea, Reeve, Monog. Melania, sp. 332.

Description.—Shell tuberculate, transversely striate below, turreted, rather thin, pale horn-color or olivaceous, banded, or without bands; spire elevately turreted; sutures very much impressed; whorls eight, carinate, with compressed tubercles at the periphery; aperture large, ovately rhomboidal, whitish within; outer lip crenulate, sinuous; columella bent in, slightly thickened, and very much twisted.

Fig. 281.

Habitat.—Randall's Creek, near Columbus, Georgia; G. Hallenbeck.

Diameter, ·47; length, 1·24 inches.

Observations.—This is a very beautiful species, having some resemblance in outline to *Melania (Goniobasis) Boykiniana* (nobis), but it is larger, has more tubercles, and a more elevated spire. Many specimens are disposed to be plicate, and on the periphery where these folds traverse the raised striæ, a compressed tubercle is caused. These are sometimes repeated obscurely by the inferior striæ. Most of the specimens before me are banded, but many are entirely free from bands. Usually, there are four bands, rarely five, two being visible on the upper whorls. The lower band near to the base of the columella is usually well defined. The aperture is about one-third the length of the shell. I have great pleasure in dedicating this fine species to Mr. Hallenbeck, who has done much to develop the natural history of Georgia.—*Lea.*

Fig. 282.

Dr. Brot makes this species a synonyme of *Boykiniana*, but I cannot, from the material that has passed under my inspection, coincide in this decision, although the two are closely allied, and *may* be the same.

14. G. Boykiniana, Lea.

Melania Boykiniana, Lea, Proc. Philos. Soc., i, p. 289, Oct., 1840. Philos. Trans. viii, p. 228, t. 6, f. 59. Obs., iii, p. 66. DeKay, Moll. N. Y., p. 100. Wheatley, Cat. Shells U. S., p. 24. Reeve, Monog. Melania, sp. 77. Jay, Cat. Shells, 4th edit., p. 273. Binney, Check List, No. 37. Catlow, Conch. Nomenc., p. 185. Brot, List, p. 34.
Elimia Boykiniana, Lea, Chenu, Man. de Conchyl., i, f. 1978. Adams, Genera, i, p. 300.
Juga Troostiana, Lea, Chenu, Man. de Conchyl., i, f. 2017.

Description.—Shell granulate, elevated, somewhat turreted, at the carina tuberculate; sutures impressed; aperture long, ovate.

Fig. 283. Fig. 284.

Habitat.—Chattahoochee River, Columbus, Georgia.

Diameter, ·38; length, ·94 of an inch.

Fig. 285.

Observations.—This is a very distinct and remarkable species. Although many of the individuals differ, the prevailing character is to have the whole of the whorls covered with numerous granulate, revolving lines, generally bearing a purple or brown line. In some the tubercles of the carina assume the character of folds.—*Lea.*

Figure 283 is a copy of the original figure. 284 and 285 are from specimens in the Smithsonian collection. Like *Hallenbeckii*, this species is numerous in individuals. Many specimens are light green with raised, revolving lines of very dark color, giving them a strikingly handsome appearance.

So great are the variations of form in this shell and in *catenaria*, that I should not be surprised if the latter proved to be a younger stage of the former.

15. G. Bentoniensis, LEA.

Goniobasis Bentoniensis, LEA, Proc. Acad. Nat. Sci., p. 271, 1862. Jour. Acad. Nat. Sci. v, pt. 3, p. 336, t. 38, f. 198, March, 1863. Obs. ix, p. 158.

Description.—Shell carinate, folded, striate, conical, greenish horn-color, without bands; spire raised, conical; sutures very much impressed; whorls seven, slightly convex; aperture rather small, ovately rhomboidal, whitish within; outer lip acute, scarcely sinuous; columella bent in, somewhat twisted.

Fig. 286.

Habitat.—Benton County? North Alabama; G. Hallenbeck. My cabinet and cabinet of Dr. Hallenbeck.

Diameter, ·39; length, ·93 inch.

Observations.—There are two specimens before me sent by Mr. Hallenbeck. He is not positively certain that they were found in Benton County. Both these have revolving striæ over all the whorls. The upper whorls have folds which, where they cut the striæ, are raised into obtuse nodes. The larger striæ on the body-whorl are represented on the inside by white lines. It is rare that any species is carinate, plicate and striate at the same time. It is allied to *Melania* (*Goniobasis*) *Boykiniana* (nobis), but is not tuberculate, nor is it so large. The aperture is about one-third the length of the shell.—*Lea.*

Doubtfully distinct from *papillosa*, Anthony.

16. G. papillosa, ANTHONY.

Melania papillosa, Anthony, REEVE, Monog. Mel., sp. 467, May, 1861. BROT, List, p. 34.

Goniobasis Downieana, LEA, Proc. Acad. Nat. Sci., p. 272, 1862. Jour. Acad. Nat. Sci., v, pt. 3, p. 341, t. 38, f. 205, March, 1863. Obs. ix, p. 163.

Description.—Shell somewhat pyramidally ovate, fulvous-olive;

whorls five, slopingly convex, then keeled, longitudinally faintly plicated, transversely nodulosely ridged; aperture ovate, rather large, slightly effused at the base.

Fig. 287. Fig. 287a. Fig. 288.

Fig. 290. Fig. 289.

Habitat.—Florida.

Observations.—Distinguished by a papillose sculpture though being crossed with transverse ridges, passing over oblique longitudinal folds.—*Reeve.*

The following is a copy of the description of

Goniobasis Downieana.—Shell tuberculate, subturreted, clathrate and subcarinate above, transversely striate below, thin, pale brown; spire conical, clathrate; sutures irregularly impressed; whorls seven, subcarinate; compressed tuberculate on and above the periphery; aperture rather large, ovately rhomboidal, whitish within; outer lip crenulate, sinuous; columella bent in and twisted.

Habitat.—Etowah River; J. Postell.

Diameter, ·33; length, ·71 inch.

Observations.—Two specimens only of this beautiful species are before me, neither of them being entirely perfect. These two are without bands, but one has in the interior slight lines of color, which indicate that other individuals may be well banded. The striæ below the periphery are six, and they are thick enough to cause corresponding white lines in the interior The three lines above the periphery are cut by close folds on ribs and these make the upper parts beautifully clathrate. This species is closely allied to *Canbyi* herein described but it is shorter and wider, and the tubercles are more numerous and smaller, having about twenty on the periphery while *Canbyi* has about thirteen. These three ornamented little species—*Canbyi*, *Couperii*, *Downieana*—form a distinct group among American species, which one would hardly expect to find existing here. The aperture is rather more than one-third the length of the shell. I name this species after T. C. Downie, Esq., civil engineer, who has done much to develop the natural history of Georgia.—*Lea.*

Fig. 291.

17. G. Couperii, LEA.

Goniobasis Couperii, LEA, Proc. Acad. Nat. Sci., p. 271, 1862. Jour. Acad. Nat. Sci., v, pt. 3, p. 341, t. 38, f. 205, March, 1863. Obs. ix, p. 163.

Description.—Shell tuberculate, plicate, striate above and below, turreted, thin, dark brown, banded at the base; spire turreted; sutures very much impressed; whorls seven, subcarinate, with compressed tubercles on and above the periphery; aperture very small, subrhomboidal, dark and single-banded within; outer lip crenulate, very sinuous; columella bent in, twisted and purple.

Fig. 292.

Habitat.—Etowah River; Mr. Couper by J. Postell.

Diameter, ·27; length, ·72 inch.

Observations.—This ornamented little species was sent by Mr. Postell with the *Canbyi*, which he found also in Etowah River. They are closely allied, but *Couperii* is slimmer, has more striæ above the periphery, which are all cut by the folds, thus filling the spire with small, compressed tubercles. It differs also in being much darker, in not being maculate and in having a broad band near the base which is well marked inside. Below the periphery there are six well-defined, raised revolving striæ. The aperture is not quite one-third the length of the shell. Mr. Postell informs me that this species, as well as *Canbyi* and *Downieana*, from Etowah River, were brought some years since by Mr. Couper, son of James Hamilton Couper, Esq., of Hopeton, near Darien, and I have great pleasure in naming this species after him.—*Lea.*

18. G. inclinans, LEA.

Goniobasis inclinans, LEA, Proc. Acad. Nat. Sci., p. 267, 1862. Jour. Acad. Nat. Sci., v, pt. 3, p. 318, t. 37, f. 166, March, 1863. Obs. ix, p. 140.

Description.—Shell very much folded, somewhat drawn out, rather thin, obscurely banded; spire subattenuate, sharp pointed; sutures furrowed; whorls eight, flattened, covered with oblique folds; aperture small, rhomboidal, pale brown within; outer lip acute, sinuous; columella very much bent in, brownish-red and very much twisted.

Fig. 293.

Operculum ovate, very thin, light brown, with the polar point nearer to the centre than usual.

Habitat.—New Albany, Georgia; Rev. G. White: Etowah; J. Postell: Tuscumbia, Alabama; B. Pybas.

Diameter, ·27; length, ·68 inch.

Observations.—A large number of this species was sent to me by Mr. White and Mr. Pybas. They were generally incrusted with carbonate of lime, which was easily removed. It has some resemblance to *Melania* (*Goniobasis*) *Deshaysiana*, but it is a smaller species, with numerous folds much inclining to the left, and generally covering all the whorls. These folds are crossed by revolving striæ which form numerous nodes, giving a general rough appearance to the surface. Below the suture there is generally a light line. There is usually a dark band at the base of the columella, more distinct inside, and sometimes several indistinct ones may be observed above. It reminds one of *Melania* (*Goniobasis*) *Edgariana* (nobis), but that is a much larger species, and different in color and folds. The aperture is about one-fourth the length of the shell.—*Lea.*

Figured from Mr. Lea's plate.

19. G. Postellii, LEA.

Melania Postellii, LEA, Proc. Acad. Nat. Sci., p. 166, July, 1858. BINNEY, Check List, No. 214. BROT, List, p. 34.
Melania Portellii, Lea, REEVE, Monog. Melania, sp. 427.
Goniobasis Postellii, LEA, Jour. Acad. Nat. Sci., v, pt. 3, p. 343, t. 38, f. 208, March, 1863. Obs., IX, p. 165.

Description.—Shell granulate, attenuate, rather thin, yellowish-olive, transversely striate below; spire raised; sutures irregularly impressed; whorls rather flattened, about eight; aperture small, elliptical, white or banded within; outer lip sharp; columella twisted.

Fig. 294.

Habitat.—Altamaha River, Georgia; James Postell.

Diameter, ·36; length, 1·06 inches.

Observations.—Some dozen specimens were received from Mr. Postell, which were all more or less covered with a black deposit of oxide of iron, but underneath the epidermis was quite perfect, and of a light horn-color. Most of the specimens have four or five brown bands, but others are entirely without them, while others, again, are altogether deep purple inside. It has a very close resemblance to *Melania* (*Goniobasis*) *caliginosa* (nobis), but that species is cancellate, the cancellation not amounting

to granulations as in *Postellii*. It is also near to *catenaria*, Say, from South Carolina, but that shell is quite cancellate. I name this after James Postell, Esq., of St. Simon's Island, to whom I owe the acquisition of many fine *mollusca*, from Georgia. Fine specimens were subsequently sent to me by Dr. Wilson, of St. Simon's Island, procured in Lewis' Creek.—*Lea*.

This is a beautiful and rather common species — easily distinguished from all others belonging to this group.

20. G. arachnoidea, ANTHONY.

Melania arachnoidea, ANTHONY, Ann. Lyc. Nat. Hist. N. Y., vi, p. 95, t. 2, f. 14, March, 1854. BINNEY, Check List, No. 19. BROT, List, p. 34. REEVE, Monog. Melania, sp. 83.

Melania intertexta, ANTHONY, Proc. Acad. Nat. Sci., p. 62, February, 1860. BINNEY, Check List, No. 151. BROT, List, p. 34. REEVE, Monog. Melania, sp. 296.

Description.—Shell conic, rather thin, horn-colored; spire slender and much elevated; whorls twelve, very strongly striated and ribbed, particularly the upper ones; the ribs extend only to a prominent, acute carina on each whorl, situated below the middle, between which and the suture below, one or two coarse striæ alone are visible, sutures deeply impressed; aperture very small, ovate, purplish within; columella regularly curved, without indentation, and with but a small, very narrow sinus at base.

Fig. 295.

Diameter, ·28 inch (7 millim.); length, 1 inch (26 millim.). Length of aperture ·22 inch (2½ millim.); breadth of aperture, ·15 inch (4 millim.).

Habitat.—A small stream emptying into the Tennessee River, near London, Tennessee.

Observations.—This is one of the slenderest and most elevated of the genus; more than forty specimens are before me, and they are very constant in all their characters; it comes nearest to *M. striatula*, Lea, by its folds and striæ, but should not be confounded with it, being different in every other particular; the number of whorls is greater by one-half, the *striatula* having only eight; its proportions are altogether more slender, the *striatula* standing as 21 to 49, while this is 28 to 100. The present species is also much more folded and rough than the *striatula*, which is essentially a *striate* shell. Upon the older specimens the folds are nearly obsolete on the two lower whorls, being *there* coarsely striate only. About twelve striæ on the body-whorl and six

on the penultimate; more elevated in the centre, which renders these whorls subangulated; lines of growth strong, by reason of which the last two whorls have quite a varicose appearance.—*Anthony*.

The following is the description of

Melania intertexta.—Shell conical, acute and highly elevated; whorls about ten, each strongly ribbed longitudinally and furnished also with revolving striæ which, becoming more elevated near the suture, arrest the ribs at that point; sutures decidedly impressed; aperture pyriform, not large, whitish within; columella slightly rounded, not indented; sinus distinct but small.

Fig. 296.

Habitat.—Tennessee.

Observations.—A very abundant species. About two hundred specimens are now before me, and present characters remarkably uniform. May be compared with *M. bella*, Conrad, but differs by its more elongate, and sharply elevated form; its ribs are more decided, and it has not the bead-like prominences, so common in *M. bella*, and kindred species. From *M. arachnoidea* (nobis), it may be distinguished by its less elongate but more acute form, difference of aperture and less number of whorls; the striæ revolve around the whorls and over the folds without being arrested by them, giving the shell a woven appearance; hence its name.—*Anthony*.

I cannot distinguish the two species indicated by the synonymy at the commencement of this article; I therefore reprint the descriptions in full and figure the types. The examination of a great many specimens has convinced me that this shell varies much in its proportions, although very distinct from the other species of the genus.

21. G. Conradi, BROT.

Melania Conradi, BROT, List, p. 36.

Melania symmetrica, CONRAD, Proc. Acad. Nat. Sci., iv, p. 155, Feb., 1849. Jour. Acad. Nat. Sci., i, pt. 4, p. 278, t. 38, f. 5, Jan., 1850. BINNEY, Check List, No. 260.

Description.—Subulate, whorls nine, slightly convex, with longitudinal, slightly curved, narrow ribs, interrupted near the suture by a revolving granulated line; ribs on the body-whorl not extending as far as the middle; margin of labrum profoundly rounded; color ochraceous and black.

30 STERKIANA NO. 27, SEPTEMBER 1967

Habitat.—Savannah River.

Observations.—Near the apex, two or three volutions have a fine granulated or carinated line.— *Conrad.*

Fig. 297.

Dr. Brot proposes the name *Conradi* for this species as *symmetrica* is preoccupied by Prof. Haldeman. I doubt whether this species is distinct from *carinifera*, Lam.

22. G. carinifera, LAMARCK.

Melania carinifera, LAMARCK, Anim. sans Vert. DESHAYES, Anim. sans Vert., 2d edit., viii, p. 433. WHEATLEY, Cat. Shells U. S., p. 24. BINNEY, Check List, No. 48. CATLOW, Conch. Nomenc., p. 185. BROT, List, p. 36. REEVE, Monog. Melania, sp. 273.

Melania bella, CONRAD, New Fresh Water Shells, Appendix, p. 6, t. 9. f. 4, 1834. BINNEY, Check List, No. 29. BROT, List, p. 36. REEVE, Monog. Melania, sp. 269.

Elimia bella, Conrad, ADAMS, Genera, i, p. 300.

Melania perangulata, CONRAD, Proc. Acad. Nat. Sci., iv, p. 154, Feb., 1849. Jour. Acad. Nat. Sci., i, pt. 4, p. 278, t. 38, f. 6. BINNEY, Check List, No. 199. BROT, List, p. 36. REEVE, Monog. Melania, sp. 285.

Melania percarinata, CONRAD, Proc. Acad. Nat. Sci., iv, p. 155, Feb., 1849. Jour. Acad. Nat. Sci., 2d ser., i, pt. 4, p. 278, t. 38, f. 10. BINNEY, Check List, No. 200. BROT, List, p. 36.

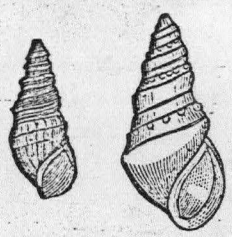
Melania nebulosa, CONRAD, Proc. Acad. Nat. Sci., iv, p. 155, Feb., 1849. Jour. Acad. Nat. Sci., i, pt. 4, p. 278, t. 38, f. 9. BINNEY, Check List, No. 172. BROT, List, p. 36.

Melania bella-crenata, HALDEMAN, Monog. Limniades, No. 4, p. 3 of cover, Oct. 5, 1841. JAY, Cat., 4th ed., p. 273. BINNEY, Check List, No. 30. BROT, List, p. 36.

Melania monilifera, Anthony, JAY, Cat., 4th ed., p. 474.

Description.—Shell ovate-oblong, longitudinally subrugose, brownish-black; whorls carinated in the middle; spire more strongly carinate.

Fig. 298. Fig. 299.

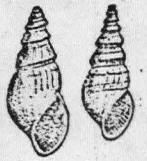


Habitat.—Cherokee County (Georgia).

Length, 7½ lignes.

Observations.—The spire is longer than the last whorl; its carinæ are very prominent and its sutures are plainly granulose.—*Lamarck.*

Fig. 300. Fig. 301.



Melania bella.—Shell subulate, with carinated whorls, and a prominent crenulated line near the summit of each; aperture elliptical.

Habitat.—Streams in North Alabama.—*Conrad.*

Melania perangulata.—Subulate; volutions nine or ten, with an acutely carinated angle on all except the body-whorl,

which is subcarinated; on each whorl of the spire is a revolving granulated line above the carina; color olive-brown.

Habitat.—Savannah River.—*Conrad.*

Melania percarinata.—Elongate-conoidal; volutions of the spire with a carinated line below the middle, and a revolving granulated line above; body-whorl with a granulated revolving line near the suture, and three carinated lines, the superior one largest, the lower one fine; color dark olive-brown.

Fig. 302.

Habitat.—Savannah River.—*Conrad.*

Melania nebulosa.—Elongate-conoidal; volutions six or seven with revolving raised lines; whorls of the spire carinated below the middle, above which they are longitudinally ribbed, and have two or three revolving granulated lines; granules compressed; aperture widely elliptical; color ochraceous, with brownish-black stains.

Fig. 303.

Habitat.—Savannah River.—*Conrad.*

The figure of *carinifera* is copied from Delessert and represents the original specimen of Lamarck's description. That of *percarinata* is from Mr. Conrad's plate. *G. bella* (fig. 301) is from the type specimen in possession of Prof. Haldeman. Dr. Brot was the first author on Melanidæ to recognize the identity of all these species. The following description also belongs to this species, which exhibits many varieties, but may be known through them all by its encircling row of beadlike elevations.

Fig. 304.

Melania bella-crenata.—Shell reddish, subulate, whorls eleven, marked with a strong carina and a crenulated line posterior to it.

Habitat.—Alabama.

Length ¾ of an inch.

Observations.—Differs from *M. bella*, Con., by having an oval aperture.—*Haldeman.*

Melania monilifera, Anthony, unpublished, but quoted in Jay's Catalogue, belongs here, as I have ascertained by a specimen so labelled by Mr. Anthony, in Coll. Gould.

I have seen specimens of *carinifera* from Yadkin River, S. C., and from North Alabama, but in Georgia it is exceedingly numerous in the Savannah and other rivers.

23. G. vittata, ANTHONY.

Melania vittata, ANTHONY, Ann. Lyc. Nat. Hist. N. Y., vi, p. 89, t. 2, f. 7, March 1854. BINNEY, Check List, No. 294. BROT, List, p. 37. REEVE, Monog. Melania, sp. 262.

Description.—Shell conic, nearly smooth; spire elevated; whorls about nine, flat, with two fine, distant, brown lines on each, the lower one revolving upon an angle near the suture; lines obsolete on the extreme upper whorls and increased to four or five on the body-whorl visible also within the aperture; sutures deeply impressed; aperture ovate, within whitish, but exhibiting also the brown lines of the epidermis; columella curved, sinus inconspicuous.

Fig. 305.

Habitat.—Alabama.

Diameter, ·32 of an inch (8 millim.); length, ·86 of an inch (22 millim.). Length of aperture, ·33 of an inch (8 millim.); breadth of aperture, ·16 inch (4 millim.).

Observations.—May be compared with *M. Taitiana*, Lea, but may be distinguished by its flat subangulated whorls. It also exhibits somewhat coarse striæ (amounting nearly, if not quite, to ribs in some specimens) upon all the whorls; even the body-whorl is no exception. The sutures also are deeply impressed, the contiguous whorls shelving towards each other to form quite a furrow there. Upper whorls carinate. It is a very beautiful species, the distinct reddish-brown, hair-like bands contrasting finely with the yellowish-brown color of the general shell.—*Anthony.*

24. G. abbreviata, ANTHONY.

Melania abbreviata, ANTHONY, Bost. Proc., iii, p. 360, Dec., 1850. BINNEY, Check List, No. 4. REEVE, Monog. Melania, sp. 424.

Melania elegantula, ANTHONY, Ann. Lyc. Nat. Hist. N. Y., vi, p. 103; t. 3, f. 2. March, 1854. BINNEY, Check List, No. 96. BROT, List, p. 32. REEVE, Monog. Melania, sp. 346.

Melania coronilla, ANTHONY, Ann. Lyc. Nat. Hist. N. Y., vi, p. 126, t. 3, f. 27, March, 1854. BINNEY, Check List, No. 69. BROT, List, p. 32. REEVE, Monog. Melania, sp. 418.

Melania chalybæa, Anthony, BROT, List, p. 37.

Melania curvilabris, ANTHONY, Ann. N. Y. Lyc. Nat. Hist., vi, p. 102, t. 3, f. 1, Mar. 1854. BINNEY, Check List, No. 82. BROT, List, p. 31. REEVE, Monog. Melania, sp. 378.

Melania coronilla.—Shell ovate, moderately thick; of a dark, dull, horn-color, sometimes decorated with two or three linear revolving bands at, and below, the upper part of the aperture; spire short, with a rather convex outline to the truncated apex; whorls 5-6, convex, one

of which seems to have been lost by truncation; obtusely shouldered and shelving, with about ten, short, thick, elevated, rather distant, longitudinal ribs on each which, on the body-whorl, are nearly obsolete, rarely extending below the shoulder; sutures distinctly impressed, but rendered irregular by the interruptions of the longitudinal folds; aperture not large, ovate, reddish or banded within; columella much curved, with an indentation below the middle, and thickened by a calcareous deposit along its whole length, more prominent near the upper angle of the aperture.

Fig. 306.

Habitat.—Tennessee.

Diameter, ·22 of an inch (5½ millim.); length, ·50 of an inch (13 millim.). Length of aperture, ·24 of an inch (6 millim.); breadth of aperture, ·13 of an inch (3 millim.).

Observations.—I know no species with which the present one can easily be confounded; its short, rather broad outline, with its thick, prominent, longitudinal ribs on the short whorls of the spire, will readily distinguish it. Six specimens only are before me, three of which are banded, and three are plain; the specimens are otherwise very uniform in appearance.—*Anthony.*

The figure is from Mr. Anthony's original type. Other specimens exhibit slight folds on the body-whorl.

An examination of the types of *coronilla*, *elegantula* and *abbreviata*, together with other specimens, convinces me that they are all varieties of one species, which does not always develop the folds on the spire. It is a very remarkable species in the form of the shell, tubercles and aperture, and particularly in the broad band of a lighter color than the general hue of the shell.

The following is the description of

Melania elegantula.—Shell obtusely conical, smooth; whorls 5-6, irregularly shouldered and angulated; body-whorl dark olive-green color, with two or three darker bands, which are visible also within the aperture; upper whorls of a very light green color, with *one* light brown sub-central band, and *another* so near the upper part of the whorl as to be almost concealed by the suture; sutures rather obscure; aperture rather large, irregularly ovate; columella much indented near its base, outer lip sinuous.

Fig. 307.

Habitat.—Kentucky.

32 STERKIANA NO. 27, SEPTEMBER 1967

Diameter, ·25 of an inch (6 millim.); length, ·60 of an inch (15 millim.). Length of aperture, ·28 of an inch (7 millim.); breadth of aperture, ·16 of an inch (4 millim.).

Observations.—A singularly ornamented species, of which only two specimens are before me, and which cannot be compared with any described species. The apex is eroded in the specimens under observation, and only five whorls are visible, but it evidently has one more when perfect. The whorls form a shelving shoulder from the suture, and are then nearly flat, the body-whorl being, perhaps, slightly concave. Altogether it presents a remarkable and beautiful appearance, and no one need be at a loss to recognize it after once having seen a specimen. Three bands are visible in the interior.—*Anthony.*

Melania curvilabris.—Shell conical, smooth, rather thick, greenish horn-color; spire elevated; whorls 7-8, convex or subangulated; body-whorl angulated, with a depression broad, but not deep; sutures deeply and irregularly impressed; aperture very irregular, by the twisted columella and the sinuous curving of the outer lip, within whitish; outer lip deeply and singularly curved, so as to give this part of the shell almost a *pleurotomose* character; columella very much curved and indented, leaving a small, umbilical indentation, and having a distinct sinus at base.

Fig. 308.

Habitat.—Tennessee.

Diameter, ·30 of an inch (8 millim.); length, ·72 of an inch (19 millim.). Length of aperture, ·25 of an inch (6 millim.); breadth of aperture, ·15 of an inch (4 millim.).

Observations.—May be compared with *M. elegantula* in general form, but its peculiarly curved outer lip will at once distinguish it from all others.—*Anthony.*

Figured from Mr. Anthony's original type.

Melania abbreviata.—Shell small, ovately conical, turreted, somewhat solid, corneous, acuminate; whorls five, flattened, the last compressed; aperture rotundately-ovate, contorted, lip dilated in front, widely sinuated behind.

Fig. 309.

Habitat.—Maury's Creek, Tennessee.

Diameter, ¼ of an inch; length, ½ of an inch.

Observations.—A peculiar shell, though not easily characterized. Its abbreviated form, shouldered whorls and the compression of the last whorl, are among its peculiarities.—*Anthony.*

25. G. vesicula, LEA.

Melania vesicula, LEA, Proc. Acad. Nat. Sci. p. 118, 1861.
Goniobasis vesicula, LEA, Jour. Acad. Nat. Sci., v, pt. 3, p. 242, t. 35, f. 45, March, 1863. Obs. ix, p. 64.

Description.—Shell obscurely folded, elliptical, yellow, without spots, rather thin; spire very short and obtuse; sutures rather impressed; whorls three, somewhat convex; aperture large, regularly ovate, pale salmon within; outer lip sharp; columella thickened, incurved, rounded at the base.

Fig. 310.

Habitat.—Alabama; E. R. Showalter, M.D.

Diameter, ·18; length, ·37 inch.

Observations.—A single specimen of this very small species was found among others of a different species from Dr. Showalter. It is a small, regularly oval, inflated species. In this specimen there is a disposition on the upper part of the whorls to plication, and this produces obscure spots round this part of the whorls. Other specimens may not have this character. The aperture is very large, being two-thirds the length of the shell. It is nearly allied to *Melania* (*Goniobasis*) *auriculæformis* (nobis), but is not so large and has a wider aperture, which is not so elongate. The color is nearly the same, but the tint is rather brighter. It cannot be confounded with *Melania* (*Goniobasis*) *corneola*, Anth., although of the same size and color, that shell being fusiform, with a conical spire and an aperture only half the length of the shell.—*Lea.*

C. *Shell plicate.*

26. G. obesa, ANTHONY.

Melania obesa, Anthony, REEVE, Monog. Melania, sp. 469, May, 1851. BROT, List, p. 33.

Description.—Shell globosely ovate, solid, fulvous, obscurely banded with olive-green; spire short, rather immersed; whorls five, slopingly rounded, longitudinally, obsoletely, rudely plicated, last whorl spirally ridged and striated round the lower part; aperture ovate, a little effused at the base.

Fig. 311.

Anthony, manuscript.

Habitat.—Alabama, United States.—*Recve*

This species, which I have not seen, does not appear to be closely related to any other plicate species.

27. G. Leai, TRYON.

Melania blanda, LEA, Proc. Acad. Nat. Sci., p. 122, 1861.
Goniobasis blanda, LEA, Jour. Acad. Nat. Sci., v, pt. 3, p. 242, t. 35, f. 44, March, 1863. Obs., ix, p. 64, t. 35, f. 44.

Description.—Shell plicate, obtusely fusiform, obtusely conical above, rather thin, dark horn-color; spire very obtuse; sutures impressed; whorls five, flattened above, the last large and subangular; aperture rather large, elliptical, yellowish-white within; outer lip acute; columella thickened, inflected, subangular below.

Fig. 312.

Habitat.—Yellowleaf Creek, Alabama; Dr. E. R. Showalter.

Diameter, ·37; length, ·73 inch.

Observations.—A single specimen only was received from Dr. Showalter. I think it is not entirely mature. The folds are low, somewhat distant and vertical. The aperture is about half the length of the shell. In outline it is near to *Lithasia Duttoniana*, which I described as a *Melania*, but it has not the callus above and below on the columella, which constitute that genus, nor has it any tubercles, being covered above by folds.—*Lea.*

The name *blanda* is preoccupied by Mr. Lea himself in a species of Goniobasis published by him over twenty years ago.

The shell is a very variable one, being generally more dilated than the figure, with impressed, distinct striæ below the periphery, which is sometimes tuberculate. The young shell is very sharply angulate. Except in being plicate, this species is very nearly related to *G. straminea*, Lea.

28. G. æqualis, HALDEMAN.

Melania æqualis, HALDEMAN, Monog. Limniades, No. 4, p. 3 of cover, Oct. 5, 1841. JAY, Cat. 4th ed., p. 272. BINNEY, Check List, No. 7.

Description.—Shell thick, short, conical; with five flat whorls ornamented with longitudinal ribs; texture thin, surface smooth, aperture narrow, elliptic, as long as the spire. Color brown.

Habitat.—Nolachucky River.

Length, ⅛ of an inch.

Observations.—Closely resembles the young of *Io spinosa*, and differs from the young of *Melania nupera* as figured by Say (Am. Conch., pl. 8), by the want of the concentric elevated lines on the anterior slope. This figure, as I am informed by Mrs. Say, does not represent the young of the principal figures (*Lithasia nupera*), but another species which, if distinct, will retain the name of *M. nupera*, as it appears to be a true Melania.—*Haldeman.*

Fig. 313. Fig. 314.

The two figures, representing a young and adult shell, are from Prof. Haldeman's types. The peculiar form of the aperture distinguishes all the specimens I have seen. Somewhat allied to *carinocostata*, Lea, but in that species the plicæ are terminated by a rib or angle on the body-whorl and the spire is angled or carinate. The largest specimen I have seen attains ¼ inch.

29. G. semigradata, REEVE.

Melania semigradata, REEVE, Monog. Melania, sp. 472, May, 1861. BROT, List, p. 33.

Description.—Shell pyramidally conical, fulvous-olive, encircled with a green band; whorls 5–6, flatly sloping, sharply keeled around the lower part, first few whorls longitudinally plicated, last whorl double-keeled; aperture ovate, a little effused at the base.

Fig. 315.

Habitat.—Alabama, United States.

Observations.—A striking new species, in which the whorls are double-keeled at the periphery, the lower keel being hid in all but the last whorl by the overlapping of one whorl upon another.—*Reeve.*

Very closely related to *G. Gerhardtii.*

30. G. carinocostata, LEA.

Melania carinocostata, LEA, Philos. Proc. iv, p. 165, 1845. Philos. Trans., x, p. 62, t. 9, f. 40. Obs., iv, p. 62. BINNEY, Check List, No. 49. BROT, List, p. 35. REEVE, Monog. Melania, sp. 333.
Elimia carinocostata, Lea, ADAMS, Genera, i, p. 300.
Goniobasis strenua, LEA, Proc. Acad. Nat. Sci., p. 267, 1862. Jour. Acad. Nat. Sci., v, pt. 3, p. 316, t. 37, f. 161, March, 1863. Obs., ix, p. 138.
Goniobasis Leidyana, LEA, Proc. Acad. Nat. Sci., p. 268, 1862. Jour. Acad. Nat. Sci., v, pt. 3, p. 322, t. 33, f. 173, March, 1863. Obs., ix, p. 144.
Melania scabrella, Anthony, REEVE, Monog. Melania, sp. 388.
Melania scabriuscula, BROT, List, p. 36.

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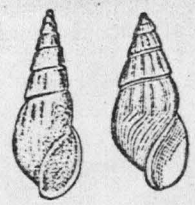
Description.— Shell plicate, carinate, conical, rather thin, yellow or chestnut-colored; spire somewhat elevated; sutures sulcate; whorls flattened; aperture small, elliptical; columella smooth.

Fig. 316. Fig. 317.



Habitat.—Alabama. Tennessee.

Diameter, ·36; length, ·98 of an inch.

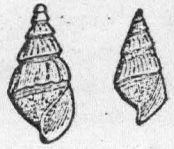
Observations.—This is a species not easily confounded with any other known to me. The character of the ribs or folds is peculiar; they being arrested near the sutures by an abrupt carina, which has a smaller parallel one between it. The folds and the carinæ are conspicuous, being perfectly pronounced. Two of the six specimens before me are of a dark chestnut-brown, with the nacre of the interior quite rufous. One is more horn-colored, having four bands and the nacre whitish. The three others, all from Dr. Budd, are wax-yellow, the ribs less expressed, and the interior yellowish. The apex of each being broken, the number of whorls cannot be determined. I should think there were about eight. The inferior part of the whorl is smooth. The aperture is rather more than one-third the length of the shell.—*Lea.*

Fig. 316 is copied from Mr. Lea's figure. The following figure, from a shell in Mr. Anthony's collection, determined by Mr. Lea, locality Georgia (?), is much broader in outline and constitutes a well marked variety, if not distinct species.

The following are synonymes:—

Melania scabrella.—Shell somewhat fusiformly conoid, dull-chestnut, whorls 5–6, slopingly convex, concentrically, closely, plicately ridged, keeled above and below; sutures impressed; aperture oblong, ovate, canaliculately produced at the base.

Fig. 318. Fig. 319.



Habitat.—Georgia, U. S.

Fig. 320.

Observations.—Distinguished by a characteristic sculpture of arched, concentric ridges, interrupted by a keel, which gives a peculiarly impressed aspect to the sutures.—*Anthony.*

Goniobasis strenua.—Shell folded, subfusiform, brownish-olive, rather thin, without bands; spire somewhat raised; sutures very much impressed; whorls about seven, flattened; aperture rather large, ovately rhomboidal, whitish within; outer lip subsinuous; columella bent in and twisted.—*Lea.*

Habitat.—Benton County, northeast Alabama; G. Hallenbeck.

Diameter, ·44 of an inch; length, 1·01 inches.

Observations.—Two specimens only were procured by Mr. Hallenbeck, and these are before me. The smaller one is rather lighter in color and inclines to be more brown. It is allied to *Melania* (*Goniobasis*) *athleta*, Anth., but is a shorter shell, with two or three less number of whorls. It also differs in being of a greenish color, and in having fewer and more distant folds. It also differs in the base of the columella being more direct. In our shell the folds are lost in a carinate edge above the suture. In the body-whorl there are minute venations. Immediately below the suture there is a line of lighter color. The aperture is four-tenths the length of the shell.—*Lea.*

Goniobasis Leidyana.—Shell folded, fusiform, rather thin, yellowish horn-color, without bands; spire obtusely conical; sutures linear; whorls six, flattened; aperture very large, ovately rhomboidal, whitish within; outer lip acute, thin; columella bent in, twisted at the base.

Fig. 321.

Operculum ovate, thin, brown, with the polar point close on the left margin, near to the base.

Habitat.—Benton County? northeast Alabama; G. Hallenbeck.

Diameter, ·39; length, ·80 of an inch.

Observations.—Two specimens were sent by Mr. Hallenbeck for my examination. Both have imperfect plicæ on the spire which is very obtuse, and both are evidently adults. The upper whorls are carinate, but the inferior whorl closes on the angle so as to obliterate the carination. On the body-whorl this angulation is nearly obsolete. It has nearly the outline of *Melania* (*Goniobasis*) *abrupta* (nobis), but that species is not plicate and is a thicker shell. The aperture is one-half the length of the shell. I dedicate this species to my friend, Joseph Leidy, M.D., who has done so much for American zoology and comparative anatomy.—*Lea.*

31. G. perstriata, Lea.

Melania perstriata, Lea, Philos. Trans., x, p. 296, t. 30, f. 2. Obs., v, p. 52. Binney, Check List, No. 203. Brot, List, p. 36.

Description.—Shell striate, acutely conical, rather thin, cinnamon-brown; spire elevated, somewhat attenuate, at the apex carinate and granulate; sutures impressed; whorls seven, convex; aperture small, elliptical, angular at the base, reddish within; columella smooth.

Fig. 322.

Habitat.—Coosa River, Alabama: Huntsville, Tennessee.

Diameter, ·28; length, ·83 of an inch.

Observations.—Among the numerous *Melaniæ* sent to me long since by my late friend, Prof. Troost, were several specimens of the young of this species. I could not satisfactorily place them in any known species, and I put them temporarily with *striatula* (nobis), which is strongly allied to the species which I have described above. Recently, I have received from Prof. Brumby and from Mr. J. Clark several adult specimens, which leave the younger in my possession no longer in doubt; they were recognized at once to belong to those more recently received. All the specimens before me, some dozen, are reddish; the *striatula* is horn-colored, with a white aperture. The latter is also flatter in the whorls, and not so carinate above, nor are the sutures so deeply impressed. Some of the specimens are quite smooth on the body-whorl. Aperture about one-third the length of the shell.—*Lea.*

32. G. Lecontiana, Lea.

Melania Lecontiana, Lea, Philos. Proc., ii, p. 13, Feb., 1841. Philos. Trans., viii, p. 177, t. 5, f. 29. DeKay, Moll. N. York, p. 96. Wheatley, Cat. Shells, U. S., p. 26. Brot, List, p. 35. Jay, Cat., 4th edit., p. 274. Binney, Check List, No. 160. Catlow, Conch. Nomenc., p. 187.

Melasma Lecontiana, Lea, Chenu, Man. Conchyl., i, f. 2002. Adams, Genera, i, p. 300.

Description.—Shell folded, conical, thick, horn-color; spire obtusely elevated; sutures small; whorls six, flattened; aperture large, elliptical, bluish.

Fig. 323.

Habitat.—Georgia; Major Le Conte.

Diameter, ·35; length, ·80 of an inch.

Observations.—The folds of this species extend over the whole shell, except the inferior half of the body-whorl. The aperture is large, and somewhat dilated, being nearly one-half the length of the shell. I owe the possession of several specimens to the kindness of Major Le Conte, to whom I dedicate it.—*Lea.*

Mr. Reeve's figure does not represent this species, it approaches nearer to *decorata*, Anthony. The outer lip in this species is not so expanded as in *carinocostata*, and the body-whorl is not angulate as in that species.

33. G. obtusa, Lea.

Melania obtusa, Lea, Philos. Proc., ii, p. 13, Feb., 1841. Philos. Trans., viii, p. 176, t. 5, f. 28. Obs., iii, p. 14. DeKay, Moll. New York, p. 96. Binney, Check List, No. 183. Troost, Cat. Shells, Tennessee. Wheatley, Cat. Shells, U. S., p. 26. Catlow, Conch. Nomenc., p. 188. Brot, List, p. 59.

Goniobasis cadus, Lea, Proc. Acad. Nat. Sci., p. 272, 1832. Jour. Acad. Nat. Sci., v, pt. 3, p. 345, t. 38, f. 211, March, 1863. Obs., ix, p. 167.

Melania substricta, Haldeman, Monog. Limniades, vii, p. 4 of cover, Jan., 1844. Wheatley, Cat. Shells, U. S., p. 27. Binney, Check List, No. 256. Brot, List, p. 36.

Description.—Shell folded, fusiform, rather thick, horn-color; spire obtuse; sutures impressed; whorls four, the last semi-plicate; aperture large, whitish.

Fig. 324.

Habitat.—Tennessee.

Diameter, ·27; length, ·55 of an inch.

Observations.—A fusiform species with costæ or folds half way down the last whorl.—*Lea.*

The following are believed to be synonymes:—

G. cadus.—Shell cancellate, subfusiform, somewhat thick, inflated, yellowish, without bands; spire very obtuse; sutures irregularly impressed; whorls five, slightly convex, cancellate above; aperture very large, ovately rhomboidal, white within; outer lip sharp, slightly sinuous; columella bent in, thickened and twisted.

Habitat.—Georgia; Major Le Conte.

My cabinet.

Diameter, ·33; length, ·63 of an inch.

Observations.—A single specimen has been in my possession for many years. The description was delayed in the hope of other specimens being found. It was a single one among many species, brought by our late lamented vice president from Georgia, which he placed in my hands. This species reminds one of *Melania* (*Goniobasis*) *Deshayesiana* (nobis), but it is entirely different in the outline and number of its whorls, being a very short shell with a very different size of aperture. The aperture is more than half the length of the shell.—*Lea.*

Fig. 325.

Melania substricta.—Brown, lengthened conical, upper whorls flat-

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tened, with numerous folds; body-whorl slightly convex, suture impressed; aperture pyriform, purple, obtusely rounded before, five-eighths of an inch.

Habitat.—Tennessee; Mr. Anthony.

Observations.—Bears some resemblance to *M. decora*, Lea. I formerly proposed the name *substricta* for *M. conica*, Say, supposing the name to have been previously applied to the *M. conica*, Gray. A subsequent examination of the dates has satisfied me that Say's name has priority, so that Mr. Gray's species now requires a new name, unless the citation of the author presents a sufficient distinction.—*Haldeman.*

34. G. amœna, Lea.

Goniobasis amœna, Lea, Proc. Acad. Nat. Sci., p. 268, 1862. Jour. Acad. Nat. Sci., v, pt. 3, p. 323, t. 38, f. 175, March, 1833. Obs., ix, p. 145, t. 38, f. 175.

Description.—Shell folded, subfusiform, thick, pale chestnut-color, without bands; spire obtusely conical; sutures irregularly impressed; whorls about six, somewhat convex; striate at the apex; aperture large, ovately rhomboidal, whitish within; outer lip acute, slightly sinuous; columella thickened, incurved and twisted.

Operculum ovate, thin, light brown, with the polar point on the left margin near the base.

Habitat.—North Alabama; Prof. Tuomey.

Diameter, ·29; length, ·70 of an inch.

Observations.—A number of these species were sent to me by the late Prof. Tuomey, but the older ones are very imperfect, being generally decollate. Most of them are young. The largest is nine-tenths of an inch long, but it is too imperfect to figure. The folds are close, regular and are oblique to the right. On the upper whorls there are one or two striæ which cut the folds as in *Melania* (*Goniobasis*) *Deshayesiana* (nobis). The aperture is nearly half the length of the shell.—*Lea.*

Fig. 326.

35. G. Tuomeyi, Lea.

Goniobasis Tuomeyi, Lea, Proc. Acad. Nat. Sci., p. 266, 1862. Jour. Acad. Nat. Sci., v, pt. 3, p. 311, t. 37, f. 153, March, 1863. Obs., ix, p. 133.

Description.—Shell smooth, fusiform, slightly thick, yellowish-olive, banded or without bands; spire obtusely conical, minutely plicate at the apex; sutures impressed; whorls about six, flattened above, the

last one ventricose; aperture large, rhomboidal, whitish within; outer lip acute, somewhat sinuous; columella thickened, bent in and twisted.

Habitat.—North Alabama; Prof. M. Tuomey.

Diameter, ·35; length, ·70 of an inch.

Observations.—My friend, the late Prof. Tuomey, sent to me during his geological survey of the state of Alabama, many new *Mollusca*, most of which I described at the time. Some were laid over for more leisure and further examination. Among them were a number of this species which I now dedicate to his memory with peculiar gratification. He was an ardent student of nature, and warm and generous in his friendships. This species varies very much. None of the specimens have perfect tips, but some are nearly so, and display on the apical whorls very minute and close plicæ. Some have minute venations on the body-whorl. They are generally without bands, yet some have two bands, but more frequently only one, which is about one-third of the whorl below the suture. It is rather broad and distinct inside and out. In outline and size it is closely allied to *Melania* (*Goniobasis*) *gracilis* (nobis), but it is not so high in the spire, nor is it so yellow. The aperture is about one-half the length of the shell.—*Lea.*

Fig. 327.

Differs from *G. strenua* in being more ventricose and in the aperture being narrower below. This species is allied in form to *G. Leidyana*, but in that species the body-whorl is plicate.

36. G. interveniens, Lea.

Goniobasis interveniens, Lea, Proc. Acad. Nat. Sci., p. 268, 1862. Jour. Acad. Nat. Sci., v, pt. 3, p. 320, t. 38, f. 169, March, 1863. Obs., ix, p. 142.

Description.—Shell folded, conical, rather thin, dark horn-color or brown, double-banded or without bands; spire obtusely conical; sutures irregularly and very much impressed; whorls about six, flattened, with slightly bent folds; aperture rather large, rhomboidal, white, brown or banded within; outer lip acute, sinuous; columella bent in and somewhat twisted.

Habitat.—North Alabama; Prof. Tuomey.

Diameter, ·32; length, ·74 of an inch.

Observations.—Some half dozen specimens were among the shells

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received from Prof. Tuomey obtained during his geological survey. This is rather a small species between *Melania* (*Goniobasis*) *costulata* (nobis), and *Melania* (*Goniobasis*) *Edgariana* (nobis). It has a less number of folds than the former, and about the same number as the latter, but these folds differ in not being so much raised and protruded above as in *Edgariana*, nor is the spire so high. The interior is usually white, sometimes double-banded, and one of the specimens is dark brown. The aperture is nearly half the length of the shell.—*Lea.*

Fig. 328.

Resembles *G. Curreyana*, Lea, but differs in being shorter and wider.

37. G. olivella, Lea.

Goniobasis olivella, Lea, Proceed. Acad. Nat. Sci., p. 269, 1862. Jour. Acad. Nat. Sci., v, pt. 3, p. 327, t. 38, f. 182, March, 1863. Obs., ix, p. 149.

Description.—Shell folded, fusiform, rather thick, olivaceous, shining, without bands; spire obtusely conical; sutures irregularly and very much impressed; whorls about five; somewhat convex; aperture large, rhomboidal, whitish; outer lip acute, scarcely sinuous; columella bent in and twisted.

Fig. 329.

Habitat.—Tennessee; Prof. Troost.

My cabinet.

Diameter, ·31; length, ·60 of an inch.

Observations.—I have two specimens before me varying little but in size. It is a well characterized species, having folds, more or less distinct on all the whorls. These folds are rather close, and incline to the left. In one of the specimens there are two lines which cut the folds immediately under the suture. In outline it is near to *ornatella*, herein described, but it cannot be confounded with that species, which is of a different color and banded. The aperture is nearly the half of the length of the shell.—*Lea.*

38. G. interrupta, Haldeman.

Melania interrupta, Haldeman, Supplement to No. 1, Monog. Limniades, Oct., 1840. Wheatley, Cat. Shells, U. S., p. 25. Jay, Cat., 4th edit., p. 274. Brot, List, p. 34. Reeve, Monog. Melania, sp. 398.

Goniobasis Christyi, Lea, Proc. Acad. Nat. Sci., p. 269, 1862. Jour. Acad. Nat. Sci., v. pt. 3, p. 328, t. 38, f. 185, March, 1863. Obs., ix, p. 150.

Goniobasis instabilis, Lea, Proc. Acad. Nat. Sci., p. 269, 1862. Jour. Acad. Nat. Sci., v, pt. 3, p. 329, t. 38, f. 186, March, 1863. Obs., ix, p. 151.

Description.—Shell conical, with four flat whorls, which are crossed by elevated ribs and spiral lines; apex truncated; suture indistinct; aperture elliptic, two-thirds the length of the shell. Color olivaceous, sometimes banded with black.

Fig. 330. Fig. 331. Fig. 332. Fig. 333.

Length, ½ of an inch.

Habitat.—Tennessee.—*Haldeman.*

The following are synonymes.

Goniobasis Christyi.—Shell folded, striate or granulate, fusiform, rather thick, inflated, yellowish-olive, banded; spire obtusely conical; sutures impressed; whorls five, slightly convex; aperture very large, ovately rhomboidal, banded within; outer lip sharp, scarcely sinuous; columella thickened, slightly twisted.

Operculum ovate, thin, brown, with the polar point well removed from the left margin and the base.

Habitat.—Valley River, Cherokee City, N. C.; Prof. David Christy.

Diameter, ·37; length, ·67 of an inch.

Observations.—I have about a dozen of this species from Mr. Clark, collected by Prof. Christy in North Carolina. All the specimens are nearly of the same size and outline, and have the same bands, usually four, but they differ much in the exterior. Some have no striæ, but those which have cut the irregular folds and form granules. Usually, there are four bands indistinct on the outside, but well marked within, the two middle ones being approximate. The upper band is the largest, and the callus above is often purple. Some specimens have five or six bands. It reminds one of *Melania* (*Goniobasis*) *basalis* (nobis), but that shell is not so much inflated, nor has it folds, striæ or granules like this. The aperture is more than half the length of the shell. I name this after Prof. David Christy, who collected it, with many interesting shells, while in the northwestern part of North Carolina.—*Lea.*

Fig. 334.

This and *instabilis* are adult forms.

Goniobasis instabilis.—Shell folded or smooth, fusiform, thick, somewhat inflated, banded or not banded, olivaceous; spire conical; sutures impressed; whorls about five, slightly convex; aperture large, ovately rhomboidal, banded within; outer lip acute, scarcely sinuous; columella thickened, somewhat bent in and twisted.

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Operculum ovate, thin, light brown, with the polar point well removed from the left margin and the base.

Habitat.—Twenty-one miles north of Murphy, and other places in Cherokee County, N. C.; Prof. David Christy.

Diameter, ·32; length, ·64 of an inch.

Observations.—I have a number of these from several habitats in Cherokee County, North Carolina. From the different habitats there is a great variety of character, about half seem to be plicate, the others perfectly smooth; the folds not being on the upper whorls, but commencing on the body-whorls or the penultimate, and these folds are on the shoulder, and somewhat curved and close. Some are lighter green and white inside being without bands. The bands are usually four in number, with the two middle ones approximate. The smooth, green, elongate varieties look very much like *Melania* (*Goniobasis*) *Saffordii* (nobis), but it cannot be confounded with that species. The dark banded varieties might be mistaken for the *Melania* (*Goniobasis*) *subangulata*, Anth. The aperture is about half the length of the shell.—*Lea.*

Fig. 335.

39. G. crispa, LEA.

Goniobasis crispa, LEA, Proc. Acad. Nat. Sci., p. 269, 1862. Jour. Acad. Nat. Sci., v, pt. 3, p. 326, t. 38, f. 180, March, 1863. Obs., ix, p. 148.

Description.—Shell folded and transversely striate, fusiform, rather thick, yellowish, crispate, without bands; spire obtuse; sutures irregularly impressed; whorls about six; somewhat convex; aperture large, ovately rhomboidal; whitish within; outer lip acute, scarcely sinuous; columella slightly bent in and twisted.

Fig. 336.

Habitat.—Florence, Alabama; Rev. G. White.

Diameter, ·30; length, ·62 of an inch.

Observations.—A single specimen only was found among the numerous shells kindly sent to me some years since by Mr. White. The folds are rather close, well-defined, and incline to the left, reaching half way down the body-whorl, and are crossed by transverse striæ, which cover the whole surface, and cause the upper portion to be clathrate. The aperture is nearly half the length of the shell.—*Lea.*

More convex than *nassula*, Con., with more regular striæ, and is altogether a handsomer species.

40. G. formosa, CONRAD.

Melania formosa, CONRAD, New Fresh-Water Shells, Appendix, p. 5, t. 9, f. 3, 1834. WHEATLEY, Cat. Shells, U. S., p. 25. BINNEY, Check List, No. 112.
Melania formosa, Anthony, REEVE, Monog. Melania, sp. 337. BROT, List, p. 35.
Goniobasis ornatella, LEA, Proceed. Acad. Nat. Sci., p. 269, 1862. Jour. Acad. Nat. Sci., v, pt. 3, p. 326, t. 38, f. 181, March, 1863. Obs., ix, p. 148.

Description.—Shell with distant, robust, rounded ribs, and six convex whorls, with two approximate, prominent lines at the summit of each; base profoundly striated; color olivaceous, with distant, brown bands.

Fig. 337.

Habitat.—Inhabits streams in North Alabama.—*Conrad.*

The figure is from an authentic specimen in the collection of Mr. Anthony. Prof. Haldeman also possesses an author's type. It is a very beautiful species and apparently very constant in its characters. *G. nassula*, Conrad, is an allied species, but is striate and more rounded in the form of the aperture and in the whorls.

The following is a synonyme.

Goniobasis ornatella.—Shell folded, fusiform, rather thick, yellowish horn-color, banded; spire obtusely conical; sutures irregularly and very much impressed; whorls about six, convex; aperture large, ovately rhomboidal, whitish and obscurely banded; outer lip acute, scarcely sinuous; columella slightly bent in and twisted.

Habitat.—Tennessee; Coleman Sellers.

Diameter, ·27; length, ·53 of an inch.

Observations.—A single specimen was among a number of *Melanidæ* kindly given to me by Mr. Sellers a long time since, one of which I then named after him. This pretty little species is ornamented with regular folds, which are slightly curved, and incline to the right. These folds cease at the middle of the body-whorl, being cut by an indented line below the suture, causing a granulation. In this specimen are five bands which are indistinct. It has nearly the same outline as *crispa*, herein described, but it is smaller, is not clathrate above, and the folds are not so strong. The aperture is about half the length of the shell.—*Lea.*

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41. G. mediocris, LEA.

Goniobasis mediocris, LEA, Proceed. Acad. Nat. Sci., p. 269, 1862. Jour. Acad. Nat. Sci., v, pt. 3, p. 326, t. 38, f. 179, March, 1863. Obs., ix, p. 148.

Description.— Shell folded, subfusiform, rather thin, ash-color, shining, banded; spire conical; sutures irregularly impressed; whorls six, flattened; aperture somewhat large, rhomboidal, whitish and banded within; outer lip sinuous; columella bent in, thickened and twisted.

Fig. 338.

Habitat.— Tennessee; Dr. Edgar, and President Lindsley.

Diameter, ·23; length, ·57 of an inch.

Observations.— A single specimen was among a number of shells simply labelled, "Tennessee." This is a well characterized little species, which cannot be confounded with any I know. It has two obscure bands, one of which shows on the whorls of the spire, which is covered with rather distant folds, which curve to the right. The spire, embellished with folds and a colored band, reminds one of some of the small *Mitræ*. The aperture is nearly one-half the length of the shell.—*Lea.*

42. G. Duttonii, LEA.

Goniobasis Duttonii, LEA, Proceed. Acad. Nat. Sci., p. 266, 1862. Jour. Acad. Nat. Sci., v, pt. 3, p. 314, t. 37, f. 158, March, 1863. Obs., ix, p. 136.

Description.— Shell folded, conoidal, pale reddish-yellow, thick, double-banded; spire conoidal; sutures irregularly impressed; whorls about seven, somewhat convex; aperture ovately rhomboidal, white and double-banded within; outer lip acute, sinuous; columella bent in, thickened and very much twisted.

Fig. 339.

Habitat.— Maury County, Tennessee; T. R. Dutton: Grayson County, Kentucky; S. S. Lyon.

Diameter, ·38; length, ·80 of an inch.

Observations.— This is a well marked species, allied to *Pybasii*, herein described, and to *Melania* (*Goniobasis*) *laqueata*, Say. It is a stouter shell than either, and may at once be distinguished from them by its two well defined brown bands, the upper one of which is the larger. The folds are rather indistinct, close, not curved, and inclining to the right. The specimen from Maury County, Tennessee,

is more robust, and has a shorter spire than that from Kentucky. The aperture is about three-eighths the length of the shell. I name this after Mr. T. R. Dutton, who sent it to me long since with other mollusca from Tennessee. This must not be confounded with the shell which I called *Melania Duttoniana*, Trans. Am. Phil. Soc., vol. 8, pl. 6, which is really a *Lithasia*.— *Lea.*

Differs from *G. Tuomeyi* in the form of the aperture. The specimens before me are not all double banded, some of them being without bands and of a light yellow-color. It is a remarkably fine species.

43. G. laqueata, SAY.

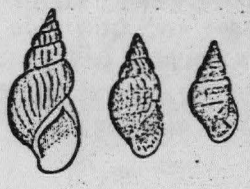
Melania laqueata, SAY, New Harmony Disseminator, p. 275, September, 1829. SAY'S Reprint, p. 17. American Conchology, No. 5, t. 47, f. 1. BINNEY'S edition, pp. 143 and 200. BINNEY, Check List, No. 158. DEKAY, Moll. New York, p. 97. WHEATLEY, Cat. Shells, U. S., p. 25. JAY, Cat., 4th ed., p. 274. REEVE, Monog. Melania, sp. 281, 288? BROT, List, p. 35. CATLOW, Conch. Nomenc., p. 187.

Melasma laqueata, Say, ADAMS, Genera, i, p, 300.

Melania monozonalis, LEA, Philos. Proc., ii, p. 13, February, 1841. Philos. Trans., viii, p. 178, t. 6, f. 31. Obs., iii, p. 16. DEKAY, Moll. New York, p. 96. BINNEY, Check List, No. 168. TROOST, Cat. Shells, Tennessee. WHEATLEY, Cat. Shells, U. S., p. 26. CATLOW, Conch. Nomenc., p. 187. BROT, List, p. 40.

Description.— Shell oblong, conic; spire longer than the aperture, elevated, acute at tip; volutions moderately convex, with about seventeen, regularly elevated, equal, equidistant costæ on the superior half of each volution, extending from suture to suture and but little lower on the spire, and becoming obsolete on the body-whorl; suture moderately impressed; labrum and columella a little extended at base.

Fig. 340. Fig. 341. Fig. 342.



Observations.— This species was found by Dr. Troost in Cumberland River. The elevated costæ, without any revolving lines, distinguish this shell from the other species of our country.— *Say.*

Figure 340 is a copy of Mr. Say's, which is drawn from a poor specimen. Shells somewhat like it are before me. The species being very variable in outline and marking, two other figures are given.

Melania monozonalis.— Shell folded, fusiform, rather thick, banded,

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light colored; spire obtuse; sutures linear; whorls five, rather convex; aperture large, elliptical, angular at base, white.

Habitat.—Tennessee.

Diameter, ·21; length, ·42 of an inch.

Observations.—But a single specimen of this was sent to me by Dr. Troost. It is a very distinct species, and remarkable for a single broad band on the upper part of the whorl. In other specimens this band may not always be found to present the same character; and the number of bands in others again may even be increased. The aperture is about one-half the length of the shell.—*Lea.*

Fig. 343.

G. monozonalis is an unusually wide juvenile *laqueata*, as I have ascertained from the inspection of numerous specimens.

44. G. Pybasii, LEA.

Goniobasis Pybasii, LEA, Proc. Acad. Nat. Sci., p. 266, 1862. Jour. Acad. Nat. Sci., v, pt. 3, p. 313, t. 37, f. 157, March, 1863. Obs., ix, p. 135, t. 37, f. 157.

Description.—Shell folded, very much drawn out, yellowish, thin, banded; spire attenuate, sharp-pointed; sutures impressed; whorls seven, flattened; aperture ovately rhomboidal, whitish and banded within; outer lip acute, sinuous; columella slightly bent in, somewhat thickened and twisted.

Fig. 344.

Habitat.—Tuscumbia, Alabama; B. Pybas.

Diameter, ·31; length, ·82 of an inch.

Observations.—I found four specimens among numerous *Melanidæ* sent to me by Mr. Pybas. It is allied to *Melania (Goniobasis) Deshayesiana* (nobis), but it is more slender, has bands, and has not the granulations of that shell on the upper part of the whorls. It differs from *Lyonii* herein described, in having a longer aperture, being thicker, not being striate, and in having bands. It is evident that this species usually has four well marked revolving bands, the two middle ones being approximate. The broadest is at the bottom. In this character it is very like to *Melania (Goniobasis) grata*, Anth., and it reminds one of *Melania Goniobasis laqueata*, Say. In one of the specimens an indistinct fifth band is observable. The folds are not very strongly marked and do not extend to the body-whorl. They are not very close, are slightly curved and incline to the left. The aperture is more than one-third the length of the shell.

I dedicate this species with great pleasure to Mr. B. Pybas, of Tuscumbia, who has sent me many new mollusca from his vicinity.—*Lea.*

45. G. versipellis, ANTHONY.

Melania versipellis, ANTHONY, Proc. Acad. Nat. Sci., p. 60, February, 1860. BINNEY, Check List, No. 286. BROT, List, p. 59. REEVE, Monog. Melania, sp. 436.

Description.—Shell small, ovate, folded, rather thin; spire not elevated, but acute composed of about seven flat whorls; whorls of the spire all more or less folded, penult and body-whorl smooth; body-whorl bulbous, subangulated, concentrically striate; color olivaceous, ornamented with dark brown bands, of which four are on the body-whorl, and one only on the spiral ones, located upon or near the shoulder of each volution; aperture elliptical, about half the length of the shell, banded within.

Fig. 345.

Habitat.—Tennessee.

Observations.—A small and somewhat variable species as to coloration, though very constant in other characters; it is sometimes very dark both as to bands and general color, and often very light, with bands scarcely distinguishable, and many varieties between. It seems not to be a very common species.—*Anthony.*

Fig. 345 is from Mr. Anthony's type specimen. This shell is more frequently *not* striate. It resembles in form a young, bulbous *G. laqueata*, but is a rather heavy shell, although small.

46. G. gracilis, LEA.

Melania gracilis, LEA, Philos. Proc., ii, p. 12, Feb., 1841. Philos. Trans., viii, p. 168, t. 5, f. 11. Obs., iii, p. 6. DEKAY, Moll. N. York, p. 94. TROOST, Cat. Shells, Tenn. WHEATLEY, Cat. Shells, U. S., p. 25. BINNEY, Check List, No. 128. CATLOW, Conch. Nomenc., p. 187. BROT. List, p. 38.

Potadoma gracilis, Lea, CHENU, Manuel de Conchyl., i, f. 1968. H. and A. ADAMS, Genera, i, p. 299.

Description.—Shell smooth, club-shaped, rather thin, horn-colored; spire acute; sutures impressed; whorls eight, convex; aperture small, ovate, whitish.

Fig. 346.

Habitat.—Tennessee; Dr. Troost.

Diameter, ·32; length, ·75 of an inch.

Observations.—This resembles the *clavata* in form, but is rather more robust. It differs also in color. The aperture is rather more than one-third the length of the shell.—*Lea*

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The figure, which is a copy of Mr. Lea's, does not represent the plicate upper whorls of the spire; and Mr. Lea, it will be perceived, supposed it to be a smooth species and described it as such. In a number of specimens before me the upper whorls are slightly ribbed.

47. G. paucicosta, ANTHONY.

Melania paucicosta, ANTHONY, Proc. Acad. Nat. Sci., p. 57, February, 1860. BINNEY, Check List, No. 198. BROT, List, p. 36. REEVE, Monog. Melania, sp. 255.

Description.— Shell conical, nearly smooth, of a dark greenish horn-color; spire obtusely elevated; whorls nearly flat, with a few distinct, longitudinal ribs on the upper ones; body-whorl entirely smooth; sutures well marked; aperture ovate, within livid or purple; columella rounded; sinus small. Fig. 347.

Habitat.— Tennessee.

Observations.— Belongs to a group of which *nitens* may be considered the type. From that species it differs, however, by its more robust form and stronger ribs. There is also a marked peculiarity in this species not often observed in the genus; the spire being acute at the apex, increases regularly for the first four or five turns, and then suddenly expanding, becomes as it were distorted in appearance. The ribs are distant from each other and very strongly expressed, differing in this respect from *M. athleta*, which it otherwise resembles. It is a beautiful, and appears to be an abundant, species.— *Anthony*.

48. G. tenebrosa, LEA.

Melania tenebrosa, LEA, Philos. Proc., ii, p. 13, February, 1841. Philos. Trans., viii, p. 176, t. 5, f. 26. Obs., iii, p. 14. DEKAY, Moll. N. Y., p. 95. TROOST, Cat. Shells, Tenn. WHEATLEY, Cat. Shells. U. S., p. 27. BINNEY, Check List, No. 267. CATLOW, Conch. Nomenc., p. 189. REEVE, Monog. Melania, sp. 443. BROT, List, p. 39.

Fig. 348. Fig. 349.

Description.— Shell smooth, conical, rather thick, nearly ovate; spire rather elevated; sutures impressed; whorls flattened; aperture rather large, elliptical, at the base angular, within bluish.

Habitat.— Tennessee.

Diameter, ·30; length, ·72 of an inch.

Observations.— Two specimens of this species were sent to me by Dr. Troost, both of which are decollated. On one there is a slight disposition to striæ on the upper remaining whorl. In general outline it resembles a small *Virginica*, Say.— *Lea*.

The first specimens received by Mr. Lea being decollate, he was not aware that it is a plicate species. I have copied Mr. Lea's figure, but give also a figure of a more perfect specimen.

49. G. coracina, ANTHONY.

Melania coracina, ANTHONY, Bost. Proc., iii, p. 361, Dec., 1850. BINNEY, Check List, No. 67. BROT, List, p. 58.

Melania Sellersiana, LEA, Philos. Trans., x, p. 299, t. 30, f. 8. Obs., v, p. 55. BINNEY, Check List, No. 239.

Description.— Shell small, thin, conically turreted, piceous, shining, whorls 6-7, flattened above, generally, plicately ribbed, the last ventricose and subangulate; aperture rotundately-ovate, rounded in front, columella narrow, blackish. Fig. 350.

Observations.— The peculiar, dark, purplish-black color of this prettily sculptured species is a very decisive character. It is allied to *M. decora* and *M. costulata*.— *Anthony*.

The figure is from the original type. Mr. Anthony writes to me that the shells described by Mr. Lea as *Sellersiana* had first been submitted to himself, when he selected specimens and described them as *M. coracina*. An inspection of the copy of Mr. Lea's figure, which is here given, will show the identity of the two species. Mr. Anthony has considerable priority in the publication.

The following is the description of

Melania Sellersiana.— Shell folded, small, conical, rather thick, very dark brown; spire rather short; sutures linear; whorls slightly convex; aperture large, elliptical, rounded at the base, within purple; columella very much incurved.

Habitat.— Caney Fork, Tennessee.

Diameter, ·16; length, ·38 of an inch.

Observations.— This is an interesting little species, somewhat like *M. Nickliniana* (nobis), in its general appearance and size, but is less inflated, and of a darker color. It might be supposed that its being a plicate shell would at once distinguish it; but the Sellersiana seems to be very variable in the character of its folds, some of the specimens really having none remaining. These may have had folds near the apex, which is now Fig. 351.

eroded. Some of those before me are beautifully folded down to the last half of the body-whorl, the folds being rather large and straight. The surface varies very much; some of the specimens being beautifully malleate, while on others no such marks can be observed. The outer lip is broken. The apex being eroded in all the specimens, I am not sure of the number of the whorls; there may be about six. The aperture is about one-half the length of the shell. I dedicate this species to Mr. Coleman Sellers of Cincinnati.—*Lea.*

50. G. intersita, HALDEMAN.

Melania intersita, HALDEMAN, Monog. Limniades, No. 4, p. 4 of cover, Dec., 28, 1841. BINNEY, Check List, No. 150. BROT, List, p. 35. REEVE, Monog. Melania, sp. 376.

Description.—Shell conic, plicated, with four convex whorls; aperture elliptical; color olivaceous.

Habitat.—Swan Creek, Indiana; Mrs. Say.

Length, ½ of an inch.

Observations.—Allied to *M. comma.*—*Haldeman.*

Mr. Reeve's figure does not well represent this species and his description does not accord with that given by Haldeman. He seems to have obtained a poor specimen, which does not exhibit the longitudinal folds. The above figure illustrates Prof. Haldeman's type. The species is interesting as being one of the few species of the present group inhabiting north of the Ohio River.

Fig. 352.

51. G. columella, LEA.

Melania columella, LEA, Philos. Proc., ii, p. 13, Feb., 1841. Philos. Trans., viii, p. 179, t. 6, f. 33. Obs., iii, p. 17. DEKAY, Moll. N. Y., p. 96. BINNEY, Check List, No. 60. TROOST, Cat. Shells, Tenn. WHEATLEY, Cat. Shells, U. S., p. 24. CATLOW, Conch. Nomenc., p. 186. BROT, List, p. 35. REEVE, Monog. Melania, sp. 441.

Description.—Shell obscurely plicate, conical, rather thin, horn-color; spire rather elevated, striate towards the apex; sutures impressed; whorls six, somewhat convex; aperture small, elliptical, angular at base, whitish.

Fig. 353.

Habitat.—Tennessee.

Diameter, ·26; length, ·63 of an inch.

Observations.—This species is remarkable for the impressed curve on the columella. In its general character it resembles the

M. blanda herein described. The aperture is about one-third the length of the shell.—*Lea.*

52. G. blanda, LEA.

Melania blanda, LEA, Philos. Proc., ii, p. 13, Feb., 1841. Philos. Trans., viii, p. 79, t. 6, f. 34. Obs., iii, p. 17. DEKAY, Moll. N. Y., p. 97. BINNEY, Check List, No. 36. TROOST, Cat. Shells, Tennessee. WHEATLEY, Cat. Shells, U. S., p. 24. CATLOW, Conch. Nomenc., p. 185. BROT, List, p. 35.
Melasma blanda, Lea, ADAMS, Genera, i, p. 300.

Description.—Shell folded, conical, rather thin, shining, horn-color; spire rather elevated; towards the apex, striate; sutures impressed; whorls seven, rather flattened; aperture small, elliptical, angulated at the base, whitish.

Fig. 354.

Habitat.—Tennessee.

Diameter, ·26; length, ·69 of an inch.

Observations.—A single specimen of this species was received from Dr. Troost. The folds are obscure and the striæ small. The aperture is not quite one-third the length of the shell.—*Lea.*

53. G. nitens, LEA.

Melania nitida, LEA, Philos. Proc., ii, p. 14, February, 1841.
Melania nitens, LEA, Philos. Trans., viii, p. 182, t. 6, f. 40. Obs., iii, p. 20. DEKAY, Moll. N. Y., p. 98. BINNEY, Check List, No. 178. TROOST, Cat. Shells, Tennessee. WHEATLEY, Cat. Shells, U. S., p. 26. CATLOW, Conch. Nomenc. p. 187, BROT, List, p. 36.

Description.—Shell folded, somewhat thick, dark brown; spire obtuse; sutures impressed; whorls seven, somewhat convex; aperture small, elliptical, angular at the base, reddish within.

Fig. 355.

Habitat.—Tennessee.

Diameter, ·30; length, ·76 of an inch.

Observations.—This is a shining, dark brown species, with rather regular ribs on the superior whorls. The aperture is about one-third the length of the shell. A single specimen only was received.—*Lea.*

This species very much resembles the last. Closely allied to *Deshayesiana*, but without the subsutural striæ which characterize that species.

54. G. mutata, BROT.

Melania Deshayesiana, REEVE, Monog. Melania, sp. 278, September, 1860.
Melania mutata, BROT, List, p. 37.

Description.— Shell acuminately ovate, raised at the apex, dull olive; whorls slopingly tumid, the first few longitudinally plicated plaits soon disappearing, transversely ridged; ridges obsolete towards the aperture; aperture ovate, rather contracted, at the upper part; columella thinly effused at the base.

Fig. 356.

Habitat.—Tennessee, United States.

Observations.— The whorls of this species are swollen in a sloping manner towards the upper part, and the spire is acuminately raised at the apex. The first few whorls are decussately sculptured, but the sculpture soon becomes obsolete.—*Reeve.*

Changed by Dr. Brot to *mutata* because *Deshayesiana* is preoccupied by Mr. Lea. This species is closely allied to *difficilis*, Lea.

55. G. suturalis, HALDEMAN.

Melania suturalis, HALDEMAN, Supplement to Monog. Limniades, No. 1, Oct., 1840. WHEATLEY, Cat. Shells, U. S., p. 27. JAY, Cat., 4th ed., p. 275.
Goniobasis mutabilis, LEA, Proc. Acad. Nat. Sci., p. 270, 1862. Jour. Acad. Nat. Sci., v, pt. 3, p. 331, t. 38, f. 189, March, 1863. Obs., ix, p. 153.

Description.— Shell lengthened, conical, composed of six quite flat whorls, which are separated by a well marked angular suture, bordered on each edge by an elevated, revolving line, which is double upon the body-whorl; aperture narrow, elliptic, one-half the entire length, bluish-white and banded; color dark olivaceous or black.

Fig. 357.

Habitat.— Ohio.

Length, ¾ of an inch.—*Haldeman.*

An examination of the original and only specimen of *suturalis* convinces me that it is the same as *G. mutabilis;* and that it is not found in Ohio will, I think, be admitted. Prof. Haldeman has probably mistaken its habitat.

The following is the description and figure of

Goniobasis mutabilis.— Shell carinate, plicate or striate, subfusiform, somewhat thick, yellowish-green, four-banded, or without bands; spire obtusely conical; whorls six, slightly flattened; aperture rather large, rhomboidal, whitish within; outer lip acute, scarcely sinuous; columella bent in, thickened, somewhat twisted.

Fig. 358.

Operculum ovate, thin, dark brown, with the polar point well removed from the left margin.

Habitat.—Butts County, Georgia; Rev. G. White.

Diameter, ·31; length, ·65 of an inch.

Observations.— This is a most variable species, most are carinate, but many are striate, and some are plicate, and on a few neither of these characters can be observed, the surface being entirely smooth. All are disposed to carination on the apical whorls. Many are without bands, but most are four-banded, having the two medial bands approximate. All were more or less covered with the black oxide of iron. In outline it is nearly allied to *Melania* (*Goniobasis*) *Lecontiana* (nobis), but it is not so fusiform, nor so large, nor is it always plicate, as that species is. Some of the specimens are entirely white inside, and thickened, but usually they are four-banded. In several instances there is an indistinct fifth band. The aperture is more than one-third the length of the shell.—*Lea.*

56. G. Viennaënsis, LEA.

Goniobasis Viennaënsis, LEA, Proc. Acad. Nat. Sci., p. 267, 1862. Jour. Acad. Nat. Sci. v, pt. 3, p. 315, t. 37, f. 160, March, 1863. Obs., ix, p. 137.

Description.— Shell folded, subfusiform, olivaceous, rather thin, without bands; spire regularly conical; sutures irregularly impressed; whorls seven, flattened; aperture rather large, rhomboidal, bluish-white within; outer lip acute, sinuous; columella bent in, thickened and somewhat twisted below.

Fig. 359.

Habitat.— Near Vienna, Dooly County, Georgia, in a small stream, tributary to Flint River; Rev. G. White.

Diameter, ·36; length, ·90 of an inch.

Observations.— A number of this species came with *Doolyensis*, herein described, but it is quite a different species. It is regularly conical, while the other is subcylindrical, and the ribs are more numerous and closer, and are not quite so much curved. The aperture is also larger. It is allied to *Melania* (*Goniobasis*) *Deshayesiana* (nobis), but while it is nearly of the same outline it

differs in being wider, also in color, and it has no decussating revolving striæ. The aperture is more than one-third the length of the shell.—*Lea.*

57. G. Curreyana, LEA.

Goniobasis Curreyana, LEA, Philos. Proc., ii, p. 13, Feb., 1841. Philos. Trans., viii, p. 180, t. 6, f. 36. Obs., iii, p. 18. WHEATLEY, Cat. Shells, U. S., p. 25. BINNEY, Check List, No. 79. DEKAY, Moll. N. Y., p. 97. REEVE, Monog. Melania, sp. 286. TROOST, Cat. Shells, Tennessee. CATLOW, Conch. Nomenc., p. 183. BROT, List, p. 35.

Melasma Curreyana, Lea, CHENU, Man. de Conchyl., i, f. 2003. ADAMS, Genera i, p. 300.

Description.—Shell folded, conical, rather thick, horn-color; spire somewhat elevated; sutures irregularly impressed; whorls seven, rather convex; aperture small, angular below, purplish within.

Fig. 360.

Habitat.—Barren River, Kentucky.

Diameter, ·27; length, ·73 of an inch.

Observations.—Two specimens of this species are before me, which I owe to the kindness of Dr. Currey of Nashville, after whom I name it. It is remarkable for its large and strong folds. It is without striæ, and the body-whorl is smooth, except near to the suture. The aperture is about one-third the length of the shell. One of the specimens has quite a dark purple aperture, and the lip is thickened and reflexed. In these two specimens the ribs seem disposed to alternate in size.—*Lea.*

58. G. costifera, HALDEMAN.

Melania costifera, HALDEMAN, Monog. Melania, No. 2, p. 3 of cover, Jan., 1841. BINNEY, Check List, No. 72. BROT, List, p. 34. REEVE, Monog. Melania, sp. 440.

Description.—Shell lengthened, composed of eight, slightly convex turns, having numerous, spiral, elevated lines, crossing a series of curved ribs, on all the whorls; spire twice the length of the aperture; suture well marked; aperture ovate.

Fig. 361.

Habitat.—Hennepin, Illinois.

Length, 1 inch.

Observations.—The aperture is wider in the allied species, and the costæ are better developed.—*Haldeman.*

The plicæ are more numerous (though not so prominent in this species) than in *Curreyana*, the aperture more rounded below and the spire more acuminate.

59. G. Deshayesiana, LEA.

Melania plicatula, LEA, Proc. Philos. Soc., ii, p. 14, Feb., 1841. Philos. Trans., viii, p. 182, t. 6, f. 41. Obs., iii, p. 20. TROOST, Cat. Shells, Tenn. JAY, Cat., 4th Edit., p. 274. CATLOW, Conch. Nomenc., p. 188. BROT, List, p. 34.

Melasma plicatula, Lea, CHENU, Man. de Conchyl., i, f. 1998. ADAMS, Genera, i, p. 300.

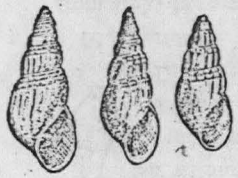
Melania Deshayesiana, LEA, Philos. Proc., ii, p. 242, Dec., 1842. Philos. Trans., ix, p. 24. DEKAY, Moll. N. Y., p. 98. WHEATLEY, Cat. Shells, U. S., p. 25, TROOST, Cat. Shells, Tennessee. JAY, Cat. Shells, 4th Edit., p. 273. BINNEY, Check List, No. 88. BROT, List, p. 34.

Melania Deshayesii, Lea. REEVE, Monog. Melania, sp. 330.

Melasma Deshayesiana, Lea, ADAMS, Genera, i, p. 300.

Description.—Shell folded, conical, thin, dark horn-color; spire rather elevated; sutures impressed; whorls eight, rather convex, striate above; aperture rather small, elliptical, at the base somewhat angular, within whitish.

Fig. 362. Fig. 363. Fig. 364.



Habitat.—Tennessee.

Diameter, ·35; length, ·85 of an inch.

Observations.—Dr. Troost and Mr. Edgar both procured this species from Tennessee, but their labels do not state the district. The ribs are numerous and close, and most individuals have two striæ above, which, crossing the ribs, produce a granulation. The mouth is about one-third the length of the shell.—*Lea.*

This species was described as *plicatula*, but that name having been preoccupied by Deshayes, Mr. Lea changed it to *Deshayesiana*. It is very closely allied to *crebricostata* and *tenebrosa*.

60. G. Abbevillensis, LEA.

Goniobasis Abbevillensis, LEA, Proc. Acad. Nat. Sci., p. 208, 1862. Journ. Acad. Nat. Sci., v, pt. 3, p. 323, t. 38, f. 174, Mar., 1863. Obs., ix, p. 145.

Description.—Shell folded, conical, rather thick, chestnut-color, shining, without bands; spire conical, sutures linear; whorls seven, somewhat convex, nearly flat, carinate and striate at the apex; aperture slightly large, ovately rhomboidal somewhat ochraceous within; outer lip acute, scarcely sinuous; columella thickened and twisted.

Fig. 365.

Habitat.—Abbeville District, South Carolina; J. P. Barratt, M.D.

Diameter, ·30; length, ·63 of an inch.

Observations.—This is a pretty species with very regular spire and

folds. It is allied to *Melania* (*Goniobasis*) *Deshayesiana* (nobis), but is a smaller species. Its chestnut-brown color reminds one of *Melania* (*Goniobasis*) *castanea* (nobis), but it is not so elongate and is thicker. The aperture is more than one-third the length of the shell.—*Lea.*

61. G. Doolyensis, Lea.

Goniobasis Doolyensis, Lea, Proc. Acad. Nat. Sci., p. 266, 1862. Jour. Acad. Nat. Sci., v, pt. 3, p. 315, t. 37, f. 159, Mar., 1863. Obs., ix, p. 137.
Goniobasis induta, Lea, Proc. Acad. Nat. Sci., p. 267, 1862. Jour. Acad. Nat. Sci., v, pt. 3, p. 319, t. 37, f. 166, March, 1863. Obs., ix, p. 141.

Description.— Shell folded, subcylindrical, dark horn-color or somewhat ash-gray, thin, without bands; spire drawn out; sutures irregularly impressed; whorls about nine, slightly convex; aperture small, ovately rhomboidal, whitish within; outer lip acute, sinuous; columella very much bent in, impressed in the middle and very much twisted.

Fig. 366.

Habitat.—Tennessee, Prof. Troost; near Vienna, Dooly County, Georgia, in a small stream tributary to Flint River; Rev. George White.

Diameter, ·32; length, ·91 of an inch.

Observations.—I have a number of specimens from Mr. White, and one a long time since from Prof. Troost. It belongs to the group of which *Melania* (*Goniobasis*) *costulata* (nobis) may be considered the type, but it is more cylindrical and has more distant folds. It is also allied to *Melania* (*Goniobasis*) *decora* (nobis), but is more cylindrical, has more distant folds and has no cancellate striæ. The folds are curved and incline slightly to the left. The aperture is not quite one-third the length of the shell. Some specimens are disposed to be slightly brownish inside.—*Lea.*

Goniobasis induta.—Shell very much folded, conical, rather thin, polished, dark, four-banded; spire conoidal, sharp-pointed; sutures very much impressed; whorls eight, flattened, clothed with erect folds; aperture small, rhomboidal, whitish and four-banded within; outer lip acute, sinuous; columella bent in and twisted.

Fig. 367.

Operculum ovate, thin, light brown, with the polar point well inside of the margin.

Habitat.—Near Vienna, Dooly County, Georgia; Rev. G. White.

Diameter, ·31; length, ·76 of an inch.

Observations.—This is a very ornate little species, being covered

with close, perpendicular ribs and four, dark brown, revolving bands, which give the shell a dark appearance, although the ground is yellow. The two middle bands are approximate, and the lowest band is the strongest. Immediately below the suture there is usually a light line. It belongs to the group of which *Melania* (*Goniobasis*) *Deshayesiana* (nobis) may be considered the type, but is nearest allied to *inclinans*, herein described. It is nearly of the same size and outline, but the regular perpendicular folds and the distinct bands distinguish it at once. The apical whorls are disposed to be carinate. The aperture is one-third the length of the shell. The specimens were all incrusted with black oxide of iron, which, being removed, the epidermis was found to be smooth and polished. One or two revolving striæ immediately under the suture decussate the folds.—*Lea.*

62. G. inconstans, Lea.

Goniobasis inconstans, Lea, Proc. Acad. Nat. Sci., p. 269, 1862. Jour. Acad. Nat. Sci., v, pt. 3, p. 325, t. 38, f. 178, Mar., 1863. Obs., ix. p. 147.

Description.— Shell folded, subfusiform, rather thin, horn-color, olivaceous or dark brown, banded or without bands; spire obtusely conical; sutures impressed; whorls six, somewhat convex, folded above; aperture somewhat large, subrhomboidal, whitish within, pale purple or banded; outer lip acute, slightly sinuous; columella bent in and twisted.

Fig. 368.

Habitat.—Etowah River; J. Postell.

Diameter, ·26; length, ·60 of an inch.

Observations.—This is a small and very variable species, varying from light horn-color to dark brown, a few having two broad bands. The folds rarely reach to the body-whorl, but they cover the upper whorls, and are somewhat distant and nearly straight. Some of the specimens closely resemble *proletaria*, herein described, in form, but this has a more pointed apex, and is more fusiform. The aperture is not quite one-half the length of the shell.—*Lea.*

63. G. continens, Lea.

Goniobasis continens, Lea, Proc. Acad. Nat. Sci., p. 268, 1862. Jour. Acad. Nat. Sci., pt. 3, p. 324, t. 38, f. 176, March, 1863. Obs., ix, p. 146.
Goniobasis proletaria, Lea, Proc. Acad. Nat. Sci., p. 268, 1862. Jour. Acad. Sci., v, pt. 3, p. 325, t. 38, f. 177, March, 1863. Obs., ix, p. 147.

Description.—Shell folded, conical, rather thin, yellowish horn-

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color, without bands; spire irregularly conical; sutures impressed; whorls about seven, somewhat convex, with folds slightly bent; aperture rather small, ovately rhomboidal, bluish-white within; outer lip acute, scarcely sinuous; columella somewhat bent in and twisted.

Operculum ovate, thin, light brown, with the polar point well removed from the margin and towards the base.

F

Habitat.—North Alabama; Prof. Tuomey.

My cabinet and cabinet of Dr. Hartman.

Diameter, ·29; length, ·79 of an inch.

Observations.—I have eight specimens before me of this modest little species. They were taken by Prof. Tuomey during his geological survey of Alabama many years since. The folds are not on the body-whorl; they incline to the left. It is allied to *Melania* (*Goniobasis*) *acuta* (nobis), but is not so small nor so pointed, and it is more of a horn-color. The aperture is about one-third the length of the shell.—*Lea.*

Goniobasis proletaria.—Shell folded, obtusely conical, rather thin, horn-color, without bands; spire obtusely conical; sutures impressed; whorls about six, slightly convex, folded above; aperture somewhat large, subrhomboidal, whitish within; outer lip acute, sinuous; columella bent in, thickened and twisted.

Fig. 370.

Habitat.—Florence, Alabama River; Rev. G. White.

Diameter, ·31; length, ·65 of an inch.

Observations.—A single specimen only was received, and that far from being perfect. The epidermis of it is very thin and most of it removed. It is nearly of the size and somewhat like *paupercula*, herein described, but is more conical and has larger and more distant folds, which are very slightly inclined to the left. The aperture is more than one-third the length of the shell.—*Lea.*

Appears to be the young of *continens.*

64. G. viridicata, Lea.

Goniobasis viridicata, Lea, Proc. Acad. Nat. Sci., p. 268, 1862. Jour. Acad. Nat. Sci., v, pt. 3, p. 322, t. 38, f. 172, March, 1863. Obs., ix, p. 144.

Description.—Shell folded, somewhat drawn out, thin, greenish, without bands; spire conical, exserted; sutures impressed; whorls about seven, flattened, with rather close folds; aperture very small,

rhomboidal, bluish-white within; outer lip acute, somewhat sinuous; columella bent in, yellowish above, whitish below and twisted.

Habitat.—Grayson County, Kentucky; S. S. Lyon.

Diameter, ·24; length, ·64 of an inch.

Observations.—Three specimens were sent to me by Mr. Lyon, taken on his geological survey of Kentucky. It is a graceful, greenish little species with the folds inclining to the left, and with a paler line below the suture. The body-whorl has no folds, but is in two of the specimens covered with minute irregular veins. The middle whorls are plicate, while the apical whorls are carinate and striate. It is about the size of *cerea*, herein described, but differs in outline and other characters. In outline it is near *Doolyensis*, herein described, but is a much smaller species, and differs in the folds and the aperture. The aperture is about one-third the length of the shell.—*Lea.*

Fig. 371.

65. G. purpurella, Lea.

Goniobasis purpurella, Lea, Proc. Acad. Nat. Sci., p. 269, 1862. Jour. Acad. Nat. Sci., vi, pt. 3, p. 327, t. 38, f. 183, March, 1863. Obs., ix, p. 149.

Description.—Shell folded, conical, thin, purplish, shining, banded or without bands; spire conical; sutures impressed; whorls about seven, flattened; aperture somewhat large, rhomboidal, dark within; outer lip acute, scarcely sinuous; columella bent in and twisted.

Fig. 372.

Habitat.—Caney Fork River, Tennessee; J. Lewis, M.D.

Diameter, ·22; length, ·48 of an inch.

Observations.—Several specimens were sent to me by Dr. Lewis for examination, nearly all more or less imperfect. They are usually without bands, but when banded the number is four, the two middle being approximate. An impressed line under the suture cuts the folds, forming a row of granules. The folds are close, inclining a little to the right. Below the suture some specimens have a light line. This species is nearly allied to *Melania* (*Goniobasis*) *Sellersiana* (nobis), but differs in being more pointed, in having bands and especially in having granules along the sutures. The aperture is more than one-third the length of the shell.—*Lea.*

66. G. semicostata, CONRAD.

Melania semicostata, CONRAD, New Fresh-Water Shells, App. p. 7, t. 9, f. 6, 1834. BINNEY, Check List, No. 241. Brot, List, p. 59.

Description.— Shell elevated; longitudinally ribbed; whorls convex, with fine, spiral striæ; body-whorl without ribs, obscurely striated above, subangulated in the middle; aperture large, obliquely elliptical; within bluish, with brown bands.

Fig. 373.

Habitat.— Inhabits streams in North Alabama.— *Conrad.*

The figure is from the author's type specimen in the collection of the Academy of Natural Sciences of Philadelphia.

67. G. dislocata, RAVENEL.

Melania dislocata, RAVENEL, Cat. Shells, p. 11, 1834. BINNEY, Check List, No. 90. BROT, List, p. 35. REEVE, Monog. Melania, sp. 380.
Goniobasis Lindsleyi, LEA, Proc. Acad. Nat. Sci., p. 267, 1862. Jour. Acad. Nat. Sci., v, pt. 3, p. 319, t. 37, f. 167, March, 1863. Obs., ix, p. 141.

Description.— Shell ovately turreted, yellowish; whorls convex, longitudinally, plicately ribbed; ribs obsolete towards the base; aperture ovate, rather small, a little effused at the base.

Fig. 374.

Habitat.— Dan River, North Carolina.— *Reeve.*

Mr. Reeve's publication of this species was made the year previous to that of *Lindsleyi* by Mr. Lea. I give a figure from Ravenel's type, which is in possession of Mr. Anthony.

Goniobasis Lindsleyi.— Shell folded, cylindrico-conical, rather thin, yellowish horn-color, without bands; spire conoidal; sutures irregularly and very much impressed; whorls flattened; clothed with erect folds; aperture rather small, rhomboidal, bluish white within; outer lip acute, sinuous; columella bent in and twisted.

Fig. 375.

Habitat.— Tennessee; President Lindsley and Dr. Edgar.
Diameter, ·31; length, ·80 of an inch.

Observations.— A few, imperfect specimens only are before me, and the number of whorls cannot be ascertained, probably eight. It is allied to *Melania* (*Goniobasis*) *costulata* (nobis), but it is more cylindrical, and has the folds further apart. The aperture is probably one-third the length of the shell. It has two or three decussating striæ immediately under the suture which make

small nodes. I dedicate this species to my friend, President Lindsley of Nashville, who sent it to me with many other shells from the streams of Tennessee.— *Lea.*

68. G. paupercula, LEA.

Goniobasis paupercula, LEA, Proc. Acad. Nat. Sci., p. 268, 1862. Jour. Acad. Nat. Sci., v, pt. 3, p. 324, t. 38, f. 176, March, 1863. Obs., ix, p. 146.

Description.— Shell folded, subcylindrical, rather thin, chestnut-color or dark olive, without bands; spire rather short, sutures impressed; whorls somewhat convex, folded above and striate at the apex; aperture small, ovately rhomboidal, whitish within; outer lip acute, slightly sinuous; columella bent in and slightly twisted.

Fig. 376. Fig. 377.

Operculum ovate, thin, light brown, with the polar point well in from the margin and above the base.

Habitat.— North Alabama; Prof. Tuomey.
Diameter, ·27; length, ·63 of an inch.

Observations.— I have quite a number of this small species sent many years since by Prof. Tuomey, not a single one with an entirely perfect apex, being usually decollate at the second whorl from the base. Most of them, therefore, do not exhibit the folds, which are only on the upper whorls; there they are pretty close and perpendicular. They were all covered with black oxide of iron, which on being removed exhibits a smooth, brown or greenish epidermis. The aperture is probably not one-third the length of the shell.— *Lea.*

69. G. corneola, ANTHONY.

Melania corneola, ANTHONY, Proc. Acad. Nat. Sci., p. 61, Feb., 1860. BINNEY. Check List, No. 68. BROT, List, p. 35. REEVE, Monog. Melania, sp. 456,

Description.— Shell small, conical, rather thin; spire short and not very acute, composed of five or six subconvex whorls; whorls all more or less folded and with revolving raised striæ, which give them a subnodulous appearance; the body-whorl has four or five faint bands, which appear also within the aperture; aperture small, ovate; sinus small.

Fig. 378.

Habitat.— Alabama. My cabinet.

Observations.— This is a small and not very remarkable species nor can it well be compared with any other. One is at first view forcibly

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reminded of *Columbella avara*, Say, which it resembles, both in size and general appearance. The bands alluded to are often interrupted and never very fully expressed; body-whorl subangulated below the middle; does not seem to be a very abundant species. Only six individuals are before me.— *Anthony.*

Fig. 378 is from Mr. Anthony's type. The shell is not entirely adult, probably, but I cannot assimilate it to any other species. A number of specimens are before me, which are very uniform in character; in one, however, the bands are three in number, broad and dark. This shell inhabits Black Warrior River, Alabama,— *teste* Showalter.

70. G. nassula, CONRAD.

Melania nassula, CONRAD, New Fresh-Water Shells, p. 55, t. 8, f. 9, 1834. BINNEY, Check List, No. 171. DEKAY, Moll. New York, p. 97. JAY, Cat. 4th edit., p. 274. WHEATLEY, Cat. Shells, U. S., p. 26. BROT. List, p. 34. REEVE, Monog. Melania, sp. 412. CATLOW, Conch. Nomenc., p. 187.

Melania Edgariana, LEA, Philos. Proc., ii, p. 14, Feb., 1841. Philos. Trans., viii, p. 180, t. 6, f. 37. Obs., iii, p. 18. DEKAY, Moll. N. Y., p. 97. JAY, Cat. 4th edit., p. 273. BINNEY, Check List. No. 94. TROOST, Cat. Shells, Tenn. REEVE, Monog. Melania, sp. 430. WHEATLEY, Cat. Shells, U. S., p. 25. CATLOW, Conch. Nomenc., p. 186.

Melasma Edgariana, Lea, CHENU, Man. de Conchyl, i, f. 1997.

Description.— Shell elevated; whorls convex or subangulated, with longitudinal ribs, crossed by numerous, spiral, elevated lines, about seven on the penultimate whorl, and about eleven on the body-whorl; suture impressed; apex much eroded. Fig. 379.

Habitat.— Inhabits the limestone spring at Tuscumbia, Ala.

Observations.— Immense numbers of this pretty species congregate on the rocks where Spring Creek finds a passage through a cavern of the carboniferous limestone.— *Conrad.*

The figure is from an author's example in collection of Anthony. I have also examined author's examples in collections of Haldeman and Gen. Totten, which are shorter in consequence of the erosion of the apices. This shell is allied to *G. formosa*, Con., but has no bands.

Mr. Lea agrees with me that his *Edgariana* is a synonyme of *nassula*. The following is his description:—

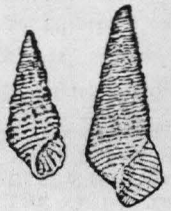
Melania Edgariana— Shell folded, conical, rather thin, striate, yellowish-brown; spire elevated: sutures irregularly impressed; whorls eight, rather flattened; aperture small, elliptical, angular below, bluish.

Habitat.—Cany Fork, Tennessee.

Diameter, ·29; length, ·77 of an inch.

Observations.— I owe to Mr. Edgar's kindness, several specimens of this pretty species, which I name after him. It is remarkable for being folded and transversely striate on all the whorls, except the lower part of the body-whorl, which is striate only. The crossing of the folds and striæ give it a cancellated appearance. The aperture is rather more than one-fourth the length of the shell. The number of striæ on the body-whorl is about ten.—*Lea.*

Fig. 380. Fig. 381.



This species is by no means uncommon in cabinets, and some specimens attain to noble proportions.

71. G. rugosa, LEA.

Melania corrugata, LEA, Philos. Proc., ii, p. 13, Feb., 1841. Philos. Trans., viii, p. 177, t. 5, f. 30. Obs., iii, p. 15. TROOST, Cat. Shells, Tenn. WHEATLEY, Cat. Shells, U. S., p. 24.

Melania rugosa, LEA, Philos. Proc., ii, p. 237, Dec., 1842. Philos. Trans. viii. p. 248. Obs., iii, p. 86. DEKAY, Moll. New York. p. 96. BINNEY, Check List, No. 235. CATLOW, Conch. Nomenc., p. 188. BROT, List, p. 34.

Description — Shell folded, conical, rather thin, translucent, transversely striated, horn color; spire rather elevated; sutures very much impressed; whorls seven, convex, cancellated above; aperture rather large, elliptical, angular below, whitish. Fig. 382.

Habitat.— Tennessee.

Diameter, ·22; length, ·50 of an inch.

Observations.— This is a small, folded species of which a single specimen was received from Dr. Troost. The superior whorls are carinated. The folds extend to the body-whorl. The aperture is rather more than one-third the length of the shell.— *Lea.*

I have not seen this species, but it is evidently a young shell. It was first described as *M. corrugata*, but as that name was preoccupied by Lamarck it was changed to *rugosa*.

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72. G. costulata, LEA.

Melania costulata, LEA, Philos. Proc., ii, p. 14, Feb., 1841. Philos. Trans., viii, p. 181, t. 6, f. 39. Obs., iii, p. 19. BINNEY, Check List, No. 73. DEKAY, Moll. N. Y., p. 98. JAY, Cat. 4th edit., p. 273. TROOST, Cat. Shells, Tennessee. WHEATLEY, Cat. Shells, U. S., p. 24. REEVE, Monog. Melania, sp. 272, 360. BROT, List, p. 35.
Melasma costulata, Lea, ADAMS, Genera, i, p. 300.

Description.— Shell folded, conical, rather thin, yellow, above carinate; spire rather elongated; sutures impressed; whorls nine, rather convex; aperture small, subovate, within bluish.

Fig. 383.

Habitat.— Barren River, Kentucky: Tennessee.

Diameter, ·20; length, ·82 of an inch.

Observations.— In its general characters this species resembles *M. laqueata*, Say. It may be distinguished in its being of less diameter and being more slender. The specimens received from both Dr. Troost and Dr. Currey were covered with a deposit from the oxide of iron, giving them a black hue. Under this the epidermis is yellow. The aperture is about one-third the length of the shell.— *Lea.*

73. G. cinerella, LEA.

Goniobasis cinerella, LEA, Proc. Acad. Nat. Sci., p. 269, 1862. Jour. Acad. Nat. Sci., v, pt. 3, p. 328, t. 38 f. 184, March, 1863. Obs., ix, p. 150.

Description.— Shell folded, subfusiform, thin, pale, ash-color, without bands; spire obtusely conical; sutures irregularly impressed; whorls six, slightly convex; aperture somewhat large, ovately rhomboidal, whitish within; outer lip acute, scarcely sinuous; columella bent in and slightly twisted.

Fig. 384.

Habitat.— Tennessee; Coleman Sellers.

Diameter, ·23; length, ·49 of an inch.

Observations.— A single specimen only was received from Mr. Sellers. It came with two young *Melania* (*Goniobasis*) *rugosa* (nobis), which it resembles, but this little species is not clathrate over the whole of the upper whorls, having only two transverse striæ, which cut the folds below the suture, forming granules. The folds are close and thick, and nearly straight. The aperture is nearly half the length of the shell.— *Lea.*

74. G. caliginosa, LEA.

Melania caliginosa, LEA, Philos. Proc., ii, p. 15, Feb., 1841. Philos. Trans., viii, p. 189, t. 6, f. 56. Obs., iii, p. 27. WHEATLEY, Cat. Shells, U. S., p. 24. REEVE, Monog. Melania, sp. 293. DEKAY, Moll. New York, p. 100. BINNEY, Check List, No. 44. TROOST, Cat. Shells, Tenn. JAY, Cat. 4th edit., p. 273. CATLOW, Conch. Nomenc., p. 185. BROT. List, p. 34.
Elimia caliginosa, Lea, ADAMS, Genera, i, p. 300.

Description— Shell cancellate, conical, somewhat thick, transversely striated; very dark brown; spire elevated; sutures irregularly impressed; whorls eight, rather convex; aperture small, elliptical, purplish within.

Fig. 385.

Habitat.— Tennessee.

Diameter, ·34; length, ·91 of an inch.

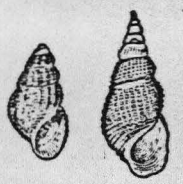
Observations.— A fine, cancellate species with ten or twelve revolving striæ on the body-whorl, crossing the folds. The aperture is about one-third the length of the shell. It nearly answers to Mr. Conrad's description of *M. nassula*, but has five striæ on the penultimate whorl, while the *nassula* has seven. It differs from *M. catenaria*, Say, in having a more elevated spire, and in having two or three more revolving striæ. In some individuals the aperture is bluish-white.— *Lea.*

75. G. nodulosa, LEA.

Melania nodulosa, LEA, Philos. Proc., ii, p. 15, Feb., 1841. Philos. Trans., viii, p. 190, t. 6, f. 57. Obs., iii, p. 28. DEKAY, Moll. N. Y., p. 100. BINNEY, Check List, No. 180. TROOST, Cat. Shells, Tennessee. WHEATLEY, Cat. Shells, U. S., p. 26. CATLOW, Conch. Nomenc., p. 188. BROT, List, p. 34. REEVE, Monog. Melania, sp. 276.
Elimia nodulosa, Lea, ADAMS, Genera, No. 300.

Description.— Shell cancellate, conical, thick, dark brown; sutures irregularly impressed; whorls somewhat convex; aperture rather large, elliptical, subangular below, within bluish.

Fig. 386. Fig. 386a.



Habitat.— Tennessee.

Diameter, ·34; length, ·82 of an inch.

Observations.— Two imperfect specimens only were received from Dr. Troost, and both are much eroded at the apex, consequently the number of whorls could not be ascertained. The body-whorl has about twenty well defined, raised striæ, which on the superior part are crossed by folds, giving the whole of the upper part of the shell a granulate appearance. It is

SMITHSONIAN CONTRIBUTIONS TO KNOWLEDGE 30
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-- On the evolution of torsion in the Limidae (Mollusca Bivalvia).

MART HULSWIT (NEW YORK SHELL CLUB) -- A proposal to register with the AMU all antiquarian Shell Books, for the purpose of conserving and tracing them for future generations of shell enthusiasts.

JOHN B. BURCH and J.M. HUBER (Museum of Zoology, University of Michigan) -- Malacologia -- five years of Publication.

C. M. PATTERSON (Museum of Zoology, University of Michigan) -- Studies on Succineidae.

G. L PACE (Museum of Zoology, University of Michigan) -- The habits and distribution of *Carinifex* and *Parapholyx*.

ALAN SOLEM (Field Museum of Natural History, Chicago) -- Endodontid land snails of Rapa Island, pattern and problems in speciation.

CHIN-TSONG LO (Museum of Zoology, University of Michigan) -- Polyembryony in buline snails.

JOHN B. BURCH and GEORGE M. DAVIS (University of Michigan and the U.S. Army's 406th Medical Laboratory, Japan) -- A taxonomic study of some species of the freshwater snail genus *Semisulcospira* in Japan.

VINCENT CONDE (Redpath Museum, McGill University, Montreal) -- Ecology and distribution of the marine Mollusca of Barbados.

JAMES E. WADSWORTH (University of North Carolina) -- Wild tales of mollusk hunters.

Following this paper, delegates representing affiliated shell clubs reported briefly on club activities.

THURSDAY, AUGUST 3

JOHN B. BURCH and G.K. LINDSAY (Museum of Zoology, University of Michigan) -- Electrophoretic analysis of esterases in *Bulinus*.

CHARLES E. JENNER and ANNE E. McCRARY (Department of Zoology, University of North Carolina, Chapel Hill) -- Commensal bivalves from the North Carolina Coast.

LOUISE RUSSERT KRAEMER (Department of Zoology, University of Arkansas, Fayetteville) -- Distribution of the posterior pallial nerves in *Lampsilis ventricosa* (Barnes).

E. L. BOUSFIELD (National Museum of Canada) -- Postglacial dispersal patterns of littoral marine mollusks and crustaceans in eastern Canada.

HERBERT D. ATHEARN (Museum of Fluviatile Mollusks,Cleveland, Tennessee) -- Aspects of change and reduction in our freshwater mollusks.

ALAN SOLEM (Field Museum of Natural History, Chicago) -- Locomotion in *Aporrhais* and *Haliotis*.

SHI-KUEI WU (Museum of Zoology, University of Michigan) -- Radular studies of Taiwan muricid gastropods.

RUTH D. TURNER (Museum of Comparative Zoology, Harvard University) -- Systematics of *Xylophaga* versus the teredinids, a study in contrasts.

WILLIAM J. CLENCH (Museum of Comparative Zoology, Harvard University) -- Florida Tree Snails.

JOSEPH P. E. MORRISON (United States National Museum) -- Western Atlantic *Hastula*.

THURSDAY EVENING, AUGUST 3

AURÈLE LA ROCQUE (Ohio State University) -- History of Canadian Conchology.

FRIDAY, AUGUST 4 -- FIELD TRIP

The annual field trip was held on Friday, August 4 to Fitzroy Harbour Provincial Park on the Ottawa River, about 35 miles west of the city of Ottawa. Here, the river and the neighboring woods offered good freshwater and land collecting, as they did to the pioneers of Ottawa Conchology nearly 100 years ago. The setting aside of the area as a Provincial Park will probably ensure preservation of wildlife in this vicinity including land and freshwater Mollusca for many years to come.

SATURDAY, AUGUST 5

Reserved buses left Ottawa early in the morning for the trip to Montreal and Expo 67. It would have been a pity for so many to come to Ottawa and to miss the opportunity of seeing Expo 67 only a little more than a hundred miles away.

A. L.