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ANNOUNCEMENT

STERKIANA is named after Dr. Victor Sterki (1846-1933) of New Philadelphia, Ohio, famed for his work on the Sphaeriidae, Pupillidae, and Valloniidae. It is fitting that this serial should bear his name both because of his association with the Midwest and his lifelong interest in non-marine Mollusca.

The purpose of STERKIANA is to serve malacologists and paleontologists interested in the living and fossil non-marine Mollusca of North and South America by disseminating information in that special field. Since its resources are modest, STERKIANA is not printed by conventional means. Costs are kept at a minimum by utilizing various talents and services available to the Editor. Subscription and reprint prices are based on cost of paper and mailing charges.

STERKIANA accepts articles dealing with non-marine Mollusca of the Americas in English, French, or Spanish, the three official languages of North America. Contributors are requested to avoid descriptions of new species or higher taxa in this serial as the limited distribution of STERKIANA would probably prevent recognition of such taxa as validly published. Papers on distribution, ecology, and revised checklists for particular areas or formations are especially welcome but those on any aspect of non-marine Mollusca will be considered.

STERKIANA will appear twice a year or oftener, as material is available. All correspondence should be addressed to the Editor.

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STERKIANA est une collection de travaux sur les Mollusques extra-marins des deux Amériques, distribuée par un groupe de malacologues du centre des Etats-Unis. STERKIANA publie des travaux en anglais, en français et en espagnol acceptés par le conseil de rédaction. Prière d'adresser toute correspondance au Rédacteur.

ABONNEMENT: 50¢ le numéro, par chèque ou mandat payable au Rédacteur.

STERKIANA es una coleccion de trabajos sobre los Moluscos extra-marinos viventes y fosiles de las dos Americas, editada por un grupo de malacólogos de los Estados Unidos centrales. Contenirá en el porvenir trabajos en inglés, francés, y español que serán acceptados por la mesa directiva. La correspondencia deberá ser dirigida al Editor.

PRECIO: 50¢ el número.

MOLLUSCAN FAUNAS OF THE LOWER FLAGSTAFF FORMATION, FAIRVIEW CANYON, SANPETE COUNTY, UTAH

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INTRODUCTION

Purpose of Investigation

The purpose of this project was to investigate quantitative and qualitative changes in molluscan faunas of the lower Flagstaff Formation in Fairview Canyon, Sanpete County, Utah. The data were obtained by collecting information from each unit of a measured stratigraphic section. The field work was done during the summer of 1967 and the laboratory work in the Autumn Quarter of the same year.

Location of Deposit

The lower Flagstaff section collected is located in Fairview Canyon, Sanpete County, Utah (Fig. 1). The outcrop is located along State Highway 31, from 2.2 to 2.6 miles east of the railroad crossing in the town of Fairview.

Method of Investigation

The entire Flagstaff section in Fairview Canyon is 308 feet thick; of this, 128 feet were assigned to the lower Flagstaff. The lower Flagstaff section was divided into units based primarily on lithology. Each unit was measured using the tape method, with accuracy in larger units to the nearest six inches.

Random sampling of each unit followed, with special attention to the shale and mudstone intervals which were known to be fossiliferous from initial inspection. Variation and randomness were also obtained by collecting laterally along the extent of the outcrop. Each sample was put into appropriate containers and labeled. In the laboratory, the content of each container was washed and sieved through 10, 30, and 50 mesh sieves and the residue allowed to dry. The residue was then put back into containers and stored until further investigation.

Initial work showed that the material obtained from the 50 mesh sieve did not contain a sufficient number of fossils to warrant examination. It was therefore stored and work was concentrated on the 10 and 30 mesh sieved material which contained greater quantities of fossils. The

fossils were separated from the rock debris with the aid of a microscope and labeled appropriately. Larger fossils that had been collected from the massive limestones were cleaned and identified. Talus specimens were not used in calculating the data.

Acknowledgements

I am highly grateful to my adviser, Dr. A. La Rocque, who served as my guide during this project. His counsel and continued encouragement are highly appreciated.

GEOLOGY OF THE AREA

The Flagstaff deposit in Fairview Canyon, Sanpete County, Utah, lies on the Wasatch Plateau which forms an irregular transition zone between the Colorado Plateau Province and the Great Basin Province.

The structure on the east side of the Wasatch Plateau is relatively simple; the rocks lie almost horizontally. Folding is present only in a minor degree.

On the west side of the Wasatch Plateau, however, a large monocline forms the front of the Plateau. The rocks plunge downward toward San Pete Valley and disappear beneath the valley alluvium. The rocks strike between N. 20° to 30° E. and dips generally are between 15 and 50 degrees. A large number of antithetic faults also occur on the monocline and generally strike about N. 25° E., which is essentially parallel to the axis of the monoclinal fold.

In the area of Fairview Canyon three formations are well exposed, from bottom to top, the North Horn, Flagstaff, and Colton formations.

The North Horn consists of clastic sediments, with local lacustrine accumulations of freshwater limestone. Sandstones and gray and ochre shales contrast sharply with the dark, rather massive limestones in the lower Flagstaff beds. The

EXPLANATION OF FIGURES 1 - 8

Fig. 1. Map of central Utah, showing counties and towns, outcrops of Flagstaff Formation (black) and greatest extent of Flagstaff Lake (dotted band). Fairview Canyon is at locality 1 near the north end of Sanpete County.

Fig. 2. Diagram showing fault block pattern and displacement of blocks in Flagstaff Formation in Fairview Canyon. Stratigraphic throw is given in feet. Not to scale.

Fig. 3. Distribution of *Hydrobia utahensis* (percent of total individuals) in the Lower Flagstaff Formation, Fairview Canyon, Sanpete County, Utah.

Fig. 4. Distribution of *Physa bridgerensis* (percent of total individuals) in the Lower Flagstaff Formation, Fairview Canyon, Sanpete County, Utah.

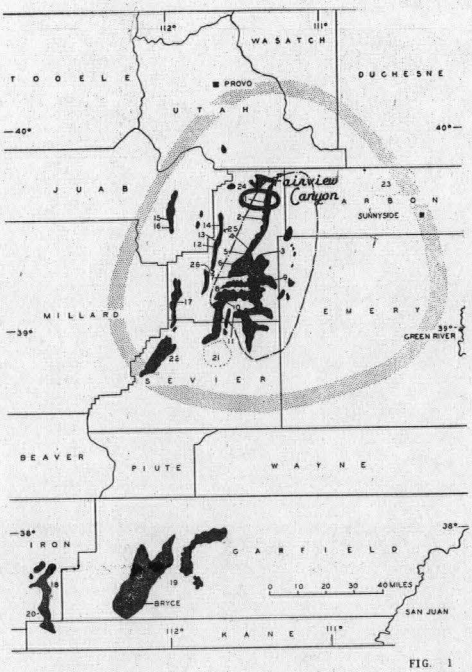
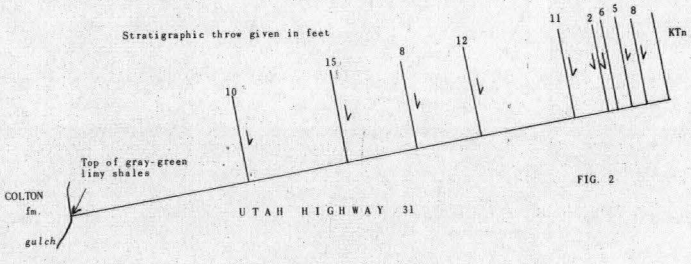


FIG. 1



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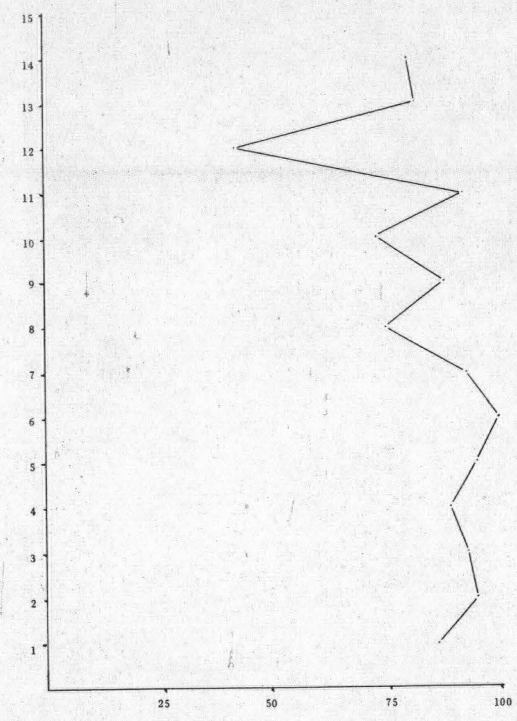

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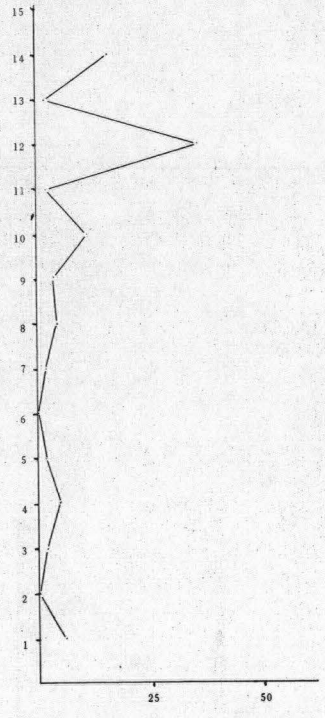

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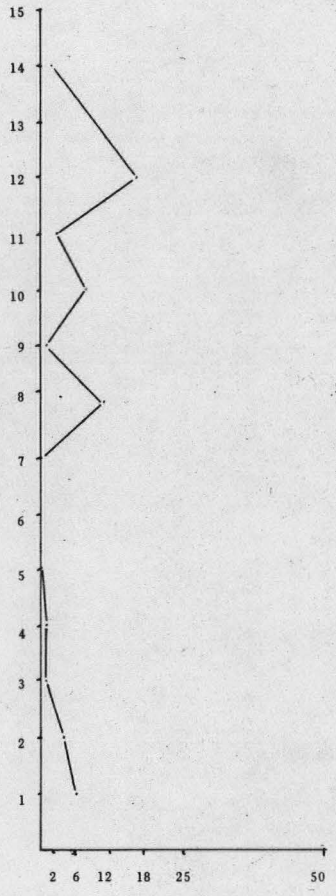

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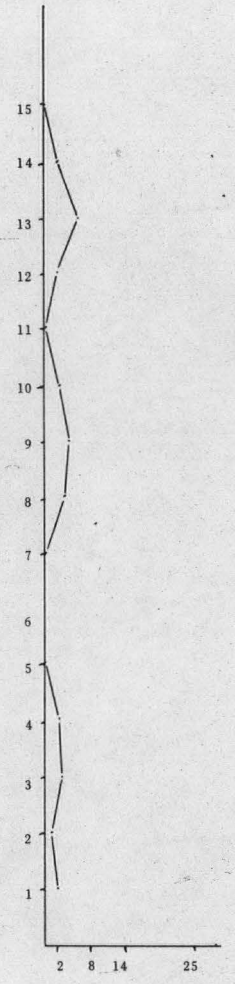

FIG. 6

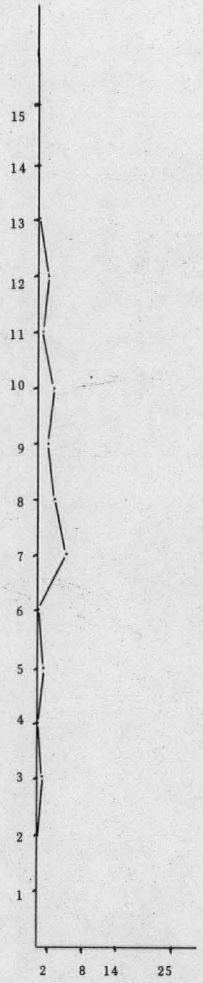

FIG. 7

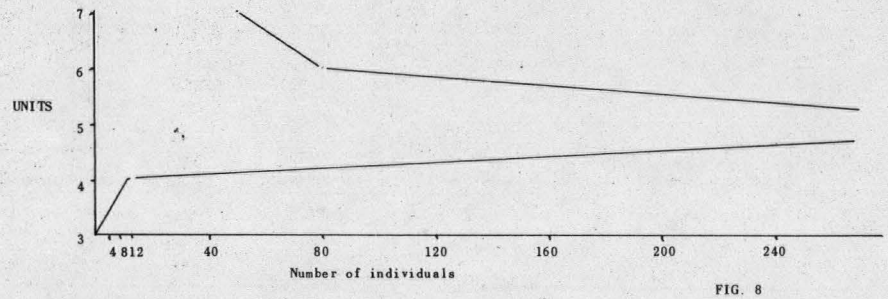

FIG. 8

North Horn contains the Cretaceous-Paleocene boundary.

The Flagstaff consists of dark limestone and shale units in the lower part of the formation, which grade into yellow-white, massive limestones toward the middle of the formation. The upper part of the Flagstaff again trends toward dark, cherty limestone and shale units which grade into the lower beds of the Colton Formation. The boundary between the two formations is difficult to distinguish because of similarity of lithologies. The Flagstaff is considered to be upper Paleocene and lower Eocene in age (La Rocque, 1960, p. 8).

The Colton, away from the Flagstaff boundary, becomes a variety of alternating green and gray shale and mudstone lacustrine beds which are readily discernible from typically lighter Flagstaff. The Colton is Eocene in age.

In the section of the collecting locality, the Flagstaff is bounded on the east by a fault against the North Horn and is probably bounded on the west by a fault against the Colton, in view of the disturbed condition of the Colton along the highway in Fairview Canyon and northwest along the strike. The best exposures of the Flagstaff occur on the North wall of the canyon near the road cut of Highway 31. Faults occur throughout the measured section and a normal stratigraphic section was assembled from the fault blocks. The general attitude, represented by one of the eastern fault blocks, was N. 30° E. and dip 15° NW. (See Fig. 2).

Section of Lower Flagstaff Formation measured in Fairview Canyon, showing fossil content of each unit. (The number preceding each species is the number of individuals collected.)

UNIT		THICKNESS (in feet)
15	Mudstone; light to dark gray; some very limy areas, with limestone ledges; nodular; contains one sandstone lens in middle of unit, approximately 8 ft. X 40 ft., medium grained with some trace of cross bedding. No fossils collected.	34
14	Limestone; with shaly partings; fresh surface light brown with	

EXPLANATION OF FIGURES 5 - 8

Fig. 5. Distribution of *Viviparus trochiformis* (percent of total individuals) in the Lower Flagstaff Formation, Fairview Canyon, Sanpete County, Utah.

Fig. 6. Distribution of *Pleurolimnaea tenuicosta* (percent of total individuals) in the Lower Flagstaff Formation, Fairview Canyon, Sanpete County, Utah.

Fig. 7. Distribution of *Gyraulus militaris* (percent of total individuals) in the Lower Flagstaff Formation, Fairview Canyon, Sanpete County, Utah.

Fig. 8. Distribution of charophytes (number of individuals) in the Lower Flagstaff Formation, Fairview Canyon, Sanpete County, Utah.

some vugs, weathers yellow-brown. Fossils include: 300 *Hydrobia utahensis* 80 percent, 61 *Physa bridgerensis* 16 percent, 9 *Viviparus trochiformis* 2 percent, 5 *Pleurolimnaea tenuicosta* 2 percent. 7.5

13 Limestone; medium gray with angular fractures, fossil hash, fetid odor; 3-foot ledge with rubbly limestone ledges at top and bottom. Fossils include: 230 *Hydrobia utahensis* 82 percent; 27 *Viviparus trochiformis* 10 percent; 18 *Pleurolimnaea tenuicosta* 6 percent; 4 *Physa bridgerensis* 2 percent. 6.5

12 Mudstone; on covered slope, difficult to measure; two limestone beds seem to be lower and upper limit. Resembles bed 6. Fossils include: 114 *Hydrobia utahensis* 42 percent; 96 *Physa bridgerensis* 36 percent; 48 *Viviparus trochiformis* 17 percent; 6 *Pleurolimnaea tenuicosta* 2 percent; 6 *Gyraulus militaris* 2 percent; 3 *Goniobasis tenera* 1 percent. 11.5

11 Limestone; very hard and brittle, fine grained; fossil hash; very dark gray; splinters when hit; angular fractures; vuggy. Fossils include: 260 *Hydrobia utahensis* 93 percent; 9 *Viviparus trochiformis* 3 percent; 8 *Physa bridgerensis* 3 percent; 3 *Gyraulus militaris* 1 percent. 6.0

10 Mudstone; medium gray; nodular limestone ledges with shale partings, light gray; upper part without limestone ledges. Fossils include: 615 *Hydrobia utahensis* 73 percent; 95 *Physa bridgerensis* 11 percent; 69 *Viviparus trochiformis* 8 percent; 23 *Goniobasis tenera* 3 percent; 22 *Gyraulus militaris* 3 percent; 17 *Pleurolimnaea tenuicosta* 2 percent. 10.5

9 Mudstone, like unit 6. Fossils include: 125 *Hydrobia utahensis* 88 percent; 5 *Pleurolimnaea tenuicosta* 4 percent; 5 *Physa bridgerensis* 4 percent; 3 *Gyraulus militaris* 2 percent; 2 *Viviparus trochiformis* 1 percent; 2 *Goniobasis tenera* 1 percent. 4.0

8 Limestone and shale; limestone fragmental at top and base, sublithographic in middle ledge 2.5 ft.; shale gray, grading to green below, fossiliferous. Fossils include: 300 *Hydrobia utahensis* 75 percent; 46 *Viviparus trochiformis* 11 percent; 21 *Physa bridgerensis* 5 percent; 13 *Gyraulus militaris* 3 percent; 11 *Pleurolimnaea tenuicosta* 3 percent; 9 *Goniobasis tenera* 2 percent; 3 *Lioplacodes mariana* 1 percent. 8.0

7 Mudstone; weathers blue-gray, gray on fresh surface, chippy in layers. Fossils include 100 *Hydrobia utahensis* 93 percent; 6 *Gyraulus militaris* 5 percent; 2 *Physa bridgerensis* 2 percent. 7.0

6 Mudstone; with nodular limestone as in unit 3, light gray; Fossils include: 150 *Hydrobia utahensis* 100 percent. 5.0

5 Limestone; knobby jointed blocks; gray shale partings, brown gray to yellow gray; forms even ledges; Fossils include: 300 *Hydrobia utahensis* 95 percent; 6 *Micropyrgus minutulus* 2 percent; 5 *Physa bridgerensis* 2 percent; 4 *Gyraulus militaris* 1 percent. 5.0

4 Limestone; thick-bedded, with shale partings, brown - gray fossil hash; dark gray over light yellow-brown at top. Fossils include: 325 *Hydrobia utahensis* 89 percent; 19 *Physa*

bridgerensis 5 percent; 9 *Pleurolimnaea tenuicosta* 2 percent; 4 *Viviparus trochiformis* 1 percent; 2 *Goniobasis tenera* 1 percent. 5.5

3 Mudstone; with 2 limestone layers, nodular; medium-gray. chippy. Fossils include: 350 *Hydrobia utahensis* 93 percent; 10 *Pleurolimnaea tenuicosta* 3 percent; 8 *Physa bridgerensis* 2 percent; 5 *Gyraulus militaris* 1 percent; 2 *Viviparus trochiformis* 1 percent. 1.5

2 Limestone; sublithographic in part; light gray; parted by gray shale; grades into shale laterally. Fossils include: 300 *Hydrobia utahensis* 95 percent; 12 *Viviparus trochiformis* 4 percent; 3 *Pleurolimnaea tenuicosta* 1 percent. 6.0

1 Limestone; thick-bedded, yellow-gray, with angular fracture; fossil hash. Fossils include: 150 *Hydrobia utahensis* 6 percent; 10 *Viviparus trochiformis* 6 percent; 3 *Pleurolimnaea tenuicosta* 2 percent. 10.0

COMPOSITION OF FAUNA

The non-marine molluscan faunas of the lower Flagstaff in Fairview Canyon, Sanpete County, Utah, are composed of 8 species of gastropods. Of this total, 3 are lung breathers and 5 are gill breathers. In the following paragraphs, the stratigraphic distribution of each species is described and some attempt is made to determine how the abundance of each species is related to various lithologies and environmental conditions.

Hydrobia utahensis (Fig. 3) is the most abundant species found in the lower Flagstaff deposit Shale and mudstone beds, as well as shale partings in the limestones, proved to contain abundant shells of this species. *Hydrobia* decreased to less than 50 percent only once, in unit 12, and was most abundant in unit 6.

Physa bridgerensis (Fig. 4) was next in abundance. The graph shows that its percentages of abundance are exactly opposite to those of *Hydrobia utahensis*. No *Physa bridgerensis* were collected in unit 6 whereas *Hydrobia utahensis* made up 100 percent of the individuals. Also, *Physa* increases most in unit 12 and *Hydrobia* shows its greatest drop in percentage in the same unit.

Viviparus trochiformis (Fig. 5) followed in order of abundance. Variations in abundance in this species correspond to those in *Physa bridgerensis* even though the former is a gill breather and the latter is a lung breather.

Pleurolimnaea tenuicosta was next in abundance and the graph (Fig. 6) shows that the greatest number of individuals occurred in units 9 and 13 which again shows a slight correlation with *P. bridgerensis* and *V. trochiformis*.

Gyraulus militaris (Fig. 7) does not seem to show any distinctive relationships to the other graphs, so that it may have lived only sporadically in the lower Flagstaff lake, or so it may be assumed from the fossils collected. Unit 7 shows its greatest advance when the number of individuals totalled 5 percent of the fossils collected.

FOOD AND FEEDING HABITS

Food supply in the environment of the early Flagstaff lake must not have been a factor for the variation in the numbers of species plotted on the graphs. The majority of these forms feed on microscopic plants, especially algae (La Rocque, 1960 p. 62). Since no distinctive drop was noted that affects all forms at

the same time, it must be assumed that the population variation must be due to other factors. One exception to this statement may be possible for unit 6, where, save for *H. utahensis*, all other forms decreased erratically. Since *H. utahensis* is a very small gastropod, it could be possible that it was able to thrive upon other food sources not available to the larger forms. It should be noted, however, that other small forms are also present in these collections.

Vegetation, upon which many of the lung breathers depend for a means of reaching the surface, may have been important. The dark, carbonaceous nature of the limestones and shales in the lower Flagstaff attests to the fact that vegetation was probably plentiful. A large number of charophyte oogonia were found in units 4, 5, and 6 which may indicate plentiful vegetation at this time (see Fig. 8). *H. utahensis* is the only species to show an advance in percentage in these units. It is possible that water weeds somehow inhibited expansion in other species.

Wave action was very probable in the early Flagstaff lake due to its large surface area, which could be swept by wind. Large numbers of fossil shell fragments were noted toward the top of the section. which might indicate that the Flagstaff lake was becoming shallower in the vicinity of Fairview Canyon. Other evidence supports this since the sediments collected from unit 15 resembled modern beach sands in that particles were well rounded, indicating transport, and also negative evidence in that no fossils were collected. This could mean that wave action was extensive and caused an inhospitable environment.

Turbidity and heavy sediment deposition were also likely factors in the locality since lateral and vertical variation in the lithology indicate a soft muddy bottom, consisting of limy and clayey muds. Turbidity under these conditions is easy to imagine since wave action and shallowness of the water would be favorable factors for turbid conditions. Bottom dwellers could find such environments inhospitable.

REFERENCE CITED

La Rocque, A. (1960) Molluscan Faunas of the Flagstaff Formation of Central Utah. — Geol. Soc. America, Mem. 78, 100 p., illus.

readily distinguishable by its more slender proportions, thinner texture, lighter color, and above all by its peculiarly shaped whorls, which, increasing regularly, and being carinate at their bases, have somewhat the appearance of the roof of a house, hence its name. Lines of growth distinct; one or two indistinct, narrow bands are often visible on the shell; a very neat and graceful species.—*Anthony.*

The following is the description of *macella*, which, notwithstanding the wide difference of habitat, appears to be the same in every respect as *tecta*:—

Goniobasis macella.— Shell carinate, awl-shaped, thin, olivaceous, without bands; spire subattenuate; sutures very much impressed; whorls seven, somewhat convex; aperture very small, subrhomboidal, whitish within; spotted at the base; outer lip acute; slightly sinuous; columella bent in and slightly twisted.

Fig. 463.

Operculum ovate, thin, light brown, with the polar point well in from the left of margin.

Habitat.— Coosa River, Alabama; Prof. Brumby.

Diameter, ·22; length, ·62 of an inch.

Observations.— This is a little species received from Professor Brumby a long time since. It is closely allied to *rubella*, herein described, but differs in being somewhat smaller, in color, in having rather flatter whorls and in having a brown, elongate spot at the base of the columella inside. The few specimens before me are minutely veined on the lower whorl. The upper whorls are carinate and substriate. The aperture is about one-fourth the length of the shell.— *Lea.*

126. G. hybrida, ANTHONY.

Melania hybrida, ANTHONY, Proc. Acad. Nat. Sci., p. 60, Feb., 1860. BINNEY, Check List, No. 140. BROT, List, p. 36.
Melania subcarinata, Anthony, REEVE, Monog. Melania, sp. 282.

Description.— Shell conical, elevated, nearly smooth, horn-colored; whorls 8–9, upper ones carinated deeply, lower ones entirely smooth; color reddish-brown, or dark horn-color; sutures distinctly impressed; aperture small, ovate, tinged with rose-color or violet within; columella rounded, but not deeply indented; sinus small.

Habitat.— Tennessee.

Observations.— A neat, pretty species, with no very strong, dis-

thin, brown; whorls about six, subconvex, often slightly angulated near the suture below; sutures impressed; body-whorl not large, a little angulated, ornamented with four very dark bands, the upper and lower of which are distant, and the central ones approximate or confluent; aperture somewhat large, elliptical, banded within; columella regularly but not remarkably curved or indented, with a small sinus.

Habitat.— Tennessee.

Diameter, ·27 (7 millim.); length, ·58 of an inch (15 millim.). Length of aperture, ·27 (7 millim.); breadth of aperture, ·15 of an inch (4 millim.).

Observations.— A rather small species, which when once seen, will readily be recognized afterwards. Compares with *M. subangulata* (nobis); it is less robust, more acute, and the bands are of a totally different character; the texture is quite thin, and the dark bands are distinctly seen in the aperture, through the substance of the shell. It has somewhat of the club-shaped form of that group of shells of which *M. clavæformis*, Lea, and *M. castanea*, Lea, are members, but is more angular, and its dark bands and thin texture are prominent differences.— *Anthony.*

Fig. 461.

This may equal *quadricincta*, Lea, young.

125. G. tecta, ANTHONY.

Melania tecta, ANTHONY, Ann. N. Y. Lyc. Nat. Hist., vi, p, 105, t. 3, f. 4, March, 1854. BINNEY, Check List, No. 265. BROT, List, p. 37. REEVE, Monog. Melania, sp. 253.
Goniobasis macella, LEA, Proc. Acad. Nat. Sci., p. 270, 1862. Jour. Acad. Nat. Sci., v, pt. 3, p. 333, t. 38, f. 192, March, 1863. Obs., ix, p. 155.

Description.— Shell conical, thin, brown; spire elevated; whorls 7–8, flat, with a distinct, but not elevated carina on each at its lower edge, near the suture; sutures very deeply impressed; aperture oval, within reddish and lightly banded; columella curved, sinus small.

Fig. 462.

Habitat.— Ohio.

Diameter, ·26 (6½ millim.); length, ·60 of an inch (15 millim.). Length of aperture, ·23 (6 millim.); breadth of aperture, ·14 of an inch (3½ millim.).

Observations.— May be compared with *M. pulchella*, Anth., but is

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tinctive characters; from *intertexta* (nobis), which it somewhat resembles, it may be distinguished by its less acute form, less numerous whorls, and by its want of reticulated surface so peculiar to that species. Bears some resemblance to *M. bella*, Con., but differs in form of outline and aperture, and has no beaded line; is also more elevated than *M. bella*.—*Anthony*.

Fig. 464.

This species differs from *symmetrica* in being more cylindrical, with the whorls more flattened.

127. G. fuscocincta, Anthony.

Melania fuscocincta, Anthony, Ann. N. Y. Lyc. Nat. Hist., vi, p. 120, t. 3, f. 20, March, 1854. Binney, Check List, No. 118. Brot, List, p. 40. Reeve, Monog. Melania, sp. 415.

Description.—Shell ovate, smooth, moderately thick; spire very short, consisting of 4-5 nearly flat whorls, with a broad, dark brown band revolving in the centre of each; body-whorl large, with one band above the middle, and another at base, subangulated; sutures irregularly impressed, distinct; columella well rounded, indented and reflected at the middle so as partially to conceal a small, umbilical opening; aperture large, broad, ovate, within banded.

Fig. 465.

Habitat.—Alabama.

Diameter, ·30 (7¼ millim.); length, ·44 of an inch (11 millim.). Length of aperture, ·25 (6 millim.); breadth of aperture, ·17 of an inch (4 millim.).

Observations.—A short shell almost like an *anculosa;* a single specimen only is before me, but is too remarkable to be confounded with any known species. The uncommonly broad, dark band, surrounded by the generally yellow epidermis, gives it a lively appearance.—*Anthony*.

Figured from Mr. Anthony's type.

128. G. congesta, Conrad.

Melania congesta, Conrad, Amer. Jour. Sci., 1st ser. xxv, p. 343, Jan., 1834, DeKay, Moll. N. Y., p. 96. Wheatley, Cat. Shells U. S., p. 24. Binney, Check List, No. 64. Jay, Cat., 4th edit, p. 273. Brot, List, p. 36. Müller, Synopsis, p. 43.

Description.—Shell subulate, with about nine volutions, the lower ones obscurely angulated, those of the spire becoming acutely carinated towards the apex; suture well defined; body-whorl obscurely subangulated; aperture longitudinal, elliptical.—*Conrad*.

This species is unknown to me and has not been figured.

G. *Short clavate, smooth species.*

129. G. auriculæformis, Lea.

Melania auriculæformis, Lea, Philos. Proc., iv, p. 166. Philos. Trans. 1, p. 62, t. 9, f. 39. Obs., iv, p. 62, t. 9, f. 39. Binney, Check List, No. 24. Brot, List, p. 32. Reeve, Monog. Melania, sp. 409.
Megara auriculæformis, Lea, Adams, Genera, i, p. 306.

Description.—Shell smooth, elliptical, rather thin, yellow; sutures impressed; whorls six, slightly convex; aperture elongate, contracted, at the base rounded, within whitish.

Fig. 466.

Habitat.—Tuscaloosa, Alabama.

Diameter, ·24; length, ·45 of an inch.

Observations.—This species has very much the aspect of an *auricula*. It is a very regularly formed and pretty shell, with a smooth, yellow, polished epidermis. The aperture is about two-thirds the length of the shell, regularly rounded below and angular above, where there is a good deal of nacreous matter deposited.—*Lea*.

This shell reminds one of a small *olivula*, Con., but it differs in texture from that species. The figure is copied from Mr. Lea's plate.

130. G. Nickliniana, Lea.

Melania Nickliniana, Lea, Philos. Proc., ii, p. 12, Feb., 1841. Philos. Trans., viii p. 171, t. 5, f. 18. Obs. iii, p. 9. DeKay, Moll. N. Y., p. 95. Reeve, Monog. Melania, sp. 375. Wheatley, Cat. Shells U. S., p. 26. Catlow, Conch. Nomenc., p. 187.
Leptoxis Nickliniana, Lea, Binney, Check List, No. 371. Adams, Genera, i, p. 307.

Description.—Shell smooth, obtusely conical, solid, very dark; sutures impressed; whorls six, slightly convex; aperture large, somewhat rounded, within purple.

Habitat.—Bath County, Virginia; P. H. Nicklin.

Diameter, ·27; length, ·45 of an inch.

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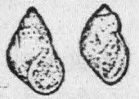
Observations.—This is a robust, small species which seems not to have been before noticed. It was found by Mr. Nicklin in a small stream of cold water at the Hot Springs in Virginia. It is amongst the smallest species I have seen. The purple color of the interior of most of the specimens gives the shell a very dark appearance. I owe to the kindness of Mr. Nicklin, to whom I dedicate it, the possession of several specimens of this species.— *Lea.*

Fig. 467. Fig. 468.



131. G. aterina, Lea.

Goniobasis aterina, Lea, Proc. Acad. Nat. Sci., p. 155, May, 1863.

Description. — Shell smooth, subfusiform, black or greenish-black, thick; spire obtuse; sutures regularly impressed; whorls six, convex; aperture rather large, subovate, within purple, *aliquanto?* white; lip acute, *vix?* sinuated; columella inflected, purple, thickened and contorted.

Fig. 469.

Habitat.— Gap Spring, Cumberland: Gap and Rogers' Spring, west of Fincastle, East Tennessee; Capt. S. S. Lyon, U. S. Army.— *Lea.*

Resembles *ebenum*, Lea, in color and texture, but is a smaller, narrower species, more angulate at the periphery. It is not an uncommon species.

132. G. Binneyana, Lea.

Goniobasis Binneyana, Lea, Proc. Acad. Nat. Sci., p. 266, 1862. Jour. Acad. Nat. Sci., v, pt. 3, p. 310, t. 37, f. 152, March, 1863. Obs., ix, p. 132.

Description.— Shell smooth, obtusely fusiform, rather thin, very much inflated, dark olive, obscurely banded; spire depressed; sutures impressed; whorls five, flattened above, the last one ventricose; aperture very large, subovate, dark within; outer lip acute, slightly sinuous; columella thickened, spotted at the base.

Habitat.—Coosa River, Alabama; Wm. Spillman, M.D.

Diameter, ·29; length, ·53 of an inch.

Observations.— Only two specimens were received from Dr. Wm. Spillman. The smaller one is rather the thicker. It has very much the outline of *Lithasia Showalterii* (nobis), and at first I thought it was only a variety of that species, but the absence of a callus above and below on the columella, and a channel at the base preclude its being a *Lithasia*. It is nearly allied to *Melania*

Fig. 470.

(*Goniobasis*) *fusiformis* (nobis), but differs in being more ovate, in having a shorter spire, larger aperture, and in being of a darker color. The aperture is more than half the length of the shell. I dedicate this species to Mr. W. G. Binney, who has done so much to elucidate American conchology.—*Lea.*

This species may be distinguished from the following by its more oval form, and by the lip being less expanded.

133. G. ebenum, Lea.

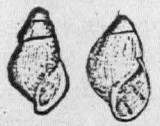
Melania ebenum, Lea, Philos. Proc., ii, p. 12, Feb., 1841. Philos. Trans., viii, p. 166, t. 5, f. 7. Obs., iii, p. 4. DeKay, Moll. New York, p. 93. Jay, Cat., 4th edit., p. 273. Binney, Check List, No. 93. Troost, Cat. Shells Tenn. Wheatley, Cat. Shells U. S., p. 25. Reeve, Monog. Melania, sp. 350. Catlow Conch. Nomenc., p. 186. Brot, List, p. 31.

Anculotus ebenum, Lea, Reeve, Monog. Anculotus, t. 4, f. 31.

Nitocris ebena, Lea, Adams, Genera, i, p. 308.

Description.— Shell smooth, obtusely conical, thick, black; spire obtuse; sutures small; whorls somewhat convex; aperture rather large, ovate, subangular at base, within purplish.

Fig. 471. Fig. 472.



Habitat.—Robinson County, Tennessee; Dr. Currey.

Diameter, ·30; length, ·47 of an inch.

Observations.— A very dark colored and rather robust species. It resembles *M. tenebrosa*, herein described, but differs in having the whorls rather more convex, and in the outer lip being more curved. All the specimens received had the apex eroded, the number of whorls is therefore not ascertained; the aperture is more than one-third the length of the shell. It is usually purplish on the whole of the inside of the aperture. Some of the specimens are, however, bluish.— *Lea.*

134. G. Vauxiana, Lea.

Goniobasis Vauxiana, Lea, Proc. Acad. Nat. Sci., p. 265, 1862. Jour. Acad. Nat. Sci., v, pt. 3, p. 309, t. 37, f. 150, March, 1863. Obs., ix, p. 131.

Description.— Shell smooth, fusiform, rather thin, green; spire very obtuse; sutures somewhat impressed; whorls five, flattened, carinate above; aperture very large, widely rhomboidal; outer lip acute, straight; columella somewhat bent in.

Habitat.— Coosa River, Alabama.

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Diameter, ·31; length, ·58 of an inch.

Observations.—Two specimens were sent to me many years since by Prof. Brumby, and I then considered them to be a variety of *Melania* (*Goniobasis*) *Nicklinlana* (nobis). They differ, however, in being more angular at the base of the aperture, in being thinner, and in having the upper whorls carinate. The two specimens before me are different in the color and markings. The one from which the diagnosis is made is of a darker green and has not four well defined bands like the other, but it has two broad, indistinct ones above and below, and the lower half of the columella is purplish. The aperture is more than half the length of the shell. I dedicate this species to my friend, W. S. Vaux, Esq., who has done so much to promote the objects of our Academy.—*Lea.*

Fig. 473.

135. G. larvæformis, Lea.

Melania larvæformis, Lea, MSS. Reeve, Monog. Melania, sp. 357, Dec., 1860. Brot, List, p. 38.

Description.—Shell conically ovate, olive; whorls six to seven, smooth, the first few minutely keeled; aperture ovate.

Fig. 474.

(Lea, manuscript in Museum Cuming.)

Habitat.—United States.

Observations.—Of few whorls, convex and smooth, but yet minutely keeled near the apex.—*Reeve.*

This species is certainly *very* closely allied to *ebenum* or *Vauxiana*, but I am unable to decide whether it is identical with either of them or not.

136. G. auricoma, Lea.

Goniobasis auricoma, Lea, Proc. Acad. Nat. Sci., p. 265, 1862. Jour. Acad. Nat. Sci., v, pt. 3, p. 308, t. 37, f. 148, March, 1863. Obs., ix, p. 130.

Description.—Shell smooth, fusiform, rather thin, honey-yellow, banded; spire very obtuse; sutures linear; whorls five, scarcely convex; aperture very large, subrhomboidal, yellowish within; outer lip acute, scarcely sinuous; columella bent in and slightly thickened.

Habitat.—Tennessee River; Wm. Spillman, M.D.

Diameter, ·25; length, ·46 of an inch.

Observations.—A single specimen only of this little species was

received among a large number of mollusca from Dr. Spillman. It reminds one of *Melania* (*Goniobasis*) *corneola*, Anth., but it is a large and more robust species, and has not the plicæ of that species. It has also affinities to *Melania* (*Goniobasis*) *fusiformis* (nobis), but differs in color, has a higher spire and a less incurved columella. The specimen of *auricoma* before me has four bands, the three lower ones are broad, equidistant and not very distinct. The upper one is more distant and very indistinct. Under the microscope may be observed in this specimen numerous, very minute, impressed revolving lines. The aperture is little more than half the length of the shell.—*Lea.*

Fig. 475.

137. G. glabra, Lea.

Melania glabra, Lea, Proc. Acad. Nat. Sci., ii, p. 82, Oct., 1841. Philos. Trans., ix, p. 18. Obs., iv, p. 18. Wheatley, Cat. Shells U. S., p. 25. Binney, Check List, No. 123. Brot, List, p. 38. Reeve, Monog. Melania, sp. 439.

Description.—Shell smooth, conical, rather thin, shining, dark chestnut color; spire rather elevated; sutures slightly impressed; whorls rather flattened; aperture elongated, trapezoidal, purplish within; columella incurved.

Habitat.—Holston River, East Tennessee.

Diameter, ·32; length, ·70 of an inch.

Observations.—The apex in all the specimens before me is slightly eroded, and therefore the number of the whorls cannot be accurately ascertained; it may be six or seven. The aperture is more than one-third the length of the shell. The superior whorls are disposed to be carinate, and below the sutures the color is lighter. The columella is much incurved. Within the aperture, indistinct, confluent bands may be observed. These are scarcely observable without, but give the shell a very dark aspect, somewhat like *M. rufa* (nobis). It is very different, however, in form from that species.—*Lea.*

Fig. 476.

138. G. gibbosa, Lea.

Melania gibbosa, Lea, Philos. Proc., ii, p. 34, April, 1841. Philos. Trans., x, p. 301, t. 30, f. 12. Obs., v, p. 57, t. 30, f. 12. Binney, Check List, No. 121. Brot, List, p. 40.

Description.—Shell smooth, obtusely conical, gibbous, subfusiform, rather thin, greenish horn-color; spire obtuse; sutures irregularly

impressed; whorls five, somewhat convex; aperture large, elliptical, within double banded; columella rubiginose, thickened, flattened, impressed and much curved.

Habitat.— Scioto River, Ohio.

Diameter, ·25; length, ·43 of an inch.

This is a small, very remarkable species. There is a slight depression above the middle of the whorl, which gives it a somewhat gibbous form. The most unusual character pertaining to this species is, however, the very flat and impressed columella, more impressed at the point of the umbilical region. The columella on the upper part of these two specimens is not thickened, but it is of a dark brown color, and being also dark below the color extends to the outer side of the whorl, and there makes two rather indistinct bands. In outline it is allied to *M. fusiformis* (nobis), but they differ entirely in the columella and in the length of the aperture. The aperture is rather more than one-half the length of the shell. I have had some doubts of the Scioto being the real habitat of this shell; but Mr. Wheatley says it was sent from thence to him. It seems to have a more southern aspect.— *Lea.*

Fig. 477.

139. G. graminea, HALDEMAN.

Goniobasis graminea, HALD., American Journ. Conch., i, 37, t. 1, f. 4, 1865.

Description.— Shell fusiform, short, inflated; spire very obtuse; surface smooth, polished, brilliant green, with a light yellow, sutural band; spire brownish; whorls five, somewhat convex; aperture large, rhomboidal, somewhat angular below, bluish within; columella somewhat curved, tinged with brown.

Fig. 478.

Habitat.— Unknown.

Diameter, ·3; length, ·56 of an inch. Aperture, ·3; diameter, ·2 of an inch.

Observations.— This shell is very closely allied to *G. Vauxiana*, Lea; but that species is banded, and the spire is carinated; it has not the light sutural band which distinguishes *graminea*.— *Haldeman.*

140. G. cognata, ANTHONY.

Melania cognata, ANTHONY, Proc. Acad. Nat. Sci., p. 60, Feb., 1860. BINNEY, Check List, No. 59. BROT, List, p. 39. REEVE, Monog. Melania, sp. 458.

Description.— Shell ovate, short, smooth, moderately thick; spire

obtusely elevated, consisting of 5–6 convex whorls; color brownish-yellow, with three dark brown bands about the middle of the body-whorl, and one very obscure one at the suture; suture deeply impressed; aperture broad, ovate, not large, exhibiting the bands inside; columella deeply rounded, indented and callous; sinus none.

Habitat.— Tennessee.

Observations.— A short, pretty species with no very marked characters, though easily recognized as distinct on examination; in form and coloring somewhat like *M. compacta* (nobis), but far less solid and heavy than that species; the spire is more elevated and acute and the surface smooth. It most nearly resembles, perhaps, *M. coronilla* (nobis), but is less elevated and has not the peculiar crowning ribs of that species, which is sufficient at once to distinguish it. It is also more robust.— *Anthony.*

Fig. 479.

Figured from Mr. Anthony's type specimen. Much more inflated and shorter than *G. Georgiana*, Lea. It also differs from that species in possessing two bands only.

141. G. Georgiana, LEA.

Goniobasis Georgiana, LEA, Proc. Acad. Nat. Sci., p. 265, 1862. Jour. Acad. Nat. Sci., v, pt. 3, p. 308, t. 37, f. 148. Obs., ix, p. 120.

Description.— Shell smooth, fusiform, inflated, rather thick, yellowish, bright, banded; spire very obtuse; sutures impressed; whorls five, convex; aperture large, subrhomboidal, whitish and banded within; outer lip acute, straight; columella bent in, thickened and somewhat twisted.

Operculum subovate, dark brown, with the polar point near to the base on the left margin.

Habitat.— North Georgia.

Diameter, ·26; length, ·57 of an inch.

Observations.— Among a number of *Melanidæ* from the Smithsonian Institution, were two small specimens which have the same outline and same form of aperture, but which differ much in color. That which is described above seems to me to be the normal character and will serve as the type. This has three well defined bands, the middle one of which is the broadest, and it has a character which I have not seen in any of our *Melanidæ*, that is, longitudinal, whitish maculations, which are dispersed over the

Fig. 480.

body-whorl, and seem under the microscope to be slightly raised on the surface. The second specimen is horn-color and has no bands. In outline this species is closely allied to *Melania* (*Goniobasis*) *Nicklíniana* (nobis), but is not so pointed at the apex, is not so inflated in the body-whorl, and differs in color. The aperture is quite half the length of the shell.—*Lea.*

142. G. depygis, Say.

Melania depygis, Say, New Harmony Disseminator, p. 291. Say's Reprint, p. 19. Am. Conchology, Part 1, t. 8, f. 4, 5. Binney's Reprint, pp. 145 and 157, t. 8. Binney, Check List, No. 87. Lapham, Cat. Moll. Wisconsin. Kirtland, Am. Jour. Sci. Kirtland, Rep. Zool., Ohio, p. 174. Shaffer, Catalogue. Higgins, Catalogue. Anthony, List, 1st and 2d edit. Sager, Rept. Michigan Moll., p. 15. Wheatley, Cat. Shells U.S., p. 25. DeKay, Moll. N. Y., p. 89, t. 7, f. 135. Stimpson, Shells of New England, p. 32. Jay, Cat. Shells, 4th edit., p. 273. Adams, Am. Jour. Sci., xl, p. 366. Adams, Thompson's Hist. Vermont, p. 152. Catlow, Conch. Nomenc., p. 186. Brot, List, p. 37. Deshayes, Lamark, Anim. sans. Vert., viii, p. 441. Reeve, Monog. Melania, sp. 373.

Potadoma depygis, Say, Adams, Genera i, p. 293.

Melania occulta, Anthony, Proc. Acad. Nat. Sci., p. 5, Feb., 1860. Binney, Check List, No. 185. Brot, List, p. 38. Reeve, Monog. Melania, sp. 254.

Description.— Shell oblong, conic-ovate, not remarkably thickened; spire as long as the aperture, or rather longer, often much eroded, with a broad, revolving, rufous line near the suture, occupying a considerable portion of the surface; whorls about five, hardly rounded; suture moderately impressed; body-whorl yellowish, with two rufous, revolving lines equidistant from the suture, base and each other, the superior one broader, and its locality a little flatter than the general curvature; aperture ovate, acute above, moderately dilated; labium with calcareous deposit, particularly above; labrum not projecting near the base, nor arquated near its junction with the second volution; base regularly rounded.

Fig. 481. Fig. 482.

Observations.— I found this species, in great abundance, on the rocky flats at the Falls of the Ohio, where they were left by the subsiding of the river, in company with numerous other shells. In old specimens the spire is very much eroded, exhibiting a white, irregular surface. It varies a little in color, and a few occurred, of which the color is fuscous, the bands being obsolete.—*Say.*

The following description is founded on elongated specimens of *depygis*, of which it is undoubtedly a synonyme.

Melania occulta.— Shell conic, smooth, rather thin; color lemon-

yellow, inclining to brown, with a darker brown band on each whorl, increasing to two on the body-whorl; whorls 7-8, rather convex; suture deeply impressed; aperture ovate, within dusky-white, with the outer bands seen faintly through its substance; columella beautifully rounded; outer lip produced, a small sinus at base.

Fig. 482a.

Habitat.— Wisconsin.

Observations.—A very beautiful and lively species. Bears some resemblance to *M. pulchella* (nobis), but is elongate, more delicately colored, and of a less solid texture; the bands are often obsolete, and never so distinctly expressed as in *pulchella*; its spire is also more acute, and the whorls more rounded. Compared with *M. brevispira* (nobis), which in form it resembles, it is more attenuate, has a greater number of whorls, and its bands also distinguish it. Its delicate yellow color also is not a common character in the genus, and forms a prominent mark for determination.—*Anthony.*

143. G. livescens, Menke.

Melania livescens, Menke, Syn. Meth., p. 135, 1830. Binney, Check List, No. 163. Gould, Lake Superior, p. 245. Jay, Cat., 4th edit., p. 274. Reeve, Monog. Melania, sp. 229. Brot, List, p. 38. Currier, Shells of Grand River Valley, Mich., 1859.

Melania Niagarensis, Lea, Philos. Proc., ii, p. 12, Feb., 1841. Philos. Trans., viii, p. 173, t. 5, f. 21. Obs., iii, p. 11. DeKay, Moll., N. Y., p. 90. Wheatley, Cat. Shells U. S., p. 26. Binney, Check List, No. 175. Catlow, Conch. Nomenc., p. 187. Brot, List, p. 38. Currier, Shells of Grand River Valley, Mich. Bell, Canad. Naturalist, iv, pt. 3, p. 213, June, 1859.

Potadoma Niagarensis, Lea, Adams, Genera, i, p. 299.

Melania napella, Anthony, Bost. Proc., iii, p. 362, Dec., 1850. Binney, Check List, No. 170. Brot, List, p. 39.

Melania cuspidata, Anthony, Bost. Proc. iii, p. 362, Dec., 1850. Binney, Check List, No. 83. Reeve, Monog. Melania, sp. 283.

Melania correcta, Brot, List, p. 39.

Description.—Shell ovately oblong, smooth, bluish flesh-color; spire conically acute; lip horn-color, produced in front, border purple; columella thinly callous, purplish.

Fig. 483.

Longitude, ·7; latitude, ·3½ lin.

Habitat.— Lake Erie, New York; sent by my friend, Hæninghaus.— *Menke.*

The following are the descriptions of the species which I consider synonymes.

Melania Niagarensis.— Shell smooth, obtusely conical, thick, horn-

colored; spire short; sutures linear; whorls rather flat; aperture rather large, elliptical, within purple.

Habitat.—Falls of Niagara.

Diameter, ·25; length, ·55 of an inch.

Observations.—I obtained this shell many years since at the foot of the Falls of Niagara, where it exists in abundance. It may generally have been confounded with *M. depygis*, Say. When I procured it I placed it in my cabinet under that name with a mark of doubt. It is a smaller shell than the *depygis*, has a shorter spire and a narrower aperture. This species has a purple columella and interior, which in some cases are very dark. The specimens procured were all more or less eroded, and the apex removed. The number of whorls is either six or seven. The aperture is nearly half the length of the shell.—*Lea.*

Fig. 484.

Melania napella.—Shell small, ovate, acuminate, smooth, light corneous; whorls seven, the upper ones conical and carinate at the sutures; aperture one-half the length of the shell, narrowly lunate; lip dilated in front, sinuate posteriorly.

Fig. 485.

Longitude, ½; latitude, ¼ poll.

Habitat.—Ohio.

Observations.—A pale, rather singular species, from its bulbous form. Some immature specimens of *M. simplex* are often much like it.—*Anthony.*

Melania cuspidata.—Shell small, short, ovate, acuminate, smooth, greenish-purple, lighter on the sutures; whorls six, convex, sometimes flattened, apical ones carinate, the last ventricose; aperture large and equalling half the length of the shell; lip dilated in front, posteriorly scarcely sinuate.

Fig. 486.

Habitat.—Maumee River, Ohio.

Longitude, three-fifths; latitude, three-tenths poll.

Observations.—Allied to *M. napella*, having the same peculiar bulbous form and produced lip. It is, however, much more elongated. It resembles *M. Warderiana*, Lea.—*Anthony.*

The identity of these species has long been conceded by most of our best conchologists. They all possess in common the short, bulbous form and conical spire, frequently slightly carinate; and are readily known by the very convex, outer lip, salmon-purple interior and dark purple-tinged columella. The epidermis is corneous in fresh specimens, but most of

them are without epidermis and then present a livid bluish-white appearance. Considerable variation may be noticed in the form of the shell and in its texture. It is an exceedingly numerous species inhabiting the waters of the Northwestern States. Dr. Brot proposed the name *correcta* instead of *cuspidata*, Anth., preoccupied in *Melania*.

144. G. Milesii, LEA.

Goniobasis Milesii, LEA, Proc. Acad. Nat. Sci., p. 154, May, 1863.

Description.—Shell smooth, subfusiform, olivaceous, without bands; spire subelevated; sutures irregularly impressed; whorls six, subinflated; aperture rather large, subrhomboidal, brownish within; lip acute, scarcely sinuate; columella purplish, slightly incurved.

Fig. 487.

Habitat.—Tuscola County, Michigan; M. Miles, State zoologist.—*Lea.*

This species is certainly very closely allied to *livescens* in many respects but appears to be more convex in the whorls, and to attain a larger size. I am by no means satisfied that it is distinct, however.

145. G. simplex, SAY.

Melania simplex, SAY, Jour. Acad. Nat. Sci., v, p. 126, Sept. 1825. BINNEY'S edition, p. 115. BINNEY, Check List, No. 244. DEKAY, Moll. N. Y., p. 100. WHEATLEY, Cat. Shells U.S., p. 27. REEVE, Monog. Melania, sp. 148. JAY, Cat., 4th edit., p. 275. BROT, List, p. 38.

Pachycheilus simplex, Say, ADAMS, Genera, i, p. 298.

Melania Warderiana, LEA, Philos. Proc., ii, p. 14, Feb., 1841. Philos. Trans., viii, p. 185, t. 6, f. 47. Obs., iii, p. 23. DEKAY, Moll. N. Y., p. 99. CATLOW, Conch. Nomenc., p. 189. BINNEY, Check List, No. 297. BROT, List, p. 39. REEVE, Monog. Melania, sp. 353.

Melania Wardiana, Lea, WHEATLEY, Cat. Shells U.S., p. 27.

Potadoma Warderiana, Lea, CHENU, Manuel de Conchyl., i, f. 1972. ADAMS, Genera, i, p. 299, CHENU, Manuel, i, f. 1972.

Melania densa, ANTHONY, Bost. Proc., iii, p. 360., Dec., 1850. BINNEY, Check List, No. 89. BROT, List, p. 31. REEVE, Monog. Melania, sp. 250.

Melania subsolida, Philos. Proc., ii, p. 12, Feb., 1841. Philos. Trans., viii, p. 168, t. 5, f. 12. Obs., iii, p. 6. TROOST, Cat. Shells Tenn. BINNEY, Check List, No. 255. WHEATLEY, Cat. Shells U.S., p. 27. DEKAY, Moll. N. Y., p. 94. CATLOW, Conch. Nomenc., p. 188. BROT, List, p. 39.

Potadoma subsolida, Lea, H. and A. ADAMS, Genera, i, p. 299.

Goniobasis Vanuxemii,* LEA, Proc. Acad. Nat. Sci., p. 265, 1862. Jour. Acad. Nat. Sci., v, p. 307, t. 37, f. 146. Obs., ix, p. 129.

* Changed to *G. Prestoniana*, LEA, Proc. Acad., 1864, p. 3.

Description.—Shell conic, blackish, rather rapidly attenuated to an acute apex; suture not deeply impressed; volutions about eight, but little rounded; aperture longitudinal; within dull reddish; labrum with the edge not undulated, or but very slightly and obtusely so near the superior termination.

Length, three-fifths; greatest breadth, three-tenths of an inch.

Observations.—For this species we are indebted to Prof. Vanuxem, who presented several specimens to the Academy. He informs me that he obtained them in Virginia, in a stream running from Abington to the salt works, and from the stream on which General Preston's grist-mill is situated, near the salt works, as well as in a brook running through the salt water valley, and discharging into the Holston River. Near the summit the whorls are marked by an elevated line near their bases. It cannot be mistaken for the *conica* (nobis) for in that species the aperture is obviously oblique.—*Say.*

Fig. 488.

The synonymy of the species indicated by the above table is due to the investigations of Professor Haldeman, whose fine suite of self-collected specimens demonstrates their entire identity. Figure 488 is from an author's example of *simplex* in Museum Anthony. I have specimens of the same form, but of much larger size. *Warderiana* is figured from Mr. Lea's plates.

The following are the descriptions of the synonymes:—

Melania Warderiana.—Shell carinate, club-shaped, rather thick, very dark; spire conical; sutures linear; whorls eight, convex; aperture ovate, rather large, within flesh-color.

Habitat.—Cedar Creek, a branch of Clinch River, Russell County, Virginia.

Diameter, ·37; length, ·76 of an inch.

Observations.—I have two specimens before me. The two lowest whorls are smooth, the superior ones are carinate, with a small, intermediate stria, the upper whorls diminish very rapidly. The exterior of the shell is very black and shining, and its color appears to arise from a deposit of ferruginous matter, as the substance of the shell is reddish. The aperture is rather more than one-third the length of the shell. I name it after Dr. Warder of Cincinnati, to whom I owe the possession of this and other interesting specimens.—*Lea.*

Fig. 489.

Melania subsolida.—Shell smooth, subfusiform, somewhat solid, horn-colored; spire acute; sutures impressed; whorls somewhat convex; aperture somewhat elongated, within purple.

Fig. 490.

Habitat.—Tennessee; Dr. Troost.

Diameter, ·32; length, ·82 of an inch.

Observations.—This species has a strong resemblance to *M. simplex*, Say. It is, however, more elevated in the spire. It is purplish within, but white towards the margin of the lip.—*Lea.*

Melania densa.—Shell solid, elongately ovate, acuminate, light olivaceous; spire produced; whorls 6–7, ventricose, angulated below, the upper ones small, the last subcylindrical, equalling two-thirds the length of the shell; aperture narrowly ovate, scarcely effused, rounded in front; columella quite callous; within yellowish.

Fig. 490*a*.

Habitat.—Maury's Creek, Tennessee.

Longitude, $\frac{7}{8}$; latitude, $\frac{3}{8}$ poll.

Observations.—Somewhat like *M. basalis*, Lea. The shelving of the whorls towards the suture and the acumination of the spire are among its most striking characters.—*Anthony.*

Goniobasis Vanuxemii.—Shell smooth, fusiform, rather thick, horn-color; spire obtusely conical; sutures impressed; whorls seven, slightly convex; aperture large, subrhomboidal, white or purple within; outer lip acute, slightly sinuous; columella bent in, thickened above and below.

Fig. 491.

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

Habitat.—North Fork of the Holston River, Virginia; Prof. L. Vanuxem.

Diameter, ·27; length, ·54 of an inch.

Observations.—Many years before the decease of my lamented friend, Prof. Vanuxem, he gave me a number of mollusca collected during his journeys in South Carolina and Western Virginia. Among them was quite a number of this little species which I now dedicate to him. It is nearly allied to *Melania* (*Goniobasis*) *Niagarensis* (nobis), but is a small species with a shorter spire, and is straighter at the base of the columella. The aperture is rather more than one-third the length of the shell.—*Lea.*

146. G. Potosiensis, Lea.

Melania Potosiensis, Lea, Philos. Proc., ii, p. 14, Feb., 1841. Philos. Trans., viii, p. 184, t. 6, f. 45. Obs., iii, p. 22. Dekay, Moll. N. Y., p. 99. Wheatley, Cat. Shells U.S., p. 26. Binney, Check List, No. 215. Catlow, Conch. Nomencl., p. 188. Brot, List, p. 36. Reeve, Monog. Melania, sp. 295.
Elimia Potosiensis, Lea, H. and A. Adams, Genera, i, p. 300.

Description.—Shell carinate, conical, rather thin, brown; spire obtusely elevated; sutures much impressed; whorls eight, convex; aperture large, ovate, purplish.

Habitat.—Potosi, Missouri.

Diameter, ·28; length, ·62 of an inch.

Observations.—The rotundity of the outer lip in this is different from the species generally, with the same elevation of spire. Fig. 492. The aperture is more than one-third the length of the shell, and is entirely purple, in the only two specimens before me. In one specimen the carina is distinct on all the whorls but the last; in the other it is not visible on the last two whorls.—*Lea.*

Were it not for the wide difference of locality I should suspect this to be identical with *simplex*. I have not seen specimens, but the figure and description are certainly very close to that species.

147. G. Saffordi, Lea.

Melania Saffordi, Lea, Philos. Trans., x, p. 300, t. 30, f. 10. Obs., v, p. 56. Binney, Check List, No. 236. Brot, List, p. 38. Reeve, Monog. Melania, sp. 365.
Melania virens, Anthony, Ann. N. Y. Lyc. Nat. Hist., vi, p. 93, t. 2, f. 11, March, 1854. Binney, Check List, No. 289. Brot, List, p. 40.

Description.—Shell smooth, obtusely conical, thick, subfusiform, dark green; spire rather short; sutures linear; whorls a little convex, the last large; aperture rather large, ovately elongated, within purple; columella purple and twisted.

Fig. 493.

Habitat.—Lebanon, Wilson County, Tennessee.

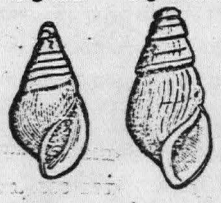
Diameter, ·37; length, ·85 of an inch.

Observations.—This is a very distinct species, with a not uncommon form. The green color is unusual. On the upper part of the whorl, and on the line of the suture there is a light or brownish band. The body-whorl is rather suddenly enlarged in the middle, which gives it a slight gibbous appearance, and it is irregularly, transversely striate. The apex of each of the three specimens under my examination being eroded, the number of whorls cannot be exactly ascertained, but I think there must be about six. The aperture is quite one-half the length of the shell. It is allied to *M. sordida* (nobis) in outline, but may easily be distinguished in color and the gibbous swelling on the whorls. I name this after Mr. Safford, to whose kindness I owe this and some other fine specimens from Tennessee.—*Lea.*

The following shell appears to be in every respect identical with the above:—

Melania virens.—Shell ovate-conic, smooth, rather thick; spire rather obtusely elevated, with a somewhat convex outline, and with sutures decidedly impressed; color light uniform green, paler towards the summit; whorls five only remaining, and indications of one lost by truncation, convex; aperture rather large, elliptical, bluish within; columella well rounded, not perceptibly indented, and with a small, recurved sinus at base.

Fig. 494. Fig. 494a.



Habitat.—Alabama.

Diameter, ·40 (10 millim.): length, ·87 of an inch (22 millim.). Length of aperture, ·42 (10 millim.); breadth of aperture, ·21 of an inch (5 millim.).

Observations.—A broad species with an outline and proportions not unlike a *Paludina*, to which genus its pale, uniform green color seems to ally it. I am not sure that it should not be referred to that genus. It cannot be compared with any known species.—*Anthony.*

148. G. Newberryi, Lea.

Goniobasis Newberryi, Lea, Proc. Acad. Nat. Sci., March, 20, 1860. Jour. Acad. Nat. Sci., v, pt. 3, p. 300, t. 37, f. 135, March, 1863. Obs., ix, p. 122. Binney, Check List, No. 174. Brot, List, p. 38.

Description.—Shell smooth, ovately conical, rather thin, dark brown, triple-banded, yellow below the sutures; spire somewhat raised; sutures much impressed; whorls six, inflated; aperture rather small, ovately rounded, whitish and banded within; outer lip inflated; columella whitish, incurved.

Operculum ovate, rather thin, dark brown, with the polar point near the inner inferior edge.

Habitat.—Upper Des Chutes River, Oregon Territory; J. S. Newberry, M.D.

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Diameter, ·30; length, ·64 of an inch.

Observations.— This is a rather small species, very nearly allied to *Melania* (*Goniobasis*) *Taitiana* (nobis), from Claiborne, Alabama, but differs in being rather more inflated, of a darker color, and having three dark bands instead of four. The bands in *Newberryi* are broad and dark, sometimes running into each other, while the *Taitiana* has thinner ones of a lighter color. In some specimens of the latter the bands are absent, but I have seen no specimen of the former without bands. These give a dark appearance to the shell, which is well relieved by the yellow margin under the sutures. I have great pleasure in naming it after Dr. Newberry, the discoverer of it.— *Lea.*

Fig. 495.

149. G. bulbosa, GOULD.

Melania bulbosa, GOULD, Bost. Proc., ii, p. 225, July, 1847. Otia Conchologica, p. 46. Moll. Expl. Exped., p. 142, f. 163, 163a, 1852. BINNEY, Check List, No. 43. BROT, List, p. 58.

Description.— Shell small, conically oblong, shining, eroded, green-ish-brown; spire of 2-3 rounded whorls, remaining; sutures profound; aperture ovately-rounded, scarcely effused.

Fig. 496.

Habitat.— Columbia River.

Longitude, one-half; latitude, nine-twentieths poll.

Observations.— The whorls are very cylindrical, so as to appear like a succession of bulbs. It is much like *M. perfusca*, Anth.; but in that the whorls slope gently to the suture. A broken specimen shows that it often attains a considerable size.— *Gould.*

This species is exactly similar in outline to Mr. Lea's *Newberryi*, but none of the specimens before me, including Dr. Gould's types, exhibit the slightest indications of bands, while Mr. Lea declares his species to be always banded.

150. G. Lithasioides, LEA.

Goniobasis Lithasioides, LEA, Proc. Acad. Nat. Sci., May, 1863. Obs., xi, p. 89, t. 23, f. 37.

Description.— Shell smooth, subfusiform, horn-color, without bands; spire conoidal; sutures impressed; whorls six, somewhat constricted, flattened above; aperture rather large, rhomboidal, white within;

outer lip acute, somewhat sinuous; columella white, bent in and somewhat twisted.

Habitat.— Ohio; J. P. Kirtland, M.D.

Diameter, ·28; length, ·65 of an inch.

Observations.— A single specimen was received many years since from Dr. Kirtland with *Melania* (*Goniobasis*) *depygis*, Say, but while it agrees with it in color and size, it is quite different in the body-whorl, and in the form of the aperture. The aperture is very much like *Lithasia*, and is slightly thickened above on the columella, but there is neither a channel nor callus below. In the whole outline and form of the aperture it is very like *Lithasia Downiei* (nobis), but it is a much smaller shell, a much lighter color, has no tubercles and has no channel at the base. It is among the few species which are impressed on the body-whorl, but it is not so much so as *G. informis*, herein described, and is a larger and stouter species. The aperture is not quite half the length of the shell. Dr. Kirtland did not state from what part of Ohio it came.— *Lea.*

Fig. 496a.

151. G. infantula, LEA.

Goniobasis infantula, Proc. Acad. Nat. Sci., May, 1863. Obs., xi, p. 91, t. 23, f. 39.

Description.— Shell smooth, fusiform, dark horn-color, much banded; spire short; sutures slightly impressed; whorls five, flattened above; aperture rather large, ovate, banded within; outer lip acute, slightly sinuous; columella purple, thickened and twisted.

Operculum ovate, reddish-brown, rather thin, with the polar point near the base on the left edge.

Habitat.— Falls of the Ohio at Louisville, Ky.; W. H. DeCamp, M.D.

Diameter, ·20; length, ·38 of an inch.

Observations.— This is a pretty little species, usually with four well marked, rather broad, brown bands. In one of the six specimens before me there are only three indistinct bands. It is closely allied to *Melania* (*Goniobasis*) *cognata*, Anthony, and near to *Georgiana* (nobis). It differs from *cognata* in being more drawn out in the spire and having less inflation of the body-whorl. The aperture is about one-half the length of the shell.— *Lea.*

Fig. 496b.

152. G. Louisvillensis, LEA.

Goniobasis Louisvillensis, LEA, Proc. Acad. Nat. Sci., May, 1863. Obs., xi, p. 89, t. 23, f. 36.

Description.—Shell smooth, fusiform, dark horn-color, without bands; spire short; sutures irregularly impressed; whorls about five, somewhat convex; aperture rather large, long elliptical, white within; outer lip acute, slightly sinuous; columella white, thickened above and twisted.

Operculum ovate, reddish-brown, rather thin, with the polar point on the left, near the base.

Habitat.—Falls of the Ohio at Louisville, Ky.; W. H. DeCamp, M.D.

Diameter, ·25; length, ·56 of an inch.

Observations.—Two specimens only were received, neither perfect at the apex. It is a simple species with an unusually thickened columella, approaching indeed to *Lithasia*. It is near to *Spartanbergensis* and *ovoidea* (nobis) and is somewhat like *depygis*, Say, but cannot be confounded with this last species, from the same habitat, being much shorter in the spire, and having a differently formed aperture. Neither of the two specimens has any appearance of bands, but they may exist on other specimens. The aperture is about one-half the length of the shell.—*Lea.*

Fig. 496c.

H. *Smooth, elevated species.*

153. G. pulchella, ANTHONY.

Melania pulchella, ANTHONY, Bost. Proc., iii, p. 361, Dec., 1850. HIGGINS, Cat., p. 7. REEVE, Monog. Melania, sp. 237. BINNEY, Check List, No. 221. BROT, List, p. 38. CURRIER, Shells of Grand River Valley, Mich.

Description.—Shell small, thin, elongately conical, brownish horn, banded with brown; spire conical; whorls 7-8, convex; aperture large, equalling one-third the length of the shell, elongately ovate.

Fig. 497.

Habitat.— ———?

Longitude, seven-tenths; latitude, one-fourth poll.

Observations.—A pretty species, ornamented by dark, rather broad bands, somewhat like *M. Taitiana* and some varieties of *M. Virginica.*—*Anthony.*

An exceedingly common species in various parts of Ohio, extending into Michigan. It varies considerably in form and size, but is larger and more elevated than *depygis*, which it resembles in color and ornamentation. From *gracilior* it is distinguished by its lighter color and convexity of the superior half of the lip, which in the latter species is incurved or flattened.

154. G. cinerea, LEA.

Goniobasis cinerea, LEA, Proc. Acad. Nat. Sci., p. 265, 1862. Jour. Acad. Nat. Sci., v, pt. 3, p. 306, t. 37, f. 145. Obs., ix, p. 128.

Description.—Shell smooth, conical, thin, ash-gray, bright: spire obtusely conical, sharp-pointed, carinate at the apex; sutures very much impressed; whorls eight, somewhat convex; aperture rather large, subrhomboidal, bluish-white within; outer lip acute, somewhat sinuous; columella bent in, slightly thickened and purplish.

Fig. 498.

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

Diameter, ·25; length, ·60 of an inch.

Observations.—A single specimen, of this gracefully formed species was among a number of shells given to me by my friend, the late Prof. Vanuxem. The exact habitat was not given. It is a thin, subdiaphanous species, of an ashen gray, with a remarkably thin epidermis. There is an obscure appearance of a band towards the upper portion of the whorls and a purple oblique marking at the interior of the base of the axis. It is allied to *Ohioensis*, herein described, but it is more slender, thinner, and has a more elongate aperture. The aperture is six-sixteenths the length of the shell.—*Lea.*

This species is so nearly allied to *G. pulchella* that I much doubt whether it is distinct.

155. G. gracilior, ANTHONY.

Melania gracilis, ANTHONY, Cover of No. 4, HALDEMAN'S Monog. Limniades. Dec., 28, 1841. Shells of Cincinnati, 1st edit. NEWBERRY, Proc. American Association for Adv. of Science, v, p. 105. JAY, Cat., 4th edit., p. 273.

Melania gracilior, ANTHONY, Ann. N. Y. Lyc. Nat. Hist., vi, p. 129, t. 1, f. 5. 1854. HIGGINS' Cat., p. 7. BINNEY, Check List, No. 127. REEVE, Monog. Melania, sp. 244.

Melania gracilis, Lea, REEVE, Monog. Melania, sp. 369.

Description.—Shell conical, smooth and shining, color dark brown,

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

Habitat.— Congress and Springfield Lakes, Stark County, Ohio.

Diameter, ·28 (7 millim.); length, ·75 of an inch (19 millim.). Length of aperture, ·25 (6 millim.); breadth of aperture, ·17 of an inch (5 millim.).

Observations.— This is a very distinct and beautiful species, remarkable for its long, slender form, its polished surface, and for a profound stricture on the body-whorl of many of the specimens, though this last character is not always present; when it is present it furnishes a mark by which this species can be readily distinguished from any other. It is seldom that any of our *Melaniæ* are found inhabiting waters so still as those of the small lakes so numerous in Stark and the neighboring counties in Ohio; nearly all the family are denizens of rapid streams abounding with rocks, to which they adhere, often in great numbers. Occasionally, however, they attach themselves to the dead bivalve shells which pave many of the rivers in our Southern and Western States, or cling to the long grass which grows in them. This species was first published on the cover of Haldeman's Monograph of the Fresh-water Shells of North America, No. 4, December 28, 1841. A short time previous Mr. Lea had published a species from Tennessee under the same name, which publication I had not then seen. It becomes expedient, therefore, to change its name to one not preoccupied, and I propose in redescribing the species to confer upon it that of *gracilior*, which seems even *more* appropriate than the name originally given to it.— *Anthony.*

Fig. 499.

156. G. Canbyi, Tryon.

Goniobasis Etowahensis, Lea,* Proc. Acad. Nat. Sci., p. 264, 1862. Jour. Acad. Nat. Sci., v, pt. 3, p. 299, t. 37, f. 133, March, 1863.

Description.— Shell smooth, conoidal, thin, dark, double-banded; spire somewhat raised; sutures impressed; whorls seven, slightly convex; aperture rather large, subrhomboidal, dark and broadly banded within; outer lip acute and sinuous; columella bent in and very much twisted.

Habitat.— Etowah River, Georgia; J. Postell.

Diameter, ·30; length, ·74 of an inch.

Observations.— A single specimen only was sent to me by Mr. Postell. At first sight it would be taken for *Melania* (*Goniobasis*) *gracilior*, Anth., having the same dark hue, made so by the two, broad, dark brown bands. It differs from it in being less conical, in having a larger aperture which is more angular at the basal margin. The two broad bands cover nearly two-thirds of the last whorl, leaving a yellowish interspace. In this specimen there is a brown, elongate spot at the base of the columella. The aperture is about three-eighths the length of the shell.— *Lea.*

Fig 500.

157. G. ovoidea, Lea.

Melania ovoidea, Lea, Philos. Proc., iv, p. 167, Aug., 1845. Philos. Trans., x, p. 61, t. 9, f. 38. Obs., iv, p. 61. Binney, Check List, No. 193. Brot, List, p. 38.
Potadoma ovoideus, Lea, Adams, Genera, i, p. 299.

Description.— Shell smooth, elliptical, rather thick, horn-color; spire short; sutures slightly impressed; whorls six, slightly convex; aperture large, nearly ovate, within white.

Habitat.— Alexandria, Louisiana.

Diameter, ·2; length, ·44 of an inch.

Observations.— A single specimen only of this little species was found among the shells sent by Dr. Hale. It differs entirely from the other two species, and approaches Mr. Say's *depygis*, but is smaller, and has a proportionately larger aperture. The aperture is quite one-half the length of the shell. The columella is somewhat thickened on the superior portion. In the

Fig. 501.

*G. Etowahensis, Lea, being preoccupied by Mr. Reeve, who described and figured *G. Canbyi*, Lea, under that name in advance of Mr. Lea's description, we apply the latter's name to this species.

specimen before me there are two, broad, rather indistinct, brown bands.—*Lea.*

Mr. Reeve's figure represents a species of *Lithasia.*

158. G. translucens, ANTHONY.

Goniobasis translucens, ANTHONY, Am. Journ. Conch., i, 36, t. 1, f. 1, 2, 1865.

Description. — Shell ovately bulbous, consisting of five convex whorls, or the upper ones sometimes flattened. Aperture ovate, slightly angular at the base; columella curved to the right inferiorly; color light horn, thin, translucent, ornamented with two dark brown bands, of which one is apparent on the whorls of the spire; columella sometimes tinged with brown.

Fig. 502.

Habitat.— Canada.

Length, ·7; breadth, ·35 of an inch.

Observations.— This beautiful species is distinguished by its coloration and thin texture from *G. livescens*, which it otherwise greatly resembles.—*Anthony.*

159. G. grata, ANTHONY.

Melania grata, ANTHONY, Proc. Acad. Nat. Sci., p. 61, Feb., 1860. BINNEY, Check List, No. 131. BROT, List, p. 34. REEVE, Monog. Melania, sp. 433.
Goniobasis Prairiensis, LEA, Proc. Acad. Nat. Sci., p. 264, 1862. Jour. Acad. Nat. Sci., v, pt. 3, p. 299, t. 37, f. 132, March, 1863. Obs., ix, p. 121.

Description. — Shell conic, elevated, smooth, thick; whorls nine, flat, terminating in an acute apex, the first three or four whorls being carinated; color light greenish-yellow, ornamented by a single dark band on the spiral whorls, and four similar bands on the body-whorl, giving the shell a truly lively and beautiful appearance; sutures very distinct; aperture ovate, banded within; columella deeply indented and curved at base, where there is a small but rather broad sinus.

Fig. 502a.

Habitat.— Alabama.

Observations.— The colors in this species are finely contrasted, and the general appearance is very lively and pleasing; the bands on the body-whorl are not uniformly distributed, the upper and lower ones being widely separated, while the central ones are very close together and less distinct. Altogether it is one of our most beautiful species.— *Anthony.*

Goniobasis Prairiensis. — Shell smooth, elongately fusiform, thin, olivaceous, shining, four-banded; spire raised, sharp-pointed; sutures regularly impressed; whorls nine, flattened; aperture rather large, subrhomboidal, whitish and four-banded within; outer lip acute and sinuous; columella bent in and twisted.

Fig. 503.

Operculum ovate, dark brown, with the polar point on the left, one-fourth above the basal margin.

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

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

Observations.— Among some twenty specimens before me there is no difference in form or markings, except that some have the bands slightly broader than others. The two middle bands are rather closer together and the under one of these two is generally the smaller. It was sent to me by Dr. Showalter under the name of *M. grata*, Anth., but while it has the four bands like that species, it is more slender, is not yellow, has a less aperture and one more whorl, and is more fusiform. The aperture is rather more than one-third the length of the shell.—*Lea.*

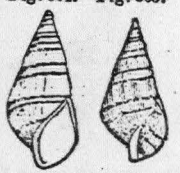
Mr. Anthony's types of *M. grata* are before me, and do not represent the shell, which Mr. Lea distinguishes in the above description by that name, but are identical in every respect with *G. Prairiensis.* The shell which Mr. Lea mistook for *M. grata*, he has since described as *quadricincta.*

160. G. quadricincta, LEA.

Goniobasis quadricincta, LEA, Proc. Acad. Nat. Sci., Apr., 1864, p. 112. Obs., xi, 87, t. 23, f. 33.

Description.—Shell smooth, or obscurely folded, somewhat fusiform, somewhat thick, yellow, four-banded; spire conical; sutures regularly impressed; whorls about eight, flattened, angular towards the apex; aperture rather large, ovate and four-banded within; outer lip acute and somewhat sinuous; columella thin and somewhat twisted.

Fig. 504. Fig. 505.



Operculum ovate, rather thin, light brown, with the polar point near the left edge.

Habitat.— Coosa and Cahawba Rivers, Alabama; Dr. Showalter: East Tennessee and North Georgia; Bishop Elliott.

Diameter, ·37; length, ·93 of an inch.

Observations.—I have about two dozen specimens before me from the different habitats. Those from East Tennessee are shorter and not so well characterized, having less marked bands, some even being without them. The best developed are from the Coosa River. Two specimens from Fannin County, Georgia, have a bright yellow epidermis without bands, and may belong to a distinct species. The four bands are remarkably regular in this species. The two middle ones are near to each other and the lower of the two is smaller than the upper. It is allied to *grata*, Anth. The aperture is rather more than one-third the length of the shell.—*Lea.*

161. G. flava, Lea.

Goniobasis flava, Lea, Proc. Acad. Nat. Sci., p. 264, 1862. Jour. Acad. Nat. Sci., v, pt. 3, p. 303, t. 37, f. 139, March, 1863. Obs., ix, p. 125.

Description.—Shell smooth, obtusely conical, rather thin, yellow, three-banded; spire obtusely conical; sutures very much impressed; whorls about six, somewhat convex; aperture rather small, ovate, white and three-banded within; outer lip acute, slightly sinuous; columella bent in and thickened. Fig. 506.

Operculum ovate, dark brown, with the polar point near to the edge and above the basal margin.

Habitat.—Benton County? N. E. Alabama; G. Hallenbeck.

Diameter, ·35; length, ·88 of an inch.

Observations.—A single specimen, only, of this pretty species, was sent to me by Mr. Hallenbeck. It cannot be confounded with any other species known to me. It reminds one of *Melania grata*, Anth., but it has a rounder base, is not fusiform, and has but three bands, which are well marked inside and out. The three bands are equidistant and of equal size. The upper part of the columella is thickened, and in this specimen the color of the upper band is extended over part of this callus. The aperture is rather more than one-third the length of the shell.—*Lea.*

162. G. tenebrovittata, Lea.

Goniobasis tenebrovittata, Lea, Proc. Acad. Nat. Sci., p. 264, 1862. Jour. Acad. Nat. Sci., v, pt. 3, p. 301, t. 37, f. 136, March, 1863. Obs., ix, p. 123.

Description.—Shell smooth, high conical, rather thin, yellowish, banded or without bands; spire somewhat raised; sutures slightly

impressed; whorls flattened; aperture rather large, subrhomboidal, whitish within; outer lip acute, slightly sinuous; columella somewhat bent in.

Operculum ovate, dark brown with the polar point near the edge above the basal margin.

Habitat.—Coosa River; W. Spillman, M.D.

Diameter, ·43 of an inch; length, 1·07 inches.

Observations.—This species is allied to *Melania* (*Goniobasis*) *grata*, Anth., which puts on many phases. It may be at once distinguished, however, by *grata* being more pointed, having a more yellow epidermis and narrower bands. Two out of ten specimens before me have a greenish epidermis and are without bands. One specimen has a purplish interior. The prevailing character of the bands is, two being proximate in the middle, and two, one above the other below, being more removed. The two middle ones are sometimes closed, forming a single broad band. The aperture is more than one-third the length of the shell.—*Lea.* Fig. 507.

163. G. tenera, Anthony.

Melania tenera, Anthony, Reeve, Monog. Melania, sp. 407, Apr., 1861. Brot, List, p. 39.

Description.—Shell elongately ovate, subcylindrical, yellowish-olive, encircled with narrow, distant, red-brown bands; whorls slopingly convex, the first few keeled next the suture; aperture ovate, narrowly effused at the base; columella thinly reflected, rather produced.

Habitat.—Alabama, United States.

Observations.—Chiefly distinguished by its encircling pattern of red-brown linear bands upon a pale yellowish-olive ground.—*Anthony.*

I at first thought this to be the same as *G. Brumbyi*, Lea, but the latter species grows larger and is of a narrower form.

164. G. Brumbyi, Lea.

Goniobasis Brumbyi, Lea, Proc. Acad. Nat. Sci., p. 263, 1862. Jour. Acad. Nat. Sci., v, pt. 3, p. 296, t. 37, f. 127, March, 1863. Obs., ix, p. 118.

Description.—Shell smooth, attenuate, rather thin, ash-gray, four-banded; spire drawn out, carinate at the apex; sutures very much

impressed; whorls about eight, slightly convex; aperture small, subrhomboidal, whitish and four-banded within; outer lip acute; columella bent in, obtusely angular at base.

Habitat.— Alabama; Prof. Brumby.

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

Observations.— Two specimens were sent to me among other species, by the late Prof. Brumby of Columbia, South Carolina. One is but little more than half grown, and is more perfect in the epidermis and in the aperture. It is very closely allied to *Melania* (*Goniobasis*) *Kirtlandiana* (nobis), but it is more attenuate and has bands which I have never seen on *Kirtlandiana*. Both the specimens before me have four bands, the two middle ones being nearer to each other. The aperture of the mature specimen is not quite one-third the length of the shell, while that of the younger is more than the third, and it is also more angular at the base, the older one not being entirely perfect. I dedicate this species to the late Prof. R. T. Brumby, to whom I am indebted for it.—*Lea.*

Fig. 508.

The shell figured is the half grown specimen; the other one is much longer.

165. G. Elliottii, Lea.

Goniobasis Elliottii, Lea, Proc. Acad. Nat. Sci., p. 271, 1862. Jour. Acad. Nat. Sci., v, pt. 3, p. 338, t. 38, f. 201, March, 1863. Obs., ix, p. 160.

Description.— Shell obscurely striate, rather obtusely conical, somewhat thick, yellowish or brownish, without bands; spire rather obtuse; sutures very much impressed; whorls about six, slightly convex; aperture large, ovately rhomboidal, whitish or brown within; outer lip sharp, slightly sinuous; columella slightly bent in, thickened and somewhat twisted.

Fig. 509.

Operculum subovate, thin, dark brown, with the polar point on the edge near the base.

Habitat.— Fannin County, Ga.; Bishop Elliott: Uchee and Little Uchee Rivers, Alabama: G. Hallenbeck and Dr. Gesner.

Diameter, ·41; length, ·94 of an inch.

Observations.— I have quite a number of this species. It is well marked, and not easily confounded with any other I know. The interiors of some specimens are dark brown, with a white thickened margin on the outer lip; others are light brown, inclining to obscure

bands, while about one-half of all are white. The apical whorls are usually carinate. The body-whorl has generally two or three obscure, transverse striæ about the periphery, below which, towards the base, they are closer and coarser. There is a strong disposition in some specimens to a depression below the suture. The aperture is about three-eighths the length of the shell. I dedicate this to the Right Reverend Stephen Elliott, who has done so much to develop the zoology of Georgia.— *Lea.*

166. G. pallescens, Lea.

Melania pallescens, Lea, Philos. Proc., iv, p. 166, August, 1845. Philos. Trans., x, p. 63, t. 9, f. 43. Obs., iv, p. 63. Binney, Check List, No. 196. Brot, List, p. 31.
Goniobasis inosculata, Lea, Proc. Acad. Nat. Sci., p. 270, 1862. Jour. Acad. Nat. Sci., v, pt. 3, p. 334, t. 38, f. 195, March, 1863. Obs., ix, p. 156.
Goniobasis parva, Lea, Proc. Acad. Nat. Sci., p. 264, 1862. Jour. Acad. Nat. Sci., v, pt. 3, p. 297, t. 37, f. 129, March, 1863. Obs., ix, p. 119.

Description.— Shell carinate, rather acutely conical, somewhat thin, yellow; spire somewhat elevated; sutures impressed; whorls nine, rather convex; aperture small, ovate, angular at the base, within whitish.

Habitat.— Chester District, South Carolina.

Diameter, ·34; length, ·87 of an inch.

Observations.— Many years since, I was not satisfied that it was not merely a variety of *semicarinata*, Say, but I am disposed to think it differs too much to be considered merely a variety. It is a larger shell, with more whorls and more distinct carinations. The color also differs, in being much lighter. A single specimen was among the shells sent from Major LeConte, which, I suspect, is from Georgia, the locality not being certain. Those from Professor Vanuxem are from Major Green's farm. The aperture is less than one-third the length of the shell. All the specimens are without bands but one, which has four, large, distinct ones.— *Lea.*

Fig. 510.

Figured from Mr. Lea's plate. The following is the description of a half grown shell of this species.

Goniobasis inosculata.— Shell carinate, conical, rather thin, yellowish horn-color, without bands; spire somewhat raised; sutures impressed; whorls about seven, a little convex; aperture rather large,

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rhomboidal, whitish within; outer lip acute, sinuous; columella somewhat bent in and thickened below.

Operculum subrotund, thin, light brown, with the polar point on the left near the edge.

Habitat.—Little Uchee River, below Columbus, Ga.; G. Hallenbeck.
Diameter, ·30; length, ·74 of an inch.

Observations.—Nearly a dozen of this species were mixed up with the *Uchéensis*, herein described. It is closely allied, but may be distinguished by the form of the aperture, which is much more rhombic. It is also of a lighter color, and the outer lip is more sinuous. The aperture is more than one-third the length of the shell.—*Lea.*

Fig. 511.

The following is a still younger form of *pallescens*:—

Goniobasis parva.—Shell smooth, conical, thin, horn-color, without bands; spire somewhat raised, sharp-pointed; sutures impressed; whorls seven, flattened; aperture rather small, whitish within, subrhomboidal; outer lip acute and sinuous; columella bent in and somewhat thickened.

Fig. 512.

Habitat.—Georgia; Right Rev. Stephen Elliott.
Diameter, ·27; length, ·66 of an inch.

Observations.—This is a small species of which I received only three specimens, neither of them entirely perfect. It is very near to *Melania* (*Goniobasis*) *lævis* (nobis), but it is more attenuate, having a higher spire and rather smaller aperture. The aperture is about two-fifths the length of the shell.—*Lea.*

167. G. Anthonyi, Lea.

Goniobasis Anthonyi, Lea, Proc. Acad. Nat. Sci., p. 264, 1862. Journ. Acad. Nat. Sci., v, pt. 3, p. 303, t. 37, f. 140, March, 1863. Obs., ix, p. 125.

Description.—Shell smooth, obtusely conical, rather thin, shining, dark chestnut brown, without bands; spire obtuse; sutures impressed; whorls about six, somewhat convex; aperture rather large, elongately rhombic, brownish within; outer lip acute, white towards the margin and slightly thickened; columella bent in and very much twisted.

Habitat.—Tennessee; J. G. Anthony.
Diameter, ·33; length, ·77 of an inch.

Observations.—A single specimen of this species was sent to me some years since by Mr. Anthony, who collected it in Tennessee, but I am not aware in what part. I then thought it might be a variety of *Melania* (*Goniobasis*) *perfusca* (nobis), but it is a smaller species with a longer aperture. It has the smooth, dark chestnut-brown and polished epidermis of *Melania* (*Goniobasis*) *nitens* (nobis), but is larger and has a longer aperture. In the specimen before me there is a line of light brown below the suture. On the inside are two, obscure, brownish bands, but none are apparent on the outside. The aperture is nearly half the length of the shell. I name this after Mr. J. G. Anthony, who kindly sent it to me with other specimens.—*Lea.*

Fig. 512*a*.

168. G. Cahawbensis, Lea.

Melania Cahawbensis, Lea, Proc. Acad. Nat. Sci., p. 121, 1861.
Goniobasis Cahawbensis, Lea, Jour. Acad. Nat. Sci., v, pt. 3, p. 223, March, 1863. Obs., ix, p. 45.

Description.—Shell smooth, somewhat fusiform, raised conical, pointed, rather thin, dark horn-color, obscurely banded; spire somewhat raised; sutures line-like; whorls eight, flattened above, the last rather large; aperture rather small, ovate, whitish or yellowish within; outer lip acute; columella arcuate, somewhat rounded at the base.

Fig. 512*b*.

Habitat.—Cahawba River, Alabama; E. R. Showalter, M.D.
Diameter, ·42; length, ·84 of an inch.

Observations.—This is a regularly formed, graceful species, with very obscure bands. In three of the specimens these bands are scarcely noticeable, but the fourth, which is the youngest, has three bands well defined within the aperture. It is nearly allied to *Melania germana*, Anth., but it is more elongate and has not the carination of the middle of the whorl, nor the rhomboidal aperture. The aperture is more than one-third the length of the shell. The apical whorls are carinate.—*Lea.*

169. G. Gabbiana, Lea.

Goniobasis Gabbiana, Lea, Proc. Acad. Nat. Sci., p. 265, 1862. Jour. Acad. Nat. Sci., v, pt. 3, p. 304, t. 37, f. 141, March, 1863. Obs. ix, p. 126.

Description.—Shell smooth, subfusiform, rather thin, horn-color, without bands; spire slightly elevated, sharp-pointed; sutures im-

pressed; whorls about eight, convex and varicose; aperture rather small, subrhomboidal, whitish within; outer lip acute, slightly sinuous; columella bent in and twisted.

Habitat.—Tennessee; Prof. G. Troost: Alabama; Prof. Tuomey. Diameter, ·25; length, ·54 of an inch.

Observations.—I have only seen two specimens and indeed I have some doubts if that from Alabama be not specifically distinct. That from the late Prof. Troost I consider the type. It has been in my possession many years. They are very much the same in outline and size, and both have veiny lines on the body-whorl. That from Alabama is, however, slightly more inflated, is of a darker color, and has plicæ on the apical whorls with striæ beneath. It also has a less number of whorls by two. When more specimens shall be found from both habitats, and these differences be found to be persistent, I would consider them as distinct species. The aperture is about one-half the length of the shell. I name this after my young friend, Mr. W. M. Gabb, who has done much to advance the conchology of our country.—*Lea.*

Fig. 513.

170. G. sordida, Lea.

Melania sordida, Lea, Philos. Proc., ii. p. 12, Feb., 1841. Philos. Trans., viii, p. 170, t. 5, f. 15. Obs., iii, p. 8. Dekay, Moll. N. Y., p. 94. Reeve, Monog. Melania, sp. 449. Jay, Cat. 4th edit., p. 275. Troost, Cat. Shells Tennessee. Catlow, Conch. Nomenc., p. 188. Wheatley, Cat. Shells U. S., p. 27. Binney, Check List, No. 246. Brot, List, p. 33.

Potadoma sordida, Lea, Chenu, Manuel de Conchyl., i, f. 1971. H. and A. Adams, Genera, i, p. 299.

Melania perfusca, Lea, Philos. Proc., ii, p. 82, Oct., 1841. Philos. Trans., ix, p. 18. Obs., iv, p. 18. Wheatley, Cat. Shells U. S. p. 26. Jay, Cat., 4th edit., p. 274. Binney, Check List, No. 201. Brot, List, p. 31. Reeve, Monog. Melania, sp. 354.

Melania incurta, Anthony, Reeve, Monog. Melania, sp. 300. Brot, List, p. 38.

Melania plebeius, Anthony, Bost. Proc., iii, p. 362, Dec., 1850. Reeve, Monog. Melania, sp. 414. Binney, Check List, No. 209.

Melania plebeia, Anthony, Brot, List, p. 38.

Melania brunnea, Anthony, Ann. N. Y. Lyc. Nat. Hist., vi, p. 92, t. 2, f. 10, March, 1854. Binney, Check List, No. 41. Brot, List, p. 39. Reeve, Monog. Melania, sp. 319.

Melania Paula, Anthony, Brot, List, p. 40.

Description.—Shell smooth, conical, somewhat thick, dark horn-colored; sutures impressed; whorls somewhat convex; aperture rather large, somewhat rounded, within bluish.

Habitat.—Tennessee; Dr. Troost.

Diameter, ·40 of an inch; length, 1·02 inches.

Observations.—The whole of five individuals before me have the apex decollate. This species closely resembles the *Ocoeënsis*, herein described. It is, however, larger in the aperture, which is more rotund, and the species seems to be larger.—*Lea.*

Fig. 514.

The following are synonymes:—

Melania plebeius.—Shell small, rather solid, plain, truncated ovate-conical, reddish-brown; whorls three, flattened, the last large, ventricose, subangulated; sutures well impressed, aperture large, ovate; lip dilated anteriorly, scarcely sinuated posteriorly; columella white or stained with red.

Fig. 515. Fig. 516.

Fig. 517. Fig. 518.

Habitat.—Saline Co., Arkansas.

Observations.—A small, apparently variable species, without any attractive characters. The angle around the last whorl is more or less marked, or even wanting. Small specimens appear to be much like *M. Nicklinianа.*—*Anthony.*

The figures are from type specimens.

Melania brunnea, Anth., is characterized from thinner and better grown specimens of this shell. *M. paula*, Anth., (unpublished) is the young, not yet half grown. The species resembles somewhat *M. iostoma*, Anth., and Mr. Lea believes them to be identical, but as it appears to me *iostoma* is darker, and a little more angulate at the periphery. *M. Nickliniana* is smaller, wider, with spire more truncate. The following is the description of

Melania brunnea.—Shell elongate-ovate, smooth, thin, brown; spire obtusely elevated; whorls six, nearly flat; body-whorl convex, sometimes three-banded; sutures irregularly but decidedly impressed; aperture large, broad, elliptical, within whitish, or tinted with reddish; columella somewhat indented below the middle, and forming a very small sinus at base.

Fig. 519.

Habitat.—Alabama.

Diameter, ·32 (8 millim.); length, ·76 of an inch (20 millim.) Length of aperture, ·37 (9 millim.); breadth of aperture, ·23 of an inch (6 millim.).

Observations.—A smooth, fine species, with no very prominent characters. May be compared with *M. perfusca*, Lea, but is less

cylindrical, and much less ponderous; the whorls are also more convex, and the sutures more distinctly impressed; it is altogether a broader and thinner shell. Some specimens are finely banded, the lower band being often concealed partially by the revolutions of the succeeding whorl. The body-whorl has three bands in the *variety*, and these also appear within the aperture. All the specimens before me, some fifty in number, are more or less decollate, and only two or three are banded.— *Anthony.*

Melania perfusca.— Shell smooth, conical, rather thick, dark brown; spire exserted; sutures linear; whorls rather flattened; aperture large, inflated, ovate, within pale purple.

Fig. 520.

Habitat.— Calf-killer Creek, Tennessee.

Diameter, ·50 of an inch; length, 1 inch.

Observations.— A single specimen, with the spire truncate, is before me. The lower portion is perfect. The apex being destroyed the number of whorls cannot be ascertained. The aperture is, I presume, rather more than one-third the length of the shell. The lower part of the margin protrudes considerably. It seems to be nearly allied to *M. ebenum* (nobis), but is a larger shell, more inflated, and has a larger aperture, being less elliptical.— *Lea.*

Melania incurta.— Shell somewhat pyramidally conical, yellowish-olive; whorls smooth, slopingly contracted round the upper part, then rounded; aperture ovate; columella reflected, slightly sinuated at the base.

Fig. 521.

(Anthony, manuscript in Museum Cuming).

Habitat.— United States.

Observations.— All I can say of this shell is, that it is in Mr. Cuming's cabinet with the above name in manuscript, alleged to have been received from Mr. Anthony.— *Reeve.*

An extensive suite of specimens, which I have had before me, through the kindness of Messrs. Gould and Haldeman proves the identity of the above described species, the variation of form being very great.

171. G. castanea, Lea.

Melania castanea, Lea, Philos. Proc., ii, p. 11. Philos. Trans., viii, p. 164, t. 5, f. 2. Obs., iii, p. 2. DeKay, Moll. N. Y., p. 92. Troost, Cat. Shells Tennessee. Wheatley, Cat. Shells U.S., p. 21. Reeve, Monog. Melania, sp. 337.

Description.— Shell smooth, club-shaped, rather thin, dark brown;

spire elevated, carinate towards the apex; sutures small; whorls eight, somewhat convex; aperture small, elliptical, purple.

Habitat.— Maury County, Tennessee; Thomas R. Dutton.

Diameter, ·25; length, ·67 of an inch.

Observations.— This species is remarkable for its club-shaped form. It differs from the *clavæformis* herein described, in having a less pointed apex, in being a smaller species, and in being of a darker color. The first three or four whorls are carinate, and disposed also to be striate and plicate. The aperture is about one-third the length of the shell. The three individuals before me are entirely purple inside, and this gives a very dark appearance to the shell.— *Lea.*

Fig. 522.

172. G. clavæformis, Lea.

Melania clavæformis, Lea, Philos. Proc., ii, p. 12, Feb., 1841. Philos. Trans., viii, p. 168, t. 5, f. 10. Obs., iii, p. 6. DeKay, Moll. N. Y., p. 93. Jay, Cat., 4th edit., p. 273. Troost, Cat. Shells Tennessee. Wheatley, Cat. Shells U.S., p. 25. Reeve, Monog. Melania, sp. 396. Binney, Check List, No. 57. Catlow, Conch. Nomenc., p. 186. Brot, List, p. 37.

Description.— Shell smooth, club-shaped, rather thin, chestnut-brown, shining; spire acute; sutures somewhat impressed; whorls eight, convex; aperture elongated, light purple.

Fig. 523.

Habitat.— Ocoee District and Clinch River, Tennessee.

Diameter, ·27; length, ·67 of an inch.

Observations.— The aperture is about one-third the length of the shell. In color it differs from most species.— *Lea.*

173. G. adusta, Anthony.

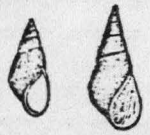
Melania adusta, Anthony, Proc. Acad. Nat. Sci., p. 55, Feb., 1860. Binney, Check List, No. 2. Brot, List, p. 37. Reeve, Monog. Melania, sp. 338.
Melania funebralis, Anthony, Proc. Acad. Nat. Sci., p. 56, Feb., 1860. Binney, Check List, No. 114. Brot, List, p. 38. Reeve, Monog. Melania, sp. 372.
Goniobasis Cumberlandiensis, Lea, Proc. Acad. Nat. Sci., p. 135, May, 1861.

Description.— Shell conical, smooth, shining; color dark brown, with a pale line near the sutures; whorls 7–8, flat; body-whorl rather large, subangulated, and with somewhat coarse lines of growth; sutures distinct, but not remarkable; aperture ovate, dark purple within; outer lip curved; columella deeply rounded, a broad sinus at base.

Habitat.— Tennessee.

Observations.—A neat, pretty species, of rather plain appearance. Compared with *M. gracilior* (nobis), it is broader, shorter, and of darker color; the broad, deep cincture on the body-whorl and beautiful red bands in the interior, so conspicuous in *M. gracilior*, are also wanting. From *athleta* it differs by its shorter, more acute form, and by the absence of folds. It is less slender than *M. viridula*. —*Anthony.*

Fig. 524. Fig. 525.



Melania funebralis.—Shell conic, smooth, solid, of a dark chestnut color; spire elevated and generally abruptly truncate; whorls from 3–5 only remaining, slightly convex; aperture ovate, within bluish; columella white, tinged occasionally with purple; sinus small.

Habitat.—Tennessee.

Observations.—A very neat, pretty species with no very decided character to distinguish it from allied species. May be compared with *M. brevispira* (nobis), but is far more solid in its texture, of a darker color, and its surface is more polished and shining; much less slender too than *brevispira*, and that species is never so abruptly decollate. It appears to be an abundant species.—*Anthony.*

Fig. 527. Fig. 526.

This species is narrower and more elongated than the typical form, *M. adusta*, and has not the yellowish, sutural band of that species.

Goniobasis Cumberlandiensis.—Shell smooth, acuminately conoidal, rather thin, reddish-brown; spire somewhat elevated; sutures regularly impressed; whorls eight, slightly convex; aperture small, subrhomboidal, white or purple within; lip acute, slightly sinuous; columella white or purple, inflated and contorted.

Fig. 523.

Habitat.—Gap Spring, Cumberland Gap, Tennessee; Capt. Lyon: and Knoxville, Tennessee; William Spillman, M.D.—*Lea.*

174. G. furva, Lea.

Melania furva, Lea, Philos. Trans., x, p. 299, t. 30, f. 7. Obs., v, p. 55. Binney, Check List, No. 115. Brot, List, p. 38.

Description.—Shell smooth, conical, rather thick, dusky; spire rather elevated; sutures furrowed; whorls flattened: aperture small,

subrhomboidal, at the base angular, within purplish; columella purple and twisted.

Habitat.—Branch of Coosa River, Alabama.

Diameter, ·30; length, ·84 of an inch.

Observations.—A single specimen of this species was received from Prof. Brumby. It has the apex so much eroded as to present only a little more than three whorls, which are, however, perfect, and enable me to distinguish it from its allied species, the nearest of which is *M. arata* (nobis). The sutures have the same furrowed line, and the sides of the whorl are alike flattened. The aperture, however, differs in form and color. In the *arata* the columella is straight down to the channel at the base; in the *furva*, it is curved to the right and the channel is less marked. The length of the aperture, in perfect specimens, must be about one-third the length of the shell. The *Alexandrensis* (nobis) from Louisiana, is very closely allied to this species, and when perfect specimens of both shall be obtained, they may possibly be found to be the same.—*Lea.*

Fig. 528a

175. G. dubiosa, Lea.

Melania dubia, Lea, Philos. Proc., ii, p. 11, Feb., 1841.
Melania dubiosa, Lea, Philos. Trans., viii, p. 165, t. 5, f. 6. Obs., iii, p. 4. DeKay, Moll. N. Y., p. 93. Binney, Check List, No. 91. Troost, Cat. Shells Tennessee. Wheatley, Cat. Shells U. S., p. 25. Jay, Cat. 4th edit., p. 273. Catlow, Conch. Nomenc., p. 186. Brot, List, p. 37.
Goniobasis Estabrookii, Lea, Proc. Acad. Nat. Sci., p. 264, 1862. Jour. Acad. Nat. Sci., v, pt. 3, p. 238, t. 37, f. 131, March, 1863. Obs., ix, p. 120.

Description.—Shell smooth, conical, rather thin, horn-color; spire rather elevated; sutures linear; whorls seven, somewhat convex; aperture elliptical, small, subangular at the base, whitish.

Fig. 529.

Habitat.—Tennessee; Dr. Troost.

Diameter, ·30; length, ·75 of an inch.

Observations.—This is a rather small species, somewhat like *M. simplex*, Say, but seems to me to differ, in having a more elevated spire, and a smaller aperture. The aperture is rather more than one-third the length of the shell.—*Lea.*

Figured from Mr. Lea's plate. One or two specimens of this species are plicate on the first two or three whorls, but the plicæ are by no means characteristic of the species.

The following is a synonyme:—

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Goniobasis Estabrookii.— Shell smooth, conical, rather thin, reddish horn-color, without bands; spire attenuately conical, sharp-pointed; sutures impressed; whorls ten, somewhat convex; aperture rather small, ovate, whitish within; outer lip acute, slightly sinuous; columella bent in.

Operculum ovate, light brown, with the polar point to the left of the centre, towards the basal margin.

Habitat.—Knoxville, Tennessee; President Estabrook.

Diameter, ·34; length, ·89 of an inch.

Observations.— I received from President Estabrook nine specimens of this species. They were all covered with a black deposit of oxide of iron. This being removed, the epidermis was found to be smooth and shining, and of a reddish horn-color, inclining to yellow. It is very closely allied to *Melania* (*Goniobasis*) *dubiosa* (nobis), but differs in the aperture being slightly more constricted and in being rather longer, having one more whorl. It is also near to *castanea* (nobis), but is larger and not chestnut-brown. The aperture is about one-third the length of the shell. I dedicate this species to the late President Estabrook of Knoxville, Tennessee.— *Lea.*

Fig. 530.

176. G. interlineata, ANTHONY.

Goniobasis interlineata, ANTHONY, Am. Jour. Conch., vol. i, p. 36, t. 1, f. 3, Feb. 25, 1865.

Description.— Shell thin, elongate, slender, of a grayish horn-color, alternating with narrow, brown, hair-like lines, longitudinally and closely arranged; whorls 7–8, subconvex, smooth; sutures distinct; aperture small, elliptical, ashen gray within; columella regularly rounded, much curved at base, and with a faint indentation or notch where the outer lip meets it.

Fig. 531.

Habitat.— Christy Creek, Indiana.

Length of shell, ·62 of an inch. Length of aperture, ·25; breadth of aperture, ·15 of an inch.

Observations.— A most beautifully delicate, slender species, whose most prominent characteristic is indicated by its specific name. Upon a light grayish horn-colored surface we find narrow, brown, longitudinal lines, distinctly drawn. These are very conspicuous under the microscope, and appear to be slightly raised. It presents a general resemblance to *G. elata* (nobis) and *G. bicolorata*

(nobis), but its peculiarly varied exterior will at once distinguish it from either. I know of no other American species so marked.— *Anthony.*

I am pretty well satisfied that this is only a local variety of *semicarinata*, the thickened, deeper colored, longitudinal lines indicate periods of arrested growth.

177. G. lævigata, LEA.

Melania lævis, LEA, Philos. Proc., ii, p. 237, Dec., 1842. Philos. Trans., viii, p. 248. Obs., ii, p. 86.
Melania lævigata, LEA, Proc. Philos. Soc., ii, p. 237. Philos. Trans., vii, p. 165, t. 5, f. 3. Obs., iii, p. 3. WHEATLEY, Cat. Shells U. S., p. 25. CATLOW, Conch. Nomenc., p. 187. REEVE, Monog. Melania, sp. 459.
Potadoma lævigata, Lea, H. and A. ADAMS, Genera, i, p. 299.
Melania Leaii, BROT, List, p. 34.

Description.— Shell smooth, obtusely conical, rather thin, shining, yellowish; spire rather short, carinate towards the apex; sutures linear; whorls seven, rather convex; aperture rather large, elliptical, angular at base, whitish.

Fig. 532.

Habitat.— Alabama River at Claiborne; Judge Tait.

Diameter, ·25; length, ·55 of an inch.

Observations.—With the *M. Taitiana* herein described, came two specimens of this species, which differ from the *Taitiana* in the elevation of the spire, and the form and size of the aperture. In the most perfect specimen the columella and base are purplish. The aperture is more than one-third the length of the shell. The upper whorls are slightly carinate on their lower portions.—*Lea.*

Originally described as *lævis*, which was preoccupied. Dr. Brot proposed the name *Leaii* for this species, because *lævigata* is preoccupied in *Melania*, but in *Goniobasis* that name has not been previously used, and consequently stands good.

The figure is a copy of that given by Mr. Lea. I doubt whether this is more than an immature shell of *dubiosa*, Lea.

178. G. Ohioensis, LEA.

Goniobasis Ohioensis, LEA, Proc. Acad. Nat. Sci., p. 265, 1852. Jour. Acad. Nat. Sci., v, pt. 3, p. 306, t. 37, f. 144. Obs., ix, p. 123.

Description.— Shell smooth, conical, somewhat thin, without bands; spire obtusely conical, sharp pointed, carinate at the apex; sutures

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very much impressed; whorls about nine, convex; aperture small, somewhat rounded, white within; outer lip acute, scarcely sinuous; columella bent in, very much thickened.

Habitat.—Yellow Springs, Ohio.

Diameter, ·31; length, ·65 inch.

Observations.—Many years since two specimens of this species were brought by a member of my family from the Yellow Springs of Ohio, a much frequented watering place. They are both dead specimens, but are well preserved in form, while the epidermis has been entirely removed. The columella is remarkably thick, and the edge stands off from the whorls, displaying an impression at the axis amounting nearly to an umbilicus. It is nearly allied to *Grosvenorii* herein described, but may be distinguished in having a shorter spire, less impressed sutures, a thicker columella, and having an umbilical impression. The outer lip also is not so sinuous and the whorls are not so attenuate. It has its affinities to *Melania (Goniobasis) varicosa*, Ward, but has a different aperture and has no veins. The aperture is about two-sevenths the length of the shell.—*Lea.*

Fig. 533.

This species is probably not distinct from *semicarinata*, Say.

179. G. brevispira, ANTHONY.

Melania brevispira, ANTHONY, Bost. Proc., iii, p. 361, Dec., 1850. BINNEY, Check List, No. 39. JAY, Cat., 4th edit., p. 474. BROT, List, p. 37. REEVE, Monog. Melania, sp. 263.

Melasma brevispira, Anthony, ADAMS, Genera, i, p. 300.

Description.—Shell small, elongate, ovate, truncate, rather solid, plain, shining, brownish-green, paler at the sutures; whorls 4–5, convex, somewhat declining at the sutures: aperture ovate; lip dilated before, sinuated behind.

Fig. 534. Fig. 535.

Habitat.—Ohio.

Longitude, three-fifths; latitude, three-tenths poll.

Observations.—A small, plain species, with no very obvious, distinctive marks. It is allied to *M. plebejus*, but is rather more slender. It is usually much eroded.—*Anthony.*

180. G. semicarinata, SAY.

Melania semicarinata, Say, New Harmony Disseminator, p. 261. Reprint, p. 16. American Conchology, Part 5, t. 47, f. 4. BINNEY'S Reprint, p. 142, 200. BINNEY, Check List, No. 240. DEKAY, Moll. N. Y., p. 100. REEVE, Monog. Melania, sp. 368. WHEATLEY, Cat. Shells U. S., p. 27. JAY, Cat. Shells, 4th edit., p. 275. CATLOW, Conch. Nomenc., p. 188. BROT, List, p. 38. KENNICOTT, Trans. Ills. State Ag. Soc. p. 595.

Melania angustispira, ANTHONY. Proc. Acad. Nat. Sci., p. 55, Feb., 1860. BINNEY, Check List, No. 16. BROT, List, p. 37.

Melania angusta, Anthony, REEVE, Monog. Melania, sp. 359.

Melania exilis, HALDEMAN, Suppl. to No. I Monog. Limniades, Oct., 1840.

Juga exilis, Haldeman, ADAMS, Genera, i, p. 304.

Melania rufula, HALDEMAN, Monog. Limniades, No. 2, p. 3 of Cover, January, 1841, BINNEY, Check List, No. 234. BROT, List, p. 39.

Melania Kirtlandiana, LEA, Philos. Proc., ii, p. 11, Feb., 1841. Philos. Trans., viii, p. 165, t. 5, f. 4. Obs., iii, p. 3. ANTHONY, Cat., 1st edit. HIGGINS, Cat. DEKAY, Moll. N. Y., p. 92. WHEATLEY, Cat. Shells U. S., p. 25. REEVE, Monog. Melania, sp. 361. BINNEY, Check List, No. 155. BROT, List, p. 36. CATLOW, Conch. Nomenc., p. 187.

Ceriphasia Kirtlandiana, ADAMS, Genera, i, p. 297.

Melania Kirtlandia, LEA, Philippi, Beschreib, Neuer, Conchyl. Melania, t. 3, f. 8.

Melania elata, ANTHONY, Bost. Proc., iii, p. 362, Dec., 1850. BINNEY, Check List, No. 95. BROT, List, p. 37. REEVE, Monog. Melania, sp. 331.

Melania bicolorata, ANTHONY, Bost. Proc., iii, p. 361, Dec., 1850. BINNEY, Check List, No. 32. BROT, List, p. 38.

Melania bicolor, Anthony, REEVE, Monog. Melania, sp. 265.

Melania inornata, ANTHONY, Bost. Proc., iii, p. 360. Dec., 1850.

Potadoma inornatus, ADAMS, Genera, i, p. 299.

Melania succinulata, ANTHONY, Bost. Proc., iii, p. 363, Dec., 1850. BINNEY, Check List, No. 238. BROT, List, p. 39.

Melana varicosa, Ward, HALDEMAN, Monog. Limniades, Part iii, p. 3 of Cover, March 13, 1854. ANTHONY, List, 1st and 2d editions. JAY, Cat., 4th edit., p. 275. BINNEY, Check List, No. 234. CATLOW, Conch. Nomenc., p. 189.

Melania livida, REEVE, Monog. Melania, sp. 434. BROT, List, p. 30.

Goniobasis Grosvenorii, LEA, Proc. Acad. Nat. Sci., p. 263, 1862. Jour. Acad. Nat. Sci., v, pt. 3, p. 297, t. 37, f. 128, March, 1863. Obs., ix, p. 119.

Melania Babylonica, LEA, Philos. Proc., ii, p. 14, Feb., 1841. Philos. Trans., viii, p. 183, t. 6, f. 43. Obs., iii, p. 21. DEKAY, Moll., N. Y., p. 98. WHEATLEY, Cat. Shells U. S., p. 24. BINNEY, Check List, No. 26. CATLOW, Conch. Nomenc., p. 185. BROT, List, p. 36.

Description.—Shell small, conic, turreted; spire acute at the apex, the four apical volutions carinate below; volutions about eight, somewhat convex; suture moderately impressed; surface, especially of the body-whorl, slightly wrinkled; labrum a little prominent near the base; within slightly tinged with reddish-brown.

Fig. 538. Fig. 537. Fig. 536.

Observations.—This pretty little species occurred in great numbers in a small stream in Kentucky. It may be distinguished from our other species by its small size, combined with the existence of a cari-

nated line only formed in its immature state; having increased to four or five volutions the carina is no longer formed.— *Say.*

The following are synonymes:—

Melania exilis.— Shell long and slender, composed of about eight convex whorls; apex pointed; suture deep; aperture narrow, elliptic, equally curved on both sides; labrum much advanced anteriorly.

Habitat.— Kentucky and Ohio.

Length, ¾ of an inch.

Observations.— More slender than *M. simplex*, Say.— *Haldeman.*

Melania rufula.— Shell lengthened, conical, composed of eight whorls, the four anterior of which are convex, and those of the apex flat; suture well marked; spire twice the length of the aperture; apex suddenly tapered to a point; aperture ovate, elliptic.

Fig. 539.

Habitat.— Lake Pepin.

Length, 1 inch.

Observations.—Distinguished from *M. simplex* by having the peritreme level, and from *M. Virginica* by the flattened apex.— *Haldeman.*

Melania Kirtlandiana.— Shell smooth, acutely conical, rather thick, shining, horn-colored; spire elevated towards the apex, carinate; sutures impressed; whorls nine, rather convex; aperture small, elliptical, whitish.

Fig. 540.

Habitat.— Richmond, Indiana: Duck Creek near Cincinnati and Miami, Ohio: Little Miami.

Diameter, ·30; length, ·87 of an inch.

Observations.— This is a finely formed, graceful species, with an indistinct carina on the lower part of the whorls, near the apex. The aperture is nearly one-third the length of the shell. I name it after Professor Kirtland of Poland, Ohio.—*Lea.*

Fig. 541.

Melania inornata.— Shell moderate in size, rather solid, ovately lanceolate, simple, yellowish-green, deeper below, and paler at the sutures; whorls eight, the apical ones carinate, the last equal to two-fifths the length of the shell. Aperture a third of the total length, narrowly lunate, subacute before produced; columella narrow, white, with a callus in front.

Habitat.— Lorrain County, Ohio.

Longitude, seven-eighths; latitude, three-tenths poll.

Observations.—A simple species like *M. simplex* and *M. gracilis.* Its pale, sutural region is perhaps its most obvious character.—*Anthony.*

Melania bicolorata.— Shell small, slender, brownish-green, at the sutures flavescent; whorls 6–7, flattened, encircled above with narrow lines, the last expanded in front. Aperture ovate; lip dilated in front, sinuate behind; tinged with pink.

Fig. 542.

Habitat.— Camp Creek, near Madison, Indiana.

Longitude, ⅛; latitude, ¼ poll.

Observations.— An unadorned species, rather remarkable for its elongated, slender form, and well rounded whorls. It comes near *M. exilis* and *M. terebralis* having the lip threaded as in these species.— *Anthony.*

Melania elata.— Shell thin, gracile, elongate, light horn-color, paler at the sutures; whorls 8–9, rather flat, carinate above; aperture ovate, effused before; columella thin.

Fig. 543.

Habitat.— Maumee River, Ohio.

Longitude, one; latitude, three-tenths poll.

Observations.— A plain, slender species of an unusually pale color. The whorls vary much in obliquity and convexity. It is similar in many respects to *M. bicolorata.*— *Anthony.*

Melania succinulata.— Shell elongate, acuminate, ovately conical, thin, plain, pinkish, horn-colored; whorls 7–10, rather convex, the apical ones carinate at the sutures, the last equalling two-thirds the length of the shell, subattenuate in front; aperture narrow, ovate, contorted, somewhat dilated in front.

Habitat.— Ohio.

Length, ⅜; width, ¼ of an inch.

Observations.— A smooth, delicate species, much thinner than usual, and when well cleaned nearly as transparent and amber-colored as a *succinea.* It may be compared with *M. clavæformis.*—*Anthony.*

Fig. 544.

Melania varicosa.— Shell olivaceous, conical, with seven convex whorls, flattened at the apex; later whorls marked with thick, varicose lines; aperture elliptic.

Habitat.— Ohio.

Length, ¾ of an inch.

Observations.— Allied to, but less slender than, *M. exilis.* It may prove to be a variety of *M. rufula*, Hald.— *Haldeman.*

Melania angustispira.— Shell thick, elongate, very slender; color reddish-brown, with a narrow, pale line at the suture; whorls 9–10,

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lower ones subconvex, smooth, upper ones flattened and carinate near their bases; sutures slight; aperture narrow, ovate, within pale purple; columella regularly curved; sinus not remarkable. Fig. 545.

Habitat.— Tennessee.

Observations.— May be compared with *M. exilis*, Hald., than which it is more slender, more attenuate and of more solid texture; its color is also entirely different, being more like *M. Warderiana*, Lea, but wanting the peculiar, bulbous form of that species. The carinations do not extend to the three lower whorls; upon these they are entirely wanting. It is a peculiarly slender and graceful species.— *Anthony.*

Goniobasis Grosvenorii.— Shell smooth, subattenuate, thin, horn-color, bright without bands; spire subattenuate, pointed, carinate at the apex; sutures regularly and very much impressed; whorls eight, Fig. 546. convex; aperture small, subrotund, white within; outer lip acute, slightly sinuous; columella bent in, thin and contorted.

Habitat.—Fox River, Illinois; H. C. Grosvenor: and Quincy, Ohio; J. Clark.

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

Observations.—I have about a dozen specimens from Quincy, and one from Fox River. The former are fresh, and of a dark horn-color. The latter is whitish and probably bleached, being evidently a dead shell. It is allied to *M. varicosa*, Ward, and is very much the same outline and size, but it has no veins and has no light line below the sutures. The aperture is not quite one-third the length of the shell. I name it after Mr. Grosvenor, to whom I am indebted for the specimen from Fox River, and many other species.— *Lea.*

Messrs. Anthony and Haldeman's species, described above, are all figured from their types. Mr. Lea's are copies from his plates. The shells indicated by the above several descriptions embrace very great variety in form and convexity of the whorls, still I cannot, with several thousand specimens before me, ascertain the dividing line, they all seem to merge together.

With regard to *exilis*, Hald., there is no doubt of the type belonging to this species, but a very narrow, elongated form, of many flattened whorls, has received the name *exilis* in most of our collections, although it does not at all resemble the type, but is a new species, *G. Haldemani* (nobis). *G. semicarinata* is found in Kentucky, Tennessee and in all the North-

western States and is everywhere within their limits, a very abundant species.

I also add the following to the synonymy of this species; the description is drawn up from a single specimen, a scalariform monstrosity :—

Melania Babylonica.— Shell carinate, turreted, rather thick; spire rather elevated, striate at the apex; sutures impressed; whorls seven, Fig. 547. angular above; aperture rather large, elliptical, white.

Habitat.— Yellow Springs, Green Co., Ohio.

Diameter, ·36; length, ·78 of an inch.

Observations.— A single specimen only of this shell has come under my notice. If the prominent character of this specimen, the large carina on the superior part of the whorls, be persistent, it marks a very distinct species. On the first four whorls the striæ are well defined. On the remaining three the carina alone exists. The aperture is more than one-third the length of the shell.— *Lea.*

181. G. Haldemani, Tryon.

Goniobasis Haldemani, Tryon, Am. Journ. Conch., i, p. 38, t. 1, f. 8, Feb. 25, 1865.
Melania acuta, Lea, Bell, Canadian Nat., iv, pt. 3, p. 213. Lewis, Bost. Proc., vi, p. 2.
Melania exilis, Haldeman, Adams, Moll. Vermont.

Description.— Shell narrowly elongated; whorls nine, smooth, flat, the last subangulated at the periphery; aperture small, suorhomboidal; lip slightly sinuous; columella incurved; color light horn, not banded, yellowish within.

Habitat.— Lake Erie; Lake Champlain.

Diameter, ¼ of an inch; length, 1 inch.

Observations.— Resembles *P. elevatum*, Say, but differs in the aperture, is still more narrowly elongated, and the whorls more Fig. 547a. flattened, and is entirely without striæ. In this last respect it differs widely from that species, and much resembles *P. Conradi* (nobis). This species has long been known in our cabinets as *G. exilis*, of Haldeman, but does not resemble that species in the remotest degree, as *exilis* is wider, with more convex whorls, and a larger aperture.— *Tryon.*

182. G. informis, LEA.

Goniobasis informis, LEA, Proc. Acad. Nat. Sci., p. 154, May, 1863. Obs., xi, p. 92, t. 23, f. 41.

Description.— Shell smooth, cylindrico-conical, dark horn-color, without bands; spire somewhat elevated; sutures irregularly impressed; whorls about seven, impressed in the middle; aperture rather small, nearly ovate, whitish within; outer lip acute, very sinuous; columella white and very much twisted.

Habitat.— Fall of the Ohio at Louisville, Ky.; W. H. DeCamp, M.D.

Diameter, ·19; length, ·60 of an inch.

Observations.— Only two specimens were sent to me by Mr. Currier, one of which is only about half-grown. It is very different Fig. 547*b*. from any species I have seen, having the appearance of being deformed by the impressed or constricted middle of the whorl. The bulging of the shoulder immediately below the suture has a corresponding thickening within. The outer lip is very much incurved above the middle of the whorl at the impressed portion of it. The aperture is nearly one-third the length of the shell.— *Lea*.

183. G. vittatella, LEA.

Goniobasis vittatella, LEA, Proc. Acad. Nat. Sci., p. 155, May, 1863. Obs., xi, t. 23, f. 38.

Description.— Shell smooth or subcarinate, conical, dark brown, single-banded; spire somewhat acuminate; sutures linear; whorls eight, flattened; aperture small, subrhomboidal, dark within; outer Fig. 548. lip acute, somewhat sinuous; columella bent in and twisted.

Habitat.— Cumberland Gap, East Tennessee; Major S. S. Lyon, U. S. A.

Diameter, ·20; length, ·55 of an inch.

Observations.— This is a pretty little species when perfect, but most of the specimens sent were imperfect, and covered with vegetable and mineral substances difficult to remove. There is a small, light band on the upper part of the whorls immediately below the suture, which is more or less visible on all the specimens before me, some of which have a carina on the upper terminal whorls. In outline and size it is near to *Melania* (*Goniobasis*) *glabra* (nobis), but

it is more slender, and that species has no band. The aperture is about three-tenths the length of the shell.— *Lea*.

184. G. Alexandrensis, LEA.

Melania Alexandrensis, LEA, Philos. Proc., iv, p. 167. Philos. Trans., x, p. 61, t. 9, f. 37. Obs., iv, p. 61. BINNEY, Check List, No. 8. BROT, List, p. 37.
Ceriphasia Alexandrensis, Lea, ADAMS, Genera, i, p. 297.

Description.— Shell smooth, rather acutely conical, rather thin, dark horn-color; spire rather elevated; sutures somewhat impressed; whorls rather flattened; aperture small and somewhat trapezoidal; within whitish.

Habitat.— Alexandria, Louisiana.

Diameter, ·22; length, ·58 of an inch.

Observations.— There were only two of this species which came Fig. 549. from Dr. Hale. It closely resembles the *Haleiana*, herein described, but has a less elevated spire, and the aperture differs in being somewhat auger-shaped, the outer lip being more sinuous. The apex of each being broken, the number of whorls cannot be ascertained. The aperture is rather more than a fourth of the length of the shell.— *Lea*.

Figured from Mr. Lea's plate.

185. G. Haleiana, LEA.

Melania Haleiana, LEA, Philos. Proc., iv, p. 167, Aug., 1845. Philos. Trans., x, p. 60, t. 9, f. 35. Obs., iv, p. 60. BINNEY, Check List, No. 134. REEVE, Monog. Melania, sp. 406.
Ceriphasia Haleiana, Lea, ADAMS, Genera, i, p. 297.

Description.— Shell smooth, acutely conical, rather thin, yellowish horn-color, polished; spire elevated; sutures impressed; whorls nine, convex; aperture small, ovate, at the base angular, within Fig. 550. whitish.

Habitat.— Alexandria, Louisiana.

Diameter, ·17; length, ·64 of an inch.

Observations.— Among some fifty specimens of small *Melaniæ* sent by Dr. Hale, I found three species, nearly the whole, however, being of the above described. It has no very distinctive character, but cannot be placed with any species with which I am

acquainted. It resembles some of the young varieties of *M. Virginica*, Say, but has the whorls more convex, and the aperture smaller. Four or five specimens are banded, and these have uniformly two bands, the inferior one being larger and much more distinctly marked. The first few whorls of the apex are carinate. The aperture is about one-fourth the length of the shell.— *Lea.*

The figure given by Reeve is perhaps the same as *Haleiana*, but differs considerably.

186. G. rubella, LEA.

Goniobasis rubella, LEA, Proc. Acad. Nat. Sci., p. 270, 1832. Jour. Acad. Nat. Sci., v, pt. 3, p. 332, t. 38, f. 191, March, 1863. Obs., ix, p. 151.

Description.— Shell carinate, awl-shaped, rather thin, reddish, without bands; spire attenuate; sutures very much impressed; whorls eight, somewhat convex; aperture very small, subrhomboidal, whitish or reddish within; outer lip acute, sinuous; columella slightly bent in and twisted.

Habitat.— Near Murphy, Cherokee County, North Carolina; Prof. Christy.

Diameter, ·23; length, ·68 of an inch.

Observations.— I have eight specimens before me, sent some years since by my late friend, Mr. Clark, being part of the collection made by Professor Christy. In form and size this species is very near to *Melania* (*Goniobasis*) *teres* (nobis), but it differs in being carinate, and having striæ which in all the specimens reach more than half way down from the apex. *Teres* is not striate. In the aperture there is also a difference. The aperture is about two-sevenths the length of the shell.— *Lea.*

Fig. 551.

187. G. spinella, LEA.

Goniobasis spinella, LEA, Proc. Acad. Nat. Sci., p. 264, 1862. Jour. Acad. Nat., Sci., p. 264, 1862. Jour. Acad. Nat. Sci., v, pt. 3, p. 298, t. 37, f. 130, March, 1863. Obs., ix, p. 120.

Description.— Shell smooth, very much attenuate, thin, dark olive, without bands; spire very much raised, sharp-pointed; sutures regularly impressed; whorls about nine, flattened; aperture very small, ovate, whitish within; outer lip acute, slightly sinuous; columella bent in and slightly thickened below.

Habitat.— Sycamore, Claiborne County, Tennessee; J. Lewis, M.D.

Diameter, ·20; length, ·67 of an inch.

Observations.— A single specimen only was received from Dr. Lewis. It is nearly of the size of *Melania* (*Goniobasis*) *terebralis* (nobis), but is a slimmer and darker colored species. It is very nearly of the same outline of *Melania* (*Goniobasis*) *strigosa* (nobis), but much smaller, slimmer and darker color. The specimen before me has neither folds nor angle on the apical whorls. Below the sutures there is a line of a lighter green. The aperture is about one-fifth the length of the shell.— *Lea.*

Fig. 552.

Of a large number before me many specimens have folds and the upper whorls angular.

188. G. Draytonii, LEA.

Goniobasis Draytonii, LEA, Proc. Acad. Nat. Sci., p. 264, 1862. Jour. Acad. Nat. Sci., v, pt. 3, p. 300, t. 37, f. 134, March, 1863. Obs., ix, p. 122.
Goniobasis nigrina, LEA, Proc. Acad. Nat. Sci., p. 263, 1862. Jour. Acad. Nat. Sci., v, pt. 3, p. 299, t. 37, f. 133. Obs. ix, p. 121.

Description.— Shell smooth, conoidal, somewhat thick, dark chestnut-brown, without bands, or obscurely banded; spire somewhat raised; sutures very much impressed; whorls about six, convex; aperture small, ovate, dark brown within; outer lip acute, slightly sinuous; columella very much bent in and twisted.

Operculum subrotund, thin, light brown, with the polar point well towards the middle on the left.

Habitat.— Fort George, Oregon; J. Drayton: also at Walla.

Diameter, ·27; length, ·68 of an inch.

Observations.— A number of these specimens were sent to me by Professor J. Henry, Secretary of the Smithsonian Institution, having been collected by the late Mr. Drayton, and to his memory I dedicate it. It is allied to *Melania* (*Goniobasis*) *nigrina* (nobis), but it is not so polished and is a much thicker shell. Some of the specimens before me have a thickened outer lip, with a lighter margin. The deep color within is made by broad, obscure bands. Some of the specimens have a white thickening in the interior at the base, and some have a lighter brown mark on the exterior at the base of the axis.—*Lea.*

Fig. 553.

Goniobasis nigrina.— Shell smooth, small, conical, rather thin, nearly black, polished; spire somewhat elevated; sutures impressed;

whorls regularly convex; aperture small, ovate, angular above, dark purple within; columella incurved, purple.

Operculum dark brown, the polar point being low down and near to the left margin.

Habitat.— Clear Creek, Shasta County, California; Dr. Trask.

Diameter, ·23; length, ·67 of an inch.

Observations.— A number of good specimens with their opercula were sent to me by Dr. Trask. In form, size and color, this species is very like to *Melania semicarinata*, Say, from Georgia and South Carolina. It may be distinguished at once by not having the carination of that species which is usually strongly marked. It is not quite so high in the spire, and the aperture is more rounded at the base. In all the specimens of *nigrina* which I received, the apex is worn off. In the half-grown ones I can see no disposition to carination or plication in the upper whorls. I should suppose that in perfect specimens, the number of whorls would be found to be about seven, and that the aperture would be about the third of the length of the shell. In some of the specimens there is a disposition to put on a few, fine striæ, and in most of them there is a very small angular line running below the suture. I am not acquainted with Dr. Gould's *Melania silicula* and *bulbosa* from Oregon, described in the Proc. Boston Soc. Nat. Hist., July, 1847; but from the descriptions, I have no doubt that they are different from both species herein described.—*Lea.*

Fig. 554.

189. G. proxima, Say.

Melania proxima, Say, Jour. Acad. Nat. Sci., p. 126, Sept., 1825. Binney's edit. of Say, p. 115. Binney, Check List, No. 220. DeKay, Moll. N. Y., p. 99. Wheatley, Cat. Shells U. S., p. 26. Gibbes' Report, p. 19. Jay, Cat., 4th edit., p. 274. Brot, List, p. 38.

Juga proxima, Say, Adams, Genera, i, p. 304.

Melania carinata, Ravenel, Cat., p. 11, 1834. Wheatley, Cat. Shells U. S., p. 24. Binney, Check List, No. 47.

Melania Taitiana, Lea, Philos. Proc., ii, p. 11, Feb., 1841. Philos. Trans., viii, p. 165, t. 5, f. 5. Obs., iii, p. 3. DeKay, Moll. N. Y., p. 92. Wheatley, Cat. Shells U. S., p. 27. Jay, Cat., 4th edit., p. 275. Binney, Check List, No. 234. Catlow, Conch. Nomenc., p. 189. Reeve, Monog. Melania, sp. 444. Brot, List, p. 37.

Melania approximata, Haldeman, Monog. Limniades, No. 4, p. 4 of Cover, Dec., 28, 1841. Jay, Cat., 4th edit., p. 272. Binney, Check List, No. 18. Brot, List, p. 36.

Melania abjecta, Haldeman, Reeve, Monog. Melania, sp. 341. Brot, List, p. 34.

Goniobasis rubricata, Lea, Proc. Acad. Nat. Sci., p. 271, 1862. Jour. Acad. Nat. Sci., v, pt. 3, p. 335, t. 38, f. 197. Obs., ix, p. 157, t. 38, f. 197.

Description.— Shell conic, rather slender, black, gradually attenuated to the truncated apex; suture moderately impressed; aperture longitudinal within, milk-white; labrum with the edge not undulated, or but very slightly and obtusely so near the superior termination.

Length to the truncated apex, nearly three-fifths; greatest breadth less than ½ of an inch.

Observations.— Professor Vanuxem obtained this species in a small brook, which discharges into the Catawba River, near Landsford, Chester district, South Carolina, and also in the Warm Springs, Buncombe County, North Carolina, and in the French Broad River of the same County. It resembles the preceding very closely (*simplex*, Say), but is decidedly more slender, and like that shell it has two elevated lines on the inferior margin of the terminal whorls. The interior of the aperture in many specimens is of a dull reddish color, and in some the same part exhibits the appearance of two or three obsolete bands. Another variety, which Mr. Vanuxem obtained from a limestone spring near Broad River, Spartanburg district, South Carolina, is of a pale horn color. In a stream of the Saluda range of mountains near Mill Gap in Rutherford County, he found another variety of a somewhat smaller size, tinged with reddish-brown, and generally distinctly banded within the aperture; one of these specimens is very remarkably truncated, presenting only about one whorl and a quarter. The same variety also inhabits a brook near the Table Rock. A variety, which seems to differ from the latter only in size, was found by Mr. Vanuxem, near Douthard's Gap of the Saluda mountains; the largest specimen he sent from that locality is only about three-tenths of an inch long.— *Say.*

Fig. 555.

Dr. Jay quotes *carinata*, Rav., as a variety, and I therefore include it in the synonymy of *proxima*. *Carinata* has not been described, nor have I seen an authentic specimen.

All of the following species are believed to be synonymes, giving this species a very wide range; I doubt, however, whether *abjecta* really inhabits Arkansas. The species does not vary much in form and is easily recognizable. It will be seen that the color and ornamentation, however, vary considerably.

The following are the descriptions of the synonymes:—

Melania approxima.— Shell lengthened, conical, tapering gradually

to the truncated apex; upper whorls carinated; aperture ovate, tinted with pink; color light brown, with two dark reddish, approximate, narrow, revolving lines.

Fig. 556.

Fig. 557.

Fig. 558.

Habitat.— Tennessee.

Length, ½ an inch.—*Haldeman.*

Melania abjecta, Haldeman.

Goniobasis rubricata.— Shell carinate, conical, rather thin, reddish-brown, polished, without bands; spire somewhat raised; sutures very much impressed; whorls about seven, convex; aperture rather large, rhomboidal, pale reddish within; outer lip acute, scarcely sinuous; columella bent in, somewhat thickened.

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

Habitat.— Tennessee; Professor Troost.

Diameter, ·29; length, ·71 of an inch.

Observations.— These specimens sent to me long since by the late Professor Troost are nearly all truncate. I formerly considered them a variety of *Melania* (*Goniobasis*) *proxima*, Say, but it is a larger species, more exserted, and has a peculiar appearance in the whorls of the spire assimilating to a coiled rope. Several young specimens are perfect to the apex, which shows that all are more or less carinate, but very obtusely so. The decollate specimens have no appearance of a carina on the lower whorls. All the specimens were covered with the black oxide of iron, which being removed, the epidermis is found to be smooth, polished and bright reddish-brown. Usually the upper part of the whorl is slightly impressed, which gives to the curve of the whorl a peculiar form. The columella is usually light brown, and some specimens have a whiteness about the middle portion. The aperture is about two-sevenths the length of the shell.— *Lea.*

Fig. 559.

Fig. 560. *Melania Taitiana.*— Shell smooth, conical, rather thin, shining, horn-color; spire truncate, carinate towards the apex; sutures impressed; whorls rather convex; aperture small, elliptical, subangular at base, whitish.

Habitat.— Alabama River, Claiborne; Judge Tait.

Diameter, ·25; length, ·80 of an inch.

Observations.— Several years previously to the death of my friend, Judge Tait, he sent me a number of this species, which in form

resembles *M. blanda*, described herein. Most of them are without bands; some, however, are finely banded, and all are mutilated at the apex. I dedicate this species to my lamented friend, to whose kindness I owe so many beautiful and interesting objects in the natural history and geology of Alabama.— *Lea.*

190. G. rufescens, Lea.

Melania rufa, Lea, Philos. Proc., ii. p. 12, Feb., 1841. Philos. Trans., viii, p. 167, t. 5, f. 8. Obs., iii, p. 5. Troost, Cat. Shells Tennessee. Wheatley, Cat. Shells U. S., p. 26. Catlow, Conch. Nomenc., p. 188.

Melania rufescens, Lea, DeKay, Moll. N. Y., p. 93. Jay, Cat., 4th edit., p. 274. Binney, Check List, No. 233. Brot, List, p. 37.

Potadoma rufescens, Lea, Adams, Genera, i, p. 299.

Description.— Shell smooth, turreted, rather thin; shining, dark red; spire elevated; sutures impressed; whorls convex, towards the apex carinate; aperture small, elliptical, subangular below, within purplish.

Fig. 561.

Habitat.— Mamma's Creek, Tennessee; S. M. Edgar.

Diameter, ·30; length, ·85 of an inch.

Observations.— In form this species resembles *M. teres*, herein described. It differs in the color being red, and in being carinate on the superior whorls. The most perfect specimen in my possession has the first few whorls broken; I should suppose a perfect one would have eight whorls, and the aperture be one-fourth the length of the shell.— *Lea.*

This species is longer, narrower and darker colored than Tennessee specimens of the preceding species.

I. *Striate species, spire elevated.*

191. G. Virginica, Gmelin.

Buccinum Virginica, Gmelin, Syst. Nat. 3505. Green, Trans. Alb. Inst., i, p. 135 Wood, Index Test., t. 24, f. 154. Schröter, Einleit., i, p. 414, 1783. Martini, Berlin Mag., iv, p. 348, t. 10, f. 48. Schreibers, Einleit. Conchyl., t. 113, f. 7.

Paludina Virginica, Say, Nicholson's Encyc., iii, t. 2, f. 4.

Melania Virginica, Say, Am. Conch., pt. 5, t. 47, f. 2. App. to Long's Exped., ii, p. 265. Binney's edit., p. 131 and 199. Binney, Check List, No. 291. Catlow Conch. Nomenc., p. 189. Philippi, Neüer Conchylien, Melania, t. 2, f. 12. Hildreth, Am. Jour. Science, xxxi, p. 53. Sager, Rept. Zool. Mich., p. 15. Conrad, Am. Jour. Science, N. S., i, p. 407. Haldeman, Rupp's Hist. Lan-

caster County, Pa., p. 479. HALDEMAN, Am. Jour. Sci., xli, p. 22. DEKAY, Moll. N. Y., p. 90, t. 7, f. 141. WHEATLEY, Cat. Shells U. S., p. 27. HARTMAN, Catalogue Shells, Chester Co., Pa. BROT, List, p. 35. GIRARD, Proc. National Inst., i, No. 2, p. 82. JAY, Cat., 4th edit., p. 275. REEVE, Monog. Melania, sp. 321. VILLA., Cat., Syst. p. 36, 1841.

Io Virginica, Say, MÖRCH, Yoldi Cat. p. 56.

Ceriphasia Virginica, Gmel., ADAMS, Genera, i, p. 297.

Juga Virginica, Say, CHENU, Man. de Conchyl., i, f. 2019. ADAMS, Genera, i, p. 304.

Melania multilineata, Say, Jour. Acad. Nat. Sci., ii, p. 380, Dec., 1822. Am. Conch., pt. 5, t. 47, f. 2. BINNEY's edit., pp. 111 and 199. BINNEY, Check List, No. 169. DEKAY, Moll. Rept. to Regents, p. 32. Moll. N. York, p. 97. WHEATLEY, Cat. Shells U. S., p. 26. HARTMAN, Cat. Shells Chester Co., Penn. CATLOW, Conch. Nomenc., p. 187. GIRARD, Proc. Nat. Inst., i, No. 2, p. 82, March, 1856. PHILIPPI, Neuer Conchyl. Melania, t. 2, f. 13.

Juga multilineata, Say, ADAMS, Genera, i, p. 304.

Melania auriscalpium, MENKE, Syn., Meth., p. 136, 1830.

Melania curta, MENKE, Syn. Meth., p. 136, 1830.

Melania fasciata, MENKE, Syn. Meth., p. 136, 1830.

Melania bizonalis, DEKAY, Moll. N. Y., p. 91, t. 7, f. 140, a. b. 1843. BINNEY, Check List, No. 35.

Melania Buddii, DeKay, WHEATLEY, Cat. Shells U. S., p. 24.

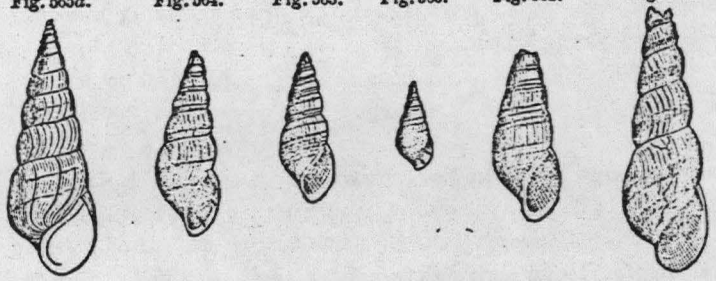
Melania gemma, DEKAY, Moll. N. Y., p. 91, t. 7, f. 142, 1843. BINNEY, Check List, No. 119. BROT, List, p. 33.

Melania strigillata, MUHLFELDT, MSS.

Melania inemta, ANTHONY, Bost. Proc., iii, p. 362, Dec., 1850. BINNEY, Check List, No. 145. BROT, List, p. 58.

Description.— Shell turreted, usually truncate, eroded at tip, olivaceous or blackish-brown; whorls about six, but little rounded, crossed by obvious wrinkles; a dull reddish line revolves near the

Fig. 565a. Fig. 564. Fig. 563. Fig. 565. Fig. 562. Fig. 566.



base of the whorls, and another near or upon the middle, both sometimes obsolete or wanting; labrum a little prominent towards the base. Animal bluish-white beneath, with orange clouds each side of the mouth; above pale orange, shaded with dusky and banded with numerous black interrupted lines; mouth advanced into a rostrum as long as the tentacula, which are darker at base, and setaceous; foot with an undulated outline. Var. A. Shell destitute of the rufous bands.

Observations.— This species is very abundant in the Delaware and

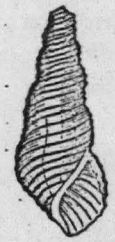
Schuylkill Rivers. The basal portion of the labrum in Lister's figure of plate 113, fig. 7, above quoted, is deficient, nevertheless I have no doubt that the figure was intended for this species, and that his lower figure on plate 109 is intended to represent the variety.—*Say.*

The above description applies only to the smooth variety, between which and *multilineata*, every grade occurs. Several of these have been described by DeKay and Menke as distinct species. Were it not for these intermediate stages, and the long continued observations upon this species, in consequence of its favorable habitat, the two extremes would certainly be considered distinct, as Say classed them.

The following are the descriptions referred to.

Melania multilineata.— Shell gradually tapering; apex generally much eroded; whorls about seven, a little convex, with numerous, filiform, elevated, subequal lines, which are from ten to twenty in number on the body-whorl.

Fig. 567.



Habitat.— Tributaries to the Delaware.

Length, nineteen-twentieths; greatest width, two-fifths of an inch.

Observations.— I found several specimens of this shell in Frankford Creek, and Professor Vanuxem presented me with others which he obtained from a creek in New Jersey. The *M. elevata* (p. 95 of this work), from its attributed specific characters, might be supposed to be nearly related to this shell, but it differs in being of a more accurate conic form, the whorls being flattened, and not convex as in this species; its raised lines are also few in number.

Synonyme.—*M. curta*, Menke, Synop., Mollusc., p. 81.—*Say.*

Melania curta.— Shell ovately oblong, subturreted; apex cariously truncated, transversely, sulcately striate, brownish-black; aperture oval; lip produced in front.

Habitat.— Philadelphia; Bescke.

Longitude, 7 lin.; latitude, 4 lin.— *Menke.*

Melania fasciata.— Shell conically oblong, turreted; apex eroded, greenish, semipellucid, with a few obsolete sulci, last whorl doubly brown-banded, the others with a single band; lip marginal, rounded, produced in front.

Habitat.— Philadelphia; Bescke.

Longitude, 11; latitude, 4½ lin.—*Menke.*

Melania bizonalis.— Shell tapering, elongated; whorls seven or eight, flattened; the upper whorls with a revolving, strongly carinated line just above the suture, and above this two slightly, but distinctly, elevated, revolving lines; all the volutions with sinuous, vertical, elevated lines becoming obsolete towards the tip; aperture subovate, angular above, and uniting with a broad, white callus on the pillar lip; tip rarely perfect; color olivaceous-brown; epidermis with two and rarely three dark reddish, revolving lines on the body-whorl, often indistinct, but may be traced.

Fig. 568.

Length, ·7. Length of aperture, ·23; width of aperture, ·16.

Observations.— For this species I am indebted to Dr. Evans who found it abundantly in Lake Champlain. It approaches *Melania Virginica*, but is, as I view it, very distinct by its flattened whorls and deep, angular sutures.— *DeKay.*

Melania gemma.— Shell moderately large, oblong; spire attenuated, acute; the whole surface covered with waved, vertical wrinkles; whorls eight, all distinctly carinate near the middle, and very acutely so on the apical whorls; on the lower whorls this carina is below the middle, but becomes medial above, in some specimens the lower whorls are bicarinate, or rather the carina is slightly furrowed on its edge; suture deep, occasionally cancellate; the body-whorl has one or more rounded grooves on each side of the carina, which produces corresponding minute, elevated ridges; lip fragile, its margin convex, rarely perfect; color variable from straw-yellow to amber and deep reddish-brown; columella often purple; lower sutures opaque, white.

Length, ·7–1·2 inches. Length of aperture, ·23 of an inch.

Observations.— This species was obtained from Mud Creek, Onondaga County by Dr. Budd, and was at first referred to the *semicarinata* of Say, hitherto supposed to be an exclusively western species. An attentive examination and comparison of Say's description with this will exhibit strongly marked differences. It is larger; all the volutions are carinate, and the sutures distinctly cancellate. I have received others from the Erie canal, much larger, being more than an inch long. In these the revolving groove, in descending, gradually approaches nearer the suture, and is continued on the body-whorl, which is vertically rugose. In my catalogue of species, I had named this species after its discoverer, but the practice has been so much abused, it is becoming daily obsolete. I trust that the name proposed will suggest that of the gentleman to whom I have been under many obligations in this department.—*DeKay.*

Fig. 569.

Melania inemta.—Shell elongate, turreted; apex eroded, unicolored, brownish-green; whorls 3–4, very convex. The last gibbose, constricted behind; sutures impressed; aperture broadly lunate, scarcely effuse; lip brownish.

Habitat.— Virginia.

Observations.— Possibly this may be a largely truncated specimen of *M. Virginica*, which it resembles in its aperture. The form of the ultimate whorl is unusual.— *Anthony.*

Philippi (Neuer Conchyl.) is very much mistaken in his remarks relative to the wide distribution of this species, as it certainly has never been found near Cincinnati nor in Central America. This shell is the only *Melania* inhabiting the eastern portion of the Middle States and is nowhere found in the tributaries of any of the western rivers. As the striate and smooth varieties are frequently observed in conjunction, and as the young shells appear indifferently smooth or striate, there can be no doubt that they all form one species.

Philippi figures the following *varieties* of *multilineata*:—

a. *Sulcosa* equally transversely striate; last whorl one-banded.

b. *Ligata* transverse striæ unequal, two-banded.

c. *Fasciata* rarely obsoletely sulcate, two-banded.

d. *Concolor* without bands.

The first figures represent specimens from Delaware River. The figures of *gemma* and *bizonalis* are copied from DeKay's work.

192. G. sulcosa, Lea.

Melania sulcosa, Lea, Philos. Proc., ii, p. 14, Feb., 1841. Philos. Trans., viii, p. 185, t. 6, f. 48. DeKay, Moll. N. Y., p. 99. Troost, Cat. Shells Tenn. Catlow, Conch. Nomenc., i, p. 189. Binney, Check List, No. 259. Wheatley, Cat. Shells U. S., p. 27. Brot, List, p. 35.

Ceriphasia sulcosa, Lea, Chenu, Man. de Conchyl., i, f. 1957. Adams, Genera, i, p. 297.

Fig. 570.

Description.—Shell transversely sulcate, conical, thick, yellowish; sutures impressed; whorls flattened; aperture small, ovate, whitish.

Habitat.— Tennessee.

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

Observations. — A single specimen only, and that imperfect, is before me. The body-whorl has seven or eight distinctly marked striæ. On the penultimate there are three, and these give a sulcate appearance to the shell.—*Lea.*

When perfect specimens are obtained this shell may be found to be a species of *Pleurocera* instead of *Goniobasis.*

193. G. Buddii, Lea.

Melania Buddii, Lea, Philos. Proc., iv, p. 165. Philos. Trans., x, p. 64, t. 9, f. 44. Obs., iv, p. 64. Binney, Check List, No. 42. Jay, Cat., 4th edit., p. 273. Reeve, Monog. Melania, sp. 324.
Juga Buddii, Say, H. and A. Adams, Genera, i, p. 304.

Description. — Shell striate, cylindrical, rather thin, horn-color; spire attenuated; sutures impressed; whorls flattened; aperture small, elliptical, within whitish.

Habitat.— Tennessee.

Diameter, ·32 of an inch; length, 1·07 inches.

Observations.—I have two specimens before me, both of which have seventeen revolving striæ on the lower whorl. They have also a single small band immediately below the middle of the body-whorl, which is hidden on the superior whorls. Each of the specimens under examination has the apex broken, but I presume the number of whorls may reach to ten. Eight may be counted in one of these. Dr. Budd mentions, in a note, that "out of six, five have a band." The aperture is about one-fourth the length of the shell. This species is nearly allied to the striate variety of Mr. Say's *M. Virginica*, which he called *multistriata* (*multilineata*, G. W. T., Jr.). The *Buddii* may be distinguished by its being flattened on the whorls, in being more angular on the superior part of the whorls, and in being more attenuate.—*Lea.*

Fig. 571.

Figured from Mr. Lea's plate. This shell is so very closely allied to *Virginica* that Dr. Brot has placed it in the synonymy of that species.

194. G. Troostiana, Lea.

Melania Troostiana, Lea, Philos. Proc., ii, p. 34, April, 1841. Philos. Trans., p. 92, t. 23, f. 86. Obs. ii, p. 92. DeKay, Moll. New York, p. 100. Wheatley, Cat. Shells U. S., p. 27. Binney, Check List, No. 276. Troost, Cat. Shells Tenn. Jay, Cat., 4th edit., p. 275. Catlow, Conch. Nomenc., p. 189. Brot, List, p. 35. Reeve, Monog. Melania, sp. 339. Troschel, Archiv fur Naturgesch., ii, p. 227.
Juga Troostiana, Lea, Adams, Genera, i, p. 304.

Description.— Shell elevated, brown, thickly striated; apex acute; whorls ten, above carinate; aperture oval.

Habitat.— Mossy Creek, Jefferson Co., Tennessee.

Diameter, ·5 of an inch; length, 1·2 inches.

Observations.— I owe to Professor Troost this interesting species. It differs from any American species with which I am acquainted, in having a sharp carina, which is placed on the superior part of the inferior whorls. In its numerous striæ it resembles the *M. multilineata*, Say, which is now I believe conceded to be only a variety, much striated, of *M. Virginica* of the same author. Most of the specimens, which have come under my notice, are white inside, with a purple spot on the columella, and an indistinct, light band along the inferior part of the suture. Some individuals are, however, entirely purple inside, and this gives the epidermis quite a black appearance.— *Lea.*

Fig. 571a.

195. G. latitans, Anthony.

Melania latitans, Anthony, Ann. Lyc. Nat. Hist., New York, vi, p. 88, t. 2, f. 6, March, 1854. Binney, Check List, No. 159. Brot, List, p. 34.

Description.—Shell conical, obscurely striate, greenish-brown, rather thin; spire elevated; whorls 8–9, convex or subangulated, with three or four transverse striæ above the angle, which become obsolete below it, and one or two brown bands at and above the middle of each turn; sutures distinct; lines of growth coarse, amounting almost to ribs on the lower whorls; aperture not large, subrotund or very broad ovate, reddish within and banded; columella very much curved and twisted, with a small sinus at base.

Fig. 572.

Habitat.— Mammoth Cave, Kentucky.

Diameter, ·39 of an inch (10 millim.); length 1 inch (26 millim.). Length of aperture, ·34 (9 millim.); breadth of aperture ·21 of an inch (5 millim.).

Observations.—Bears no very strong resemblance to any known species; but is perhaps more nearly allied to *M. rufa*, Lea, and *M. teres*, Lea, in its elevated spire and convex whorls. It wants, however, the smooth whorls of the former, its dark red color, and elliptical aperture. From the latter it may be distinguished by its striated whorls, its less slender proportions, the absence of folds, its obscure bands, and white aperture. This species is unusually interesting from the fact that it is the first species in conchology known to have been procured from the subterranean river flowing through Mammoth Cave.—*Anthony.*

196. G. porrecta, Lea.

Goniobasis porrecta, Lea, Proc. Acad. Nat. Sci., p. 155, May, 1863.

Description.—Shell striate, attenuate, blackish-brown, one-banded; spire attenuated, acuminate; sutures slightly impressed; whorls nine, flattened; aperture small, ovate, white or blackish within; lip acute, scarcely sinuous; columella inflected and contorted.

Fig. 573.

Habitat.—Gap Creek and Spring, Cumberland Gap, East Tennessee; Captain S. S. Lyon, U. S. Army.—*Lea.*

A very distinct, and apparently abundant species, at its locality. I possess a number of specimens, most of which are not banded. They are generally covered with raised striæ, and the sutures almost canaliculate.

197. G. sculptilis, Lea.

Melania sculptilis, Lea, Philos. Trans., x, p. 297, t. 30, f. 3. Obs., v, p. 53, t. 30, f. 3. Binney, Check List, No. 238. Brot, List, p. 38.

Description.—Shell thickly striate, conical, rather thin, horn-color; spire pointed, towards the apex carinate and granulate; sutures irregularly impressed; whorls ten, rather flattened; striæ close, and between them sculptured; aperture small, elliptical, angular at base, white within; columella incurved and twisted.

Fig. 574.

Habitat.—Tennessee.

Diameter, ·24; length, ·55 of an inch.

Observations.—Two specimens are before me, which are precisely alike. It is a very remarkable species, having regular and close striæ over the whole of the lower whorls, between which striæ there is a double row of minute, indented marks, very close to each other, and

only visible with a lens. I have seen no such marks on any other species. In outline it is closely allied to *striatula* (nobis), but it is a smaller species, and has not the cancellation of that species. The aperture is rather more than one-third the length of the shell. The outer lip is broken.—*Lea.*

The specimen figured by Mr. Lea being imperfect, I give a figure from a shell in Coll. Smithsonian Institute. This species is evidently described from an immature specimen.

198. G. crenatella, Lea.

Melania crenatella, Lea, Proc. Acad. Nat. Sci., v, pt. 3, p. 268, t. 35, f. 79, March, 1863. Obs., ix, p. 90. Binney, Check List, No. 76. Brot, List, p. 34. Reeve, Monog. Melania, sp. 457.

Description.—Shell transversely striate, high turreted, subcostate, somewhat folded, rather thin, dark brown, almost black; spire elevated, closely folded at the apex; sutures very much impressed; whorls seven, flattened, covered with transverse ribs; aperture small, oval, banded within; columella whitish, incurved; outer lip somewhat contracted and very crenulate.

Habitat.—Coosa River, Uniontown, Alabama; E. R. Showalter, M.D.

Diameter, ·16; length, ·50 of an inch.

Observations.—Five specimens of this very beautiful little species are before me, all of which I owe to the kindness of Dr. Showalter. Most of these have eleven closely-set, thread-like, transverse ribs on the last whorl, which are very dark brown, while the interspace is yellowish. On the next whorl above there are usually six, and above these the number diminishes to three. There appear to be about seven whorls. Within the aperture of four out of the five specimens there are brown bands accompanying the lines of the outer ribs, and these terminate in little furrows at the edge, which cause the outer lip to be beautifully and regularly crenulate. One of the specimens has the ribs without color, and therefore it is without bands inside. It is allied to *Melania* (*Goniobasis*) *striatula* (nobis), but is a much smaller species, more cylindrical, of a darker color, and has stronger rib-like striæ.—*Lea.*

Fig. 575.

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J. *Heavy, pupæform or cylindrical species.*

199. G. cylindracea, CONRAD.

Melania cylindracea, CON., New Fresh-water Shells, p. 55, t. 8, f. 10, 1834. MÜLLER, Synopsis, p. 47, 1836. BINNEY, Check List, No. 84.
Melania cylindrica, Con., WHEATLEY, Cat. Shells, U. S., p. 25. REEVE, Monog. Melania, sp. 311. BROT, List, p. 32.
Melania oppugnata, LEA, Philos. Trans., x, p 300, t. 30, f. 9. Obs., v, p. 56. BINNEY, Check List, No. 190.

Description.—Shell subcylindrical, smooth, with a short spire, the whorls of which are small; apex eroded; body-whorl angulated, obtusely rounded above, and at base; aperture more than half the length of the shell, narrow, much contracted above.

Fig. 576. Fig. 577.

Observations.—This species is remarkable for the rude, almost deformed, whorls of the spire. It inhabits the Tombigbee River on the soft limestone banks, and is generally coated with a calcareous deposit.—*Conrad.*

Fig. 576 is a copy of Mr. Conrad's original figure. Fig. 577 is from an excellent specimen in Coll. Smithsonian. The numerous shells before me vary in color from brown to dull light green. Whilst most of them are unadorned, a few are banded with dark green. The identity of *cylindracea* and *oppugnata* is conceded by most American conchologists. The following is the description of the latter with a copy of the figure.

Melania oppugnata.—Shell smooth, truncate, cylindrical, very thick, yellowish horn-color; spire cut off; sutures large and very irregularly impressed; whorls very much compressed, geniculate above; aperture very long, very much narrowed, above callous; within white; columella twisted, and very much thickened above.

Fig. 578.

Habitat.—Alabama River.

Diameter, ·41; length,———?

Observations.—This is a very remarkable species. The two specimens before me are both cut off, leaving little more than the body-whorl. When taken they were evidently living and healthy specimens, but the eroded and fractured spires give them the appearance of old and diseased shells, which is by no means the case. The upper part of the whorl, along the suture, is irregularly fractured round the whole circle. This arises from the fact that the animal having filled up the channel with calcareous deposit, suddenly recommences at a new line of growth, some distance below, leaving open and bare of epidermal matter this upper portion of the channel, which, consequently having a sharp edge, becomes more or less fractured. The whorls are so much flattened that the two sides are nearly parallel. One of the specimens has a small spot of brown in the aperture above and below; the other has none. This species is allied to *auriculaformis* (nobis) on one side, and *olivula*, Conrad, on the other, but it may be easily distinguished from both of them. The former is a smaller shell and more fusiform; the latter is more conical, less thickened on the columella, and not irregularly fractured in the suture. The number of whorls or proportional size of the aperture cannot be ascertained on the specimens before me. They have the appearance of having been very much exposed to an attacking enemy, hence the name.—*Lea.*

In Coll. Haldeman are specimens labelled "Kemper County, Mississippi."

200. G. pupoidea, ANTHONY.

Melania pupoidea, ANTHONY, Ann. Lyc. Nat. Hist. N. Y., vi, p. 104, t. 3, f. 3, April, 1854. BROT, List, p. 33. BINNEY, Check List, No. 224. REEVE, Monog. Melania, sp. 249.
Melania propinqua, LEA, Proc. Acad. Nat. Sci., p. 119, 1861.
Goniobasis propinqua, LEA, Journ. Acad. Nat. Sci., v, pt. 3, p. 234, t. 34, f. 29, March, 1863. Obs., ix, p. 56.

Description.—Shell ovate-conic, smooth, rather thick; spire obtusely elevated, with a decidedly convex outline, and a well impressed suture; whorls seven, convex, nearly entire at the apex; color pale green, with one linear band revolving on the spire, and four broader and more distinct bands on the body-whorl; aperture small, narrow ovate, diaphanous, with four distinct, brown bands within; columella rounded, not indented; outer lip curved and extended forward; sinus small.

Fig. 579.

Habitat.—Alabama.

Diameter, ·35 (9 millim.); length, ·87 of an inch (22 millim.). Length of aperture, ·38 (10 millim.); breadth of aperture, ·17 of an inch (4 millim.).

Observations.—This belongs to that group of which *M. olivula*, Conrad, may be considered the type. From that shell it differs, how-

ever, in being more elongate, and less ornamented with bands, as well as by its paler and less varnished epidermis. Compared with *M. proteus*, Lea, it is even more elongate and less acute; the aperture is entirely different, and it wants the tuberculous shoulder which distinguishes that species. Its resemblance to the pupæ of some of the insect tribes has suggested its characteristic.—*Anthony.*

The following is a synonyme.

Goniobasis propinqua.—Shell smooth, subcylindrical, somewhat thick, yellowish, four-banded; spire somewhat raised, conical; sutures very much impressed; whorls six, flattened above; aperture elliptical and rather small, whitish and banded within; outer lip acute; columella slightly thickened and rounded below.

Fig. 580.

Habitat.—Coosa and Cahawba Rivers, Alabama; E. R. Showalter, M.D.

Diameter, ·33; length, ·90 of an inch.

Observations.—This species is very closely allied to *Melania (Goniobasis) pupoidea*, Anthony, but it differs in being more cylindrical, in being smaller, and in having the base of the aperture more rounded. Most of the specimens are decollate. One has a few raised striæ. In some there is a disposition to have a shoulder under the sutures.—*Lea.*

Without the large series of specimens before me I should have acquiesced in the institution of *propinqua* as a distinct species, but I find every grade of form between the two. The shorter forms become very close to *olivula*, Conrad, with which indeed, they have been confounded. They are distinguished by difference of color, and principally of texture, *olivula* being much heavier.

201. G. lita, Lea.

Melania lita, Lea, Proc. Acad. Nat. Sci., 1861, p. 121.
Goniobasis lita, Lea, Jour. Acad. Nat. Sci., v, pt. 3, p. 239, t. 34, f. 40, March, 1863. Obs., ix, p. 61.

Description.—Shell rugosely striate, subfusiform, rather large, four-banded, variegated, shining; spire obtusely elevated; sutures irregularly impressed; whorls six, convex above, the last elongate; aperture somewhat constricted, elongately ovate, purplish and banded within; outer lip acute, thickened; columella incurved and purple below, rounded at the base.

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

Diameter, ·31; length, ·78 of an inch.

Observations.—I have seen but a single specimen of this species. It is remarkable for the several greenish and brownish tints of the exterior and its purple aperture. The apical whorls are plicate. The two lower whorls have rather rugose striæ. Other individuals may differ from the characters given above. The aperture is about two-fifths the length of the shell. It is one of the pupoid group and is nearly allied to *fallax*, herein described, but it is not so cylindrical and the aperture is longer. It differs also in color.—*Lea.*

Fig. 581.

I am doubtful whether this is distinct from *Haysiana*. I have before me two or three specimens which appear to occupy an intermediate position between the two species. In the specimens I have examined, except Mr. Lea's type, the aperture is white within, instead of purple.

202. G. fallax, Lea.

Melania fallax, Lea, Proc. Acad. Nat. Sci., 1861, p. 120.
Goniobasis fallax, Lea, Journ. Acad. Nat. Sci., v, pt. 3, p. 231, t. 34, f. 24, March, 1863. Obs., ix, p. 53.

Description.—Shell smooth, pupæform, somewhat cylindrical, rather thick, either dark brown or dark horn-color, obscurely banded or without bands; sutures impressed; whorls seven, slightly convex, the last small; aperture small, very much constricted, elongate elliptical; outer lip sharp; columella a little inflected, obtusely angular at the base.

Fig. 582.

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

Diameter, ·34; length, ·96 of an inch.

Observations.—This species is nearly allied to *clausa*, herein described, but it is a smaller species, rather more cylindrical and with a smaller aperture. The dark specimens are four-banded, the bands being well defined inside, but obscure exteriorly. These dark ones have a light line below the suture. The aperture is not quite one-third the length of the shell.—*Lea.*

203. G. inosculata, Lea.

Goniobasis inosculata, Lea, Proc. Acad. Nat. Sci., p. 263, 1862. Journ. Acad. Nat. Sci., v, pt. 3, p. 296, t. 37, f. 126, March, 1863. Obs., ix, p. 118.

Description.— Shell smooth, pupæform, somewhat raised, rather thick, yellowish-brown, four-banded; spire somewhat raised; sutures very much and irregularly impressed; whorls seven, somewhat convex; aperture small, constricted, subelliptical, whitish within and banded; outer lip acute; columella white, bent in, twisted and subangular at the base. Fig. 583.

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

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

Diameter, ·37; length, ·89 of an inch.

Observations.—A species very closely allied to *Melania* (*Goniobasis*) *Alabamensis* (nobis), but it may be distinguished by its being smaller, more constricted, and being slightly more cylindrical. The bands are smaller and not quite so well expressed. When I received the first specimen, I considered it a small variety of *Alabamensis*, but having received others from Dr. Showalter, I cannot but consider it a distinct species inosculating on the other. The aperture is about one-third the length of the shell.— *Lea.*

This species is nearly related to *G. fallax*, Lea, and at first I united it with that species, but I am now convinced that it is distinct. Among the points of difference may be mentioned the greater convexity of its whorls, brighter color, and the constant ornamentation of four distinct, dark bands, the upper of which is the broadest. A single band appears on the whorls of the spire. *G. fallax* is a more cylindrical species.

204. G. Alabamensis, Lea.

Melania Alabamensis, Lea, Proc. Acad. Nat. Sci., 1861, p. 121.
Goniobasis Alabamensis, Lea, Jour. Acad. Nat. Sci., v, pt. 3, p. 232, t. 34, f. 23, March, 1863. Obs., ix, p. 54.

Description.— Shell smooth, pupæform, subelevated, rather thick, yellowish, four-banded; spire raised; sutures very much impressed; whorls about seven, convex; aperture small, rather constricted, subelliptical, whitish and banded within; outer lip sharp; columella inflected, whitish, obtusely angular at base. Fig. 584.

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

Diameter, ·38; length, ·92 of an inch.

Observations.— This species is allied to *clausa*, herein described, but it is more conical and less cylindrical. One of the two specimens is obscurely banded, while the other has well defined bands, the broadest one being above. The aperture is about one-third the length of the shell.— *Lea.*

205. G. rare, Lea.

Melania rara, Lea, Proc. Acad. Nat. Sci., p. 121, 1861.
Goniobasis rara, Lea, Jour. Acad. Nat. Sci., v, pt. 3, p. 220, t. 34, f. 3, March, 1863. Obs., ix, p. 42.

Description.— Shell smooth, high conical, scalariform, rather thick, dark olive, shining; spire raised; sutures irregularly impressed; whorls eight, flattened, angular above; aperture rather small, elliptical, dark purple within; outer lip sharp; columella incurved, purple, obtusely angular at the base. Fig. 585.

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

Diameter, ·38; length, ·90 of an inch.

Observations.— A single specimen only of this species was sent to me by Dr. Showalter. It is remarkable for its fine polish, its dark color and its square shoulder below the sutures. It has a few obscure striæ on the lower part of the whorl. The Babylonic form is unusual. It reminds one of *varians*, herein described, but that species is plicate and not scalariform. The length of the aperture is more than one-third the length of the shell.—*Lea.*

May possibly be a monstrosity of *G. fallax*.

206. G. punicea, Lea.

Melania punicea, Lea, Proc. Acad. Nat. Sci., p. 119, 1861.
Goniobasis punicea, Lea, Jour. Acad. Nat. Sci., v, pt. 3, p. 232, t. 34, f. 27, March, 1863. Obs., ix, p. 54.

Description.— Shell smooth, somewhat cylindrical, thick, reddish brown; spire elevated, conical; sutures impressed; whorls slightly convex; aperture small, ovately rounded, white within; outer lip acute; columella thickened, white, rounded at the base. Fig. 586.

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

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

Observations.— All the five specimens before me are decollate, and have nearly the general outline of *Bulimus decollatus*, Lam. Some have but two complete whorls, while one has four; probably when complete the number would be seven. Two of the specimens have slight striæ below, and one has a few obscure, capil-

lary bands. The reddish-brown shining epidermis well characterizes the species. The aperture is small, and is probably a little more than the third of the length of the shell.—*Lea.*

Very closely allied to *pudica*, if not identical with that species.

207. G. pudica, Lea.

Melania pudica, Lea, Proc. Acad. Nat. Sci., v, pt. 3, p. 222, t. 34, f. 7, March, 1863. Obs., ix.

Description.—Shell smooth, conical, somewhat thick, olive or reddish; spire conical; sutures irregularly impressed; whorls six, slightly convex; aperture rather small, ovate, bluish-white within; outer lip acute; columella inflected, thickened above, rounded at the base.

Fig. 587.

Observations.—This is a modest little species, with regular, even whorls. One of the specimens has obscure bands, the other has none. It is allied to *æqua*, herein described. The aperture is not quite half the length of the shell.—*Lea.*

This species has been confounded with *olivula*, Conrad; it is a smaller and more solid shell, and appears to be more numerous in individuals.

208. G. fabalis, Lea.

Goniobasis fabalis, Lea, Proc. Acad. Nat. Sci., p. 266, 1862. Jour. Acad. Nat. Sci. v, pt. 3, p. 311, t. 37, f. 154, March, 1863. Obs., ix, p. 133.

Description.—Shell smooth, elliptical, thick, yellow, four-banded; spire very obtuse; sutures irregularly impressed; whorls four, somewhat convex above, the last one very large; aperture large, subrhomboidal, whitish and banded within; outer lip acute, scarcely sinuous; columella thickened above and below.

Fig. 588.

Habitat.—Tennessee River; W. Spillman, M.D.

Diameter, ·34; length, ·64 of an inch.

Observations.—Among the *Melanidæ* sent by Dr. Spillman, with simply the habitat Tennessee River, were four of this species. I presume they are from that part of the river which is in or near to Alabama. All the three specimens are very similar in color, size and bands. It is one of that group which approaches the genus *Lithasia* by the thickening of the columella above and below, but it has no

channel. It is allied to *Melania* (*Goniobasis*) *elliptica* (nobis) and *Melania* (*Goniobasis*) *auriculæformis* (nobis), but differs from the former in being smaller and having a less constricted aperture; from the latter in being larger and having a more obtruded spire, and in the bands. The aperture is about half the length of the shell.—*Lea.*

209. G. Shelbyensis, Lea.

Melania Shelbyensis, Lea, Proc. Acad. Nat. Sci., p. 121, 1861.
Goniobasis Shelbyensis, Lea, Jour. Acad. Nat. Sci., v, pt. 3, p. 228, t. 34, f. 18, March, 1863. Obs., ix, p. 50.

Description.—Shell smooth, fusiform somewhat thick, banded or without bands; spire obtusely conical; sutures impressed; whorls flattened above; aperture rather small, subovate, white within; outer lip acute; columella inflected, obtusely angular at base.

Fig. 589.

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

Diameter, ·38; length, ·86 of an inch.

Observations.—This species is allied to *clausa* and to *bellula* herein described. It is more elliptical than either, and smaller than the former. One of the specimens before me has four well defined, though not strong, bands, while another is entirely without any. The aperture is nearly half the length of the shell. Neither of the two specimens before me has a perfect spire, and hence the number of whorls cannot be ascertained.—*Lea.*

This species is closely related to *G. pudica*, but differs somewhat in the base of the aperture and the whorls are flattened.

210. G. fumea, Lea.

Melania fumea, Lea, Proc. Acad. Nat. Sci., 1861, p. 123.
Goniobasis fumea, Lea, Jour. Acad. Nat. Sci., v, pt. 3, p. 222, t. 34, f. 6, March, 1863. Obs., ix, p. 41.

Description.—Shell smooth, conical, rather thin, sooty brown, sometimes obscurely banded; spire somewhat raised; sutures irregularly impressed; whorls flattened above, somewhat inflated below; aperture ovately rhombic, whitish within; outer lip acute; columella inflected, slightly thickened above, rounded at the base.

Fig. 590.

Diameter, ·36; length, ·80 of an inch.

Habitat.—Yellowleaf Creek, Shelby Co., Ala.; Dr. E. R. Showalter.

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Observations.—This is an obscure species and is near to *crepera* herein described, but it is more inflated, and reminds one of *bullula* also herein described. But it has not the well marked bands of that species, some individuals being without any bands, while others have a few very obscure ones. In some there are very obscure striæ towards the base of the lower whorl. All the specimens before me being worn at the tips, I cannot make out the character of the apical whorls. The aperture is about one-third the length of the shell.—*Lea.*

Very closely allied to *G. solida.*

211. G. æqua, LEA.

Melania æqua, LEA, Proc. Acad. Nat. Sci., 1861, p. 122.
Goniobasis æqua, LEA, Jour. Acad. Nat. Sci., v, pt. 3, p. 240, t. 34, f. 41, March, 1863. Obs., ix, p. 62.

Description.—Shell substriate, conical, somewhat thick, dark brown; spire somewhat elevated; sutures impressed; whorls about six, flattened above; aperture small, rhomboidal, whitish within; outer lip acute; columella inflected, slightly thickened, obtusely angular at the base.

Fig. 591.

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

Diameter, ·37; length, ·34 of an inch.

Observations.—This is a modest looking species near to *pudica* herein described. One of the specimens has a few obscure, transverse striæ on the lower part of the whorls, the other has them nearly over the whole surface. Both specimens are imperfect at the spire. The aperture is about one-third the length of the shell.—*Lea.*

Differs from the previous species of this group in the form of the aperture.

212. G. solidula, LEA.

Melania solidula, LEA, Proc. Acad. Nat. Sci., 1861, p. 121.
Goniobasis solidula, LEA, Jour. Acad. Nat. Sci., v, pt. 3, p. 230, t. 34, f. 23. Obs., ix, p. 52.

Description.—Shell smooth, subfusiform, obtusely conical, somewhat thick, yellowish-green or yellowish-brown, banded; spire raised; sutures impressed; whorls five, above flattened, rounded below, the last large; aperture rather large, ovate, whitish within; outer lip acute; columella arcuate, slightly thickened above, obtusely angular at the base.

Habitat.—Yellowleaf Creek, near its junction with Coosa River, Alabama; E. R. Showalter, M.D.

Fig. 592. Diameter, ·33; length, ·68 of an inch.

Observations.—Two specimens of this solid little species are before me. The larger has five well-defined bands, which are visible in the interior as well as the exterior. The smaller one has obsolete bands on the outside, but none within. In outline it is very near to *Melania abrupta* (nobis), but it differs in being more solid and less expanded in the aperture. The aperture is nearly one-half the length of the shell.—*Lea.*

213. G. olivula, CONRAD.

Melania olivula, CON., Am. Jour. Sci., 1st series, xxv, p. 342, t. 1, f. 13, Jan., 1834. MÜLLER, Synopsis, p. 42, 1836. WHEATLEY, Cat. Shells U. S., p. 26. DEKAY, Moll. N. Y., p. 98. JAY, Cat. Shells, 4th edit., p. 274. REEVE, Monog. Melania, sp. 455. BINNEY, Check List, No. 188. BROT, List, p. 33. HANLEY, Conch. Miscellany, t. 1, f. 2.
Megara olivula, Con., CHENU, Manuel, i, f. 2027. ADAMS, Fig. 592*a*. Fig. 593. Genera, i, p. 306.
Melania olivata, Con., JAY, Cat. 3d edit., p. 45. CATLOW, Conch. Nomenc., p. 188.

Description.—Shell oblong or narrow, elliptical, smooth and entire; spire conical; volutions five; suture impressed; aperture somewhat elliptical, longitudinal, about half the length of the shell; color green-olive, with strongly marked, brown, revolving bands; about four on the body-whorl.—*Conrad.*

214. G. fascinans, LEA.

Melania fascinans, LEA, Proc. Acad. Nat. Sci., p. 119, 1861.
Goniobasis fascinans LEA, Jour. Acad. Nat. Sci., v, pt. 3, p. 229, t. 34, f. 20, March, 1863. Obs., ix, p. 51.

Description.—Shell smooth, subfusiform, somewhat thick, yellowish horn-color, shining; spire high conical; sutures impressed; whorls slightly convex; aperture rather large, white and three-banded within; outer lip acute; columella white and retuse at base.

Fig. 594.

Habitat.—Yellowleaf Creek, Shelby County, Alabama; E. R. Showalter, M.D.

Diameter, ·38; length, ·92 of an inch.

Observations.—This graceful an beautifully banded species is

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allied to *Melania pupoidea*, Anth. It is more elongate and has only three bands usually, which are deep brown, well defined and nearly equidistant; but sometimes has a thin additional one below the middle one. Neither of the two specimens before me has a perfect apex, so that the number of whorls might be determined, but a perfect mature specimen would probably exhibit seven. In the penultimate whorl are two bands; on those above only one can be observed. The aperture is more than one-third the length of the shell.—*Lea.*

215. G. Showalterii, LEA.

Melania Showalterii, LEA, Proc. Acad. Nat. Sci., 1861, p. 120.
Goniobasis Showalterii, LEA, Jour. Acad. Nat. Sci., v, pt. 3, p. 220, t. 34, f. 4. Obs., ix, p. 42.

Description.—Shell smooth, raised conical, rather thick, yellowish-brown, four bands; spire obtusely elevated; sutures impressed; whorls about six, flattened above, somewhat inflated below, the last rather large; aperture rather large, ovately rhombic; whitish and banded within; outer lip sharp and slightly sinuate; columella white inflected, slightly thickened above, rounded at the base.

Operculum elongate, tongue-shaped, narrower at the outer end, dark brown, without polar point, having parallel, transverse, slightly curved striæ.

Habitat.—Coosa and Cahawba Rivers, Alabama; Dr. E. R. Showalter.
Diameter, ·42; length, —— of an inch.

Observations.—This remarkable shell was sent to me by Dr. E. R. Showalter last summer who called my attention to the very unusual form of its horny operculum, which in the old specimens is half an inch long, being a quarter of an inch wide at the inner end, gradually diminishing to an angular point at the outer end. It is usually curved, the outer end forming a half circle from the base, the starting or inner end. Thus quite half the length extends outside of the outer lip, the inner half stretching across the aperture of the shell. Dr. Showalter did not observe whether there was any difference in the soft parts of this species from other *Goniobases*, but proposes to examine living specimens. He remarks in his letters that "the operculum is very striking and not observed in any other species, the mouth being remarkably uniform in its shape, as indeed it is in its general form and aspect." "Some of the Coosa *Anculosæ*," he says, "have this

Fig. 595.

peculiar form of operculum," but I have never seen any operculum of the *Melaniæ* take this long tongue-shaped form but in this species.* Having asked Dr. Showalter if he had observed whether the opercula of young individuals were spiral, he very kindly sent me one about one-third grown. This was in no way different from the adults except in size, being rather more than one-third of an inch long. He says that he "finds the young specimens of this species have the same peculiarity in the operculum." Should there be found to exist any difference in the anatomical structure of this mollusk, when the soft parts shall be examined, then it must be eliminated from the *Goniobases*. In which case I propose the name of *Macrolimen*† for it. Among nearly a dozen specimens which I have examined, none have a perfect apex. The length of the shell, therefore, cannot be stated, nor the exact number of whorls, nor the character of the very young. The length of the aperture is probably nearly half the length of the shell. All the specimens I have examined are handsomely adorned with four bands, more or less distinct inside and out. It is nearly allied to *suavis* (nobis) and *bellula* (nobis), and reminds one of *Lewisii* (nobis).—*Lea.*

216. G. clausa, LEA.

Melania clausa, LEA, Proc. Acad. Nat. Sci., 1861, p. 120, v, pt. 3, p. 231, t. 34, f. 25, March, 1863.
Goniobasis clausa, LEA, Jour. Acad. Nat. Sci., Obs., ix, p. 53.

Description.—Shell smooth, subfusiform, thick, olive, banded, or without bands; sutures very much impressed; whorls seven, somewhat convex; aperture small, constricted, elliptical, whitish within; outer lip acute; columella slightly inflected, obtusely angular at base.

Fig. 596.

Habitat.—Coosa River, Alabama; E. R. Showalter, M.D.
Diameter, ·42 of an inch; length, 1·2 inches.

Observations.—This species reminds one at once of *Pupa crysalis*, Fér., but the outline is more fusiform. It is nearly allied to *Melania pupæformis*, Anth., but it is a larger and stouter shell and is not so much banded. The aperture is narrow and unusually closed. Some specimens are feebly banded, while others have the usual four bands very broad, which make the interior dark, and

*I have several specimens of *A. rubiginosa* (nobis) which have an elongated operculum, but I have never observed it in any other species of *Anculosa*.
†μακρος, longus; λιμεν, portus.

give the exterior a dark brownish or submaculate appearance. Two of the specimens are entirely without bands. The aperture is about one-third the length of the shell.—*Lea.*

217. G. crepera, Lea.

Melania crepera, Lea, Proc. Acad. Nat. Sci., 1861, p. 123.
Goniobasis crepera, Lea, Jour. Acad. Nat. Sci., v, pt. 3, p. 240, t. 34, f. 42, March, 1863. Obs., ix, p. 62.

Description.— Shell substriate, conical, somewhat thick, sooty-brown; spire somewhat raised; sutures irregularly impressed; whorls six, somewhat convex; aperture ovately rhombic, whitish within; outer lip acute; columella inflected, slightly thickened above, obtusely angular at the base.

Fig. 597.

Habitat.— Yellowleaf Creek, Shelby County, Alabama; E. R. Showalter, M.D.

Diameter, ·41; length, ·83 of an inch.

Observations.— This species is closely allied to *Haysiana* (nobis), but is less striate, has a darker epidermis, is rather smaller and not so solid. Some of the specimens have but few and obscure striæ on the lower part of the whorls, while others have them over the whole whorl. None were perfect enough to show the character of the apical whorls. The length of the aperture is more than one-third the length of the shell.—*Lea.*

218. G. abscida, Anthony.

Melania abscida, Anthony, Proc. Acad. Nat. Sci., 1860, p. 56. Binney, Check List, No. 435. Brot, List, p. 32. Reeve, Monog. Melania, sp. 395.

Description.— Shell ovate, smooth, olivaceous, thick; spire obtuse, composed of five low whorls, nearly flat; body-whorl large, occupying nearly the entire length of the shell; aperture not broad, but long, subrhombic, more than half the length of the shell; columella deeply rounded and indented; outer lip much curved and produced; sinus broad and conspicuous.

Fig. 598.

Habitat.— Alabama.

Observations.— A ponderous species, whose chief characteristic is its square form and short, truncate spire, resembling in that respect *M. planospira* (nobis). It differs from that species, however, by its more elongate form, narrow, rhombic aperture, and by having several revolving striæ at base. It is a solid shell of compact texture and seems to be rare, as only two specimens have come under my notice.—*Anthony.*

Very closely allied to *G. crepera*, Lea.

219. G. Vanuxemiana, Lea.

Melania Vanuxemiana, Lea, Proc. Philos. Soc., ii, p. 242, Dec., 1842. Philos. Trans. ix, p. 25. Obs., ix, p. 25. Reeve, Monog. Melania, sp. 453. Brot, List, p. 33.
Melania Vanuxemensis, Lea, Wheatley, Cat. Shells U. S., p. 27. Binney, Check List, No. 283.
Megara Vanuxemiana, Lea, Adams, Genera, i, p. 303.

Description.—Shell striate, obtusely conical, solid, yellowish, banded; spire rather short; sutures impressed; whorls six, somewhat convex; columella thickened above; aperture ovate, white.

Fig. 599. Fig. 600.

Habitat.—Alabama.

Diameter, ·42; length, ·73 of an inch.

Observations.— A very pretty symmetrical species, having the mouth rather more than one-third the length of the shell. A single specimen only is before me. It has five nearly equidistant, coarse striæ, and four purple bands. It is somewhat like *M. ovalis* herein described, but has a wider aperture, and a higher spire. I name it after my friend, Prof. Vanuxem.—*Lea.*

220. G. Coosaensis, Lea.

Melania coosæensis, Lea, Proc. Acad. Nat. Sci., 1861, p. 118.
Goniobasis coosæensis, Lea, Jour. Acad. Nat. Sci., v, pt. 3, p. 234, t. 34, f. 30, March, 1863. Obs., ix, p. 56.

Description.—Shell striate, fusiform, horn-color, four-banded, rather thick; spire rather raised, conical; sutures very much impressed; whorls seven, slightly convex, sulcate; aperture constricted, elongate elliptical, whitish and four-banded within; outer lip acute, subcrenulate; columella slightly thickened, incurved and obtusely angular at the base.

Fig. 601.

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

Diameter, ·42 of an inch; length, 1·2 inches.

Observations.— About a dozen specimens of various ages are before me. They all bear the four well marked bands, more distinct from the inside. The transverse striæ are coarse and rounded,

cord-like, making well impressed sulcations. This species reminds one of *Melania* (*Goniobasis*) *Vanuxemiana* and *ovalis* (nobis), but it is a more fusiform shell, and has a longer aperture. Some of the young are almost free from striæ, and are disposed to be plicate at the apex.— *Lea.*

Differs from *Haysiana* in the form of the aperture.

221. G. rubicunda, LEA.

Melania rubicunda, LEA, Proc. Acad. Nat. Sci., 1861, p. 118.
Goniobasis rubicunda, LEA, Jour. Acad. Nat. Sci., v, pt. 3, p. 235, t. 34, f. 32, March, 1863. Obs., ix, p. 57.

Description.— Shell much striate, reddish, subfusiform: spire subelevated, conical; sutures impressed; whorls about six, slightly convex; aperture rather constricted, elongate elliptical, reddish within, obtusely angular at the base; outer lip acute; columella thickened, reddish, incurved.

Fig. 602.

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

Diameter, ·43; length, ·96 of an inch.

Observations.— There are five specimens before me, two of them being old and so much eroded as to leave little more than the body-whorl. The other specimens are more perfect, but the apices are worn and their character unascertained. The species is allied to *Melania* (*Goniobasis*) *Haysiana* (nobis), but may be distinguished by its not being cylindrical and by the aperture being longer. Like *Haysiana*, the striæ are coarse and rounded, somewhat cord-like. These striæ number eight to ten. As *Haysiana* is sometimes found without striæ, this species may also be found without them. The aperture is more than one-third the length of the shell.—*Lea.*

222. G. Haysiana, LEA.

Melania Haysiana, LEA, Philos. Proc., ii, p. 242, Dec., 1842. Philos. Trans., ix, p. 25. Obs., iv, p. 25. WHEATLEY, Cat. Shells U. S., p. 25. JAY, Cat. Shells, 4th edit., p. 273. BINNEY, Check List, No. 137. BROT, List, p. 32. BROT. Mal. Blatt., ii, p. 108, July, 1860. REEVE, Monog. Melania, sp. 310. HANLEY, Conch. Miscel. Melania, t. 1, f. 6.
Megara Haysiana, Lea, CHENU, Manuel, i, f. 1981. ADAMS, Genera, i, p. 306.

Description.— Shell striate, subcylindrical, solid, yellowish-brown; spire rather elevated; sutures impressed: whorls flattened; aperture small, elliptical.

Habitat.— Alabama.

Diameter, ·43; length, ·90 of an inch.

Observations.— Dr. Foreman submitted many specimens of this species to my examination, and I find them differing very much in form and color. Some individuals are so full of dark purple bands as to give them a dark hue; others are devoid of bands entirely, and are yellowish. The aperture is contracted and about one-third the length of the shell. The transverse, raised striæ, in some, cover nearly all the whorls, while others are almost or entirely free from them. In general outline it is allied to *M. picta* (nobis) all the specimens being more or less eroded at the beaks. I am unable to state the number of whorls, but believe them to be eight or nine. I dedicate this species to my friend, Isaac Hays, M.D.—*Lea.*

Fig. 603. Fig. 604. Fig. 605.

223. G. arctata, LEA.

Melania arctata, LEA, Philos. Proc., iv, p. 166. Philos. Trans., x, p. 64, t. 9, f. 46. Obs., iv, p. 64. BINNEY, Check List, No. 20. BROT, List, p. 32.
Megara arctata, Lea, CHENU, Manuel, i, f. 2024. ADAMS, Genera, i, f. 306.

Description.—Shell striate, compressed, thick, yellowish horn-color; spire conical; sutures much impressed; whorls six, flattened; aperture small, rhomboidal, within whitish.

Habitat.— Tuscaloosa, Alabama.

Diameter, ·40; length, ·90 of an inch.

Observations.— Among the seven specimens before me there is a good deal of difference. Some are darker than others. Several have the superior portion of the whorl rising into a ridge, quite nodose, while others are entirely without it. This species has more resemblance to *M. Haysiana* than any other which has come under my notice. It is not, however, so elliptical a shell, and the aperture is shorter. The aperture of the *arctata* is rather more than one-third the length of the shell; is obtusely angular below, and somewhat acutely angular above, where it is thickened.—*Lea.*

Fig. 606.

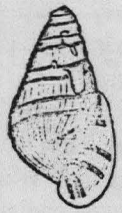
The nearest affinity of this species is with *G. Coosaensis.*

224. G. ampla, ANTHONY.

Melania ampla, ANTHONY, Ann. N. Y. Lyc., vi. p. 93. t. 2, f. 12, 1854, BINNEY, Check List, No. 13. BROT, List, p. 39. REEVE, Monog. Melania, sp. 312.
Melania Hartmaniana, LEA, Proc. Acad. Nat. Sci., 1861.
Goniobasis Hartmanii, LEA, Jour. Acad. Nat. Sci., v, pt. 3, p. 218, t. 34, f. 1, 1863. Obs., ix, p. 40.

Description.— Shell ovate conic, smooth, thin; spire obtusely elevated; whorls 5–6, subconvex; body-whorl ample, surrounded with four dark greenish bands; sutures irregularly and deeply impressed; aperture large, ovate, within roseate and banded, columella rounded, slightly indented, and a little effuse at base.

Fig. 607.



Habitat.— Alabama.

Diameter, ·58 of an inch (15 millim.); length, 1·25 inches (32 millim.). Length of aperture, ·58 (15 millim.); breadth of aperture, ·30 of an inch (8 millim.).

Observations.— Compared with *M. olivula*, Conrad, it is a larger, much less solid species, the epidermis is thinner, less polished, and has not the fine contrasting colors which render *M. olivula* so lively and pleasing; differs from *M. fuliginosa*, Lea, in being far less ponderous, with fewer and less distinct bands, by the distinct angle passing round the shell near the top of the mouth, and by its capacious aperture, which last two points apply with equal force to *olivula*. Although in some points, and particularly in its ample mouth, it resembles *M. florentina*, Lea, it has not the shouldered whorls and tubercular armature which distinguish that beautiful species. The bands within the aperture do not reach its outer edge, but a broad, plain area is left between.— *Anthony.*

Melania ampla is not a fully grown shell, as will be seen by reference to the accompanying figure which is copied from Mr. Anthony's type specimen, but that the species is the same as *Hartmanii* cannot be doubted. Some specimens before me are slightly striate transversely.

The following is Mr. Lea's description of *G. Hartmanii* together with a copy of his figure.

Description.— Shell smooth, conical, large, dark horn or olive color, much banded, imperforate; spire obtusely conical; sutures much impressed; whorls somewhat flattened, about seven, the last large; aperture large, ovately rhomboid, brown, banded within, obtusely angular at the base; outer lip sharp; columella incurved.

Operculum ovate, spiral, dark brown, rather rough, with the polar point on the edge, about ¼ from the base.

Habitat.— Coosa and Cahawba Rivers, Ala.; E. R. Showalter, M.D.

Diameter, ·68 of an inch; length, 1·65 inches.

Observations.— This is a fine large species, and among the most robust yet found in the United States. It is much larger than *Melania robusta* (nobis) and cannot be confounded with that species, being entirely smooth and banded. The whorls are also more flattened. The general character of the species is to have four broad, brown bands, very strongly marked on the inside. In some cases these bands are increased in width, and even so combined as to make the fauces nearly black within. These bands do not quite reach the margin. Where the bands are not strong, the exterior is light horn-color. There is a disposition on the upper part of the whorls to geniculation, and this part is there yellowish. The aperture is nearly half the length of the shell. I have great pleasure in naming this fine species after my friend, Wm. D. Hartman, M.D. of Westchester, Pennsylvania, who is always ready to promote the objects of natural history and other branches of science.—*Lea.*

Fig. 608.

225. G. mellea, LEA.

Melania mellea, LEA, Proc. Acad. Nat. Sci., 1861, p. 120.
Goniobasis mellea, LEA, Jour. Acad. Nat. Sci., v, pt. 3, p. 224, t. 34, f. 10, 1863. Obs., ix, p. 46.

Description. — Shell smooth, subfusiform, conical, rather thick, honey-yellow, sometimes banded; spire very obtuse; sutures regularly impressed; whorls seven, flattened above, the last large and inflated; aperture large, rhomboidc-elliptical, yellowish within; outer lip acute; columella thickened, inflected, obtusely angular below.

Fig. 609.

Operculum ovate, spiral, light brown, with polar point near the edge and base.

Diameter, ·52; length, ·98 of an inch.

Habitat.—Coosa River, at Wetumpka, Alabama; Dr. E. R. Showalter.

Observations.— This is a well marked species with an unusual

yellow, smooth epidermis. There are four specimens before me, one being quite young, the others mature or nearly so. One has four somewhat obscure, broad, purplish bands, better defined within. The aperture is about half the length of the shell. In outline it approaches *Lithasia Florentiana* and *L. fuliginosa*, both which were described by me as *Melaniæ*, but it is larger, more yellow, has a higher spire and is not so thickened on the columella as either of those species.—*Lea.*

226. G. ambusta, ANTHONY.

Melania ambusta, ANTHONY, Ann. Lyc. Nat. Hist., vi, p. 94, t. 2, f. 13, 1854. BINNEY, Check List, No. 12. BROT, List, p. 39. REEVE, Monog. Melania, sp. 352.

Description.—Shell ovate, rather thin, smooth, chocolate-colored; spire obtusely elevated; whorls about six, subconvex; body-whorl large, substriate; sutures moderately impressed; aperture large, narrow ovate, reddish within; columella indented, with a broad, not very remarkable sinus at base.

Habitat.—Alabama.

Diameter, ·48 of an inch (12 millim.); length, 1 inch (26 millim.). Length of aperture, ·48 (12 millim.); breadth of aperture, ·23 of an inch (6 millim.).

Observations.—In form not unlike *M. olivula*, Conrad, but its very peculiar plain, dark chocolate-colored epidermis and sombre interior will at once distinguish it from all other species. A few, irregular striæ are visible on the body-whorl, and a very obscure, narrow band may be observed near the sutures; in all of the three specimens before me the columella is slightly reflected over a narrow, umbilical opening near the base, which appears almost disconnected from the outer lip as in *Achatina*. The burnt appearance of the shell has suggested its specific name.—*Anthony.*

Fig. 610.

Figured from Mr. Anthony's type specimen.

227. G. laeta, JAY.

Melania laeta, JAY, Cat. Shells, 3d edit., p. 122, t. 7, f. 11, 1839. JAY, Cat. Shells, 4th edit., p. 274. WHEATLEY, Cat. Shells U. S., p. 26. BINNEY, Check List, No. 156. CATLOW, Conch. Nomenc., p. 187. BROT, List, p. 32.

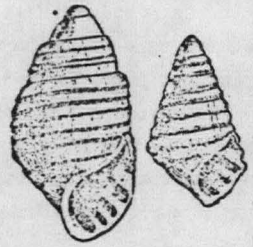
Melania robusta, LEA, Philos. Proc., ii, p. 83, October, 1841. Philos. Trans., ix, p. 19. Obs., iv, p. 19. WHEATLEY, Cat. Shells, U. S., p. 26. BINNEY, Check List, No. 231.

Melatoma Buddii, Lea, REEVE, Monog. Melatoma, sp. 3.

Melania tæniolata, ANTHONY, Proc. Acad. Nat. Sci., 1860, p. 59. BINNEY, Check List, No. 263. BROT, List, p. 31. REEVE, Monog. Melania, sp. 392.

Description.—Shell striate, fusiform, thick, yellowish; spire obtuse; sutures rather impressed; whorls six, rather convex; aperture elliptical, large, angular at the base, within white.

Fig. 611. Fig. 612.

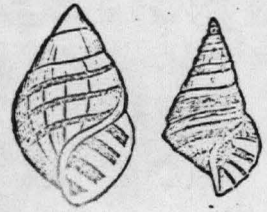


Habitat.—Coosa River, Alabama.

Diameter, ·60; length, ·91 of an inch.

Observations.—A single specimen only of this fine species was obtained by Dr. Griffith. It presents four rather distant, large, revolving striæ on the body-whorl and two on the next. In other specimens these may be found more numerous, or entirely wanting.* The aperture is nearly half the length of the shell. In form and size, it very closely agrees with *M. impressa* herein described.—*Lea.*

Fig. 613. Fig. 614.



Dr. Jay published merely a name and figure of his species, without description. The figure 613 represents a copy of it. 612 represents Mr. Lea's figure of *robusta* and 611 is from a splendid specimen from Coosa River, while 614 represents a younger shell.

The following description was drawn up from an immature specimen; we present a figure from the type:—

Melania tæniolata.—Shell conic, ovate, striate, thick; spire elevated, but not acute, composed of 6–7 nearly flat whorls; sutures not distinct; aperture subrhombic, small, banded within; columella indented, callous at its lower portion, and with a small, but distinct, sinus at base.

*In specimens subsequently received, the striæ were found to differ but little.

Habitat.— Alabama.

Observations.—A fine, showy, robust species, of a dark yellow color, enlivened by several dark brown bands, generally two on each whorl; body-whorl angulated, with one band directly upon the sharp angle, another in close proximity, and a third quite distant and near the base of the shell. Band obsolete on the first two or three whorls. Surface coarsely striate and obscurely ribbed.— *Anthony.*

Fig. 615.

This species appears to vary somewhat in form, being only occasionally angulated at the periphery, but the specimens are all covered with alternate, transverse, rounded ribs and sulcations with a few nodules on the former.

228. G. harpa, Lea.

Melania harpa, Lea, Philos. Proc., iv, p. 163, August. 1845. Philos. Trans., x, p. 64, t. 9, f. 45. Obs., iv, p. 64. Binney, Check List, No. 135. Brot, List, p. 32. Reeve, Monog. Melania, sp. 313, 314.
Megara harpa, Lea, Adams, Genera, i, p. 306.
Melania textilosa, Anthony, Ann. Lyc. Nat. Hist., vi, p. 101, t. 2, f. 20, 1854. Binney, Check List, No. 270. Brot, List, p. 40. Reeve, Monog. Melania, sp. 391.

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

Fig. 616.

Habitat.— Tuscaloosa, Alabama.

Diameter, ·42; length, ·8 of an inch.

Observations.— I am not able to place this with any of the species submitted to me by Dr. Budd, and although a single specimen only is under examination, I have considered it new. It has some resemblance to *M. Haysiana*, but is not so cylindrical, and the aperture is not so narrow. It is transversely striate over the whole whorls. The length of the aperture is about two-fifths the length of the shell. The aperture being eroded the number of whorls cannot be ascertained.—*Lea.*

The following description represents the young of this species:—

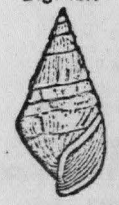
Melania textilosa.— Shell conical, thick; color uniform, pale greenish-yellow; spire not acutely elevated; whorls 7-8, nearly flat, obscurely striate and subnodulous; body-whorl coarsely, but not thickly,

striate on its upper half; sutures impressed; aperture rather large, ovate, whitish, inclining to roseate.

Habitat.— Georgia.

Diameter, ·40 (10 millim.); length, ·88 of an inch (23 milim.).

Fig. 617.



Length of aperture, ·39 (10 millim.); breadth of aperture, ·20 of an inch (5 millim.).

Observations.— In form like *M. Duttoniana*, Lea, but without any of the ornamental decorations of that species. The nodules are not so distinct, appearing more like interrupted folds. The striæ on the body-whorl are not uniformly distributed, but above the middle there is a plain surface or ground, which becomes more decidedly a furrow on the penultimate whorl.—*Anthony.*

G. harpa is narrower than *laeta* with the mouth more acuminate below. The striæ are smaller and closer.

229. G. oliva, Lea.

Melania oliva, Lea, Philos. Proc., ii, p. 242, 1842. Philos. Trans., ix, p. 27. Obs., iv, p. 127. Wheatley, Cat. Shells U. S., p. 26. Binney, Check List, No. 187. Brot, List, p. 33.
Megara oliva, Lea, Adams, Genera, i, p. 306.

Description.— Shell striate, elliptical, solid, brown; spire rather short; sutures much impressed; whorls convex; columella incurved, thickened above; aperture ovate, white.

Habitat.— Alabama.

Diameter, ·50 of an inch; length, 1 inch.

Observations.— This is a ponderous and rather large species, with not very distinct striæ on the few specimens before me. The superior part of the columella is quite callous. The apex of each is too much eroded to designate the number of the whorls. The aperture is rather small and contracted. One of the specimens is rather coarsely plicate.— *Lea.*

This shell is narrower than *laeta*, resembling *harpa* in form, but with the aperture wider and more rounded below. It is very closely allied to *G. excavata*, which is a smooth species, however.