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Geological Survey of Alabama,

EUGENE A. SMITH, PH. D., STATE GEOLOGIST.

FAUNA OF ALABAMA.

1. *FRESH WATER AND LAND SHELLS.*

BY JAMES LEWIS, M. D.

GEOLOGICAL SURVEY OF ALABAMA.

EUGENE A. SMITH, PH. D., STATE GEOLOGIST.

FAUNA OF ALABAMA.

1. *FRESH WATER AND LAND SHELLS.*

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24
A limited number of SINGLE COPIES of a pamphlet embracing a list of the Land and Fresh Water shells of Alabama may be had by addressing

JAMES LEWIS, MORAWK, N. Y.

Enclose fifty cents.

FAUNA OF ALABAMA.

FRESH WATER AND LAND SHELLS.

There is no State in the Union that affords a more diversified Molluscan Fauna than is found within the limits of Alabama. While exhibiting no marked superiority in the number of species that are classed as Land Shells, and possibly displaying a meager list of aquatic pulmonates, it is remarkably rich in fresh water bivalves (Unionidæ), and in an operculate class of aquatic univalves, chiefly of the family Melanidæ.

The list of species here presented is compiled from various sources, chiefly the writings of Isaac Lea, L. L. D., who has written more on the fresh water shells of North America than all other original writers together. The compilations and writings of Mr. W. G. Binney have afforded much aid in compiling the pulmonate species. The writings of Thomas Say and other distinguished American Conchologists, have also been consulted.

The verification of facts relative to local and geographical distribution, has been greatly aided by material presented by various gentlemen, who have, at different times, collected shells in various parts of Alabama. Among the gentlemen to whom the greatest credit is due for specimens and notes on Geographical Distribution, may be mentioned Dr. E. R. Showalter, of Mobile, formerly of Uniontown, who, prior to 1861, was largely interested in bringing to light many species which were previously unknown. Later, Mr. Truman H. Aldrich, of Montevallo,

formerly of Selma, has taken up the subject and afforded much valuable information. At Tuscumbia, L. B. Thornton, Esq., and Mr. B. Pybas have made many useful discoveries. At Tuscaloosa, Dr. Eugene A. Smith, State Geologist of Alabama, has recently made additions to the subject. There are, no doubt, portions of the State that have not been explored, and very likely unknown species remain to be brought to light. The shells of the Chattahoochee River, and of streams in the eastern part of Alabama were very diligently studied prior to 1861, by Dr. Hugh M. Neisler, Mr. Garrett Hallenbeck and Wm. Gesner, at Columbus, Ga. The late Rt. Rev. Stephen Elliott, of Savannah, Ga., also materially aided in contributions to our knowledge of the shells of Alabama, Georgia and other Southern States. A study of the shells of Alabama necessarily involves a portion of the fauna of Georgia and other States on the borders of Alabama. To isolate them in cases in which there is a doubt as to the extent of Geographical Distribution is sometimes difficult. Species may have been credited to Alabama that may hereafter not be verified. Unquestionably a few species that were referred to Georgia at the time they were described, will hereafter also be found in Alabama, though not so recorded here.

The fascinating character of the study of this branch of Natural History will assuredly bring new collectors into the field, and bring to light many new facts which at some future time will make a revision of the present list necessary.

JAMES LEWIS.

Mohawk, N. Y., October 24th, 1876.

Shell-bearing Mollusca of Alabama.

LAMELLIBRANCHIATA.

CONCHIFERA.

Family Unionidæ.

GENUS UNIO, Brug.

- U. abacus, *Haldeman*. Tennessee drainage.
- “ acutissimus, *Lea*. Alabama river ; Coosa river.
- “ *Æsopus*, *Green*. Tennessee drainage.
- “ alatus, *Say*. “ “
- “ altilis, *Conrad*. Alabama river.
- “ amœnus, *Lea*. Tennessee drainage.
- “ Andersonensis, *Lea*. “ “
- “ Anodontoides, *Lea*. Chattahoochee and Alabama rivers ; Bogue Chitto Creek.
- “ appressus, *Lea*. Tennessee drainage.
- “ aquilus, *Lea*. Chattahoochee or its tributaries.
- “ arcæformis, *Lea*. Tennessee drainage.
- “ arctatus, *Con*. Black Warrior, Coosa and Cahawba rivers.
- “ arcus, *Con*. Alabama river.
- “ argenteus, *Lea*. Tennessee drainage.
- “ asper, *Lea*. Alabama river.
- “ asperatus, *Lea*. Alabama and Coosa rivers ; Cahawba river ; Buck creek.
- “ atro-costatus, *Lea*. Alabama and Coosa rivers ; Cahawba river.
- “ atro-marginatus, *Lea*. Chattahoochee river.

- U. *basalis*, *Lea*. Carter's creek, (Ga.)
- " *bellulus*, *Lea*. Tennessee drainage.
- " *biemarginatus*, *Lea*. " "
- " *Bigbyensis*, *Lea*. " "
- " *Binneyi*, *Lea*. "Alabama." (Lea.)
- " *Blandianus*, *Lea*. Coosa river.
- " *Boykinianus*, *Lea*. Alabama, Chattahoochee and Coosa rivers; Buck creek.
- " *brevidens*, *Lea*. Tennessee drainage.
- " *Brumbyanus*, *Lea*. "Warrior river."
- " *cælatus*, *Conrad*. Tennessee drainage.
- " *Cahabensis*, *Lea*. Cahawba river.
- " *camelopardilis*, *Lea*. Tennessee drainage.
- " *camelus*, *Lea*. " "
- " *camptodon*, *Say*. Coffee creek and Big Prairie creek.
- " *caperatus*, *Lea*. Tennessee drainage.
- " *capsæformis*, *Lea*. " "
- " *castaneus*, *Lea*. Alabama river.
- " *Chattanoogaensis*, *Lea*. Coosa and Cahawba rivers; Bogue Chitto creek.
- " *Chunii*, *Lea*. Near Selma.
- " *circulus*, *Lea*. Tennessee drainage.
- " *circumactus*, *Lea*. Tennessee drainage.
- " *Claibornensis*, *Lea*. Alabama river.
- " *Clarkianus*, *Lea*. Tennessee drainage.
- " *clavus*, *Lamarck*. " "
- " *Clinchensis*, *Lea*. " "
- " *compactus*, *Lea*. Coosa and Cahawba rivers; Buck creek.
- " *concestator*, *Lea*. Chattahoochee river.
- " *concolor*, *Lea*. Big Prairie creek; Buck creek; Cahawba river.
- " *Conradianus*, *Lea*. Tennessee drainage.
- " *consanguineus*, *Lea*. Alabama, Coosa and Cahawba rivers.
- " *Cooperianus*, *Lea*. Tennessee drainage.
- " *corneus*, *Lea*. Chattahoochee tributaries.

- ✓ U. cornutus, *Barnes*. Alabama, Coosa and Tennessee rivers.
- “ corvunculus, *Lea*. Cahawba river.
- “ Columbensis, *Lea*. Chattahoochee river.
- ✓ “ crassidens, *Lamarck*. Alabama, Coosa and Tennessee rivers. Cahawba river.
- “ crebrivittatus, *Lea*. Coosa river ; Coosawattee river.
- “ crudus, *Lea*. Tennessee Drainage.
- “ cuneolus, *Lea*. Tennessee Drainage.
- “ cylindrellus, *Lea*. “Northern Alabama,” (*Lea*).
- ✓ “ cylindricus, *Say*. Tennessee Drainage.
- “ decisus, *Lea*. “Alabama river,” (*Lea*). Bogue Chitto creek.
- “ declivis, *Say*. Alabama. Shoal creek.
- “ decumbens, *Lea*. “Alabama,” (*Lea*).
- “ denigratus, *Lea*. Chattahoochee river.
- “ deviatus, *Anthony*. Tennessee Drainage.
- “ discrepans, *Lea*. “Northern Alabama,” (*Lea*).
- “ dispar, *Lea*. Chattahoochee river ; Bogue Chitto creek.
- “ dolabelloides, *Lea*. Tennessee Drainage.
- “ dolosus, *Lea*. Alabama and Cahawba rivers.
- ✓ “ dromas, *Lea*. Tennessee Drainage.
- ✓ “ ebenus, *Lea*.. Alabama river.
- ✓ “ Edgarianus, *Lea*. Tennessee drainage.
- “ Estabrookianus, *Lea*. Tennessee Drainage.
- “ excavatus, *Lea*. Alabama, Coosa, Black Warrior, and Cahawba rivers ; Buck creek ; Bogue Chitto creek.
- “ exiguus, *Lea*. Chattahoochee river ; Shoal creek.
- “ extensus, *Lea*. Chattahoochee river.
- “ fabalis, *Lea*. Tennessee Drainage.
- “ fallax, *Lea*. Chattahoochee river.
- “ fibuloides, *Lea*. Coosa river (*Showalter*).
- “ flavescens, *Lea*. Black Warrior river.
- “ flavidus, *Lea*. Tennessee Drainage.
- “ Florentinus, *Lea*. Tennessee Drainage.
- “ foliatus, *Hildreth*. Tennessee river.

- U. Foremanianus, *Lea*. Coosa and Cahawba rivers; Buck creek.
- “ Forsheyi, *Lea*. Big Prairie creek.
- “ fraternus, *Lea*. Chattahoochee river; Cahawba river?
- “ fucatus, *Lea*. “Northern Alabama,” (*Lea*). Tusculumbia.
- “ fumatus, *Lea*. Chattahoochee tributaries.
- “ Gerhardtii, *Lea*. Cahawba river; Buck creek. (*Querie*, *Spillmanii*?)
- “ germanus, *Lea*. Coosa river.
- “ Gesnerii, *Lea*. Uchee creek.
- ✓ “ gibbosus, *Barnes*. Tennessee river.
- “ glandaceus, *Lea*. Cahawba river; Buck creek.
- “ glans, *Lea*. Tennessee drainage.
- “ Gouldii, *Lea*. “Tuscaloosa,” (*Lea*).
- ✓ “ gracilis, *Barnes*. Tennessee drainage.
- “ granulatus, *Lea*. Big Prairie creek; Coosa river.
- “ Greenii, *Conrad*. Black Warrior river.
- “ Hallenbeckii, *Lea*. Chattahoochee tributaries.
- “ Hanleyianus, *Lea*. Coosawattee river.
- “ Hartmanii, *Lea*. Coosa river.
- ✓ “ Haysianus, *Lea*. Tennessee drainage.
- “ Holstonensis, *Lea*. Tennessee drainage.
- “ incrassatus, *Lea*. Chattahoochee river.
- “ inflatus, *Lea*. Alabama river.
- “ infucatus, *Conrad*. Chattahoochee river.
- “ instructus, *Lea*. Cahawba river; Buck creek.
- “ intercedens, *Lea*. Chattahoochee river.
- “ intermedius, *Conrad*. Tennessee river.
- “ interventus, *Lea*. Cahawba river.
- ✓ “ irroratus, *Lea*. Tennessee drainage.
- “ Johannis, *Lea*. Coosa river (*Showalter*).
- “ Kleinianus, *Lea*. Chattahoochee river.
- “ late-costatus, *Lea*. “Tuscaloosa,” (*Lea*).
- “ Lawii, *Lea*. Tennessee drainage.
- “ Lesueurianus, *Lea*. Tennessee drainage.
- ✓ “ lens, *Lea*. Tennessee drainage.
- “ Lewisii, *Lea*. Coosa river.

- U. lienosus, *Conrad*. Creeks—Bogue Chitto creek.
- “ limatulus, *Conrad*. Uchee Bar (Chattahoochee river).
(Lea, X 43.)
- “ ligamentinus, *Lamarck*. Tennessee river.
- “ lineatus, *Lea*. Chattahoochee river.
- “ linguæformis, *Lea*. Chattahoochee river.
- “ litus, *Lea*. Cahawba river; Buck creek; Shoal creek.
- “ luridus, *Lea*. Coosawattee river.
- “ medius, *Lea*. Coosa river.
- “ Meredithii, *Lea*. Spring creek, Tuscumbia. (Thorn-
ton.)
- ✓ “ metanever, *Raf*. Alabama, Coosa and Tennessee riv-
ers.
- “ Mississippensis, *Con*. Coffee creek.
- “ modicellus, *Lea*. Connesauga river and Chattanooga.
- “ modicus, *Lea*. Chattahoochee river.
- “ monodontus, *Say*. Tennessee river.
- “ Mooresianus, *Lea*. Tennessee river.
- ✓ “ multiradiatus, *Lea*. Tennessee river.
- “ mundus, *Lea*. Tennessee river.
- ✓ “ Nashvillensis, *Lea*. Beech creek; Shoal creek.
- “ negatus, *Lea*. Big Prairie creek; Bogue Chitto creek.
- “ neglectus, *Lea*. “Northern Alabama,” (Lea).
- “ nigellus, *Lea*. Chattahoochee river.
- “ nucleopsis, *Conrad*. Coosa river (Showalter).
- “ nux, *Lea*. Alabama river; Buck creek; Cahawba riv-
er; Shoal creek.
- “ obesus, *Lea*. Chattahoochee river.
- “ obtusus, *Lea*. Chattahoochee river.
- “ obuncus, *Lea*. Tennessee drainage.
- “ ornatus, *Lea*. “Alabama”? (Lea).
- “ ovatus, *Say*. Tennessee river.
- “ pallescens, *Lea*. “Tuscaloosa,” (Lea.)
- “ pallidofulvus, *Lea*. Cahawba river.
- “ parvulus, *Lea*. Coosa river.
- ✓ “ parvus, *Barnes*. Tennessee drainage.
- “ paulus, *Lea*. Chattahoochee river; Beech creek.
- “ pellucidus, *Lea*. Chattahoochee river.

- U. *penicillatus*, *Lea*. Chattahoochee river.
 " *penitus*, *Conrad*. Alabama river ; Coosa river.
 " *perovatus*, *Conrad*. "Green county," (Conrad).
 " *perovalis*, *Conrad*. Alabama river.
 " *perpastus*, *Lea*. Coosa river.
 " *perpictus*, *Lea*. Tennessee drainage.
 ✓ " *perplexus*, *Lea*. Tennessee drainage.
 " *perradiatus*, *Lea*. Tennessee river.
 ✓ " *phaseolus*, *Hildreth*. Tennessee river.
 " *placitus*, *Lea*. "Alabama," (Lea).
 " *plancus*, *Lea*. Coosa and Cahawba rivers.
 " *planicostatus*, *Lea*. Tennessee drainage.
 " *planior*, *Lea*. Tennessee drainage.
 " *plenus*, *Lea*. Tennessee river ; Alabama river.
 " *porphyrius*, *Lea*. Coosa river.
 " *Postellii*, *Lea*. Chattahoochee river.
 " *Prattii*, *Lea*. Chattahoochee river.
 " *propinquus*, *Lea*. Tennessee river.
 " *pudicus*, *Lea*. "N. Alabama," (Lea).
 " *pullatus*, *Lea*. Chattahoochee river.
 " *pulvinulus*, *Lea*. Coosawattee river ; Tuscaloosa.
 U. *purpuratus*, *Lamarck*. Alabama river ; Coosa river ;
 Bogue Chitto creek.
 ✓ " *pustulosus*, *Lea*. Tennessee river.
 " *Pybasii*, *Lea*. Tennessee drainage ; small streams
 Coosa river ; Shoal creek.
 ✓ " *pyramidatus*, *Lea*. Tennessee and Alabama rivers ;
 Coosa river (Showalter).
 " *pyriformis*, *Lea*. Chattahoochee river.
 " *quadratus*, *Lea*. Chattahoochee river or tributaries.
 " *radians*, *Lea*. Cahawba river.
 " *radiosus*, *Lea*. Tennessee river.
 " *Raeensis*, *Lea*. Chattahoochee river.
 ✓ " *Rangianus*, *Lea*. Tennessee river.
 " *recurvatus*, *Lea*. " " "
 " *Roswellensis*, *Lea*. Chattahoochee river.
 " *rubellinus*, *Lea*. Coosa river ; Cahawba river ; Shoal
 creek.

- U. *rubellus*, *Con.* Black Warrior river.
- “ *rubidus*, *Lea.* Coosa river and Big Prairie creek.
- “ *Rumphianus*, *Lea.* Coosa and Cahawba rivers.
- “ *rutilans*, *Lea.* Chattahoochee river ; Shoal creek.
- “ *salebrosus*, *Lea.* Chattahoochee or tributaries.
- “ *saxeus*, *Conrad.* Alabama river.
- “ *scitulus*, *Lea.* Spring creek, Tuscumbia.
- ✓ “ *securis*, *Lea.* Tennessee river ; Alabama river.
- “ *Showalterii*, *Lea.* Coosa river.
- “ *simplex*, *Lea.* Black Warrior river.
- “ *simulans*, *Lea.* Cahawba river.
- “ *Sloatianus*, *Lea.* Chattahoochee river.
- “ *Sowerbyanus*, *Lea.* Tennessee river.
- “ *sparsus*, *Lea.* “ “
- “ *sparus*, *Lea.* Shoal Creek.
- “ *sphæricus*, *Lea.* Alabama river ; Cahawba river.
- “ *stabilis*, *Lea.* Coosa river.
- “ *stapes*, *Lea.* Tennessee river.
- “ *Stewardsōnii*, *Lea.* “ “
- “ *stramineus*, *Conrad.* Uchee and other creeks ; Beech creek.
- “ *striatus*, *Lea.* Chattahoochee river.
- “ *strigosus*, *Lea.* Chattahoochee or tributaries.
- “ *subangulatus*, *Lea.* Chattahoochee river ; Buck creek ; Shoal creek.
- “ *subellipsis*, *Lea.* Chattahoochee river ; Buck creek ; Shoal creek.
- “ *subgibbosus*, *Lea.* Coosa river ; Alabama river.
- “ *subglobatus*, *Lea.* Tennessee river.
- “ *sublatus*, *Lea.* Uchee bar ; Buck Creek ; Cahawba river ; Shoal creek.
- “ *sudus*, *Lea.* Chattahoochee river.
- “ *Taitianus*, *Lea.* “ Alabama river.”
- ✓ “ *tenuissimus*, *Lea.* Tennessee river.
- “ *tetralasmus*, *Say.* Creeks.
- “ *Thorntonii*, *Lea.* Tennessee river.
- “ *tortivus*, *Lea.* Chattahoochee river.
- ✓ “ *trapezoides*, *Lea.* Alabama river.

- ✓ *U. triangularis*, *Barnes*. Tennessee river.
- “ *trinacrus*, *Lea*. Coosa river.
- “ *Troschelianus*, *Lea*. Coosawattee river.
- “ *turgidulus*, *Lea*. Florence.
- ✓ “ *tuberculatus*, *Barnes*. Big Prairie creek; Cahawba river.
- “ *tumescens*, *Lea*. Tennessee river.
- “ *Tuscumbiensis*, *Lea*. “ “
- “ *umbrans*, *Lea*. Shoal creek.
- ✓ “ *undulatus*, *Barnes*. Tennessee river.
- “ *unicolor*, *Lea*. Tuscaloosa.
- “ *vallatus*, *Lea*. Bogue Chitto creek; Buck creek; Cahawba river.
- ✓ “ *verrucosus*, *Barnes*. Tennessee river.
- “ *verus*, *Lea*. Cahawba river; Buck creek.
- “ *verutus*, *Lea*. Chattahoochee river.
- “ *vibex*, *Conrad*. Black Warrior river.
- “ *virescens*, *Lea*. Tennessee drainage; Spring creek, Tuscumbia; Beech creek.
- “ *viridans*, *Lea*. Chattahoochee river.
- “ *viridiradiatus*, *Lea*. Big Uchee creek.
- ✓ “ *zig zag*, *Lea*. Alabama river. [Querie, donaciformis *Lea* ?]

Genus MARGARITANA, *Schum*.

- M. Alabamensis*, *Lea*. Talladega creek (*Lea*); Buck creek: Beech creek.
- ✓ “ *complanata*, *Barnes*. Big Prairie creek.
- “ *Connesaugaensis*, *Lea*. Head waters of Alabama river.
- “ *Curreyana*, *Lea*. Tennessee river.
- “ *Elliottii*, *Lea*. Chattahoochee river; Uchee creek.
- “ *Georgiana*, *Lea*. Tributaries of Coosa river; Shoal creek.*
- “ *Gesnerii*, *Lea*. Uphaupee creek.
- ✓ “ *Holstonia*, *Lea*. Coosa river (abounds in streams tributary to the Tennessee river); Shoal creek.
- “ *marginata*, *Say*. Tennessee river.

*[NOTE.—Possibly the shell referred to Shoal creek, as *Marg. Georgiana* may be *Holstonia*.

M. minor, *Lea*. Tennessee drainage (small streams tributary to Tennessee river.)

✓ " *rugosa*, *Barnes*. Tennessee river.

" *Spillmanii*, *Lea*. Cahawba river.

" *triangulata*, *Lea*. Chattahoochee river.

Genus *ANODONTA*, *Lamarck*.

✓ *A. edentula*, *Say*. Tennessee river.

" *Gesnerii*, *Lea*. Uphaupec creek.

" *Hallenbeckii*, *Lea*. Uphaupec creek.

" *Showalterii*, *Lea*. Coosa river ; Big Prairie creek.

" *subvexa*, *Conrad*. Black Warrior river.

Family *CORBICULADÆ*.

Genus *CYRENA*, *Lamarck*.

✓ *C. Carolinensis*, *Lamarck*. Mobile bay.

Genus *SPHÆRIUM*, *Scopoli*.

✓ *S. stramineum*, *Conrad*.

✓ *S. fabale*, *Prime*. Shoal creek.

✓ *S. occidentale*, *Prime*. (Near Columbus, Ga.)

S. contractum, *Prime*. Grier's creek.

Genus *PISIDIUM*, *Pfeiffer*.

P. Virginicum, *Bourguignat*. Chattahoochee river.

✓ *P. abditum*, *Haldeman*. Springs and small streams.

PECTINIBRANCHIATA.

Family *MELANIDÆ*.

Sub-Family *STREPOMATIDÆ*.

Genus *STREPOMA*, *Raf*.

Sub Genus *Io*, *Lea*.

✓ *Io spinosa*, *Lea*. Tennessee river.

Io turrita, *Anthony*. Bridgeport. Tennessee river.

Sub Genus *ANGITREMA*, *Haldeman*.

A. angulata, *Wetherby*. Elk river. Compare *Wheatleyi* Tryon.

- A. *armigera*, *Say*. Tennessee river.
- " *curta*, *Lea*. Tennessee river.
- " *lima*, *Con*. Elk river. (Compare *verrucosa*, *Raf.*)
- " *salebrosa*, *Con*. Tennessee river.
- " *subglobosa*, *Lea*. Tennessee river.
- " *Tuomeyi*, *Lea*. Tennessee river.
- " *verrucosa*, *Raf.* Tennessee river.
- " *Wheatleyi*, *Tryon*. Elk river.

Sub-genus LITHASIA, *Haldeman*.

- L. *brevis*, *Lea*. Alabama and Coosa rivers.
- L. *compacta*, *Anthony*. Cahawba river; Buck creek.
- L. *cylindrica*, *Lea*. Coosa river.
- L. *dilatata*, *Lea*. Tennessee river.
- L. *Florentiana*, *Lea*. Florence.
- L. *fusiformis*, *Lea*. Coosa river.
- L. *imperialis*, *Lea*. Tuscumbia.
- L. *purpurea*, *Lea*. Cahawba river. (See *Gon. purpurea*, *Lea.*)
- L. *Showalterii*, *Lea*. Cahawba river; Alabama river.
- L. *vittata*, *Lea*. Coosa and Cahawba rivers.

Sub-genus STREBHOBASIS, *Lea*.

- S. *bitæniata*, *Con*. "Black Warrior river."
- S. *carinata*, *Lea*. "Tennessee river."
- S. *Clarkii*, *Lea*. "Tennessee river."
- S. *cornea*, *Lea*. Tennessee river.
- S. *corpulenta*, *Anthony*. Tennessee river.
- S. *Lyonii*, *Lea*. Tennessee river.
- S. *olivaria*, *Lea*. Tennessee river.
- S. *plena*, *Anthony*. Tennessee river.
- S. *solida*, *Lea*. Tennessee river.

Sub-genus TRYPANOSTOMA, *Lea*.

- T. *abruptum*, *Lea*. "Alabama," (*Lea*).
- T. *affine*, *Lea*. Tennessee river.
- T. *Alabamense*, *Lea*. Tennessee river.
- T. *alveare*, *Conrad*. Tennessee river.
- T. *annuliferum*, *Conrad*. "Black Warrior river."

- T. *Anthonyi*, *Lea*. Black Warrior river, and Yellow Leaf creek.
- T. *aratum*, *Lea*. "N. Alabama," (*Lea*).
- T. *attenuatum*, *Lea*. Tennessee river.
- T. *bicinctum*, *Tryon*. Tennessee river.
- T. *bivittatum*, *Lea*. Tennessee river.
- T. *Brumbyi*, *Lea*. Coosa river, and at Huntsville.
- T. *canaliculatum*, *Say*. Tennessee river.
- T. *canalitium*, *Lea*. Yellow Leaf creek, and Coosa river.
- T. *castaneum*, *Lea*. Coosa river.
- T. *Clarkii*, *Lea*. "Florence; Coosa, Cahawba, and Alabama rivers." (See Appendix.)
- T. *Conradii*, *Tryon*. Numerous small streams tributary to the Coosa, Cahawba, and Alabama rivers. (See *pyrenellum*, *Con*.)
- T. *curvatum*, *Lea*. Tennessee river.
- T. *Currierianum*, *Lea*. Yellow Leaf creek.
- T. *dux*, *Lea*. Tennessee river.
- T. *excuratum*, *Conrad*. Tennessee river.
- T. *filum*, *Lea*. Tennessee river.
- T. *Florencense*, *Lea*. Florence.
- T. *Foremanii*, *Lea*. Coosa river.
- T. *gradatum*, *Anth*. "Alabama."
- T. *gracile*, *Lea*. Coosa and Cahawba rivers.
- T. *Hartmanii*, *Lea*. Coosa and Cahawba rivers. (Compare *prasinatum*.)
- T. *hastatum*, *Anth*. "Alabama."
- T. *incurvum*, *Lea*. Tennessee river.
- T. *Jayi*, *Lea*. Coosa and Cahawba rivers.
- T. *lativittatum*, *Lea*. "Chickasaha river, Alabama," (*Lea*).
- T. *ligatum*, *Lea*. Tennessee river.
- T. *Leaii*, *Tryon*. Coosa river.
- T. *lugubre*, *Lea*. "Alabama."
- T. *minor*, *Lea*. Tennessee river.
- T. *modestum*, *Lea*. Tennessee river. Tryon, page 101.
- Obs. IX.170. (See *lugubre*, *Lea*.)

- T. moniliferum*, *Lea.* Tennessee river.
T. moriforme, *Lea.* Chattanooga. Tennessee river.
T. nobile, *Lea.* Tennessee R., Jackson Co.
T. nodosum, *Lea.* Tennessee river. "Tuscumbia."
T. olivaceum, *Lea.* Tombigbee river.
T. planogyrum, *Anth.* "Alabama."
T. ponderosum, *Anth.* Tennessee river.
T. opacum, *Anth.* "Alabama."
T. Postellii, *Lea.* Tennessee river.
T. prasinatum, *Con.* "Alabama river;" also, in the Coosa and Cahawba rivers.
T. pumilum, *Lea.* Tennessee river.
T. Pybasii, *Lea.* Tennessee river.
T. pyrenellum, *Con.* Talladega Springs; Cahawba river; Buck creek; Clear creek; Coosa river; Sulphur Spring, six miles west of Jacksonville.
T. robustum, *Lea.* Tennessee river.
T. Showalterii, *Lea.* Cahawba river; Coosa river; Tuscaloosa.
T. spinalis, *Lea.* "Alabama."
T. striatum, *Lea.* Shelby Springs; Florence.
T. Thorntonii, *Lea.* Tennessee river.
T. tortum, *Lea.* Little Uchee river. (See *lugubre*, *Lea.*)
T. trivittatum, *Lea.* Tombigbee river.
T. Troostii, *Lea.* Tennessee river.
T. Tuomeyi, *Lea.* Tennessee river.
T. univittatum, *Lea.* Cahawba R. (See *prasinatum*?)
T. venustum, *Lea.* Big Prairie creek. (See *vestitum*, *Con.*)
T. vestitum, *Conrad.* Big Prairie creek; Green county; Four Mile creek; Buck creek.
T. Wheatleyi, *Lea.* Coosa river.

Sub-genus GONIOBASIS, *Lea.*

- G. abscida*, *Anth.* "Alabama." [Abnormal, old and ex-eroded.]
G. acuta, *Lea.* N. Alabama. Tributaries of Tennessee river?
G. æqua, *Lea.* Yellow Leaf creek.

- G. Alabamensis*, *Lea.* Coosa river.
G. ambusta, *Anth.* Cahawba river. "Alabama."
G. amœna, *Lea.* "N. Alabama."
G. ampla, *Lea. Anth.* Cahawba and Coosa rivers.
G. angulata, *Anth.* Cahawba river. [var. *cinnamomea*?]
G. arctata, *Lea.* Tuscaloosa,
G. auricoma, *Lea.* Tennessee river. (*Querie instabilis*?)
G. auriculæformis, *Lea.* "Tuscaloosa."
G. baculoides, *Lea.* Coosa river.
G. basalis, *Lea.* "Alabama." (*Querie*, young of *ampla*?)
G. bellula, *Lea.* Yellow Leaf creek; Cahawba river;
 Coosa river. (*Querie*, *Lewisii*, var?)
G. Bentoniensis, *Lea.* Benton Co.
G. Binneyana, *Lea.* Coosa river.
G. Boykiniana, *Lea.* Chattahoochee river,
G. Bridgesiana, *Lea.* Cahawba river,
G. Brumbyi, *Lea.* "Alabama."
G. brunnea, *Anth.* "Alabama."
G. bullula, *Lea.* Yellow Leaf creek.
G. Cahawbensis, *Lea.* Cahawba river; Montevallo,
G. calculoides, *Lea.* Coosa river.
G. capillaris, *Lea.* Coosa river.
G. carinifera, *Lamarck*, Montevallo; Clear creek; Blount
 spring; Gadsden; Jefferson county; Sulphur spring,
 6 miles west of Jacksonville.
G. carino-costata, *Lea.* Montevallo; Talladega spring;
 Talladega; Buck creek; Calera; Shelby springs;
 Camp branch; Bowie's spring, 6 miles west of Tal-
 ladega; Cahatchee.
G. casta, *Anth.* "Alabama."
G. catenoides, *Lea.* Chattahoochee river.
G. cinnamomea, *Anth.* Cahawba river; Buck creek.
G. circincta, *Lea.* Elk river; (*querie*, banded *plicatula*?)
G. clara, *Anth.* "Alabama."
G. Clarkii, *Lea.* Gravelly springs.
G. clathrata, *Lea.* Jackson county; (very like *arachnoidea*,
 which is probably a synonym of *acuta*.)

- G. clausa*, *Lea*. Coosa river.
G. clavæformis, *Lea*. Talladega spring; properly belonging to tributaries of Tennessee river.
G. clavula, *Lea*. Jackson county.
G. cochliaris, *Lea*. Shelby county; [querie, *macella*?]
G. comma, *Con*. "Tributaries of Black Warrior river."
G. continens, *Lea*. Spring creek, Tuscumbia; Buxahatchee creek, near Shelby springs; [querie, *Pybasii*, without bands?]
G. Coosaensis, *Lea*. Coosa river.
G. corneola, *Anth*. Coosa river; "Alabama;" [young of *Lith. brevis*?]
G. costulata, *Lea*. Jacksonville, Calhoun county; Sulphur spring.
G. crenatella, *Lea*. "Coosa river."
G. crispa, *Lea*. Florence.
G. cristata, *Anth*. Cahawba river; "Alabama;" *Anth*.
G. crebristriata, *Lea*. Tuscaloosa.
G. crepera, *Lea*. Yellow Leaf creek.
G. cruda, *Lea*. "Tennessee river."
G. culta, *Lea*. Cahatchee creek; Coosa river.
G. cylindræa, *Con*. Black Warrior river; "Tombigbee river,"
G. DeCampii, *Lea*. Huntsville.
G. Dooleyensis, *Lea*. "Chattanooga;" (Lea's label.)
G. Elliottii, *Lea*. Little Uchee and Uchee river.
G. ellipsoides, *Lea*. Coosa river.
G. elliptica, *Lea*. Coosa river.
G. excavata, *Anthony*. Cahawba river; "Alabama;" *Anth*.
G. expansa, *Lea*. "Alabama;" Bowie's spring branch, 6 miles north of Talladega; (no figure extant); the apex of the young shell is plicate.
G. fabalis, *Lea*. "Tennessee river;" [querie, Coosa river?]
G. fallax, *Lea*. "Coosa river."
G. fascinans, *Lea*. "Yellow Leaf creek;" Cahawba river; Coosa river.
G. flava, *Lea*. "Benton co.;" Talladega county; Calera Shelby county.

- G. flavescens*, *Lea*. Tennessee river; querie, erroneous locality?
G. formosa, *Conrad*. "N. Alabama."
G. fraterna, *Lea*. Bibb county and Cahawba river; [compare *pulcherrima*, *Anth.*]
G. fumea, *Lea*. Yellow Leaf creek.
G. furva, *Lea*. "Branch of Coosa river."
G. fuscocincta, *Anth.* "Alabama."
G. Gerhardtii, *Lea*. Montevallo; Coosa river; Turner's spring branch, 6 miles south of Talladega; Talladega.
G. germana, *Anth.* Cahawba river.
G. Gesnerii, *Lea*. Uchee river.
G. glabra, *Lea*. North Alabama; tributaries of Tennessee river.
G. glandaria, *Lea*. Coosa river.
G. Gouldiana, *Lea*. "North Alabama;" XII, 92.
G. grata, *Anth.* Big Prairie creek.
G. gravida, *Anth.* "Alabama."
G. grisea, *Anth.* "Tennessee river;" (doubtful.)
G. Hallenbeckii, *Lea*. Chattahoochee river.
G. harpa, *Lea*. "Tuscaloosa;" Coosa river; Cahawba river.
G. Haysiana, *Lea*. "Alabama;" Coosa river.
G. Hydei, *Conrad*. "Black Warrior River."
G. impressa, *Lea*. Coosa river.
G. inclinans, *Lea*. Tuscumbia.
G. inflata, *Haldeman*. Alabama river; (querie, *germana*?)
G. infuscata, *Lea*. Montevallo; "Coosa river."
G. inosculata, *Lea*. Little Uchee river.
G. intercedens, *Lea*. Montevallo; four mile creek; Bogue Chitto creek; Cahawba river; Little Mayberry creek.
G. interrupta, *Haldeman*. Buxahatchee creek.
G. interveniens, *Lea*. "North Alabama."
G. laeta, *Jay*. Coosa river; (querie, *laeta*?)
G. lævigata, *Lea*. Alabama river; Talladega springs.

- G. Lewisii*, *Lea*. "Coosa and Tallapoosa rivers."
G. lita, *Lea*. Cahawba and Coosa rivers.
G. luteola, *Lea*. Coosa river; "Alabama river;" (querie, young *Lith. brevis*?)
G. macella, *Lea*. "Coosa river;" spring at Montevallo; (Coosa river doubtful.)
G. mellea, *Lea*. Coosa river; (querie, *ampla*, half grown?)
G. nassula, *Con*. "Limestone spring at Tuscumbia."
G. negata, *Lea*. Coosa river.
G. obesa, *Anthony*. "Alabama."
G. oliva, *Lea*. "Alabama."
G. olivula, *Conrad*. "Alabama."
G. osculata, *Lea*. Coosa river.
G. ovalis, *Lea*. "Alabama;" Coosa river.
G. paula, *Lea*. Cahawba river; (see *fraterna*, *Lea*; subangulata, *Anth*.; *pulcherrima*, *Anth*.)
G. paupercula, *Lea*. "North Alabama."
G. pergrata, *Lea*. Coosa river.
G. perstriata, *Lea*. "Huntsville" and "Coosa river;" compare, *acuta*, *Lea*, and *carino-costata*, *Lea*.
G. porrecta, *Lea*. North Alabama; (essentially a Tennessee species found in creeks.)
G. procissa, *Anth*. "Alabama;" (Tryon doubts the local reference.)
G. propria, *Lea*. "Alabama;" (Coosa river?)
G. proxima, *Say*. Alabama; (see Tryon's *Strepomatidæ*.)
G. pudica, *Lea*. Alabama river; Coosa river; Yellow Leaf creek.
G. pulcherrima, *Anth*. Bibb county; [see *paula*, *Lea*; subangulata, *Anth*.; *fraterna*, *Lea*.]
G. punicea, *Lea*. Alabama and Coosa rivers.
G. purpurea, *Lea*. Cahawba river; (Tryon says *rara*?)
G. pupæformis, *Lea*. Coosa river.
G. pupoidea, *Lea*. "Alabama;" Alabama, Coosa and Cahawba rivers.
G. Pybasii, *Lea*. Tuscumbia; Spring creek; (compare *continens*, *Lea*.)

- G. quadricincta*, *Lea*. Coosa and Cahawba rivers; Talladega county; Montevallo.
- G. quadrivittata*, *Lea*. Coosa and Cahawba rivers; Montevallo.
- G. rara*, *Lea*. Coosa and Cahawba rivers.
- G. rhombica*, *Anth*. "Alabama;" Cahawba river.
- G. rubicunda*, *Lea*. Coosa river.
- G. semicostata*, *Con*. Streams in North Alabama.
- G. semiquadrata*, *Reeve*. "Alabama;" (*quadrivittata* or *gerhardtii*.)
- G. Shelbyensis*, *Lea*. Yellow Leaf creek.
- G. Showalterii*, *Lea*. Coosa river; Cahawba river.
- G. simplex*, *Lea*. "Alabama;" (*Gon. virens*, *Anth*.)
- G. Smithsoniana*, *Lea*. Montevallo; Gadsden; Cave creek; Talladega springs.
- G. solidula*, *Lea*. Yellow Leaf creek.
- G. Spillmanii*, *Lea*. "Tennessee river."
- G. straminea*, *Lea*. "Coosa river;" (querie, young of *Lith. brevis*?)
- G. strenua*, *Lea*. Benton county; Buck creek; Beech creek.
- G. subangulata*, *Anth*. "Alabama;" Nix's marble quarry, Syllacoga, Talladega county; Bibb county.
- G. sulcata*, *Lea*. Cahawba river.
- G. symmetrica*, *Hald*. "Alabama;" Daley's creek; (*Gon. imbricata*, *Anth*.)
- G. Taitiana*, *Lea*. Alabama river; Claiborn; Averitt's spring branch, s. e. part of Talladega county.
- G. tenebrovittata*, *Lea*. Shelby county; "Coosa river."
- G. tenera*, *Anth*. "Alabama."
- G. Thorntonii*, *Lea*. Tuscumbia and Florence.
- G. trochiformis*, *Conrad*. Streams in North Alabama; (querie, *Try. filum*, *Lea*?)
- G. Tuomeyi*, *Lea*. "No. Alabama."
- G. Ucheensis*, *Lea*. Little Uchee river.
- G. Vanuxemiana*, *Lea*. Alabama and Coosa rivers.
- G. varians*, *Lea*. Coosa river.
- G. variata*, *Lea*. Montevallo; Coosa and Cahawba rivers; Buck creek.

- G. Vauxiana*, *Lea*. "Coosa river."
G. venusta, *Lea*. Coosa river.
G. versa, *Lea*. "Yellow Leaf creek." Lily Shoals, Cahawba river.
G. vesicula, *Lea*. Black Warrior river. (Querie, young of *Gon. cylindracea*, *Con.*?)
G. vicina, *Anth*. "Alabama."
G. violacea, *Lewis* [MSS.] Rail Road Spring, six miles west of Jacksonville.
G. virens, *Lea*. "Alabama."
G. virgulata, *Lea*. Coosa river; Tallapoosa R. (Querie, young of *G. ampla*, *Anth.*?)
G. vittata, *Anth*. "Alabama."
G. Wheatleyi, *Lea*. Coosa river.

Sub-genus *EURYCÆLON*, *Lea*.

- E. Anthonyi*, *Redfield*. Tennessee river, Bridgeport.
E. crassa, *Haldeman*. Tennessee river.
E. gibberosa, *Lea*. Alabama river.
E. gratiosa, *Lea*. "Coosa river;" Alabama river.
E. lachryma, *Anth*.
E. lepida, *Lea*. "Yellow Leaf creek;" Alabama river, at Selma.
E. midas, *Lea*. Alabama and Coosa rivers. (Alabama river doubtful.)
E. nubila, *Lea*. Coosa river.
E. proteus, *Lea*. "Tuscaloosa."

Sub-genus *SCHIZOSTOMA*, *Lea*.

- S. Alabamense*, *Lea*. "Alabama;" Coosa river.
S. amplum, *Anthony*. Coosa river.
S. Anthonyi, *Reeve*. "Alabama."
S. Babylonicum, *Lea*. "Tuscaloosa."
S. Buddii, *Lea*. "Tuscaloosa."
S. bulbosum, *Anthony*. Coosa river.
S. cariniferum, *Anthony*. Coosa river.
S. castaneum, *Lea*. Coosa river.
S. constrictum, *Lea*. "Tuscaloosa;" Coosa river.
S. eurtum, *Mighels*.

- S. cylindraceum*, *Mighels*. "Warrior river."
S. demissum, *Anthony*. ———?
S. ellipticum, *Anth.* Coosa river.
S. excisum, *Lea.* "Alabama."
S. glandulum, *Lea.* Coosa river.
S. glans, *Lea.* Coosa river.
S. incisum, *Lea.* "Alabama."
S. laciniatum, *Lea.* "Tuscaloosa."
S. Lewisii, *Lea.* Coosa river.
S. nuculum, *Anth.* Coosa river.
S. ovoideum, *Shuttleworth*. ———?
S. pagoda, *Lea.* "Tuscaloosa;" Coosa river.
S. pumilum, *Lea.* "Alabama;" Coosa river.
S. pyramidatum, *Shuttleworth*. ———?
S. salebrosum, *Anth.* Coosa river.
S. Showalteriana, *Lea.* Coosa river.
S. sphæricum, *Anth.* Coosa river.
S. Wetumpkaense, *Lea.* Coosa river. [Querie, var. or
young of pagoda?]
S. Wheatleyi, *Lea.* Coosa river.

Sub-genus *ANCULOSA*, *Say*.

- A. ampla*, *Anthony*. Cahawba river; Coosa river; Buck
creek; Shoal creek.*
A. contorta, *Lea.* Coosa river. [Querie, Lith. compac-
ta, *Anth.*]
A. Coosaensis, *Lea.* Coosa river.
A. Downiei, *Lea.* Coosa river. (Also found in Georgia.)
A. ligata, *Anth.* Tennessee river.
A. melanoides, *Con.* "N. Alabama."
A. picta, *Con.* Alabama, Coosa and Cahawba rivers,
A. plicata, *Con.* Black Warrior river.
A. prærosa, *Say*. Tennessee river. [Varieties are num-
erous.]
A. rubiginosa, *Lea.* "Warrior river;" Coosa river.
A. Showalterii, *Lea.* Coosa river.
A. squalida, *Lea.* "Tuscaloosa."

* In creeks a small, black variety is found.

- A. sub-globosa*, *Say*. Tennessee river.
A. tæniata, *Con*. "Alabama river;" Coosa river.
A. tintinnabulum, *Lea*. Tennessee river.
A. virgata, *Lea*. Tennessee river. (—*trilineata*, *Say*,
 var.)
A. vittata, *Lea*. Cahawba river. [This has been else-
 where erroneously credited to the Coosa river.]
A. zebra, *Anth*. "Alabama." Coosa and Cahawba rivers.
-

FAMILY VIVIPARIDÆ.

Genus VIVIPARA.

Sub-genus VIVIPARA.

- V. contectoides*, *W. G. Binney*. Tuscumbia.

Sub-genus TULOTOMA, *Haldeman*.

- T. angulata*, *Lea*. Coosa river.
T. bimonilifera, *Lea*. Alabama and Coosa rivers.
T. Coosaensis, *Lea*. Coosa river.

Sub-genus MELANTHO, *Bowditch*.

- M. ponderosus*, *Say*. Tennessee river. "All parts of
 the State." (*Aldrich*.)
M. ponderosus, *Say*. var. *Nolani*, *Tryon*. Coosa, Ca-
 hawba and Alabama rivers.
M. ponderosus, *Say*. (geniculate var.) Talladega
 creek.
M. ponderosus, *Say*. var. *coarctatus*, *Lea*. Coosa
 river.
M. ponderosus, *Say*. var. *incrassatus*, *Lea*. Coosa
 river.
M. decius, *Say*. (geniculate var.) Talladega Creek.
M. decius, *Say*. (coarctate var.) Big Prairie creek.
M. De Campi. *W. G. Binney*. Stevenson.
M. rufus, *Haldeman*. (geniculati var.) Talladega creek.
M. lima, *Anthony*. Huntsville.

Sub-genus LIOPLAX. *Troschel*.

- L. subcarinata*, *Say*. Chattahoochee river; Coosa
 river?

L. cyclostomatiformis, *Lea.* Coosa and Cahawba rivers ;
Black Warrior river.

Family RISSOIDÆ.

Genus SOMATOGYRUS. *Gill.*

S. subglobosus, *Say.* Coosa river ? Alabama river.

S. Currierianus, *Lea.* "Huntsville." Decatur.

S. parvulus, *Tryon.* Tennessee river at Bridgeport ;
Coosa river.

S. aureus. *Tryon.* Tennessee river ; Cahawba river ;
Alabama river ; Coosa river.

Genus POMATIOPSIS. *Tryon.*

P. lapidaria, *Say.*

Family NERITIDÆ.

Genus NERITELLA. *Humphrey.*

N. reclinata, *Say.* Mobile Bay ? (var. *Floridana*,
Shuttleworth.

N. Showalterii, *Lea.* Coosa river.*

Family HELCINIDÆ.

Genus HELICINA, *Lamarck.*

Sub-genus OLIGYRA, *Say.*

O. orbiculata, *Say.* Motevallo.

*No specimens with opercles are known. It is therefore yet uncertain if this species be a *Neritella*.

PULMONATA LIMNOPHILA.

Family AURICULIDÆ.

Sub-Family AURICULINÆ.

Genus CARYCHIUM, *Muller*.

- ✓ C. exiguum, *Say*. In moist, shaded stations.

Sub-Family MELAMPINÆ.

Genus MELAMPUS, *Montfort*.

- ✓ M. bidentatus *Say*. Coast marshes.

Family LIMNÆIDÆ.

Sub-Family LIMNÆINÆ.

Genus LIMNÆA, *Lamarck*.Sub-genus RADIX, *Montfort*.

- ✕ R. columella, *Say*. Ponds and streams; near Selma.

Sub-genus LIMNOPHYSA, *Fitz*.

- ✕ L. desidiosa, *Say*. Small streams and swamps.
 L. caperata, *Say*. " " "
 ✓ L. humilis, *Say*. " " " near Selma.

Genus PHYSA, *Draparnaud*.

- ✓ P. gyrina, *Say*. Streams and springs.
 P. elliptica, *Lea*. Streams and springs. P. oleacea, *Tryon*. Bridgeport.
 P. crocata, *Lea*. Streams and springs.
 P. Showalterii, *Lea*. Stream from Artesian well, Uniontown.
 P. anatina, *Lea*. Streams.
 P. Whitei, *Lea*. Streams in Georgia and Alabama.
 P. pomilia, *Conrad*. "Randon's creek, near Claiborn."

Genus BULINUS, *Adanson*.

- ✓ B. hypnorum, *Drap*. Swampy stations.

Genus PLANORBIS, *Guetlard*.

- P. glabratus, *Say*.

Sub-genus *HELISOMA*, *Swainson*.

- ✓ *H. bicarinata*, *Say*. Ponds and streams. Beech creek ;
Cahawba river.
- ✓ *H. trivolis*, *Say*. Ponds and streams.

Sub-genus *GYRAULUS*, *Agassiz*.

- G. dilatatus*, *Gould*. (Has been found in N. W. Georgia.)
- G. parvus*, *Say*. Stagnant water and small streams.

Genus *SEGMENTINA*, *Fleming*.Sub-genus *PLANORBULA*, *Haldeman*.

- P. Wheatleyi*, *Lea*. Swamp near Selma. (Aldrich.)

Sub-family *ANCYLINÆ*.Genus *ANCYLUS*, *Geoffroy*.

- A. diaphanus*, *Hald*. Tennessee river.
- A. ———*? Coosa and Cahawba rivers.

Genus *ACROLOXUS*, *Beck*.

- A. filusus*, *Conrad*. Black Warrior river, south of Blount
Springs ; Coosa river?

PULMONATA GEOPHILA.

Family *OLEACINIDÆ*.Genus *GLANDINA*, *Schum*.

- ✓ *G. truncata*, *Gmelin*. Vicinity of the Gulf Coast.

Family *HELICIDÆ*.Sub-family *VITRININÆ*.Genus *MACROCYCLIS*, *Beck*.

- ✓ *M. concava*, *Say*. Wooded districts.

Genus *ZONITES*, *Montfort*.Sub-genus *OMPHALINA*, *Raf*. [Includes *Hyalina*, *Gray*.]

- ✓ *O. capnodes*, *W. G. Binney*. Montevallo.
- ✓ *O. friabilis*, *W. G. Binney*.

- ✓ *O. lævigata*, Pfeiffer. Near Selma.
- O. sculptilis*, Bland.
- O. Elliotti*, Redfield.
- ✓ *O. arboreus*, Say.
- ✓ *O. viridula*, Menke.
- ✓ *O. indentata*, Say. Near Selma ; Montevallo.
- O. minuscula*, Binney.
- ✓ *O. capsella*, Gould.

Sub-genus MESOMPHIX, Raf.

- M. demissa*, Binney. Near Selma.
- ✓ *M. acerra*, Lewis.
- ✓ *M. ligera*, Say. Montevallo.
- ✓ *M. intertexta*, Binney.

Sub-genus CONULUS, Moq-Tand.

- C. fulvus*, Drap. Near Selma ; Montevallo.

Sub-genus VENTRIDENS, W. G. Binnney.

- ✓ *V. gularis*, Say.
- ✓ *V. suppressa*, Say.
- ✓ *V. lasmodon*, Phillips.
- ✓ *V. interna*, Say. Montevallo.

Sub-family HELICINÆ.

Genus PATULA, Hald.

- ✓ *P. alternata*, Say. Wooded districts ; near Selma.
- ✓ *P. perspectiva*, Say. Wooded districts near Selma.
- ✓ *P. striatella*, Anth. Wooded districts.

Genus HELIX, Lin.

Sub-genus HELICODISCUS, Morse.

- ✓ *H. lineatus*, Say. Wooded districts ; near Selma.

Sub-genus STROBILA, Morse.

- ✓ *S. labyrinthica*, Say.

Sub-genus POLYGÝRA, Say.

- P. auriformis*, Bland. Near Selma.
- P. espiloca*, Ravenel. Near Mobile.

- P. plicata, *Say.* (*Helix* Hazardi, *Bland.*)
- ✓ P. Febigeri, *Bland.* Near Mobile.
- P. pustula, *Fer.*
- P. pustuloides, *Bland.* Near Selma ; Montevallo.
- P. leporina, *Gould.*

Sub-genus STENOTREMA, *Raf.*

- ✓ S. spinosa, *Lea.* Near Selma.
- S. labrosa, *Bland.*
- S. Edgariana, *Lea.*
- ✓ S. barbigera, *Redfield.*
- ✓ S. stenotrema, *Fer.*
- ✓ S. hirsuta, *Say.* Montevallo.
- S. maxillata, *Gould.* Near Selma ; Montevallo.
- ✓ S. monodon, *Rackett.*

Sub-genus TRIODOPSIS, *Raf.*

- ✓ T. palliata, *Say.*
- T. obstricta, *Say.*
- ✓ T. appressa, *Say.* Montevallo.
- ✓ T. inflecta, *Say.* Near Selma ; Montevallo.
- ✓ T. Rugeli, *Shuttleworth.*
- ✓ T. tridentata, *Say.*
- ✓ T. fallax, *Say.*

Sub-genus MESODON, *Raf.*

- ✓ M. major, *Binney.*
- ✓ M. albolabris, *Say.*
- ✓ M. elevata, *Say.*
- M. Clarkii, *Lea.*
- M. Christyi, *Bland.*
- ✓ M. exoleta, *Binney.*
- M. Wheatleyi, *Bland.*
- ✓ M. thyroides, *Say.* Near Selma ; Montevallo.
- M. bucculenta, *Gould.* Near Selma ; Montevallo.
- ✓ M. clausa, *Say.* Near Selma.
- M. jejuna, *Say.*
- M. Mobiliana, *Lea.*

Sub-genus VALLONIA, *Risso.*

- ✓
- V. pulchella*
- ,
- Muller.*

Genus BULIMULUS, *Leach.*Sub-genus SCUTALUS, *Albers.*

- ✓
- S. dealbatus*
- ,
- Say.*
- Northern Alabama; near Selma.
-
- Genus PUPA,
- Drap.*

Sub-genus PUPILLA, *Leach.*

- ✓
- P. pentodon*
- ,
- Say.*

Sub-genus LEUCOCHILA, *Alb. & Mart.*

- ✓
- L. fallax*
- ,
- Say.*
-
- ✓
- L. modica*
- ,
- Gould.*
-
- ✓
- L. armifera*
- ,
- Say.*
- Common in cane brakes.
-
- ✓
- L. contracta*
- ,
- Say.*
-
- L. rupicola*
- ,
- Say.*
-
- L. corticaria*
- ,
- Say.*

Genus VERTIGO, *Muller.*Sub-genus ISTEMIA, *Gray.*

- I. Gouldii*
- ,
- Binney.*
-
- ✓
- I. ovata*
- ,
- Say.*
-
- I. ventricosa*
- ,
- Morse.*
-
- I. milium*
- ,
- Gould.*

Family SUCCININÆ.

Genus SUCCINEA, *Drap.*Sub-genus SUCCINEA, *Drap.*

- ✓
- S. luteola*
- ,
- Gould.*
-
- ✓
- S. avara*
- ,
- Say.*
-
- ✓
- S. obliqua*
- ,
- Say.*

APPENDIX TO THE UNIONIDÆ OF ALABAMA.

The student who may desire to become acquainted with the Unionidæ of Alabama, will naturally have his attention drawn to some interesting facts relating to Geographical Distribution. In some instances a species will be found to occur in numerous localities, some of them beyond the limits of the State. In other instances, species bearing a very close resemblance to each other occupy stations apart from each other, seldom occurring together. Many species are, so far as is known, limited to a particular stream, or a portion of a system of drainage. Among the species having widest distribution, may be mentioned *Unio Anodontoides*, which occurs in the Chattahoochee and Alabama rivers; and is also found in the Ohio river, and in some of the rivers in Illinois. A group of species very strongly resembling each other, embraces *Unio acutissimus*, *U. parvulus*, *U. rubellinus*, and *U. penicillatus*. The two latter belong also to the State of Georgia. Another group of species strongly resembling each other, varying somewhat in size and other minor details, embraces *Unio striatus*, *U. modicus*, *U. litus*, and *U. striatulus*, the last being found in North Carolina, and later (according to Mr. Lea), in Georgia.

Still another group embraces species, a portion of which are found in adjoining States, as well as in Alabama. Curiously, it appears that some of these species sometimes unquestionably occur in the same station. This group embraces *Unio decius*, *U. concolor*, *U. consanguineus*, *U. clavus*, *U. pallidofulvus*, *U. interventus*, *U. crebrivittatus*, and *U. Chattanoogaensis*. In the Chattahoochee river, *U. Sloatiana* takes the place of *U. trapezoides*, found in the Alabam,

river, and in the rivers of States westward; while on the other hand, *Unio Boykinianus* is found in the Chattahoochee and Alabama rivers, and probably, also, in some of the rivers of Mississippi. *Unio obtusus*, found in the Chattahoochee, also occurs in Mississippi, while a species of similar form, *U. Claibornensis*, takes its place in the Alabama river.

Unio infucatus and *U. Kleinianus* are said to occur in the Chattahoochee river and its tributaries in Georgia, while no available record exists of their having been found in the streams rising in Alabama.

Unio lienosus, found in Mississippi and various streams in Alabama, seems to be replaced in the Chattahoochee system by three well defined species of the same group, viz: *U. concestator*, *U. intercedens* and *U. fallax*.

Unio crassidens, a robust species found in Illinois, Ohio, Kentucky, Tennessee, and also in the Alabama and Coosa rivers, in Alabama, is replaced in the Chattahoochee and Flint rivers by a nearly related species—*U. incrassatus*.

Unio camptodon (and *Unio tetralasmus*, possibly a synonym,) occurs in Ohio, as well as in Alabama, Mississippi and Louisiana. *Unio Columbensis*, of the Chattahoochee, seems to unite *camptodon* with *declivis*, forming a group.

Unio atro-costatus, which is often taken to be *U. perplicatus*, Conrad, seems to take the place of that species in Alabama. There is no reliable record that *perplicatus* occurs so far east as Alabama.

Unio Blandianus, of the Othcalooga creek in Georgia, is represented in Alabama by shells which are regarded as being *U. Rumphianus*. If the two should prove to be identical, *Blandianus* will rank as a synonym of *Rumphianus*.

Unio penitus, of the Alabama river, is replaced further east (in Alabama and Georgia) by *U. compactus*, a similar but smaller species. It is possible that both these species occur in the Coosa river; but at the present time a doubt is entertained of such occurrence.

Unio castaneus, of the Alabama river, is the analogue of *U. circulus* of Tennessee and Ohio. Specimens are some-

times seen in collections labeled *circulus*. *Unio unicolor* is probably very similar to *castaneus*.

Unio vallatus, of Bogue Chitto creek, and *U. Cahabensis*, of the Cahawba river, very strongly resemble each other.

Unio Edgarianus, of the Tennessee river and its tributaries, is the type of a group of shells resembling each other in several important particulars. *U. obuncus*, *U. Tuscumbiensis* and *U. Andersonensis* belong to this group.

Among the shells of the Alabama and Coosa rivers are a few which remain to be noted as occurring in Tennessee, Ohio, &c.; *U. metanever*, *U. cornutus*, *U. pyramidatus*, *U. securis*, and possibly *U. plenus*, may be included in this list. *Unio tuberculatus*, which occurs in Alabama, is also found in Ohio and adjoining States.

Unio subangulatus, of the Chattahoochee, is represented in Buck creek by a larger shell of the same type, which has not as yet been set apart as a distinct species. It may, however, be regarded as being quite as distinct from *subangulatus* as *medius* is from *striatus* in the Chattahoochee system.

In the Cahawba river three species are indicated, under the names *glandaceus*, *instructus* and *verus*. Specimens evidently referable to the three species have been submitted for examination. They resemble each other very strongly indeed, and differ simply as specimens of different ages and sexes might be supposed to differ, when a single species is subjected to a diversity of conditions.

The student will find that quite a considerable number of species originally quoted as found in various streams in Georgia, have been catalogued as Alabama shells. Among these is *Unio radians*, originally found in the Othcalooga creek in Georgia. Shells from Alabama agreeing very exactly with the description and figure of this species have been submitted for examination. The shells that have been examined are, without doubt, the female forms of an Alabama species called *U. plancus*. The question of the identity of *radians* and *plancus* is still an open one, in the absence of Georgia specimens for comparison.

In the tributaries of the Chattahoochee river occur several species which belong to the "*complanatus* group"—a group which includes a large number of species, of which *Unio complanatus* is a familiar type. This group of shells prevails in the rivers of the Atlantic slope, and very few members of this group occur west of the Chattahoochee drainage. A single instance may possibly present itself in a species known as *Unio sublatus*, specimens of which have been found at or near Montevallo. It is possible, however, that *sublatus* really belongs to a group of which *U. gibbosus* is almost the sole type, (*Unio subgibbosus* being the exception.) The specimens referred to have the peculiar dark nacre and the singularly undulated breaks of *U. gibbosus*, though differing from that species in the form of the teeth, and in the details of the muscular and pallear cicatrices.

There remain abundant suggestions which might possibly be profitably added, but as this would necessarily involve much *descriptive matter*, it is deemed expedient to refer the student to the published writings of Isaac Lea, LL. D., in which will be found descriptions of a very large share of the Mollusca of North America, with usually very fine illustrations. The writings of Thomas Say, Mr. T. A. Conrad, Mr. John G. Anthony, Dr. Barnes, Hildreth, and others, might also be read with advantage.

Notes on CORBICULADÆ.

Cyrena Carolinensis is found on the Atlantic coast as far North as South Carolina. It occurs also on the west coast of Florida, and has been tabulated here on the presumption that it will unquestionably be found in Mobile Bay.

Shells referable to *Sphærium stramineum*, found in Alabama, are quite unlike any thing from other States that have been presented as that species.

A single specimen, only, of *S. fabale* is all that has been presented from Alabama.

Sphærium occidentale was found prior to 1860 in a swamp near Columbus, Ga.; whether in Alabama or Georgia is unknown. It will undoubtedly be found in similar situations in Alabama,

Pisidium Virginicum is found in numerous rivers in the United States, and undoubtedly will be found in muddy portions of some of the rivers of Alabama.

APPENDIX TO STREPOMATIDÆ.

The Strepomatidæ of Alabama seem to be divided into three great groups. The first is characterized by the presence of the genera *Io* and *Angitrema*, which are locally restricted in this State to the Tennessee Drainage, in which they occur with a preponderating number of species of *Trypanostoma*, a smaller number of species of *Anculosa* and *Strephobasis*, and comparatively a few species of *Goniobasis*.

In the Alabama system of drainage comprising the Tombigbee, Black Warrior, Alabama, Cahawba, and Coosa rivers, and their tributaries, are found a less considerable number of species of *Trypanostoma*, a single species of *Strephobasis*, several species of *Anculosa*, and a preponderating number of species of *Goniobasis*. The characteristic genus of this system of drainage is *Schizostoma*, which includes a considerable number of recognized species. It is believed that this genus is confined to the Coosa river. Doubts, however, are suggested on that point by the fact that several of the earlier species brought to notice were credited to "Tuscaloosa," and the "Warrior river." No recent information on this point affords any means of settling the doubts, though it is hoped that explorations now under contemplation may bring to light conclusive testimony relative to the distribution of *Schizostoma*.

In the Chattahoochee river and its tributaries, have been found only a few species of *Goniobasis*, and possibly a single species of *Trypanostoma*.

In the original descriptions of some of the species of *Trypanostoma*, and *Goniobasis*, found in the State of Alabama,

localities have been assigned that identify some of the species of the Tennessee system of drainage with certain forms found in the Alabama system. A careful examination of these supposed cases of identity of species in the two systems of drainage has not as yet elicited any confirmatory evidence. It seems, indeed, very probable, that not a single instance of supposed identity will be verified. In explanation, it may be remarked that collectors are *not* always careful to keep apart from each other their unidentified specimens of species from various localities, and it is not an uncommon circumstance for specimens to pass into the hands of the descriptive naturalist with local references of an unreliable character. This, together with the vague and very indefinite mention of the *State* or *Continent* for the *locality* of a species, is surely the source of continual trouble to one who seeks to reconcile his shells with the literature relating to them.

While the preliminary sheets of this paper were in progress, the writer was urgently solicited to embody in it such facts in synonymy as might be thought useful. In reply to these solicitations it may be urged that there is not yet at hand, and may not be for many years to come, a sufficient amount of material to enable the most careful student to do justice to the subject, and not at the same time do injustice to those writers who have done most to define species.

A few of the difficulties of synonymy may be presented in a manner which will be appreciated by those persons who have given the subject slight attention. Take, for instance, some common and well known species of *Trypanostoma*, found in the Tennessee river. On tracing it from point to point along the stream it will be found to vary in several particulars, which are obvious at a glance. If only the *extreme forms* are known, these would appear to the observer to differ so much from each other as to justify him in regarding them as distinct species—an opinion he is compelled to abandon when further investigation has brought to light the intermediate forms. There may be,

and undoubtedly there are species, (as in the family Unionidæ,) in which the sexes are distinguishable from each other by certain peculiarities of form and size. This is a portion of the subject which has not yet been investigated, and really nothing is known relative to it. There are unquestionably instances in which *hybrids* occur. These, except under very favorable conditions for observation, would be likely to be regarded as *species*.

Occasionally abnormal specimens come to the notice of the Naturalist—usually a solitary specimen (and the author “regrets there were not more,”) is all that is known, and it is recorded as a species. It sometimes happens that a species produces specimens the epidermis of which exhibits a uniform color without bands. Other specimens, on the other hand, have bands. Unquestionably, a species has been divided and put on record as *two distinct species*, with no better ground for the division than has been stated. Again, a species sometimes produces specimens characterized by several revolving elevated lines or carinæ. Mr. Say made a second ‘species of *Goniobasis Virginica*, based on this peculiarity; Mr. Anthony has bestowed similar attention on a variety of Mr. Say’s *Anculosa trilineata*; and a curious sequel to this is that many intelligent naturalists, who do not admit the validity of Mr. Say’s “*Melania multilineata*,” regard Mr. Anthony’s *Anculosa costata* with favor.

There are yet other perplexities, and these arise out of the diversities of forms a species is liable to manifest when developed under the varying conditions of stations unlike each other in temperature, mineral properties of the water, abundance or absence of appropriate food, the influence of light, the influence of currents in the water, and finally, other influences of equal importance, which possibly have not yet been conjectured.

The *form* of a shell is simply a function of the mantle—a delicate membrane, in which the soft parts within the shell are included, and which lines the interior of the shell and deposits the calcareous matter of which it is composed.

The *color* of a shell may, to a very great extent, depend upon that function of the mantle involved in the production of the epidermis. It may also be to some extent influenced by the properties of the water in which the mollusc lives.

It will be seen that there are numerous conditions which may affect a single species and cause it to be presented under such aspects as to create the impression that different local forms are different species. Much has been done in the direction of synonymy, but without doubt, equally as much more remains to be done. It may also be suggested that a few errors have crept into synonymy, as it is now received, and the work needs revision. In a class of shells embracing so many species, presented under the difficulties that beset the Strepomatidæ, it will be impossible to do more at present than suggest inquiries. The brief hints that occasionally appear in the list of species are all that it seems expedient to suggest at this time.

APPENDIX TO VIVIPARIDÆ.

V. contectoides is distributed over a wide extent of territory. It inhabits the rivers of Illinois and Indiana. Specimens from Illinois have been successfully colonized in New York. Very fine specimens of the species are found in Othcalooga Creek, Georgia. A variety of this species occurring in Florida, has received the name *V. Waltoni*, Tryon.

Tulotoma bimonilifera, Lea, (*magnifica*, Conrad,) is admitted by the Academy of Natural Sciences to take precedence over *magnifica*. *T. Coosaensis*, hitherto regarded as a true *Vivipara*, is unquestionably a *Tulotoma*, and is well characterized as such by its opercle. Perfect specimens are characterized by numerous short, hairy prolongations of the epidermis on a considerable portion of the surface, and more particularly by a bristly fringe to the margin of the aperture.

Melantho ponderosus, Say, which occurs in the Ohio river, and some of its larger tributaries, and attains a large size in some portions of the Tennessee river, has also been found in Mississippi and Georgia, as well as in the rivers of Alabama. Mr. Tryon separates the Alabama shells under the name *M. Nolani*. A number of years ago, Mr. Lea described *Paludina coarctata* and *P. incrassata* from the Coosa river. From a careful comparison of numerous specimens of *Melantho* from the Coosa with shells from other regions and with Mr. Lea's unpublished figure of *coarctata*, it is inferred that *coarctata* and *incrassata* are identical with the shells Mr. Tryon calls *Nolani*. It may seem improbable that a species can exhibit so much variation in form in one locality; but it is apparently an unde-

niable fact, and has a parallel in the two species (?) described by Mr. Anthony as *Pal. subsolida* and *P. exilis*, both referable to the sexual varieties of one species. (In this connection it may be remarked that two specimens of this variable species served as illustrations of the male and female of *Melantho integer* in a work on the shells of North America.) Mr. Lea's *coarctata* is the slender form of the species. His *incrassata* is an immature specimen, the apex of which has been removed by erosion. If the species really be distinct from *ponderosus* it should receive the name *coarctata* or *incrassata*, either of which has priority of *Nolani*. A slender variety of *M. decius* occurring in Big Prairie Creek has been confounded with the Coosa shell that Mr. Lea calls *coarctata*. There are peculiarities of form and color that should forbid the association of the Prairie Creek shell with the Coosa River *coarctata*.

M. decius, *M. ponderosus* and *M. rufus* occur together in Talladega Creek. They are all in a considerable degree characterized by the shouldered suture which distinguishes Mr. Conrad's *geniculus*.

M. lima, *Anthony*, occurs at Huntsville. It seems to be somewhat nearly related to *M. De Campi*. *W. G. Binney*. Possibly a full series of specimens might establish their identity.

Specimens doubtfully referable to *Lioplax subcarinata* have been presented as coming from the Coosa river. The specimens referred to have not the peculiar *salmon tinted* upper whorls that characterize *cyclostomatiformis* from the Coosa and Cahawba rivers, and differ in other respects also. It would be interesting to verify the occurrence of both these species in the Coosa river.

APPENDIX TO THE PULMONATA.

The fresh water pulmonates of Alabama seem not to have been thoroughly studied, and there are available no records that locate a considerable number of species which might very reasonably be expected to occur in the State. A large share of these have been omitted from the list—only such species being included as have a local record within the limits of the State or within contiguous portions of adjoining States. The land shells, having been more thoroughly studied, afford sufficient records to make it probable that only a few species likely to occur within the limits of the State have been omitted. It is quite probable that a careful exploration of the mountains in the northern part of the State may bring to light some of the few species that have recently been described as occurring in the not distant mountains of Tennessee and North Carolina. One of these—*Mesodon Chilhoweensis*, *Lewis*, occurs in northern Georgia, as is established by an immature specimen in the National Museum; and the occurrence of this species in East Tennessee and Georgia would seem to warrant the expectation that it might also be found in Alabama.

Lewis, James

Fauna of Alabama.

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