

Natural History

OF

NEW YORK.



BY AUTHORITY.

NEW YORK;

T. APPLETON & CO. AND WILEY & PUTNAM;

BOSTON;

GOULD, KENDALL & LINCOLN.

ALBANY,

CARROLL & COOK PRINTERS TO THE ASSEMBLY.

1843.

ZOOLOGY

OF

NEW-YORK,

OR THE

NEW-YORK FAUNA;

COMPRISING DETAILED DESCRIPTIONS OF ALL THE ANIMALS HITHERTO OBSERVED WITHIN THE
STATE OF NEW-YORK; WITH BRIEF NOTICES OF THOSE OCCASIONALLY FOUND NEAR
ITS BORDERS: AND ACCOMPANIED BY APPROPRIATE ILLUSTRATIONS.

BY JAMES E. DE KAY.

PART V. MOLLUSCA.

ALBANY:

CARROLL AND COOK, PRINTERS TO THE ASSEMBLY.

.....
1843.

The copy-right of this work is secured for the benefit of the People of the State of New-York.

SAMUEL YOUNG,

Secretary of State.

Albany, 1843.

TO

WILLIAM C. BOUCK,

GOVERNOR OF THE STATE OF NEW-YORK.

I submit a continuation of a Report on the Zoology of the State.

And have the honor to be,

With great respect,

Your obedient servant,

JAMES E. DE KAY.

INTRODUCTORY NOTICE.

THE MOLLUSCA, or *Shells* and *Shell-fish* as they are usually called, although several have no shells or calcareous coverings, present many objects of interest to the naturalist, and are not unimportant in their various uses to man.

The history of American Conchology must be necessarily brief. The earliest notices are derived from the labors of Garden, Michaux, and more especially of Bosc. Within our own times, we are chiefly indebted to Thomas Say, who occupies in this department the same eminence which he attained in every other branch of Natural History to which he directed his attention. The names of Lea and of Totten, of Adams, Couthouy, Haldeman, Barnes, Binney and Gould, will always be associated in the history of the progress of American Conchology. To the last named naturalist, it will be seen that I have been largely indebted for much valuable information derived from his History of the Invertebrata of Massachusetts. To the excellent cabinet of shells belonging to Dr. J. C. Jay of New-York, I have been chiefly indebted for opportunities of comparing our own with foreign species. My obligations to Dr. B. W. Budd, for many friendly services and important communications, will be found in the course of the work.

In giving a succinct account of such of the Mollusca of the State of New-York as have fallen under my notice, I have also endeavored to render it more extensively useful, by furnishing the student in every part of the Republic with increased facilities, by directing his attention to the species already described in many scattering volumes beyond his reach. In the progress of the work, I have been obliged to correct and revise so frequently what had been previously written, that at the conclusion I cannot dare to hope I have attained what I

LIST

OF

CONCHOLOGICAL WORKS REFERRED TO IN THE DESCRIPTIONS OF THE MOLLUSCA.

- ADAMS, C. B. Various contributions to the American Journal of Science and the Boston Journal of Natural History.
- ANTHONY. Catalogue of the Terrestrial and Fluvial Shells of Ohio. By J. G. Anthony. Cincinnati, 1843.
- BARNES. On the Genera *Unio* and *Alasmodonta*, with introductory remarks. By D. W. Barnes. pp. 40. 14 figures. (Am. Jour. Sc. Vol. 6.)
- BINNEY, A. Monograph of the Genus *Helix*. (Bost. Jour. Nat. Hist.)
- " Descriptions of some of the species of naked air-breathing Mollusca inhabiting the United States. (From the Bost. Jour. Nat. Hist.)
- BLAINVILLE. Manuel de Malacologie et de Conchyliologie. 8vo. Paris, 1825.
- CONRAD. Marine Conchology. 8vo. Philadelphia.
- " Descriptions of Freshwater Shells. 12mo.
- COUTHOUY. Descriptions of new species of Mollusca and Shells. By J. P. Couthouy. (Bost. Jour. Nat. Hist. 1838.)
- CUVIER. Le Règne Animal distribué d'après son organisation. 4 vols. 8vo. Paris, 1818 et seq.
- " The same, translated by Griffith. Vol. 12th.
- EARLE. History of Land and Freshwater Shells in Massachusetts. By J. M. Earle. (From Hitchcock's Catalogue.)
- EIGHTS, J. Various contributions to the Zodiac. 4to. Albany, 1835-6.
- FERUSSAC. Histoire Naturelle générale et particulière des Mollusques terrestres et fluviatiles, etc. Paris, folio.
- GOULD. Lamarck's Genera of Shells, with a catalogue of the species. Translated by A. A. Gould. 12mo. Boston, 1833. pp. 110.
- " Various contributions to the Boston Journal of Natural History.
- " Report on the Invertebrata of Massachusetts. Cambridge, 1841. pp. 373.
- GREENE. List of the Marine Shells of Massachusetts. By T. A. Greene. (In Hitchcock's Catalogue.)
- GUERIN. Magazin de Zoologie, &c. Par F. E. Guerin. 8vo. Paris, 1831 et seq.
- HALDEMAN, S. S. Monograph of the Limniades or Freshwater Univalve Shells of North America. Philadelphia, 1840 et seq.
- JAY. Catalogue of Recent Shells in the Cabinet of J. C. Jay. 8vo. New-York, 1835. pp. 56.
- " The same, with descriptions of new and rare shells, with four plates. 8vo. New-York, 1836. 2d ed. pp. 78.
- " A Catalogue of the Shells arranged according to the Lamarckian system, together with descriptions of new and rare species, contained in the Collection of J. C. Jay, M. D. 3d ed. 4to. New-York. pp. 125, with ten plates.
- KIRTLAND. Catalogue of the Testacea of Ohio. (First Annual Report of the Geology of the State of Ohio.) 8vo. Columbus, 1838.

[FAUNA—PART 5.]

C

SYNOPSIS

OF THE

NORTH AMERICAN FAMILIES AND GENERA OF MOLLUSCA DESCRIBED IN THIS WORK.

I. CEPHALOPODA.

SEPIADÆ, Loligo.
SIPHONIDÆ, Spirula.

II. PTEROPODA.

CLIONIDÆ, Clio.

III. GASTEROPODA.

a. NUDIBRANCHIA.

DORIDÆ, Doris.
TRITONIDÆ, Tritonia.
GLAUCIDÆ, Eolidia, Cavolina, Filurus.

b. INFRABRANCHIA.

HEMIPHYLLIDÆ, Ancyclus.

c. TECTIBRANCHIA.

ACERIDÆ, Bulla.

d. PULMOBRANCHIA.

LIMACIDÆ, Limax, Arion, Tebennophorus.
HELICIDÆ, Vitrina, Helix, Pupa, Succinea, Bulimus.
AURICULIDÆ, Auricula.
LIMNIADÆ, Planorbis, Limnea, Physa.

e. OPERCULATED PULMOBRANCHIA.

CYCLOSTOMIDÆ, Cyclostoma.
HELICINIDÆ, Helicina.

f. PECTINIBRANCHIA.

TURBINIDÆ, { Paludina, Amnicola, Melania, Anculotus, Io, Littorina, Margarita,
Cingula, Lacuna, Turritella, Pyramis, Odostomia, Vermetus,
Skenea, Valvata, Natica.
TROCHIDÆ, Ampullaria, Janthina, Scalaria, Tornatella, Pirena.

THE NEW-YORK FAUNA.

DIVISION II. INVERTEBRATED ANIMALS.

CLASS VI. MOLLUSCA.

ANIMALS OF A SOFT OR GELATINOUS STRUCTURE, NOT COMPLETELY SYMMETRICAL; WITHOUT ANY SOLID SKELETON OR VERTEBRAL CANAL, OR ARTICULATED LIMBS. ALMOST ALWAYS FURNISHED WITH A DEVELOPMENT OF THE SKIN, WHICH ASSUMES A MORE OR LESS HARD CONSISTENCE, UNDER WHICH THE ANIMAL CAN CONCEAL ITSELF. SOME HAVE A SOLID CALCAREOUS COVERING OF ONE OR MANY PIECES, WHICH ARE TERMED "SHELLS." CIRCULATION DOUBLE, THAT IS TO SAY, THE PULMONARY CIRCULATION DISTINCT AND COMPLETE; THE BLOOD WHITE OR BLUISH. BREATHE IN AIR OR WATER. OVIPAROUS AND VIVIPAROUS. CARNIVOROUS AND HERBIVOROUS. LIVING ON LAND, OR IN SALT AND FRESH WATER.

Obs. This class, in its now extended form, comprises all those animals of a soft or gelatinous structure, with the above mentioned characters, found on land or in the water, and which are known under the popular names of *Slugs*, *Cuttlefish*, *Sea-slugs*, and *Shellfish*. These latter, which form a very large proportion of the whole class, are commonly called *Shells*, from their hard calcareous coverings. The arrangement of these varied and often beautifully colored shells constitutes the science of Conchology; which, it will be perceived, is only a partial and incomplete view of the subject, unless accompanied with a study of the structure of the animals themselves. Various systems of arrangement have been proposed, each of which have some peculiar advantage; but none appears preferable, in its outline and philosophical spirit, to that proposed by CUVIER. We have therefore adopted it, with a few modifications from more recent writers.

LOLIGO PUNCTATA.

PLATE I. FIG. 1.—(STATE COLLECTION.)

Description. Body cylindrical, tapering, about three inches in length, and with a slight ridge along the back, caused by the internal cartilaginous support. Body ends above in an acute point. The caudal appendage or fleshy fins terminal, broadly rhomboidal, and ending in an obtuse angle, nearly half the length of the body; lateral edges rounded, perfectly smooth on both sides, attenuated at the margins. Head moderately large, depressed; neck narrowed. Eyes large and prominent. Beneath the throat a prominent elongated muscular sac, opening externally by an irregular rounded orifice or vent.

Arms ten, of which the two superior are shortest and smallest, and furnished with rounded cup-like suckers attached to the arms by a central ligament. These suckers extend to the tips, but become gradually smaller until they are scarcely visible unless aided by the lens. The same remark applies to the other arms, and it may be observed that the suckers are placed in no regular order. The second pair similar in shape, but more robust, and equal in length to the fifth or inferior pair. The third pair remarkably robust, and exceeding in length the preceding. Fourth pair longest of all, and equalling the length of the head and body; cylindrical, dilated towards the extremity, and ending in an acute tip: the suckers are arranged irregularly over the dilated part.

Mouth central, sphincter-form, partly covered by an angular membrane with six short processes resembling the arms in miniature, and, like them, furnished with minute suckers. The internal cartilaginous support smooth, thin and translucent, resembling an ordinary quill; its superior portion being comparable to the barrel, and its broad dilated extremity to the web. The upper portion triquetrous, hollowed out beneath, carinate above, and producing a corresponding elevation externally along the back: it ends in an acute tip above. This ridge along the back becomes gradually effaced towards the lower extremity.

Color. The whole body, back of the head, fins and external parts of the arms covered with reddish rounded spots of various sizes; they are rather more sparse on the inferior surface of the sac. A row of these spots around the orbits, and behind the eyes they are so numerous as to give a darkened red appearance to that part. The external cuticle containing these spots is easily detached, leaving the denuded part of a pearly white.

Length of head and body, 4.0 - 6.0.

This beautiful *Squid* is nearly allied to the *L. pealii* of Lesueur; but this latter has its suckers arranged in two regular series, with the disks obliquely truncated. It has also a membrane along the lateral edges of the arms, and an acute termination of the caudal extremity.

Dr. Gould, in his valuable report on the *Invertebrata* of Massachusetts, has furnished us with an exceedingly interesting account of the habits of these animals. Their colors vary every moment from vivid red to deep blue, violet, brown or orange. Their usual mode of swimming is by dilating their body and filling it with water; the body is then suddenly con-

FAMILY SIPHONIDÆ.

Animal little known, with ten or more arms surrounding the mouth. Shell frequently spiral, many-chambered, connected by a siphon or tube external or partially covered by the animal.

GENUS SPIRULA. *Lamarck.*

Animal purse-shaped, surrounding partially a shell in its posterior part. Head with ten arms furnished with suckers; two of these pedunculated and contracted. Shell spiral, discoid, with the turns separated from each other. The siphon on the internal border.

SPIRULA PERONII.

PLATE XXXV. FIG. 332.

Nautilus spirula. LINN. Syst. Nat.

S. australis. CUV. Règne animal, Vol. 12, p. 12, pl. 5, fig. 8.

S. peronii. LAMARCK, An. sans vertèb. Vol. 7, p. 600. GOULD, Invert. Mass. p. 317.

Description. Shell fragile, white or pearly, occasionally yellowish, with two or three spiral turns which do not touch each other. The place of the partitions of the chambers within are exhibited by circular grooves in the shell. As yet but one species is said to have been discovered, common to the Atlantic and Pacific oceans; it is probable, however, from the difficulty of observing recent specimens, that two if not more species exist. The chambers communicate by a siphon on the interior sides of the turns. Diameter 1.0 – 1.5.

The beautiful little shell belonging to this species is occasionally picked up along our shores after heavy storms. The nature of this animal was first detected by Peron, and hence we are enabled to infer the structure of those which inhabited the numerous fossil shells of a similar conformation. Such are the *Orthoceratites*, *Ammonites*, *Bacculites*, *Scaphites*, *Bellemeites*, &c. The nature of this work does not admit of their admission here, more particularly as they will all be described in the forthcoming work on the fossils of the State of New-York, included in the Report on the Natural History of that State.

Those who are desirous of becoming acquainted with the numerous fossil shells of the United States belonging to this order, will find abundant materials in the *American Journal of Science*, *Annals of the Lyceum of Natural History of New-York*, *Journal of the Academy of Natural Science of Philadelphia*, and in a volume published by Lea, entitled "*Contributions to Geology*." To those who wish to study the structure of the animals of this order, we would refer to the Memoirs of Messrs. Owen and D'Orbigny on this subject, and to the Bridgewater Treatise on Geology and Mineralogy by the English professor Buckland.

ORDER III. GASTEROPODA.

Body free, without any distinct arms, but with a fleshy foot extending under the body, adapted for crawling, and in a few cases for swimming. A distinct head, furnished with one or several pairs of tentacula. Upon or near these are placed the eyes. Shell either entirely wanting or rudimentary, but for the most part complete. Generative organs usually on the right side.

OBS. This order embraces an immense number of Mollusca, particularly of those furnished with shells, which are usually termed *shellfish*. Their number requires their division into several orders, or, as we shall term them, sections, divided after Cuvier from the form and position of the gills or lungs.

SECTION 1. NUDIBRANCHIA.

Gills in naked tufts rising from the back, always symmetrical either on the sides or median line. No shell whatsoever. Marine.

OBS. We have numerous species on our coast, but they have not yet been much studied. They are often seen swimming in a reversed position, employing the margin of their mantle and the tentacula as oars. Others are found in the ocean, attached to fuci.

FAMILY DORIDÆ.

With four tentacula; two above, and two beneath under the edge of the mantle. Gills arborescent, and forming on the median line a group around the vent.

GENUS DORIS.

Body oblong, flattened or cylindrical, bordered with a loose membrane surrounding it, and extending occasionally beyond the head. Upper tentacula on the anterior part of the body, in a cavity; the other two, conic, and situated under the anterior edge of the mantle. Mouth at the extremity of a small tube. Foot oblong. Vent on the median line, on the posterior part of the back. Gills prominent, fringed and lacinated. Sexual orifice under the right margin of the mantle.

papillose, with strong transverse folds. Jaws angular. Tentacula arising from the back of the head, and received into a round sheath which terminates in five unequal branches. Five pair of dorsal gills, all susceptible of being retracted into the body of the animal, leaving in their places small tubercles. Sexual orifice closed by a conical valve, attached before. Anal orifice between the first and second pair of dorsal gills.

Color. Rufous brown, occasionally dark brown, with patches of white on the back between the branchial tufts. Foot white, diaphanous.

Length, 3·5.

Mr. Couthouy found this animal about the bathing-houses and timber-docks in Charles river; and as it differed in many respects from the *T. arborescens* of Cuvier, he described it as a new species. Recently Dr. Gould has referred it, on the authority of Dr. Lovèn of Stockholm, to the species described by Cuvier.

FAMILY GLAUCIDÆ.

Animal furnished with two and sometimes three pair of tentacula. Gills strap-shaped, or in the form of cirri.

GENUS EOLIDIA. Cuvier.

Body oblong, slug-shaped, gelatinous, terminating in a point behind. Head distinct, with four tentacula above, and occasionally two on the sides of the neck. Gills prominent, composed of conical or flattened cirri arranged in longitudinal series along the back. Sexual and anal orifices separate, on the right side.

EOLIDIA BOSTONIENSIS.

PLATE V. FIG. 96.—(CABINET OF THE LYCEUM.)

Eolis bostoniensis. COUTHOUY, Bost. Jour. Nat. Hist.
E. rufibranchialis? GOULD, Invertebrata of Mass. p. 6.

Description. Body oblong, with a slight protuberance on the centre of the back. Head orbicular, short, with four tentacula: two lateral and longest; the other pair on the back of the head, with the eyes near their base. Beneath the mouth are two other appendages resembling tentacula. Mouth large and fleshy. Lips hemispherical. Branchiæ tubular, arranged in five clusters on a side. Sexual orifice just behind the anterior cluster of gills on the right side; the vent near the back, between the third and fourth branchial group.

Color. Brownish white: lateral tentacula, lake tinged with blue; the other pair dark flesh-color. Gills brown tipped with white.

Length 1·5.

FAUNA — PART 6.

GENUS CAVOLINA. *Brug.*

The general form and habits of the preceding, with retiform branchiæ arranged in a series on the dorsal surface on each side of the medial line.

CAVOLINA SALMONACEA.

PLATE VI. FIG. 116.

C. salmonacea. COUTROUY, Bost. Jour. Nat. Hist. Vol. 2, p. 68, pl. 1, fig. 2.
Eolis id. GOULD, Invertebrata of Mass. p. 6.

Description. Body nearly diaphanous. Back with a conspicuous elevation in the middle. Head large, with four tentacula; the superior minutely serrated. Mouth an inverted Δ . Branchiæ in longitudinal series, to the number of one hundred or more. Foot with two short processes in front, and ending in a point behind. Sexual appendages placed in a large tubercle on the right side, a short distance behind the neck. Vent on the same side, near the centre of the body.

Color. Pale yellowish white. Branchial cirri salmon-colored, bordering on orange.
 Length, 1·7.

GENUS FILURUS.

Tentacula two. Gills in two series along the back. Vent terminal. Caudal appendage long and filiform.

FILURUS DUBIUS.

Description. Body cylindrical, enveloped in a loose transparent membrane through which the intestinal tube is apparent. Along the back are two rows of branchial? processes, six in number on each side; at their tips, furnished with five or six spiculæ: these are only seen when the animal is in motion. Mouth terminal, composed of a loose festooned membrane, alternately dilating and contracting when the animal is in motion; when dilated, two small transparent tentacula are protruded. The abdomen, or upper surface, appears to be composed of numerous rings. The caudal portion becomes abruptly smaller than the body, is long, cylindrical, and tapering to a point.

Color. Abdomen silvery white; dorsal region and sides light brown; tail light greenish. The color of the body, however, appears to depend on the contained viscera.

Length of body, 0·5; of tail, 0·7.

This curious animal was taken while swimming in salt water with its body reversed. Its motion was vermicular, and it appeared to be very tenacious of life, as it lived several days in a vessel containing salt water which had not been renewed.

ANCYLUS CALCARIUS.

PLATE V. FIG. 99. A. B. — (STATE COLLECTION.)

Description. Shell conic, calcareous, opake. Apex not central, moderately prominent. Aperture oval, entire; the curves on the longest sides dissimilar. In very minute specimens, the edges somewhat everted.

Color. Epidermis rufous, extending beyond the edges of the aperture; within, bluish white, darker towards the apex.

Length, 0.3. Height, 0.12.

The specimen which furnished the above description was one of the largest which I have seen. They are more commonly of the dimensions of *A. rivularis*. I separate it from this latter, chiefly on account of its solid calcareous structure. I am indebted to Mr. I. Cozzens for the specimens from the Passaic river, near Patterson; but it will doubtless be found in this State.

ANCYLUS FUSCUS.

A. fuscus. ADAMS, Bost. Jour. Nat. Hist. Vol. 3, p. 329, pl. 3, fig. 17.
A. id. GOULD, Invertebrata Mass. p. 224, fig. 152.

Description. Shell rounded oval, the entire outline regularly curved, thin and pellucid, depressed; convexity regular, not compressed at the sides. Apex obtuse, a little to the right of the centre. Epidermis coarse, strong and rough, extending beyond the margin of the shell.

Color. Epidermis dusky yellowish brown; within, glistening, polished.

* Length, 0.3. Height, 0.01.

This species has been observed in Massachusetts, and will probably be found in this State. It appears to be a very distinctly marked species.

(EXTRA-LIMITAL.)

- A. tardus.* (SAY, Des. terr. et fluv.) Shell conic, depressed. Apex behind the middle, obtuse, rounded, inclining backwards, but not laterally. Line from the apex to the posterior tip rectilinear; line from the apex to the anterior tip arcuated. Aperture oval, not distinctly narrowed at one end. Length, 0.15; breadth, 0.1. *Wabash River.*
- A. filusus.* (CONRAD, Fresh Water Shells, p. 57.) Shell regularly oval, rather elevated, with numerous radiating prominent lines. Apex very prominent, inclined, eroded, not nearly central. Abundant on *Melania*. *Alabama.*
- A. nuttallii.* (HALD. Monog. Lymn. No. 3.) Shell oval, elevated. Apex one-fourth of the entire length from one end. *Color* fuscous. Length, 0.3; breadth, 0.25; height, 0.09. *Oregon.*
- A. diaphanus.* (HALD. Ib.) Shell regularly oval, very wide, depressed. Apex sub-central. *Color,* very pale, translucent. Length, 0.25. *Ohio.*
- A. parallelus.* (HALD. Adams, Am. Jour. Vol. 40, p. 275.)

This species, which was first detected and described by Col. Totten of the U. S. Engineers on the coast of Rhode-Island, and subsequently along the shores of Massachusetts, has also been observed on our own coast. Those obtained by Dr. Jay near Rye, at low water on the surface of the mud, are much larger than the Rhode-Island specimens, with which, through the kindness of Col. Totten, I have been enabled to compare them. Mr. I. Cozzens has obtained them from Staten island, below Quarantine ground, in seven or eight feet water; and Dr. Stillman, by dredging in the East river above Corlaer's hook. These latter were olive-green, and covered with a rust-colored epidermis. When a number of these specimens are kept in a close vial, they communicate a deep olive-green color to the water.

Dr. Gould has thought proper to refer the *solitaria* of Say to this species.

BULLA GOULDII.

PLATE V. FIG. 101.

Bulla gouldii. COUTHOUY, Bost. Jour. Nat. Hist. Vol. 2, p. 181, pl. 4, fig. 6.
B. id. GOULD, Invertebrata of Mass. p. 163, fig. 94.

Description. Shell thin and brittle, small, ovate, convolute; of four convolutions, rounded at their upper edges, and having their sutures well defined, the last whorl with numerous fine transverse striæ. Spire depressed, discoidal, sometimes slightly mammillated: incremental striæ very indistinct; lower extremity rather narrower than the upper. Aperture narrow above, and abruptly dilated towards the base by the arcuated inner margin, which is a little thickened, white and polished. No umbilicus.

Color. Shining dead white, with a yellowish epidermis.

Length, 0·3. Diameter, 0·1.

This species was first described by Mr. Couthouy, from specimens obtained from the stomachs of fishes; and was subsequently dredged by Col. Totten, in Provincetown harbor, Mass. It will probably be found on our coast. Distinguished from *insculpta* by its flat summit, displaying all the whorls.

BULLA OBSTRACTA.

PLATE V. FIG. 102. MAGNIFIED.

Bulla obstricta. GOULD, Am. Jour. Se. Vol. 38, p. 196.
B. id. GOULD, Invertebrata of Mass. p. 167, fig. 96.

Description. Shell oval, cylindrical, rather solid, small. Whorls five, the last nearly involving all the others, pressed in or obstructed at the middle, dilated beneath, and forming a fold at the umbilical region. Spire obtuse, rising above the junction of the lip to about one-fifth the length of the shell: upper whorls suddenly smaller. Suture deep, apparently double in old specimens; or, rather, a narrow and deep line revolving on the shoulder of each whorl

BULLA TRITICEA.

PLATE XXXV. FIG. 326.

Bulla triticea. COUTHOUY, Bost. Jour. Nat. Hist. Vol. 2, p. 88, pl. 1, fig. 8.*B. id.* RUSSEL, Essex Jour. Nat. Hist. Vol. 1, p. 75.*B. id.* GOULD, Invertebrata of Mass. p. 165, fig. 98.

Description. Shell polished, cylindrical, rather solid. Spire slightly depressed, imperforate. Surface traversed longitudinally and transversely by numerous microscopic striæ. Lip inserted into, or rather arising from, the margin of the circular pit at the summit of the spire. Aperture narrow above, almost linear, except at the base, where it is dilated to double its previous breadth by the sudden curvature of the columella, which is slightly reflected upon the body of the shell. At the region of the umbilicus is a flattened white space, thickened by enamel, gradually disappearing within the aperture. The whole inner margin is sometimes slightly coated with enamel.

Color. Dull white, covered with a thin shining ferruginous epidermis. Columella white.

Length, 0·3; diameter, 0·1.

Neither this shell nor the preceding has been yet found *in situ*. The present species has only been obtained from the maws of fishes on the coast of Massachusetts, but will probably be found here.

BULLA DEBILIS.

PLATE XXXV. FIG. 329.

Bulla debilis. GOULD, Am. Jour. Sc. Vol. 38, p. 196.*Bulla debilis.* Id. Invertebrata of Mass. p. 164, fig. 95.

Description. Shell small, obliquely ovate, tumid, thin and brittle. Whorls four, all rising to about the same height; divisions distinct, each very convexly rounded. Last whorl the whole length of the shell, including all the others, and partially detached from them above. Surface smooth, without any apparent mark. Aperture as long as the shell, widening from above. Outer lip attached behind, a little before the summit of the shell, rising to a level with the spire, then descending in a regular though slightly waved curve to the front of the pillar, where it terminates abruptly. Inner lip spread out into a thin enamel upon the body of the shell, partially covering an umbilical indentation placed at about one-fourth the length of the shell.

Color. Greenish white.

Length, 0·1; diameter, 0·13.

According to its original describer, this shell has as yet no determinate locality, being obtained only from the maws of fish in Massachusetts bay. The same writer suspects that it may possibly be the young of *B. gouldi*, and that it bears a striking resemblance to the

FAUNA — PART 6.

BULLA CANALICULATA.

PLATE XXXV. FIG. 223.

Volaris canaliculata. SAY, Jour. Acad. Nat. Sc. Vol. 5, p. 211.*Bullina id.* ID. American Conchology, pl. 39.*Bulla id.* GOULD, Invertebrata of Massachusetts, p. 116, fig. 97.

Description. Shell minute, cylindrical, polished, with very faint lines of growth. Spire convex, a little elevated, with a minute but prominent tip: whorls about five, with their shoulders very obtusely grooved. Outer lip arching forward; inner lip with a thin coat of enamel, with a single oblique fold or small tooth near the base.

Color. Whitish, immaculate.

Length, 0·1 – 0·2.

This species, first observed by Say on the southern coast, has since been found on the shores of Martha's Vineyard. It will, therefore, doubtless be discovered on the coast of New-York.

This, with *B. obstricta*, are the only two American species yet observed, possessing a prominent spire. I place the present species here with great doubt, which can only be settled by a minute examination of the animal.

(EXTRA-LIMITAL.)

B. solitaria. (SAY, Acad. Nat. Sc. Vol. 2, p. 245.) Shell very thin and fragile, pellucid, oval, narrowed at the base, with numerous impressed revolving lines and transverse very obtuse wrinkles. Aperture surpassing the tip of the shell. Spire none, substituted by an umbilicus. No umbilicus at the base. Length 0·5. *Southern coast.*

Supposed by some American writers to be identical with *B. insculpta*.

SECTION 4. PULMOBRANCHIA.

Animals furnished with a foot for crawling. No gills, but instead thereof a pulmonary cavity, receiving the surrounding medium by an aperture on the right side of the mantle. Organs of generation in the same individual, united in the same cavity, or distant. Shell complete, rudimentary or none, external or internal. Without opercle.

Obs. This section comprises numerous families, extended over the globe. They are terrestrial or aquatic. Those found in water live at a small depth, as they are compelled to rise frequently to the surface to breathe. They are carnivorous and herbivorous.

distinct concentric furrows, centering on its posterior portion. Breathing-hole on the right side,* above the lower edge, and in the posterior third portion of the mantle. Vent adjacent, and slightly above and anterior to it. Upper tentacles terminating in a small bulb; lower tentacles much shorter.

Color. Various, but most usually dark reddish or chocolate-brown, varied with numerous minute blackish brown dots and lines; the mantle somewhat darker. Occasionally the general color is greyish. Tentacles darker than the general color. Foot beneath flesh-colored. Breathing-hole greyish or white on its margin.

Length 1.5 – 1.7.

Found on the underside of leaves and decayed branches lying on the ground; also under stones and boards. Their chief food appears to consist of succulent leaves. Rarely seen during the day. I make no reference to names of species published by myself some years since, as the descriptions have been anticipated. This species varies much in its color and markings, and is invariably smaller than the following.

LIMAX FLAVUS.

PLATE I. FIG. 5.

Limax flavus. LINN.

L. variegatus. LAM. An. sans. vert Vol. 3, p. 266, No. 15.

L. flavus. BINNEY, Limacidæ, Bost. Jour. Vol. 4.

Description. Surface with long narrow prominent tubercles. Mantle short, broad, oval, concentrically striated. Breathing-hole large, near the posterior part of the mantle, and cleft to the edge. Neck smooth. Body terminating acutely behind, with a short ridge.

Color, varying from deep reddish brown to light ferruginous, mottled with oblong-oval greyish spots. Mantle with rounded spots. Head, neck and upper tentacles much lighter than the general hue: the latter lineated with dusky at their bases. Foot greyish on the margin.

Length, 2.0 – 2.8.

This species was obtained from gardens in the city of New-York. It has also been noticed in Philadelphia. I have adopted the names proposed by Mr. Binney, but with much scepticism in relation to the introduction of foreign species of this family. I have, however, had no opportunity of studying the foreign species to which these have been referred.

* Through inattention, both the figures of *Limacæ* in Plate I. are represented with the breathing-holes on the left side.

GENUS ARION. *Ferussac.*

With the characters of the preceding, but the breathing-hole more in front. Mantle with small granulations, and containing small calcareous concretions. A terminal mucous pore.

Obs. It is very doubtful whether this should be considered as more than a sub-genus of *Limax*.

ARION HORTENSIS.

Limax hortensis. LAMARCK, An. sans vert. ed. Brux. Vol. 3, p. 265.

Arion id. FERUSSAC, Mollusques, p. 65, pl. 2, fig. 6.

A. id. BINNEY, Limacidae, p. 10.

Description. Body narrow, expanding somewhat behind, and ending in a truncated point. Surface above with crowded fine oblong tuberosities; and the flanks with elongated tuberculated plates, with furrows between. Mantle small, oval, flattened, its anterior edge nearly reaching the head. It is about one-fourth of the length of the body. A tubercular ridge, with furrows on each side, between the upper tentacles; lower tentacles very short. Foot separated from the margin of the body by a furrow, and projecting beyond the body behind in a flat and rounded form. The mucous pore is a triangular sinus. Breathing-hole very small, near the edge of the mantle, about one-third of its length distant from its anterior extremity.

Color. Above whitish or ashen, with occasionally a tinge of brown. On each side of the body an obscure brownish line, uniting over the posterior extremity. Upper tentacles darker than the general surface. Foot whitish.

Length, 1·0 and more.

I have followed Mr. Binney in the nomenclature of this species, who appears to consider it as identical with the *hortensis* of Europe, from its black longitudinal bands. Its hitherto restricted locality (vicinity of Boston), and small numbers, seems to induce that distinguished naturalist to consider it as an introduced species.

GENUS TEBENNOPHORUS. *Binney.*

Mantle covering the whole superior surface of the body. Pulmonary cavity anterior; orifice on the right side, towards the head. Vent contiguous to, and a little above and in advance of the pulmonary orifice. Organs of generation united; orifice behind and below the superior tentacle of the right side. No testaceous rudiment, terminal mucous pore, or locomotive band of the foot.

Obs. This genus appears to be allied to the *Onchidium* of Buchanan, but I have had no opportunity to examine the species upon which it is founded. In both, the mantle covers the

FAMILY HELICIDÆ.

Body elongated, twisted spirally, and distinct from the foot. Tentacula four, rarely two; the upper bearing the eyes. Shell closed by a fleshy collar. Generative organs united in front. Vent near the breathing orifice. Shell globular, spiral, varying very much in its form, and receiving the body more or less completely.

GENUS VITRINA. *Draparnaud.*

Body slightly spiral, with a fleshy collar surrounding the neck, and produced forward into a sort of shield, and, with other retractile appendices, covering the shell. Foot separated by a slight furrow. Shell very small, thin, transparent, fragile, and flattened, without an umbilicus. Aperture large, but its margin not tumid, and borne on the posterior part alone of the animal.

VITRINA PELLUCIDA.

PLATE III. FIG. 42. A. B. — (STATE COLLECTION.)

Vitrina pellucida. DRAPARN. Hist. des Moll. p. 119, pl. 8, fig. 34-37.

Helico limax. FERUSSAC, Method. Conch. pl. 29; Moll. pl. 9, fig. 6.

Vitrina pellucida. SAY, Long's Expedition, Vol. 2, p. 258.

V. id. ADAMS, Am. Jour. Sc. Vol. 40, p. 274.

Description. Shell minute, ear-shaped, slightly spiral at its summit. Aperture very large. Animal with its breathing and excretory orifices behind. Generative apparatus under the right superior tentaculum.

Color, greenish yellow.

Greatest diameter, 0.25.

In this country, the above species was first detected by Mr. Say, under stones and fallen timber, near Coldwater lake, Lat. 48° 50' north. It has more recently been found in this State by Mr. Adams, at Rogers's Rock, Lake George.

Through inattention, the figures B. C. on the plate, are erroneously said to be of the natural size.

GENUS HELIX. *Linneus.*

Animal with a head rather distinct, with four retractile tentacula enlarged at the end: a fleshy collar closes completely the orifice of the shell. Foot large, oblong. Generative organs as in the preceding genus. *Shell* very variable in its form, globular, fusiform, conoidal or turreted. Aperture crescent-shaped, simple or toothed, oblique, broader than long. Umbilicus open or concealed. From three to fourteen spiral turns. Usually dextral.

FAUNA — PART 6.

4

HELIX APPRESSA.

PLATE II. FIG. 11. A. B.—(STATE COLLECTION.)

- Helix appressa.* SAY, Nich. Encyclopedia; Jour. Acad. Nat. Sciences, Vol. 2, p. 151.
H. linguifera. FERUSSAC, Tab. systematique, p. 33.
H. linguifera. LAMARCK, Am. sans vert. Ed. Brux. Vol. 3, p. 293.
H. appressa. BINNEY, Bost. Jour. Nat. Sciences, Vol. 3, p. 356, pl. 6.

Description. Shell orbicular, depressed; base flattened or slightly convex. Whorls five, depressed, forming an angle on the external one, more acute near the superior angle of the lip, with numerous transverse elevated equidistant lines with interstitial grooves. Umbilicus covered with calcareous matter, but concave within. Aperture rather restricted. Lip dilated, reflected, adpressed near the base to the body-whorl, and covering the umbilicus. A slight tooth-like angle on the lower part of the outer lip. Pillar-lip with a strong, prominent, compressed, oblique white tooth, gradually becoming obsolete towards the umbilicus.

Color. Epidermis uniform brownish horn-color; the lip white, edged with dusky brown. Animal with the neck and the sides blackish.

Diameter, 0·5 – 0·8.

This species appears to exist from the western part of this State southwardly. It has been noticed in Alabama. The lip has occasionally two projecting angles. Somewhat allied to *tridentata*, but the umbilicus is covered. According to Mr. Binney, this species and *palliatata*, although very unlike, yet their varieties approach each other by nice and scarcely appreciable differences, until they at length seem to blend into one. I am not aware that it has been found north or east of this State.

HELIX EXOLETA.

PLATE II. FIG. 6. A. B.—(STATE COLLECTION.)

- H. albobabris*, var. *unidentata.* FERUSSAC, Moll. pl. 46, A. fig. 6.
H. exoleta. SAY, MSS. as cited by BINNEY, Bost. Journ. Nat. Hist. Vol. 1, p. 492, pl. 20.
H. exoleta. BINNEY, in literis.

Description. Shell convex, somewhat ventricose. Whorls five or six, with minute oblique striæ. Suture distinct. Lip white, broadly reflected. Umbilicus covered. Pillar-lip with a prominent oblique tooth.

Color. Epidermis of a uniform yellowish horn-color. Tooth white. Animal greyish brown or blackish above, and three inches in length.

Diameter of the shell, 1·0. Height, 0·6.

I am indebted to Mr. I. Cozzens for specimens of this species from the banks of the Hudson river, Rockland county. It ranges through the Western States.

HELIX THYROIDUS.

PLATE II. FIG. 8. A. B. IMMATURE. — (STATE COLLECTION.)

- Cochlea umbilicata*. LISTER, Conch. pl. 91, fig. 91.
Helix thyroidus. SAY, Nich. Encyc. Vol. 4. Id. Acad. Nat. Sc. Vol. 2, p. 161.
H. id. Id. American Conchology, pl. 13, fig. 1.
H. id. FERUSSAC, Histoire des Mollusques, pl. 49, A. fig. 4.
H. thyroidienne. LAMARCK, An. sans vert. Ed. Brux. Vol. 3, p. 309.
H. thyroidus. GOULD, Invertebrata of Mass. p. 171.

Description. Shell rounded, convex. Whorls convex, about five in number, with minute parallel oblique striæ; the suture distinctly impressed. Aperture moderately large, lunate. Lip broadly reflected, and partially covering the umbilicus. Pillar-lip in the adult with an oblique tooth. Umbilicus exhibiting one volution, and sometimes entirely closed.

Color. Epidermis yellowish brown. Animal granulated, and of a soiled yellow. Diameter, 0·5 – 0·8.

We have strongly marked varieties in this vicinity of a light chocolate-brown, with dispersed dark spots, and interrupted revolving lines; the pillar-lip smooth; diameter 0·8; animal of a light amber-color. I have thought that it would be more instructive to give this variety in the plate above referred to, than the typical form, which may be found in most of our conchological works.

This species is common in moist shady places, from New-York to Missouri. It is more rare in the Eastern States.

HELIX ALTERNATA.

PLATE II. FIG. 9. — (STATE COLLECTION.)

- Helix alternata*. SAY, Nich. Encyc. Vol. 4, pl. 1, fig. 2. Id. Jour. Acad. Nat. Sc. Vol. 2, p. 161.
H. scabra. LAMARCK, An. sans verteb. Ed. Brux. Vol. 3, p. 292
H. alternata. GOULD, Invertebrata of Mass. p. 177. ADAMS, Am. Jour. Vol. 40, p. 273.

Description. Somewhat depressed, slightly convex above. Whorls five or six, flattened, and roughened above with lines of growth; smooth beneath. In young specimens, there is a prominent ridge between the upper and under surfaces. Lip simple, thin and brittle, and regularly curved. Umbilicus wide and deep, exhibiting all the volutions.

Color. Epidermis dusky. Shell light brown, alternating or varied with zigzag bars of deep reddish brown, becoming smaller as they converge towards the umbilicus. These bars are interrupted by a light colored revolving band. Lip within glossy and pearly. *Animal:* Head and tentacles light slate; back brown; remainder of the upper surface brownish orange.

Diameter of the shell, 0·8 – 1·0.

Common every where in ditches and moist places, and under the bark of decaying trees. Its geographical limits southwardly and westwardly not known. It has been observed from Maine to Maryland. As Deshayes has properly observed, the name imposed by Lamarck must be expunged, that of Say having distinctly the priority.

HELIX INDENTATA.

PLATE III. FIG. 26. A. B. — (STATE COLLECTION.)

- Helix indentata.* SAY, Acad. Nat. Sciences, Vol. 2, p. 372.
H id. BINNEY, Journ. Nat. History, Vol. 3, pl. 29, fig. 1.
H id. GOULD, Invertebrata of Mass. p. 181, fig. 109.

Description. Shell small, depressed, highly polished, subiridescent, pellucid, very fragile. Whorls four, slightly convex, with regular subequidistant impressed transverse lines, with the intervening spaces very smooth; from twenty-eight to thirty of these lines on the body-whorl, extending to the umbilicus. Suture not deeply indented. Aperture moderate. Lip simple, terminating at its lower extremity at the centre of the base of the shell. Umbilical region deeply indented, but not perforated.

Color. Polished light horn-color: the animal bluish black above; immaculate, lighter behind.

Diameter of the shell, 0.15 – 0.22. Height, 0.07 – 1.09.

This species is found, like the preceding, about decaying logs and fallen timber. In some specimens the umbilicus is open and patulous, and the animal of a light blue color. It has been observed from Vermont to Ohio. In this State it was found by Mr. Newcomb in the neighborhood of Troy.

HELIX CLAUSA.

PLATE II. FIG. 13. A. B. — (STATE COLLECTION.)

- Helix clausa.* SAY, Acad. Nat. Sciences, Vol. 2, p. 154. *Id.* Am. Conchology pl. 37.
H id. BINNEY, Bost. Jour. Nat. Hist. Vol. 1, p. 482, pl. 15.

Description. Shell fragile, somewhat elevated, subglobular, slightly perforated. Whorls four to five, convex, with minute oblique striæ. Aperture somewhat contracted. Lip reflected, flat, nearly covering the umbilicus, and occasionally entirely so, but not dilated there as in *albolabris*.

Color. Yellowish brown or russet; the animal dusky black.

Diameter, 0.5 – 0.7. Height, 0.5.

This species is allied to *albolabris*, but is not much more than half its size. It may be considered as a southern species, extending to New-Jersey and New-York.

HELIX CONCAVA.

PLATE II. FIG. 15. A. B. — (STATE COLLECTION.)

Helix concava. SAY, Journ. Acad. Nat. Sciences, Vol. 2, p. 159.
H. id. WHEATLEY, Cat. Shells U. S. No. 492, p. 19.

Description. Shell much depressed, orbicular. Whorls five, irregularly wrinkled across, and more convex beneath. Suture distinctly impressed. Lip simple, very slightly reflexed towards the base. Aperture large but short, in the line of the axis of the shell. Umbilicus large, funnel-shaped, exhibiting distinctly all the volutions (which are there very prominently corrugated) to the summit.

Color. Light corneous, or whitish with a tinge of yellowish green, immaculate.

Diameter, 0·7. Height, 0·35.

Of this remarkably distinct species, I have received specimens from the western district of this State, and from the neighborhood of Lake Champlain. It does not appear in Gould's Catalogue of the Shells of Massachusetts. Mr. Wheatley, however, assigns its locality in the Eastern States. To the west it seems to be more numerous, and has been noticed in Ohio and Missouri.

HELIX PALLIATA.

PLATE III. FIG. 36. A. B. PLATE II. FIG. 16. A. B. VARIETY. — (STATE COLLECTION.)

Helix palliata. SAY, Journ. Acad. Nat. Sciences, Vol. 2, p. 152.
H. obstricta. ID. Journ. Acad. Nat. Sciences, Vol. 2, p. 154.
H. denotata. FERUSSAC, Histoire des Moll. Pl. 49, A. fig. 5.
H. carolinensis. LEA, Am. Phil. Trans. Vol. 4, p. 102, pl. 15, fig. 33.
Carocolla helicoides. ID. Am. Phil. Trans. Vol. 4, p. 159, pl. 15, fig. 34.
H. palliata. BINNEY, Journ. Nat. Hist. Vol. 3, p. 353.
Helice notable. LAMARCK, An. sans vert. Ed. BRUX. Vol. 3, p. 309.

Description. Shell subdepressed or depressed, with elevated revolving and minute transverse lines, and numerous minute tubercles with scattering stiff hairs. Whorls five, very slightly convex above, distinctly convex beneath, and forming in one variety (Pl. 2, fig. 16, B.) an obtuse angle, appearing like a prolongation of the broadly reflected lip. Aperture usually trilobed. Umbilical region covered with a white callus. Lip widely reflected, with two obtuse sinuses on each side, forming a prominent tooth between them, and a third profound sinus near the middle of the lip; occasionally a single tooth on the outer lip. Pillar with a large white oblique tooth.

Color. Reddish brown; reflected portion of the lip white, tinged occasionally with blue.

Diameter, 0·7 – 0·9. Height, 0·5.

FAUNA — PART 6.

5

the base on the inner edge. Pillar-lip with a short oblique tooth on the middle portion. Umbilicus large and deep, exhibiting all the volutions. This is very indistinctly given in the figure A.

Color. Pale horn-color; reflected portion of the lip and the tooth white.

Diameter, 0·7 – 0·9. Height, 0·4 – 0·5.

This species is somewhat allied to *H. profunda*, but is distinguished by its armed pillar-lip; in its delicate texture, it resembles *multilineata*. According to Mr. Wheatley, it is found from Maine to Ohio.

HELIX MONODON.

PLATE III. FIG. 19. PLATE III. FIG. 21. A. B.

Helix monodon. RACKET, Tr. Lin. Soc. Lond. Vol. 13, p. 42, pl. 5, fig. 2.

H. fraterna. SAY, Long's Exped. St. Peter's, Vol. 2, p. 257, pl. 15, fig. 3.

H. convexa. LAMARCK, An. sans vert. Ed. Bruz. Vol. 3, p. 408.

H. fraterna. ADAMS, Am. Jour. Sc. Vol. 40, p. 272.

H. monodon and *fraterna.* BINNEY, Jour. Nat. Hist. Vol. 3, pp. 360, 363, pl. 10, figs. 1. 2.

H. monodon. GOULD, Invertebrata of Mass. p. 174, fig. 113.

Description. Shell slightly convex, subdepressed, and covered with a hairy epidermis. Whorls five or six, narrow, diminishing very gradually in width to the apex. Aperture semilunar, restricted and closed by a deep groove behind the reflected portion of the outer lip. The umbilicus either deep, but not exhibiting all the volutions as in fig. 21; or partially or entirely closed by the reflected lip. The outer edge of the lip not projecting beyond the surface of the whorl. Base rounded, much excavated in the umbilical region. Pillar-lip with an oblique compressed elongated white tooth.

Color. Epidermis dusky brownish or chesnut-colored; reflected portion of the outer lip occasionally with a pinkish hue. Animal yellowish brown, darker in front.

Diameter, 0·3 – 0·5.

This species was originally described by Mr. Racket in the English Linnean Transactions, with an open umbilicus. Mr. Say described the same under the name of *fraterna*, with a closed umbilicus. Both are now believed to be identical.

Found on rotten wood in forests, or in open fields under stones: a pair usually found together. It appears to extend through the Northern and Western States. It has been found at Troy, and throughout the western district of this State. It seems to be allied to *H. hirsuta*, but the tooth is much smaller than in that species, which is moreover imperforate.

HELIX FULIGINOSA.

PLATE III. FIG. 22.

H. fuliginosa, GRIFFITH. ADAMS, Am. Jour. Sc. Vol. 40, p. 273.

Description. Shell large, pellucid, polished, little elevated. Volutions slightly convex. Lip simple. Umbilicus open, broad, profound; its margin furrowed by the transverse wrinkles, which become effaced towards the periphery of the body-whorl. Aperture large, simple, semilunate.

Color. Light waxen, polished, with greenish tinge; interior of the mouth rosaceous.

Diameter, 1·0.

This species has been detected near Troy in this State, by Dr. Newcomb. It is allied to the following species, from which, however, I suppose it to differ constantly in size.

HELIX CELLARIA.

PLATE III. FIG. 25 A. B.—(STATE COLLECTION.)

- Helix cellaria.* MULLER, Verm. Hist. No. 130.
H. glaphyra. SAY, Nich. Ency. Ed. Am. Vol. 4, pl. 1, fig. 3.
H. nitida. DRAPARNAUD, Moll. pl. 8, fig. 23 to 25.
H. cellaria. BINNEY, Bost. Jour. Nat. Hist. Vol. 3, pl. 26, fig. 2.
H. id. GOULD, Invertebrata of Mass. p. 180, fig. 104.

Description. Shell moderately small, orbicular, depressed, concave beneath, thin, fragile, smoothly polished. Whorls five, slightly convex, with irregular obsolete transverse wrinkles. The umbilicus moderate, gradually enlarging towards the circumference of the body-whorl. Lip simple, thin, acute and regular. Aperture lunate, broader than high.

Color. Waxen or whitish, polished, slightly tinged with greenish, with deeper colored vertical striæ; within the aperture, purplish. Animal light indigo-blue above, darkest on the head; collar greenish.

Diameter of the shell, 0·3 – 0·5.

This animal is now supposed, by the most recent American conchological writers, to be identical with the *cellaria* of Müller, and to have been introduced about water-casks, greenhouse plants, etc. It is often confounded with *inornata* of Say, in the immature state of the latter species, when the umbilicus is but small.

HELIX INORNATA.

(STATE COLLECTION.)

Helix inornata. SAY, Jour. Acad. Nat. Sci. Vol. 2, p. 371.

Description. Shell thin, subglobose, polished; resembling, in its texture and external configuration, *H. cellaria*. The whorls rounded, with numerous transverse wrinkles. Spire convex, little elevated. Suture distinct, but not deeply impressed. Umbilicus small, profound. Lip simple, somewhat thickened near the base, slightly everted at that place over the umbilicus. Pillar-lip smooth, polished. Aperture lunate, wider than high.

Color. Pale yellowish horn-color, polished.

Diameter, 0.5 – 0.7. Height, 0.3.

This species has been obtained from Orange and Rockland counties in this State, and is also found throughout the western district. It extends throughout the Western States, but does not appear farther north than this State. According to Say, it is closely allied to *ligera*, but is larger and not as solid, and the aperture is proportionally wider.

HELIX LABYRINTHICA.

PLATE III. FIG. 31. — (STATE COLLECTION.)

Helix labyrinthica. SAY, Nich. Ency, Vol. 4; Jour. Acad. Nat. Sci. Vol. 1, p. 124.*H. id.* BINNEY, Bost. Jour. Nat. Hist. Vol. 3, pl. 24, fig. 1.*H. id.* GOULD, Invertebrata of Mass. p. 184, fig. 106.

Description. Shell very small, conoidal; the apex obtuse. Whorls six, rapidly decreasing to the apex, with distinct elevated equidistant oblique lines. Suture distinct. Outer lip somewhat reflected, rounded. Pillar-lip with a long tooth-like ridge (and sometimes beneath it a second one), which appears to revolve within the shell parallel to the suture. The second ridge, when present, terminates before it reaches a point on the pillar-lip, opposite to the outer margin of the lip. Shell flat beneath, with the umbilical region excavated and the umbilicus small.

Color, varying from reddish brown to brownish horn-color. Outer lip often rose-colored.

Animal: Head slate-colored above; foot white, linear; tentacles dark colored.

Diameter, 0.1. Height, 0.1.

Found on fungus in decaying wood, or under logs and among decaying leaves. It is easily distinguished by its strongly corrugated surface, and the internal ridge or ridges on the pillar-lip. Ranges from Massachusetts, and perhaps farther north, to Missouri. In this State it has been found near Troy, and in the neighborhood of New-York.

HELIX MULTILINEATA.

PLATE III. FIG. 34. A. B.—(STATE COLLECTION.)

Helix multilineata. SAY, Jour. Acad. Nat. Sciences, Vol. 2, 156.

Description. Shell large, thin, convex, imperforate. Whorls six, with elevated subequidistant lines separated by grooves. Aperture lunated, not angulated at the base of the column, but obtusely curved. Lip contracting slightly the aperture, reflected, white, and adpressed to the body-whorl near the base. Umbilicus covered with a white callus.

Color. Dark brown, with numerous dark red revolving lines varying from four or five to twenty-five or thirty, sometimes confluent into bands which are minutely and irregularly undulated. Animal granulated; granulæ large, whitish, the interstices blackish. Foot blackish beneath.

Diameter, 0·8–1·1. Height, 0·5–0·8.

This animal was observed by Say in Illinois and Missouri, where it is exceedingly numerous. The specimen which furnished the figure was said to have been found in the western district of this State, but the precise locality was not indicated.

HELIX PENNSYLVANICA.

PLATE III. FIG. 35. A. B.—(STATE COLLECTION.)

Helix pennsylvanica. GREEN, Journ. Maclurian Ly ceum, No. 1, p. 8.
H. id. BINNEY, Bost. Journ. Nat. Hist. Vol. 1, p. 483, pl. 16.

Description. Shell moderately large, convex, elevated, imperforate. Whorls five or six, rounded, with numerous oblique striæ. Suture distinctly impressed. Lip reflected, with occasionally a thickening near the base. Aperture oblique, subtriangular. Umbilicus closed, with its region somewhat indented.

Color. Reddish or dark reddish brown; lip white.

Diameter, 0·8. Height, 0·6.

This species occurs throughout the Western States. It has been found in Pennsylvania, and will probably be discovered in the western district of this State.

HELIX STRIATELLA.

PLATE III. FIG. 40. A. B. C. — (STATE COLLECTION.)

Helix striatella. ANTHONY, Journ. Nat. Hist. Vol. 3, p. 298, pl. 3, fig. 2.*H. ruderata?* STUDER. ADAMS, Amer. Jour. Science, Vol. 40, p. 273 and 408.*H. striatella*. GOULD, Invertebrata of Mass. p. 178, fig. 112.

Description. Shell small, orbicular, polished, thin, much depressed; the spire somewhat elevated. Whorls four to five, flattened above, rounded beneath, with a distinctly impressed suture, minutely but distinctly marked with elevated sharp lines, which are most obvious on the circumference of the shell; these become obsolete on the whorls near the apex. Aperture oblique, rounded. Base excavated, passing into a broad and deep umbilicus. Lip thin and simple.

Color. Uniform transparent horn, or yellowish or reddish brown. Animal with bluish black tentacles; margin and posterior part of the foot white; foot transparent, terminating acutely behind.

Diameter at the aperture, 0·2. Height, 0·1.

This beautiful little species has for a long time been considered as identical with the *H. perspectiva* of Say. It is, however, a smaller and more delicate shell; the ridges are more conspicuous, and it has fewer whorls.

It has been found near Oriskany and Troy in this State, about old timber and under the bark of rotten trees. Its hitherto ascertained geographical range is from Vermont through Ohio.

HELIX SOLITARIA.

PLATE III. FIG. 41. A. B. — (STATE COLLECTION.)

Helix solitaria. SAY, Journ. Acad. Nat. Sciences, Vol. 2, p. 157.

Description. Shell large, solid, subglobose. Spire conic-convex. Volutions five and a half, wrinkled across and rounded: suture rather deeply impressed. Aperture wide, embracing rather a small portion of the penultimate whorl. Lip simple, not reflected. Umbilicus large, exhibiting distinctly all the volutions.

Color. Reddish horn-color, with two or more revolving dark reddish lines.

Diameter 1·0 – 1·3. Height, 0·7.

This species was first designated by Mr. Say, who noticed it in Missouri. It has since been found, as I am informed, in Ohio. The specimen which furnished the figure was said to have been obtained from Pennsylvania. It may probably be detected in this State.

This species has been found from Vermont to Georgia. In this State it has, I learn, also been found, but I am not aware of the precise locality. It occurs under pieces of wood, and among rotten leaves. I have not had an opportunity of examining it, and am indebted to Dr. Gould for the description and figure. It can only be confounded with the *H. labyrinthica*; but its polished surface, and the absence of parallel ridges within its mouth, afford sufficiently distinctive characters.

(EXTRA-LIMITAL.)

H. major. (BINNEY, Bost. Jour. Vol. 1, p. 473, pl. 12.) Whorls six, with coarse oblique raised striæ; revolving striæ indistinct or wanting. *Color*, brownish horn. Diameter, 1.5. *Southern States.*

Closely allied to *albolabris*, and supposed by Ferussac and others to be a southern variety of that species.

H. inflecta. (SAY, Ac. Nat. Sc. Vol. 2, p. 153. BINNEY, Ib. Vol. 3, p. 358, pl. 9, fig. 1.) Aperture trilobate. One or two teeth on the inner margin of the lip. Pillar-lip with a large lamelliform tooth. Umbilicus closed. Epidermis brownish horn, with occasionally fine hair-like projections. Diameter, 0.8. *North-Carolina and the Western States.*

H. irrorata. (SAY, l. c. Vol. 2, p. 370. Var. *lactea*, Ferussac.) Shell subglobular, depressed, imperforate. Whorls five; wrinkles on the body-whorl obsolete, more distinct on the spire. Suture declining much near the mouth. Lip reflected, but not flattened. *Color*, pale reddish brown, with numerous white spots, and about four deeper brown obsolete bands. Diameter, 0.6. *Pennsylvania.*

H. corpuloides, Montagu. (ADAMS, Am. Jour. Vol. 38, p. 193.) *Near Boston.*

H. egena. (SAY, l. c. Vol. 5, p. 120.) Shell small, polished, convex. Whorls five, rounded, not distinctly wrinkled. Aperture transverse, rather narrow. Lip simple, its lower margin terminating at the base of the shell. Umbilicus none, but deeply indented. Diameter, 0.1. *Pennsylvania.*

H. mitchelliana. (LEA, Am. Phil. Soc. Vol. 6, p. 87, pl. 23, fig. 71) Shell above obtusely conical, below inflated, longitudinally and finely striate: whorls five. Lip reflected; aperture nearly round. Imperforate. *Color*, corneous transparent. Diameter, 0.7. *Ohio.* Allied to *jejuna* and *ligera*.

H. porcina. (SAY, Exped. to St. Peter's, Vol. 2, p. 257, pl. 15, fig. 2.) Shell small, depressed. Epidermis rugose, with numerous minute bristles. Whorls rather more than four, depressed above, rounded beneath, forming a very obtuse angle rather above the centre of the whorl. Umbilicus open rather small, profound. Lip simple. *Color*, yellowish brown. Diameter, 0.3. *N. W. Territory.*

H. vancouverensis. (LEA, Am. Phil. Tr. Vol. 6, p. 87, pl. 23, fig. 72.) Shell large, plano-convex, flattened below and shining, longitudinally striate, widely umbilicate. Whorls five, rounded. Lip below somewhat reflexed, above depressed, forming a sinuous edge: columella short, callous. *Color*, corneous. Diameter, 1.1. *Oregon.*

H. auriculata. POLYGYRA *id.* (SAY, Ac. Sc. Vol. 1, p. 277. PL. 3, fig. 28 in this volume.) Shell small, flattened above. Spire little elevated, often eroded. Whorls 5, rounded beneath, obtusely carinate above, regularly wrinkled across. Umbilicus small within, dilated without. Lip and pillar-lip irregularly dilated, and nearly closing the aperture, with a faint resemblance to an ear. *Color*, bluish white to reddish brown. Diameter, 0.4; height, 0.2. *Florida*.

This forms the type of a new genus proposed by Say, under the name of *Polygyra*, but which has not been adopted by subsequent naturalists. I have deemed it important to give a figure, as there is none extant to which the American naturalist has convenient access.

H. sayi. (WOOD, Index Suppl. pl. 7, 34 n.) Shell small. Lip reflected, forming a narrow sulcus towards the open umbilicus. *Color*, brownish.

Closely allied to, if not identical with the preceding.

H. septemvolva. POLYGYRA *id.* (SAY, Ac. Sc. Vol. 1, p. 278. FERUSSAC, pl. 51, fig. 6.) Shell much depressed, discoidal. Spire not prominent. Whorls 7, perfectly lateral, compressed and depressed, with lines and grooves above; a projecting keel on the upper edge of the body-whorl. Aperture subreniform, not contracted. Outer lip reflected; pillar-lip projecting inward into an angle or tooth. Umbilicus moderate, attenuated to the apex, so as to show the volutions. Diameter, 0.3 - 0.4. *Georgia, Florida*.

H. avara. (SAY, *Ib.* Vol. 1, p. 277.) Spire convex. Whorls four, rounded, wrinkled, and furnished with many short robust hairs. Aperture with two projecting obtuse teeth on the outer lip, separated by a deep sinus; pillar-lip connected to an elongate lamelliform oblique tooth on the penultimate whorl. Umbilicus moderate, not showing the volutions. Diameter, 0.25. *Florida, Carolina*.

H. aspersa. (FERUSSAC, Moll. pl. 18.)

* * WHORLS ANGULAR.

H. spinosa. CAROCOLLA *id.* (LEA, I. C. Vol. 4, p. 104, pl. 15, fig. 35. BINNEY, Bost. Jour. Vol. 3, pl. 11; and PL. 6, fig. 114 A. B. of this book.) Shell lenticular, thin, diaphanous, imperforate. Carina acute, with minute spines. Whorls 6. Spire nearly planular, being guarded by a long tooth on the columella. Outer lip irregularly thick, angulated near the upper termination. Diameter, 0.6. *Alabama*.

This belongs to the genus *Carocolla* of Lamarck, and *Helicigona* of Ferussac, but is considered by later writers as a merely artificial section.

H. cumberlandiana. CAROCOLLA *id.* (LEA, Am. Tr. Vol. 8, p. 229, pl. 6, fig. 61.) Shell lenticular, carinate, striate, widely umbilicate, impressed above and below the carina. Whorls 5. Aperture angular, within furrowed. Lip acute. *Color*, whitish brown, spotted. Length, 0.14; diameter, 0.54. *Tennessee*.

H. lasmadon. (PHILIPS, Ac. Sc. Vol. 8, p. 182.) Shell minute, moderately elevated, lenticular, rather thick, umbilicate, faintly striate. Aperture compressed, with one or two lamellar teeth. *Color*, light horn. *Alabama*.

PUPA BADIA.

PLATE IV. FIG. 45.

- Pupa badia.* ADAMS, Amer. Journ. Science, Vol. 40, p. 271.
P. id. ID. Bost. Jour. Nat. Hist. Vol. 3, p. 331, pl. 3, fig. 18.
Pupilla id. GOULD, Bost. Journ. Nat. Hist. Vol. 3, p. 404.

Description. Shell very obtusely tapering in the two upper whorls. Whorls seven, convex. Aperture orbicular, with a slightly reflected margin, and a single tooth on the penultimate whorl. Umbilicus moderate.

Color. Reddish brown. Diameter, 0·07. Height, 0·14.

This species has been observed at Crownpoint in this State.

PUPA EXIGUA.

PLATE IV. FIG. 46 — (STATE COLLECTION.)

- Pupa exigua.* SAY, Jour. Acad. Nat. Sciences, Vol. 2, p. 375.
P. id. GOULD, Jour. Nat. History. Vol. 3, p. 398, pl. 3, fig. 20.
P. id. ADAMS, American Journal of Science, Vol. 40, p. 271.
P. id. GOULD, Invertebrata of Massachusetts, p. 191, fig. 122.

Description. Shell exceedingly minute, elongate, subcylindrical. Apex somewhat obtuse. Whorls five, with minute grooved lines. Suture distinctly impressed. Aperture large and oblique, with the lip smooth and widely reflected, but not flattened. Pillar-lip bidentate; one near the middle, and the other smaller, near its inner termination. Umbilicus distinct.

Color. Pellucid watery white. Diameter, 0·04; height, 0·15.

This very minute species has been noticed in Vermont, Massachusetts and Ohio. In this State, it has been detected by Dr. Newcomb near Troy.

PUPA CONTRACTA.

PLATE IV. FIG. 47.

- Pupa contracta.* SAY, Journ. Acad. Nat. Sciences, Vol. 2, p. 374.
P. id. GOULD, Jour. Nat. Hist. Vol. 3, p. 399, pl. 3, fig. 22.
P. id. ADAMS, American Journal of Science, Vol. 40, p. 271.

Description. Shell very small, subcylindrical. Apex obtuse. Whorls five, convex, with faint transverse lines: suture distinct. Aperture irregularly triangular. Lip widely reflected, not flattened; pillar-lip with a large elongated spoon-shaped lip, and contracting the throat into the form of a horse-shoe. An oblong thin tooth or fold far within the shell. Umbilicus large and distinct. *Color,* waxen white or dead white. Diameter, 0·05; height, 0·1.

Found among decaying logs and old stumps, from Vermont to Virginia. In this State, it has been noticed near Troy, and throughout the western district. It appears to be a common species.

nearest the base very small, and placed near the smaller tooth of the columella; the two others larger, subequal. Umbilicus distinct.

Color. Whitish horn. Animal with two truncated tubercles, representing the anterior tentacles: foot white; and head and neck, as far as the mantle, black.

Height, 0·09.

This, according to Dr. Eights, is common about Albany and Troy. Pl. 35, fig. 337, is copied from Gould, to illustrate his *curvidens*, which is now considered as identical with this species.

PUPA FALLAX.

PLATE XXXV. FIG. 331.

<i>Cyclostoma marginata:</i>	SAY, Jour. Acad. Nat. Sc. Vol. 2, p. 172.
<i>Pupa fallax:</i>	Id. Jour. Ac. Nat. Sciences, Vol. 5, p. 121.
<i>P: placida:</i>	Id. Desc. terr. and fluv. shells, p. 24.
<i>P: fallax:</i>	GOULD, Invertebrata of Mass. p. 192, fig. 123.
<i>P: albolabris:</i>	ADAMS, American Jour. Science, Vol. 40, p. 271.

Description. Shell very small, turreted, regularly tapering to a pointed apex. Whorls six, moderately convex, polished, minutely wrinkled. Aperture unarmed, suboval, truncated above by the penultimate whorl, less than one third of the whole length of the shell. Lip white, reflected and thickened. Pillar-lip nearly straight, and turns abruptly at the front so as to form nearly a right angle. Umbilicus small, but distinct. *Color,* dusky or pale horn.

Height, 0·2 – 0·3.

This animal was first described by Say as a *Cyclostoma*, under the name of *C. marginata*. In describing *P. fallax*, he undoubtedly alludes to this as *Pupa marginata*, but thinks it differs by its larger size, and its lip not being so widely reflected. Recent American conchologists have, however, united not only these species together, but have added to them the *P. placida* of the same author,* as published in a scarce tract now out of print.

I have not been so fortunate as to detect this species in this State, but I am informed that it has been found here by Mr. Binney. Its present range is from Massachusetts to Ohio.

* *P. placida.* (Des. terr. and fluv. shells, p. 24.) Shell pale yellowish horn; apex whitish obtuse. Whorls six and a half, somewhat wrinkled: suture moderately impressed: aperture unarmed, longitudinally oval, truncate a little obliquely above by the penultimate volution. Columella so recurved as almost to conceal the umbilicus: labrum, with the exception of the superior portion, appearing a little recurved when viewed in front, but in profile this is hardly perceptible. Umbilicus very narrow. Height, 0·3.

Since writing the above, I learn that the original specimen of the *P. placida* of Say is the *Bulimus hordeaceus* of Europe.

GENUS SUCCINEA. *Draparnaud.*

Animal elongated, spiral, larger than the shell: tentacles four. Amphibious. Shell ovate, subelongate, pellucid straw-colored, very thin: aperture very large, oval, entire, rounded before, angular behind: lip simple. Whorls three.

SUCCINEA OVALIS.

PLATE IV. FIG. 51, VAR., and 52.—(STATE COLLECTION.)

- Succinea ovalis.* SAY, Nich. Encycl. No. 2, Jour. Ac. Nat. Sc. Vol. 1, p. 15, and Vol. 2, p. 163.
S. *id.* ADAMS, American Jour. Science, Vol. 40, p. 270.
S. *id.* GOULD, Invertebrata of Mass. p. 194, fig. 125.

Description. Shell suboval, diaphanous. Whorls nearly three, oblique. Body very large. Spire small, but little prominent, somewhat obtuse. Columella much narrowed, so as almost to permit a view of the interior apex from the base of the shell. Scarcely any calcareous deposit on the pillar-lip.

Color. Pale yellowish. Animal pale, with black stripes on its neck, and squares or bands on its sides.

Length, 0·3—0·5.

Var. *α.* Minutely striated and distinctly impressed with a medial revolving line, large.

This is a common species about the margins of ponds, and in damp places. The shell is so vitreous, according to Dr. Gould, as to permit the viscera and circulatory apparatus to be seen through it. The distinctive characters of the species by the shell alone are so few, that when I obtained the var. *α.* from streams in Rockland county, I supposed that it was quite distinct enough to form a separate species under the name of *lineata*. Such a course in this genus now appears to me premature, until I succeed in obtaining the living animal. The typical form of this species (fig. 52) bears a striking resemblance to *S. putris*, var. *γ.* of Ferussac (*Hist. Nat. Moll.* pl. 11, *α.* fig. 7—8).

SUCCINEA OBLIQUA.

PLATE IV. FIG. 53.—(STATE COLLECTION.)

- Succinea obliqua.* SAY, Long's Exped. St. Peters, Vol. 2, p. 260, pl. 15, fig. 7.
S. *id.* ADAMS, Am. Journal of Science, Vol. 40, p. 270.

Description. Shell oblong-oval, nearly pellucid. Whorls three, very obliquely revolving, and distinctly wrinkled. Spire a little prominent. Aperture sub-oval, sub-oblique.

Color. Pale amber. *Animal:* tentacles margined posteriorly, and tipped with black.

Length, 0·5—0·9.

(EXTRA-LIMITAL.)

S. retusa. (LEA, Am. Phil. Trans. Vol. 5, p. 117, pl. 19, fig. 86.) Shell ovate-oblong, very thin, pellucid; spire short; whorls three; aperture dilated below, and drawn back. Color, yellowish. Length, 0.7; diameter, 0.3. *Cincinnati.*

GENUS BULIMUS. *Bruguières. Lamarck.*

Shell oblong, oval-oblong or turreted. Aperture simple or entire, rounded anteriorly. Columella straight, smooth.

Obs. This genus comprises species which were found distributed by Linneus under the genera *Helix* and *Bulla*. It forms the subgenus *Cochlicopa* of Ferussac, but the best conchological writers prefer arranging it as a separate genus in the vicinity of *Helix*. The animals are terrestrial, and some of them are remarkable for the size and stony hardness of their eggs. Few species have been detected in this country.

BULIMUS LUBRICUS.

PLATE III. FIG. 43.—(STATE COLLECTION.)

Bulimus lubricus. BRUGUIÈRES, Dict. No. 23.
B. id. SAY, Long's Expedition St. Peters, Vol. 2, p. 259. ADAMS, Am. Jour. of Sci. Vol. 40, p. 270.
B. id. GOULD, Invertebrata of Massachusetts, p. 193, fig. 124.

Description. Shell very small, thin, polished and transparent, elongate-oval. Whorls five or six, rounded, lessening to the obtuse apex, with a distinct suture. Aperture small, oval, not broadly rounded at the base. Pillar-lip slightly thickened, so as to present the appearance of a slight notch at the base. Lip simple, thickened within.

Color. Yellowish olive; the inner margin of the lip light reddish: often smoky horn-colored throughout.

Diameter, 0.1. Height, 0.3.

This species, which was first detected by Mr. Say in the Northwest territory, has since been ascertained to have a wide geographical range. It occurs under rotten wood and leaves. The specimen which furnished the above description was obtained from Oriskany, Oneida county, but it doubtless occurs throughout every part of the State. I have never had an opportunity of examining European specimens of this species.

FAMILY AURICULIADÆ.

Shell always spiral and variable. Aperture dentate, and always lateral in relation to the axis. Animal elongated, with the body distinct from the foot: no mantle: a collar. Tentacles two, with the eyes at or near their base. Mouth usually armed with an upper tooth opposed to the tongue. Pulmonary cavity and its orifice placed forward. Generative organs united or distant. Terrestrial or marine: freshwater?

Obs. This small family corresponds with the *Auriculacés* of Blainville, and the *Limnocochlides* of Ferussac.

GENUS AURICULA. *Lamarck.*

Shell oval, more or less pointed and elongated, rarely cylindrical. Spire with five or six whorls; the last enveloping the others. Aperture long and narrow, ear-shaped, with two or more folds on the pillar. Animal elongated, enlarged in front into a rostrum or snout. Tentacles short, cylindrical, gland-shaped above. Eyes placed at the internal base of the tentacles, slightly behind. Foot not divided.

AURICULA BIDENTATA.

PLATE V. FIGS. 92, 1, 2, 3.

(STATE COLLECTION.)

Melampus bidentatus. SAY, Jour. Acad. Nat. Sc. Vol. 2, p. 245.

Auricula cornea. LAMARCK, An. sans vert. Ed. alt. Vol. 8, p. 339.

A. bidentata. RUSSEL, Essex Jour. Nat. Hist. Vol. 1, p. 67.

A. id. GOULD, Invertebrata of Massachusetts, p. 197, fig. 130.

Description. Shell thin, translucent, smooth, broadest about the upper third. Whorls five or six, somewhat rounded; the last forming the largest part of the shell, with minute wrinkles and revolving striæ. Pillar-lip bidentate: the upper one, which may be considered as a fold, is prominent, transverse, and placed below the middle; the other oblique, not so large, formed by the outer lip as it turns within the shell. Outer lip with four or five parallel revolving ridges, not attaining the edge of the lip. Spire short and blunt. Aperture long and narrow, widest below.

Color. Dark reddish brown. Animal reddish brown above, beneath paler. Rostrum nearly as long as the tentacles, bilobed. Foot transversely bifid.

Diameter, 0·3. Height, 0·5.

Var. A. Aperture narrowed beneath, and with 3 4 revolving dark lines.

This is a common species in the salt marshes about New-York; often observed near the salt water, and said to have been found in the interior. They are occasionally submerged, but do not appear to live in the water. Found from Vermont to Florida.

FAUNA — PART 6.

8

FAMILY LIMNIADÆ.

Shell always complete, thin, smooth, much convoluted: outer lip trenchant, not reflexed. Animal with its body elongated, distinct from the foot: no cuirass, but a collar formed around the neck by the margin of the mouth. Head furnished with a wide sort of veil. Tentacles two, with the eyes at their base. Pulmonary orifice on the collar. Organs of generation separated. Vent near the pulmonary orifice. All fluviatile.

GENUS PLANORBIS. *Lamarck.*

Shell discoidal, sinistral. Spire depressed or concave, exhibiting the whorls above and below. Aperture broader than long; the margin sharp, and not reflexed. Animal elongated, compressed, with two very long filiform tentacles. Mouth with a crescent-shaped tooth above, and the tongue armed with small hooks, surmounted by a sort of short emarginated veil. Breathing-hole dextral, on the collar, and the vent near it. Organs of generation on the same side, separate; the male near the tentacle, and the other at the base of the collar. All living in fresh water.

PLANORBIS TRIVOLVIS.

PLATE IV. FIG. 50. A. B.

(STATE COLLECTION.)

Planorbis trivolvis. SAY, Encyclop. Nich. Am. ed. Vol. 4, pl. 2, fig. 2.
P. *id.* SAY, American Conchology, pl. 54, fig. 2.
P. *id.* GOULD, Invertebrata of Mass. p. 201, fig. 131.

Description. Shell discoidal. Whorls three or four, marked with regular transverse lines, rather acutely carinated above and beneath, more obtusely so on the circumference: these carinæ most obvious on the young shell. Suture most apparent on the upper or right side, which has a depressed spire; beneath cup-shaped. Aperture large, higher than wide, embracing a considerable portion of the body-whorl, inclining to the left. Lip abruptly angulated at the termination of the carina, thickened within.

Color. Pale yellow or olive. Animal dusky, with pale yellowish confluent spots.

Diameter of the shell, 0.5 - 0.7; height, 0.2 - 0.3.

This species, which ranges through the Northern and Western States, is abundant in many of the streams and ponds of New-York.

PLANORBIS MEGASTOMA.

PLATE IV. FIGS. 60 & 61.

(STATE COLLECTION.)

Description. Shell large, coarse and solid. Whorls nearly five, rounded, with coarse transverse waving wrinkles, becoming larger towards the mouth. A large prominence on the body-whorl nearly opposite to the aperture, producing an obtuse angle. Spire depressed, with the suture distinct; beneath, the volutions are exhibited nearly to the apex. Mouth dilated, but somewhat contracted at the margin, 0·3 wide and 0·4 high; its lower portion rounded, arising from the lower part of the penultimate whorl; line of the upper margin more nearly straight. In the young (fig. 60), the aperture is not so much dilated, and is obscurely trigonal, with the lower margin beneath the plane of the transverse diameter of the shell.

Color. Olivaceous, tinged with yellowish within the aperture. In the young, black, with the interior of the aperture dull reddish.

Diameter, 0·8. Height, 0·3.

This *planorbis* was found near Lake Ontario, and appears to be different from any species yet described. In its aperture it resembles the small *P. dilatatus* of Gould, but is otherwise very distinct.

PLANORBIS CAMPANULATUS.

PLATE V. FIG. 69. A. B.

(STATE COLLECTION.)

<i>Planorbis campanulata.</i>	SAY, Jour. Acad. Nat. Sc. Vol. 2, p. 266.
<i>P. id.</i>	ADAMS, American Journal of Science, Vol. 40, p. 269.
<i>P. id.</i>	GOULD, Invertebrata of Massachusetts, p. 204, fig. 133.

Description. Shell regular, small, transverse lines and grooves; with four whorls above, which are carinated, and form a conspicuous cavity; beneath much deeper, and nearly perforating the shell to the apex. Aperture suddenly dilated, and subtrigonal or bell-shaped; its upper margin being elevated above the plane of the shell.

Color. Light olive-green; aperture brownish, polished.

Greatest diameter, 0·5. Height, 0·2.

This species occurs in most of the lakes in the western district of the State.

PLANORBIS EXACUTUS.

PLATE IV. FIG. 62. A. B.

(STATE COLLECTION.)

- Planorbis exacutus.* SAY, Jour. Acad. Nat. Sci. Vol. 2, p. 164.
P. id. ADAMS, Am. Jour. of Sci. Vol. 40, p. 269.
P. id. GOULD, Invertebrata of Mass. p. 208, fig. 137.

Description. Shell thin and fragile, much depressed, lenticular. Whorls four; upper and under sides slightly convex, flattened to the periphery, and forming an acute edge which is continued on the middle of the aperture, which is below the plane of the transverse diameter: surfaces of the whorls transversely striated. Umbilicus regular, showing all the volutions to the apex. Suture moderately impressed. Whorls wider than high. Aperture subtriangular, oblique. Lip angulated in the middle, arched near its lower tip; the upper termination just including the acute edge of the penultimate whorl.

Color, light corneous.

Diameter, 0.2 - 0.3. Height, 0.07 - 0.1.

Common in ponds and ditches. I have obtained it from the northern and western districts. It is one of the most fragile and most depressed of all the species.

PLANORBIS PARVUS.

PLATE IV. FIG. 56.

(STATE COLLECTION.)

- Planorbis parvus.* SAY, Nich. Ency. Ed. Am. Vol. 4, pl. 1, fig. 5.
P. id. GOULD, Invertebrata of Mass. p. 209, fig. 139.

Description. Shell small, thin, depressed, discoidal; upper side nearly plane, but concave in the centre. Umbilicus broadly concave, and both sides exhibiting all the volutions. Whorls four; the body-whorl obtusely carinated on its circumference, and with impressed incremental lines. Aperture rounded, oblique; its upper and lower margins in the plane of the transverse diameter of the shell. Lip sharp, not thickened.

Color. Varying from reddish brown to yellowish or olivaceous. Animal whitish, darker above.

Diameter, 0.08 - 0.1. Height, 0.02 - 0.04.

Common. I have received specimens from the Mohawk and Connecticut rivers, which only differ from the above in having the upper edge of the mouth nearly in the centre of the last whorl. I refer them with doubt to the above named species. It is one of the smallest of the group.

PLANORBIS ELEVATUS.

Planorbis elevatus. ADAMS, Journ. Nat. Hist. Vol. 3, pl. 3, fig. 15.
P. id. GOULD, Invertebrata of Mass. p. 207.

Description. Shell small, faintly marked with incremental lines. Whorls three and a half to four; the tube not rapidly enlarging, and considerably flattened. Whole shell flat or slightly elevated above, the tip depressed so as to form a small pit; below with a deep funnel-shaped cavity, the whorls appearing obscurely angulated: suture deeply impressed. Aperture slightly oblique: its upper edge on a level with the spire, or slightly declining; lower edge descending considerably beneath the level of the under surface; portion of the preceding whorl embraced by the aperture, constituting about one fifth of its circuit.

Color. Light grass-green, translucent.

Diameter, 0.25. Height, 0.1.

Allied to *parvus*, which is, however, more depressed, aperture more oblique, and the upper surface more broadly and deeply concave; to *hirsutus*, which is more elevated, and deeply concave above and below. Dr. Gould imagines that it will prove to be the immature shell of some other species.

PLANORBIS DEFLECTUS.

Planorbis deflectus. SAY, Long's Exped. St. Peter's, Vol. 2, p. 261, pl. 15, fig. 8.
P. id. GOULD, Invertebrata of Massachusetts, p. 207, fig. 136.

Description. Shell small, distorted, depressed, finely wrinkled: right side in general convex, but with the centre slightly indented; suture distinct; left or under side concave, forming an expanded umbilicus, exhibiting one-half of each whorl. Whorls four or five, very much depressed, descending to an acute lateral edge below the middle; the last whorl turns somewhat suddenly downwards. Aperture large, ovate. Lip commencing below the keel, and embracing but a very small part of the preceding whorl, much narrower from side to side, and its plane oblique to the axis of the shell: lip simple, very slightly everted beneath.

Color. Light greenish yellow or soiled waxen. Animal dusky above, with a dusky line to the top of the tentacles.

Diameter, 0.4. Height, 0.1.

Adhering to stones, etc. in ponds; occasionally with scattering hairs on its surface. In the very young animal, the remarkable deflection of the last whorl not conspicuous.

GENUS LIMNEA. *Lamarck.*

Animal spiral, elongated or oval. Head with two flattened triangular tentacles, with the eyes at their internal base. Mouth surmounted by a free thin movable appendage. Foot oval, bilobed in front, contracted behind. Breathing orifice on the right side, narrow, oblong, and covered by a fleshy appendage which borders it beneath: vent near it. Generative organs distant: the male under the right tentacle; female near the breathing orifice. Sexes united in the same individual. *Shell* thin, dextral, oval, elongated; spire more or less acute and elongated: aperture longer than wide, oval, occasionally very large; lip thin; an oblique fold on the columella.

Obs. The animals of this genus inhabit fresh water streams, or their vicinity, feeding on aquatic animalculæ. The American species have been carefully studied and beautifully illustrated by Mr. Haldeman.

LIMNEA CATASCOPIUM.

PLATE V. FIG. 80.

(STATE COLLECTION.)

- Limnea catascopium.* SAY, Nich. Ency. Vol. 4, p. 2, fig. 3; Am. Conchology, pl. 55, fig. 2.
L. pinguis? var. ID. Jour. Acad. Nat. Sciences, Vol. 2, p. 123.
L. decollata. ADAMS, Bost. Jour. Nat. Hist. fide Haldemani.
L. catascopium. GOULD, Invertebrata of Massachusetts, p. 223.
L. id. HALDEMAN, Monog. of the Limniades, No. 3, p. 6, pl. 1, figs. 1-12.

Description. Shell smooth and polished, oblong-ovate. Whorls four or five, convex, with wrinkled incremental lines, and rapidly tapering to an acute apex: body-whorl large and ventricose: spire shorter than the aperture: aperture ovate. Lip simple, thick, and regularly curved: pillar-lip concave, with a distinct fold.

Color. Yellowish horn or blackish. Animal yellowish brown, minutely punctate with light yellowish: foot rounded behind.

Diameter, 0.2-0.4. Height, 0.5-0.7.

I have followed Mr. Haldeman in uniting the *pinguis* of Say with the above. Common in the western district of this State. It ranges from Massachusetts to Delaware, and westwardly through the Northwest territory.

LIMNEA CAPERATA.

PLATE IV. FIGS. 66 & 69. — PLATE V. FIG. 79. Youne !

- Limneus caperatus*. SAY, Des. terr. and fluv. shells, p. 23.
L. umbilicata. ADAMS, Bost. Journ. Nat. Hist. Vol. 3, p. 315, pl. 3, fig. 14.
L. id. GOULD, Invertebrata of Mass. p. 218, fig. 149.
L. id. HALDEMAN, Monog. Limniades, p. 34, pl. 11, figs. 1-9.

Description. Shell conic. Whorls five or six, separated by a deep suture: apex pointed or entire. Lines of growth fine, but apparent. Surface closely covered with numerous and very fine spiral light-colored elevated epidermal lines: these become usually obsolete on the adult shell. Aperture ovate, semicircular or subrotund. Pillar-lip with a fold more or less distinct, and folding over the umbilicus.

Color. Yellowish or reddish brown, occasionally with whitish or reddish varicose bands. Aperture frequently stained with reddish brown. Animal almost black, minutely and sparsely dotted with whitish: tentacles long and very flat: foot rounded behind.

Length, 0.2 - 0.4.

My specimens were obtained from the Mohawk river. A variety of this species, beautifully reticulated with transverse and revolving striæ, was procured at Sandy pond near Lake Ontario, Oswego county. They were numerous on the upper surface of the leaves of the Poad-lily.

LIMNEA PALLIDA.

PLATE IV. FIG. 67.

(STATE COLLECTION.)

- Limnea pallida*. ADAMS, Am. Jour. Sc. Vol. 39, p. 374; Vol. 40, p. 268. ID. Bost. Journ. Nat. Hist. Vol. 3, p. 324, pl. 3, fig. 3.
L. id. HALDEMAN, Monog. Limniades, p. 45, pl. 13, figs. 11-13.

Description. Shell conical, smooth, imperforate and fragile. Whorls five or six, slightly convex. Suture shallow, but well defined. Spire as long or longer than the aperture, with a subacute apex. Aperture ovate, symmetrical. Fold on the columella well marked and remarkably constant. Incremental lines very fine and undeviating, crossed by minute spiral corrugations.

Color. Varying from pale ochraceous to white. Apex often tinged with brown.

Length, 0.3 - 0.4.

I am indebted to Prof. Emmons for specimens of this shell, which he obtained from Lake Champlain.

LIMNEA HUMILIS.

PLATE IV. FIG. 71. A. B.

(STATE COLLECTION.)

- Limneus humilis*. SAY, Jour. Acad. Nat. Sc. Vol. 2, p. 378.
L. modicellus, var.? ID. Jour. Acad. Nat. Sciences, Vol. 2, p. 122.
L. modicella. GOULD, Invertebrata of Mass. p. 218, fig. 151.
L. humilis. HALDEMAN, Monog. Limniades, p. 41, pl. 13, figs. 1-8.

Description. Shell ovate-conic. Volutions five to six, convex; the terminal one very minute. Aperture and spire subequal, oval, regular. Fold on the columella occasionally distinct.

Color, varying from pale reddish to brownish horn. Animal translucent, except the central portion, which is very light brown. Tentacles short, with a black point on the anterior basal edge.

Length, 0.2-0.4.

Found from Maine to South-Carolina inclusive. The typical form of this species, according to Mr. Haldeman, is short and thick, and such are found near the Susquehannah at Owego; the northern specimens are more slender, and form the variety described as *modicellus*.

LIMNEA REFLEXA.

PLATE IV. FIG. 72. A. B. — FIG. 65, VAR.

(STATE COLLECTION.)

- Limneus reflexus*. SAY, Jour. Acad. Nat. Sc. Vol. 2, p. 167.
L. exilis. LEA, Am. Phil. Trans. Vol. 5, p. 114, pl. 19, fig. 62.
L. reflexa. HALDEMAN, Monog. Limniades, p. 26, pl. 8, figs. 1 and 8.

Description. Shell elongated, tapering, subacute. Whorls six to seven, flattened or slightly rounded, with transverse sinuous wrinkles, and very minute revolving lines. Suture deeply impressed, revolving very obliquely. Pillar-lip with a fold more or less distinct: lip everted at the base over the umbilicus, which is, however, distinct: apex polished.

Color. Brownish horn, becoming blacker towards the tip; occasionally covered entirely with a black epidermis. The young are amber-colored.

Length, 0.2-0.5.

The specimens illustrating this species were obtained near Fairfield, Herkimer county. Fig. 65 represents a specimen, nearly 0.8 in length, from the same locality.

LIMNEA EMARGINATA.

LATE IV. FIG. 77.

(STATE COLLECTION.)

- L. emarginatus.* SAY, Jour. Acad. Nat. Sc. Vol 2, p. 170.
L. id. ID. American Conchology, pl. 55, fig. 1.
L. id. HALDEMAN, Monog. Limniades, p. 10, p. 2, figs. 1 - 8.

Description. Shell ovate-conic, thin, translucent and smooth. Whorls five, convex, polished, with minute closely applied incremental lines : suture deep. Apex, when present, acute. Aperture wide, and more than half the entire length. Pillar-lip with the fold obsolete, and reflected in the adult so as to cover the umbilicus : columellar depression deeply emarginate.

Color. Light ochraceous or rufous brown ; within yellowish white.

Length, 0.5 - 1.0.

Some varieties of this species, according to Haldeman, have the body-whorl marked with revolving divaricate lines, extending to the margin of the outer lip, which is undulated. A boreal species, extending from north of Lake Superior, through Maine, etc. to New-York. I am indebted to Dr. Charles Stillman for specimens from the Mohawk river.

LIMNEA DESIDIOSA.

PLATE V. FIG. 78.

(STATE COLLECTION.)

- Limneus desidiosus.* SAY, Journ. Acad. Nat. Sciences. Vol. 2, pp. 169 and 378.
L. id. ID. American Conchology, pl. 55, fig. 3.
L. acuta. LEA, Tr. Am. Phil. Soc. Vol. 5, pl. 19, fig. 81.
L. casta? ID. Tr. Am. Phil. Soc.
L. philadelphica. ID. Proceedings of same, Vol. 2, p. 32.
L. desidiosa. ADAMS, American Journ. Science, Vol. 40, p. 268.
L. id. GOULD, Invertebrata of Mass. p. 219, fig. 150.
L. id. HALDEMAN, Monograph Limniades, p. 31, figs. 1 - 12.

Description. Shell subconic, somewhat inflated, thin and translucent. Incremental lines rather coarse. Surface with a tendency to form irregular facets. Whorls five, convex, with a deep suture ; body-whorl much the largest. Spire about as long as the aperture. Aperture wide, generally obtuse behind ; edge of lip nearly level. Pillar-lip thick, and not adpressed in front, but having a small umbilical aperture. Columellar fold not very distinct.

Color. Light chesnut or brownish : margin and submargin often dusky brown. Animal light yellowish grey, darkest on the middle : surface minutely dotted with whitish.

Length, 0.3 - 0.5.

Common between the parallels of 35° and 45°, and from the Atlantic to the Mississippi. I have specimens from various parts of the State, in rivulets and small lakes.

(EXTRA-LIMITAL)

- L. obrussa*. (SAY. AC. SC. 5. 123. *L. decidiosa*? HALD. l. c. pl. 13, fig. 16 - 18.) Shell oblong, rather slender, pale yellowish, testaceous. Whorls five, slightly rounded; apex acute; suture deeply impressed; aperture not dilated, within pure white; columella with the sinus of the fold very obvious. Length, 0.4; diameter, 0.2. *Philadelphia*.
- L. ferruginea*. (HALD. l. c. p. 49, pl. 13, figs. 19 - 20.) Shell ovate-conic, thin. Whorls four, convex; suture and columellar fold distinct; aperture oval, as long as the spire; labium appressed, ferruginous. Length 0.3. *Oregon*.
- L. rugosa*, Val. (HALD. l. c. pl. 3, fig. 4 - 5.) Ovate-conic, thin. Whorls six, convex, with very coarse accretional lines; aperture elliptic, longer than the spire; columella reflected on the last whorl, so as to form a small umbilicus. *Color*, white, with a spiral fulvous band. *Mexico*.
- L. attenuata*, Say. (HALD. l. c. pl. 9, fig. 1 - 5.) Long and slender. Whorls seven, slightly convex, revolving obliquely; suture rather deep; apex suddenly pointed; aperture small and semicircular, sometimes expanded; fold on the columella well marked. Length, 1.0. *Color*, wood-brown. *Mexico*.
- L. expansa*. HALD. l. c. pl. 9, fig. 6 - 8. PL. 36, fig. 348 of this work.) Short, smooth, translucent and fragile. Body-whorl inflated; spire rapidly attenuated to an acute apex, and as long as the aperture. Whorls five, somewhat flattened; suture shallow, but very distinct; aperture effuse; columellar fold deep and distinct. *Color*, brownish ochre-yellow. Length, 1.0. *Vermont*.
- L. solida et apicina*, Lea. (HALD. l. c. pl. 11, fig. 10 - 13.) Shell obtusely conical, smooth and umbilicate. Whorls 4 - 5, convex; suture deep; apex pointed; aperture polished, subovate; fold conspicuous only in the young. *Color*, pale bluish grey; aperture various shades of reddish brown; young ochraceous. Length, 0.5. *Oregon*.
- L. bulimoides*, Lea. (HALD. l. c. pl. 13, fig. 9 - 10.) Shell short, inflated, composed of about four convex whorls. Surface smooth and shining; lines of growth inconspicuous and undeviating, not crossed by spiral striæ; aperture as long as the spire, level, subround and slightly produced posteriorly; labium closely appressed, except anteriorly, where it forms a small umbilicus; columella without fold; spire generally much eroded; apex frequently truncated. *Color*, pale ochraceous, sometimes with reddish varicose bands. Length, 0.5. *Oregon*.
- L. vitrea*. (HALD. l. c. pl. 13, figs. 14 - 15.) Shell ovate, extremely thin and delicate. Surface smooth and polished; lines of growth very fine; labium with a well marked fold, and is not appressed anteriorly; spire short. Length, 0.5. *Ohio? Missouri*.

This singular shell was found by Mr. G. B. Clendining at the Cohoes falls, adhering to stones. I have adopted the name proposed by its discoverer. It was alive, and was destitute of an opercle. It is supposed by some conchologists to be a young *Planorbis*, but I cannot learn that it has been found in the intermediate stages. It is placed provisionally here; but if a perfect animal, must constitute a new genus. I am inclined to suspect that it is the animal described by Say as *Bulla fluviatilis*.

PHYSA CYLINDRICA.

PLATE V. FIG. 83.

(STATE COLLECTION.)

P. cylindrica. NEWCOMB, in literis.

Description. Shell remarkably solid, sinistral, cylindrical. Whorls four, rapidly diminishing to the subacute apex. Surface moderately smooth and polished, with incremental lines. Suture impressed: outer lip with a sinuous margin, nearly straight, forming an acute angle with the body, effuse beneath; body-whorl not convex, but rather flattened and cylindrical. Aperture narrow above, moderately dilated and elongated beneath. Columella smooth, arched with a conspicuous callus reflected over the umbilicus.

Color. Light rusty, or opaque rusty white: outer lip with a rusty submargin within.

Length, 0.5; of aperture, 0.35.

This specimen was communicated by Dr. Newcomb, who obtained it from Red creek, Wayne county. I have received the same shell under the name of *P. elliptica*, Lea; but it does not agree with his description.

PHYSA ELLIPTICA.

Physa cylindrica. LEA, Trans. Am. Phil. Soc. No. 5, p. 115, pl. 19, fig. 83.

Description. Shell sinistral, elliptical, thin and fragile. Spire short, rapidly attenuating to the tip. Whorls four to five, with minute vertical striæ. Outer lip dilated, margined.

Color. Reddish brown, translucent; the apex amber-colored.

Length, 0.5; of aperture, 0.4. Diameter, 0.2 nearly.

According to Mr. Lea, found in various parts of the State.

PHYSA ANCILLARIA.

PLATE V. FIG. 90.

Physa ancillaria. SAY, Jour. Acad. Nat. Sci. Vol. 5, p. 124.
P. id. ADAMS, Am. Journal Science, Vol. 40, p. 268.
P. id. GOULD, Invertebrata of Mass. p. 213, fig. 142.

Description. Shell heterostrophe, subglobose. Whorls rather more than four, very rapidly attenuated, smooth. Spire truncated, hardly elevated beyond the general curve of the surface. Suture not impressed, very inconspicuous. Aperture but little shorter than the shell, dilated. Lip a little thickened on the inner submargin.

Color. Pale yellowish, occasionally deep bay: submargin of the lip reddish. Animal lemon-yellow.

Length, 0·5 – 0·6.

This species occurs in Lake Champlain, and in other parts of the State. According to Prof. Adams, the young of this species are not easily distinguished from *P. gyrina*, although the mature specimens differ widely.

PHYSA GYRINA ?

PLATE V. FIG. 87.

(STATE COLLECTION.)

Physa gyrina. SAY, Journ. Acad. Nat. Sciences, Vol. 2, p. 171.
P. id. ADAMS, American Journal of Science, Vol. 40, p. 268.

Description. Shell sinistral, solid. Subovate. Whorls five or six, slightly convex, not flattened, gradually tapering to an acute apex. Surface with minute incremental lines. Suture slightly impressed. Columella with a slight fold above, turned over beneath the reverted edge, and concealing the place of the umbilicus. Outer lip thin, acute. Aperture elongated, acute above, more than one-half and less than two-thirds of the length of the shell.

Color. Amber, often coated with a black pigment, except on the reflected portion of the inner lip, which is polished.

Length, 0·8; of aperture, 0·45.

The specimens which I place here, were obtained from the northern part of the State by Dr. Budd. They do not exactly coincide with any described species; they approach nearest to the descriptions of *P. gyrina*, which I have never seen. I have therefore placed it provisionally here, to avoid the necessity of making a useless synonyme. I annex the characters assigned by Say to his *P. gyrina*. "Shell heterostrophe, oblong; whorls five or six, gradually acuminate to an acute apex; suture slightly impressed; aperture more than one-half, but less than one-third of the length of the shell; lip a little thickened on the inner margin. Length rather less than an inch. *Missouri.*"

PHYSA ELONGATA.

PLATE XXXVI. FIG. 346.

- P. elongata.* SAY, Journ. Acad. Nat. Sciences, Vol. 2, p. 171.
P. id. ADAMS, Am. Journ. Science, Vol. 40, p. 269.
P. id. GOULD, Invertebrata of Mass. p. 214, fig. 143.

Description. Shell sinistral, very fragile, diaphanous, oblong. Whorls six or seven, polished. Spire tapering, acute at tip. Suture slightly impressed. Aperture not dilated, attenuated above, about half as long as the shell. Columella much narrowed near the base, so that the view may be partially extended from the base towards the apex.

Color. Pale yellowish. Animal dusky: head above orange.

Length, 0.5 – 0.7. Diameter, 0.2.

Common from Maine westwardly: usually found in stagnant pools.

(EXTRA-LIMITAL)

- P. pomilia.* (CONRAD, Am. Jour. Vol. 25, p. 243.) Volutions four, polished; spire short, conical; body-whorl ventricose; aperture patulous. *Color*, corneous. *Alabama.*
- P. integra.* (HALD. Monog.) Shell oval, of five very convex whorls; apex pointed; suture very deep; aperture oval, wide posteriorly; peritreme continuous; no fold on columella. *Color*, pale, with white varicose bands. Length, 0.5. *Indiana.*
- P. concolor.* (ID. l. c.) Shell oval; spire produced, with the apex pointed; whorls four, convex; aperture oval, narrow; fold on the columella distinct. *Color*, honey-yellow. Length, 0.23. *Oregon.*
- P. sayii.* (TAPPAN, Wheatley's Catalogue.)
- P. globosa.* (HALD. Ac. Sc. Vol. 8, p. 200.) Shell globose, translucent; spire short and rounded; aperture very wide, occupying more than one-half of the entire area of the shell; fold well marked. Length, 0.3. *Virginia.*

SECTION OPERCULATED PULMOBRANCHIA:

ANIMAL provided with a foot for crawling. No gills, but a pulmonary cavity communicating externally with the air by a large solution of continuity placed above the head. Two tentacles. Generative organs upon different individuals. All terrestrial. SHELL external, complete, spiral, globular or conic; a calcareous or horny opercle.

OBS. None of this section are found in this or the adjoining States.

SECTION 5. PECTINIBRANCHIA.

ANIMAL with gills arranged in parallel rows like the teeth of a comb, within the pulmonary cavity, which has a large opening in front and above, between the edge of the mantle and the body. Two eyes, variously placed, sometimes on pedicles. Sexes separate: the orifice of the female on the right side, at the entrance of, or within the branchial cavity; the male organ on the right side of the neck, usually very robust and reflected into the branchial cavity: vent anterior and on the same side. Tongue often armed with small hooks. Aquatic; usually marine; a few genera fluviatile. SHELL complete and spiral, variously shaped, almost always external, rarely internal. Opercle complete, rudimentary or none.

Obs. This section, or order, as it stands in various works, comprises all the spiral univalves, and many that are simply conical; it is consequently the most numerous in species. It corresponds with the *Trachelipodes* of Lamarck, and the *Chismobranches* of Blainville. It has been subdivided into three groups, according as the water is introduced to the gills, 1, by a membranous appendage; 2, by a siphon; and 3, without either.

FAMILY TURBINIDÆ.

ANIMAL with two subulate contractile tentacles; eyes at their base. Fluviatile or marine. SHELL variable in form. Aperture rounded or oval; the edges not disunited, or slightly so: without canal or emargination. Opercle horny or calcareous.

GENUS PALUDINA. Lamarck.

Animal: Mouth without teeth, but having in its stead a small prickly lingual mass. Tentacles contractile. Foot oval, with a marginal furrow in front. Male organ very large, and retracted through an orifice in the right tentacle near its base. Vent at the extremity of a small tube near the branchial cavity. *Shell* conoidal, with an epidermis. Whorls rounded or convex: aperture rounded or oval, angulated above: margins of outer and inner lip united, with acute but not reflected edges. Opercle orbicular, horny.

Obs. The shells of the animals of this genus are distinguished from those of *Melania* by the simple curvature of the lip at the base, from *Cyclostoma* by its simple lip, and from *Valvata* by the form of its aperture. There are numerous species in the Western and Southern States, but very few as far north as this State.

upper part of the body-whorl forms a sort of shoulder with the suture. Like other specimens of *disscisa*, the apex is often truncated, and some of the specimens were filled with young shells.

In my notes, I had marked specimens from Wolcott creek, Wayne county, as *P. heros*, with the following characters: "Shell subconic, solid; whorls 5 - 6, with moderate vertical wrinkles and revolving striæ, becoming few and obsolete on the body-whorl; suture very deeply impressed; apex depressed, polished; aperture subelliptic, narrowed above. *Color*, whitish, but covered with an olive-green epidermis; aperture within whitish, with a slight reddish or bluish hue. Length, 1.5; diameter across the aperture, 0.8." The enormous size of these specimens, and the absence of banded striæ except on the body-whorl, induced me at first to consider them as distinct; but on reëxamination, I refer them to this species.

PALUDINA ISOGONA.

PLATE VII. FIG. 133.

(STATE COLLECTION.)

P. isogona. SAY, Des. terr. and fluv. shells, p. 19.
P. pallida? LEA.

Description. Shell short, subglobose; surface polished with minute lines of growth. Whorls four or five, rounded, rapidly decreasing to the apex; body-whorl ventricose: suture distinct. Aperture oval, angulated above, reflected on the pillar-lip, partially concealing the umbilicus: outer lip slightly everted at the base. Aperture nearly twice the length of the spire. Apical whorl minute, scarcely elevated.

Color. Olive-green.

Length, 0.25; of aperture, 0.15.

I have received specimens of *Paludina* from the western part of this State, labelled "*isogona*, Say;" which, I am informed, is identical with *P. pallida* of Lea. I have not been able to find descriptions of the latter; but to avoid burthening the systems with a new name, I prefer to adopt that assigned to it by Say.

(EXTRA-LIMITAL.)

P. transversa. (SAY, Des. terr. and fluv. p. 20.) Shell transverse, depressed-orbicular: spire convex. Whorls three and a half, with numerous minute slightly elevated revolving lines; suture not widely indented; body-whorl very convex, short; umbilicus small. Opercle pale fulvous. Greatest width, 0.4. *Louisiana*.

P. intertexta. (Id. l. c. p. 20; Am. Conch. pl. 30, figs. 3-6.) Shell subglobose, wrinkled, and with minute, very numerous obsolete revolving deceduous lines: spire depressed, conic, obtuse, truncated, eroded at tip. Whorls nearly four; suture rather deeply indented; umbilicus closed by

- P. subcarinata*. (SAY, Nich. Ency. p. 1, fig. 7. HALD. pl. 2.) Whorls three, rounded and subcarinate, reticulated with striæ and wrinkles (sometimes no striæ); suture deeply impressed; apex truncated and reentering; aperture oval, more than half the length of the shell: 2-3, and sometimes more, elevated lines or subcarina on the body. Length, 0·5; breadth, 0·4. *Pennsylvania*.
- P. bimonilifera*. (LEA, Am. Tr. Vol. 5, p. 58, pl. 19, fig. 71.) Shell obtusely turreted: apex obtuse. Whorls with two rows of nodules: those of the lower row of the upper whorls hidden by the suture; of the upper row larger, and visible on all the whorls: suture deep and irregular: outer lip subangular; base subangular. *Color*, dark horn. Height, 1·8; diameter, 1·1. *Alabama River*.

GENUS AMNICOLA. *Gould and Haldeman.*

Animal with the foot rounded behind, and each anterior angle laterally produced. Head half the breadth of the foot, and protruding beyond it. Tentacles short, filiform, unequal? Eyes at the side of the external base. Oviparous. Fluvialile. *Shell* ovate-conic, thin; spire acute, composed of a few rounded whorls; aperture small, oblique, rounded-ovate; lip continuous simple. Opercle horny, spiral, with a few volutions.

Obs. This genus has been established by Messrs. Gould and Haldeman, for the reception of a few small shells hitherto classed under *Paludina*, but with distinct habits. Its position seems to be between *Paludina* and *Melania*.

AMNICOLA LUSTRICA.

Paludina lustrica. SAY, Journ. Acad. Nat. Sc. Vol. 2, p. 175.

P. id. ADAMS, American Journ. Science, Vol. 40, p. 267. *Valcata pepoides?*

Description. Shell small, conic. Whorls slightly wrinkled, convex: suture profoundly indented; aperture oval, nearly orbicular; lip with the upper edge not appressed to the preceding whorl, but simply touching it: umbilicus rather large, rounded. Length, 0·1 nearly.

This very small species was first detected by Mr. Jessup, on the shores of Cayuga lake. It abounds also in the streams emptying into Lake Champlain.

GENUS MELANIA. *Lamarck.*

Animal with a proboscis-like rostrum, semicylindrical, slightly notched in front; tentacles filiform; foot oval and very large; mantle festooned in front and on the left. *Shell* turreted, rather thick, and covered with an epidermis. Aperture acute, oblong, entire, effuse at the base. Lip simple, acute, prominent near the base, and rather abruptly retracted at its junction with the base of the columella, and not united above to the pillar-lip. Columella smooth, incurved. No umbilicus. Opercle corneous, spiral.

Obs. These animals are most numerous in Asia and America. In Europe they are only found in a fossil state. In this country, more than one hundred species have been described, almost exclusively from the Western and Southern States. In the first edition of Lamarck, (*Animaux sans vertèbres*), among the sixteen living species described, only one is attributed to North-America. The chief laborers in this genus are Messrs. Say, Conrad, and more especially Mr. Lea, who alone has added more than fifty species, all of which are beautifully figured in the *Transactions of the American Philosophical Society*. As the species are very numerous, Mr. Lea has arranged them under nine divisions, according as they are smooth, plicate, carinate, sulcate, striate, tuberculate, granulate, cancellate or rugose.

MELANIA DEPYGIS.

PLATE VII. FIG. 135. A. B. VARIETY.

(STATE COLLECTION.)

M. depygis. SAY, Des. terr. & fluv. shells, p. 19; Am. Conch. pl. 8, figs. 4, 5.
M. id. ADAMS, American Jour. Science, Vol. 40, p. 366.

Description. Shell oblong, conic-ovate, not remarkably thickened. Spire longer than the aperture, often much eroded, with a broad revolving band near the suture, occupying more than half the surface. Whorls about five, hardly rounded, and in the adult nearly flat. Suture moderately impressed. Aperture ovate-acute above, moderately dilated. Lip not projecting near the base, nor arched near its junction: base regularly rounded.

Color. Body-whorl rufous or yellowish, with two equidistant revolving rufous lines, of which the upper is broadest.

Length, 0·5 – 0·9; of aperture, 0·3 – 0·4.

Var. A. Dark brown bands obsolete.

Var. B. Large, with coarse folds on the body-whorl.

I have received this species from the Brimstone springs west of Geneva, and it doubtless occurs in various other parts of the State. The whorls of these are of a dark horn-color, and the sutures whitish, often entirely covered with a calcareous coating. Prof. Adams detected it in Lake Champlain, and remarks that it is the only species yet observed in the States east of the Hudson river.

MELANIA BIZONALIS.

PLATE VII. FIG. 140. A. B.

(STATE COLLECTION.)

Description. 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.

Length, 0.7; of aperture, 0.23. Width of the same, 0.16.

For this species I am indebted to Dr. Emmons, who found it abundantly in Lake Champlain. It approaches *M. virginica*, but, as I view it, very distinct by its flattened whorls and deep angular sutures.

MELANIA GEMMA.

PLATE VII. FIG. 142.

(STATE COLLECTION.)

Description. 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 dark reddish brown; columella often purple; lower sutures opaque white.

Length, 0.7 - 1.2; of aperture, 0.23.

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 that it is daily becoming obsolete. I trust that the name now proposed will readily suggest that of the gentleman to whom I have been under many obligations in this department.

- M. dubiosa*. (Id. l. c. pl. 5, fig. 6.) Shell smooth, conical, rather thin. Whorls 7, somewhat convex: sutures linear; spire rather elevated; aperture elliptical, subangular at the base, rather more than one-third of the total length. Allied to *M. simplex* of Say. Color, horn; aperture whitish. Length, 0.75; diameter, 0.3. *Tennessee*.
- M. eberum*. (Id. l. c. pl. 5, fig. 7.) Shell smooth, obtusely conical, thick: spire obtuse; sutures small; whorls somewhat convex; aperture rather large, ovate, subangular at base. Color, black or bluish; aperture purplish. Length, 0.47; diameter, 0.3. *Tennessee*.
- M. rufescens*. (Id. l. c. pl. 5, fig. 8.) Shell smooth, turreted, rather thin, shining: spire elevated; sutures impressed; whorls 8, convex, carinate towards the apex; aperture small, elliptical, subangular beneath. Color, dark red; within purplish. Length, 0.85; diameter 0.3. *Tennessee*.
- M. tuberculata*. (*M. stygia*, SAY, Am. Conch. LEA, l. c. Vol. 4, pl. 15, fig. 31.) Shell robust, conic-ovate: spire rather larger than the aperture, eroded at the tip. Whorls 5, hardly convex; wrinkles obsolete, except a few larger ones; aperture narrowed at base into a slight sinus, and subangulated, much widest in the middle; lip much arched in the middle. Color, black. Resembles *armifera*, but that shell has tubercles and colored lines. Length, 0.75. *Tennessee*.
- M. armifera*. (SAY, Ac. Sc. Vol. 2, p. 178.) Shell tapering. Whorls about 6, slightly wrinkled: spire near the apex, eroded; body-whorl with a revolving series of 5 - 6 distant prominent tubercles, which become obsolete on the spire, and are concealed by the revolutions of the succeeding whorls: hence an appearance of a small subsutural series of tubercles on the body-whorl. Columella with a distinct sinus at the base. Color, brownish horn, with two or three obsolete revolving reddish brown lines; apex whitish. Length, 1.0. *Ohio river*.
- M. hydei*. (CONRAD, Fr. Wat. Shells, pl. 8, fig. 1.) Shell conical, rather elevated. Whorls flattened, with spiral acute tuberculated lines: one or two on each whorl of the spire, and about four on the body-whorl; the inferior one plain: aperture elliptical. *Alabama*.
- M. catenaria*. (SAY, Ac. Sc. Vol. 2, p. 379.) Shell conic. Whorls 7 - 8, slightly undulated transversely, and with 8 - 9 revolving elevated lines, the four or five superior ones of which are almost interrupted between the undulations. Color, blackish. Length, 0.45. *South-Carolina*.
- M. cancellata*. (SAY, Des. terr. etc. p. 16.) Shell rather slender, attenuated. Whorls convex, with about twenty-six reclivate longitudinal elevated lines-crossed by about eighteen revolving ones, the eight or nine towards the base crowded. Length, 0.8. Allied to *catenaria*, but more elongated and attenuated. *Florida*.
- M. fusiformis*. (LEA, Tr. Am. Phil. Soc. Vol. 8, p. 167, pl. 5, fig. 9.) Shell smooth, fusiform, rather thin, pointed at the apex: spire short; sutures linear; whorls 6, the last large and inflated; aperture ovately elongated. Color, yellow; aperture whitish. Length, 0.5; diameter, 0.27. *Tennessee*.
- M. clavaformis*. (Id. l. c. pl. 5, fig. 10.) Shell smooth, shining, club-shaped, rather thin: spire acute; sutures somewhat impressed; whorls eight, convex; aperture elongated. Color, chesnut brown; aperture light purple. Length, 0.67; diameter, 0.27. *Tennessee*.

- solete revolving reddish lines. Length, 1.1; diameter, 0.4. One of the largest of the genus. *Ohio*.
- M. comata*. (SAY, Ac. Sc. Vol. 2, p. 176.) Shell conic, rapidly attenuating to an apex, very slightly wrinkled: suture not deeply impressed. Whorls 7 - 8; aperture oblique, equalling the second, third and fourth whorls together. *Color*, olivaceous, occasionally with one to three revolving rufous or blackish lines. Length 0.6. An *anculotus*? *Ohio river*.
- M. nickliniana*. (LEA, Am. Phil. Tr. Vol. 8, p. 171, pl. 5, fig. 19.) Shell smooth, obtusely conical, solid; sutures impressed; whorls six, slightly convex; aperture large, somewhat rounded. *Color*, very dark, occasionally banded; aperture purple. Length, 0.45; diameter, 0.27. *Virginia*.
- M. viridis*. (Id. l. c. pl. 5, fig. 19.) Shell smooth, subfusiform, rather thick; spire short, obtusely conical; sutures linear; whorls 5, somewhat convex; aperture ovate, rather large. *Color*, green; aperture white. Length, 0.32; diameter, 0.27. *Ohio*.
- M. occidentalis*. (Id. l. c. pl. 5, fig. 20.) Shell smooth, subglobose, rather thick; spire short, pointed; sutures linear; whorls four, rather convex, occasionally with raised revolving striæ; aperture large, ovate, nearly three-quarters of the total length. *Color*, green; within purple or white. Closely allied to the *M. subglobosa* of Say. Length, 0.37; diameter, 0.3. *Ohio*.
- M. globula*. (Id. l. c. pl. 5, fig. 22.) Shell very small, smooth, subglobose; spire short; sutures impressed; whorls four, rather convex; aperture large, nearly two-thirds of total length, nearly round. *Color*, dark brown, with two darker revolving bands; aperture bluish. Length, 0.25; diameter, 0.22. *Tennessee*.
- M. altilis*. (Id. l. c. pl. 5, fig. 23.) Shell smooth, subglobose, thick; spire short; sutures small; whorls four, obtusely angular above; aperture large, nearly round. *Color*, pale horn. Length, 0.32; diameter, 0.27. *Maryland, South-Carolina*.
- M. strigosa*. (Id. l. c. pl. 5, fig. 24.) Shell smooth, acutely turreted, thin, striate above; spire drawn out; sutures impressed; whorls 9, flattened; aperture small, elliptical, angulated at the base. *Color*, pale yellow; bluish within. Length, 0.85; diameter, 0.27.
- M. virgata*. (Id. l. c. pl. 5, fig. 25.) Shell smooth, rounded, rather thin, shining; spire short; sutures linear; whorls convex; aperture half the total length, elliptical. *Color*, yellow, with two broad bands. Length, 0.3; diameter, 0.2. *Tennessee*.
- M. tenebrosa*. (Id. l. c. pl. 5, fig. 26.) Shell smooth, conical, rather thick; spire rather elevated; sutures impressed; whorls flattened; aperture rather large, elliptical, angular at the base. *Color*, nearly black; within bluish. Length, 0.72; diameter, 0.3. *Tennessee*.
- M. cincinnatensis*. (LEA, Am. Jour. Vol. 38, p. 175; Am. Phil. Tr. Vol. 8, p. 190, pl. 6, fig. 58.) Shell minute, much depressed, compressed beneath, bicarinate, with an acute apex; whorls four; aperture subrounded. *Color*, fuscous, trifasciate. Length, 0.16; diameter, 0.14. *Cincinnati*.
- M. comma*. (CONRAD, op. cit. pl. 8, fig. 7.) Shell subulate, much elongated, slender. Whorls 8 - 9, flattened, indented at the sutures, with longitudinal distant slightly arcuated ribs, disappearing on the lower whorls; lip thin; aperture elliptical, produced at the base. *Color*, olive, with a dark band above the middle of each whorl. *Alabama*.

- aperture about one-third of total length, elliptical, angular at base; columella with an impressed curve. *Color*, horn. Length, 0·63; width, 0·26. *Tennessee*.
- M. blanda*. (Id. Ib. pl. 6, fig. 34.) Shell folded, conoidal, rather thin, shining: spire rather elevated, striate above; sutures impressed; whorls 7, rather flattened; aperture one-third of total length, elliptical, angular at base. Length, 0·69; diameter, 0·26. *Tennessee*.
- M. crebri-costata*. (Id. Ib. pl. 6, fig. 35.) Shell with numerous slightly curved folds, except on lower half of body-whorl, conoidal, rather thick: sutures linear; whorls 7, flattened; aperture about one-third of the total length, elliptical, angular below. *Color*, horn; mouth bluish. Length, 0·9; diameter, 0·28. *Tennessee*.
- M. laqueata*. (SAY, op. cit. p. 17; Am. Conch. pl. 47, fig. 1.) Shell oblong-conic: spire longer than the aperture, elevated, acute at tip. Whorls moderately convex, with about seventeen regular elevated equal equidistant costæ on the upper half of each whorl, extending from suture to suture, but little lower on the spire, and obsolete on the body-whorl; suture moderately impressed; lip and columella a little extended at base; sinus obsolete. Length, 0·8. *Tennessee*.
- M. lima*. (CONRAD, Fr. Wat. Shells, p. 54, pl. 8, fig. 8.) Shell conic or subfusiform, with approximate nodulous spiral lines of unequal size: body-whorl angulated, with a series of prominent tubercles; base with two lines, the upper one nodulous; aperture nearly half the length of the shell, contracted and acutely angular above, and obtusely pointed at the base; lip very thin. *Color*, olive within, with purple bands. *Alabama*.
- M. multilineata*. (SAY, Ac. Sc. Vol. 2, p. 380; Am. Conch. pl. 47, fig. 1.) Shell gradually tapering; apex generally much eroded: whorls about seven, a little curved, with numerous filiform elevated subequal lines which are from 10 – 20 in number. Length, 0·9; width, 0·4. Allied to *elevata*, but the whorls are convex and the lines more numerous. *Pennsylvania, New-Jersey*.
- M. mupera*. (SAY, Des. etc. p. 16; Am. Conch. pl. 8, fig. 1.) Shell oblong, suboval. Whorls five, slightly rounded: body-whorl with one or more revolving series of subequal equidistant tubercles on its upper part; second volution with two series, the others with slightly elevated longitudinal lines; aperture longer than the spire, which is often decorticated; suture not deeply impressed; sinus of upper angle profound; lip concave, with a callus near the upper angle. Length, 0·8. *Wabash river*.
- M. nassula*. (CONRAD, op. cit. p. 55, pl. 8, fig. 9.) Shell elevated. Whorls convex or subangulated, with longitudinal ribs crossed by numerous spiral elevated lines; about seven on the penultimate whorl, and about eleven on the body-whorl: suture impressed; apex much eroded. *Alabama*.
- M. curreyana*. (LEA, Am. Phil. Trans. Vol. 8, p. 180, pl. 6, fig. 36.) Shell strongly folded, conoidal, rather thick: spire rather elevated; suture irregularly impressed; whorls seven, subconvex; aperture about one-third of the total length, angular below. *Color*, horn; purplish within. Length, 0·73; diameter, 0·27. *Kentucky*.
- M. edgariana*. (Id. Ib. pl. 6, fig. 37.) Shell folded, conoidal, transversely striate, rather thin: whorls eight, rather flattened; aperture rather more than one-fourth the total length, elliptical, angular below. *Color*, yellowish brown; within bluish. Length, 0·77; diameter, 0·29. *Tennessee*.

- M. proxima*. (SAY, Jour. Ac. Sc. Vol. 5, pl. 126.) Shell conic, rather slender, gradually attenuated to the truncated apex: suture moderately impressed; aperture longitudinal; lip with the edge not undulated, or but very slightly and obtusely so near the upper termination. *Color*, black. Height, 0·6. *South-Carolina*.
- M. pyrenella*. (CONRAD, Fr. Wat. Sh. p. 52, pl. S, fig. 5.) Shell elevated, with flattened whorls having an obsolete spiral line on each: suture impressed; body-whorl angulated, the angle defined by a prominent line; base hardly convex; lip angulated near the centre; aperture patulous; columella obtusely rounded at the base. *North-Alabama*.
- M. potosiensis*. (LEA, Am. Phil. Tr. Vol. 8, p. 154, pl. 6, fig. 45.) Shell carinate, conoidal, rather thin: spire obtusely elevated; sutures much impressed; whorls 8, convex; aperture large, more than one-third of the total length, ovate. *Color*, brown; within purplish. Length, 0·62; diameter, 0·28. *Missouri*.
- M. acuto-carinata*. (Id. Ib. pl. 6, fig. 46.) Shell carinate, conoidal, rather thick, shining: spire obtusely elevated; sutures impressed; whorls six; aperture large, nearly one-half of the total length, elliptical, angular at the base. *Color*, dark brown; within purplish. Length, 0·66; diameter, 0·3. *Tennessee*.
- M. warderiana*. (Id. Ib. p. 185, pl. 6, fig. 47.) Shell carinate, club-shaped, rather thick: spire conical; sutures linear; whorls 8, convex; aperture ovate, rather more than one-third the length of the shell. *Color*, very dark; flesh-colored within. Length, 0·76; diameter, 0·37. *Virginia*.
- M. sulcosa*. (Id. Ib. pl. 6, fig. 48.) Shell transversely sulcate, conoidal, thick: sutures impressed; whorls flattened; aperture small, ovate. *Color*, yellowish; within whitish. Length, —; diameter, 0·32. *Tennessee*.
- M. striatula*. (Id. Ib. p. 186, pl. 6, fig. 49.) Shell striate, conoidal, carinate above, rather thin: spire somewhat elevated; sutures impressed; whorls 8, convex; aperture small, rather more than one-third of the total length, elliptical. *Color*, dark reddish brown; reddish within. Length, 0·49; diameter, 0·21. *Tennessee*.
- M. pillula*. (Id. Ib. pl. 6, fig. 50.) Shell striate, subglobose, thick: sutures somewhat impressed; whorls 4? convex; aperture ovate, about half the length of the shell, angular at the base. *Color*, dark brown; within purplish. Length, 0·43; diameter, 0·34. *Tennessee*.
- M. circincta*. (Id. Ib. p. 187, pl. 6, fig. 51.) Shell striate above, turreted, rather thin: spire drawn out; sutures small; whorls 9, slightly convex, carinate in the middle; aperture small, elliptical, angular at base. *Color*, pale yellow, with a broad band on the carina; within white. Length, 0·9; diameter, 0·35. *Tennessee*.
- M. venusta*. (Id. Ib. pl. 6, fig. 52.) Shell subtuberculate above, fusiform, somewhat thin: spire rather obtuse; sutures roughly impressed; whorls 6, convex; aperture elongated at the base, angulated and channelled, rather more than half the length of the shell. *Color*, yellowish above. Length, 0·8; diameter, 0·43. *Tennessee*.
- M. florentiana*. (Id. Ib. p. 188, fig. 6, fig. 53.) Shell tuberculate, elliptical, ponderous: spire obtuse; sutures impressed; whorls 6, slightly convex; aperture elongated, more than half the total length. Resembles *M. olivula*. *Color*, pale, occasionally with bands; within whitish. Length, 0·87; diameter, 0·47, *Tennessee, Alabama*.

- M. catenoides.* (Id. Ib. pl. 6, fig. 60.) Shell granulate, elevated, conoidal; apex folded; sutures small; aperture ovate; no tubercles nor carina. *Color*: adult black; young green or yellow. Length, 0·93; diameter, 0·43. *Georgia*.
- M. vestita.* (CONRAD, Fr. Wat. Sh. p. 57, pl. 8, fig. 12.) Shell subulate, subturreted: whorls nine, each angulated below the middle; suture deeply impressed; whorls near the apex acutely carinated. *Color*: epidermis smooth, polished, horn-colored, with a dark band revolving below the angle of each whorl.

GENUS ANCULOTUS. *Say*.

Shell suboval, rarely conical. Spire generally depressed. Aperture suborbicular or obovate, rounded at the base. Base of the columella rounded, or obtusely angulated. Columella wide, thickened, polished, generally with a callus near its superior junction with the labrum.

Obs. This genus was first separated by Say from *Melania*, under the name of *Anculosa* (*Ac. Sc.* 2, 178), which was subsequently changed to *Anculotus*. It includes those which have a shorter spire, and the outer lip more rounded anteriorly. I am not aware that the animals of this genus have been examined.

ANCULOTUS CARINATUS.

(STATE COLLECTION.)

Description. Shell short, pyramidal, thin, fragile. Whorls with a distinct elevated carina, rather suddenly attenuated to the apex, which is frequently eroded: the whorls are polished, with incremental striæ ascending to the edge of the carina, where they become multiplied, especially on its lower aspect. Suture canaliculate, by the elevated carinæ; aperture subrhomboidal; outer lip simple, angular, reflected at the base; pillar-lip concave, with a broad callus; outer lip above contiguous to the carina of the preceding whorl.

Color. Amber, darker towards the lip.

Length, 0·45; of aperture, 0·25. Extreme width, 0·4.

This very remarkable species, which may probably form the type of a new genus, is from Lake Champlain. My thanks are due to Dr. B. W. Budd, for an opportunity of adding this to the State Collection. I have since obtained others from Cranesport, Broome county, in one of the tributaries of the Susquehannah. These are dark olive-green, and many of them 0·5 – 0·6 long. An eminent conchologist pronounces it identical with *A. dissimilis*, but I have not found the description of this species.

- A. plicatus*. (ID. Ib. pl. 8, fig. 18.) Suboval with a short spire, of which one whorl only is entire, rounded: body-whorl slightly ventricose, with oblique plaits, which are crenulated on the margins of a slight spiral groove near the suture; aperture elliptical. *Color*, greenish or blackish, with spiral bands. *Alabama*.
- A. pictus*. (ID. Ib. pl. 62. Am. Jour. Vol. 25, p. 342, pl. 1, fig. 15.) Suboval; shoulder obtusely rounded; aperture obovate, large; columella callous above. *Color*, olive, with numerous quadrangular small spots disposed in revolving lines, strongly marking the aperture. Length, 0.5; diameter, 0.35. *Alabama River*.
- A. proerosus*. (SAY, Ac. Sc. Vol. 2, p. 177. CONRAD, l. c. pl. 8, fig. 13.) Subglobose, oval: whorls 3-4, wrinkled across; spire very short, much eroded, sometimes scarcely prominent above the body-whorl, which is large, ventricose, with a very obtuse revolving band; aperture suboval, above acute, effuse; base of the columella elongated and incurved, meeting the exterior lip at an angle. *Color*, brownish; a few revolving purplish dots within, sometimes obsolete. Length, 0.8. *Ohio*.
- A. pumilus*. (CONRAD, Op. cit. p. 62.) Very small, obliquely oval: spire consisting of one entire convex whorl; apex eroded; body-whorl regularly convex; base with a groove behind the columella; aperture patulous, suborbicular. *Color*, blackish. *Alabama*.
- A. subglobosus*. (SAY, Ac. Sc. Vol. 5, 128. CONRAD, pl. 8, fig. 14.) Subglobose: spire but little elevated, not half the length of the aperture; whorls about four; aperture rounded, nearly as broad as long; pillar-lip somewhat flattened. *Color*, brownish horn; aperture more or less tinged with red. Length, 0.6; diameter, 0.5. *Virginia*.
- A. taniatus*. (ID. loc. cit. p. 63.) Shell oval or oblong: one whorl of the spire not eroded, often longitudinally produced. *Color*, olivaceous, with dark green spiral bands: four on the body-whorl. Length, 0.7. *Alabama*.

Genus *Io*, *Lea*. Shell fusiform; base canaliculate; spire elevated; columella smooth and concave.

- Io fusiformis*. (LEA, Trans. Am. Phil. Soc. Vol. 4, p. 122, pl. 15, fig. 37. A. B. *Fusus fluviatilis*, SAY, Jour. Acad. Nat. Sciences, Vol. 5, p. 129.) Shell fusiform: spire much elevated, gradually tapering; volutions nearly six, wrinkled across, and with a series of elevated undulations on the middle; suture merely an impressed line; aperture somewhat fusiform; lip within the edge, undulated; canal rounded at tip; columella very concave. *Color*, olive green or brownish, with more or less dull reddish lines of the same, confluent. Length, 1.8; diameter, 0.9. *Salt streams in the interior of Virginia*.

LITTORINA TENEBROSA.

PLATE VI. FIG 106.

(STATE COLLECTION.)

Turbo tenebrosus. MONTAGU, Test. Brit.
T. vestitus. SAY, Jour. Acad. Nat. Sc. RUSSEL, Essex Journ. Vol. 1, p. 72.
Littorina tenebrosa. GOULD, Invertebrata of Mass. p. 259, fig. 166.

Description. Shell small, conic, not as stout as the preceding. Spire elevated and pointed, as long as the aperture. Whorls five to six, rounded, with faint revolving lines. Suture deeply impressed: lip thin, acute.

Color, variable: according to Mr. Say, usually invested with a soiled greenish white pigment, beneath which it is sometimes reticulated with abbreviate yellow lines on a brown or dusky ground. *Animal* with a dark olive head, and an olive stripe on the tentacles from the eye: sides of the foot lined with the same.

Length, 0.5. Diameter, 0.3.

Scarcely any species varies more in its external markings, and the specimen figured is only one of numerous varieties. They are brown, immaculate, black, green, sometimes reddish, with pale revolving lines, and occasionally as represented in the figure. Mr. Sowerby, after a careful comparison of specimens, believes that *vestitus* and *obligatus* are both identical with the *tenebrosa* of Montagu. I coincide with Dr. Gould in referring only to this latter species, the *vestitus* of Say.

LITTORINA NERITOIDES.

PLATE VI. FIG. 109. A. B. YOUNG; FIG. 110. A. B. ADULT.— PLATE VI. FIG. 111. A. B. ADULT. *T. neritoides* of Europe.

T. neritoides. LINN. Syst. Nat. 1232.
Littorina palliata. GOULD, Invertebrata of Mass. p. 260 (excl. syn.).

Description. Shell small, very thick, smooth in the adult; with minute revolving and vertical lines in the young. Whorls four; the spire is flattened, and (except in very young shells) scarcely rises above the body. Suture moderately distinct in the young, but very faintly marked in the adult. Aperture nearly circular, or slightly oval; the lip acute, entire, bevelled on its inner margin, which is continuous with the curve of the pillar-lip in the adult. Opercle corneous, smooth, subspiral.

Color, variable, usually uniform sulphur-yellow, as represented in figs. 109 and 110; the young being of a dark amber brown: often whitish, greenish or orange, and occasionally striped. "*Animal*: head orange, darker above; the foot drab or cream-color" (GOULD).

Length, 0.4 – 0.6. Diameter of adult, 0.7.

FAUNA — PART 6.

14

GENUS MARGARITA. *Leach.*

Shell conical, moderately elevated. Whorls few, subinflated; aperture rounded, imperfect posteriorly; lip sharp; umbilicus deep. Opercle multispiral; the nucleus central.

Obs. This genus, instituted by Dr. Leach, includes a number of small marine shells hitherto included under the genus *Turbo*.

MARGARITA ORNATA.

PLATE VI. FIG. 104.

(STATE COLLECTION.)

Description. Shell moderately solid, subconical; its transverse exceeding its vertical diameter. Whorls four to five, convex; the body-whorl very large, subinflated. Seven to nine distant revolving costæ on its upper surface, which is separated from the simply striate surface beneath by an obsolete carina. Spire scarcely much elevated, faintly striated; umbilicus large and very profound; aperture rounded, oblique; lip thin and simple, entire.

Color. Bright red.

Length, 0·1. Width, 0·15.

I have met with many specimens of this beautiful shell, collected on the shores in the neighborhood of New-York. It is somewhat allied to *M. undulata*, but is much larger, and the costæ subequal.

MARGARITA UNDULATA.

Margarita undulata. SOWERBY, *Malac. and Conch. Mag.* 1, p. 26.

Turbo incarnatus. COUTHOUY, *Boet. Journ. Nat. Hist.* Vol. 2, p. 98, pl. 3, fig. 13.

M. undulata. GOULD, *Invertebrata of Mass.* p. 254, fig. 162.

Description. Shell orbicular, small, smooth and shining. Whorls four to five, convex, impressed with numerous striæ alternating with others still finer, undulated near the sutures by short folds or wrinkles: sutures distinct; basal striæ much finer than those above; umbilicus large, extending quite to the apex, and partially covered by the reflected inner lip; aperture nearly circular, very oblique. Opercle thin, horny, multispiral.

Color. Uniform red, of various shades.

Length, 0·3. Width, 0·4.

This boreal shell was discovered nearly simultaneously by Messrs. Couthouy and Sowerby, the latter having the priority of publication. It has been found in the stomachs of fishes, and along the seacoast of Massachusetts. It will probably be detected on our own coast.

MARGARITA MULTILINEATA.

PLATE VI. FIG. 106.

(STATE COLLECTION.)

Description. Shell small, pyramidal. Whorls four, convex, obtusely carinate: suture impressed; spire elevated; whorls with minute revolving striæ, and three to four revolving ribs; aperture suborbicular; umbilicus entirely concealed by the reflection of the lip, but its place marked by a slight depression.

Color. Beautifully variegated by alternate yellowish white and brown or reddish brown revolving lines; lip with abbreviated red and white lines.

Length, 0·3; of aperture, 0·13.

I am indebted to my excellent friend, Mr. Couthouy, for the specimens here described, and which he considered to be new. He obtained them from the stomachs of codfishes on the coast.

(EXTRA-LIMITAL)

M. obscura, COUTHOUY. (GOULD, Op. cit. fig. 161.) Depressed conical, solid: spire obscure, reddish brown, base ash-colored; whorls angulated by two or three revolving ridges; lines of growth coarse; aperture circular; pearly within. Length, 0·2; diameter, 0·3. Stomachs of fishes. *Massachusetts.*

M. argentata. (GOULD, Op. cit. p. 256, fig. 164.) Shell very minute, depressed-conical, covered with microscopic revolving lines; umbilicus moderately large. *Color*, pearly white; iridescent within. Length, 0·1. Stomachs of fishes. *Massachusetts.*

CINGULA LÆVIS.

PLATE VI. FIG. 118.

(STATE COLLECTION.)

Description. Shell small, moderately solid, elevated. Whorls five, very convex, and separated by a deep suture; the two upper whorls rather rapidly diminishing in size. Surface smooth, but (under the lens) exhibits faint traces of incremental lines; the two lower whorls more than half the total length. Body-whorl large; aperture small, nearly regularly oval, slightly angulated above; pillar-lip arcuated, elevated, and partially everted over the distinct and rather large umbilicus.

Color. Opake white in the adult; transparent corneous in the young, with occasionally the upper whorls deep black.

Length, 0·2; of aperture, 0·08.

I received numerous specimens of this shell from the Rev. Mr. Linsley of Stratford (Conn.), who obtained them from the crop of a wild duck. I then referred it to *Odostomia*, and gave a specific name which recalled the form of a *Limnea*. I was subsequently furnished with specimens by Dr. Charles Stillman, who obtained them at Bushwick inlet, near the city, where they had been washed upon the shore after a storm. The above dimensions are given from one of the largest size. In its general form it resembles *C. aculeus*, with which indeed it may, perhaps, be identified. It differs from *C. minuta* by its constantly greater size, the smallness and more inferior position of the aperture, the wide umbilicus, and deeper suture.

GENUS LACUNA. *Turton.*

Shell globose or conical, thin; covered with a smooth epidermis. Spire short, consisting of a few rapidly enlarging whorls. Aperture semilunar, rounded at the extremities. Columella oblique, reflected over part of the umbilicus, which forms a lengthened groove.

LACUNA VINCTA.

PLATE VI. FIG. 119. A. B. C.

(STATE COLLECTION.)

Turbo vinctus. MONTAGU, Test. Brit. 307, pl. 20, fig. 3.

Lacuna pertusa. CONRAD, Jour. Acad. Nat. Sciences, Vol. 6, p. 266, pl. 11, fig. 19.

Lacuna vincta. GOULD, Invertebrata of Mass. p. 262, fig. 178.

Description. Shell small, thin, ovate-conic: spire pointed; whorls five, very convex, with faint incremental lines; suture deep; aperture nearly circular; lip sharp and simple; pillar-

TURRITELLA EROSA.

PLATE VI. FIG. 122.

(STATE COLLECTION.)

Turritella erosa. COUTHOUY, Bost. Jour. Vol. 2, p. 103, pl. 3, fig. 1.
T. id. GOULD, Invertebrata of Mass. p. 267.

Description. Shell larger than the preceding, turreted, elongate. Whorls nine to eleven, rather flat, smooth, sloping towards the suture: from three to five abruptly revolving grooves, most prominent and numerous on the lower whorls. Striæ of growth wrinkling the shell longitudinally. Apex often eroded: aperture circular; lip thin, and impressed by the termination of the costæ. Columella with a slight callus and angular base.

Color. Reddish brown; epidermis sometimes dark lilac.

Length, 0.5 – 0.8; of aperture, 0.15.

Found in the stomachs of fishes, on the seacoast of Massachusetts.

(EXTRA-LIMITAL.)

- T. impressa.* (SAY, Acad. Sc. Vol. 2, p. 244.) Shell with an acute apex: whorls six, with about four acute impressed revolving lines; lip not thickened, a slight indentation at its base, and a projection within on the middle. *Color*, dusky. Length, 0.1. *Seacoast.*
- T. aequalis.* (SAY, Jour. Ac. Sc. Vol. 5, p. 208.) Shell subulate. Whorls ten, each with about twenty-two transverse elevated obtuse equal lines, with interstitial grooves of the same diameter: suture impressed, distinct; aperture rounded at the base, and destitute of any distinct emargination. *Color*, white. Length, 0.2. *Seacoast.*
- T. alternata.* (SAY, Ac. Sc. Vol. 2, p. 243.) Shell acute at apex. Whorls eight, with about eight unequal revolving slightly elevated lines, maculated with rufous, and decussated by transverse elevated obtuse lines, obsolete below the middle of the body-whorl, and prominent on the spire. Lip not thickened; a slight indentation at the base. *Color*, whitish ash. Animal with long white tentacles, annulate with brown. Length, 0.2. *Seacoast.*
- T. concava.* (SAY, Ac. Sc. Vol. 5, p. 207.) Shell subulate. Whorls more than ten, concave in the middle, and sculptured with 2 – 4 obsolete impressed revolving lines, and with an apical and basal band of about fifteen longitudinal undulations on each whorl; the basal band passes round the middle of the body whorl. Suture very slightly impressed: canal rather prominent. *South-Carolina.*

This small species was originally detected by Col. Totten, in the waters of Rhode-Island. I have obtained them from Mr. Charles Wheatly, who dredged them from the mud in five fathom water, opposite Staten island, and subsequently obtained them along the shore. They are not uncommon on the northern shores of Long island. I have received specimens of an *Odostomia*? from Mr. Couthouy, which differs from the above in having more than one fold on the columella. It will be described by Mr. Couthouy.

ODOSTOMIA SEMINUDA.

PLATE VIII. FIG. 171.

(STATE COLLECTION.)

Jamnia seminuda. ADAMS, Bost. Jour. Nat. Hist. Vol. 2, p. 280, pl. 4, fig. 13.*Odostomia seminuda.* GOULD, Invertebrata of Mass. p. 273, fig. 178.

Description. Shell small, acute, conic. Whorls seven, convex: upper whorls and half of the body-whorl longitudinally rugose, crossed by three equidistant revolving lines, presenting a granulated appearance: at the base of the lower whorl are four revolving lines, beginning on the middle, where the folds abruptly terminate. Suture distinct, divided by an indistinct spiral ridge. Aperture oval; the outer lip very thin, and scolloped by the revolving lines; the pillar-lip with an inconspicuous fold.

Color. Glossy white, translucent.

Length, 0·15. Width, 0·07.

First observed by Prof. Adams on the coast of Massachusetts, and since dredged by Dr. Stillman in the East river opposite Newtown creek. These latter specimens are larger than those described by Messrs. Adams or Gould, having a total length of 0·25, and width of 0·1.

ODOSTOMIA INSCULPTA.

PLATE XXXI. FIG. 297.

(STATE COLLECTION.)

Description. Shell elevated, thick, opaque, regularly tapering to the apex. Whorls seven, flat, with a deeply impressed suture: body-whorl with ten deeply sculptured closely approximated revolving striæ on the lower half, and five distant revolving lines on the upper half; about four on the next whorl, and gradually diminishing in number above. Aperture ovate, acute above, effuse beneath. Lip simple; fold on the pillar-lip near the middle, distinct under the lens, and deepening within.

Color. Soiled white; the sculptured lines rufous.

Length, 0·2; of aperture, 0·08.

V. lumbricalis? LIN. (PL. 36, fig. 349 of this book.) Tubular: usually many interlaced together, with numerous raised lines along its length; spire with 8 - 10 closely connected whorls. *Color*, ashen gray. Length, 8 - 10 inches.

The *lumbricalis* is reddish brown, and not more than four inches long. *Northern Coast*.

GENUS SKENEA: Fleming.

Shell minute, discoidal, concavely umbilicated beneath. Whorls three; mouth expanded.

SKENEA SERPULOIDES.

PLATE XXXII. FIG. 208.

Delphinula serpuloides. ADAMS, Bost. Jour. Vol. 3, p. 334.

Skenea id. GOULD, Invertebrata of Mass. p. 247, fig. 189.

Description. Shell very minute, diaphanous, smooth, not shining, slightly convex above and broadly concave beneath, forming a deep umbilicus which exhibits all the whorls. Whorls three: suture broad and deep. Aperture entire, free, turning downwards, circular, in contact with but not embracing any part of the preceding whorl: lip sharp, and receding so as to form an acute gape as it joins the preceding whorl. Opercle horny, multispiral; the apex central.

Color. Reddish brown or horn-color.

Length, 0·03. Width, 0·07.

One of the smallest of our marine shells, usually attached to stones about low-water mark. Common on the northern coast, and will probably be found on the shores of this State.

(EXTRA-LIMITAL)

S. ? laxa. (DELPHINULA *id.* SAY, Jour. Ac. Sc. Vol. 5, p. 207; Am. Conchology, pl. 7.) Shell regularly spiral, subovate, nearly smooth. Whorls rounded, perfectly disjoined throughout, rapidly lessening to the apex: a dilated groove on the line of the umbilicus; aperture oval, with a sharp edge. *Color*, whitish tinged with yellow. *South-Carolina*.

An var. monst. *Natica* vel *Valvata*?

the passage to *sincera*. Some eminent conchologists suppose this, and perhaps the following, to be but mere varieties of *tricarinata*. It approaches the *V. humeralis* of Say, from Mexico; but it is smaller, not so much depressed, and has a wider umbilicus.

VALVATA SINCERA.

PLATE VI. FIG. 127. A. B. — PLATE VI. FIG. 128. MONSTROUS VARIETY.

(STATE COLLECTION.)

Valvata sincera. SAY, Long's Exped. St. Peters, Vol. 2, p. 264, pl. 15, fig. 11.
V. id. ADAMS, American Journ. Sciences, Vol. 40, p. 267.

Description. Shell small, subglobose, conic. Whorls nearly four, accurately rounded, finely and regularly wrinkled across. Aperture not interrupted by the penultimate whorl, nor appressed to it, but merely in contact; the lip not diminished in thickness at the point of contact. Umbilicus large, exhibiting all the volutions.

Color. Light, often whitish; the apex frequently purplish.

Height, 0·1. Diameter, 0·2 nearly.

Var. A. The transverse wrinkles obsolete.

I have received specimens from various parts of the State, and am chiefly indebted to Drs. Boyd and Emmons, and to Dr. Jay, for specimens. They are abundant in Lakes Champlain, Chautauque, Oneida, &c. I have seen a monstrous variety of this species from the collection of Dr. Newcomb (fig. 128), which presents the following characters:

Shell oblong, subcylindrical. Whorls three or four, rounded, smooth: apex depressed; first whorl horizontal, the following whorls entirely detached; aperture oblique, oval, slightly angular, and effuse at its point of contact with the body-whorl. Umbilicus small, partially covered by the effuse lip. *Color*, light waxen. Height, 0·13; diameter, 1·95.

In this great deviation from the normal form, it is not unlike the monstrous variety of *Helix*, described and figured by Ferussac (*Hist. Moll. terr. etc.* pl. 36, fig. 12). In the cabinet of Dr. Jay, there is a monstrous variety of *Carocolla albolabris*, in which the whorls are separated and the lip effuse. The specimen under consideration comes from the Mohawk river.

There is frequently found associated with this and the preceding species, an agglutinated arenaceous mass, resembling them very much in form. This has been described as *V. arenifera*, in the *Transactions of the American Philosophical Society* (Vol. 4, p. 104, pl. 15, fig. 36. A. B.), and has since been erected by Mr. Swainson into the new genus *Thelidomus* (See Lardner's *Cabinet Cyclopedia*, No. 123, pp. 226, 353). It is believed to be the case of the larva of some aquatic insect, possibly a *Phryanea*.

(EXTRA-LIMITAL.)

V. pupoidea. (GOULD, Invert. Mass. p. 226, fig. 155.) Shell minute, elevated; whorls four or five, the last nearly disjoined; apex obtuse. *Color*, chestnut. Length, 0·1. Var. of the preceding? *Massachusetts*.

NATICA DUPLICATA.

PLATE VII. FIG. 147.

(STATE COLLECTION.)

Natica duplicata. SAY, Journ. Acad. Nat. Sciences, Vol. 2, p. 247.
N. id. GOULD, Invertebrata of Mass. p. 236, fig. 164.

Description. Shell solid, subglobular. Whorls five; the upper whorls not very convex, marked by the lines of growth: aperture oval, oblique; umbilicus irregular, with a deep furrow, and almost entirely covered by a thick callus.

Color. Ashen, with a dark line or band revolving around the spire above the suture, becoming gradually obsolete; within, deep chesnut-brown: callus of the same color.

Length, 1·0 – 2·0. Diameter, 1·0 – 2·1.

This is one of the most common species on the coast.

NATICA TRISERIATA.

PLATE VII. FIG. 144.

(STATE COLLECTION.)

Natica triseriata. SAY, Journ. Acad. Nat. Sciences, Vol. 5, p. 209.
N. id. GOULD, Invertebrata of Mass. p. 233, fig. 165.

Description. Shell longitudinally suboval, nearly globular. Whorls five, convex: spire somewhat elevated; suture slightly impressed; aperture ovate; lip simple, acute; pillar-lip with a thick callus, slightly modifying the umbilicus, which is open, rounded.

Color. Epidermis thin, yellowish: three revolving series of large oblique parallel oblong dark reddish brown spots, about twelve or fourteen in each series; the upper series most usually found on all the whorls: these series are more or less distinctly exhibited within the aperture.

Length, 0·4 – 0·6. Width, 0·3 – 0·5.

This species appears to be very common north of Cape Cod. I have obtained a few specimens from the east end of Long island.

NATICA PUSILLA.

PLATE VII. FIG. 145.

Natica pusilla. SAY, Journ. Acad. Nat. Sc. Vol. 2, p. 257.
N. id. GOULD, Invertebrata of Mass. p. 237, fig. 166.

Description. Shell suboval, smooth, glossy, or with faint incremental and revolving lines. Whorls four, regularly rounded: spire moderately elevated, obtuse; suture distinct and deep; lip sharp, acute; callus pressed laterally into the umbilicus, leaving a narrow curved linear opening; opercle horny.

Color. Epidermis ash-colored; underneath bluish white: throat white.

Length, 0·5. Width, 0·8.

I received specimens from several collections, labelled "*N. pusilla*, Say," and gathered many identical with them at Glasshouse point, near the city. I am now convinced that they were either young of *duplicata*, or a species of *Margarita*, allied to, if not identical with *M. inflata*. I have therefore adopted from Dr. Gould his figure and description, with the observation that the true *pusilla* as yet has only been obtained from the stomachs of fishes along the coast, inhabiting deep water, and is probably a boreal species.

NATICA FLAVA.

N. flava. GOULD, Am. Jour. Vol. 33, p. 196; Invertebrata of Mass. p. 239, fig. 162.

Description. Shell globular, inflated, thin and light. Whorls four, rounded, slightly compressed above near the suture, with very minute incremental and revolving striæ: spire little elevated. Pillar-lip with a curve in its middle; the callus contracting and obliterating the umbilicus, which is deeply indented.

Color. Epidermis light yellowish; white underneath: callus ivory white.

Length, 0·1; width rather less.

This shell was obtained by Col. Totten from the Bank fishing grounds, and first described by Dr. Gould. The absence of an umbilicus, which is one of the characters of the genus, suggests the propriety of modifying it so as to admit this species, or to place it under a new subgenus. There are three other American species, which figure in the catalogues under the names of *N. canrena*, Lam., *alba* and *lunata*, Say. The first is European, or rather Asiatic. I can find no descriptions of the other two species, which are said to be found along the Southern coast. For the fossil species, consult the *Journal of the Academy of Natural Sciences*, Vols. 4 and 6.

JANTHINA FRAGILIS.

PLATE XXXVI. FIG. 360.

Janthina fragilis. BRUG. Encycloped. Methodique, pl. 456, fig. 1.
J. id. GOULD, Invertebrata of Mass. p. 240.

Description. Shell globose-conic, with a short spire. Body-whorl large, angulated in the middle: surface shining, with incremental wrinkled lines, and with revolving lines beneath the angle; aperture large, semioval; lip retiring as it passes the angle of the whorl; pillar-lip straight.

Color. Deep violet beneath the angle; lighter above.

Length, 0·8. Width, 1·0.

This shell is never found on our shores, unless driven by heavy storms. In the autumn of 1839, according to Dr. Gould, great numbers were thus thrown upon the shores of Nantucket.

GENUS SCALARIA. *Lamarck.*

Animal furnished with a proboscis, with two tentacles ending in filaments, and with the eyes on an external tubercle. Foot short and oval; the male organ very slender. Marine. *Shell* turreted, elongated; whorls rounded, with longitudinal subacute elevated ribs; aperture rounded, the margin reflected, continuous. Opercle horny, thin, paucispiral.

Obs. The animal of this genus is yet incompletely known. We are chiefly indebted to Messrs. Say and Couthouy for our knowledge of the American species.

SCALARIA SUBULATA.

PLATE VI. FIG. 194. A. B.

(STATE COLLECTION.)

Scalaris subulata. COUTHOUY, Bost. Journ. Nat. Hist. Vol. 2, p. 94, pl. 3, fig. 4.
S. id. RUSSELL, Essex Journ. Nat. Hist. Vol. 1, p. 75.
S. gramländica. GOULD, Invertebrata of Mass. p. 249, fig. 170.

Description. Shell tapering to a fine point, imperforate. Whorls nine or ten, contiguous, slightly convex, with eight to fifteen stout compressed oblique ribs, with intervening coarse rounded vertical ridges, and seven or eight revolving striæ; the ribs not ending abruptly at the suture, but flowing along the sutural region to the preceding ones. Aperture nearly circular, bordered by a rib which is emarginate at the base. Opercle horny, shining.

Color. Dull bluish white to livid brown; lip and ribs white. *Animal* yellowish grey, with whitish spots; mouth rather large, rounded, corrugated.

Length, 1·0. Width, 0·35.

(EXTRA-LIMITAL.)

- S. novanglia.* (COUTHOUY, Bost. Journ. Vol. 2, p. 96, pl. 3, fig. 5. PL. 6, fig. 126 of this book.) Shell with the whorls scarcely in contact. Whorls 10, crossed by about 11 delicate ribs, each forming a little spine in the suture above: intervening spaces with numerous minute revolving lines. Umbilicus small. *Color*, glossy white or faint bluish white, with a few rusty blotches. Length, 0·7; width, 0·25. From the stomach of a fish off Cape Ann. A single specimen only known.
- S. clathrus*, LIN. (SAY, Jour. Ac. Nat. Sc. Vol. 5, p. 208; Am. Conch. pl. 27, var. c.) Shell conic, imperforate: whorls 6–11, touching each other only by the ribs, but with a very narrow interval; ribs 9, simple, slightly oblique, with a more or less obvious obtuse angle or shoulder above, near the suture; aperture oval-orbicular, a little angulated at the base; lip distinct. *Color*, white immaculate. Length, 0·6–0·9. *Southern Coast.*
- S. turbinata.* (CONRAD, Jour. Ac. Sc. Vol. 7, p. 263, pl. 20, fig. 26.) Shell with the body-whorl dilated: ribs lamellar, strong, very prominent, slightly reflected, terminating above in a prominent angle. *Color*, white. *From deep waters off the coast of North-Carolina.*
- S. humphreysii*, KIENER.

GENUS TORNATELLA. *Lamarck.*

Shell oval, spirally grooved: whorls few. Aperture long, narrow, rounded beneath. Lip thin; pillar-lip twisted spirally to form a fold.

TORNATELLA PUNCTOSTRIATA.

PLATE VII. FIG. 143.

(STATE COLLECTION.)

Tornatella puncto-striata. ADAMS, Bost. Journ. Nat. Hist. Vol. 3, p. 323, pl. 3, fig. 9.
T. id. GOULD, Invertebrata of Mass. p. 245, fig. 188.

Description. Shell minute, suboval, polished. Whorls four to five: body-whorl large, smooth above the aperture; beneath it, with ten to fifteen punctate revolving lines. Spire short, rapidly diminishing, with a shoulder near the suture: suture deeply impressed. Aperture two-thirds of the length of the body-whorl, narrow, becoming wider beneath: pillar-lip with a prominent fold. Umbilicus open in the young, partly covered by the reflected margin in the adult.

Color. White.

Length, 0·1–0·15.

This species occurs in the mud just below low-water mark in the harbor of New-York, where it was found by Dr. Budd. It has also been found by Dr. C. H. Stillman, in the East river, opposite Williamsburgh. It likewise occurs on the coast of Massachusetts.

elevated folds with elevated spiral lines : about twenty of these ribs, which disappear on the lower half of the body-whorl, leaving there only about six slightly elevated revolving lines. Suture deeply impressed. Aperture about a fourth of the length of the shell, elongate, subovate, acutely angular above, widely rounded below, slightly effuse. Lip sharp, modified by the revolving lines ; the canal, if it can be said to exist, is a mere oblique fissure. Opercle horny, ovate, concave externally, multispiral.

Color. Bluish black to reddish black.

Length, 0·2 – 0·3. Width, 0·1.

This species was first described by Col. Totten, from immature specimens, and referred to *Pasithea*. The subsequent acquisition of full grown shells enabled him to refer it to the present genus, where, however, it is not likely long to remain. The imperfect development of the canal may probably induce some writers to refer it to *Potamida* of Brongniart, or to construct a new and closely allied genus.

This shell is common on the shores of this State. In some specimens collected by Dr. Stillman, the upper whorls are blackish, and furnished with distinct vertical elevated lines ; on the three lower whorls, the revolving lines are very distinct, the color light brown, with rufous elevated vertical lines.

(EXTRA-LIMITAL.)

C. ferrugineum. (SAY, Am. Conch. pl. 49, fig. 3.) Whorls 7, with longitudinal ribs, rendered nodulous by spiral striæ. About 20 ribs on the body-whorl, almost interrupted by the interstices of the striæ. Striæ 7 on the body-whorl, with intermediate smaller ones ; 3 on the second whorl : suture not very distinct. Aperture oblique, oval ; lip somewhat thickened on the outer margin. *Color*, ferruginous ; within whitish. *Florida*.

C. emersonii. (ADAMS, Bost. Jour. Vol. 2, p. 284, pl. 4, fig. 10. GOULD, fig. 180. PL. 8, fig. 168 of this book.) Shell long, conical : whorls 17, flat, each with three rows of granules ; suture very deeply impressed ; aperture small, subquadrate, about one-sixth the length of the shell ; columella spirally twisted ; canal less than half the length of the aperture. *Color*, dark reddish brown. Length, 0·5 ; width, 0·12. *Nantucket*.

C. septemstriatum. (SAY, Am. Conchol. pl. 49.) Shell turreted, with ribs made somewhat nodulous by elevated spiral striæ. Ribs about 13 on the body-whorl, bifid towards the base. Spiral striæ 7 on the body-whorl, 7 on the second, and 3 on the third : volutions 9. *Color*, dusky or blackish ; the interstices of the striæ often whitish. Lip whitish, often interrupted by small brown lines. *Florida*.

C. nigrocinctum. (ADAMS, l. c. Vol. 2, p. 286, pl. 4, fig. 11.) Shell small, conic-cylindrical, with 3 revolving series of granules. Whorls reversed or heterostrophe ; suture broad, carinate ; aperture small, subelliptical, ending in a twisted canal about one-third as long as the aperture. *Color*, reddish black ; columella black : a black spiral belt in faded shells. Length, 0·3 ; width, 0·07. *Massachusetts*.

effaced on the body-whorl: these folds are crossed by numerous, elevated, angular, distant, revolving ribs; the interstitial spaces reticulate, with revolving and vertical elevated lines. Aperture oblong-oval, rather more than one-half of the length of the shell; its base emarginate. Columella arched, furnished with a broad callus, and twisted on its lower portion. Lip attenuated at the margin, slightly everted, and festooned by the terminations of the revolving ribs.

Color. Epidermis olivaceous brown, velvety; beneath light reddish white: aperture yellowish or soiled white.

Length, 2·0 – 5·0; of aperture, 1·2 – 2·6.

This species occurs on both shores of the Northern Atlantic. On this coast it has been found from New-York to Maine, and farther north. On the coast of this State, it is a rare shell.

BUCCINUM LUNATUM.

PLATE VII. FIG. 102.*

(STATE COLLECTION.)

Nassa lunata. SAY, Journ. Acad. Nat. Sciences, Vol. 5, p. 213.

Buccinum lunatum. ADAMS, Bost. Journ. Nat. Hist. Vol. 2, p. 266.

B. id. GOULD, Invertebrata of Mass. p. 312, fig. 196.

Description. Shell very small, conic-oval. Whorls six, nearly smooth, slightly convex: a single revolving line below the suture, and a few around the base; suture not deeply impressed. Aperture narrow, slightly angulated above, and with a short channel beneath. Columella with a callus: lip simple, dentate on its inner margin; those above most prominent.

Color. Reddish brown or yellowish, with one or more series of sublunate white spots on the body-whorl; occasionally uniform reddish brown. "Animal with the trunk more than half as long as the shell: eyes placed on the base? of the tentacles" (SAY).

Length, 0·2. Width, 0·1.

This species has been found from Georgia to Cape Cod, adhering to stones and seaweed below low-water mark. It is subject to great variations of form and coloring, and perhaps the following may be considered as identical with this species.

suture very distinct. The aperture of the dead shell is often found filled up with a conical mound of fine particles of sand, with a large aperture at the summit: in this state, it is evidently the abode of some other marine animal. I have received from Col. Totten similar specimens, dredged from fifteen to twenty fathoms in Narragansett bay. In these, Col. Totten noticed the protrusion of a proboscis capable of being extended one inch.

BUCCINUM OBSOLETUM.

PLATE VIII. FIG. 163. A. B. — FIG. 164, VAR.

(STATE COLLECTION.)

Nassa obsolata. SAY, Jour. Acad. Nat. Sciences, Vol. 2, p. 232.*Buccinum noveboracensis*. WOOD, Index Suppl. pl. 4, fig. 26.*B. oliviformis*. KIENER, Iconographie, pl. 25, fig. 99.*B. obsoletum*. ADAMS, Bost. Jour. Nat. Hist. Vol. 2, p. 267.*B. id.* GOULD, Invertebrata of Mass. p. 208, fig. 210.

Description. Shell ovate-conic, subacute. Whorls six, convex: surface reticulated by vertical and revolving lines, and cancellate by oblique folds; body-whorl often deeply rugose vertically; suture distinct, but not deeply impressed. Aperture oval: lip sharp, simple, with a few elevated lines not reaching the margin in the adult, and a broad prominence beneath. Pillar-lip arched, with a broad callus, and a prominence or fold at its base.

Color. Dark olive or reddish brown: lip purple, black. *Animal* mottled with slate: trunk half as long as the shell: tentacles above the eyes, suddenly smaller, and thread-like.

Length, 0.6 – 1.0. Width, 0.2 – 0.55.

Var. A. (fig. 164), with a light colored or bluish white band on the body-whorl.

This voracious little animal is found along our whole coast, to the shores of Mexico. It is one of our most common species.

BUCCINUM VIBEX.

Nassa vibex. SAY, Jour. Acad. Nat. Sc. Vol. 2, p. 231; Am. Conch. pl. 57, fig. 2.*Buccinum vibex*. ADAMS, Bost. Jour. Nat. Hist. pl. 2, p. 266.*B. id.* GOULD, Invertebrata of Mass. p. 310, fig. 212.

Description. Shell solid, ovate, short. Whorls six: body-whorl with from ten to twelve vertical undulating and prominent costæ, which are continued to the apex; and about the same number of revolving lines, which are most prominent on the costæ: suture moderate. Aperture oval: lip incrassated without and within, with two to four prominent teeth internally; pillar-lip arched with a broad flat callus, which forms a process directed upwards towards the suture on the upper portion of the body-whorl, and is slightly granulated at the base. Spire short, rapidly attenuated to an acute apex: canal very short.

Color. Ashy white to pale reddish brown, with darker colored revolving bands.

Length, 0.5 – 0.6. Width, 0.3 – 0.35.

GENUS PURPURA. *Adanson.*

Animal with a large head. Trunk short or obsolete. Tentacles two, generally in front and approximated, conical, and with the eyes on an inflated portion near the middle, and external. Mouth beneath, almost always concealed by the foot. Foot moderately large, advanced and bilobed in front. Mantle forming a distinct siphon in front. Gills in two unequal series. Orifice of the oviduct at the entrance of the branchial cavity; that of the vas deferens on the right side of the neck, at the end of the male organ, which is generally voluminous. Vent on the same side. Marine. *Shell*, ovate, thick, smooth, tubular or angular: spire short; aperture dilated, emarginate at the base, having a subcanaliculate oblique sinus. Columella depressed, ending in a point.

PURPURA LAPILLUS.

PLATE VIII. FIG. 175.

(STATE COLLECTION.)

Buccinum lapillus. LIN. Gmel. Syst. Nat. 1202. LAM. AN. sans vert. Ed. prior, Vol. 7, p. 244.

Purpura id. RUSSEL, Ess. Journ. Nat. Hist. Vol. 1, p. 69.

P. id. ADAMS, Bost. Journ. Nat. Hist. Vol. 2, p. 268.

P. id. GOULD, Invertebrata of Mass. p. 301.

Description. Shell ovate, thick and solid: spire short and very acute; suture impressed. Whorls five, with deep revolving furrows and intervening ribs, giving frequently a strong carination to the whorls, which have moreover numerous slight transverse wrinkles. Aperture ovate: lip arched and subacute, with obscure revolving ridges within the margin. Pillar-lip produced, concave externally at the base; canal short. Opercle horny, oval.

Color. Varying from white to lemon and orange yellow; aperture reddish brown within. Length, 0.6 – 0.8.

This shell occurs along our coast, from Cape Cod to Florida. It is usually described as varying very much in its markings, constituting strongly marked varieties, which have been considered by others as distinct species. Among these are the two following.

GENUS TRICHOTROPIS. *Broderip and Sowerby.*

Shell turbinate, thin, ventricose, keeled and umbilicate. Aperture longer than the spire, compressed into a partial canal beneath: outer lip thin, sharp. Epidermis horny, produced into long hairs at the angles of the shell. Opercle horny, with the nucleus lateral. *Animal* undescribed.

TRICHOTROPIS BOREALIS.

PLATE VIII. FIG. 178. A. B.

- Trichotropis borealis.* SOWERBY, Zool. Jour. Lond. Vol. 4, p. 373, pl. 9, figs. 6, 7.
T. costellatus. COUTHOUY, Bost. Jour. Nat. Hist. Vol. 2, p. 108, pl. 3, fig. 2.
T. borealis. GOULD, Invertebrata of Mass. p. 300, fig. 207.

Description. Shell ovate, acutely turreted. Whorls six (four according to Dr. Gould), separated by a deeply channelled suture; the last whorl larger than all the others, with two to four prominent revolving ribs with intermediate striæ; the two largest ribs only continued on the upper whorls, which are thereby angulated: numerous minute vertical striæ. Aperture oblong-oval, rounded and broad above: lip thin, acute, distinctly indented, and festooned by the ribs. Columella arcuated with a slight projection near its lower third, and abruptly compressed near its base, meeting the lip at an acute angle, forming a very short canal. Umbilicus slight, bounded externally by a revolving imbricated ridge. Epidermis horny, elongated into bristles along the ribs.

Color. Epidermis whitish yellow; beneath this, brownish or yellowish white.

Length, 0.75. Width, 0.45.

This shell was first obtained from Melville island, and afterwards from the coast of Scotland, by Mr. Sowerby. It was subsequently obtained by Mr. Couthouy, from the stomachs of fishes off the coast of Massachusetts, and, in similar situations, will undoubtedly be found here. The species described by Mr. Couthouy, he supposes to be distinct from the *borealis*, by the greater breadth of the body-whorl of that species, its fewer number of ribs, and the more conspicuous bristly fringe. Later conchological writers, together with Mr. Sowerby himself, consider these two as identical.

GENUS RANELLA. *Lamarck.*

Animal unknown, but supposed to resemble that of *Murex*. *Shell* thick, oval-oblong, nodulous, having a series of varices on each side, formed at each half revolution. Aperture oval above, ending in a notch above and a straight canal beneath : lip thickened. Opercle unknown.

RANELLA CAUDATA.

PLATE VIII. FIG. 176. A. B.

(STATE COLLECTION.)

<i>Ranella caudata.</i>	SAY, Jour. Acad. Nat. Sciences, Vol. 2, p. 236.
<i>R. id.</i>	Id. American Conchology, pl. 48.
<i>R. id.</i>	ADAMS, Bost. Jour. Nat. Hist. Vol. 2, p. 269.
<i>R. id.</i>	GOULD, Invertebrata of Mass. p. 298, fig. 204.

Description. Shell solid. Whorls five, flattened above, cancellate, with eleven stout vertical ribs, of which the one bordering the aperture, and one on the left side of the body-whorl, are enlarged into stout knobs ; these are crossed by numerous revolving filiform lines, which form a reticulated surface. Lip thick, bordered within by raised granules. Columella curved, flattened and smooth : canal narrow, deep and almost closed in front, as long as the spire.

Color. Dark reddish brown ; internal margin of lip white or bluish white.

Length, 1.0. Width, 0.5.

This animal is common on our shores, and on those of the southern coast. It does not appear to range north of Cape Cod.

GENUS COLOMBELLA. *Lamarck.*

Animal offering the family characteristics, but as yet incompletely known. *Shell* oval : spire short ; base of the aperture more or less emarginate, and destitute of a canal ; columella plaited ; lip thickened by an internal prominence, which narrows the aperture. Opercle horny, elliptical.

COLOMBELLA AVARA.

PLATE VIII. FIG. 179.

(STATE COLLECTION.)

<i>Colombella avara.</i>	SAY, Jour. Acad. Nat. Sciences, Vol. 2, p. 230.
<i>C. id.</i>	ADAMS, Jour. Nat. Hist. Vol. 2, p. 264.
<i>C. id.</i>	GOULD, Invertebrata of Mass. p. 313, fig. 197.

Description. Shell thick, small, elongate-ovate ; spire elevated and acute. Whorls six or seven, very slightly convex, almost flat : suture distinct. Surface with spiral impressed

PYRULA CARICA.

PLATE IX. FIG. 192. ADULT.— FIG. 193. YOUNG.

- Murex carica.* LIN. Gmel. 3545.
Pyrula id. LAM. AN. sans vert. Vol. 7, p. 138.
P. id. ADAMS, Bost. Journ. Nat. Hist. Vol. 2, p. 271.
P. id. GOULD, Invertebrata of Mass. p. 296.

Description. ADULT SHELL, large, ponderous : spire moderately elevated, acute. Whorls six, nearly plane or subconcave above, with numerous minute revolving striæ ; the three lower volutions with a series of distinct triangular tubercles near the suture : those on the body-whorl nine in number, gradually enlarging to the edge of the outer lip ; on the apical whorls, obsolete : incremental lines on the body whorl coarse. Columella concave, with a polished callus : aperture oval ; lip arched, dilated ; canal rounded, slightly emarginate.

Color : Epidermis soiled brownish, agglutinating ; within dull orange.

YOUNG SHELL. Spire more elevated : body-whorl furnished rather with spines than tubercles, which may be traced as far up as the fourth whorl ; revolving striæ more distinct, particularly on the lower part of the body-whorl, and may be traced on the callus above the fold ; the fold on the pillar-lip very distinct, subangular beneath ; extremity of the canal rounded ; aperture irregularly oval, angular above. *Color*, varied with brownish red and white, the reddish spots most apparent near the sutures : a broad light greyish revolving band on the upper portion of the body-whorl ; a similar, but narrower, interrupted and obsolete band beneath ; within varied with brownish red and grey.

Length of adult, 6·0 – 8·0 ; of aperture and canal, 4·8 – 5·5.

Length of young, 2·0 – 4·0.

This shell, as is apparent from the description given above, varies very much in different stages of its growth. It is very common, and the largest of the convoluted shells found on our coast, extending from the shores of the Southern States to Cape Cod. It is sold in our markets as an article of food, at the rate of a dollar a hundred ; but is coarse, and of a strong flavor.

GENUS FUSUS. *Lamarck.*

Animal incompletely known, but not differing essentially from that of the *Pyrula*. Marine.

Shell, stout, elongated, fusiform, tapering to both ends, without varices: spire elevated; aperture oval, ending in a straight or slightly curved canal; columella smooth; lip acute, without a notch. Opercle horny, with the nucleus at the smaller end.

FUSUS SCALARIFORMIS.

PLATE VIII. FIG. 182.

(STATE COLLECTION.)

F. scalariformis? GOULD, Invertebrata of Mass. p. 288, fig. 203.

Description. Shell fusiform, elongate, tapering. Whorls six or seven, moderately rounded: suture very distinct. The whole upper surface covered with fifteen prominent equidistant and vertical ribs, which become obsolete on the three upper whorls; the intervening spaces smooth. Lip arched, simple, not crenated. Aperture not quite half of the total length, oblong-oval, and ending in a narrow recurved canal beneath: columella concave.

Color, brownish; white within.

Length, 1.8; of aperture and canal, 0.8.

This shell I had named *F. borealis* many years since, believing it then to be an undescribed shell. It was sent to me from the northern coast. Since the appearance of Dr. Gould's Report on the Shells of Massachusetts, I find that it bears a very close resemblance to the *scalariformis* of that author. The following are the chief differences: In my specimen, the ribs are smooth and solid, without any appearance of being composed of imbricated scales; there is no appearance of revolving lines in the intervening spaces; the beak is not wrinkled, to any apparent degree, by the transverse terminations of the ribs. It is proper, however, to add, that my specimen is old, and apparently weathered. I have received since from the Rev. Mr. Linsley, a specimen 1.2 in length, with the ribs not imbricated, taken in Long-island sound. It is placed, however, under the above name provisionally, until I can have better opportunities for comparison and description.

FUSUS CINEREUS.

PLATE VIII. FIG. 184. A. B.

(STATE COLLECTION.)

- Fusus cinereus*. SAY, Acad. Nat. Sciences, Vol. 2, p. 236.
F. id. ID. American Conchology, pl. 29.
F. id. ADAMS, Bost. Jour. Nat. Hist. Vol. 2, p. 272.
Buccinum plicosum. GOULD, Invertebrata of Mass. p. 303, fig. 213.

Description. Shell coarse, subfusiform, moderately solid. Whorls five or six, moderately convex, with ten to twelve revolving raised lines, rendered undulating by numerous coarse rounded vertical ribs: on the body-whorl there are twelve of these revolving lines, and ten ribs; on the spire, the revolving lines decrease and disappear, leaving only the coarse vertical ribs. Aperture semioval, and, with the canal, exceeding the length of the spire: lip sharp, and festooned by the termination of the revolving lines; columella smooth, polished, slightly arched; canal short, recurved. Opercle horny, with concentric elements.

Color. Epidermis greyish brown; aperture dark purple. *Animal* yellowish, punctured with brownish yellow above.

Length, 1.0; of aperture and canal, 0.5.

This is a common shell on our coast, and is known under the name of *Drill* by our oystermen. They are said to be very destructive to oysters, by piercing or drilling small holes through the shell, and destroying the animal. The means by which this is effected, has not been explained. I have observed them attached to oysters; and upon removing them, a white circular space may be seen at the spot to which they had been attached; and in the centre of this space, a small perforation, not exceeding a pin-hole in size, extending a greater or less distance into the substance of the shell. It appears to extend from the shores of Massachusetts to the coast of the Southern States.

FUSUS DECEMCOSTATUS.

PLATE IX. FIG. 186.

- Fusus carinatus?* LAMARCK, An. sans vert. Vol. 7, p. 126.
F. decemcostatus. SAY, Journ. Acad. Nat. Sciences, Vol. 5, p. 214.
F. id. RUSSEL, Essex Journ. Nat. History, Vol. 1, p. 70.
F. id. GOULD, Invertebrata of Mass. p. 287, fig. 202

Description. Shell large, robust, solid, somewhat ventricose, oval. Whorls six or seven obliquely flattened above the shoulder, and with stout coarse revolving ribs: there are about ten of these ribs on the body-whorl, gradually diminishing beneath. On the upper whorls, the ribs are reduced to two or three large and coarse ones, which give a turreted appearance to the spire: between these ribs are smaller revolving lines, and the whole surface is coarsely

FUSUS IMBRICATUS.

PLATE IX. FIG. 188.

Description. Shell elongate, robust. Whorls five; the apical one smooth, polished, very acute; suture distinct. Whorls with equal equidistant vertical folds, crossed by alternately larger and smaller revolving lines, which are also distinct in the intervening spaces: these lines are most prominent and cancellate on the lower part of the body-whorl. Lip curved inward above, and crenate on the whole margin by the revolving lines; on the beak, these revolving lines become obliquely ascending, or nearly vertical. Canal nearly straight, patulous, broadly emarginate at base.

Color. Ashen grey; columella dark olive; lip yellowish within.

Length, 0.55; of aperture, 0.3.

Obtained by dredging in the harbor of New-York. It has the general configuration of *F. cinereus*, with which it is usually associated: it differs mainly in the form of the aperture, and the development of the revolving lines.

FUSUS PYRULOIDES.

PLATE IX. FIG. 191.

Description. Shell solid, ventricose, turreted. Spire pointed, moderately elevated. Whorls seven; the two upper ones smooth: body-whorl with its upper fifth portion vertically depressed, obliquely flattened. The whole surface covered with alternate large and small revolving ribs, undulated by their decussation with smaller vertical raised lines. Upper whorls with a vertical and flattened portion resembling the body-whorl; along the carinated edge of the body-whorl, a series of small tubercles. Aperture oblong-oval, narrowed beneath, ending beneath in a very short canal, and more than two-thirds of the total length. Lip thin, somewhat inflated, rendered waving by about thirty distinct robust revolving ribs within the aperture, which descend obliquely beneath until they become nearly vertical; some of these ribs become duplicated near the outer margin: pillar-lip with an oblique inconspicuous fold. Opercle horny, irregularly subovate.

Color. Epidermis ashen brown; upper portion of the columella bluish, beneath wax-yellow; interior of the aperture, polished umber-brown; ribs near the base of the aperture, white.

Length, 0.95; of aperture, 0.7.

This shell was found attached to the bottom of a vessel in the harbor of New-York, believed to have arrived from a southern port. I have given it a name indicating its resemblance to the genus to which it may possibly belong; a name proposed by its zealous discoverer, Dr. Stillman.

- F. muricatus*. (GOULD, Op. cit. p. 293.) Shell slender. Whorls seven, very convex, with about ten conspicuous vertical folds, crossed by coarse elevated revolving lines, making a rough almost tuberculated surface: canal straight, equalling half the length of the shell; outer lip jagged by the revolving lines, sometimes much thickened. *Color*, yellowish white or orange. Length, 0.7; width, 0.3. Stomachs of fishes. *Northern Coast*.
- F. turriculus*. (GOULD, op. cit. 292. PL. 36, fig. 340 of this work.) Shell small, thin. Whorls seven or eight, angulated and turreted: surface with 12–14 prominent folds, and numerous distinct revolving lines; beak open, short and nearly straight. *Color*, white, yellowish or brownish white. Length, 0.66; width, 0.25. Stomachs of fishes.

GENUS PLEUROTOMA. *Lamarck*.

Animal unknown, but probably not differing from that of *Fusus*. *Shell* fusiform or turreted, generally ribbed: aperture oval, terminating in a canal more or less elongated; lip simple, thin, with a notch above. Columella smooth, nearly straight.

Obs. This genus was first identified on our coast by Mr. Couthouy. It contains at present three species, two of which have only been found in the stomachs of fishes.

PLEUROTOMA BICARINATA.

PLATE VI. FIG. 113.

Pleurotoma bicarinata. COUTHOUY, Journ. Nat. Hist. Vol. 2, p. 104, pl. 1, fig. 11.
P. id. GOULD, Invertebrata of Mass. p. 281, fig. 186.

Description. Shell minute, tapering at both extremities, turreted. Whorls six, convex, with numerous revolving ribs, and smaller ones intervening; about the middle a deep groove, with two prominent revolving ribs on each side: sutures clearly defined. Aperture narrow, elliptical, ending in a short canal slightly inclining to the left: lip thin, toothed by the revolving ribs, with a slight notch above; pillar-lip arched at its upper third.

Color. Whitish or slate-color, or dusky brown.

Length, 0.3. Width, 0.15.

Stomachs of fishes on the northern coast. Very rare.

(EXTRA-LIMITAL.)

Genus *ROSTELLARIA*, Lam. *Animal* imperfectly known, but, according to Cuvier, resembling that of *Murex*. *Shell* turreted: spire long, pointed; aperture long and narrow, ending in a straight canal in front, and in a channel running up the spire posteriorly; lip widely dilated, often with one or more processes.

R. occidentalis. (GUERIN, Mag. Zool. 1836, pl. 72. GOULD, Op. cit. p. 298. PL. 8, fig. 177 of this work.) Whorls 8-9, convex, with numerous waving vertical folds and regular conspicuous revolving lines: lip expanded, with a blunt process above. *Color*: epidermis thick and dusky; beneath bluish white. Length, 2.25; width, 1.5. Stomachs of fishes, and shores of Maine.

FAMILY CONIDÆ.

ANIMAL not furnished with a veil, but with a trunk; having the eyes either upon or towards the summits of the tentacles: opercle horny. *Marine*. *SHELL* variable in form, but always in the shape of a cone, more or less elongated.

Genus *CONUS*, Linn. *Animal* elongated, much compressed and involuted, with a very distinct head, terminating in a trunk susceptible of great extension: tongue armed with two series of sharp teeth. Foot oval, somewhat lengthened, larger in front, with an anterior transverse furrow. Mantle narrow, and forming an elongated siphon in front. Opercle horny, small, subspiral. *Shell* thick, solid, conical: aperture long, narrow, linear, entire; lip simple, trenchant; pillar-lip smooth.

Obs. These are for the most part inhabitants of the equatorial seas; and of the one hundred and eighty described by Lamarck, none have been found on the coast of the United States, except on the Florida Keys.

C. mus. (LAM. An. sans vert. Vol. 7, p. 457.) *Shell* ovate, turbinate, coronate, with elevated transverse striæ; spire acute. Ash-colored, banded with white, with longitudinal fulvous blotches. Length, 1.0. *Florida Keys*.

C. leucostrictus, GMEL.

FAMILY MITRIADÆ.

ANIMAL with conical subulate tentacles, with the eyes on the external side, either near the base or on the middle portion. *Marine*. *SHELL* oblong, more or less elongated: aperture narrow, and more or less emarginate. *Opercle*, in one genus, horny.

Genus *TEREBRA*, Brug. *Animal*: head bordered with a small fringe; tentacles approximated, cylindrical, with the eyes at the outer base; mouth with no trunk; foot oval, with an anterior transverse furrow and two lateral processes; siphon much elongated.

FAMILY CRYPTOSTOMIDÆ.

ANIMAL with the eyes at the external base of the tentacles. *Marine.* **SHELL** either external or internal, ear-shaped, much depressed, with a very large aperture; in some genera, the shell entirely wanting. *No opercle.*

GENUS SIGARETUS. *Lamarck.*

Animal oblong, convex above, plane beneath: mantle very large, emarginate in front; head wide, with two conic tentacles. Gills composed of two pectens. Vent and generative organ on the anterior right side, that of the male being very voluminous. *Shell* internal, much depressed: aperture large; spire small, flattened, lateral; lip thin and trenchant; pillar short and spiral. Two lateral muscular impressions.

SIGARETUS PERSPECTIVUS.

PLATE VII. FIG. 156. A. B.

(STATE COLLECTION.)

Sigaretus perspectivus. SAY, American Conchology, pl. 25. Subsequently *Calypstoma*.

Description. Shell moderately large, ovate-elongate, depressed. Surface with numerous impressed transverse slightly undulated lines, which are crossed by revolving striæ which become obsolete beneath. Aperture more than three-fourths of the entire area of the shell. Whorls three: spire depressed, smooth, exhibiting the whorls almost to the summit; suture distinct, but not deeply impressed.

Color. Most usually milk-white, sometimes tinged with brown; within smooth and polished, and faintly iridescent.

Length, 0·9 – 1·5; of aperture, 0·7 – 0·9.

This is a southern species, as far as I can learn; not having been as yet found to the north of the coast of this State. It is not unfrequent on the seacoast of Long island, near Rock-away.

(EXTRA-LIMITAL.)

S. haliotoideus. (GOULD, Invert. Mass. p. 244, fig. 158. *S. oxinoe*, COUTHOUY.) Shell small, obliquely ovate, pellucid, white, compressed, smooth: aperture very large; whorls two. Length, 0·5: width, 0·4. Stomachs of fishes. *Coast of Massachusetts and Europe.*

S. maculatus. (SAY, Am. Conch. pl. 25.) Shell with numerous transverse hardly undulated impressed lines and longitudinal wrinkles: spire hardly prominent, slightly convex; whorls about three; suture a simple impressed line. *Color,* whitish, with two bands of pale rufous spots, and a rufous band near the suture: smaller than the preceding. *Southern Coast.*

SECTION 6. SCUTIBRANCHIA.

ANIMAL with a foot for crawling. Gills arranged either in regular series or detached filaments in a peculiar cavity, which opens in front, either on the back or on the left between the edge of the mantle and the body. Eyes variously placed, sometimes on pedicels. Sexes united, so that they can fecundate themselves. Heart traversed by the rectum, and receives the blood from two auricles, as occurs among most of the bivalves. SHELL open, shield-shaped, usually without spire, with a continuous margin.

FAMILY CALYPTRIADÆ.

ANIMAL with its eyes on small dilatations, either at or slightly above the external base of the tentacles. Respiratory organs composed of filaments adhering to the sides of the branchial cavity. SHELL cup-shaped, not symmetrical: summit rarely spiral.

GENUS CALYPTREA. Lamarck.

Animal with a conspicuous wide head, bifurcate in front, with a marginal band on each side of the neck. Tentacles lateral, distant, very large, triangular, slender at their extremities, with the eyes on a slight dilatation about the middle of their external or posterior margin. Mantle very thin, without lateral tentacles. Foot subcircular, moderate. Branchial cavity very large, oblique from left to right, opening largely in front, and containing a gill formed of long stiff and exsertile filaments. Vent at the extremity of a small tube, floating in the branchial cavity. Shell irregular, conoidal: summit vertical, and slightly posterior. Aperture large, circular; an irregularly rounded projecting rim or partition within towards the summit.

CALYPTREA STRIATA.

PLATE VII. FIG. 155. A. B.

Calyptra striata. SAY, Journ. Acad. Nat. Sciences, Vol. 5, p. 216.

Description. Shell moderately solid, conoidal. Surface with numerous slightly elevated equidistant radiating lines. Summit smooth, obtusely pointed, subspiral, inclining towards the left side and the posterior end; the inner partition cup-shaped, and attached by one side to the shorter side of the shell, acutely angulated at the anterior line of junction, rounded behind, and terminating above near the inner apex of the shell: its margin irregular, not continuous.

Color, greyish; wax-yellow at the summit. Length of base, 0·8. Height, 0·5.

This shell is not common, but has been brought to me from this coast; farther south, it is more abundant.

GENUS CREPIDULA. *Lamarck.*

Animal with its head convex, bordered in front with a bifid lip. Tentacles nearly cylindrical, large, obtuse, little contractile, with the eyes at their external base. Foot moderately thick, Mantle thin, without lateral appendices: branchial cavity very large, oblique from right to left, with a large opening; the gills form a transverse series of long filaments, which are capable of floating externally. Vent on the right in the same cavity. *Shell* oval, arched, cup-shaped, more or less elongated: spire imperfectly formed, and pressed against the margin. Cavity large, with tronchant margins, and partially divided by a horizontal partition.

CREPIDULA FORNICATA.

PLATE VII. FIG. 154, ADULT; FIG. 152, YOUNG.

(STATE COLLECTION.)

<i>Patella fornicata.</i>	LIN. Syst. Nat. 1257.
<i>Crepidula id.</i>	LAMARCK, An. sans vert. Vol. 6, part 2, p. 42, Ed. prior.
<i>C. id.</i>	SAY, Jour. Acad. Nat. Sc. Vol. 2, p. 225; Am. Conch. pl. 44.
<i>C. id.</i>	GOULD, Invertebrata of Mass. p. 156, fig. 17.

Description. Shell varying in convexity, with one side more oblique than the other: apex turned to one side, not separate from the body of the shell; surface transversely wrinkled. Partition or diaphragm smooth, slightly concave, occupying about half the length of the shell, with the margin uniting with the cavity in a solid manner; the free edge subacute, with a waving or sinuous margin.

Color. Epidermis olive-green, tinged with light rufous, and with obsolete longitudinal undulated chesnut-colored lines: within reddish brown, the ends of the rufous lines appearing along the margin.

Length, 1.0 – 2.0. Width, 0.7 – 1.3.

This species is the most common and the largest found on our coast. They are most usually found adhering to each other, and to other shells; when adhering to the Pecten, the margin is observed to have undulations corresponding to the ribs of the Pecten. I have noticed four or five adhering to each other. It occurs from the mouth of the St. Lawrence, and probably further north, to the Gulf of Mexico.

Color. Ashen brown, with spots or stripes of a dark reddish brown ; within dark chesnut ; the diaphragm lighter brown and bluish ; the edge white.

Length, 0.2. Width, 0.1.

This small species is found attached to seaweed or to stones ; it is not so common as the preceding. It occasionally reaches the length of half an inch, but I have never seen it of this size on our coast.

CREPIDULA GLAUCA.

Crepidula glauca. SAY, Jour. Acad. Nat. Sciences, Vol. 2, p. 226.
C. id. GOULD, Invertebrata of Mass. p. 161, fig. 14.

Description. Shell moderately small and convex, broadly oval, thin, nearly smooth, with minute transverse wrinkles. Apex conic, pointed, projecting, somewhat beyond the surface, and nearly to the plane of the aperture. Diaphragm less than half the length of the shell, with an irregular surface, partly convex and concave, deeply seated, and with a small cavity under the apex : edge of the diaphragm curved.

Color. Greenish grey, maculated within dusky ; within uniform chocolate-brown : diaphragm yellowish white or opake white.

Length, 0.5. Width, 0.28.

This species is said to occur on our coast, but my specimen was from Rhode-Island.

(EXTRA-LIMITAL)

- C. depressa.* (SAY, Ac. Sc. Vol. 2, p. 225.) Much depressed, nearly equilateral, transversely wrinkled: apex not curved, forming a simple acute terminal angle upon the margin of the aperture, which is subovate. Diaphragm convex ; edge contracted in the middle and at one side. *Color:* epidermis pale yellowish brown ; within white. Length, 0.8. *Southern Coast.*
- C. intorta?* (Id. Ib. Vol. 2, p. 227.) Convex-ovate, with about 20 elevated somewhat undulated lines with alternate smaller ones, somewhat confused on the convex side, the larger ones with a few slightly elevated very thick tubercles: apex curving laterally ; tip pointing upwards, and not elevated from the body of the shell. *Southern Coast.*

(EXTRA-LIMITAL.)

D. attenuatum. (SAY, Journ. Acad. Vol. 4, p. 154, pl. 8, fig. 3.) Shell arcuated: surface with from 12 – 16 rounded ribs, the intervening grooves simple; lines of growth numerous, distinct; aperture orbicular. Length-1.7. Fossil. *Maryland*.

NOTE. The size and fewer longitudinal ribs, with its fossil condition, induce me to consider it as distinct from the preceding.

SECTION 8. CYCLOBRANCHIA.

ANIMAL furnished with a foot for crawling. Gills in the form of lamellæ, in a series more or less complete, in the furrow between the mantle and body; or a small gill on the right side of the head. Sexes united. SHELL not spiral, covering the soft parts, and of one or many pieces.

NOTE. I have retained the name of this section, although it is not significant in its present extended meaning.

FAMILY PATELLIDÆ.

ANIMAL furnished with tentacles, and eyes at their external base. Gills forming a series of lamellæ around the body or on the side of the neck. SHELL univalve, cup-shaped.

GENUS PATELLA. *Linnaeus*.

Animal with a very distinct head, terminated in a thick and short trunk. Vent on the neck, back of the head. Mouth fleshy with a long prickly tongue, which folds itself in the visceral cavity. Duct of the ovary near the right tentacle. Gills arranged round the body in a series of lamellæ. Shell conical, cup-shaped, solid: apex nearly central.

PATELLA CANDIDA.

Patella candida. COUTHOUY, Bost. Jour. Nat. Hist. Vol. 2, p. 86, pl. 3, fig. 17.
P. id. GOULD, Invertebrata of Mass. p. 152.

Description. Shell small, conical, with numerous minute revolving ribs, traversed by equally fine concentric lines, giving the surface under the lens the appearance of net-work. Summit nearly central: margin slightly scalloped by the termination of the ribs. *Color*, white.

Length, 0.35. Height, 0.1.

Stomachs of fishes. Coast of Massachusetts. First noticed by Mr. Couthouy; but three specimens found.

FAUNA — PART 6.

Mr. Couthouy, to whom we are indebted for our first anatomical acquaintance with this animal, observes, that "perhaps it would be more correct to consider it as a constant variety (of *P. testudinalis*), than as a distinct species;" and "many species have been received as valid, upon far narrower distinctions than exist between this and Mr. Say's shell." It occurs almost universally upon the *Eel-grass* (*Zostera marina*), while the *testudinalis* is attached to rocks.

FAMILY CHITONIDÆ.

ANIMAL without tentacles or eyes, but furnished with a small veil. The branchial apparatus formed by a cordon of small pyramidal leaves, around the mantle. SHELL multivalve, shield-shaped.

GENUS CHITON. *Linnæus. Lamarck.*

Animal elongate, obtuse at both ends, and without a very distinct head. Tentacles replaced by a small membranous veil, which extends over the mouth; the latter inferior, without jaws, and with a small prickly tongue. Foot elongated, the mantle extending beyond it more or less completely; the gills under the edge of the mantle, particularly behind. Vent at the posterior extremity. Generative organs double; one on each side, between the leaves of the gills. Shell oval, composed of eight arched pieces arranged in a series more or less overlapping each other, their sides imbedded in the skin.

CHITON ALBUS.

PLATE X. FIG. 200.

Chiton albus. MONTAGU, Test. Brit. 4.

C. sagrinatus. COUTHOUY, Boat. Journ. Nat. History, Vol. 2, p. 82.

C. albus. GOULD, Invertebrata of Massachusetts, p. 150, fig. 21.

Description. Shell small: valves with a small beak, minutely crenulate on their anterior margin, subcarinate with minute striæ; the surface, under the lens, exhibiting the appearance of shagreen. An obsolete diagonal ridge sometimes divides each side into triangular areas, but for the most part without any distinct boundary. Margin membranous, covered with beaded granules.

Color. Epidermis a blackish powder, underneath which greyish white; the marginal membrane ash-colored, with a narrow black line in the middle surrounding it.

Length, 0.4. Width, 0.15.

This species was originally discovered by Mr. Couthouy in the stomachs of fishes off the coast of Massachusetts, and described by him under the appropriate name of *sagrinatus*. It has since been referred to the *albus* of Montagu, and *aselloides* of Lowe, by Dr. Gould.

- C. fulminatus*. (COUTHOUY, Bost. Journ. Vol. 2, p. 80, pl. 3, fig. 19. PL. 10, fig. 199 of this work.) Shell ovate-oblong, rather flat; the valves carinate and slightly beaked, covered with microscopic granulations arranged in quincunx: margin pubescent. *Color*, brownish or yellowish red, with white points along the posterior margins of the valves. Length, 0.7; width, 0.45. Stomachs of fishes. *Mass.*
- C. ruber*, Lowe. (GOULD, Op. cit. fig. 24.) Shell small, oval, elevated, carinated: surface smooth under the lens, except the lines of growth; valves strongly beaked. *Color*, light brick red or flesh-color under a blackish pigment; interior bright rose red. Allied to *fulminatus*, but distinguished by its unpunctured surface. Found in fishes, and attached to stones in deep water. *Massachusetts.*
- C. emersonii*. (COUTHOUY, Bost. Jour. Vol. 2, p. 83, pl. 3, fig. 10. PL. 10, fig. 198 of this work.) Shell ovate-oblong, broadest behind: valves reniform, each with a central heart-shaped area, with bead-like granules or tubercles in concentric series round the margin, the remainder covered with a soiled downy membrane; marginal membrane with series of yellow hairy tufts. *Color*, whitish. Length, 0.8; width, 0.5. Allied to *C. vestitus*, Sowerby. Stomachs of fishes taken in Massachusetts bay.

- T. caput-serpentis*, Linn., Gould. (*T. septentrionalis*, COUTHOUY, Bost. Journ. Vol. 2, p. 65. PL. 34, fig. 321 of this work.) Shell rather thin, semitransparent, ovate: upper valve truncated horizontally at the apex; foramen large, one side completed by the apex of the lower valve; surface with a downy epidermis, under which minute radiating striæ. From under each tooth in the lower valve arises a thin process, curving a little inwards, whose extremities support an oval partially twisted ring: margin of the shell crenate. *Color*, whitish. Length, 0.4; Width, 0.2. *Coast of Northern Europe, Maine and Massachusetts.*
- T. psittacea*, Gmel. (GOULD, Op. cit. p. 142, fig. 91. PL. 34, fig. 322 of this work.) Shell thin and fragile, subtriangular, narrowed above; the beak produced into a decurved horn: surface striated concentrically and in radii; foramen triangular. *Color*, brownish black or sea-green. Length, 0.35; width, 0.25. *Northern Europe, and Seacoast of Massachusetts.*
- T. thalassina*, GOULD.

SECTION 2. LAMELLIBRANCHIA.

ANIMAL adherent, enveloped in a bilobed mantle, varying in the number and dimensions of its apertures. Mouth transverse, medial, concealed at the bottom of the mantle between two pair of appendices. Gills in the form of semicircular leaves, composed of two pair, one on each side of the body: vent posterior and medial. SHELL composed of two valves connected by a hinge and ligament, and enclosing the animal.

FAMILY OSTRACIDÆ.

ANIMAL with the mantle not adherent, entirely open except on the dorsal part, without tube or peculiar opening. Foot wanting or rudimentary. The two pair of gills united in a medial line. SHELL inequivalve, inequilateral, irregular, more or less lamellar or foliated: hinge variable; ligament internal or partly internal; muscular impression single, sub-central.

GENUS ANOMIA. *Bruguières*.

Animal with the edges of its mantle thin, and furnished with a series of tentacular filaments. Foot rudimentary; the adductor muscle divided into three branches, the largest of which passes through an aperture in the lower valve, with a corneous opercle to attach itself to other bodies. Shell thin, often translucent: one valve convex; the other flattened or concave, and perforated near the beak. Ligament of the hinge short and thick; muscular impression tripartite.

GENUS OSTREA. *Linnæus. Lamarck.*

Animal with the edges of its mantle thick, not adhering, retractile, with numerous short and irregularly disposed tentacular appendages. Mouth large, funnel-shaped, furnished with two pair of elongated lanceolate appendices. Gills formed by four nearly equal and semi-circular leaflets, minutely striated. Vent posterior, with its orifice floating between the lobes of the mantle. *Shell* very irregular, more or less coarsely foliated; left valve generally larger and more concave, adherent; the right valve smaller, usually flattened, often operculiform, moving forwards with age, leaving a groove for the ligament exposed along the adhering valve. Hinge without teeth.

OSTREA BOREALIS.

PLATE X. FIG. 204, ADULT; 203, YOUNG VARIETY.

Ostrea borealis. LAMARCK, *Am. sans vert.* Ed. Brux. Vol. 3, p. 82.
O. id. GOULD, *Invertebrata of Mass.* p. 137.

Description. Shell variously shaped, but most frequently suborbicular or oblong-ovate, with loosely imbricated concentric flakes, becoming obsolete towards the beaks, which are usually curved, generally short, but occasionally somewhat elongated. Lower valve concave, with coarse rugose folds on the margin; but these are often indistinct. The young under two years often strongly costate, with six to eight convex ribs or folds, which extend into processes on the margin of the valves, and resembling *equestris* of Say (See pl. 10, fig. 203). Upper valve with a transverse ridge in the hinge, abrupt behind, and sloping gradually into the shell; on the larger valve, this ridge is prolonged backwards.

Color. Dusky brown, intermixed with green; within pearly white: muscular impression purplish. The young, under a year, are reddish, with dusky radiations.

Length, 5·0 – 12·0. Width, 3·0 – 6·0.

More than eighty species of oysters are mentioned in the most recent systematic catalogues; but many of these are so nearly allied, as to render it very doubtful whether mere varieties have not been described as species. Lamarck attributes three species to the coast of the United States; but we must confess our inability to find more than one, and that one, under certain forms, cannot be distinguished from the *O. edulis*, or *Common Oyster* of Europe. The three American species in Lamarck are thus characterized:

1. *O. borealis.* Shell oblong-ovate, whitish, with imbricated undulated plates; upper valve somewhat convex. Length, nearly three inches. Allied to *edulis* and *virginica*, but distinct from both. *New-York.*
2. *O. virginica.* Shell elongate, whitish, narrow, rather straight, thick-lamellar; upper valve rather plane. As it advances in age, it becomes very thick, and its lower beak becomes very long, and with a channel within furrowed transversely: its upper beak tuberos within. Length, six inches. *Virginia.*

punctures are often seen through the shell, produced by various marine animals; the most common and destructive of these, according to the oystermen, is the *Drill*, or *Fusus cinereus*. I have examined several oysters on which were numerous drills; and upon detaching them, observed, in the centre of a circular abraded spot, a minute puncture not larger than a pin-hole, extending into the body of the shell, but not perforating it entirely through; occasionally these punctures would be very numerous, and apparently communicate with each other, the whole interior being eroded, and the shell itself rotten and brittle. In such cases, the oyster itself would be poor and destitute of flavor, and, as might naturally be inferred, perishes sooner or later. I am informed that when these drills abound in an oyster bed, a great mortality among the oysters is observed.

(EXTRA-LIMITAL.)

- O. semicylindrica*. SAY, Ac. Sc. Vol. 2, p. 228.) Shell elongated, semicylindrical: sides parallel; base and tip rounded, equally obtuse; inferior valve very convex; upper valve flat. Muscular impression large, white. Color, white, with a fuscous epidermis. Length, 0.35. Attached to Sponges. Georgia, Florida.
- O. equestris*. (ID. Am. Conch. pl. 58.) Small, ovate-triangular, with transverse wrinkles, and more or less deeply and angularly folded longitudinally. Lateral margin near the hinge, with 6 – 12 denticulations of the superior valve, received into corresponding cavities of the lower valve: upper valve depressed, but slightly folded. Lower valve convex, attached by a portion of its surface, the margins elevated; folds unequal, much more profound than those of the upper valve. Hinge very narrow, and curved laterally and abruptly. South Carolina, Florida.

This is one of the most common shells on the coast of New-York, where it is known under the popular name of *Scollop*, or *Scallop-shell*. It abounds on shallow sandy bottoms, and is taken in great quantities for food, the broad and stout muscular portion being the only part of the animal used. This is boiled and put in vinegar, and considered by many as a great delicacy. The shells, which vary very much in the beauty and delicacy of their coloring, are used for ornamental purposes, such as card-racks, pin-cushions, etc. On a clear calm day, these animals may be seen skipping along to considerable distances on the surface of the water: this movement is accompanied by sharp and quickly repeated sounds, occasioned by the rapid opening and shutting of the valves. I have never noticed these movements in adults. They are preyed upon by numerous fishes.

PECTEN ISLANDICUS.

PLATE XI. FIG. 206.

- Ostrea islandica*. MULLER, Zool. Dan. prodr. No. 2990.
Pecten pealii. CONRAD, Amer. Marine Conchology, p. 12, pl. 2, fig. 2.
P. islandicus. SAY, Amer. Conchology, plate 56, fig. 1.
P. id. GOULD, Invertebrata of Massachusetts, p. 133, fig. 89.

Description. Shell occasionally very large, sub-rounded; the valves nearly equal. Surface covered with numerous scaly radiating lines, alternately smaller. Ears unequal, with radiating ribs. Five to six minute teeth in the angle beneath the emarginate ear. Margin jagged by the produced elevated radiating lines; intervals between these lines reticulated.

Color. Reddish or orange, with darker concentric bands and pale broad radiations. Ears with dark red concentric lines.

Length, 2·0 – 3·0. Width, 1·9 – 3·0.

I am not aware that this shell has yet been found on our coast, but it has been obtained from the stomachs of fishes. The banks of Newfoundland appear to be its proper locality on the American coast, and it extends very far north. Conrad observed it on the coast of Maine.

PECTEN MAGELLANICUS.

PLATE XI. FIG. 207. A. B.

- Ostrea magellanica*. GMELIN, p. 3317.
Pecten id. CONRAD, Amer. Marine Conchology, pl. 1, fig. 1.
P. id. RUSSEL, Essex Jour. Nat. Hist. Vol. 1, p. 62.
P. id. GOULD, Invertebrata of Mass. p. 132.

Description. Shell large, orbicular, moderately solid, much compressed; the upper valve more convex, the lower nearly flat. Ears subequal; on the upper valve equal: valves gaping

Genus *LIMA*, Brug. *Animal* with numerous tentacular filaments in many series along the edges of its mantle: foot very small, and carrying a byssus; mouth surrounded by a very thick and fringed labial appendage. *Shell* longitudinal, subequivalve, eared, slightly gaping on one side between the valves: beaks distant; internal face inclined outwards. Hinge toothless: pit partly exterior, receiving the ligament; muscular impression central and trifid.

L. squamosa, Lam. (CONRAD, Mar. Conch. pl. 3, fig. 2.) Shell oblong, with broad and strong scaly ribs: hinge oblique; margin plicate. *Color*, whitish or yellowish. Length, 1.0 - 2.5; width, 0.8 - 1.2. *Florida*.

L. glacialis, Lam. (CONRAD, Ib. pl. 3, fig. 1. PL. 11, fig. 208 of these pages.) Shell oval, sub-equilateral, with numerous subscabrous striæ: margin entire. *Color*, soiled whitish or dull reddish. Length, 2.5; width, 1.5. *Florida*.

FAMILY AVICULIDÆ.

ANIMAL with the mantle entirely open except along the back, without tubes or peculiar openings, and prolonged sometimes behind: foot moderate, with a byssus. *SHELL* often foliated, generally thin, pearly subequivalve. Hinge without teeth, or only showing small rudimentary teeth; an anterior notch for the passage of the byssus.

Genus *AVICULA*, Brug. *Shell* oval, fragile, rather smooth: base transverse, straight; extremities produced. Hinge linear, unidentate between the beaks: area of the ligament marginal, narrow, channelled.

A. atlantica, Lam. (*A. hirundo*, SAY, Ac. Sc. Vol. 2, p. 262.) Shell with numerous undulated wrinkles disposed in rays: wings broad, rounded, scarcely oblique; valves unequal. *Color*, reddish brown. Width, 0.7. *Southern Coast*.

ARCA TRANSVERSA.

PLATE XII. FIG. 212.

Arca transversa. SAY, Journ. Acad. Nat. Sciences, Vol. 2, p. 269.
A. id. GOULD, Invertebrata of Mass p. 96.

Description. Shell smaller than the preceding, thick, transversely oblong, subrhomboidal. Surface with from thirty-two to thirty-five strong radiating ribs, obsolete on the beaks, and crossed towards the lower margin by two or more concentric furrows of growth: these ribs are nearly their own diameters apart, and become larger near the margin. Beaks prominent, incurved, and separated by a long and narrow interval: they are placed at the end of the anterior third of the length of the hinge-margin. Valves slightly unequal, so that the margin of one passes slightly beyond the other; this is most conspicuous on the posterior portions of the lower margin: a slight curve at each extremity of the hinge-margin. One or more angulated lines on the hinge space, drawn from the beaks to the hinge edge: valves accurately closing all round.

Color. Dingy white, sometimes tinged with reddish, and particularly adherent about the lower margin. Epidermis chesnut-brown, foliaceous.

Length, 0.5 – 0.8. Transverse diameter, 1.0 – 1.4.

This is also a very common species on our coast. It ranges north nearly to Cape Cod, and occurs on the coast of New-Jersey.

(EXTRA-LIMITAL)

- A. ponderosa.* (SAY, Ac. Sc. Vol. 2, p. 267.) Shell very thick and ponderous, somewhat oblique, with 25 – 28 ribs, each marked with an impressed line. Beaks distant, and opposite the middle of the hinge: lower margin nearly straight, or contracted in the middle. Length, 2; transverse diameter, 2.5. *Southern Coast.*
- A. incongrua.* (ID. Ib. Vol. 2, p. 268.) Shell somewhat rhomboidal, with 26 – 28 ribs, nearer than their own diameters, and crossed by elevated obtuse equal and equidistant lines, which are altogether wanting on ten rays of the disk of the left valve. Beaks distant, opposite the middle of the hinge, with a lanceolate space between: anterior margin cordate, flattened. Allied to *A. rhombea*, Born. Length, 2.0; transverse diameter, 2.1. *Southern Coast.*

NUCULA RADIATA.

PLATE XII. FIG. 216.

Description. Shell rather solid, very oblique, triangular. Surface polished, with minute concentric lines, and occasional larger ones; these concentric lines are rendered waving by a furrow running from the beak to the base, parallel to and at a short distance from the anterior side. Beaks anterior, large and eroded. Teeth minute, the two series forming almost a right angle with each other: four to five in one series, and from nine to ten in the other; the inner is deeply crenulated on the margin by numerous striæ radiating from the cavity of the beaks, but not impressed externally.

Color. Epidermis thin, ferruginous; beneath whitish pellucid; within bluish iridescent.

Length, 0·18.

Under this name, I venture to indicate a shell which was obtained by Dr. C. H. Stillman, by dredging in the East river opposite Williamsburgh: some thirty or forty other specimens were procured at the same time. In the number of its teeth, and the strongly impressed radiating striæ, it is very distinct from its otherwise strongly allied species *N. proxima*.

NUCULA PROXIMA.

PLATE XII. FIG. 215.

<i>Nucula proxima.</i>	SAY, Jour. Acad. Nat. Sciences, Vol. 2, p. 270.
<i>N. id.</i>	CONRAD, American Mar. Conchology, pl. 6. fig. 2.
<i>N. id.</i>	GOULD, Invertebrata of Mass. p. 103, fig. 63.

Description. Shell small, solid, subglobose, trigonal, oblique, polished, concentrically wrinkled with numerous hardly perceptible striæ: beaks somewhat elevated and inclined forwards; pit of the cartilage very small. Teeth very robust for the size of the shell, long, acute, recurved and equidistant; twelve in number before, and about twenty behind the beaks. Margin very minutely crenulated; the crenæ extending some distance from the margin, but not forming radiated striæ as in the preceding.

Color. Epidermis light olive and very thin; within pearly white.

Length, 0·45. Transverse diameter, 0·35.

This species, although not yet detected on our coast, will undoubtedly be found, as it ranges from Massachusetts bay along the southern coast. It is closely allied to, but as we think very distinct from, the preceding.

- N. tenuis*. (GOULD, l. c. p. 105, pl. 54.) Shell small, thin, trapezoidal, smooth, without radiating lines: beaks prominent, placed anteriorly; margin simple. Teeth long and slender, about eight behind and four or five before the beaks. *Color*: epidermis grass-green. Length, 0.25; transverse diameter, 0.3. Stomachs of fishes.
- N. minuta*. (GOULD, l. c. p. 101. *N. tenuisulcata*, COUTHOUY, Bost. Jour. Vol. 2, p. 64, pl. 3, fig. 8. PL. 12, fig. 213 of this book.) Shell ovate, lanceolate, inequilateral, posteriorly much narrowed and rostrated: surface with numerous concentric ridges. Teeth twelve before and sixteen behind the beaks. *Color*: epidermis light greenish yellow. Length, 0.9; transverse diameter, 1.0. Stomachs of fishes.
- N. acuta*. (CONRAD, Mar. Conchol. pl. 6, fig. 2.) Shell very small, ovate-elongate, convex, with numerous concentric striæ. Beaks behind the centre pit, very small. Width, 0.2. This was found in so very recent a fossil deposit, as to induce Mr. Conrad to suppose that it may still be found on the coast, but overlooked on account of its size. *Virginia*.

FAMILY MYTILIDÆ.

ANIMAL oval, moderately thick, with its mantle open throughout its lower portion and adhering towards its edges; a separate opening behind for the excrements, forming very rarely a tube. Foot tongue-shaped, channelled, and with a byssus behind. With a very few exceptions, marine. *SHELL* usually with an epidermis, equivalve, very inequilateral. Hinge without teeth; ligament linear, marginal, partly included: posterior muscular impression very small; the anterior large.

GENUS MYTILUS. *Linnaeus*.

Animal with the lobes of the mantle fringed about the opening of the vent. Mouth moderately large, with two pair of soft triangular labial appendages. Foot slender, cylindrical, with a silky byssus at its base and posteriorly. *Shell* longitudinal, subtriangular; apex acute, pointed at base, and fixed by a byssus. Beaks terminal, pointed, nearly straight. Hinge lateral, usually without teeth; ligament marginal, deeply seated, rectilinear, partly internal. Muscular impressions elongated, club-shaped; the anterior largest: palleal impression entire.

Obs. The species of this and the following genus are popularly known under the name of *Mussels*.

MYTILUS PELLUCIDUS.

PLATE XXIV. FIG. 256.

- Mytilus pellucidus*. PENNANT, Br. Zool. Vol. 4, p. 237, pl. 66, fig. 3.
M. id. TURTON, Conchol. Brit. Ins. p. 197, pl. 15, figs. 1 and 2.
M. edulis, var. *pellucidus*. GOULD, Invertebra's of Mass. p. 122.

Description. Shell oblong, convex, pellucid, smooth, with very minute concentric wrinkles; anterior margin in young specimens nearly straight, more curved with age. Beaks small, approximated, scarcely terminal, occasionally with two or three teeth, but these are more often wanting: posterior margin produced and more or less angulated.

Color. Light horn-color or yellowish, but more usually dark horn, with vertical blue radiations, most conspicuous when held against the light; as the animal increases in size, these radiations become more numerous. Within a rich ultramarine blue, particularly towards the margins.

Length, 0·4 – 1·2. Width across the beaks, 0·6 – 2·1.

In very young specimens, the surface of the valves is furnished with scattering hairs, and the basal margin is lineated. As the genera *Mytilus* and *Modiola* now stand, it is doubtful in many specimens to assign its true position.

(EXTRA-LIMITAL.)

- M. incurvatus*, Lam. Shell oval, thick, opaque, tumid, much incurved on the anterior side: beaks divaricate, with two or three teeth only under them. *Color*, bluish grey. Length, 1·4. An var. *M. borealis*? Northern shores of Europe and America.
- M. unguilatus*, Linn. Shell oblong, ventricose, roughened with transverse plaits, curved on the anterior side, and the summits conical and diverging: hinge with from three to five minute teeth. *Color*: epidermis blackish or purple; in the young, the epidermis green, and occasionally with reddish zigzag lines. Length, 4·0 – 5·0; width, 2·0 – 2·4. Coast of Europe and America.
- M. cubitus*. (SAY, Ac. Sc. Vol. 2, p. 263.) Shell oblong, striated, with elevated subglabrous lines which are smaller on the anterior side: anterior edge linear or slightly concave; posterior edge ascending from the base in a right line to a prominent posterior angle, which is rather behind the middle of the shell, from which it descends by a concave line to the obliquely and very obtusely rounded tip. *Color*, yellowish, polished, and somewhat fasciated with green or brownish, disappearing on the anterior margin. Length, 1·2; breadth, 0·5. Seacoast.
- M. lateralis*. (Id. Ib. p. 264.) Shell transversely oval, inflated, subpellucid, with numerous concentric wrinkles: anterior and posterior margins longitudinally ribbed, and crenating the basal margin; intermediate area without longitudinal lines: the most prominent part of the shell extending from the beak to the tip of the anterior margin, and bounded on its posterior side by an indented line. *Color*: epidermis pale brown. Length, 0·3; breadth, 0·5. Southern coast.
- M. hamatus*. (Id. Ac. Sc. Vol. 2, p. 264; Am. Conch. pl. 50. *M. striatus*, BARNES, Am. Jour. Vol. 6, p. 364.) Shell very much contracted and incurved at the base, which is acute. Valve

MODIOLA MODIOLUS.

PLATE XXIV. FIG. 257.

(STATE COLLECTION.)

- Mytilus modiolus*. LINN. Syst. Nat. 1158.
Modiola papuana. LAM. An. sans vert. Vol. 3, p. 11, Ed. Brux.
M. id. SAY, Am. Conch. pl. 45. TURTON, Conch. Ins. Brit. pl. 15, fig. 3 (Young).
M. modiolus. GOULD, Invertebrata of Mass. p. 123.

Description. Shell large, coarse and solid, oblong, obliquely dilated. Beaks tumid, obtusely angulated, placed on one side, and nearly approaching the anterior margin. Basal margin concave, with a fissure for the byssus. Surface coarsely marked with deep incremental lines; the groove for the ligament deep and elongated.

Color. Epidermis thick and folded within the margins, dark violaceous approaching to black, occasionally chesnut brown; lighter along the ridge from the beaks; within, pearly.

Longest axis, 4·5 – 6·0; shortest, 2·5 – 3·0.

This species occurs in deep water along the whole coast, and is usually found after heavy storms. It is subject to many variations in form, which have given rise, according to Dr. Gould, to several nominal species, such as *M. umbilicatus*, *barbatus*, and *gibbsii*. The true *M. papuana*, with which this has been confounded, as its name would seem to imply, is an East-Indian shell: the animal is dark orange or reddish.

(EXTRA-LIMITAL.)

- M. pectinula*. (GOULD, Invertebrata of Mass. p. 127, fig. 85.) Shell obovate, ventricose, with about forty equal radiating ribs; beaks prominent, projecting as far as the anterior margin; entire margin crenulated by the ribs. *Color*: epidermis brownish yellow. Longest diameter, 0·7; shortest, 0·3. *St. George's Bank*.
- M. nexa*. (Id. Ib. fig. 86.) Shell ovate: beaks prominent, and placed considerably behind the anterior extremity, minutely reticulated with fine corrugated concentric and radiating lines; front of the beaks radiated. *Color*: epidermis rusty brown with shades of olive, glossy. Length, 0·7; shortest axis, 0·4. *Provincetown, Mass.*
- M. discrepans*, Montagu. (GOULD, Ib. p. 129, fig. 83.) Shell suboval, broadest behind: beaks nearly terminal; hinder extremity somewhat lobed. Surface divided into three compartments, of which the anterior is marked by about eight, and the posterior by numerous radiating lines. *Color*: epidermis olive-green. Length, 1·0; breadth, 0·4. Stomachs of fishes. *Coast of Massachusetts.*
- M. discors*, Montagu. (GOULD, Ib. p. 130, fig. 84.) Shell oval, tumid: upper edge somewhat compressed and arching; posterior tip somewhat produced and pointed. Beaks large, nearly terminal: surface with about sixteen ribs at the anterior third, and very numerous ones at the posterior third; three or four teeth before the beaks. *Color*: epidermis greenish yellow, with clouds of olive. Length, 1·5; height, 0·3. Adhering to seaweed. *Coast of Massachusetts.*

(EXTRA-LIMITAL)

Genus PINNA, *Linneus*. *Shell* longitudinal, wedge-shaped, equivalve, gaping at the base and pointed at the summit, with the beaks straight and acute: hinge lateral and without teeth; ligament marginal, linear, very long and half interior. *Animal* with its foot tongue-shaped, conic, and bearing an ample byssus.

P. seminuda. (LAM. AN. sans vert. Vol. 3, p. 27.) *Shell* with the apex very broad, obliquely truncated, with longitudinal scaly furrows; posterior side smooth. *Color*, reddish grey. *Southern Coast*.

P. muricata. (Id. Ib. p. 23.) *Shell* moderately large, thin, pellucid, subtruncate, with a few muricated longitudinal furrows. Scales small, erect, subacute. Allied to the preceding. *Southern Coast*.

FAMILY UNIONIDÆ.

ANIMAL with the mantle entirely open beneath, with a particular opening for the vent; beneath this, an incomplete tube for respiration, furnished with tentacular papillæ. Foot very large and thick; without a byssus. Inhabiting fresh water. SHELL free, with an epidermis, equivalve, inequilateral, transverse. Hinge variable, sometimes furnished with an irregular simple or divided cardinal tooth, and a longitudinal one, which extends under the corslet; sometimes irregular granular tubercles in the place of teeth: in some species, entirely wanting. The posterior muscular impression subdivided.

Obs. This family corresponds with the *Naiades* of Lamarck, and to a portion of the family *Submytilacés* of Blainville. It is a well characterized family, which is more than can be said of the genera into which it has been attempted to be subdivided, or many of the species. The form and number of the teeth are so variable, and run into each other by such insensible gradations until they become obsolete, that it has been doubted whether they may not all be reduced to one genus. North America is particularly rich in species. In the latest edition of Lamarck, out of one hundred species, fifty-four* are attributed to the United States; but this gives but a faint idea of the actual number described by American Conchologists. Say alone has described fifty-eight; Conrad has enumerated one hundred and sixteen; and Lea has carried the number beyond two hundred and fifty, most of which have been beautifully figured. There is so much discrepancy of opinion among these writers in relation to the species, and such a variety of forms requiring careful examination, that for fear of adding to the confusion, contrary to the plan hitherto pursued, I shall not cite under this family the extra-limital species.

* Many of these descriptions must have been drawn up from badly characterized specimens; for, in one instance alone, according to Mr. Lea, eight of Lamarck's species are purely nominal, and refer to one and the same species.

UNIO BOYDIANUS.

(STATE COLLECTION.)

Unio boydianus. LEA, Trans. Am. Phil. Society, Vol. 8, p. 216, pl. 16, fig. 32.

Description. Shell obovate, rather inflated, very inequilateral, subangulate before, with regular rather close and nearly equidistant marks of growth. Substance of the shell rather thin, thicker before. Beaks rather prominent, with small undulations at the tip: ligament rather short and thin. Epidermis yellowish brown, striate. Cardinal teeth compressed, double in both valves; lateral teeth long and nearly straight. Anterior cicatrices distinct; posterior cicatrices confluent; dorsal cicatrices on the under side of the cardinal tooth. Cavity of the shell deep and rounded; cavity of the beaks shallow and subangular. Nacre white and iridescent. Length, 1.2. Breadth, 1.9. Diameter, 0.8.

Such is the description by Mr. Lea of a species which is found in Oak-orchard creek, Orleans county. Dr. Boyd presented me with the same shells from that locality, and I then considered them as probably a variety of *U. ochraceus*, Say; to which, as Mr. Lea remarks, they are most nearly allied. My specimens were all radiated more or less distinctly behind.

UNIO RADIATUS.

PLATE XVIII. FIG. 236.

(STATE COLLECTION.)

<i>Mya radiata</i> .	GMEL. Syst. Nat. 3220.
<i>Unio id.</i>	LAM. An. sans vert. Vol. 2, p. 668.
<i>Unio radiatus</i> .	BARNES, Am. Journ. Sciences, Vol. 6, p. 265. HILDBETH, Id. Vol. 14.
<i>Margarita (Unio) id.</i>	LEA, Am. Phil. Tr. Vol. 3, p. 415; Vol. 6, p. 127, pl. 15, fig. 48, 49.
<i>U. id.</i>	CONRAD, Monog. pl. 10, fig. 2. RUSSEL. Ess. Jour. Vol. 1, p. 60.
<i>U. id.</i>	GOULD, Invertebrata of Mass. p. 110, fig. 73.

Description. Shell varying from fragile to robust, oblong-ovate. Anterior margin narrowed, regularly rounded; posterior broadest and angulated on its surface, rounded on its margin. Beaks near the front of the shell, slightly elevated. Hinge-margin elevated, subcompressed. Cardinal teeth erect, triangular, bifid, crenulate.

Color. Epidermis light green or olive, with numerous darker green concentric zones, and lighter colored radiations from the beaks to every part of the margin; within bluish white, occasionally very iridescent.

Transverse diameter, 1.0 - 3.0; vertical ditto, 0.3 - 1.6.

This is also a common species, occurring everywhere through the Northern and Middle States. Those communicated to me from Massachusetts, appear to be more robust and somewhat more elongated than those procured in this State. It may be necessary to state, that many of the plates of this and the succeeding genera were drawn reversed, an error which was not discovered until the impressions were all printed off: with a knowledge of this fact, the reader will not be misled in studying the species.

Lamarck received his specimens from the Susquehannah and Mohawk rivers; Mr. Barnes, from Wisconsin river and Lake Erie. My specimens were procured from Sandy creek in Orleans county, Wolcott creek and Port bay on Lake Ontario, and from the Little falls and Lake Champlain. It approaches *U. tappanianus*, but is not as much alated, is a more solid shell, and is evidently distinguished from that shell by the teeth.

UNIO COMPRESSUS.

PLATE XXI. FIG. 245.

(STATE COLLECTION.)

Symphonota compressa. LEA, Trans. Phil. Vol. 3, p. 450, pl. 12, fig. 22.*Margarita (Unio) compressa*. ID. Ib. Vol. 6, p. 121.*Unio compressus*. CONRAD, Fr. Wat. Shells, p. 68. ADAMS, Am. Jour. Vol. 40, p. 276.

Description. Shell flattened, moderately thin, compressed, subtriangular; beaks with double concentric undulations: ligament concealed within the valves. Hinge-margin nearly straight, subangular, on the posterior margin. The posterior cardinal tooth in one valve highest, curved, and passing into the lamellar tooth, which is narrowly channelled throughout; the central one often dentate: a single broad cardinal tooth in the other valve; the lateral tooth simple, with two rudimentary teeth parallel with it near its termination.

Color. Olive brown or greenish, which increases in intensity towards the beaks, with occasionally faint radiations with bluish white; salmon-colored towards the cavities of the beaks.

Vertical axis, 1.1 – 1.7; transverse ditto, 1.7 – 2.8.

Through the kindness of the late Dr. Boyd, I have received specimens of this species from Sandy creek in Jefferson county, and Oak-orchard creek in Orleans county. It occurs near Middlebury, Vermont.

UNIO NASUTUS.

PLATE XX. FIG. 239.

(STATE COLLECTION.)

Unio nasutus. SAY, Nich. Ency. Vol. 4, pl. 4, fig. 1.*U. rostratus*. VAL. Humboldt & Bonpland, Rec. de Zoologie, Vol. 2, p. 233, pl. 53, fig. 3.*U. nasutus*. BARNES, American Jour. Science, Vol. 6, p. 273.*U. id.* CONRAD, Monog. pl. 18, fig. 1. RUSSEL, Essex Jour. Vol. 1, p. 60.*U. id.* LEA, Synopsis, etc., p. 132. GOULD, Invertebrata of Mass. p. 109, fig. 71.

Description. Shell oblong-lanceolate and somewhat produced or rostrated at one extremity, regularly rounded at the other. Valves thin in running streams, more stout and solid in the lakes. Beaks small and little elevated, with a few corrugations. An elevated ridge runs from the beaks to the rostrated extremity, and above this the valves are much depressed, with a few broad radiating furrows on the surface. Lower margin regularly rounded, until it ap-

UNIO OCHRACEUS.

PLATE XIX. FIGS. 237, 238.

(STATE COLLECTION.)

Unio ochraceus. SAY, Nich. Encyl. Vol. 4, pl. 2, fig. 8.*Symphonota ochracea*, and *Margarita id.* LEA, Am. Phil. Tr. Vol. 3, p. 69; Vol. 6, p. 126, pl. 15, fig. 44.*U. ochraceus*. CONRAD, Monog. Unionidæ, pl. 17, fig. 2. GOULD, Inv. Mass. p. 112, fig. 74.

Description. Shell thin, translucent, subovate, ventricose: valves smooth. Hinge-margin nearly straight, angulated at each end. Beaks elevated and approximated, directed forwards, with a few concentric undulations. A rib, strongly impressed within, passes obliquely from the beaks to the posterior margin, enclosing a depressed area with the margins carinated; this rib gives a subangulated appearance to the posterior margin: the other extremity rounded, gaping. Cardinal teeth very oblique and much compressed, striated, and nearly parallel with the hinge-margin; lateral teeth short.

Color. Epidermis varying from pale reddish to yellow olive and green, with colored radiations and dusky concentric bands; within bluish tinged with red, occasionally uniform rose-red, and often of a beautiful scarlet or salmon-color.

Vertical axis, 1·0 – 2·0; transverse ditto, 1·8 – 2·8.

Fig. 237 is from the Mohawk river. The variety fig. 238, from Second river near Belleville, is introduced for its brilliant interior, and is more solid than any specimens which have come under my notice.

UNIO CARIOSUS.

PLATE XXI. FIGS. 243, and 244 (VARIETY).

Unio cariosus. SAY, Nich. Ency. Vol. 4, pl. 3, fig. 2. BARNES, Am. Jour. Vol. 6, p. 271.*U. cariosa*. LAMARCK, An. sans vert. Vol. 3, p. 671, Ed. Brux.*U. ovata*. VAL. Obs. de Zool. Vol. 2, p. 226, pl. 50, fig. 1.*Margarita (Unio) cariosa*. LEA, Trans. Am. Phil. Soc. Vol. 6, p. 126, pl. 15, fig. 45.*Unio cariosa*. CONRAD, Unionidæ, p. 40, pl. 19 (*crassus*, SAY). CONRAD, Fr. Wat. Sh. p. 63.*U. id.* GOULD, Invertebrata of Massachusetts, p. 111, fig. 72.

Description. Shell ovate, inflated, moderately thin. Beaks somewhat prominent, much eroded, with a prominent ridge passing from the beaks to the posterior margin. Teeth oblique: cardinal teeth broad, oblique and compressed. Cavity of the beaks moderate. Surface occasionally verrucose.

Color. Epidermis olive brown or greenish, commonly with a few distant deep green narrow radiations, most conspicuous on the posterior portion; the decorticated beaks wax-yellow or opaque white: within, bluish white, rose-red, and even salmon-color.

Vertical axis, 2·0 – 2·5; transverse ditto, 3·5 – 4·0.

This fine shell is found of extraordinary size and beauty in the River Passaic, near Belleville. Those from the Hudson are usually smaller and less solid than the Jersey specimens.

This shell was presented to me by Dr. Budd, who obtained it from Dr. Newcomb, by whom it was detected in the northern canal near Troy. Mr. Lea's specimens were from the Juniata, and from the Schuylkill near Philadelphia. Its northern geographical limits are consequently much extended. In the specimens before me, the double cardinal teeth become united into one in the larger individuals.

UNIO ALATUS.

- Unio alatus*. SAY, Nich. Encyclopedia, Vol. 4, pl. 4, fig. 2.
U. id. BARNES, American Journ. Science, Vol. 6, p. 260.
U. id. ADAMS, American Journal of Science, Vol. 40, p. 276.

Description. Shell large, varying from moderately thick to very thin and fragile, subtriangular, generally gaping at the posterior part of the base, fuscous, wrinkled. Beaks not prominent, placed very much on one side, and decorticated: base nearly straight. Hinge-margin very oblique, rising near the termination of the cartilage into an alated projection, and forming almost a right angle with the inferior slope, which is nearly equal in length; often with numerous tubercles within, which upon the gaping extremities are confluent: cicatrices very rough. Teeth crenate; the outer laminated one obsolete, only one in each valve being perceptible.

Color. Epidermis brownish; within purple red.

Length, 3·8. Transverse diameter, 5·5.

This large and well characterized species was observed by Mr. Lesueur in Lake Erie. It occurs also in Lake Champlain; and Dr. Newcomb has obtained very fine specimens from the Northern canal, near Waterford.

UNIO RECTUS.

- Unio recta*. LAM. AN. sans vert. Vol. 3, p. 669.
U. prolongus. BARNES, Amer. Jour. Sc. Vol. 6, p. 261, pl. 13, fig. 11.
U. rectus. LEA, Tr. Am. Phil. Soc. Vol. 5, p. 26. ADAMS, Am. Journal Sc. Vol. 41, p. 276.

Description. Shell thick, elongated, narrow, tumid, somewhat pointed in front, obtusely rounded behind. Beaks little elevated: basal margin slightly compressed, and in old specimens arched; lateral tooth long and thin.

Color. Epidermis blackish brown; in young specimens, with yellowish radiations.

Vertical axis, 2·5 – 2·7; transverse ditto, 5·5 – 6·5.

This species is found in Lake Champlain.

elevated, compressed, carinate: posterior hinge-margin abruptly depressed, with numerous obtuse oblique wrinkles near it; the ridge from the beaks to the posterior margin distinct. Teeth (one in each valve) compressed, slightly elevated, and terminating abruptly behind, sometimes scarcely apparent. Surface with numerous concentric wrinkles behind.

Color. Epidermis olive-green, with numerous darker green interrupted radiations; within, bluish white, with a tinge of buff in the centre.

Vertical axis, 1·0; transverse ditto, 2·0.

This species assumes great variety in shape and coloring, and is supposed by Mr. Lea to be the same shell from the Western States, described by Mr. Say under the name of *A. truncata*. It is found in various parts of this State.

ALASMODON ARCUATA.

PLATE XIV. FIG. 234.

(STATE COLLECTION.)

Alasmodonta arcuata. BARNES, Am. Journ. Sc. Vol. 6, p. 277, pl. 12, figs. 20 and 21.

Margaritana margaritifera. LEA, Trans. Am. Phil. Soc. Vol. 6, p. 136.

Alasmodon arcuata. ADAMS, Am. Journ. Sc. Vol. 40. GOULD, Invertebrata, p. 114, fig. 75.

Description. Shell thick and strong, subcylindrical, bent, or obscurely kidney-shaped. Hinge-margin elevated, compressed, carinate. Anterior slope declivous, terminating in a narrow somewhat pointed anterior margin. Beaks slightly elevated, very far on one side, often much eroded: hinge-margin and basal margin usually parallel; the latter (in old specimens) much arcuated. Teeth in one valve double, erect, strong, one of them deeply grooved so as to form a slight denticulation on its edge; in the other valve, the tooth is single, long, grooved, and with a pit on each side: a slightly elevated fold in the place of lateral teeth.

Color. Epidermis brownish black, loosely wrinkled towards the margins; in young specimens, smooth: within bluish white, iridescent; margin greenish.

Vertical axis, 2·0 – 2·6; transverse ditto, 4·0 – 5·5.

This is one of the largest and most common of our *Unios*. Mr. Lea has thought proper to consider it as identical with the *Mya margaritifera* of Europe; but as Dr. Gould has shown, that shell is shorter, the beaks more central and elevated, and the interior minutely granulated. My specimens were from Rockland county, Champlain, Oneida, and many other localities.

GENUS ANODON. *Bruguières.*

Animal as in the two preceding genera. *Shell* generally thin; hinge toothless; all the other characters of the two preceding genera.

ANODON UNADILLA.

PLATE XV. FIG. 238.

(CABINET OF DR. BUDD.)

Description of the adult shell, solid, concentrically rugose, (more particularly on the posterior portion), transversely subelliptical, kidney-shaped, inflated, inequilateral. Beaks large, elevated, contiguous, very prominent, anterior to the centre of the shell: greatest diameter near the centre of the shell. Hinge-margin slightly arched, nearly straight: upper posterior margin sloping to the regularly rounded posterior margin; basal margin widely arcuated and compressed on the side; anterior margin broadly and regularly rounded. Within, the cavity is capacious; in the beaks, deep and wide, with a crescent-shaped deep cicatrix far within: palleal impression very distinct. Anterior cicatrices confluent; posterior distinct, the upper very small, and placed immediately under the end of the hinge-ligament; dorsal cicatrices five, very conspicuous, small, and arranged in a regular series anterior to the cavity of the beak.

Color. Epidermis dark brown, passing into dark olive green on the basal margin; beaks yellowish brown: within, salmon-color, brightest within the limits of the palleal impression; margin bluish white.

Vertical axis, 2.0; transverse ditto, 3.5. Diameter, 1.5.

This species is an exception to the old generic character, as it is remarkably stout and solid. It was obtained by Dr. C. H. Stillman, from Unadilla river, Otsego county, a tributary of the Susquehannah. In its general outline it resembles *A. cylindracea* of Lea, but is at once distinguished by its solidity and greater inflation, and the situation and prominence of its beaks; the palleal impression, in our specimens, may be traced through the posterior cicatrices. In the smaller specimens, the beaks are distinctly undulated; the epidermis is darker, and the nacre is of a deeper salmon-color: the palleal impression in all may be traced through the posterior muscular impressions.

ANODON EDENTULA.

PLATE XVI. FIG. 231.

(STATE COLLECTION.)

Alasmodonta edentu'a. SAY, according to Lea.
Margarita (Anodonta) id. LEA, Trans. Am. Phil. Soc. Vol. 6, p. 136.
Anodonta areolata. SWAINSON, Zool. Illustrations, 2d series, pl. 1.

Description. Shell moderately thin, inequilateral, subcompressed, regularly rounded at one extremity and subangular at the other: dorsal margin nearly straight. Beaks prominent, contiguous, often decorticated, strongly rugose. Basal margin not regularly rounded: a slightly emarginate prominence supplying the place of a tooth in one valve.

Color. Epidermis light brown, with indistinct traces of radiation: within, salmon-color near the beaks; bluish white and faintly iridescent towards the margins.

Vertical axis, 1.0; transverse ditto, 1.7. Diameter, 0.7.

I am scarcely satisfied with the propriety of separating this from *Alasmodon*, and unfortunately I have but one specimen, obtained from Lake Onondaga. Mr. Say's description I have not met with.

ANODON PLANA.

PLATE XVII. FIG. 232.

(STATE COLLECTION.)

Anodonta plana. LEA, Trans. Am. Phil. Soc. Vol. 5, p. 48, pl. 7, fig. 18.

Description. Shell large, solid, inequilateral, inflated, elliptical, produced and attenuated in front: ligament external, elevated. Beaks large and prominent, often eroded. Surface concentrically rugose, almost scaly on the smaller end: cavity within large and deep. Cicatrices distinct.

Color. Epidermis dark brown, occasionally light green: within bluish white and purple, iridescent; often a light salmon-colored tinge in the centre.

Vertical axis, 2.7; transverse ditto, 4.5. Diameter, 1.7.

The specimens which furnished this description came from Port bay, Lake Ontario. Through the attention of Mr. I. Cozzens, I have examined forty or fifty specimens of this species from Ohio; these are generally much larger, more inflated, with thicker valves, and the alation more conspicuous. I should be disposed to consider our New-York specimens as very strongly marked varieties of this species.

Color. Epidermis greenish yellow in the adults; green in the young, which are also very faintly rayed: within silvery or salmon-colored; in some specimens, reddish.

Vertical axis, 2·0; transverse ditto, 4·0. Diameter, 1·0.

This shell appears to be common in various parts of this State and the adjoining States. If it be, as Dr. Gould suggests, the *A. newtoniensis* of Lea, it has a wide southern range. Say remarks, on *implicata*, that it is more cylindrically convex than any he ever met with.

ANODON FLUVIATILIS.

PLATE XVIII. FIG. 234.

Mytilus fluviatilis. DILLWYN, Catalogue, Vol. 1.

Anodonta cataracta. SAY, Nich. Ency. Vol. 4, pl. 3, fig. 4. RUSSEL, Essex Jour. Vol. 1, p. 60.

Anodonta fluviatilis. LEA, Trans. Am. Phil. Soc. Vol. 6, p. 133.

A. cataracta. ADAMS, Am. Jour. Sciences, Vol. 40, p. 276.

A. fluviatilis. GOULD, Invertebrata of Mass. p. 117, fig. 80.

Description. Shell thin, fragile, inequilateral, oblong, inflated; its greatest vertical axis is from the posterior end of the ligament. Beaks at the anterior third of the shell, prominent, swelling, often undulated at the tip. Basal margin slightly gaping: an indistinct ridge or double fold extends from the beaks to the posterior margin. The hinge-margin, at its posterior portion, compressed, and raised into a thin crest. Surface with concentric striæ, which become almost scaly folds behind.

Color. Epidermis light green or olive, with a few short indistinct radiations; beaks horn-color: interior bluish white, iridescent.

Vertical axis, 2·5; transverse ditto, 4·5. Diameter, 1·5.

This species is common in almost all our mill-ponds and sluggish streams.

ANODON PAVONIA.

PLATE XL. FIG. 358.

(STATE COLLECTION.)

Anodonta pavonia. LEA, Tr. Am. Phil. Soc. Vol. 6, p. 21, fig. 65.

Description. Shell moderately thin, inflated, transversely oblong, regularly rounded in front, subacutely rounded behind: umbones large. Beak distinct, flattened above, undulated, incurved, contiguous, with a slight pit in front; basal margin regularly rounded. Surface smooth and polished, with slight concentric furrows of growth; within, with faint radiating striæ.

Color. Light grass-green, with darker green waving radiating striæ on every part of the shell; beaks uniform olive brown: within bluish white, iridescent.

Vertical axis, 1·8; transverse ditto, 3·2. Diameter, 1·2.

The characters of this large and beautiful species, first described and named by Mr. Lea, appear to apply exactly to specimens derived from Onondaga lake, and for which I am indebted to Dr. Sartwell.

A small triangular tooth in the left valve, with a long grooved and oblique one along the margin; in the other valve, a long oblique tooth, occupying the pit between the teeth of the left valve, and a smaller one near or upon the ligament.

Color, white, under a thick blackish brown epidermis.

Vertical axis, 1.0; transverse ditto, 1.1. Diameter, 0.8.

This occurs along all the shores of Long island, and even extends to the Arctic seas.

I suspect that Mr. Say had this species before him when he described his *Venericardia cribraria*, which may be found on the cover of No. 5 of his *Conchology*, with the following characters: "Longitudinally ovate, orbicular, with twenty slightly elevated ribs, more distant from each other than their width, decussated by concentric almost equally elevated lines. Length, 1.2; breadth, 1.1. *New-Jersey*."

(EXTRA-LIMITAL)

C. incrassata. (CONRAD, loc. cit. p. 39, pl. 8, fig. 2.) Shell oblong, oblique: ribs about eighteen, crenulated anteriorly. *Color*, light yellow, with fulvous or brown spots. *Florida*.

C. tridentata. (SAY, Am. Conch. pl. 40, fig. 1-5. VENERICARDIA *id.* Ac. Sc. Vol. 5, p. 216.) Shell suborbicular, subequilateral, thick and ponderous, with about eighteen convex ribs, cancellate; obsolete on the umbo and anterior side. Inner margin deeply crenate: hinge with two diverging teeth in valve, one separated by a large cavity; on the other, a large prominent recurved tooth closing into the cavity. Length, 0.25. *South-Carolina*.

GENUS CARDIUM. *Linnaeus*.

Shell more or less heart-shaped: beaks prominent; margin generally toothed or folded within; hinge with two oblique cardinal and two lateral teeth in each valve; pallial impression without a sinus.

CARDIUM PINNATULUM.

PLATE XXII. FIG. 240.

(STATE COLLECTION.)

Cardium pinnatulum. CONRAD, Jour. Ac. Sciences, Vol. 6, p. 260, pl. 11, fig. 8.
C. id. GOULD, Invertebrata of Massachusetts, p. 90, fig. 57.

Description. Shell small, thin and fragile, nearly orbicular. Ribs about twenty-six, flattened, but becoming convex towards the base, with a series of equidistant scales almost assuming behind the appearance of spines: beaks slightly elevated, often decorticated, inclining inwards.

Color. Dingy white without; within dull white.

Length, 0.45. Width, 0.5. Diameter, 0.3.

A small shell, found, but not common, only along the shores of Long island sound.

CARDIUM MORTONI.

PLATE XXIII. FIG 231.

(STATE COLLECTION.)

Cardium mortoni. CONRAD, Jour. Acad Nat. Sc. Vol. 6, p. 259, pl. 11, figs. 5, 6, 7.
C. id. GOULD, Invertebrata of Mass. p. 91.

Description. Shell small, thin, inflated, globular, slightly oblique. Surface smooth and destitute of ribs or rays: posterior side somewhat obliquely extended; margin entire, or obsoletely serrated; beaks large, tumid, subcentral, contiguous.

Color. Epidermis scanty, dingy-white; beneath which it is yellowish, the beaks yellow: an oblong dark purple spot on the posterior side. Interior with faint radiating striæ: the cavity bright sulphur yellow; margins white.

Length and breadth, 0.5 – 0.9. Diameter, 0.3 – 0.6.

This is a very common shell along the shores of Long island sound. It is closely allied to the *C. lævigatum* of the Antilles, according to Dr. Gould, but wants the purple blotch on th posterior margin, and is more smooth and polished on its surface.

(EXTRA-LIMITAL)

- C. fasciatum.* (MONTAGU, Suppl. 30, pl. 27, fig. 6.) Shell ovate-rotund, pellucid. Valves with about 27 longitudinal ribs, and a few distant elevated striæ, which are often obsolete towards the hinge. *Color*, whitish, with transverse interrupted brown bands, which appear, especially within, like series of oblong spots. Length, 0.25; width, 0.4. *Common to both Continents.*
- C. muricatum.* (LIN. p. 1123. LAM. Vol 3, p. 626.) Shell ovate, heart-shaped. Valves with 36 ribs, of which 12 have their spines directed in an opposite direction to the others; marginal serratures largest on the anterior edge. *Color*, greyish or yellowish white, edged with orange-yellow or scarlet on the anterior side, and sometimes stained with red. Length, 1.5; width, 1.4; diameter, 1.0. *South Carolina, Florida.*
- C. ventricosum,* Brug. (LAM. Vol 3, p. 627.) Shell ventricose, almost heart-shaped. 33 – 34 ribs, of which seven at the anterior end are flattened and somewhat imbricated, and a few at the posterior end are without the scaly striæ which cross the others; one edge of the middle ribs is more rounded than the other, and they all form crenatures on the margin of the shell. *Color*, rusty spotted, and irregularly banded transversely with brown. Length, 2.2 – 4.5; width, 2.0 – 4.0; diameter, 1.7 – 3.5. *South Carolina.*

TELLINA TENERA.

PLATE XXVI. FIG. 271.

(STATE COLLECTION.)

Tellina tenera. SAY, Journ. Acad. Nat. Sciences, Vol. 2, p. 303.
T. id. GOULD, Invertebrata of Mass. p. 69, fig. 44.

Description. Shell very thin and fragile, pellucid, compressed, transversely oblong, suboval. Surface with delicate concentric wrinkles, caused by the lines of growth. Beaks placed slightly anteriorly: marginal folds distinct; basal margin slightly arcuated. The anterior cardinal tooth in the left valve largest; the other often indistinct; the chief tooth in each valve grooved: lateral tooth on the longest side distinct; the others very indistinct.

Color. White, iridescent, occasionally with a pinkish or rosaceous hue.

Vertical axis, 0·35; transverse ditto, 0·55. Diameter, 0·1.

This beautiful little shell occurs on our coast, from the shores of New-Jersey northwardly. On the coast of Massachusetts, it is very common.

TELLINA VERSICOLOR.

PLATE XXVI. FIG. 172.

T. versicolor. COZZENS, Jay's Catalogue of Shells, Ed. alt. p. 15.

Description. Shell transverse, compressed, inequilateral, equivalve, slightly gaping at its subacute extremity. Incremental striæ evident, but not laminae, and no radiating striæ: the posterior end subangular, with an indistinct fold; anterior extremity dilated and rounded. Cardinal teeth two in the right valve; the posterior more robust, simple: in the left valve, rudimentary or inconspicuous.

Color. Polished, opalescent, white, with a distinct purple and bluish iridescence, often strongly radiated, enlarging towards the margins.

Vertical axis, 0·4; transverse ditto, 0·65. Diameter, 0·2.

This shell, which is of extreme beauty, and often very brilliant, was first detected by Mr. I. Cozzens on the shores of the Hudson at Glass-house point, a few miles above the city. In its comparative proportions, teeth and color, it varies distinctly from *T. sordida*, with which it is otherwise allied. It resembles very much the description of *T. iris*, except in wanting the oblique striæ; but I have had no opportunity of making a direct comparison of the shells.

- T. interstriata.* (Id. Ib. Vol. 5, p. 218.) Subovate, angulated at the anterior base, transversely wrinkled and slightly striated within longitudinally: hinge teeth very small; no lateral teeth. *Color*, white, immaculate. Length, 1.6; breadth, 2.1. *East-Florida.*
- T. alternata.* (Id. Ib. Vol. 2, p. 275.) Shell compressed, oblong, narrow and angulated before: numerous impressed concentric lines, alternately obsolete, on the anterior margin. Within, a callous line passes from behind the hinge to the inner margin of the anterior cicatrix. Anterior hinge-tooth emarginate; posterior lamellar tooth near the cardinal, so as to appear like a primary tooth; that of the right valve wanting: anterior lamellar tooth at the extremity of the ligament. Anterior hinge-slope declining in a concave line to an obliquely truncated tip. *Color*, white, tinged with yellow within. Length, 1.25; width, 2.2. *Georgia and East-Florida.*
- T. decora.* (Id. Ib. Vol. 5, p. 219.) Transversely subovate, not much compressed, with numerous minute concentric wrinkles and regular equidistant lines crossing them: no oblique lines on the anterior margin. Posterior lateral tooth of the left valve prominent; the others obsolete: apex a little before the middle. *Color*, rosaceous or white, with rosaceous radiations. Length, 8.5; breadth, 0.8. *East-Florida.*
- T. mera.* (Id. Am. Conch.)

GENUS DONAX. *Linnaeus.*

Animal with large labial appendages: mouth small. Foot compressed, trenchant, angular. Tubes or siphons elongated, slender and separate, entering into a fold of the mantle. *Shell* transverse, equivalve, inequilateral, trigonal: two primary teeth in one or both valves, and one or two lateral teeth more or less apart. Ligament short, external.

DONAX FOSSOR.

PLATE XXIII. FIG. 255.

(STATE COLLECTION.)

Donax fossor. SAY, Jour. Acad. Nat. Sciences, Vol. 2, p. 306.

Description. Shell subtriangular; anterior margin short and rounded. Posterior hinge-slope straight; the base very slightly prominent beyond a regular curve at the middle. Surface striated with numerous equal parallel lines, not visible to the naked eye, and obsolete on the posterior margin; the basal margin crenate within.

Color. Pale livid, with two longitudinal rays both within and without.

Length, 0.43; width, 0.5.

This pretty little shell, which is moderately abundant at the south, is not uncommon on our coast, but does not seem to extend northwardly. It buries itself in the sand, and affords a supply of food to birds and fishes.

This is a very common shell along our shores, and appears to exist from Maine to Florida. It affords a plentiful supply of food to the numerous wild fowl which visit the shores of Long island. There appears to be several varieties in the colors and marking. The young are very small and thin; the teeth not developed, polished white; others are larger, roundish, and of a delicate pink within and without: there are still others larger and proportionally wider, tinged with red or brown when decorticated.

SANGUINOLARIA SORDIDA.

PLATE XXXII. FIG. 305.

(STATE COLLECTION.)

Tellina sordida. COUTHOUY, Bost. Jour. Nat. Hist. Vol. 2, p. 59, pl. 3, fig. 11.
S. sordida. GOULD, Invertebrata of Mass. p. 67.

Description. Shell thin and fragile, inequilateral, obscurely triangular, slightly gaping. Epidermis thin and brittle; beneath which the surface is marked with numerous incremental lines. Beaks very small, and behind them the margin slopes away in nearly a straight line. Teeth two in each valve; the largest bifid.

Color. Epidermis dusky brown; surface iridescent: within polished white, with faint radiating striæ.

Vertical axis, 0.2; transverse ditto, 0.3.

They are said to occur nearly an inch in their greatest length; the largest I have seen did not exceed 0.5. These latter were procured by Mr. Charles Wheatley, in dredging in the mud in five fathom water off the Quarantine ground. Those described by Messrs. Couthouy and Gould, were exclusively from the stomachs of fishes.

(EXTRA-LIMITAL)

S. lusoria. (*Psammobia*? SAY, Ac. Sc. Vol. 2, p. 304. CONRAD, Mar. Conch. pl. 7, fig.) Shell oblong, suboval, with minute wrinkles; posterior side narrowed, and inclining to the right at the end: an obtuse convex line on the left valve. *Color*: epidermis pale; beneath, bluish white. Vertical axis, 0.6; transverse ditto, 1.0. *New-Jersey to Florida*.

S. rugosa. (LAM. Vol. 2, p. 558, Ed. Brux.) Ovate, ventricose, longitudinally rugose. *Color*, violaceous behind; nymphæ blackish, violaceous: posterior area none. *Florida*.

FAMILY VENERIDÆ.

SHELLS with three cardinal teeth at least, on one valve; the other having as many or fewer: rarely with lateral teeth; usually solid. Epidermis often scanty or entirely wanting. Tubes elongated, unequal. Foot wide, prominent. Marine.

OBS. This family corresponds with the *Conques marines* of Lamarck, and comprises at present four genera.

GENUS CYPRINA. Lamarck.

Animal with the edges of the mantle undulated, and furnished with a series of tentacular cirri; tubes short, separated. Mouth small; labial appendices small; gills wide; foot wide; compressed, trenchant. Shell obliquely heart-shaped, solid; beaks prominent. Hinge with three unequal diverging cardinal teeth, and a remote lateral one; pallear impression simple.

CYPRINA ISLANDICA.

PLATE XXVI. FIG. 269 (ADULT). FIG. 268 (YOUNG).

(STATE COLLECTION.)

<i>Venus islandica.</i>	LIN. Syst. Nat. p. 1131.
<i>Cyprina id.</i>	RUSSEL, Essex Jour. Vol. 1, p. 37.
<i>C. id.</i>	GOULD, Invertebrata of Mass. p. 82.

Description. Shell large, thick and ponderous, ventricose; beaks prominent, incurved, contiguous. Ligament stout and prominent: basal margin simple, rounded. Cardinal teeth stout and diverging: three in each valve, or the largest one bipartite in the right valve; lateral tooth inconspicuous: pallear impression distinct. Epidermis coarse and wrinkled.

Color. Epidermis blackish, becoming olivaceous towards the margin; interior chalky white; faint purple on the margin.

Vertical axis, 2.8; transverse ditto, 3.3. Diameter, 1.4.

It rarely attains a greater size than this specimen, which I derived from Mr. Couthouoy, who obtained it on the northern coast. Although a northern shell, it may possibly be detected on the shores of this State. The young shell (fig. 268), which I obtained from fishes, has numerous minute concentric elevated ridges, becoming obsolete on the highly polished beaks; an obsolete ridge extends from the beaks to the basal margin. It may however prove to be a new species of *Astarte*.

GENUS VENUS. *Linnæus.*

Animal oval, moderately thick, with the edges of the mantle undulated, and furnished with a row of tentacular cirri. Tubes rarely separated. Mouth small, with the labial appendages small. Foot occasionally semilunar, not furrowed beneath. *Shell* solid, inequilateral, subovate; hinge with three diverging cardinal teeth in each valve; ligament external; cordiform depressions beneath the beaks: palleal impression with a sinus.

VENUS MERCENARIA.

PLATE XXVII. FIG. 376.

(STATE COLLECTION.)

Venus mercenaria. LIN. Syst. Nat. 1131. RUSSEL, Ess. Jour. Nat. Hist. Vol. 1, p. 58.
V. id. LAM. ubi supra, Vol. 2, p. 610. GOULD, Invertebrata of Mass. p. 85, fig. 67.

Description. Shell large, solid and ponderous, inequilateral, subcordate; beaks incurved, and projecting forwards and inwards. Anterior area heart-shaped, and bounded by an impressed line. Surface, in the old shells, with numerous coarse grooves and ridges; in the young, with concentric lamellar ridges. Epidermis very slight, and easily detached: ligament stout and prominent; posterior area obsoletely plicate. Basal margin entire, but crenulated within; anterior margin rounded; the posterior more pointed. In the one valve, the anterior tooth is largest and distant from the other two, which are oblique and contiguous; in the other valve, the two anterior teeth are united, forming a simple bifid tooth: this is most striking in aged individuals. The remainder of the hinge is composed of roughened irregular points, interlocking with those of the opposite valve. Muscular impressions deep, and united by the palleal impression, which has an angular sinus near the posterior impression.

Color. Externally varying from brownish white to ash-grey, and, in very old specimens, with a rufous tinge, frequently deep blackish brown; but the color appears to vary with the bottom upon which they live. Within, white, with a deep violet or purple margin.

Vertical axis, 2.0 – 3.5; transverse ditto, 3.0 – 4.5. Diameter, 1.8 – 2.3.

This species is the common *Round Clam*, much prized as an article of food, and so savory in some localities as to be equally valued with the *Oyster*. Its aboriginal name of *Quahog* has now fallen into disuse. It sells in the markets at prices varying from thirty-seven and a half to sixty-two and a half cents the bushel. It abounds in all our bays, a few inches beneath the bottom, from low-water mark to two or six fathom water. If taken from its bed and placed on its side, it can, in the course of a single tide, bury itself six inches beneath the surface.

From the internal purple part of the shell, the colored beads of the aborigines were formerly manufactured, constituting the *seawan* or *wampum*, the specie currency of the natives. Long island was formerly the great mint for the supply of this article, and hence its Mohegan

This beautiful little shell, which has been dredged from the East river near Blackwell's island, was for a long time considered as the young of the common round clam. Col. Totten first detected its specific identity. It occurs abundantly on all the sandy shores of Massachusetts, but its extreme northern and southern limits are not yet known.

VENUS PRÆOPARCA.

(STATE COLLECTION.)

Venus præparca. SAY, Journ. Acad. Nat. Sciences, Vol. 2, p. 271.*V. notata*, var.? GOULD, Invertebrata of Mass. p. 87.

Description. Shell ovate, with numerous elevated subacute parallel concentric lines, which subside into mere wrinkles near the suture of the ligament-slope; interstitial spaces plain: ligament-slope flattened, margined by an acute line. Anterior margin with an obsolete longitudinal very obtuse undulation, which gives the tip of this margin a slightly truncated appearance; areola cordate, elevated at the suture: lower and posterior margins crenulated, the crenulæ extending along the edge of the areola to the beak. In advance of the anterior termination of the ligament-groove of the left valve, is another distinct groove, which receives the edge of the corresponding margin of the other valve.

Color, white, immaculate; within, white or yellowish white.

Vertical axis, 1.0 – 1.5; transverse ditto, 1.5 – 2.2.

This shell occurs frequently along our beaches, and is usually taken for the young of the *V. mercerania*. Dr. Gould states that it seems to be same as *V. notata*, in which merely the zigzag lines are wanting. It seems to me more widely transverse than either.

(EXTRA-LIMITAL.)

- V. inequalis*, SAY. Shell subcordate, longitudinally sulcated: lines numerous, obsolete on the anterior margin; behind the middle, bifid, and alternating with smaller single ones: concentric distant lamellar bands but little more elevated than the longitudinal lines. Anterior margin subangulated; within, the margin crenate; crenæ obsolete on the anterior margin and rear. Hinge on the posterior margin. Length, 1.0; width, 1.2. *Coast of New-Jersey and Maryland.*
- V. elevata.* (ID. Ib. p. 272.) Shell subcordate, longitudinally sulcate: sulci equal, numerous, dense; on the anterior submargin sparse: concentric elevated remote lamellar bands. Anterior margin subangulated at the tip; within, margin crenate; crenæ obsolete on the anterior margin, and near the hinge on the posterior margin. Length, 0.8; breadth, 0.9. *Southern coast.*
- V. mortoni.* (CONRAD, Ib. Vol. 7, p. 251.) Shell very large, cordate, inflated, thick and ponderous, with prominent recurved concentric laminæ, more elevated on the anterior and posterior margins; ligament-margin arcuate. Umbones prominent; lunule large, cordate, defined by a deep groove;

ASTARTE SULCATA.

PLATE XXVIII. FIG. 281.

Venus sulcata. MONTAGU, Test. Brit. p. 131.*Crassina id.* TURT. Conch. Ins. Brit. p. 131, pl. 14, fig. 1 and 2.*Astarte dammoniensis.* TOTTEN, Am. Journ. Sc. Vol. 29, p. 349, fig. 3, A. B.*A. sulcata.* FLEMING, Brit. An. p. 439. GOULD, Invertebrata of Mass. p. 78, fig. 46

Description. Shell solid, suborbicular, transverse, subinequilateral and perfectly closed. Surface undulated, with fifteen to eighteen or twenty distinct obtuse concentric equidistant ridges; the spaces between, wider than the ridges, widest at the middle, contracting, and with the ridges disappearing at the two ends. Beaks prominent, pointed and in contact. Anterior area deep, smooth and lanceolate; posterior slope slightly rounded, including a long narrow and deeply excavated corslet. Margins crenulated in adults; smooth in the young. Epidermis very adherent.

Color. Deep chestnut brown or greenish yellow; the ridges occasionally denuded, and exhibiting a white chalky appearance beneath.

Vertical axis, 1.2; transverse ditto, 1.0; diameter, 0.4.

The appearance of this shell, in its different stages of growth, has given rise to much confusion in its synonymes. It is occasionally found along the gravelly bottoms on the coast of Long island, but is more rare than the preceding.

(EXTRA-LIMITAL)

A. lactea. (BROD. & SOW. Zool. Jour. Vol. 4, p. 365. GOULD, l. c. p. 80, fig. 47.) Shell suborbicular, much compressed, concentrically wrinkled; an obsolete marginal tooth in each valve: ridges most conspicuous on the posterior slope. *Color:* epidermis yellowish brown. Vertical axis, 1.0; transverse ditto, 1.1. *Grand Banks.*

A. ? quadrans. (GOULD, Ib. p. 81, fig. 48.) Shell triangular, small, slightly oblique; anterior side longest. Surface smooth; beaks pointed, not inclined to either side; hinge with a small lateral tooth on the anterior margin of the left valve. *Color:* epidermis yellowish olive. Length, 0.45. Stomachs of fishes. *Coast of Massachusetts.*

central; a lamelliform plate in the place of cardinal teeth; lateral teeth scarcely rising above the margin of the shell; cavity chalky within, with faint radiating furrows. *Color*, dark olive brown. Vertical axis, 0·5; transverse ditto, 0·6. It was obtained from Sandy creek, Orleans county, and I had but a single specimen.

CYCLAS DUBIA.

PLATE XXV. FIG. 261.

(STATE COLLECTION.)

Cyclas dubia. SAY, Nich. Ency. Ed. Am. Vol. 4, pl. 1, fig. 10.
C. striatina. LAM. AN. sans vert. Ed. Brux. Vol. 2, p. 388.
C. dubia. GOULD, Invertebrata of Mass. p. 75, fig. 56.

Description. Shell small, moderately solid, subtriangular, oblique, subovate, convex; the beaks not very prominent, placed much nearer one end. Surface with minute concentric ridges, which become more distinct towards the basal margin. Primary teeth very distinct, placed between two pits in one valve, and two divaricating ones in the other; the exterior lamellar tooth very small, with the fossæ acutely elliptical.

Color. Epidermis olive-green tinged with reddish, with occasionally darker bands marking the stages of growth.

Vertical axis, 0·25 – 0·3; transverse ditto, 0·3 – 0·35.

I have obtained specimens of this shell from Herkimer county, and Dr. Newcomb has noticed them at Palmyra, Wayne county; they are doubtless to be found in ponds and ditches in every part of the State. The description of *C. striatina* by Lamarck, which he procured from Lake George, applies in every particular to this species.

CYCLAS PARTUMEIA.

PLATE XXV. FIG. 262.

(STATE COLLECTION.)

Cyclas partumeia. SAY, Jour. Acad. Nat. Sciences, Vol. 2, p. 390.
Cyclas cornea, var. 2, 3. LAMARCK, AN. sans vert. Ed. Brux. Vol. 2, p. 388.
C. partumeia. ADAMS, Am. Jour. Sciences, Vol. 40, p. 279.
C. id. GOULD, Invertebrata of Mass. p. 73, fig. 54.

Description. Shell thin, fragile, pellucid, inflated, rounded oval. Beaks nearly central and moderately prominent. Posterior margin more broadly rounded than in front; basal margin regularly curved. Surface glossy, with minute regular concentric wrinkles and larger undulations which are impressed within; under the lens, faint radiating lines may be detected. Hinge teeth prominent and diverging; lateral teeth strong and prominent.

This species occurs along the borders of Lake Champlain, where it was first noticed by Mr. Adams. It appears to be closely allied to what I consider to be the *C. rhomboidea* of Say, but differs chiefly in the cardinal teeth, which in this species are very slightly developed.

CYCLAS EDENTULA.

Cyclas edentula. SAY, Desc. flu. and terr. shells, p. 10.

Description. Shell transversely oval, inequilateral, with somewhat elevated and regular transverse lines. Beaks not elevated above the general surface. Cardinal tooth very small, lineolar, oblique, and not elevated higher than the edge of the hinge-margin: umbones denticulated. *Color*, brown.

Length, 0.35; breadth, 0.4.

This species, which I only know through the very brief notice of Mr. Say, was observed by him in the Canandaigua lake in this State. It is distinguishable, according to Say, by the diminutive teeth, which are not visible in a profile view of the hinge. The only species I could find in that lake was the *C. similis*, with the young of which this may possibly have been confounded.

(EXTRA-LIMITAL.)

C. transversa. (SAY, Op. sup. cit.) Transversely oblong, subovate, subinequilateral: anterior margin decidedly more widely rounded than the posterior margin; beak obviously elevated above the general curvature; cardinal teeth double, distinct. Length, 0.25; breadth, 0.45. *Kentucky.*

C. staminea. (CONRAD, Am. Jour. Vol. 25, p. 342.) Shell oval, regularly convex, inequilateral: anterior and posterior ends similarly rounded; umbo inflated; beaks slightly prominent; apex obtusely rounded; lateral teeth rather prominent; cavity rather capacious. *Color*: epidermis yellowish, with darker stains; within bluish white.

C. elevata. (HALD. Proceed. Ac. Sc. 1841.) Shell orbicular: cardinal tooth prominent; lamellar tooth thick; beaks elevated. *Color*, brownish olive. Length, 0.55; height, 0.5. *New-Orleans.*

Genus *PISIDIUM*, Pfeiffer. Shell equivalve, transverse; sides unequal, completely closing. In the right valve one, in left valve two, opposite very small primary teeth: behind and before, two thin lamellar side-teeth; those of the latter cleft in the right valve, in order to receive the opposite ones. *Animal* with a narrow fleshy projection next the forepart of the shell, instead of a tubular trachea: foot long and thin.

Obs. This genus was separated from *Cyclas* by Mr. Pfeiffer; but conchologists have not agreed as to the propriety of its creation. Deshayes observes, that the author "s'aperçut, en étudiant les animaux des cyclades, qu'il y en avait une dont les siphons postérieurs sont beaucoup plus courts que dans les autres espèces, et dépassent à peine les bords de la coquille. Il crut ce caractère suffisant pour justifier la création d'un genre sous le nom de *Pisidium*. Nous ne croyons pas qu'il soit utile d'adopter ce genre, ses caractères ayant trop peu de valeur."

SAXICAVA DISTORTA.

PLATE XXXIII. FIG. 309. A. B.

(STATE COLLECTION.)

Saxicava distorta. SAY, Journ. Acad. Nat. Sciences, Vol. 2, p. 318.
S. *id.* GOULD, Invertebrata of Mass. p. 61, fig. 40.

Description. Shell thick, coarse, transversely ovate-oblong, inequivalve, irregular in shape and often distorted, generally rounded in front and more or less truncated behind, often with a prominent rounded ridge passing from the beaks to the lower angle, and which is sometimes roughened with scales. Beaks rather prominent, and on the anterior third. Surface roughened and undulated by the different stages of growth. Basal margin irregular, usually contracted in the middle, with a silken appendage issuing from it. In young specimens, a slight rudimentary tooth in one valve is received into a cavity in the other, but both disappear with age.

Color. Epidermis light ashen grey: foot bright orange.

Vertical axis, 0.4 – 0.6; transverse ditto, 0.7 – 1.0.

This shell is found along the whole coast, adhering to marine bodies, and is so irregular that scarcely two specimens can be found alike. It is often found imbedded in *Sponges* and among *Ascideæ*. The *S. rugosa* of Turton (*Conch. Ins. Brit.* p. 20, pl. 2, fig. 10), with which this has sometimes been confounded, is more transversely elongated, the beaks more central, the elongated side more abruptly truncate, and the dorsal margin more sloping; the surface furrows are subquadrate following the truncation of the elongated side.

GENUS PETRICOLA. *Lamarck.*

Mantle with its borders simple, slightly dilated in front, where there is a small opening for the passage of a feeble tongue-shaped foot. Tubes small, conic, truncate at their summits, separated for two-thirds of their length, and minutely radiated at their orifice. Gills small. *Shell* transverse, inequilateral, rounded before, narrowed posteriorly: hinge almost toothless; ligament exterior.

This species has been found at Glasshouse point above the city, and is a more robust shell than the preceding, from which it differs chiefly in the want of a definite area before the beaks. It appears to range from Massachusetts to Carolina, but is more rare than the preceding.

FAMILY MACTRIDÆ.

SHELL *equivalve, frequently gaping at the sides. Hinge with an internal ligament, and sometimes an external ligament beside. ANIMAL with a small foot, but well adapted for motion.*

GENUS MACTRA. *Lamarck.*

Animal with the edges of the mantle thickened and simple, furnished behind with two united moderately long tubes. Mouth small; labial appendages narrow and pointed. Branchial plates small, and nearly equal. Foot oval, trenchant, very long and angular. *Shell* transverse, slightly gaping at the sides: beaks prominent. Hinge a prostrate concave tooth to contain the cartilage, having at one margin a delicate erect tooth, like the letter v: two lateral teeth near the central ones.

MACTRA SOLIDISSIMA.

PLATE XXIX FIG. 286.

(STATE COLLECTION.)

- Mactra solidissima.* CHEMNITZ, Conch. Vol. 10, p. 365, pl. 170, fig. 1656.
M. id. CONRAD, Am. Mar. Conchology, 64, pl. 14, fig. 7. ID. Ac. Sc. Vol. 6, p. 257.
M. gigantea. LAMARCK, An. sans vert. Ed. Brux. Vol. 2, p. 535.
Spissula. GRAY, Loud. Mag. Nat. Hist. New series, Vol. 1, p. 373.
M. solidissima. GOULD, Invertebrata of Massachusetts, p. 51.

Description. Shell large and solid, subtriangular, nearly equilateral, smooth or very slightly wrinkled by the lines of growth. Beaks large and protuberant, directed slightly forwards; nearly central, and behind them a broad somewhat flattened space bounded by a rounded elevation from the beaks. Hinge very strong; the spoon-shaped cavity large; the v tooth very delicate, and adhering by a very small base, so that it is usually broken off in the cartilage; lateral teeth long and thin, and regularly striated on the side next the recipient cavity.

Color. Epidermis thin and olive-brown or light yellowish; beneath this, chalky white.

Vertical axis, 1.5 - 4.5; transverse ditto, 2.0 - 6.0. Diameter, 1.0 - 2.5.

M. nucleus. (CONRAD, Ac. Sc. Vol. 6, p. 258, pl. 11; Am. Conch. pl. 14.) Small, triangular, thick, with an obsolete concentric ridge or angle: umbones flattened and rectilinear; apices nearly central and very acute; posterior slope depressed; lateral teeth strong. *Color*, pale brown. *New-Jersey*, and undoubtedly on our own coast, although not yet observed.

GENUS MESODESMA. *Deshayes*.

Animal with the mantle united on the posterior two-thirds of its length, and provided on its posterior extremity with two short tubes, prolonged within by a very delicate membrane. Foot much flattened, quadrangular, partly concealed by the gills; these latter short, truncated and connected together, the external pair smallest and subauriculated. *Shell* solid, subtriangular, compressed and generally closed: hinge with a spoon-shaped cavity in each valve for the cartilage, and a simple and oblong tooth on each side.

MESODESMA ARCTATA.

PLATE XXIX. FIG. 288. A. B.

(STATE COLLECTION.)

Mactra arctata. CONRAD, Jour. Acad. Nat. Sciences, Vol. 6, p. 257, pl. 11, fig. 1.

M. deaurata. Id. Am. Mar. Conchology, p. 59, pl. 14, fig. 1.

Mesodesma arctata. GOULD, Invertebrata of Mass. p. 57, fig. 39.

Description. Shell solid, subtriangular, very inequilateral; the anterior margin short, truncated. Beaks little elevated, quite in front, with a prominent ridge to the lower angle; posterior end produced, with the margin rounded. Surface with concentric ridges, caused by the different stages of growth: cartilage-pit very deep and triangular. Lateral teeth elongated, and crossed by regular elevated striæ. Interior smooth; the sinus of the pallear impression orbicular, and somewhat larger than its contiguous posterior muscular impression.

Color. Epidermis olive-yellow, with a metallic lustre; within whitish.

Vertical axis, 1.0; transverse ditto, 1.4. Diameter, 0.5.

This is not a very common species on our shores, but appears to be more abundant on the shores of Massachusetts.

(EXTRA-LIMITAL.)

M. jauresii. (GUERIN, Mag. de Zool. 1834. GOULD, loc. cit. fig. 38.) Shell ovate, triangular, thick, and very rough externally with coarse concentric ridges; beaks little elevated; lateral teeth very strong, curved and very faintly striated. *Color*: epidermis dusky brown. Vertical axis, 1.1; transverse ditto, 1.75. *Grand Banks*.

GENUS CUMINGIA. *Broderip and Sowerby.*

Shell ovate, inequilateral, equivalve. A shallow spoon-shaped cardinal tooth, and a single small tooth by its side, in each valve; and a strong lateral tooth on both sides in one valve only. Palléal impression with a large sinus.

CUMINGIA TELLINOIDES.

<i>Mactra tellinoides.</i>	CONRAD, Jour. Ac. Nat. Sc. Vol. 6, p. 258, pl. 11, figs. 2, 3. Id. Mar. Conch. pl. 14, fig. 2.
<i>M. id.</i>	RUSSEL, Essex Journ. Nat. Hist. Vol. 1, p. 53.
<i>Cumingia id.</i>	CONRAD, Jour. Acad. Nat. Sciences, Vol. 7, p. 234.
<i>C. id.</i>	GOULD, Invertebrata of Mass. p. 56, fig. 36.

Description. Shell small, thin, fragile, ovate-triangular, nearly equilateral, inflated, broad in front, compressed behind, warped, ending in a rounded point. Beaks raised, with a small well defined area in front. Surface with concentric incremented lines, which are sharp and elevated, and crossed by microscopic radiations. In front of the cartilage pit in each valve is a linear tooth, forming part of its wall, and at its side a pit for the reception of the corresponding tooth: lateral teeth distinct in the right valve, but wanting in the left; the anterior one longest. Palléal impression far within the shell, with a broad deep sinus.

Color, bluish white; within bluish white.

Vertical axis, 0.45; transverse ditto, 0.6.

I am indebted to Dr. Gould for the description of this species, which I have not seen, but which is very probably to be found on the coast of this State.

(EXTRA-LIMITAL)

Genus GNATHODON, *Gray.* Shell thick, nearly oval, equivalve, inequilateral, covered with an olivaceous epidermis; umbones distant. An acuminate cardinal tooth and two lateral teeth, the posterior elongated, the anterior uncinatè in one valve; in the other, two acuminate and two lateral ones, the posterior of which is elongated, and the anterior wedge-shaped. Palléal impression with a small sinus: ligament internal, in a deep pit.

G. cuneatum, Sowerby. (GRAY, Loud. Mag. Vol. 1, p. 376, fig. 34. *Rangia,* DESM. Lin. Soc. Bord. Vol. 4, p. 58. CONRAD, Mar. Conch. p. 57, pl. 13. PL. 25, fig. 267 of this work) Shell very solid, inequilateral, subcordate, oblique: beaks prominent, incurved, often eroded; posterior margin subacute, anterior rounded; lunule heart-shaped, circumscribed by an obsolete raised line; left valve with two teeth on one side of the deep ligament pit, the anterior smallest, the outer with a broad lamellar tooth parallel with the posterior slope. *Color,* light olive brown. Vertical axis, 1.4; transverse, 1.7; diameter, 1.1. *Mobile.*

G. flexuosum. (CONRAD, Am. Jour. Sc. Vol. 38, p. 92.)

GENUS ANATINA. *Lamarck.*

Animal having the mantle closed by a wide membranous plate, with a small rounded aperture on the antero-inferior portion, for the passage of a tongue-shaped foot. Two elongated tubes separated for some considerable distance from their extremities; the inferior slightly longest. Branchiæ narrow, free, and pointed behind. *Shell* usually thin, sometimes translucent, fragile, ovate, rounded, nearly equivalve, inequilateral, gaping slightly at one or both extremities. Hinge with a prostrate spoon-shaped tooth in each valve, to receive the cartilage; and a small ossiculum resting in front of the teeth, usually removed with the animal.

ANATINA PAPYRACEA.

PLATE XXXI. FIG. 300.

(STATE COLLECTION.)

Anatina papyracea. SAY, Jour. Acad. Nat. Sc. Vol. 2, p. 314.
A. id. fragilis? TOTTEN, Amer. Jour. Sc. Vol. 23, p. 347, pl. 1.
A. papyracea. GOULD, Invertebrata of Mass. p. 47, fig. 28.

Description. Shell thin and fragile, ovate-rounded; one valve more convex, and at the basal margin projecting a little beyond the other. Beaks not prominent, in the posterior third of the length of the shell: from the beaks to the posterior portion runs an elevated angular ridge; shorter end narrowed and subtruncated, slightly gaping. Surface of the valves minutely wrinkled. Tooth long, narrow and oblique, with an accessory process at the base. Ossiculum like two crescents fitting in front of the teeth. *Color*, white and pearly.

Vertical axis, 0·5; transverse ditto, 0·6.

This delicate shell, which is rare, occurs along our whole coast. It has been obtained by dredging at Newport, Rhode-Island, and from the stomachs of fishes on the coast of Massachusetts.

THRACIA CONRADI.

PLATE XXVIII. FIG. 264.

<i>Thracia dectlovis.</i>	CONRAD, Am. Marine Conch. p. 44, pl. 9, fig. 2 (exc. syn.).
<i>T. conradi.</i>	COUTHOUY, Bost. Jour. Nat. Hist. Vol. 2, p. 153, pl. 4, fig. 2.
<i>T. id.</i>	RUSSEL, Essex Jour. Nat. Hist. Vol. 1, p. 75.
<i>T. id.</i>	GOULD, Invertebrata of Mass. p. 50.

Description. Shell thin, fragile, ventricose, rounded in front, narrowed and subtruncate behind. Beaks prominent, with one or more obtuse carinations extending to the angle of the basal and posterior margins; the beak of the right valve perforated to receive the points of the other. Right valve more convex, and extending somewhat beyond the left: valves slightly gaping. Hinge toothless, but represented by strong rounded eminences. Surface with a thin epidermis, and with concentric undulated striæ. Palleal impression with an acute angular sinus: no ossiculum.

Color. Epidermis light brown; within white.

Vertical axis, 2·2; transverse ditto, 2·7. Diameter, 1·4.

This is one of the largest species of the genus, and is found along the coasts of Rhode-Island, Massachusetts and Maine. Mr. I. Cozzens assures me that he has obtained it in Long island sound, along the shores of Connecticut, so that in all probability it exists on the shores of this State.

(EXTRA-LIMITAL.)

- Genus *AMPHIDESMA*, Lamarck. Shell inequilateral, transverse, suboval or somewhat rounded: sides slightly gaping. Hinge with one or two cardinal teeth, and a narrow groove for the internal ligament; external one short; internal one fixed in the internal grooves.
- A. flexuosa.* (LAM. Vol. 2, p. 344. *TELLINA id.* MONTAGU, Test. p. 72.) Shell suborbicular, thin, convex, pellucid, fragile, with minute irregular concentric striæ. A remarkable furrow extends from the apex parallel to the cartilage-slope, and forms a deep curve in the margin at its termination. Hinge with an obsolete tooth. *Color*, white. Length, 0·6. On the authority of Mr. Redfield, this has been found on the coast of Massachusetts.
- A. transversa.* (SAY, Conch. pl. 28.) Shell transversely short, oval, nearly equilateral, compressed, a little gaping. Hinge nearly central: margins subequally rounded behind and in front; the former somewhat more obtusely so. Basal margin regularly rounded without any undulation in front: apex obtuse, but little prominent. Cardinal teeth two; fosset dilated, fusiform, abruptly very narrow at the beaks: lateral teeth none. Posterior muscular impression very slender and elongated. *Color*, tinged with yellowish. Width, 1·5. *Long Island Sound? Southern Coast.*
- A. ? punctata.* (SAY, Ac. Sc. Vol. 2, p. 308.) Orbicular, with numerous minute concentric wrinkles and very numerous minute punctures. No lateral teeth; two primary teeth in each valve, of which one has a deep groove: within, a small rim or projecting line runs near the edge from the hinge to the basal margin. *Color*, white. Length, 0·3; width, 0·3. *Southern Coast.*
- A. orbiculata.* (ID. Ib. Vol. 2, p. 317.) Shell orbicular, somewhat compressed: beaks nearly central, and a little prominent; valves slightly wrinkled transversely. Hinge with two lamellar teeth;

PANDORA TRILINEATA.

PLATE XXXIII. FIG. 310. A. B.

(STATE COLLECTION.)

- Pandora trilineata.* SAY, Jour. Acad. Nat. Sc. Vol. 2, p. 261. ID. Conchology, pl. 2.
P. *id.* CONRAD, Am. Mar. Conch. p. 49, pl. 11, fig. 1. RUSSEL, Ess. Jour. Vol. 1, p. 54.
P. *id.* GOULD, Invertebrata of Mass. p. 44.
P. *nasuta.* SOWERBY, fig. 18 - 19.

Description. Shell irregularly wedge-shaped, rounded before, with a recurved subtruncated beak behind. Hinge-margin with a concave curve; the surface above flattened, and bounded on its edges by two elevated lines from the beaks to the rostrated tips; anterior portion of the basal margin strongly curved. Surface with fine undulated incremental striæ and faint radiating lines; rostrated portion coarsely wrinkled and gaping. Three or more distinct lines radiate from the beaks. The flat valve with two teeth, of which one is shorter and more robust than the other; the cavities in the other valve, to receive these teeth, exhibit between them the appearance of three teeth or teeth-like elevations.

Color.—Pearly white; within, bluish iridescent.

Vertical axis, 0.45 - 0.6; transverse ditto, 0.9 - 1.2. Diameter, 0.2.

This delicate and singular species occurs on our coast from Maine to Florida. It is found along the shores of Long island and Staten island. On the coast of the latter island it is very commonly washed ashore, attached to seaweed. Here its locality is limited to a small spot at the foot of Coverly's lane, on the south side. In the more perfect and larger specimens, a fourth oblique line may be traced between the two approximated hinge-marginal lines and the third oblique one. In many specimens, a byssus associated with *sertulariæ* is attached to the beaks.

GENUS MYA. *Linnaeus.*

Animal with a moderately thin mantle, adhering by its edges, closed by a membranous plate, and forming behind around its tubes a loose membranous envelope into which it is retracted. Tubes united, slightly separated at their summits, and radiated at the orifices. Foot very small, coming out from the mantle by a small slit at the antero-inferior portion in the median line. Gills moderate, unequal, on the same side. Mouth small, with triangular striated appendices. *Shell* moderately thin, transverse, gaping at both ends, with an epidermis. Left valve with a single broad compressed upright tooth, received into a pit of the opposite valve.

lobe on the edge: valves ridged by the stages of growth, convex; beaks moderately prominent. *Color*: epidermis yellowish; beneath white. Length, 1.5 - 2.5; width, 2.5 - 3.5. Common on the Grand Banks: a few valves occasionally found on the shores of Massachusetts.

GENUS CORBULA. *Bruguières*.

Animal unknown. *Shell* moderately solid, subtrigonal, inequivalve, inequilateral, slightly gaping. Hinge with a small conic erect recurved tooth in each valve, one received into a pit by the side of the other: cartilage between the teeth. Palleal impression feebly excavated.

CORBULA CONTRACTA.

PLATE XXVIII. FIG. 288.

(STATE COLLECTION.)

Corbula contracta. SAY, Jour. Acad. Nat. Sciences, Vol. 2, p. 312.
C. id. GOULD, Invertebrata of Mass. p. 43, fig. 37.

Description. Shell small, solid, convex; valves subequal, shortest and rounded in front, long and pointed behind. Beaks rather prominent, nearly touching each other at their points: basal margin contracted and concave in the middle. Surface with regular equidistant concentric impressed lines and intervening ridges. A prominent ridge runs from the beaks on each side to the posterior basal margin, including a broad space between them: left valve shutting within the other along the basal margin. Epidermis thin. In one valve the tooth is simple, hooked and turned towards the beak; in the other, it is broader than high, projecting at right angles to the valve, with a deep cavity on the posterior side of the base for the reception of the hooked tooth.

Color. Epidermis dull brown; beneath dead white.

Vertical axis, 0.25; transverse ditto, 0.4. Diameter, 0.2.

This little shell is not uncommon along our coast, from Florida to Cape Cod. I have found it on the shores of Long island, and Mr. Linsley of Stratford has sent it to me from the shores of Connecticut. The epidermis is occasionally ferruginous.

(EXTRA-LIMITAL.)

S. viridis. (SAY, Ac. Sc. Vol. 2, p. 316. CONRAD, Mar. Conch. pl. 5, fig. 2. PLATE 33, fig. 312 of this book.) Shell transversely oblong, compressed. Hinge-margin, nearly straight: basal margin rounded; posterior end obliquely truncated, a little reflected and rounded near the base; anterior end rounded. Surface smooth, with very slight concentric lines, marking the various stages of growth: hinge terminal. A single tooth in each valve, having a flattened vertical surface which turns upon that of the opposite tooth. Color: epidermis pale green, becoming olivaceous with age. Vertical axis, 0.4; transverse, 2.0. *Southern coast.*

Genus LEPTON, *Turton.* Shell flat, nearly orbicular, equivalve, inequilateral, a little open at the sides. Hinge of one valve with a single tooth, and a transverse linear lateral one, each side; the other valve with a cavity in the centre, and a transverse deeply cloven lateral tooth each side, the segments of which divaricate from the beak: ligament internal.

L. fabagella. (CONRAD, Mar. Conch. p. 51, pl. 11, fig. 3. PLATE 32, fig. 307, A. B. of this book.) Shell very small, suboval, convex, with minute crowded concentric lines; beaks central, rather prominent. Epidermis thin and wrinkled: teeth similar in each valve; the posterior tooth longest, and angulated under the beak. Color: epidermis yellowish. Vertical axis, 0.3; transverse, 0.4. *Rhode-Island.*

GENUS SOLECURTUS. *Blainville.*

Animal too large for its shell. Lobes of the mantle thick in front, united and elongated in its posterior half into two large unequal siphons, which are united very near the summit. Foot tongue-shaped, large, very thick. Labial appendices very long and narrow. Branchiæ narrow, very long, extending through the whole length of the branchial siphon. *Shell* transverse, elongated, equivalve; the beaks small, subcentral. Margins nearly parallel; ends abruptly rounded. Hinge with two or three cardinal teeth in each valve: ligament prominent, seated on thick callosities. Pallæal impression with a very deep sinus.

SOLECURTUS CARIBÆUS.

PLATE XXXII. FIG. 208.

(STATE COLLECTION.)

Solen caribæus. LAM. An. sans vert. Vol. 2, p. 522. Ed. BRUX.*Solecurtus caribæus.* CONRAD, Am. Marine Conchology, p. 22, pl. 4, fig. 2.*S. (Cultellus.) id.* GOULD, Invertebrata of Mass. p. 30.

Description. Shell thick and solid, transversely elongated, resembling in shape some species of *Unio*, rounded at both ends; the upper and basal margins nearly parallel, the latter compressed and slightly arcuated. Beaks obtuse and little elevated, and placed towards the

the shell. Teeth three in the left valve; the posterior upright; the others directed forwards. A strong broad rib passes from the beaks towards the margin, where it becomes obsolete. Surface smooth and diaphanous, with minute wrinkles about the posterior end, and faint traces of radiations. Epidermis smooth and shining.

Color. Pale violaceous, passing into olive towards the margins, disposed in a radiated manner; within, bluish white, faintly iridescent; the transverse rib white.

Vertical axis, 0·8; transverse ditto, 1·5 – 2·0.

This is a northern species, occurring as far south as New-Jersey. On the coast of Massachusetts it is very abundant, but is more rare on our coast.

(EXTRA-LIMITAL)

M. nitida. (GOULD, Am. Jour. Vol. 38, p. 196; Invertebrata of Mass. p. 33, fig. 25, 26.) Shell thick, slightly recurved, ovate-oblong, undulated by the lines of growth. In the left valve, three teeth; in the right, two. *Color:* epidermis greenish yellow, shining, corrugated at the posterior end. Vertical axis, 1·25; transverse, 2·8. *Massachusetts.*

GENUS SOLEMYA. *Lamarck.*

Animal with the lobes of its mantle reunited in their posterior half, and terminated by two short and unequal siphons. Foot proboscis-like, truncated in front by a sort of disk or sucker, the edges of which are fringed. A single branchia on one side in the shape of a plumule, the barbs of which are divided to the base. Vent terminal, not floating. *Shell* equivalve, transverse, inequilateral. Epidermis thick and shining, projecting far beyond the margin. Beaks inconspicuous. Hinge-margin widened and excavated to form a receptacle for a cartilage, usually resting on a rib-like support.

SOLEMYA VELUM.

PLATE XXX. FIG. 302.

(STATE COLLECTION.)

<i>Solemya velum.</i>	SAY, Jour. Acad. Nat. Sciences, Vol. 2, p. 317.
<i>S. id.</i>	CONRAD, Am. Mar. Conchology, p. 66, pl. 16.
<i>S. id.</i>	RUSSEL, Ess. Nat. Hist. Vol. 1, p. 53. GOULD, Invertebrata of Mass. p. 35.
<i>S. id.</i>	WHEATLEY, Catalogue of the Shells of the U. S. p. 5.

Description. Shell very thin and fragile, transversely oblong-elliptical; beaks not elevated; umbones scarcely apparent; the basal and hinge-margins parallel, ends rounded. Hinge toothless, placed near the anterior end, with a slightly prominent cartilage resting on an arched bony support, which is itself supported beneath by pillars which are directed across

FAMILY PHOLIDÆ.

SHELL without a tubular sheath. Hinge either with one or more accessory bony pieces, or gaping widely in front. Penetrate by boring into wood, stones, or indurated clay.

GENUS PHOLAS. *Linnæus.*

Animal with its mantle reflected on the dorsal portion, connecting together the valves and accessory pieces; anterior opening moderately small. Foot short, oblong and flattened. Tubes often elongated and united into one, which is very extensible. Mouth small, with very small labial appendices. Gills long, narrow, and a little unequal on each side, united in the same line for almost their entire length, and prolonged into the siphon. *Shell* transverse, gaping at both sides; hinge-margin rolled outwards, and toothless: a rib-like curved tooth arises from the cavity of the beaks, and is directed across the shell.

PHOLAS CRISPATA.

PLATE XXXII. FIG. 306. A. B.

- Pholas crispata.* LIN. Syst. Nat. p. 1111. LAM. l. c. Vol. 2, p. 518, Ed. BRUX.
P. id. RUSSEL, Essex Jour. Nat. Hist. Vol. 1, p. 50.
P. id. GOULD, Invertebrata of Mass. p. 27.

Description. Shell large, thick and strong, oval-oblong, rounded behind; subangular or beaked in front; both extremities widely gaping, the valves touching only at two points the hinge and middle of the basal margin. Surface divided into two portions by a broad furrow, running almost vertically from the beaks to the base; the anterior portion coarsely marked with lamellar concentric plates. Within smooth, but showing the outer broad vertical furrow.

Color, soiled greyish white, occasionally rust-colored.

Vertical axis, 1.5 - 2.0; transverse ditto, 2.5 - 3.0.

This species is common to Europe and America. On the coast of the United States, it appears to range from Massachusetts to Carolina. Large single valves are occasionally found on the shores of Long-island. It is more abundant on the seacoast south of New-York.

FAMILY TEREDINIDÆ.

SHELL either inclosed in a calcareous tube distinct from its valves, or encrusted either partially or wholly in it, or projecting beyond it. Marine.

Obs. This group corresponds with *Les Tubicolées* of Lamarck, and the *Teredinites* of Latreille. It comprises at present six genera; the living representative of one only has yet been observed on the coast of the United States.

GENUS TEREDO. *Linnæus*.

Animal much elongated, vermiform, with the mantle very slender, opened in front and at its lower portion for the passage of the foot. Tubes separate, very short. Mouth small; labial appendices short. Vent at the end of a small tube floating in the cavity of the mantle. Gills ribbon-shaped, united in their whole length in a single line slightly extended into the siphon. A muscular ring at the point of junction of the mantle and tubes, in which is implanted a pair of corneo-calcareous pediculated appendices, acting laterally against each other. *Shell* bivalve, orbicular, hemispherical, equivalve, terminating behind in a long cylindrical tube. Hinge with a long curved tooth in each valve, inserted under the margin: no lateral teeth nor ligament. Tube cylindrical, straight or flexuous, closed with age at the buccal extremity.

TEREDO NAVALIS.

PLATE XXXIV. FIG. 325. A. B. C.

(STATE COLLECTION.)

Teredo navalis. LINN. Syst. Nat. p. 1267. RUSSEL, Essex Jour. Nat. Hist. Vol. 1, p. 49.
T. id. GOULD, Invertebrata of Mass. p. 26.

Description. Shell with valves, ear-shaped behind, triangular, forming a circular ring touching each other only at two points (the surface elegantly striated in various directions), each with a triangular projection in front, bending a little inwards; one of them with a curved denticle on the margin above the teeth: the edges of the ear-shaped processes behind are not detached around the whole of the circumference. Tube more or less flexuous, semiconcamerated behind (See fig. A.). Length of valves, 0.5 - 0.7; of tube, 5.0 - 6.0.

This is the well known *Ship-worm*, which scarcely extends north of the waters of this State. The supplemental valves within the tube, and near the small extremity, are spoon-shaped, convex on the outside and concave within, terminating in a linear elongation (See fig. C.). I am indebted to Turton for the figures. Its greatest ravages in our waters, take place in August and September. The long galleries which it excavates are lined with a second kind of tubular shell.

Occurs imbedded in the skin of whales. Several years since, I observed them attached to a whale caught off Sandyhook and exhibited in this city. Among them I noticed what I conceived to be *C. balænaris*.

(EXTRA-LIMITAL.)

C. denticulata. (SAY, Ac. Sc. Vol. 2, p. 325. *Astrolepas*, GRAY.) Shell depressed-conic; base oval: height equal to about one-third of the base. Valves and interstices smooth; the anterior valve largest, posterior smallest. Opercle transversely striate. Posterior pair of valves with a submarginal impressed line, from which to the edge are drawn three or four other impressed lines. Attached to *Limulus polyphemus*.

GENUS BALANUS. *Bruguères*.

Shell conical, occasionally elongated, composed of six valves. Opercle pyramidal, slightly oblique, of four triangular valves, of which the two smallest are spoon-shaped.

BALANUS MISER.

PLATE XXXIV. FIG. 318.

(STATE COLLECTION.)

Balanus miser. LAM. An. sans vert. Vol. 2, p. 491.
B. id. RUSSEL, Essex Jour. Nat. Hist. Vol. 1, p. 48.

Description. Shell gregarious, much broader than high, conic-truncate, oblique on one side, more vertical and slightly beaked on the other side. In the young shells, they are slightly festooned at the base; in the full grown specimens, as exhibited in the plate, the sides towards the base are coarsely rugose: opercular valves transversely striated; the inferior valves most projecting.

Color, soiled greenish or whitish.

Height, 0.05 - 0.25. Diameter of base, 0.15 - 0.5.

The young are brownish or whitish. It is the most common species on our shores, attached to stones and logs between high and low water. If not identical with the common *ovularis* of Gould, it is a very closely allied species.

BALANUS FISTULOSUS.

PLATE XXXIV. FIG. 319.

(STATE COLLECTION.)

Balanus fistulosus. BRUG. Encyclop. Method, p. 166, pl. 164, figs. 7, 8.
B. id. LAM. An. sans vert. Vol. 2, p. 496. Ed. Brux.
B. elongatus. GOULD, Invertebrata of Mass. p. 18, fig. 8.

Description. Shells gregarious, crowded, elongated, tubular, with irregular rings often strangulated, larger at the summit than at the base, vertically striated for more than half the length, vertically rugose towards the summit. Valves with concentric elevated costæ towards their bases, dehiscent above. Aperture ample.

Color. Soiled greenish above; white or pinkish white on the tubular body.

Height, 0·5 – 1·0. Diameter of aperture, 0·2; of base, 0·15.

This is a common species on our coast, attached generally to docks, wharves, and other submerged timber exposed to the flow and recess of the tides. They are so strongly gregarious, that it is not uncommon to see a single specimen with clusters of others attached to the circumference of its aperture. They are often much shorter and broader than the dimensions given above. Some conchologists are inclined to believe it to be a variety of *B. miser* or *ovularis*, but with this opinion I cannot coincide. Its constant and regular occurrence in places where it had ample room for development, forbids the supposition of its being an accidental variety.

(EXTRA-LIMITAL.)

- B. tintinnabulum*, Lin. (GOULD, l. c. p. 13.) Shell conical; the six triangles with irregular unequal longitudinal ribs marked across by distant incremental striæ, and the smooth intervening spaces by deeply sculptured lines. Two anterior opercular valves deeply grooved or plaited; the two others rising above them like a beak. *Color*, purplish. Height, 1·5; diameter of base, 1·0. Accidental visitor.
- B. geniculatus*. (CONRAD, Ac. Sc. Vol. 6, p. 265, pl. 11, fig. 16. GOULD, l. c. fig. 9.) Prominent, flexuous, longitudinal. Ribs alternately larger and smaller, with two angular elevations on each, between which the valves are crossed by a carinate line. Opercular valves coarsely striated; aperture large. *Color*, greenish white. Height, 0·6; diameter of base, 1·0. Attached to *P. magellanicus*. *Maine, Massachusetts.*
- B. rugosus*, Montagu. (GOULD, l. c. p. 16.) Subcylindrical. Valves raised into angular points, coarsely and irregularly ribbed: aperture large, rhomboidal; opercle nearly smooth, with acute curved slightly diverging points. *Color*, white. Diameter of base, 0·75. *Massachusetts.*

ANATIFA VITREA.

PLATE XXXIV. FIG. 316.

Anatifa vitrea. LAM. An. sans vert. Vol. 2, p. 500.A. *id.* WHEATLEY, Catalogue of Shells of the United States, p. 4.

Description. Shell exceedingly thin and fragile, translucent, papyraceous, short triangular; the dorsal valve forming a distinct angle behind, dilated and enlarged towards the base. Surface of the valves with faint incremental lines. Peduncle short.

Height, 0·8. Width of base, 0·5.

This was one of the largest of several hundred specimens attached to each other, and to a mass of seaweed floating near the Quarantine ground in the harbor of New-York, in the month of July. It was observed by Mr. Charles Wheatley. The smallest did not exceed 0·3 in height.

ANATIFA DENTATA.

PLATE XXXIV. FIG. 317.

(STATE COLLECTION.)

Anatifa dentata. BRUG. No. 3. LAM. An. sans vert. Vol. 2, p. 500.A. *id.* DILLWYN, Cat. 32. GOULD, Invertebrata of Mass. p. 21, fig. 11.

Description. Shell with the valves more robust than the preceding; the lateral valves with an elevated ridge from the base to the summit, over which are angulated parallel striæ. Apex obliquely truncated. Dorsal valve sharp, compressed, with ten to twelve distinct serrated dentations.

Color, opake white.

Height, 1·1. Width of base, 0·4.

This species I have obtained from the bottoms of vessels in the harbor of New-York.

ANATIFA LEVIS.

Anatifa levis. BRUG. Ency. Math. p. 166, fig. 1.*Lepas anatifera.* LIN. Syst. Nat. p. 1109.*Anatifa levis.* GOULD, Invertebrata of Mass. p. 19; woodcut, p. 11.

Description. Shell with the lower valves triangular, rather obtuse at the summit, slightly wrinkled by the lines of growth, crossed by very faint radiating lines: upper valves triangular, narrow, pointing downward; tip blunted, and leaving quite a large space occupied only by a membrane. Very near the apex is a distinct angle at the back: apex rounded; back valve rather broad, not much compressed, sometimes grooved lengthwise.

GENUS OTION. *Leach.*

Animal with two corneous ear-shaped tubes directed backwards, truncated, open at their points, and placed in the edge of the mantle, having a lateral opening, with many ciliated and articulated arms. *Shell* consisting of two small testaceous semilunar valves only, near the lateral opening.

OTION BLAINVILLII.

(STATE COLLECTION.)

Otion blainvillii. LAM. AN. sans. vert. Vol. 2, p. 503. Ed. Brux.
Aurifère. BLAINVILLE, Dict. des Sc. Nat. Vol. 3, p. 135, supplement.

Description. Body swollen and pointed; aperture subelliptical. The two ear-shaped tubes are irregularly cylindrical, nearly as long as the body, with openings at their extremities. Cirri disposed round a common centre. I did not notice the lower aperture in the right tube, observed by Blainville. Peduncle twice the length of the body, and attached by a wide coriaceous disk.

Color. The markings similar to those of *C. vittata*; the body is, however, more of a dark purple: peduncle and body with dark fulvous stripes; ears white and spotted; cirri dark brown.

Total length, 2.0; of body, 0.8; of ears, 0.5.

Associated with the preceding on ships' bottoms in the harbor of New-York, and, like all the family, may be considered as introduced species.

(EXTRA-LIMITAL.)

O. cuvieri, Leach. (GOULD, l. c. p. 23.) Body a smooth leathery membrane, with a small crescent-shaped valve on each side of the aperture. *Color*, leaden brown, unspotted. Length, 2.0 - 4.0. *Vessels' bottoms. Massachusetts.*

ASCIDEA MANHATTENSIS.

Description. Oblong-oval, globular; orifices distant, elevated and surrounded by ten to thirteen verrucose processes; externally corrugated, often covered with marine sordes, concealing the natural color. When held against the light, the intestinal canal may be indistinctly traced. The shape varies according as they are crowded together or isolated; in the latter case, they are oval-orbicular.

Color. Uniform ashen-grey or brown.

Diameter, 0.3 – 1.0.

In the young, the orifices are both terminal. The aperturæ incarnatæ attributed by Linneus to the *rustica*, are wanting in this species, and the references to Müller indicate a very different animal. The *ovalis* of Lesueur, another allied species, has the tubes plaited. Our species is commonly found in the months of September and October, adhering to stones, dock-logs, and other submerged bodies. I refer to it a small *Ascidea*, about 0.3 in diameter, adhering to salt grasses.

(EXTRA-LIMITAL)

- A. rustica.* (LAM. Vol. 1, p. 584. GOULD, Invert. Mass. p. 319.) Rough; varying in size from a pea to that of a musket ball. *Color*, ferruginous; the orifices flesh-colored. *Northern Coast.*
- A. plicata.* (LESUEUR, Acad. Nat. Sc. Vol. 3, p. 5, pl. 3, fig. b.) Body ovate, sessile: surface subglabrous, but with many large inflated folds on the side of the inferior aperture, crossed by smaller folds, and giving the appearance of small imbricated dilatations. Apertures approximate, unequal, terminal. *Color*, white. Length, 2.0. Ships' bottoms. *Philadelphia.*
- A. ovalis.* (ID. Ib. p. 6, pl. 3, fig. a.) Sessile; somewhat smaller than the preceding, and without the inflated folds. Apertures large, distant, placed at the extremity of two short plaited tubes: skin round the aperture thin, and apparently divided into many small obsolete angles. *Color*, white. Same locality with the preceding.
- A. lobifera.* (ID. Ib. p. 7.) Body sessile, wrinkled, subglobular. Apertures approximate, unequal, concealed among many irregular fleshy lobes. *Color*, dull black. Length, 1.5. *Florida.*
- A. proboscidea.* (ID. Ib. p. 6, pl. 1, fig. 4, 5.) Smooth; with an elongated proboscis containing the two tubes. Apertures placed on the summit of the proboscis, and contiguous. *Color*, white. An *Ascidea*? *Coast of Georgia.*

The *A. intestinalis* and *microcosmus* have also been stated to occur on the Northern Coast.

- | | | | | | |
|------|-------------------------------|------|-------------------------------|------|-----------------------------------|
| FIG. | PLATE 10. | FIG. | PLATE 17. | FIG. | |
| 197 | <i>Dentalium dentalis</i> . | 232 | <i>Anodon plana</i> . | 264 | <i>Cyclas similis</i> . |
| 198 | <i>Chiton emersonii</i> . | 233 | — <i>excurvata</i> . | 265 | — <i>id</i> . |
| 199 | — <i>fulminatus</i> . | | PLATE 18. | 266 | <i>Cyrena carolinensis</i> . |
| 200 | — <i>albus</i> . | 234 | <i>Anodon fluviatilis</i> . | 267 | <i>Gnathodon cuneatum</i> . |
| 201 | — <i>apiculatus</i> . | 235 | — <i>benedictensis</i> . | | PLATE 26. |
| 202 | — <i>id</i> . | 236 | <i>Unio radiatus</i> . | 268 | <i>Cyprina islandica</i> , young. |
| 203 | <i>Ostrea borealis</i> , var. | | PLATE 19. | 269 | — <i>id</i> . adult. |
| 204 | — <i>id</i> . | 237 | <i>Unio ochraceus</i> . | 270 | <i>Sanguinolaria sordida</i> . |
| | PLATE 11. | 238 | — <i>id</i> . | 271 | <i>Tellina tenera</i> . |
| 205 | <i>Pecten concentricus</i> . | | PLATE 20. | 272 | — <i>versicolor</i> . |
| 206 | — <i>islandicus</i> . | 239 | <i>Unio nasutus</i> . | 273 | <i>Lucina divaricata</i> . |
| 207 | — <i>magellanicus</i> . | 240 | — <i>novi-eboraci</i> . | 274 | — <i>radula</i> . |
| 208 | <i>Lima glacialis</i> . | 241 | — <i>luteolus</i> . | | PLATE 27. |
| | PLATE 12. | 242 | — <i>tappanianus</i> . | 275 | <i>Lucina contracta</i> . |
| 209 | <i>Anomia ephippium</i> . | | PLATE 21. | 276 | <i>Venus mercenaria</i> . |
| 210 | — <i>aculeata</i> . | 243 | <i>Unio cariosus</i> . | 277 | — <i>gemma</i> . |
| 211 | <i>Arca pexata</i> . | 244 | — <i>id</i> . var. | 278 | — <i>notata</i> . |
| 212 | — <i>transversa</i> . | 245 | — <i>compressus</i> . | 279 | <i>Cytherea convexa</i> . |
| 213 | <i>Nucula minuta</i> . | | PLATE 22. | | PLATE 28. |
| 214 | — <i>sapotilla</i> , var. | 246 | <i>Unio complanatus</i> . | 280 | <i>Astarte castanea</i> . |
| 215 | — <i>proxima</i> . | 247 | <i>Cardita borealis</i> . | 281 | — <i>sulcata</i> . |
| 216 | — <i>radiata</i> . | 248 | <i>Crenella decussata</i> . | 282 | <i>Petricola pholadiformis</i> . |
| 217 | — <i>thraciæformis</i> . | 249 | <i>Cardium pinnatulum</i> . | 283 | — <i>dactylus</i> . |
| | PLATE 13. | | PLATE 23. | 284 | <i>Thracia conradi</i> . |
| 218 | <i>Nucula limatula</i> . | 250 | <i>Cardium grœnlandicum</i> . | 285 | <i>Corbula contracta</i> . |
| 219 | — <i>myalis</i> . | 251 | — <i>mortoni</i> . | | PLATE 29. |
| 220 | — <i>sapotilla</i> . | 252 | — <i>islandicum</i> . | 286 | <i>Mactra solidissima</i> . |
| 221 | — <i>gouldi</i> . | 253 | <i>Velutina zonata</i> . | 287 | — <i>lateralis</i> . |
| 222 | <i>Mytilus borealis</i> . | 254 | — <i>lævigata</i> . | 288 | <i>Mesodesma arctata</i> . |
| 223 | — <i>notatus</i> . | | PLATE 24. | 289 | <i>Mya truncata</i> . |
| | PLATE 14. | 255 | <i>Donax fossor</i> . | | PLATE 30. |
| 224 | <i>Alasmodon arcuata</i> . | 256 | <i>Mytilus pellucidus</i> . | 290 | <i>Mya arenaria</i> . |
| 225 | — <i>marginata</i> . | 257 | <i>Modiola modiolus</i> . | 291 | <i>Solemya borealis</i> . |
| 226 | — <i>rugosa</i> . | 258 | — <i>plicatula</i> . | 292 | — <i>velum</i> . |
| | PLATE 15. | 259 | <i>Alasmodon corrugata</i> . | | PLATE 31. |
| 227 | <i>Alasmodon undulata</i> . | | PLATE 25. | 293 | <i>Odostomia fusca</i> . |
| 228 | <i>Anodon unadilla</i> . | 260 | <i>Capsa lævigata</i> . | 294 | — <i>exigua</i> . |
| | PLATE 16. | 261 | <i>Cyclas dubia</i> . | 295 | — <i>id</i> . |
| 229 | <i>Anodon subcylindræa</i> . | 262 | — <i>partumeia</i> . | 296 | — <i>producta</i> . |
| 230 | — <i>ferussaciana</i> . | 263 | — <i>rhomboidea</i> . | 297 | — <i>insculpta</i> . |
| 231 | — <i>edentula</i> . | | | 298 | <i>Lutraria canaliculata</i> . |

INDEX.

	PAGE.		PAGE.		PAGE.
ACEPHALA,	166	Ampullaria paludosa, ...	124	Ancylus rivularis,	12
ACERIDÆ,	14	Anatina papyracea,	235	— tardus,	12
Achatina flammigera, ...	56	ANATINIDÆ,	234	Anodon benedictensis, ...	204
— solida,	56	Anatifa anserifera,	254	— edentula,	201
— striata,	56	— dentata,	255	— excurvata,	202
— vexillum,	56	— lævis,	255	— ferussaciana, ...	200
— virginea,	56	— vitrea,	255	— fluviatilis,	203
Alasmodon arcuata,	197	Anculotus angulatus,	102	— implicata,	202
— corrugata, ...	198	— carinatus, ...	101	— pavonia,	203
— marginata, ..	196	— costatus,	102	— plana,	201
— undulata,	198	— dentatus,	102	— subcylindracea, .	200
— rugosa,	196	— melanoides, ..	102	— unadilla,	199
Amphidesma æqualis, ...	238	— monodontoides, 102		Anomia aculeata	168
— flexuosa, ...	237	— nigrescens, ...	102	— ephippium,	168
— lepida,	238	— pictus,	103	ARCADÆ,	176
— orbiculata, .	237	— procerosus, ...	103	Arca incongrua,	177
— punctata, ..	237	— plicatus,	103	— pexata,	176
— radiata,	238	— pumilus,	103	— ponderosa,	177
— transversa, .	237	— subglobosus, ..	103	— transversa,	177
Amnicola cincinnatensis, .	88	— tæniatus,	103	Arion hortensis,	23
— grana,	88	— trivittatus,	102	Ascidea manhattensis, ...	259
— limosa,	88	Ancylus calcarius,	13	— lobifera,	259
— lustrica,	87	— diaphanus, ...	13	— ovalis,	259
— nickliana,	88	— filosus,	13	— plicata,	259
— porata,	88	— fuscus,	13	— proboscidea, ...	259
Ampullaria depressus, ...	124	— nuttallii,	13	— rustica,	259
— hopetonensis, 124		— parallelus,	13	Astarte castanea,	220

[FAUNA — PART 6.]

	PAGE.		PAGE.		PAGE.
<i>Cytherea gigantea</i> ,	216	<i>Helix californiensis</i> ,	46	<i>Helix rufa</i> ,	44
— <i>occulta</i> ,	216	— <i>cellaria</i> ,	37	— <i>sayi</i> ,	47
DENTALIDÆ,	160	— <i>chersina</i> ,	44	— <i>septemvolva</i> ,	47
<i>Dentalium dentalis</i> ,	160	— <i>clausa</i> ,	31	— <i>solitaria</i> ,	43
— <i>attenuatum</i> ,	161	— <i>concaua</i> ,	33	— <i>spinosa</i> ,	47
<i>Donax fossor</i> ,	212	— <i>columbiana</i> ,	46	— <i>striatella</i> ,	43
— <i>variabilis</i> ,	212	— <i>corpuloides</i> ,	45	— <i>subglobosa</i> ,	32
— <i>elevata</i> ,	212	— <i>cumberlandiana</i> ,	47	— <i>suppressa</i> ,	38
DORIDÆ,	7	— <i>dealbata</i> ,	46	— <i>tridentata</i> ,	28
<i>Doris illuminata</i> ,	8	— <i>dentifera</i> ,	34	— <i>thyroides</i> ,	29
<i>Eolidia bostoniensis</i> ,	9	— <i>diodonta</i> ,	34	— <i>townsendiana</i> ,	46
— <i>diversa</i> ,	10	— <i>egena</i> ,	45	— <i>vancouverensis</i> ,	45
— <i>gymnota</i> ,	10	— <i>electrina</i> ,	30	— <i>wardiana</i> ,	46
<i>Filurus dubius</i> ,	11	— <i>elevata</i> ,	36	HELICINIDÆ,	82
<i>Fusus bamfius</i> ,	148	— <i>exoleta</i> ,	27	<i>Helicina fastigiata</i> ,	82
— <i>bicolor</i> ,	148	— <i>fallax</i> ,	28	— <i>occulta</i> ,	82
— <i>cinereus</i> ,	145	— <i>fuliginosa</i> ,	37	— <i>orbiculata</i> ,	82
— <i>decemcostatus</i> ,	145	— <i>gularis</i> ,	46	— <i>plicata</i> ,	82
— <i>harpularius</i> ,	146	— <i>hirsuta</i> ,	36	<i>Janthina fragilis</i> ,	125
— <i>islandicus</i> ,	144	— <i>inflecta</i> ,	45	<i>Io fusiformis</i> ,	103
— <i>imbricatus</i> ,	149	— <i>interna</i> ,	46	<i>Kellia rubra</i> ,	232
— <i>muricatus</i> ,	149	— <i>inornata</i> ,	39	<i>Lacuna vincta</i> ,	111
— <i>pyruloides</i> ,	147	— <i>intertexta</i> ,	38	— <i>neritoidea</i> ,	112
— <i>rufus</i> ,	146	— <i>indentata</i> ,	31	LEPADÆ,	254
— <i>ventricosus</i> ,	144	— <i>irrorata</i> ,	45	<i>Lepton fabagella</i> ,	243
— <i>scalariformis</i> ,	143	— <i>jejuna</i> ,	46	LIMACIDÆ,	20
— <i>turriculus</i> ,	149	— <i>labyrinthica</i> ,	39	<i>Limax agrestis</i> ,	20
— <i>tornatus</i> ,	148	— <i>lasmadon</i> ,	47	— <i>campestris</i> ,	22
GASTEROPODA,	7	— <i>ligera</i> ,	40	— <i>dorsalis</i> ,	22
<i>Glycimeris siliqua</i> ,	246	— <i>lineata</i> ,	44	— <i>flavus</i> ,	21
<i>Gnathodon cuneatum</i> ,	233	— <i>major</i> ,	45	— <i>gracilis</i> ,	22
— <i>flexuosum</i> ,	233	— <i>monodon</i> ,	35	<i>Lima glacialis</i> ,	175
<i>Glandina truncata</i> ,	56	— <i>minuta</i> ,	40	— <i>squamosa</i> ,	175
GLAUCIDÆ,	9	— <i>mitchelliana</i> ,	45	LIMNIADÆ,	59
HELICIDÆ,	25	— <i>multilineata</i> ,	41	<i>Limnea appressa</i> ,	74
<i>Helix albolabris</i> ,	26	— <i>nuttalliana</i> ,	46	— <i>apicina</i> ,	75
— <i>alternata</i> ,	29	— <i>oregonensis</i> ,	46	— <i>attenuata</i> ,	75
— <i>appressa</i> ,	27	— <i>palliata</i> ,	33	— <i>bulimoides</i> ,	75
— <i>arborea</i> ,	30	— <i>porcina</i> ,	45	— <i>caperata</i> ,	69
— <i>aspersa</i> ,	47	— <i>profunda</i> ,	42	— <i>catascopium</i> ,	67
— <i>avara</i> ,	46	— <i>perspectiva</i> ,	42	— <i>columella</i> ,	72
— <i>auriculata</i> ,	49	— <i>pennsylvanica</i> ,	41	— <i>desidiosa</i> ,	73

	PAGE.
<i>Melania sordida</i> ,	94
— <i>striatula</i> ,	99
— <i>strigosa</i> ,	95
— <i>subcylindracea</i> ,	94
— <i>subularis</i> ,	92
— <i>subsolida</i> ,	94
— <i>sulcosa</i> ,	99
— <i>taitiana</i> ,	92
— <i>tenebrosa</i> ,	95
— <i>terebralis</i> ,	95
— <i>teres</i> ,	96
— <i>trochiformis</i> ,	100
— <i>troostiana</i> ,	100
— <i>trilineata</i> ,	100
— <i>tuberculata</i> ,	93
— <i>undulata</i> ,	92
— <i>venusta</i> ,	99
— <i>vestita</i> ,	100
— <i>virgata</i> ,	95
— <i>virginica</i> ,	90
— <i>viridis</i> ,	95
— <i>warderiana</i> ,	99
<i>Mesodesma arcata</i> ,	231
— <i>jauresii</i> ,	231
MITRIADÆ ,	151
<i>Modiola americana</i> ,	186
— <i>carolinensis</i> ,	186
— <i>castanea</i> ,	186
— <i>discors</i> ,	185
— <i>discrepans</i> ,	185
— <i>modiolus</i> ,	185
— <i>nexa</i> ,	185
— <i>pectinula</i> ,	185
— <i>plicatula</i> ,	184
<i>Montacuta bidentata</i> ,	232
MYADÆ ,	238
<i>Mya acuta</i> ,	240
— <i>arenaria</i> ,	240
— <i>truncata</i> ,	240
MYTILIDÆ ,	181
<i>Mytilus borealis</i> ,	182
— <i>cubitus</i> ,	183

	PAGE.
<i>Mytilus hamatus</i> ,	183
— <i>incurvatus</i> ,	183
— <i>lateralis</i> ,	183
— <i>leucopheatus</i> ,	184
— <i>notatus</i> ,	182
— <i>pellucidus</i> ,	183
— <i>ungulatus</i> ,	183
<i>Natica clausa</i> ,	122
— <i>duplicata</i> ,	121
— <i>flava</i> ,	123
— <i>heros</i> ,	120
— <i>immaculata</i> ,	122
— <i>pusilla</i> ,	123
— <i>triseriata</i> ,	121
<i>Nucula acuta</i> ,	181
— <i>gouldi</i> ,	180
— <i>limatula</i> ,	180
— <i>minuta</i> ,	181
— <i>myalis</i> ,	180
— <i>navicularis</i> ,	180
— <i>proxima</i> ,	179
— <i>radiata</i> ,	179
— <i>sapotilla</i> ,	180
— <i>tenuis</i> ,	181
— <i>thraciaformis</i> ,	178
<i>Odostomia exigua</i> ,	116
— <i>fusca</i> ,	116
— <i>insculpta</i> ,	115
— <i>producta</i> ,	116
— <i>seminuda</i> ,	115
— <i>trifida</i> ,	114
<i>Oliva literata</i> ,	152
<i>Osteodesma hyalina</i> ,	234
OSTRACIDÆ ,	167
<i>Ostrea borealis</i> ,	169
— <i>canadensis</i> ,	170
— <i>equestris</i> ,	171
— <i>semicylindrica</i> ,	171
— <i>virginica</i> ,	169
<i>Otton blainvilli</i> ,	257
— <i>cuvieri</i> ,	257
<i>Paludina bimonicifera</i> ,	87

	PAGE.
<i>Paludina dissicisa</i> ,	84
— <i>dissimilis</i> ,	86
— <i>genicula</i> ,	86
— <i>georgiana</i> ,	86
— <i>integra</i> ,	84
— <i>intertexta</i> ,	85
— <i>isogona</i> ,	85
— <i>lapidaria</i> ,	86
— <i>magnifica</i> ,	86
— <i>ponderosa</i> ,	86
— <i>subcarinata</i> ,	87
— <i>subglobosa</i> ,	86
— <i>subpurpurea</i> ,	86
— <i>transversa</i> ,	85
— <i>vivipara</i> ,	86
<i>Pandora trilineata</i> ,	239
<i>Panopea arctica</i> ,	246
<i>Patella candida</i> ,	161
PATELLIDÆ ,	161
<i>Patelloida alveus</i> ,	162
— <i>testudinalis</i> ,	162
<i>Pecten concentricus</i> ,	172
— <i>islandicus</i> ,	173
— <i>magellanicus</i> ,	173
— <i>nodosus</i> ,	174
— <i>ornatus</i> ,	174
— <i>purpuratus</i> ,	174
— <i>varius</i> ,	172
PECTINIDÆ ,	172
<i>Petricola dactylus</i> ,	228
— <i>pholadiformis</i> ,	228
<i>Pholas costata</i> ,	248
— <i>crispata</i> ,	249
— <i>cuneiformis</i> ,	248
— <i>oblongata</i> ,	248
— <i>truncata</i> ,	248
PHOLIDÆ ,	247
<i>Physa ancillaria</i> ,	79
— <i>aurea</i> ,	80
— <i>concolor</i> ,	81
— <i>cylindrica</i> ,	77
— <i>elliptica</i> ,	77