6 to 25 fathoms; Bay of Fundy, 4 to 20 fathoms. Fossil in the Post-Pliocene of Canada. This species is usually brownish or chestnut-color, but is also frequently white.

Rissoa eburnea Stimpson, has been recorded (as *Rissoella* (?) *eburnea*) by Dr. G. H. Perkins, from Long Island Sound, near New Haven, but I have seen no undoubted shells of this species from any locality south of Massachusetts Bay. The shell referred to by Dr. Perkins was beach-worn, and may have been some other species. The figure given in the second edition of Gould's Invertebrata (fig. 564, p. 297), does not represent this species. See the figure in Stimpson's Shells of New England, Plate 1, figs. 1, 1*a*. This shell appears to be a *Jeffreysia*.

From Huntington, Long Island, I have seen a shell closely resembling *Rissoa latior* Stimpson, (M. and Adams, sp.), if not identical with it.

SKENEA PLANORBIS. Plate XXIV, fig. 142. (p. 383.)

Forbes and Hanley, British Mollusca, vol iii, p. 156, Plate 74, figs. 1–3, and Plate G, G, figs. 1 and 1*a* (animal); Stimpson, Shells of New England, p. 35; Gould, Invert., ed. ii, p. 296, fig. 563. *Turbo planorbis* Fabricius, Fauna Grönl., p. 394, 1780. *Skenea serpuloides* Gould, Invert., ed. i, 247, fig. 189.

Long Island Sound to Greenland, Iceland, Spitzbergen, Scandinavia; and northern and eastern coasts of Europe generally, to England and France. Near New Haven, Connecticut, common; Watch Hill, Rhode Island; Cuttyhunk Island. Very common on all rocky shores in Massachusetts Bay, Casco Bay, and Bay of Fundy. Fossil in the Post-Pliocene of Scotland and Scandinavia.

STYLIFER STIMPSONII Verrill. (p. 460.)

American Journal of Science, vol. iii, pp. 210 and 283, 1872.

Shell white, short, swollen, broad oval; spire short, rapidly enlarging. Whorls four or five, the last one forming a large part of the shell; convex, rounded, with the suture impressed, surface smooth, or with very faint striæ of growth; a slightly impressed revolving line just below the suture. Aperture large and broad. Length about .15 of an inch; breadth, .12.

Parasitic on the dorsal surface of *Strongylocentrotus Dröbachiensis*, from off New Jersey, in 35 fathoms (Captain Gedney); and Saint George's Bank, north latitude 41° 25′, west longitude 65° 50′, 3″, in 60 fathoms, (S. I. Smith).

EULIMA OLEACEA Kurtz and Stimpson. Plate XXIV, fig. 149. (p. 418.)

Proceedings Boston Soc. Nat. Hist., vol. iv, p. 115, 1851; Stimpson, Shells of New England, p. 39, Plate 1, fig 6, 1851; Gould, Invert., ed. ii, p. 332, fig. 603.

Vineyard Sound to Beaufort, North Carolina. In Vineyard Sound it is not uncommon on *Thyone Briareus*, in 4 to 10 fathoms. Buzzard's Bay (Stimpson).

ODOSTOMIA PRODUCTA Gould. Plate XXIV, fig. 143. (p. 418.)

Invert., ed. i, p. 270, fig. 175, 1841; ed. ii, p. 325, fig. 593. *Jaminia producta* Adams, Boston Journal Nat. Hist., vol. iii, p. 322, Plate 3, fig. 8, 1840.

Vineyard Sound to New Jersey.

ODOSTOMIA FUSCA Gould. Plate XXIV, fig. 144. (p. 307.)

Invert., ed. i, p. 270, fig. 176; ed. ii, p. 325, fig. 594. *Pyramis fusca* Adams, op. cit., vol ii, p. 282, Plate 4, fig. 9, 1839.

Cape Cod to New Jersey.

This species is referred both to *Turbonilla* and *Odostomia* by H. and A. Adams, in the same work (Genera Moll., pp. 231, 232).

ODOSTOMIA DEALBATA Stimpson.

Smithsonian Check-List, p. 5, 1860; Gould, Invert., ed. ii, p. 327, fig. 595. *Chemnitzia dealbata* Stimpson, Proc., Boston Soc. Nat. Hist., vol. iv, p. 114, 1851; Shells of New England, p. 41.

Long Island Sound to Boston Harbor. New Haven, Connecticut (Perkins). Boston (Stimpson).

ODOSTOMIA BISUTURALIS Gould. (p. 307.)

Invert., ed. ii, p. 327, (not fig. 597). *Turritella bisuturalis* Say, Journ. Acad. Nat. Sci., Philadelphia, vol. ii, p. 244, 1822. *Chemnitzia bisuturalis* Stimpson, Shells of New England, p. 42. *Jaminia exigua* Couthouy, Boston Journ. Nat. Hist., vol. ii, Plate 1, fig. 7, 1838. *Odostomia exigua* Gould, Invert., ed. i, p. 272, fig. 177.

New Jersey to Massachusetts Bay. Boston (Say); Chelsea (Couthouy); Staten Island; Greenport, and Huntington, Long Island (S. Smith). Not uncommon in Long Island Sound, Vineyard Sound, and Buzzard's Bay.

The figure (597) in the second edition of Gould's Invertebrata does not represent this species, but apparently a variety of *O. trifida*.

ODOSTOMIA TRIFIDA Gould. Plate XXIV, figs. 145, 146. (p. 307.)

Invert., ed. i, p. 274, fig. 179, 1841; ed. ii, p. 328, fig. 598. *Actæon trifidus* Totten, Amer. Journ. Science, ser. i, vol. xxvi, p. 368, Plate 1, figs. 4, *a*, *b*, 1834.

New Jersey to Massachusetts Bay. Staten Island (S. Smith); Lynn, Massachusetts (Haskell). Common in Long Island Sound, Vineyard Sound, and Buzzard's Bay.

ODOSTOMIA IMPRESSA Stimpson. Plate XXIV, fig. 147. (p. 418.)

American Journ. Science, vol. xxiv, p. 444, 1860; Gould, Invert., ed. ii, p. 330, fig. 600. *Odostomia insculpta* Dekay, Nat. Hist. N. Y., Mollusca, p. 115, Plate 31, fig. 297, 1843. *Turritella impressa* Say, Journ. Acad. Nat. Sci., Philadelphia, vol. ii, p. 244, 1822; Binney's Say, p. 84. *Chemnitzia impressa* Stimpson, Shells of New England, p. 42, 1851.

Long Island Sound to South Carolina. Near New Haven, Connecticut, rare. East River (Dekay); Maryland (Say); Beaufort, North Carolina (Stimpson, Coues).

ODOSTOMIA SEMINUDA Gould. Plate XXIV, fig. 148. (p. 418.)

Invert., ed. i, p. 273, fig. 178, 1841; ed. ii, p. 329, fig. 599. *Jaminia seminuda* C. B. Adams, Boston Journal Nat. Hist. vol. ii, p. 280, Plate 4, fig. 13, 1839. *Chemnitzia seminuda* Stimpson, Shells of New England, p. 42, 1851. *Turbonilla seminuda* H. and A. Adams, Genera Moll., vol. i, p. 231.

Massachusetts Bay to South Carolina. Common in Vineyard Sound and Buzzard's Bay, in 2 to 10 fathoms; Long Island Sound, less common. Massachusetts Bay (Stimpson). Greenport and Huntington, Long Island (S. Smith). Fort Macon, North Carolina (Coues).

TURBONILLA INTERRUPTA Adams. (p. 418.)

H. and A. Adams, Genera, vol. i, p. 231, 1858; Gould, Invert., ed. ii, p. 231, fig. 601 (bad figure). *Turritella interrupta* Totten, Amer. Jour. Science, ser. i, vol. xxviii, p. 352, fig. 7, 1835; Gould, Invert., ed. i, p. 268, fig. 173 (incorrect).

Cape Cod to South Carolina. Quite common in Vineyard Sound and Buzzard's Bay, in 3 to 10 fathoms; Long Island Sound, off Thimble Islands and New Haven, 3 to 5 fathoms, rather rare. Huntington and Greenport (S. Smith). Dartmouth, Massachusetts (Adams). Newport, Rhode Island (Totten). Fort Macon, North Carolina (Coues).

I have received from Prof. E. S. Morse specimens of this shell obtained from mud in the harbor of Portland, Maine, but they are dead and bleached. I am not aware that it has been found living so far north on our coast. Fossil in the Post-Pliocene of South Carolina.

Lovén records this species as from the coast of Norway, but possibly his shell is a different species, or else a variety of *T. rufa* of Southern Europe, which is certainly very closely related to our species, and is considered the same by Jeffreys. If so, the name given by Totten has precedence of *rufa* (Philippi, 1836). Farther and more extensive comparisons must be made before the identity of the two forms can be established.

The figure given in the first edition of Gould's Invertebrata, and copied in the second edition, does not correctly represent this shell, and was, perhaps, drawn from some other species, for it does not agree with Gould's description, which is accurate. The spire, as represented, is too acute and too rapidly tapered; the last or body whorl is too large; the aperture has not the right form; and the peculiar sculpture is not brought out at all. Totten's figure, though somewhat coarse, is characteristic.

TURBONILLA ELEGANS Verrill. Plate XXIV, fig. 155. (p. 418.)

American Journal of Science, ser. iii, vol. iii, pp. 210, 282, Plate 6, fig. 4, 1872.

Shell light yellowish, elongated, moderately slender, acute. Whorls ten or more, well rounded, not distinctly flattened; suture rather deeply impressed; surface somewhat lustrous, with numerous rounded vertical costæ, narrower than the concave interspaces, fading out below the middle of the last whorl; and with numerous fine revolv-

ing grooves, which are interrupted on the costæ, but distinct in the intervals; on the upper whorls there are about five; and on the lower half of the last whorl usually five or six distinct and continuous ones. Aperture broad oval, anteriorly rounded and slightly effuse; outer lip thin, sharp; columella nearly straight at base within, slightly revolute outwardly, regularly curved anteriorly where it joins the outer lip, and not forming an angle with it. The epidermis is thin, light yellow, sometimes with a darker, yellowish, revolving band on the middle of the last whorls, and also with the revolving striæ darker.

Vineyard Sound, 6 to 10 fathoms; Long Island Sound, near New Haven, 5 fathoms.

TURBONILLA AREOLATA Verrill, sp. nov.

Shell small, slender, with eight or more whorls, slightly obelisk-shaped, owing to the more rapid narrowing of the upper whorls; apical or nuclear whorl very small, reversed; the other whorls are moderately convex, somewhat flattened in the middle, and crossed by numerous rather crowded, narrow, transverse costæ, of which there are twenty-five or more on the lower whorls; interstices interrupted by numerous rather conspicuous, revolving, impressed lines, of which there are about six on the upper whorls; these divide the interstices into series of pretty regular, small, squarish pits, but do not cross the costæ; the body-whorl is subangulated below the middle, where the costæ disappear, below which the base is marked only by fine revolving lines; suture impressed. Aperture oval, acute posteriorly, rounded and slightly spreading anteriorly; outer lip sharp, thin, slightly angulated below the middle, rounded and slightly effuse anteriorly; columella smooth, somewhat curved, scarcely forming an angle at its junction with the outer lip. Length, 4^{mm}; breadth, 1.5^{mm}.

Long Island Sound, near New Haven.

The crowded costæ and numerous spiral lines produce a closely cancellated appearance, which is sufficient to distinguish this from the two preceding species. From the following it differs much in sculpture, form, shape of aperture, and columella, and especially in the minute size of the apical whorl.

TURBONILLA COSTULATA Verrill, sp. nov.

Shell small, long conical, translucent, glossy white, banded faintly with pale brown, subacute, with a relatively large, smooth, reversed apical whorl; the other whorls are six or more, flattened, and but slightly convex, enlarging regularly, crossed by numerous straight, smooth, rounded, transverse costæ, of which there are upward of twenty on the lower whorls; interstices rather narrower than the costæ, deep, and interrupted by numerous very minute revolving lines, which are scarcely visible under an ordinary pocket-lens, and do not cross the costæ; suture impressed. The body-whorl is subangulated below the

middle, the costæ vanishing at the angulation; the base is covered with numerous microscopic revolving lines; on the body-whorl there are two revolving bands of pale brown, one above and one below the angulation. Aperture long ovate, acute posteriorly, a little angulated on the outer side, rounded and slightly prolonged anteriorly. Outer lip thin and sharp, round and slightly effuse anteriorly; columella smooth, nearly straight, but scarcely forming an angle where it joins the outer lip. Length, 4^{mm}; breadth, 1.5^{mm}.

Somewhat resembles *T. interrupta*, but the costæ are more crowded, the spiral lines are very much finer and more numerous, and the nuclear-whorl is much larger.

Long Island Sound, near New Haven, Conn.

TURBONILLA STRICTA Verrill, sp. nov.

Shell white, subulate, very acute, with a very minute reversed apical whorl; whorls ten, besides the nucleus, gradually and regularly enlarging, flattened or only very slightly convex, crossed by straight, obtuse, transverse costæ, of which there are about sixteen or eighteen on the lower whorls; the two upper whorls are nearly smooth; suture impressed. Aperture irregularly oblong-ovate, acute posteriorly, rounded anteriorly; outer lip flattened, thickened internally, in mature shells, and minutely crenulate within; columella smooth, nearly straight, thickened, forming an angle where it joins the outer lip. Length, 4.5^{mm}; breadth, 1^{mm}.

Long Island Sound, off New Haven, Connecticut.

This is probably the shell recorded from this region as *T. nivea* (Stimpson, sp.) by Dr. G. H. Perkins. It differs from the *nivea* in the form of the aperture and lip, and in being smaller and much more acute, though having the same number of whorls.

TURBONILLA EQUALIS Verrill.

Turritella æqualis Say, Journal Acad. Nat. Sciences, vol. v, p. 208, 1826; Binney's Say, p. 119.

"Shell subulate, white; volutions ten, each with about twenty-two, transverse, elevated, obtuse, equal lines, with interstitial grooves of the same diameter; suture distinct, impressed; aperture rounded at base, and destitute of any distinct emargination. Length one-fifth of an inch." (Say.)

My specimens agree well with the above description. The shell is very slender and acute, with a small distinctly reversed apical whorl; the remaining nine whorls are somewhat flattened, and all are crossed by obtuse, transverse costæ, which are a little oblique, especially at the upper ends, close to the sutures; on the body-whorl there are about twenty, but fewer on the upper ones; at the base of the body-whorl they vanish, leaving it smooth; the interstices between the costæ are deep and apparently smooth. The aperture is round ovate, well rounded or sub-circular anteriorly; the inner lip having a raised and thin

margin. Length, 4.5mm; breadth, 1.25mm. Vineyard Sound, 6 to 8 fathoms.

Menestho albula Möller (Fabricius, sp.), was recorded by Linsley (as *Pyramis striatula* Couth.) from the stomachs of ducks at Bridgeport, Connecticut. It has not been found south of Cape Cod by any one else, and as it is a rare deep-water shell on our northern coast, it is not likely to have been obtained by ducks. It is found in Massachusetts Bay, Casco Bay, Bay of Fundy, and northward to Greenland. Linsley's shell may have been *Odostomia impressa.*

SCALARIA LINEATA Say. Plate XXI, fig. 123. (p. 418.)

Journal Acad. Nat. Sciences, Philadelphia, vol. ii, p. 242, 1822; Binney's Say, pp. 83, 180, Plate 27, lower left figure; Gould, Invert., ed. i, p. 250; ed. ii, p. 312, fig. 580.

Vineyard Sound, Buzzard's Bay, and Long Island Sound; southward to South Carolina and Georgia. Fossil in the Post-Pliocene of North and South Carolina.

SCALARIA MULTISTRIATA Say. Plate XXI, fig. 122. (p. 418.)

Journ. Acad. Nat. Sciences, Philadelphia, vol. v, p. 208, 1826; Amer. Conchology, iii, Plate 27; Binney's Say, pp. 119, 180, Plate 27, lower right figure; Gould, Invert., ed. ii, p. 313, fig. 581.

Vineyard Sound, Buzzard's Bay and Long Island Sound; southward to Florida. Fossil in the Post-Pliocene of South Carolina.

SCALARIA ANGULATA Say.

American Conchology, iii, Plate 27, upper figures, 1831, as a variety of *S. clathrus*; Sowerby, Thes. Conch., part iv, p. 86, Plate 32, fig. 5, 1844. *Scalaria Humphreysii* Kiener, Iconographie des Coquilles Viv., p. 15, Plate 5, fig. 16, 1838–9.

Connecticut to Florida. Stonington (Linsley); Greenport, Long Island (S. Smith). Outer beach at Great Egg Harbor, New Jersey (A. E. V.); Fort Macon and Beaufort, North Carolina, common, (Stimpson, Coues); South Carolina (Kiener). Rare and perhaps accidental north of New Jersey.

SCALARIA GRŒNLANDICA Perry.

Conch., 1811, (t. Mörch); Sowerby, Thesaurus Conch., part iv, p. 101, Plate 34. figs. 105, 106, 1844; Gould, Invert., ed. i, p. 249, fig. 170*; ed. ii, p. 314, fig, 582. *Turbo clathrus Grœnlandicus* Chemnitz, Conch., xi, t. 1878, 1879 (t. Gould). *Scalaria subulata* Couthouy, Boston Jour. Nat. Hist., vol. ii, p. 93, Plate 3, fig. 4, 1838.

Cape Cod to the Arctic Ocean, and northern coasts of Europe, southward to Bergen. South Shoals, off Nantucket (Agassiz, t. Stimpson). Common in Casco Bay and Bay of Fundy, from 10 to 109 fathoms. Fossil in the Post-Plicoene of Nantucket, rare, (Desor); and in the Red-Crag, Norwich-Crag, and later deposits in Great Britain.

Janthina fragilis Lamarck; Gould, Invert., ed. i, p. 240; ed. ii, p. 277. This has been found cast ashore at Nantucket, but probably does not occur living so far north. It inhabits the Gulf Stream farther south.

RHIPIDOGLOSSA.

MARGARITA OBSCURA Gould. Plate XXIV, fig. 156. (p. 508.)

Invert., ed. i, p. 253, fig. 171*, 1841; ed. ii, p. 283, fig. 545. *Turbo obscurus* Couthouy, Boston Journ. Nat. Hist., vol. ii, p. 100, Plate 3, fig. 2, 1838.

Stonington, Connecticut, to Labrador. Rare and confined to the outer waters south of Cape Cod; off Martha's Vineyard, 20 to 25 fathoms. Stonington, from haddock's stomach, (Linsley). Common in Massachusetts Bay, Casco Bay, and in the Bay of Fundy, from extreme low-water mark to 100 fathoms. East of Saint George's Bank, in 430 fathoms, (S. I. Smith).

Margarita ornata Dekay, N. Y. Mollusca, p. 107, Plate 6, fig. 104, 1843, was described as occurring in the vicinity of New York, but I have not met with it in Long Island Sound.

DOCOGLOSSA.

ACMÆA TESTUDINALIS Forbes and Hanley. Plate XXIV, figs. 159, 159*a*. (p. 307.)

British Mollusca, vol. ii, p. 434, Plate 62, figs. 8, 9, and Plate A A, fig. 2; Carpenter, Report of British Association for 1856, pp. 219, 366, 1857; Dall (subgenus, *Collisella* Dall), American Journal of Conchology, vol. vi, p. 249, 1871. *Lottia testudinalis* Gould, Invert., ed. i, p. 153, fig. 12. *Tectura testudinalis* Gould, Invert., ed. ii, p. 267, fig. 529. *Patella testudinalis* Müller, Prodromus Zool. Danica, p. 227, 1776.

Variety *alveus*, (fig. 159 *a*). *Patella alveus* Conrad, Journal Acad. Nat. Sciences, Philadelphia, vol. vi, Plate 11, fig. 20, 1831. *Lottia alveus* Gould, Invert., ed. i, p. 154, fig. 13. *Tectura alveus* Gould, Invert., ed. ii, p. 269, fig. 530.

Long Island Sound to the Arctic Ocean; circumpolar. It extends southward on the European coasts to Southern Sweden, England, and Ireland; in the North Pacific, southward to Sitka and the Island of Jesso, Japan. It is comparatively rare and local south of Cape Cod; at New Haven, very rare; Watch Hill, Rhode Island; Martha's Vineyard, Cuttyhunk, and adjacent islands. Huntington and Greenport, Long Island (S. Smith). Fossil in the Post-Pliocene of Labrador (Packard); Greenland, Scandinavia, and Great Britain.

POLYPLACOPHORA.

CHÆTOPLEURA APICULATA Carpenter. Plate XXV, fig. 167.

Chiton apiculatus Say, Amer. Conch., part vii, appendix, (?) 1834; Binney's Say, p. 231; Gould, Invert., ed. i, p. 146, fig. 20; ed. ii, p. 258, fig. 522. *Leptochiton apiculatus*, this Report, p. 399.

Cape Cod to Eastern and Western Florida. Common in Vineyard Sound and Buzzard's Bay, in 3 to 12 fathoms, shelly. Off New London, Connecticut (coll. T. M. Prudden).

Dr. P. P. Carpenter informs me that this species belongs to the genus *Chætopleura* of Gray (*non* Adams).

TRACHYDERMON RUBER Carpenter. Plate XXV, fig. 166.

Chiton ruber Lowe, Zoöl. Journ., vol. ii, p. 101, Plate 5, fig. 2 (t. Gould); Gould, Invert., ed. i, p. 149, fig. 24; ed. ii, p. 260, fig. 523. *Leptochiton ruber* H. and A. Adams, Genera, vol i, p. 473; this Report, p. 399.

Off New London, Connecticut, to the Arctic Ocean and northern coasts of Europe. Rare and local in the colder outer waters south of Cape Cod. Off New London, 8 fathoms; off Watch Hill, 5 fathoms. Stonington (Linsley). Very common in Casco Bay and Bay of Fundy, from low-water mark to 40 fathoms.

Dr. Carpenter assures me that this species should be referred to *Trachydermon*.

Linsley records "*Chiton fulminatus* Couth." (= *C. marmoreus* Gould, Invert., ed. ii, p. 261, fig. 524) as from cod-fish taken off Stonington, Connecticut, but as it has not been confirmed from south of Cape Cod, this must be regarded as a doubtful identification. This species is found from Massachusetts Bay northward to the Arctic Ocean and northern coasts of Europe. It is common in the Bay of Fundy, from low-water mark to 40 fathoms, on "nullipore" (*Lithothamnion*).

"*Chiton albus*" (= *Trachydermon albus*, t. Carpenter) has been mentioned as from this region, but probably erroneously. White specimens of *C. apiculata* are often mistaken for it, when superficially examined. The genuine *albus* is a northern species, with about the same distribution as the preceding. It is abundant in the Bay of Fundy, from low-water to 80 fathoms.

PULMONATA.

MELAMPUS BIDENTATUS Say. Plate XXV, figs. 169, 169*a*. (p. 463.)

Journal Acad. Nat. Sciences, Philadelphia, vol. ii, p. 245, 1822; Gould, Invert., ed. ii, p. 467, fig. 721. *Auricula bidentata* Gould, Invert., ed. i, p. 117, fig. 131. *Melampus corneus* Stimpson, Shells of New England, p. 51, 1851.

Massachusetts Bay to Florida, and along the northern shores of the Gulf of Mexico to Texas. Very common on the shores of Vineyard Sound, Buzzard's Bay, Long Island, and Long Island Sound. Fossil in the Post-Pliocene of South Carolina.

ALEXIA MYOSOTIS Pfeiffer. Plate XXV, fig. 168. (p. 383.)

Pfeiffer, Mon. Auric. Viv., p. 148, (t. Binney); Gould, Invert., ed. ii, p. 463, figs. 718, 719. *Auricula myosotis* Draparnaud, Tabl. Moll. Fr., p. 53. *Auricula denticulata* Gould, Invert., ed. i, p. 199, fig. 129 (*non* Montfort).

New Jersey to Nova Scotia; also on the Atlantic and Mediterranean coasts of Europe. It is common at Eastport, Maine; Portland, Maine; and at the mouth of West River, near New Haven, Connecticut; also near New York City.

TECTIBRANCHIATA.

BULLA SOLITARIA Say. Plate XXV, fig. 161. (p. 371.)

Journal Acad. Nat. Sciences, Philadelphia, vol. ii, p. 245, 1822; Binney's Say, p. 84; Gould, Invert., ed. i, p. 162, fig. 92; ed. ii, p. 222, fig. 513. *Bulla insculpta* Totten, American Journ. Science, vol. xxviii, p. 350, fig. 4, 1835.

Massachusetts Bay to South Carolina. Common in the muddy lagoons

and salt-ponds along the shores of Vineyard Sound, Buzzard's Bay, and Long Island Sound. Abundant in a small pond near Holmes' Hole; in New Haven Harbor, in ditches near Fort Hale.

CYLICHNA ORYZA Stimpson. Plate XXV, fig. 164. (p. 432.)

Smithsonian Check List, p. 4, 1860; Gould, Invert., ed. ii, p. 221, fig. 512. *Bulla oryza* Totten, Amer. Jour. Science, vol. xxviii, p. 350, fig. 5, 1835; Gould, Invert., ed. i, p. 168, fig. 93.

Cape Cod to South Carolina. Not uncommon in Vineyard Sound, Buzzard's Bay, and Long Island Sound. This species was recorded as from Casco Bay by Dr. Mighels, but as this habitat has not been confirmed subsequently, it was probably based on an erroneous identification. Fossil in the Post-Pliocene of Canada (Dawson).

CYLICHNA ALBA Lovén. Plate XXV, fig. 163. (p. 508.)

Ofversigt af Kongl. Vet.-Akad. Förhandlingar, vol. iii, p. 142, 1846; Gould, Invert., ed. ii, p. 220, fig. 511. *Volvaria alba* Brown, Ill. Conch. G. B., iii, p. 3, figs. 43, 44. *Bulla triticea* Couthouy, Boston Jour. Nat. Hist., vol. ii, p. 88, Plate 2, fig. 8, 1838; Gould, Invert., ed. i, p. 165, fig. 98.

Near Block Island, northward to the Arctic Ocean; northern coasts of Europe to Bergen; and on the northwest coast of America, south to Sitka. Fossil in the Post-Pliocene of Canada and Great Britain.

Most of the specimens of this shell dredged in the Bay of Fundy are opaque, yellowish brown or chestnut color, but those from Casco Bay are nearly all clear white and translucent, although of equal size.

UTRICULUS CANALICULATUS. Plate XXV, fig. 160. (p. 432.)

Stimpson, Smithsonian Check-List, p. 4, 1860; Gould, Invert., ed. ii, p. 219, fig. 510. *Volvaria canaliculata* Say, Jour. Acad. Nat. Sciences, Philadelphia, vol. v, p. 211, 1826; Binney's Say, p. 121. *Bulla canaliculata* Gould, Invert., ed. i, p. 166, fig. 97. *Tornatina canaliculata* H. and A. Adams, Genera, vol. ii, p. 13.

Massachusetts Bay to South Carolina. Common in Buzzard's Bay and Vineyard Sound, in 2 to 8 fathoms; less common in Long Island Sound. Fort Macon, North Carolina, abundant, (Dr. Yarrow). Fossil in the Post-Pliocene of North and South Carolina; and the Pliocene of South Carolina.

AMPHISPHYRA DEBILIS Verrill. Plate XXV, fig. 162. (p. 432.)

Bulla debilis Gould, Amer. Journ. Science, ser. i, vol. xxxviii, p. 196, 1840; Invert., ed. i, p. 164, fig. 95, 1841. *Diaphana debilis* Gould, Invert., ed. ii, p. 216, fig. 507. *Bulla pellucida* Brown, 1844. *Amphisphyra pellucida* Lovén, op. cit., p. 143, 1846. *Bulla hyalina* Turton, Mag. Nat. Hist., vol. vii, p. 353, 1834, (t. Jeffreys), (*non* Gmelin).

Cape Cod to the Arctic Ocean; and on the northern coasts of Europe, southward to Great Britain, Madeira, etc. Stonington, Connecticut, from stomach of cod (Linsley). Not uncommon in Casco Bay and Bay of Fundy, and northward, in 6 to 50 fathoms. Very rare south of Cape Cod. Fossil in the Post-Pliocene of Canada, Great Britain, Norway, and Sweden.

ACTÆON PUNCTO-STRIATA Stimpson. Plate XXV, fig. 165.

Shells of New England, p. 51, 1851; H. and A. Adams, Genera, vol. ii, p. 5. *Tornatella puncto-striata* C. B. Adams, Boston Jour. Nat. Hist., vol. iii, p. 323, Plate 3, fig. 9, 1840; Gould, Invert., ed. i, p. 245, fig. 188; ed. ii, p. 224, fig. 515.

Cape Cod to South Carolina. Vineyard Sound, and Buzzard's Bay, not uncommon; Long Island Sound, rare; Huntington and Greenport, Long Island (S. Smith).

DORIDELLA Verrill.

Body smooth, oval, convex. Dorsal tentacles retractile, without sheaths. Head prominent, the lateral angles prolonged anteriorly as short oral palpi or tentacles. Foot broad, cordate. Branchiæ tufted, situated near the posterior end, on the right side, in the groove between the mantle and foot.

DORIDELLA OBSCURA Verrill. Plate XXV, figs. 173 *a*, *b*. (p. 400.)

American Journal of Science, vol. l, p. 408, figs. 2, 3, November, 1870.

Body broad oval, 7.5^{mm} long and 5^{mm} broad; back convex, smooth. Foot broad, cordate in front. Oral disk broad, emarginate or with concave outline in front; the angles somewhat produced, forming short, obtusely pointed, tentacle-like organs, which in extension project beyond the front edge of the mantle. Dorsal tentacles small, stout, retractile. The branchiæ consist of a tuft of slender filaments, usually concealed by the edge of the foot. Color of body dark brown, lighter toward the edge, as if covered with nearly confluent blackish or brown spots, the whitish ground-color showing between them; foot, oral disk, and dorsal tentacles white; the central part of the body, beneath, with a three-lobed yellow spot due to the internal organs. Young specimens are flesh-color or yellowish brown above, specked with darker brown.

Vineyard Sound and Long Island Sound to Great Egg Harbor, New Jersey. Savin Rock, at low-water, under stones; off South End, 4 to 5 fathoms, shelly.

NUDIBRANCHIATA.

DORIS BIFIDA Verrill. Plate XXV, fig. 176. (page 307.)

American Journal of Science, vol. l, p. 406, 1870.

Outline broad oval, widest anteriorly, about 25^{mm} long by 12^{mm} broad, in extension; back very convex, mantle covered with numerous, scattered, small but prominent, pointed papillæ. Tentacles rather long, thickest in the middle, the outer half strongly plicated with about twenty folds, but with a smooth tip, the base surrounded by small papillæ. Gills retractile into a single cavity, united together by a partial web, deeply frilled, much subdivided, bipinnate, the subdivisions fine and slender. Foot very broad, in extension projecting back beyond the mantle about a quarter of an inch, slightly tapering, rounded and slightly notched at the end. Oral disk or veil crescent-shaped, the front

a little prominent, the sides extended backward, and forming a curve continuous with that of the foot.

Color purplish brown, sprinkled with white specks; tentacles deep brown, specked with white, tips yellowish; gills purplish at base, the edges and tips usually yellow; foot similar in color to mantle, but lighter.

Long Island Sound, at Savin Rock, near New Haven, to Eastport, Maine, under stones, at low-water mark.

ONCHIDORIS PALLIDA Verrill. (p. 495.)

American Journal of Science, vol. l, p. 408, 1870; vol. iii, p. 212, 1872. *Doris pallida* Ag. MSS.; Stimpson, Invert. of Grand Manan, p. 26, 1853; Gould, Invert., ed. ii, p. 229, Plate 20, figs. 284, 287, 288, 291.

Off Cuttyhunk Island; Massachusetts Bay; Casco Bay; Bay of Fundy. In Eastport Harbor, not uncommon, from low-water mark to 30 fathoms.

POLYCERA LESSONII D'Orbigny. (p. 400.)

Magazine de Zoöl., vol. vii, p. 5, Plate 105 (t. Gould); Alder and Hancock, Brit. Nud. Moll., Fam. 1, Plate 24; Gould, Invert., ed. ii, p. 226, Plate 17, figs. 242–248. *Doris illuminata* Gould, Invert., ed. i, p. 4, 1841.

Long Island Sound to Labrador; European coasts, from Sweden to France and Great Britain. Savin Rock, near New Haven, Connecticut, at low-water, and off South End in 4 to 5 fathoms; Watch Hill, Rhode Island, 3 to 6 fathoms. Common in Casco Bay and Bay of Fundy, from low-water mark to 20 fathoms.

DENDRONOTUS ARBORESCENS Ald. and Hancock. (p. 495.)

British Nud. Moll., Fam. 3, Plate 3, 1850; Gould, Invert., ed. ii, p. 234, Plate 22, figs. 311–313. *Doris arborescens* Müller, Zoöl. Dan. Prod., p. 229, 1776; Fabricius, Fauna Grönl., p. 346, 1780. *Tritonia arborescens* Cuvier; Gould, Invert., ed. i, p. 5. *Tritonia Reynoldsii* Couthouy, Boston Journ. Nat. Hist., vol. ii, p. 74, Plate 2, figs. 1–4, 1838.

Watch Hill, Rhode Island, in 4 to 5 fathoms, common on *Laminaria* among *Obeliæ;* northward to Greenland; on the European coasts south to Great Britain and France; Sitka (Middendorff). Very common in the Bay of Fundy and Casco Bay, from above low-water mark to 60 fathoms. Rare and local south of Massachusetts Bay.

DOTO CORONATA Lovén. Plate XXV, fig. 170. (p. 400.)

Arch. Scand. Nat., p. 151 (t. Stimpson); Öfvers. af Kongl. Vet.-Akad. Förhandlingar, vol. iii, p. 139, 1846; Alder and Hancock, Brit. Nud. Moll., Fam. 3, Plate 6; Gould, Invert., ed. ii, p. 236, Plate 16, figs. 233–237. *Doris coronata* Gmelin, Syst. Nat., p. 3105, 1790.

New Jersey to Labrador; on the northern European coasts, southward to Great Britain, Holland, and France. Great Egg Harbor, New Jersey, 1 fathom, (A. E. V. and S. I. Smith); Long Island Sound, near New Haven; off Gay Head, Martha's Vineyard; off Watch Hill, Rhode Island, 4 to 5 fathoms, on *Obelia.* Common in Massachusetts Bay, Casco Bay, and Bay of Fundy, from low-water mark to 15 fathoms.

ÆOLIS PAPILLOSA Lovén. (p. 495.)

Öfvers. af Kongl. Vet.-Akad. Förh., vol. iii, p. 139, 1846; Gould, Invert., ed. ii, p. 238, fig. 518, and Plate 18, figs. 257–263. *Limax papillosus* Linné, Syst. Nat., ed. xii, vol. i, p. 1082, 1767. *Æolis farinacea* Gould, MSS.; Stimpson, Invert. Grand Manan, p. 25, 1853.

Rhode Island to the Arctic Ocean; northern coasts of Europe to Great Britain. Rare south of Cape Cod; Watch Hill, among roots of *Laminariæ*; very common in Casco Bay and Bay of Fundy, from above low-water mark to 20 fathoms.

ÆOLIS, OR MONTAGUA. Species undetermined. (p. 495.)

A species about an inch long, with bright red, fusiform branchiæ, arranged in seven or eight transverse clusters on each side. Foot with prominent and acute auricles anteriorly.

Off Gay Head, 4 to 5 fathoms, rocks.

MONTAGUA PILATA Verrill. (p. 383.)

Æolis pilata Gould, Invert., ed. ii, p. 243, Plate 19, figs. 270, 277, 279, 281, 1870. *Æolidia pilata*, this Report, p. 383. (See errata.)

Long Island Sound to Massachusetts Bay. Abundant in New Haven Harbor, on piles of Long Wharf.

MONTAGUA VERMIFERA Verrill.

Æolis vermiferus S. Smith, Annals Lyc. Nat. Hist., N. Y., vol. ix, p. 391, 1870.

Greenport, Long Island (Smith). Long Island Sound, off Thimble Islands, 4 to 5 fathoms, among rocks.

The specimens from Thimble Islands differ somewhat from the original description. They were about half an inch long; moderately stout; the foot lanceolate, rapidly tapered posteriorly to a point, but not produced far beyond the branchiæ, nor slender-pointed; anteriorly the angles are somewhat produced, triangular, and pointed, their length equal to about half the breadth of the foot. Head rounded; tentacles rather stout, obtuse; the oral longer than the dorsal ones; the latter are transversely wrinkled. The branchial papillæ are fusiform, moderately stout, obtuse, arranged in about twelve transverse rows on each side, forming six clusters, the two rows forming each cluster separated by a narrow elliptical naked space, narrower than the spaces between the clusters; in each anterior row there are six or seven papillæ, the upper ones larger, the lowest short and blunt. Foot translucent, white, with a flake-white streak on the upper side posteriorly; body pale yellowish, minutely specked with greenish and flake-white; back of the dorsal tentacles there is, on each side, an orange patch, and there are others along the back; papillæ dark brown internally, irregularly specked with flake-white externally, forming toward the end an ill-defined white ring; the extreme tips are white; tentacles similar in color to the body.

MONTAGUA GOULDII Verrill, sp. nov.

Body elongated, rather slender; foot with the anterior angles only slightly prominent, and obtusely rounded; posteriorly it tapers gradually to an elongated slender point. Tentacles long, slender, not serrate, the dorsal ones a little longer than the oral; eyes small, black; branchial papillæ fusiform, moderately stout, grouped in eight or more tranverse rows on each side, the rows being grouped two by two, so as to form transverse clusters, with two rows each, the rows of the clusters being separated by spaces narrower than those between the clusters. Color of body light yellow or tinged with pale orange; tentacles pale orange, with a flake-white stripe on the posterior surface; branchial papillæ dark brown or reddish brown internally, with a ring of opaque white close to the tips.

Length about 20^{mm}.

Off Thimble Island, in 4 to 5 fathoms, with the preceding species.

This is nearly allied to *M. Mananensis* Stimpson, but the angles of the foot are less produced and not acute, and the proportions of the tentacles are different. Dr. Gould seems to have confounded this species with *M. diversa* (*Æolis diversa* Couth.), and one of his figures (Plate 19, fig. 280) apparently represents this species; but certainly does not represent *M. diversa*, which was originally described and figured as having the oral tentacles longer than the dorsals (See Gould's figs. 267, 268, copied from Couthouy.)

CORYPHELLA GYMNOTA Verrill.

Eolis (*Tergipes*) *gymnota* Couthouy, Boston Jour. Nat. Hist., vol. ii, p. 69, Plate 1, fig. 3, 1838; Gould, Invert., ed. i, p. 7; ed. ii, p. 249, Plate 16, figs. 238–241. *Montagua gymnota* H. and A. Adams, Genera, vol. ii, p. 74. *Cavolina gymnota*, this Report, p. 383. (See errata.)

Wood's Hole to Boston, Massachusetts.

TERGIPES DESPECTUS Adams. (p. 495.)

H. and A. Adams, Genera, vol. ii, p. 76, 1858. *Eolidia despecta* Johnston, Loud. Mag. Nat. Hist., vol. viii, p. 378, fig. 35^{e}. *Eolis despecta* Alder and Hancock, Brit. Nud. Moll., Fam. 3, Plate 37. *Æolis* (*Tergipes*) *despecta* Gould, Invert., ed. ii, p. 248, Plate 16, figs. 222–225.

Stonington, Connecticut, to Bay of Fundy and northward; northern coasts of Europe to Great Britain. Off Watch Hill, 4 to 5 fathoms, on *Laminaria*, among hydroids, abundant; Casco Bay; Eastport Harbor.

HERMÆA CRUCIATA A. Agassiz, MSS. Plate 25., fig. 175.

Gould, Invert., ed. ii, p. 253, Plate 17, fig. 256.

Naushon Island (A. Agassiz).

ELYSIA CHLOROTICA Gould. Plate XXV, fig. 172. (p. 480.)

Invert., ed. ii, p. 255, Plate 17, figs. 251–255, 1870.

Great Egg Harbor, New Jersey, in pools on salt-marsh at low-water (A. E. V. and S. I. Smith). Cambridge, Massachusetts (Agassiz).

ELYSIELLA CATULUS Verrill. Plate XXV, fig. 171. (p. 480.)

American Journ. Science, vol. iii, p. 284, Plate 7, figs. 5, 5a, 1872. *Placobranchus catulus* Agassiz, MSS.; Gould, Invert., ed. ii, p. 256, Plate 17, figs. 249, 250, 1870.

Great Egg Harbor, New Jersey, to Massachusetts Bay. New Haven Harbor and Wood's Hole, among eel-grass, common.

PTEROPODA.

GYMNOSOMATA.

CLIONE PAPILLONACEA Pallas. (p. 444.)

Spicil. Zoöl., x, p. 37, Plate 1, figs. 18, 19, (?) 1774. *Clio limacina* Phipps, Voyage to North Pole, p. 195, 1774 (t. Gould). *Clio retusa* Müller, Prod. Zoöl. Dan., 2742, 1776 (*non* Linné); Fabricius, Fauna Grönlandica, p. 334, 1780 (description excellent). *Clio borealis* Brugiere, Encyc. Meth., Vers., i, p. 502, 1792 (t. Gould). *Clione borealis* Gray, Brit. Mus. Pteropoda, p. 36, 1850; Stimpson, Shells of New England, p. 27, 1851; H. and A. Adams, Genera, vol. i, p. 62, Plate 7, fig. 7. *Clione limacina* Stimpson, Smithsonian Check-Lists, p. 4, 1860; Binney in Gould, Invert., ed. ii, p. 507, fig. 754 (poor). *Clio Miquelonensis* Rang, Ann. Sci. Nat., ser. i, vol. v, p. 285, Plate 7, fig. 2, 1825.

New York to the Arctic Ocean; on the northern coasts of Europe south to Great Britain. Off Stonington, Connecticut (A. E. V. and D. C. Eaton); Vineyard Sound (V. N. Edwards); Portland, Maine (C. B. Fuller).

The synonymy of this species has been greatly and unnecessarily confused. The *Clio retusa* of Linné was a southern Pteropod, having a triquetral shell. In a foot-note on page 1094 of the twelfth edition of the Systema Naturæ, he states that he had not seen the genus *Clio*, but adopts it from Brown. He gives three species mentioned by Brown, all having shells.

THECOSOMATA.

STYLIOLA VITREA Verrill. Plate XXV, fig. 178. (p. 443.)

American Journ. Science, vol. iii, p. 284, Plate 6, fig. 7, 1872.

Shell smooth, polished, diaphanous, almost glassy, long conical, rather slender, slightly curved toward the acute apex; animal white; locomotive organs obovate, with the end broadly rounded, and bearing slender tapering tentacle-like processes near the middle of the anterior edge; intermediate lobe short, rounded in front.

Length of shell, 11.5^{mm}; diameter, 2^{mm}.

Taken among *Salpæ*, off Gay Head, Martha's Vineyard, in the afternoon, September 9, 1871.

Several other species of this and other related genera were taken by Messrs. S. I. Smith and Oscar Harger, off Saint George's Bank, in 1872, on the United States steamer Bache. These may occasionally occur also in the vicinity of Nantucket and Martha's Vineyard.

CAVOLINA TRIDENTATA. Plate XXV, fig. 177. (p. 444.)

H. and A. Adams, Genera, vol. i, p. 51, Plate 6, figs. 1, 1[a]; Verrill, op. cit., p. 284. *Anomia tridentata* Forskal, Fauna Arab., p. 124, 1775; Icon., Plate 40, fig. b, (t. Lamarck). *Hyalœa cornea* Lamarck, Syst. des Anim., p. 140, 1801. *Hyalœa tridentata* Lamarck, Anim. sans Vert., ed. ii, vol. vii, p. 415.

Mediterranean Sea and the warmer parts of the Atlantic. The shells were dredged off Martha's Vineyard, at two localities, in 19 and 22 fathoms.

DIACRIA TRISPINOSA Gray. (p. 444.)

British Museum Pteropoda; H. and A. Adams, Genera, i, p. 52, Plate 6, fig. 2[a]; Gould, Invert., ed. ii, p. 504. *Hyalœa trispinosa* Lesueur, in Blainville, Dict. des Sci. Nat., vol. xxii, p. 82, 1824; Forbes and Hanley, Brit. Moll., vol. ii, p. 380, Plate 5, fig. 3; Stimpson, Shells of New England, p. 27.

Gulf Stream and warmer parts of the Atlantic generally. Occasionally cast ashore at Nantucket (Stimpson).

SPIRIALIS GOULDII Stimpson. (p. 443.)

Proc. Boston Soc. Nat. Hist., vol. iv, p. 8, 1851; Shells of New England, p. 27, Plate 1, fig. 4. *Heterofusus balea* and *H. retroversus* Binney, in Gould, Invert., ed. ii, p. 505, Plate 27, figs. 345–349, (not of European writers). *Spirialis Flemingii* A. Agassiz, Proc. Boston Soc. Nat. Hist., vol. x, p. 14, 1865, (not of Forbes). *Heterofusus Alexandri* Verrill, Amer. Jour. Science, vol. iii, p. 281, 1872 (young).

Near Naushon Island and Nahant, Massachusetts (A. Agassiz). Twenty miles off No Man's Land, in stomach of herring, (S. I. Smith). Off Saint George's Bank, in Gulf Stream, (S. I. Smith and O. Harger). The identity of this species with the *Limacina balea* Möller, of Greenland, is very questionable. The description of the latter is brief, and no mention is made of the spiral sculpture, which is an important character of *S. Gouldii*.

LAMELLIBRANCHIATA.

DIMYARIA.

TEREDO NAVALIS Linné. Plate XXVI, fig. 183. Plate XXVII, fig. 186. (pp. 384, 482.)

Systema Naturæ, ed. xii, p. 1267, 1767; Tryon, Proc. Acad. Nat. Sciences, vol. xiv, p. 468, 1862; Gould, Invert., ed. ii, p. 28, fig. 355; Jeffreys, Brit. Conch., vol. iii, p. 171.

Coast of United States, from Florida to Vineyard Sound; coasts of Europe, from Sweden (Christiania) and Great Britain to Sicily; Algeria and the Black Sea (Jeffreys); Senegal. Great Egg Harbor, New Jersey; New Haven Harbor, in piles of wharves; Wood's Hole, in piles of wharf; Vineyard Sound and Buzzard's Bay, in cedar buoys.

This is the most abundant species on our Atlantic coast, south of Massachusetts Bay, where it also probably occurs.

TEREDO MEGOTARA Hanley. Plate XXVII, fig. 188. (p. 387.)

Forbes and Hanley, Brit. Conch., vol. i, p. 77, Plate 1, figs. 1, 2; Plate 18, figs. 1, 2; vol. iv, p. 247; Tryon, op. cit., p. 466, 1862; Jeffreys op. cit., p. 176; Gould, Invert., ed. ii, p. 30, fig. 357.

Massachusetts Bay to South Carolina. Common in floating driftwood, in the North Atlantic; north to Greenland, Iceland, and Spitzbergen; coasts of Scandinavia and Great Britain. Fossil in the Post-Pliocene of Scandinavia.

TEREDO THOMSONII Tryon. Plate XXVII, fig. 187. (p. 387.)

Proc. Acad. Nat. Sci., Philadelphia, vol. xv, p. 28, Plate 2, figs. 3, 4, 5, 1863; Gould, Invert., ed. ii, p. 31, fig. 358.

New Bedford, Massachusetts, in cedar buoys (Tryon). Provincetown, Massachusetts, in whale-ship (Atwood).

TEREDO DILATATA Stimpson.

Proc. Boston Soc. Nat. Hist., vol. iv, p. 113, 1851; Shells of New England, p. 26; Tryon, op. cit., p. 464, 1862; Gould, Invert., ed. ii, p. 32, fig. 359.

Massachusetts to South Carolina (Tryon). Cape Ann, in buoys, (Stimpson). Provincetown, Massachusetts (Gould). Greenport, Long Island (S. Smith). I have not met with this species south of Cape Cod.

XYLOTRYA FIMBRIATA Jeffreys. Plate XXVII, fig. 189. (p. 387.)

Annals and Mag. Nat. Hist., ser. iii, vol. vi, p. 126, 1860; Tryon, op. cit., p. 478, 1862; Gould, Invert., ed. ii, p. 34, fig. 361. *Teredo palmulata* Forbes and Hanley, Brit. Moll., vol. i. p. 86, Plate 2, figs. 9–11, (*non* Lamarck). *Xylotrya palmulata* Stimpson, Check-List, p. 3, 1860; Perkins, Proc. Boston Soc. Nat. Hist., vol. xii, p. 141, 1869.

Long Island Sound to Florida; Pacific coast, at the Straits of Fuca; Europe. In an old submerged wreck near New Haven. From the hull of the "Peterhoff," used in the blockade of the southern coast during the late war. Frequent in vessels from foreign ports.

PHOLAS TRUNCATA Say. Plate XXVII. fig. 200. (p. 372.)

Journal Acad. Nat. Sciences, Philadelphia, ser. i, vol. ii, p. 321, 1822; Binney's Say, p. 107; Hanley, Recent Shells, p. 6, Plate 9, fig. 26; Tryon, op. cit., p. 202; Gould, Invert., ed. ii, p. 38, fig. 364.

Vineyard Sound to Florida. Payta, Peru (Tryon). Common on the shores of Long Island Sound, near New Haven. The large specimens from Sable Island (Gould), mentioned by Tryon, were not this species, but *Z. crispata.*

PHOLAS COSTATA Linné. (p. 433.)

Systema Naturæ, ed. xii, p. 1111, 1762; Tryon, Proc. Acad. Nat. Sciences, Philadelphia, xiv, p. 201, 1862; Gould, Invert., ed. ii, p. 37, fig. 363.

Caribbean Sea to Buzzard's Bay. Southern Europe (Linné). New Bedford Harbor, living, (Gould); Wood's Hole, Massachusetts, dead

shells dredged, (A. E. V.); Long Island Sound. Atlantic City, New Jersey (Tyron). Specimens from the east and west coasts of Florida; and from near Vera Cruz, Mexico (coll., Mr. Salt), are also in the museum of Yale College.

ZIRPHÆA CRISPATA Mörch, 1853. (p. 433.)

H. and A. Adams, Genera, vol. ii, p. 327, Plate 89, figs. 5, 5*a*, 1858; Tryon, op. cit., p. 211, 1862. *Pholas crispata* Linné, Syst. Nat., ed. xii, p. 1111, 1767; Gould, Invert., ed. i, p. 27. *Zirfœa crispata* Gray, Figures of Moll. Anim., Plate 338, fig. 5, and 339, fig. 5, 1857; Ann. and Mag. Nat. Hist., ser. ii, vol. viii, p. 385, 1851; Gould, Invert., ed. ii, p. 39, fig. 365.

Stonington, Connecticut, to Gulf of Saint Lawrence; Iceland; northern coasts of Europe, south to France, and the southern coasts of Great Britain; west coast of North America, south to California. Charleston, South Carolina (Stimpson, t. Gould). New Jersey (t. Gould). Wood's Hole, dead shells dredged, (A. E. V.). Common in Casco Bay, in 10 to 20 fathoms, perforating hard clay and sunken but sound wood; also in the Bay of Fundy, in 8 to 70 fathoms, in hard clay. Mr. C. B. Fuller has obtained fine large specimens in submerged tree-stumps at extreme low-water mark on Jewell's Island, Casco Bay. Fossil in the Post-Pliocene of Maine, Scandinavia; and in the Coralline and Red Crags of Great Britain. Its occurrence at Charleston, South Carolina, needs confirmation.

Martesia cuneiformis Gray, 1851; Tryon, op. cit., p. 219. *Pholas cuneiformis* Say, Jour. Acad. Nat. Sci., Philad., vol. ii, p. 322, 1822.

This species was found by Mr. Perkins in oyster-shells, near New Haven, but it was probably brought from farther south (Maryland or Virginia) in the oysters. It inhabits the coasts of Florida and the West Indies.

Diplothyra Smithii Tryon, op. cit., p. 450, 1862.

This species was described from specimens found in oyster-shells at Staten Island, where they were supposed to have lived. If really indigenous there, it may be expected to occur in Long Island Sound.

SAXICAVA ARCTICA Deshays. Plate XXVII, fig. 192. (p. 309.)

Elem. Conch., Plate xii, figs. 8, 9 (t. Gould); Forbes and Hanley, Brit. Moll., vol. i, p. 141, Plate 6, figs. 4–6; Gould, Invert., ed. ii, p. 89, fig. 397. *Mya arctica* Linné, Syst. Nat., ed. xii, p. 1113, 1767. *Mytilus rugosus* Linné, Syst. Nat., ed. xii, p. 1156. *Saxicava rugosa* Lamarck, Anim. sans Vert., ed. ii, vol. vi, p. 152; Gould, Invert., ed. ii, p. 87; Jeffreys, Brit. Conch., vol. iii, p. 81. *Mytilus pholadis* Linné, Mant. Plant., p. 548. *Saxicava pholadis* Lamarck, op. cit., vol. vi, p. 152. (?) *Saxicava distorta* Say, Jour. Acad. Nat. Sci., Philad., vol. ii, p. 318, 1822; Gould, ed. i, p. 62.

Georgia and South Carolina to the Arctic Ocean; northern coasts of Europe to the Mediterranean; Pacific Coast of America, south to Santa Barbara, California. Various other parts of the world are given as localities by different authors. On our coast this shell is very common from Massachusetts Bay to Labrador, occurring from low-water mark to 50

fathoms or more. In Casco Bay it is extremely abundant in rocky, cavernous pools, among the ledges at low-water mark, and mostly attached by a byssus, associated with *Modiola modiolus*. I also found specimens in 10 to 15 fathoms, perforating recent and sound shells of *Cyprina Islandica*. In the Gulf of Saint Lawrence, near Anticosti Island, where limestone abounds, I have found it burrowing in the limestone in large numbers. South of Cape Cod it is far less abundant, though not uncommon in Long Island Sound. Var. *distorta* (Say) is common from Fort Macon to Georgia, and is possibly a distinct species. Fossil in the Post-Pliocene of Maine, New Brunswick, Canada, Anticosti, Labrador, Scandinavia, and Great Britain; in the Coralline and Red Crags of England, etc. Var. *distorta* is found in the Miocene of Maryland.

MYA ARENARIA Linné. Plate XXVI, fig. 179. (pp. 357, 463.)

Systema Naturæ, ed. xii, p. 1112, 1767; Gould, Invert., ed. i, pp. 40, 359; ed. ii, p. 55, fig. 375. *Mya mercenaria* and *M. acuta* Say, Journal Acad. Nat. Sci., Philadelphia, vol. ii, p. 313, 1822.

South Carolina to the Arctic Ocean; northern coasts of Europe, south to England and France; northeastern coast of Asia, south to China and Japan (Hakodadi). Sitka (Middendorff). South Carolina (Gibbs). Fort Macon, North Carolina (Dr. Yarrow). Comparatively scarce south of Cape Hatteras. Very abundant from New Jersey northward, both in brackish estuaries and on the open coasts. Particularly large and fine in Long Island Sound (see p. 463). Casco Bay and Bay of Fundy, from half-tide mark to 40 fathoms, those dredged being all young. Fossil in the Post-Pliocene of Scandinavia, Greenland, Labrador, Canada, New England, Virginia, South Carolina, etc.; in the Red-Crag and all later formations in Great Britain; and in the Miocene of Virginia.

CORBULA CONTRACTA Say. Plate XXVII, fig. 191. (p. 418.)

Journal Acad. Nat. Sciences, Philadelphia, vol. ii, p. 312, 1822; Gould, Invert., ed. i, p. 43, fig. 37; ed. ii, p. 60, fig. 377.

Cape Cod to Florida. Common, living, in Vineyard Sound and Buzzard's Bay, in 5 to 19 fathoms; Long Island Sound, near New Haven, not uncommon in shallow water. Georgia (Couper). Fossil in the Post-Pliocene of Virginia, North and South Carolina; and in the Pliocene of South Carolina. A closely related species occurs in the Miocene of Maryland.

LYONSIA HYALINA Conrad. Plate XXVII, fig. 194. (p. 358.)

American Marine Conchology, p. 51, Plate 11, fig. 2, 1831; Gould, Invert., ed. ii, p. 64, fig. 380. *Mya hyalina* Conrad, Jour. Acad. Nat. Sci., Philadelphia, vol. vi, p. 261, Plate 11, fig. 12, 1831. *Osteodesma hyalina* Couthouy, Boston Jour. Nat. Hist., vol. ii, p. 166, 1839; Gould, Invert., ed. i, p. 46, fig. 31.

Florida to Gulf of Saint Lawrence. Common in Long Island Sound, Buzzard's Bay, Vineyard Sound, Massachusetts Bay, Casco Bay, and Bay of Fundy; low-water mark to 30 fathoms; Beaufort, North Carolina (Coues).

CLIDIOPHORA TRILINEATA Carpenter. Plate XXVII, fig. 193. (p. 418.)

Proc. Zoöl. Soc., London, 1864, p. 597; Mollusks of W. N. America, p. 226. *Pandora trilineata* Say, Journ. Acad. Nat. Sciences, Philadelphia, vol. ii, p. 261, 1822; Gould, Invert., ed. i, p. 44; ed. ii, p. 62, fig. 379.

Florida to Gulf of Saint Lawrence. Common in Long Island Sound; off Block Island, 29 fathoms; Buzzard's Bay; Vineyard Sound; Casco Bay; and Bay of Fundy; low water mark to 30 fathoms; Great Egg Harbor, New Jersey, 1 fathom. Beaufort, North Carolina (Coues, Yarrow). Fossil in the Post-Pliocene of Virginia and South Carolina; and in the Pliocene of South Carolina. A closely-related form, *C. crassidens* (Conrad, sp.), occurs in the Miocene of Virginia.

PERIPLOMA PAPYRACEA Verrill. Plate XXVII, fig. 197. (p. 509.)

Amer. Journal Science, vol. iii, pp. 213, 285, Plate 7, figs. 1, 1[a], 1[b] (animal and hinge), 1872. *Anatina papyratia* Say, op. cit., p. 314, 1822. *Anatina papyracea* Gould, Invert., ed. i, p. 47, fig. 28; ed. ii, p. 66, fig. 382. *Anatina fragilis* Totten (name provisional), Amer. Jour. Science, vol. xxviii, p. 347, fig. 1, 1835.

New Jersey to Labrador. Anticosti Island (A. E. V.); not uncommon in Massachusetts Bay, Casco Bay, and Bay of Fundy, 10 to 100 fathoms. Less frequent south of Cape Cod; off Block Island, in 29 fathoms, (A. S. Packard); Newport, Rhode Island (Totten); Greenport, Long Island (S. Smith). Chateau Bay, Labrador (Packard).

This species, when young, is liable to be confounded with *Thracia myopsis* Beck = *T. Couthouyi* Stimpson (see Plate XXVII, fig. 196), but they are easily distinguished by the structure of the hinge. The latter occurs in Massachusetts Bay, Bay of Fundy, etc., northward to Greenland, but has not been recorded from south of Cape Cod.

COCHLODESMA LEANUM Couthouy. Plate XXVII, fig. 198. (p. 418.)

Boston Jour. Nat. Hist., vol. ii, p. 170, 1839; Stimpson, Shells of New England, p. 22; Gould, Invert., ed. i, p. 49, figs. 29, 30; ed. ii, p. 68, fig. 383. *Anatina Leana* Conrad, Jour. Acad. Nat. Sciences, vol. vi, p. 263, Plate 11, fig. 11, 1831.

North Carolina to the Gulf of Saint Lawrence. Vineyard Sound and Long Island Sound, not uncommon in 3 to 10 fathoms; Casco Bay and Eastport, Maine, rarely obtained alive; banks off Nova Scotia (Willis); Saint George's Bank (S. I. Smith and O. Harger). A related species, *C. antiquatum* (*Periploma antiquata* Conrad), occurs in the Miocene of Virginia.

THRACIA CONRADI Couthouy. (p. 426.)

Boston Jour. Nat. Hist., vol. ii, p. 153, Plate 4, fig. 2, 1839; Gould, Invert., ed. i, p. 50; ed. ii, p. 69, fig. 384. *Thracia declivis* Conrad, Amer. Mar. Conch., p. 44, Plate 9, fig. 2, 1831 (not of Pennant).

Long Island to Gulf of Saint Lawrence. Vineyard Sound, 6 to 8 fathoms; Casco Bay, 6 to 15 fathoms; Frenchman's Bay, near Mount Desert, Maine, 3 to 8 fathoms. Eastport, Maine, in 6 fathoms, and Grand Menan (Stimpson); Nahant, Massachusetts (Haskell); Rhode Island

and Buzzard's Bay (Gould); Labrador (Packard). Fossil in the Post-Pliocene (Leda-clay) at Saco, Maine (Fuller).

This species burrows so deeply in the mud or sand that it is seldom taken alive with the dredge.

THRACIA TRUNCATA Mighels and Adams. Plate XXVII, fig. 195. (p. 509.)

Boston Jour. Nat. Hist., vol. iv, p. 38, Plate 4, fig. 1, 1842; Gould, Invert., ed. ii, p. 72, fig. 386.

Long Island to Greenland. Off Block Island, 29 fathoms; Casco Bay, 10 to 20 fathoms; Bay of Fundy. Off Long Island, 37 fathoms, (Gould). Greenland, in 60 fathoms, (Mörch).

ENSATELLA AMERICANA Verrill. Plate XXVI, fig. 182; Plate XXXII, fig. 245. (p. 356.)

American Jour. Science, vol. iii, pp. 212, 284, 1872. *Solen Americanus* Gould, Invert., ed. ii, p. 42, 1870 (provisional name). *Solen ensis* Gould, op. cit., ed. i, p. 28; and ed. ii, p. 40 (*non* Linné); Dekay, Nat. Hist. New York, Moll., p. 242, Plate 33, fig. 313. *Ensis Americana* H. and A. Adams, Genera, vol ii, p. 342.

Florida to Labrador. Common at Great Egg Harbor, New Jersey; Long Island Sound; Buzzard's Bay; Vineyard Sound; Massachusetts Bay; Casco Bay; Bay of Fundy; Gulf of Saint Lawrence; low-water mark to 20 fathoms, sandy. Fort Macon, North Carolina, abundant, (Coues). Georgia (Couper). Labrador, rare (Packard). Saint George's Bank (S. I. Smith).

Fossil in the Post-Pliocene of Portland, Maine; Point Shirley, Massachusetts; Nantucket; Virginia; and South Carolina; in the Pliocene of South Carolina; and Miocene of Maryland; North and South Carolina.

In this species the siphonal tubes, in mature shells, protrude about 35^{mm}, and are united together for about half their length, beyond which they are round and divergent, subequal. Both orifices are surrounded by a similar circle of numerous papillæ, of three sizes; the larger ones are enlarged in the middle, acute at tips, with a large black spot on each side of the base; alternate with these are somewhat smaller ones of the same form and with similar basal spots; alternating with the primary and secondary ones are small tapering papillæ, less than half the length of the longest; numerous slender tapering papillæ are also scattered irregularly over the sides of the free portions of both tubes, in some cases in irregular rows of four to six, while on the ventral side of the branchial tube two rows of alternating papillæ extend along the whole length of the siphon. The mantle is closed ventrally for most of its length; there is a posterior opening for the protrusion of the foot, and a small opening just in advance of it, and another opening near the middle of the ventral border; the latter is fringed with small conical papillæ. Foot long; the end bulbous, obliquely truncated and beveled laterally.