Solen viridis Say. This species has been recorded from the southern coast of New England by several writers (Stonington, Connecticut, Linsley; Rhode Island, Conrad), but I have myself met with no authentic New England specimens. It may, however, occur rarely and perhaps accidentally. It is not uncommon on the outer beach at Great Egg Harbor, New Jersey, and farther south, to Florida.

SILIQUA COSTATA Adams. Plate XXXII, fig. 244. (p. 358.)

H. and A. Adams, Genera, vol. ii, p. 345, 1858. *Solen costatus* Say, Jour. Acad. Nat. Sci., Philad., vol. ii, p. 315, 1822; Hanley, Recent Shells, p. 15, Plate 9, fig. 28 (*non Leguminaria costata* Schum., 1817 = *Siliqua radiata* Linné, sp.). *Solen Sayii* Gray, Griffith's Cuvier, xii, Plate 31, fig. 3 (t. Gould). *Machœra costata* Gould, Invert., ed. i, p. 34, and fig. on p. 24, 1841; ed. ii, p. 47, fig. 370.

Cape Hatteras to Gulf of Saint Lawrence. Rare or local north of Casco Bay. Not observed in the Bay of Fundy. Common in Massachusetts Bay; Vineyard Sound; Great Egg Harbor, New Jersey. Comparatively rare in Long Island Sound, near New Haven; Fire Island Beach, Long Island (S. I. Smith). Coney Island, etc. (S. Smith). Rimouski, Gulf of Saint Lawrence, common, (Bell). Banks off Nova Scotia (Willis). The earliest name for this genus appears to be *Siliqua* Muhlfeldt, 1811. It was named *Leguminaria* by Schumacher in 1817, and *Machœra* by Gould, in 1841. The latter name is, moreover, preoccupied by *Machœra* Cuvier, 1832.

TAGELUS GIBBUS Gray. Plate XXVI, fig. 181; Plate XXX, fig. 217. (p. 373.)

Proc. Zoöl. Soc., London, xv, 1847; Dall, Proc. Boston Soc. Nat. Hist., vol. xiii, p. 251, 1870. *Solen gibbus* Spengler, Skrivt. Nat. Selks., vol. iii, p. 104, 1794 (t. Gould). *Solen Guineensis* Chemnitz, Conch., xi, p. 202, Plate 198, fig. 1937, 1799. *Solen Caribæus* Lamarck, Anim. sans Vert., ed. ii, vol. vi, p. 58. *Solecurtus Caribæus* Gould, Invert., ed. i, p. 30. *Solecurtus gibbus* Forbes and Hanley, Brit. Moll., vol. i, p. 267; Gould, Invert., ed. ii, p. 43, fig. 367. *Siliquaria notata* Schumacher, Essai d'un Nouv. Syst. des Habit. des Vers test., p. 129, Plate 7, figs. 2, 3, 1817 (not the genus *Siliquaria* Brug.; Lamarck, 1801). *Siliquaria gibba* H. and A. Adams, Genera, p. 347, Plate 93, figs. 5, 5*a*, 1858.

Caribbean Sea, West Indies, and Gulf of Mexico to Cape Cod. Similar if not identical species are found on the Pacific coast of Central America, and on the west coast of Africa. Vineyard Sound and Buzzard's Bay, not uncommon; Great Egg Harbor, New Jersey, abundant. Fort Macon, North Carolina, very common (Coues). Alabama (Mighels). Fossil in the Post-Pliocene of Virginia, South Carolina, and Florida; in the Pliocene of South Carolina; and in the Miocene of North and South Carolina.

The name, *Siliquaria* Schumacher, 1817, adopted for this genus by several recent writers cannot be retained, because preoccupied by Brugiere, 1791, and by Lamarck (see Syst. des Anim., 1801, p. 98) for a genus of *Vermetidæ*.

This genus is widely different from the restricted genus *Solecurtus*

Blainv., 1824,=*Macha* Oken, 1835, and undoubtedly belongs to the *Tellinidæ*, near *Psammobia*, as shown by the structure of the soft parts. (See page 373 and Plate xxvi, fig. 181).

TAGELUS DIVISUS. Plate XXX, fig. 218. (p. 435.)

Dall, op. cit., p. 251, 1870. *Solen divisus* Spengler, op. cit., p. 96, 1794 (t. Gould). *Solen bidens* Chemnitz, op. cit., p. 203, Plate 198, fig. 1939, 1799. *Solen fragilis* Pulteney, Dorset Catal., p. 28, Plate 4, fig. 5, 1799 (t. Gould). *Solen centralis* Say, Journ. Acad. Nat. Sci., Philad., vol. ii, p. 316, 1822. *Solecurtus bidens* Forbes and Hanley, op. cit., vol. i, p. 266; Stimpson, Shells of New England, p. 22. *Solecurtus divisus* Gould, Invert., ed. ii, p. 44, fig. 368. *Macha divisa* Gray, Catal. Brit. Moll., p. 160. *Leguminaria Floridana* Conrad, Proc. Acad. Nat. Sci., Philad., vol. iv, p. 121, 1848. *Mesopleura bidentata* Conrad, Catal. Solenidæ, Amer. Jour. Conch., vol. iii, Appendix, p. 23, 1867.

Gulf of Mexico and West Indies to Cape Cod. Vineyard Sound and Buzzard's Bay, not common. Rhode Island, rather common, (Gould). Fort Macon, North Carolina, common, (Coues). Tampa Bay, Florida, (Conrad, Jewett).

MACOMA FRAGILIS Adams. Plate XXX, fig. 222.

H. and A. Adams, Genera, vol. ii, p. 400, 1858.

Var. fusca = *Macoma fusca* Adams. (p. 359.)

Genera, vol. ii, p. 400; Gould, Invert., ed. ii, p. 93, fig. 400. *Psammobia fusca* Say, Jour. Acad. Nat. Sci., Philad., vol. v, p. 220, 1826. *Sanguinolaria fusca* Conrad, Amer. Mar. Conch., p. 34, Plate 7, fig. 1, 1831; Gould, Invert., ed. i, p. 66, fig. 42.

Var. fragilis.

Venus fragilis O. Fabricius, Fauna Grönlandica, p. 413, 1780. *Tellina Grönlandica* Beck, Lyell, in Trans. Geol. Soc., London, vol. v, p. 137, Plate 16, fig. 8, 1841. *Macoma Grönlandica* Packard, Mem. Boston Soc., vol. i, pp. 235, 243, etc., 1866; Dawson, Notes on Post-Pliocene Geology of Canada, p. 72, from Canadian Naturalist, vol. vi, 1872. *Tellina Fabricii* Hanley; Sowerby, Thesaurus, p. 112, (t. Mörch).

Georgia to Greenland. Var. *fusca* is abundant on the entire coast of New England, Long Island, and New Jersey. Georgia (Say, Couper). Var. *fragilis* is abundant from Long Island Sound and Massachusetts Bay to Labrador. The two forms grade into one another insensibly.

A closely related but apparently distinct species, *M. Balthica* (Linné, sp.), is abundant in the Baltic and elsewhere on the northern coasts of Europe, and has been regarded as identical by several writers. Another similar form, *inconspicua* (Sowerby), occurs on the northwest coast of America, but is regarded as distinct by Dr. P. P. Carpenter and others.

As a fossil, *var. fragilis* is abundant in the Post-Pliocene deposits of New England, New Brunswick, Canada, Labrador, and Greenland; *var. fusca* occurs in the Post-Pliocene of New England, Virginia, North Carolina, and South Carolina.

MACOMA SABULOSA Mörch.

Tellina (*Macoma*) *sabulosa* Mörch, in Naturh. Bidrag til Beskr. af Grönland, p. 90, 1857. *Tellina sabulosa* Spengler, Skrivt. Nat., vol. iv, part 2, 1798. *Tellina proxima* Gray, Zoöl. Beechey's Voyage, p. 154, Plate 44, fig. 4, 1839. *Tellina sordida* Couthouy, Boston Jour. Nat. Hist., vol. ii, p. 59, Plate 3, fig. 11, 1839. *Sanguinolaria sordida* Gould, Invert., ed. i, p. 67, 1841. *Tellina lata* Lovén, Öfvers. af Kongl. Vet.-Akad., Förhand., vol. xi, p. 195, 1846 (not *Tellina lata* Gmelin, 1790, which is a *Thracia*, t. Mörch). *Tellina calcarea* Lyell, Phil. Trans., 1836 (not Chemnitz, 1782 = a *Mactra*, t. Mörch). *Macoma proxima* Gould, ed. ii, p. 95, fig. 401; this Report, p. 503. *Macoma calcarea* Adams; Dawson, op. cit., p. 73.

Connecticut to the Arctic Ocean; northern coasts of Europe; North Pacific; south on the coast of Asia to Hakodadi, Japan; and, perhaps (as *M. expansa*, a doubtful variety), on the west coast of America south to Puget Sound. Off Block Island, in 29 fathoms, rare; Casco Bay, 3 to 60 fathoms, not uncommon; Quahog Bay, Maine, 3 to 5 fathoms, soft mud, large and abundant; Bay of Fundy, 4 to 80 fathoms. Stonington and Stratford, Connecticut (Linsley); Saint George's Bank (S. I. Smith). Fossil in the Post-Pliocene of Maine, New Brunswick, Canada, Labrador, Scandinavia, and Great Britain.

The *Tellina tenera* Leach, 1818 (*non* Say), has been regarded as a synonym of this species by most writers; Mörch considers it identical with *M. fragilis*.

ANGULUS TENER. Plate XXVI, fig. 180; Plate XXX, fig. 223. (p. 358.)

Tellina (*Angulus*) *tenera* H. and A. Adams, Genera, vol. ii, p. 398, 1858. *Angulus tener* Verrill, Amer. Jour. Science, vol. iii, p. 290, Plate 6, figs. 1, 1*a*, 1872. *Tellina tenera* Say, Jour. Acad. Nat. Sci., Philad., vol. ii, p. 303, 1822; Hanley, Recent Shells, p. 65, Plate 9, fig. 38; Gould, Invert., ed. i, p. 68, fig. 44; ed. ii, p. 97, fig. 403.

Florida to Gulf of Saint Lawrence. Common on the coast of New Jersey, Long Island, Long Island Sound, Buzzard's Bay, Vineyard Sound, Massachusetts Bay; less common in Casco Bay and Bay of Fundy. Gaspé, Canada (Dawson). Fort Macon, North Carolina (Coues). A closely-allied form (*A. declivis* = *Tellina declivis* Conrad, Journ. Acad. N. Sc., Phil., vol. vii, p. 131) occurs in the Miocene of Virginia.

ANGULUS TENELLUS Verrill. Plate XXX, fig. 224.

Angulus modestus Verrill, Amer. Jour. Science, vol. iii, pp. 210, 285, Plate 6, figs. 2, 2*a*, 1872; this Report, p. 418, (*non* Carpenter, 1864).

Shell smooth, shining, more or less iridescent, with very fine concentric striæ. Form similar to that of *A. tener*, but more oblong, and with the anterior dorsal margin nearly straight, or even slightly concave; the beaks are at about the posterior third, and scarcely prominent; the posterior end slopes rapidly, and is subtruncate at the end; the ventral margin is but slightly convex in the middle, and sub-parallel with the dorsal margin. The shell is often a little thickened, and firmer than in *A. tener*, but is sometimes as thin. Color, pink, light straw-color, or

white; often banded concentrically with these colors. The hinge-margin is stouter and the teeth stronger than in *A. tener*, and different in relative size and proportions; the ligament-plate is also longer.

Long Island Sound and Vineyard Sound; 4 to 10 fathoms, mud and sand.

TELLINA TENTA Say. Plate XXX, fig. 223. (p. 432.)

American Conchology, Part vii, Plate 65, fig. 3, 1837; Binney's Say, p. 228; Hanley, Recent Shells, p. 65, Plate 14, fig. 10; Gould, Invert., ed. i, p. 68, fig. 43; ed. ii, p. 96, fig. 402. *Tellina* (*Peronæa*) *tenta* H. and A. Adams, Genera, vol. ii, p. 499, 1858.

Cape Cod to South Carolina. Vineyard Sound and Buzzard's Bay, 2 to 10 fathoms, mud, common; Long Island Sound; Great Egg Harbor. Greenport, Long Island (S. Smith); Fort Macon, North Carolina (Coues); South Carolina (Say).

Fossil in the Post-Pliocene of South Carolina.

Tellina versicolor Cozzens.

Jay, Catalogue Shells, ed. ii, p. 12, 1836; Dekay, Nat. Hist. New York, Moll., p. 208, Plate 26, fig. 272.

Glass House Point, near New York (Cozzens); Stratford, Connecticut (Linsley).

I have met with no shells corresponding precisely with the description of this species.

GASTRANELLA Verrill.

American Journal of Science, vol. iii, p. 286, 1872.

"Shell oblong, more or less irregular, and sometimes with the ventral margin inflexed; pallial sinus large; ligament external, elongated. Right valve with two small cardinal teeth; the posterior one thin, directed obliquely backward. Left valve with two cardinal teeth; the posterior one stout, bilobed; the anterior one smaller. No distinct lateral teeth. Animal with long, slender, separate siphonal tubes, with a simple circle of papillæ at the ends; mantle well open anteriorly; foot ligulate. The curious little shell for which this genus is constituted apparently resembles *Gastrana* more than any other described genus."

GASTRANELLA TUMIDA Verrill. Plate XXVII, fig. 190. (p. 418.)

American Jour. Sci., vol. iii, pp. 210, 286, Plate 6, figs. 3, 3*a*, 1872.

Shell small, variable in form, swollen above, more or less elongated oval, or oblong, with rounded ends, compressed posteriorly. The beaks are rounded, somewhat prominent, incurved but not approximate, and directed somewhat forward; the anterior dorsal margin is deeply concave in front of the beaks, but without a distinct lunule, at the anterior end regularly rounded or a little prolonged, compressed; ventral margin slightly convex, or nearly straight and sub-parallel with the dorsal margin, or incurved, in the different specimens; posterior end broadly rounded in some, decidedly prolonged in others; dorsal posterior mar-

gin usually nearly straight for at least half its length, sometimes a little convex and gradually sloping throughout. Surface with fine, somewhat irregular, concentric striæ, slightly iridescent. Color white, with the umbos purple. Length, 4^{mm}; height, 2.5^{mm}.

Long Island Sound, near New Haven, 4 to 6 fathoms, shelly and gravelly bottom, among hydroids and sponges (A. E. V.).

Abra æqualis Say.

American Conch., Part iii, Plate 28; outer figures, 1831; Binney's Say, p. 182, same plate; Stimpson, Check-List, p. 3, 1860. *Amphidesma æqualis* Say, Journ. Acad. Nat. Sci., Philadelphia, vol. ii, p. 307, 1822; American Conch., Part iii, Plate 28; Binney's Say, pp. 100, 182. *Semele equalis* Verrill, Amer. Jour. Science, vol. iii, p. 210, 1872.

Florida and Gulf of Mexico to Cape Hatteras; rare and local farther north. Stonington, Connecticut, from cod-stomachs (Linsley). Fort Macon, North Carolina, abundant (Coues, Yarrow). Texas (Rœmer). Charleston, South Carolina (Say).

The occurrence of this southern species at Stonington needs confirmation. I have seen no specimens from north of Cape Hatteras.

Fossil in the Miocene of North and South Carolina.

CUMINGIA TELLINOIDES Conrad. Plate XXX, fig. 221. (p. 418.)

Journ. Acad. Nat. Sci., Philad., vol. vii, p. 234, 1837; Gould, Invert., ed. i, p. 56, fig. 36; ed. ii, p. 79, fig. 390. *Mactra tellinoides* Conrad, Journ. Acad. Nat. Sci., Philad., vol. vi, p. 258, Plate 9, figs. 2, 3, 1831.

Cape Cod to Florida. Common in Vineyard Sound and Buzzard's Bay, 3 to 12 fathoms; Long Island Sound, less common. Fort Macon, North Carolina (Coues, Yarrow). Florida (Conrad). Fossil in the Post-Pliocene of Nantucket Island, South Carolina, and North Carolina; in the Pliocene of South Carolina; and in the Miocene of Virginia and South Carolina.

CERONIA ARCTATA Adams. (p. 426.)

H. and A. Adams, Genera, vol. ii, p. 414, 1858; Gould, Invert., ed. ii, p. 80, fig. 391. *Mactra arctata* Conrad, Journ. Acad. Nat. Sci., Philad., vol. vi, p. 257, Plate 11, fig. 1, 1831. *Mesodesma arctata* Gould, Invert., ed. i, p. 57, fig. 39.

Long Island to River Saint Lawrence. Stonington, Connecticut (Linsley). East Hampton and Montauk, Long Island (S. Smith). Nantucket (Gould). Common in Massachusetts Bay; Casco Bay, and Eastport, Maine, rare. Nova Scotia (Willis).

Donax fossor Say.

Journal Acad. Nat. Sciences, Philadelphia, vol. ii, p. 306, 1822; Binney's Say, pp. 99, 226, Plate 61, fig. 2.

This species may possibly occur occasionally on the Southern New England coast, but I am not aware of any authentic instances. I have found it quite common living on the outer beach at Great Egg Harbor, New Jersey, and it has been found as far north as the southern side of Long Island.

MACTRA SOLIDISSIMA Chemnitz. Plate XXVIII, fig. 202. (p. 358.)

Conch., x, p. 350, Plate 170, fig. 1656, 1788; Gould, Invert., ed. i, p. 51; ed. ii, p. 73, fig. 387. *Mactra gigantea* Lam., Anim. sans Vert., ed. ii, vol. vi, p. 97. *Mactra similis* Say, Journ. Acad. Nat. Sci., Philadelphia, vol. ii, p. 309, 1822; Binney's Say, p. 101. *Spisula solidissima* Gray, Charlesworth's Mag. Nat. Hist., vol. i, p. 373, 1837; H. and A. Adams, vol. xi, p. 378. *Hemimactra solidissima* Conrad, Amer. Journ. Conch., vol. iii, appendix, p. 32; Perkins, Proc. Bost. Soc. Nat. Hist., vol. xiii, p. 346, 1869. *Spisula Sayi* Gray, op. cit., p. 373.

Florida and Gulf of Mexico to Labrador. Very abundant on the outer beach at Great Egg Harbor, New Jersey; Long Island; Long Island Sound; Vineyard Sound; Cape Cod; Massachusetts Bay; Casco Bay; Bay of Fundy, low water-mark to 10 fathoms, sandy. Fort Macon, North Carolina (Coues); Labrador (Packard); St. George's Bank (S. I. Smith); West Florida (Jewett); Texas (Rœmer).

Fossil in the Post-Pliocene at Point Shirley, Chelsea, Massachusetts (Stimpson); and apparently in the Miocene of North and South Carolina (Conrad, as "*M. similis ?*").

MULINIA LATERALIS Gray. Plate XXVI, fig. 185, B. (p. 373.)

Charlesworth's Mag. of Nat. Hist., vol. i, p. 376, 1837; Meek, Smithsonian Check-Lists, Miocene, p. 11, 1864. *Mactra lateralis* Say, Journ. Acad. Nat. Sci., Philad., vol. ii, p. 309, 1822; Gould, Invert., ed. i, p. 54, figs. 34, 35; ed. ii, p. 77, fig. 389. *Standella lateralis* H. and A. Adams, Genera, vol. ii, p. 382, 1858; Conrad, Proc. Philad. Acad., vol. xiv, p. 573, 1862.

Massachusetts Bay to Florida, and on the northern shores of the Gulf of Mexico to Galveston, Texas. Very abundant in Long Island Sound; common in Buzzard's Bay and Vineyard Sound, 1 to 15 fathoms, mud. Boston and near Lynn, Massachusetts (Gould). Fort Macon, North Carolina (Coues). Georgia (Couper). Texas (Rœmer).

Fossil in the Post-Pliocene of Virginia, North Carolina, South Carolina, and Florida (Saint John's River); in the Pliocene of South Carolina; and in the Miocene of Virginia, North and South Carolina.

PETRICOLA PHOLADIFORMIS Lamarck. Plate XXVII, fig. 199. (p. 372.)

Anim. sans Vert., ed. i, vol. v., p. 505, 1818; ed. ii, vol. vi, p. 159; Say, Amer. Conch., Part vi, Plate 60, fig. 1, 1834; Binney's Say, p. 222 (same plate); Hanley, Recent Shells, p. 52, Plate 13, fig. 49; Gould, Invert., ed. i, p. 63; ed. ii, p. 90, figs. 398, 399. *Petricola fornicata* Say, Journ. Acad. Nat. Sci., Philadelphia, vol. ii, p. 319, 1822. *Petricola dactylus* Say, Amer. Conch., Part vi, Plate 60, fig. 2 (*non* Sowerby, Hanley, etc.); Gould, Invert., ed. i, p. 65; ed. ii, p. 92, fig. 41.

Florida and Gulf of Mexico to Massachusetts Bay; local and more rare farther north, at Quahog Bay, Maine; and in the southern part of the Gulf of Saint Lawrence, as at Prince Edward's Island (Dawson); Nova Scotia (Willis). Very common in Long Island Sound, near New Haven; Buzzard's Bay; Vineyard Sound (Lackey's Bay, etc.); and Massachusetts Bay (Chelsea, Nahant, etc.). Fort Macon (Coues);

Florida (Conrad); Texas (Rœmer); Cuba (D'Orbigny). Fossil in the Post-Pliocene of Virginia, South Carolina, and Florida; and in the Pliocene of South Carolina. A similar form, if not identical (*P. Carolinensis* Conrad), occurs in the Miocene of South Carolina.

A species scarcely to be distinguished from this was sent to me in large numbers from La Paz, Gulf of California, by Captain Pedersen.

VENUS MERCENARIA Linné. Plate XXVI, fig. 184 (animal). (p. 359.)

Systema Naturæ, ed. xii, p. 1131, 1767; Gould, Invert., ed. i, p. 85, fig. 67; ed. ii, p. 133, fig. 445. *Mercenaria violacea* Schumacher, Essai d'un Nouveau Syst., p. 135, Plate 10, fig. 3, 1817; Adams, Genera, vol. ii, p. 419. *Mercenaria mercenaria* Chenu, Man. Conch., vol. ii, p. 82, figs. 356–358, 1862. *Crassivenus mercenaria* Perkins, Proc. Boston Soc. Nat. Hist., vol. xiii, p. 147, 1869. *Venus notata* Say, Journ. Acad. Nat. Sci., Philadelphia, vol. ii, p. 271, 1822 (variety); Gould, Invert., ed. i, p. 87, fig. 67; ed. ii, p. 135, fig. 446. *Venus præparca* Say, op. cit., p. 271, 1822; Binney's Say, p. 95.

Florida to Massachusetts Bay; more rare and local farther north, at Quahog Bay, Maine; Nova Scotia (Willis); and in the southern part of the Gulf of Saint Lawrence, to the Bay of Chaleur. It is not found on the coast of Maine, east of Kennebeck River, nor in the Bay of Fundy. Very common in Vineyard Sound, Buzzard's Bay, Long Island Sound, and southward. Fort Macon (Coues); South Carolina (Gibbes); Georgia (Couper); Texas (Rœmer). Fossil in the Post-Pliocene of Point Shirley, Nantucket Island, Gardiner's Island, Virginia, and South Carolina; in the Pliocene of South Carolina; and in the Miocene of Maryland, Virginia, North and South Carolina.

CALLISTA CONVEXA Adams. Plate XXX, fig. 219. (p. 432.)

H. and A. Adams, Genera, vol. ii, p. 425, 1858. *Cytherea convexa* Say, Journ. Acad. Nat. Sci., Phil., vol. iv, p. 149, Plate 12, fig. 3, 1824 (fossil); Gould, Invert., ed. i, p. 84, fig. 49; ed. ii, p. 131, fig. 444 (recent). *Dione convexa* Deshayes, Catal. Conch. Biv., British Museum, p. 71, 1853. *Cytherea morrhuana* Linsley, Amer. Jour. Sci., vol. xlviii, p. 276, 1845 (no description); Gould, op. cit., ser. ii, vol. vi, p. 233, 1848 (young). *Cytherea Sayana* Conrad, Amer. Jour. Sci., ser. i, vol. xxiii, p. 345, 1833 (recent); Fossils of the Medial Tertiary of the U. S., p. 13, Plate 7, fig. 3, 1838 (fossil). *Cytherea Sayii* Perkins, Proc., Boston Soc. Nat. Hist., vol. xiii, p. 147, 1869. *Callista (Caryatis) convexa* Römer; Verrill, Amer. Jour. Sci., vol. xlix, p. 277, March, 1870.

New Jersey to Gulf of Saint Lawrence. Fort Macon, North Carolina, dead valves on the beach, plenty, but perhaps fossil, (Coues, Yarrow). Great Egg Harbor, New Jersey; Long Island Sound; Vineyard Sound, and Buzzard's Bay, 2 to 10 fathoms, mud, common; Casco Bay, 3 to 8 fathoms, mud, adult, living; Eastport, Maine, rare. Nova Scotia (Willis); Prince Edward's Island (Dawson).

Fossil in the Post-Pliocene of Virginia and North Carolina; in the Pliocene of South Carolina; and in the Miocene of Maryland, North and South Carolina.

The name *Sayana* given to this species in 1833 (loc. cit.) by Mr. Con-

rad, was accompanied by a short description of recent specimens from Rhode Island and New Jersey. He gave *C. convexa* Say as a synonym, however, remarking that it "appears not to differ from the *C. convexa* of Say, but I have changed the name because M. Brogniart had previously applied it to a very dissimilar species." More recently, however, he has indicated his belief that the two are distinct (Catal. Miocene Shells, in Proc. Phil. Acad., vol. xiv, p. 575, 1862), although he recognizes the "*Sayana*" as a Miocene shell, but he has not pointed out the differences, if any exist, so far as known to me. Should the recent shell prove to be distinct from the fossil one described by Say, it should therefore bear the name *Callista Sayana*.

In this species the animal is white, or pale salmon-color. The border of the mantle sometimes protrudes considerably beyond the edge of the shell, and is delicately undulated or frilled; the siphon tubes, in full expansion, are smooth and rather longer than the shell, and are united quite to the ends; the orifices are simple, without apparent papillæ, and the branchial is considerably larger than the other; a well-marked groove extends along the whole length of the siphon, indicating the partition between the tubes.

TOTTENIA GEMMA Perkins. Plate XXX, fig. 220. (p. 359.)

Proc. Boston Soc. Nat. Hist., vol. xiii, 1869 (in errata); by error, *Totteniana* (p. 148). *Venus gemma* Totten, Amer. Jour. Science, vol. xxvi, p. 367, figs. 2*a*, *d*, 1834. *Gemma gemma* Deshayes, Catal. Conch. Biv., British Museum, p. 113, 1853; H. and A. Adams, Genera, vol. ii, p. 419, Plate 107, fig. 3. *Gemma Totteni* Stimpson, Check-List, p. 3, 1860.

South Carolina to Labrador. Very abundant in Long Island Sound, Buzzard's Bay, Vineyard Sound, Nantucket, and Massachusetts Bay; common in Casco Bay, and at Grand Menan Island. Nova Scotia (Willis). Prince Edward's Island (Dawson). Indian Harbor, Labrador (Packard). Fort Macon, North Carolina (Coues).

An allied species (*T. sphærica* H. C. Lea, sp.) occurs in the Miocene of Virginia.

TOTTENIA MANHATTENSIS Verrill.

Venus Manhattensis Prime, in Jay's Catalogue of Shells, ed. iv, supplement, p. 466, 1852. *Venus* (*Gemma*) *Manhattensis* Prime, Annals Lyc. Nat. Hist. N. Y., vol. vii, p. 482 (figure), 1862. *Gemma Manhattensis* Gould, Invert., ed. ii, p. 138, fig. 449.

North Carolina to Vineyard Sound. Hell Gate (Prime). Greenport and Huntington, Long Island (S. Smith). Near New Haven, rare. Fort Macon, North Carolina (Yarrow).

I have seen but few specimens of this shell, and am not fully satisfied that it is distinct from the preceding. Its color is not constant, some specimens being pale straw-color, others purplish. Mr. Prime originally described it as white.

CYPRINA ISLANDICA Lamarck. Plate XXVIII, fig. 201. (p. 508.)

Animaux sans Vert., ed. ii, vol. vi, p. 290; Gould, Invert., ed. i, p. 82; ed. ii, p. 443. *Venus Islandica* Linné, Syst. Nat., ed. xii, p. 1131.

Eastern end of Long Island to the Arctic Ocean; on the northern European coasts southward to England. Off Block Island, 29 fathoms, sandy mud; off Gay Head, Martha's Vineyard, 19 fathoms, soft mud; common in Casco Bay, 10 to 80 fathoms; Bay of Fundy, 6 to 90 fathoms; Saint George's Bank, 45 fathoms; and Gulf of Saint Lawrence. Montauk, Long Island (S. Smith). Fossil in the Post-Pliocene of Scandinavia, Scotland, England, Sicily, and other parts of Europe. In North America it appears not to have been found fossil hitherto, and it must, therefore, be rare in our northern Post-Pliocene or glacial deposits, if not altogether absent.

CARDIUM PINNULATUM Conrad. Plate XXIX, fig. 209. (p. 505.)

Journal Acad. Nat. Sciences, Philadelphia, ser. i, vol. vi, p. 260, Plate 11, fig. 8, 1831; Gould, Invert., ed. i, p. 90, fig. 57; ed. ii, p. 141, fig. 452.

Long Island Sound to Southern Labrador. Near New Haven, Connecticut, rare; Buzzard's Bay and Vineyard Sound, 4 to 12 fathoms, common; very common in Massachusetts Bay, Casco Bay, Bay of Fundy, and Gulf of Saint Lawrence, 2 to 80 fathoms. Labrador, south of Straits of Belle Isle (Packard). Huntington, Gardiner's and Peconic Bays, Long Island (S. Smith.) Off New London, Connecticut, (coll. T. M. Prudden). Fossil in the Post-Pliocene of New Brunswick.

LÆVICARDIUM MORTONI. Plate XXIX, fig. 208. (p. 358.)

Perkins, Proc. Boston Soc. Nat. Hist., vol. xiii, p. 150, 1869. *Cardium Mortoni* Conrad, op. cit., vol. vi, p. 259, Plate 10, figs. 5, 6, 7; Gould, Invert., ed. i, p. 91; *Liocardium Mortoni* Stimpson, Check-List, p. 2, 1860; Gould, Invert., ed. ii, p. 143, fig. 453.

Florida and northern shores of the Gulf of Mexico to Cape Cod; rare and local farther north. Common in Long Island Sound, Buzzard's Bay, Vineyard Sound, and about Nantucket. Dartmouth Lakes, Halifax, Nova Scotia (Willis, t. Gould). West Florida (Jewett). Fort Macon (Coues). Fossil in the Post-Pliocene of South Carolina.

Serripes Grönlandicus Beck (*Aphrodite Grönlandica* Stimpson; Gould, Invert., ed. ii, p. 144, fig. 454). This species was recorded as from Stonington, Connecticut, by Linsley, but has not since been found south of Cape Cod, and must, therefore, be regarded as a doubtful inhabitant of our waters. It occurs from Massachusetts Bay to the Arctic Ocean, but is rare south of the Gulf of Saint Lawrence and Labrador. Casco Bay and Mount Desert, Maine, 8 to 30 fathoms, rare, (A. E. V.).

CYCLOCARDIA BOREALIS Conrad. Plate XXIX, fig. 216. (p. 418.)

Amer. Journ. Conchology, vol. iii, p. 191, 1867. *Cardita borealis* Conrad, Amer. Mar. Conch., p. 39, Plate 8, fig. 1, 1831; Gould, Invert., ed. i, p. 94, fig. 59; ed. ii, p. 146, fig. 455. *Actinobolus borealis* H. and A. Adams, Genera, vol. ii, p. 487, 1858.

(?) *Venericardia cribraria* Say, Amer. Conch., Part v, cover, 1832; Binney's Say, p. 205. (?) *Venericardia granulata* Say, Jour. A. Nat. Sci., Philadelphia, vol. iv, p. 142, Plate 12, fig. 1. *Cardita granulata* Conrad, Fossils of Medial Tert. of U. S., p. 13, Plate 7, fig. 1.

New Jersey to Labrador. Common in the deeper parts of Vineyard Sound, near its mouth, and off Gay Head and Buzzard's Bay, 10 to 25 fathoms; off Block Island, 29 fathoms; very common in Casco Bay, Bay of Fundy, and Gulf of Saint Lawrence, 3 to 80 fathoms. Sandy Hook, and Montauk, Long Island (S. Smith). Off New London, Connecticut (T. M. Prudden). Saint George's Bank, 25 to 65 fathoms, (S. I. Smith). Straits of Belle Isle, 50 fathoms; Chateau Bay, 50 fathoms; Long Island, Labrador, 15 fathoms, (Packard). A species, regarded as identical by Dr. Carpenter, occurs on the North Pacific coast of America as far south as Catalina Island, and on the northeast coast of Asia.

Fossil in the Post-Pliocene of Gardiner's Island; Nantucket and Point Shirley, Massachusetts; and Labrador. The Miocene form, *C. granulata* (Say, sp.) is very closely allied to this, if not identical. It is found in Virginia and Maryland.

CYCLOCARDIA NOVANGLIÆ Morse. Plate XXIX, fig. 215. (p. 418.)

Actinobolus (*Cyclocardia*) *Nova-angliæ* Morse, First Annual Report of Trustees of Peabody Acad. of Science, Salem, p. 76, cut, 1869. *Cyclocardia Novangliæ* Verrill, Amer. Journ. Science, vol. iii, p. 211, 1872.

Connecticut to Gulf of Saint Lawrence. Mouth of Vineyard Sound and off Gay Head, 10 to 25 fathoms; Casco Bay, and Bay of Fundy, 3 to 40 fathoms, not uncommon. Off New London, Connecticut (T. M. Prudden).

ASTARTE UNDATA Gould. Plate XXIX, fig. 203. (p. 508.)

Invert., ed. i, p. 80, fig. 46, 1841 (provisional name); Philippi, Abbildungen und Beschr. neuer oder wenig gek. Conch., vol. ii, p. 1, Plate 1, fig. 1, 1850; Verrill, Amer. Jour. Science, vol. iii, p. 213, 1872. *Crasina latisulca* Hanley, Recent Shells, p. 87, Plate 14, fig. 35, 1843. *Astarte sulcata* Gould, Invert., ed. i, p. 78, fig. 46, 1841 (not of European writers); ed. ii, p. 119, fig. 432 (poor figure, from an old, deformed shell).

Var. *lutea* = *Astarte lutea* Perkins, Proc. Boston Soc. Nat. Hist., vol. xiii, p. 150, figure, 1869.

Long Island Sound to the southern part of the Gulf of Saint Lawrence. Off Gay Head and Buzzard's Bay, and in the deeper parts of Vineyard Sound, 8 to 25 fathoms, common; off Block Island, 29 fathoms; very common in Casco Bay and Bay of Fundy, 5 to 100 fathoms; Saint George's Bank, 20 to 85 fathoms. Off New London, Connecticut, (T. M. Prudden). Southern part of Gulf of Saint Lawrence (Whiteaves). Var. *lutea* occurs rarely near New Haven (Perkins); and more frequently off Gay Head and in Vineyard Sound, 8 to 19 fathoms, with the ordinary varieties. It resembles the European *sulcata* more than the common or typical varieties do, but passes insensibly into the ordinary forms. The shells referred to *undata*, by Dawson and Whiteaves, from

Gaspé, Canada, are not this species, but a short variety of *A. elliptica*. The latter is a much more northern shell, and I have dredged but one specimen on the New England coast (off Casco Bay, 65 fathoms).

Fossil at Point Shirley, Massachusetts, in the Post-Pliocene, (Stimpson, as *A. sulcata*); and at Gardiner's Island (S. Smith).

ASTARTE CASTANEA Say. Plate XXIX, fig. 204. (p. 432.)

American Conchology, Part i, 1830, Plate 1; Binney's Say, p. 150, Plate 1; Gould, Invert., ed. i, p. 76, fig. 45; ed. ii, p. 117, fig. 431. *Venus castanea* Say, Journ. Acad. Nat. Sci., Philad., vol. ii, p. 273, 1822; Binney's Say, p. 96. *Crassina castanea* Lamarck, Anim. sans Vert., ed. ii, vol. vi, p. 258; Hanley, Recent Shells, p. 88, Plate 9, fig. 27.

Great Egg Harbor, New Jersey, to Nova Scotia. Common on the shores of Long Island, Nantucket, Martha's Vineyard, and Cape Cod; Long Island Sound, not very common; Vineyard Sound and Buzzard's Bay, 5 to 20 fathoms, frequent; Casco Bay and Bay of Fundy, 5 to 20 fathoms, not common. Massachusetts Bay, abundant, (t. Gould). Saint George's Bank, 25 to 40 fathoms, (S. I. Smith). Halifax and Sable Island, Nova Scotia (Willis). Off Cape Sable, Nova Scotia (A. E. V.). Off New London, Connecticut (T. M. Prudden). Fossil in the Post-Pliocene at Nantucket and Point Shirley, Massachusetts.

ASTARTE QUADRANS Gould. Plate XXIX, fig. 205. (p. 509.)

Invert., ed. i, p. 81, fig. 48, 1841; ed. ii, p. 123, fig. 434; Verrill, Amer. Journ. Sci., vol. iii, p. 287, 1872. *Astarte Portlandica* Mighels, Boston Journ. Nat. Hist., vol. iv, pp. 320, 345, Plate 16, fig. 2, 1843 (variety); Gould, Invert., ed. ii, p. 127, fig. 441.

Stonington, Connecticut, to Gulf of Saint Lawrence. Mouth of Vineyard Sound, and off Martha's Vineyard, 19 to 25 fathoms, rare; Massachusetts Bay; Casco Bay; Bay of Fundy, in 6 to 40 fathoms, not uncommon. Saint George's Bank (S. I. Smith). Gulf of Saint Lawrence (Whiteaves).

Var. *Portlandica* occurs, with intermediate forms, in Casco Bay and Bay of Fundy, 10 to 25 fathoms, not common.

GOULDIA MACTRACEA Gould. Plate XXIX, figs. 206, 207. (p. 418.)

Invert., ed. ii, p. 128, fig. 442, 1870. *Astarte mactracea* Linsley, Amer. Jour. Sci., vol. xlviii, p. 275 (figure), 1845; Gould, op. cit., ser. ii, vol. vi, p. 233, figs. 1. 2, 1848. (?)*Astarte lunulata* Conrad, Jour. Acad. Nat. Sciences, Philad., vol. vii, p. 151, 1837; Fossils of the Medial Tertiary of the U. S., p. 45, Plate 21, fig. 8, 1840; *Gouldia lunulata* Conrad, Catal. of Miocene Shells, in Proc. Acad. Nat. Sci., Philad., vol. xiv, p. 578, 1862.

Florida and northern shores of the Gulf of Mexico to Cape Cod. Common, living, and of large size, in Vineyard Sound and Buzzard's Bay, especially at Wood's Hole, 3 to 10 fathoms. Stonington, in stomach of cod (Linsley). Huntington and Greenport, Long Island (S. Smith). Off New London, Connecticut (coll. T. M. Prudden). Fort Macon (Coues). South Carolina (Kurtz). West Florida (E. Jewett). Tampa Bay (Conrad).

Fossil (*G. lunulata*) in the Post-Pliocene of North and South Carolina; in the Pliocene of South Carolina; and in the Miocene of Maryland and Virginia. The fossil shell is probably identical with the recent one, but I have not had suitable specimens of the former for comparison; if identical, the species should be called *G. lunulata*.

LUCINA FILOSA Stimpson. Plate XXIX, fig. 212. (p. 509.)

Shells of New England, p. 17, 1851; Gould, Invert., ed. ii, p. 98, fig. 404. *Lucina radula* Gould, Invert., ed. i, p. 69 (*non* Montagu, sp.). ? *Lucina contracta*, Say, Jour. Acad. Nat. Sciences, Philad., vol. iv, p. 145, Plate 10, fig. 8; Conrad, Fossils of the Medial Tertiary of U. S., p. 40, Plate 20, fig. 5, 1840.

Stonington, Connecticut, to Maine. Off Block Island, 29 fathoms, sandy mud; off Gay Head, 19 fathoms, soft mud; Casco Bay and Portland Harbor. Stonington (Linsley). Boston Harbor (Stimpson). Phillip's Beach (Holder). Rhode Island (Conrad, as *L. contracta*).

Fossil in the Post-Pliocene of Gardiner's Island (S. Smith). *L. contracta* occurs in the Miocene of Virginia; it was formerly regarded by Conrad as identical with the recent shell from Rhode Island, but is probably a distinct, though closely-allied species. Mr. Jeffreys identified this species with *L. borealis* (Linné) of Europe; the latter is also found on the Pacific coast at Vancouver Island and Catalina Island (Cooper and P. P. Carpenter).

CYCLAS DENTATA. Plate XXIX, fig. 211. (p. 418.)

Lucina dentata Wood, General Conchology, p. 195, Plate 46, fig. 7, 1815; Gould, Invert., ed. ii, p. 99, fig. 45. *Lucina divaricata* Gould, Invert., ed. i, p. 70, (*non* Linné, sp). *Lucina strigilla* Stimpson, Shells of New England, p. 17, 1851.

Brazil and West Indies to Cape Cod. Not uncommon, dead, but rarely obtained living, in Vineyard Sound, 6 to 14 fathoms. Coney Island (S. Smith). Nantucket (Gould). St. George's Bank (S. I. Smith). Fort Macon, North Carolina, abundant, (Coues, Yarrow). Georgia (Couper).

Fossil in the Post-Pliocene of North Carolina, South Carolina, and Florida; and in the Pliocene of South Carolina. The same, or a closely-related species, (*L. Conradi* D'Orb., Prod., iii, p. 117, 2194, t. Conrad, in Proc. Acad. Nat. Sci., Phil., 1862, p. 577=*L. divaricata* Conrad, Fossils of Med. Tert., p. 38, Plate 20, fig. 3) occurs in the Miocene of Virginia.

CRYPTODON GOULDII Adams. Plate XXIX, fig. 213. (p. 509.)

H. and A. Adams, Genera, vol. ii, p. 470, 1858; Gould, Invert., ed. ii, p. 100, fig. 406. *Lucina Gouldii* Philippi, Zeitsch. f. Malak., 1845, p. 74 (t. Gould). *Thyasira Gouldii* Stimpson, Shells of New Eng., p. 17, 1851. *Lucina flexuosa* Gould, Invert., ed. i, p. 71, fig. 52 (*non* Montagu, sp.).

Stonington, Connecticut, to Gulf of Saint Lawrence. Off Block Island, 29 fathoms; Buzzard's Bay, 6 fathoms, mud; common in Massachusetts Bay, Casco Bay, and Bay of Fundy, 5 to 60 fathoms, muddy and sandy. Nova Scotia (Willis). Gaspé, Canada (Whiteaves). Murray Bay (Dawson). Gulf of Saint Lawrence, 20 to 300 fathoms (White-

aves). Greenland (Mörch). Labrador, 15 to 50 fathoms, (Packard). Fossil in the Post-Pliocene at Montreal, rare, (Dawson); Brunswick, Maine (Packard).

Possibly some of the Gulf of Saint Lawrence specimens may belong to the following species.

CRYPTODON OBESUS Verrill. Plate XXIX, fig. 214. (p. 509.)

American Journ. Science, vol. iii, pp. 211, 287, Plate 7, fig. 2, 1872.

Shell white, irregularly and rather coarsely concentrically striated, much swollen in the middle; the transverse diameter nearly equal to the length; the height considerably exceeding the length. The beaks are prolonged and turned strongly to the anterior side. The lunular area is rather large and sunken, somewhat flat, in some cases separated by a slight ridge into an inner and an outer portion. Anterior border with a prominent rounded angle; ventral margin prolonged and rounded in the middle; posterior side with two strongly-developed flexures, separated by deep grooves. Interior of shell with radiating grooves, most conspicuous toward the ventral edge.

Length of the largest specimen, 15^{mm}; height, 18^{mm}; thickness, 13^{mm}. The smaller specimens have about the same proportions.

Six single valves, some of them quite fresh, were obtained off Noman's Land at different localities. They were all right valves, and the smallest was 12.5^{mm} of an inch in height. The specimen from Labrador agrees nearly in form and structure, and is only 5.75^{mm} in height and 5^{mm} in length.

This species appears to be more nearly related to *C. flexuosus* of Europe than to *C. Gouldii.* The European species is nearly intermediate between the two American shells in form; but judging from the specimens that I have had opportunities to examine, the three forms ought to be kept distinct. *C. Gouldii* is a thinner and more delicate shell, more rounded, relatively much longer, and is seldom more than 6^{mm} to 7^{mm} in breadth.

Block Island to Labrador. East of Block Island, in 29 fathoms, fine sandy mud; off Gay Head, 19 fathoms, mud; Casco Bay, 60 fathoms, mud. Labrador (Packard). East of Saint George's Bank, 430 fathoms (S. I. Smith).

Turtonia minuta Stimpson.

Shells of New England, p. 16, 1851 (*non* Alder, Forbes and Hanley, etc.); Gould, Invert., ed. ii, p. 85, fig. 395. *Venus minuta* Fabricius, Fauna Grönlandica, p. 412, 1780. *Turtonia nitida* Verrill, Amer. Journ. of Sci. vol. iii, p. 286, Plate 7, figs. 4, 4*a*, 1872.

Massachusetts Bay to Greenland. Common under stones and in rocky pools at low-water, in Massachusetts Bay and Casco Bay. Although this species has not yet been found south of Cape Cod, so far as I am aware, it will probably be found hereafter on the more exposed rocky shores, as at Point Judith, Watch Hill, or on some of the outer islands.

The American specimens of this shell differ so widely in form, and especially in the structure of the hinge, from all the European specimens with which I have compared them, as well as from the descriptions and figures, that I cannot regard them as identical. Dr. Gould has well defined the form and external characters of our shell. I have seen no European specimens so elongated in form as the American examples seen by me invariably are, but depend less on the external form than on the structure of the hinge for distinguishing them. (See the greatly enlarged figure in the Amer. Journal of Science).

Having had opportunities to study northern specimens of this shell, since I gave it the name *nitida*, I have become fully satisfied that the original shell described by Fabricius is identical with the American species, rather than with the European. His description corresponds well with our best specimens. The European species, if, as I believe, distinct from ours, should, therefore, retain the name *T. purpurea* (Montagu, sp.); and *minuta* should be restored to the American form.

KELLIA PLANULATA Stimpson. Plate XXX, fig. 226. (p. 310.)

Shells of New England, p. 17, 1851; Gould, Invert., ed. ii, p. 83, fig, 393. *Kellia rubra* Gould, Invert., ed. i, p. 60, (*non* Montagu, sp.).

Long Island Sound to Greenland. Near New Haven, Connecticut, rare; Vineyard Sound and Buzzard's Bay, 1 to 8 fathoms, not common; Casco Bay; Eastport, Maine, 8 to 15 fathoms; Bay of Fundy. Montauk and Greenport, Long Island, low-water to 6 fathoms, mud; and Gull Island, low-water, under stones, (S. Smith). Boston Harbor, 5 fathoms, shelly, (Stimpson). Sable Island, Nova Scotia (Willis). Greenland (Mörch).

MONTACUTA ELEVATA Stimpson. (p. 418.)

Shells of New England, p. 16, 1851; Gould, Invert., ed. ii. p. 86, fig. 396. *Montacuta bidentata* Gould, Invert., ed. i, p. 59, 1841 (*non* Montagu, sp., 1803).

Long Island Sound to Massachusetts Bay. Savin Rock, near New Haven, rare; Naushon Island, Vineyard Sound, rare. Greenport, Long Island (S. Smith). New Bedford (Gould). Chelsea Beach (Stimpson).

LEPTON FABAGELLA Conrad.

Marine Conchology, p. 53, Plate 11, fig. 3, 1831; Dekay, Nat. History of New York, Mollusca, p. 243, Plate 32, fig. 307, A, B.

Rhode Island (Conrad).

I have not seen specimens of this shell. It seems to be rare and little known.

A closely-related species (*L. mactroides* Conrad, Fossils Medial Tert., p. 19, Plate X, fig. 5, 1839) is found in the Miocene of Maryland.

SOLENOMYA VELUM Say. Plate XXIX, fig. 210. (p. 360.)

Journal Acad. Nat. Sciences, Philad., vol. ii, p. 317, 1822 (*Solemya*); Gould, Invert., ed. i, p. 35; ed. ii, p. 48, fig. 371.

North Carolina to Nova Scotia. Great Egg Harbor, New Jersey; Long Island Sound, near New Haven, low-water to 6 fathoms, not uncommon;

very common in Buzzard's Bay and Vineyard Sound, 1 to 5 fathoms, especially in soft mud, in coves; Chelsea Beach, etc., Massachusetts Bay, common; Casco Bay, rare. Nova Scotia (Willis). Huntington and Greenport, Long Island, rare, (S. Smith).

SOLENOMYA BOREALIS Totten.

Amer. Jour. Science, vol. xxvi, p. 366, fig. 1, *h*, *i*, 1834 (*Solemya borealis*); Gould, Invert., ed. i, p. 36; ed. ii, p. 50, fig. 372.

Connecticut to Nova Scotia. Newport, Rhode Island (Totten). Chelsea and Nahant, Massachusetts (Gould). Casco Bay and Portland Harbor rare; Vineyard Sound, at Cuttyhunk Island, rare. Stonington, Connecticut (Linsley).

This species may prove to be only the mature state of the preceding, but I have never seen specimens intermediate in character.

YOLDIA LIMATULA Stimpson. Plate XXX, fig. 232. (p. 432).

Shells of New England, p. 9, 1851; H. and A. Adams, Genera, vol. ii, p. 548, Plate 126, figs. 5, 5*b*, 1858; Gould, Invert., ed. ii, p. 154, fig. 462. *Nucula limatula* Say, Amer. Conch., ii, Plate 12, middle figures, 1831; Gould, Invert., p. 98, fig. 62. *Leda limatula* Stimpson, Shells of New England, p. 10, 1851.

North Carolina to Gulf of Saint Lawrence. Common in Long Island Sound; Buzzard's Bay; Vineyard Sound; Casco Bay, in 2 to 12 fathoms, soft mud; less common in the Bay of Fundy, 4 to 30 fathoms. Beaufort, North Carolina (Stimpson, Coues). Huntington and Greenport, Long Island (S. Smith). Nova Scotia (Willis). The specimens from Long Island Sound are as large and fine as the northern ones.

Fossil in the Post-Pliocene of Canada, Virginia, North and South Carolina; and in the Pliocene of South Carolina. An allied species (*Y lævis* Say, sp., Conrad) occurs in the Miocene of Maryland and South Carolina.

Yoldia myalis Stimpson; Gould, Invert., ed. ii, p. 160, fig. 467; *Nucula myalis* Couthouy, 1838. This is often confounded with *Y. limatula*, though quite distinct. It is a more arctic species, ranging from Massachusetts Bay to the Arctic Ocean and Spitzbergen, but it has not been found south of Cape Cod, so far as known to me. The shells reported as such, that I have seen, are *Y. limatula*. Gould reports the latter as from Nordland (McAndrew), but we suspect that *Y. myalis* or *Y. sapotilla* may have been, in this case, mistaken for *Y. limatula*.

YOLDIA SAPOTILLA Stimpson, 1851. Plate XXX, fig. 231. (p. 509.)

H. and A. Adams, Genera, vol. ii, p. 548; Gould, Invert., ed. ii, p. 159, fig. 466. *Nucula sapotilla* Gould, Invert., ed. i, p. 100, fig. 61, 1841; Hanley, Recent Shells, p. 170, Plate 20, fig. 3. *Leda* (*Yoldia*) *sapotilla* Stimpson, Shells of New England, p. 10, 1851. *Yoldia arctica* Mörch, op. cit., p. 93, 1857 (t. Dawson, from specimen; *non Y. arctica* Sars).

Long Island to the Arctic Ocean, comparatively rare and local, chiefly in deep water, south of Cape Cod. Off Gay Head, 19 fathoms, soft mud; off Buzzard's Bay, 25 fathoms, sand; east of Block Island, 29 fathoms,

fine sandy mud; common in Casco Bay and Bay of Fundy, 4 to 100 fathoms, mud. Greenport, Long Island (S. Smith). Massachusetts Bay (Gould). Nova Scotia (Willis). Labrador (Packard). Greenland (Mörch).

This species seems to be unknown among our Post-Pliocene shells. Having examined several hundred specimens from many different localities and depths, I am satisfied that it is perfectly distinct from *Y. limatula*, with which certain writers are inclined to unite it.

Yoldia Gouldii.

Nucula Gouldii DeKay, Nat. Hist. New York, Mollusca, p. 180, Plate 13, fig. 221, 1843.

This was originally described by Dekay as from Long Island Sound. I have seen no specimens corresponding with the description in all respects. It is, perhaps, a short variety of *Y. sapotilla.*

YOLDIA OBESA Stimpson, 1851. (p. 509.)

H. and A. Adams, Genera, vol. ii, p. 548, 1858; Gould, Invert., ed. ii, p, 155, fig. 463. *Leda obesa* Stimpson, Proc. Boston Soc. Nat. Hist., vol. iv, p. 13, 1851; Shells of New England, p. 10, Plate 2, fig. 1, 1851. *Nucula navicularis* Mighels, Boston Journal Nat. History, p. 323, 1843 (*non* Couthouy, Gould).

Block Island to Gulf of Saint Lawrence. East of Block Island, 29 fathoms, rare; Casco Bay and off Cape Elizabeth, 30 to 95 fathoms; Bay of Fundy, 40 to 100 fathoms, rare; near Saint George's Bank, 110 and 150 fathoms (Packard). Massachusetts Bay (Stimpson).

YOLDIA THRACIFORMIS Stimpson, 1851. (p. 509.)

Smithsonian Check-List, p. 2, 1860; H. and A. Adams, Genera, vol. ii, p. 548, 1858 (*thraciæformis*); Gould, Invert., ed. ii, p. 157, fig. 465; Mörch, op. cit., p. 21, 1857. *Nucula thraciæformis* Storer, Boston Jour. Nat. History, vol. ii, p. 122, figure, 1838; Gould, Invert., ed. i, p. 97, fig. 66. *Leda thraciæformis* Stimpson, Shells of New England, p. 9, 1851. *Nucula navicularis* Couthouy, Boston Journ. Nat. History, vol. ii, p. 178, Plate 4, fig. 4, 1839, (young); Gould, Invert., ed. i, p. 103. *Yoldia angularis* Möller, op. cit., p. 92, 1842 (t. Mörch).

Long Island to Greenland. Off Fire Island, south of Long Island, in 10 fathoms; and off Race Point, Cape Cod, in 30 fathoms, (Stimpson). Not uncommon, and of large size, in Casco Bay, 15 to 95 fathoms; and Bay of Fundy, 10 to 100 fathoms; near Saint George's Bank, 85 fathoms (Packard).

LEDA TENUISULCATA Stimpson. (p. 509.)

Shells of New England, p. 10, 1851; Gould, Invert., ed. ii, p. 161, fig. 468. *Nucula tenuisulcata* Couthouy, Boston Journ. Nat. Hist., vol. ii, p. 64, Plate 3, fig. 8, 1838. *Nucula minuta* Gould, Invert., ed. i, p. 101, 1841 (*non* Fabricius, sp).

Rhode Island to Gulf of Saint Lawrence. Common in Massachusetts Bay, Casco Bay, and Bay of Fundy, 6 to 80 fathoms. Nova Scotia (Willis). Newport, Rhode Island (t. S. Smith). Southern part of the Gulf of Saint Lawrence (Whiteaves). Particularly abundant in Eastport Harbor, 10 to 30 fathoms; Saint George's Bank and vicinity, 40 to 150

fathoms (Smith, Packard). Fossil in the Post-Pliocene at Saco and Portland, Maine (Packard); ? Canada (Dawson, as *L. pernula*, var).

NUCULA PROXIMA Say. Plate XXX, fig. 230. (p. 418.)

Journ. Acad. Nat. Sciences, Philad., vol. ii, p. 270, 1822; Gould, Invert., ed. i, p. 103, fig. 63; ed. ii, p. 150, fig. 458.

South Carolina to Gulf of Saint Lawrence. Common in Long Island Sound, Buzzard's Bay, and Vineyard Sound, 2 to 19 fathoms; off Buzzard's Bay and Block Island, 25 to 29 fathoms; common in Massachusetts Bay, Casco Bay, and Bay of Fundy, 4 to 80 fathoms; very abundant in Trenton Bay, Mount Desert, Maine, 10 fathoms, soft mud. Nova Scotia (Willis). Saint George's Bank (S. I. Smith). Fort Macon, North Carolina (Coues). Long Island, abundant, (S. Smith). Fossil in the Post-Pliocene of North and South Carolina; in the Pliocene of South Carolina; and in the Miocene of Maryland and South Carolina.

NUCULA DELPHINODONTA Mighels. Plate XXX, fig. 229. (p. 509.)

Boston Journal Nat. Hist., vol. iv, p. 40, Plate 4, fig. 5, 1842; Gould, Invert., ed. ii, p. 153, fig. 461. *Nucula corticata* Möller, Naturhistorisk Tidsskrift, vol. iv, p. 90, 1842. ? *Nucula radiata* Dekay, Nat. Hist. New York, Moll., p. 179, Plate 12, fig. 216, 1843.

Rhode Island to Greenland. East of Block Island, 29 fathoms; off Gay Head, 19 fathoms, soft mud; Massachusetts Bay, common; Casco Bay, 6 to 95 fathoms, common; Frenchman's Bay, Mount Desert, common; Bay of Fundy and Eastport Harbor, 10 to 100 fathoms, mud, common; Nova Scotia (Willis); Gulf of St. Lawrence (Whiteaves). Greenland (Möller, Mörch). Northern Europe (t. Jeffreys).

Nucula tenuis Turton (Montagu, sp.)

Gould, Invert., ed. i., p. 105, fig. 64; ed. ii, p. 149, fig. 457.

This species was recorded as from cod-stomachs, at Stonington, Connecticut, but was not met with by us. Its occurrence south of Cape Cod needs confirmation. It is an arctic species; common in Casco Bay and the Bay of Fundy, in 10 to 100 fathoms, mud; and northward to the Arctic Ocean. Also on the northern coasts of Europe, south to Great Britain. It is also found in the Post-Pliocene of New England and Canada.

SCAPHARCA TRANSVERSA. Plate XXX, fig. 228. (p. 309.)

H. and A. Adams, Genera, vol. ii, p. 538, 1858. *Arca transversa* Say, Jour. Acad. Nat. Sci., Philad., vol. ii, p. 269, 1822; Gould, Invert., ed. i, p. 96; ed. ii, p. 148, fig. 456*a*.

Florida to Cape Cod. Long Island Sound, near New Haven, low-water to 8 fathoms; Buzzard's Bay and Vineyard Sound, 2 to 10 fathoms; Great Egg Harbor, New Jersey, 1 fathom. Nantucket (Gould). Long Island, abundant; Greenport, 3 to 10 fathoms (S. Smith). Fort Macon, North Carolina (Coues). South Carolina (Kurtz). Georgia (Couper).

Fossil in the Post-Pliocene of Nantucket, Gardiner's Island, Virginia, North and South Carolina; and in the Miocene of Virginia and North Carolina. According to Gould, found fossil at Provincetown, Massachusetts, in an artesian boring, 120 to 200 feet beneath the surface, (Post-Pliocene ?)

ARGINA PEXATA Gray. Plate XXX, fig. 227. (p. 309.)

Proc. Zoöl. Soc., London, 1847; H. and A. Adams, Genera, vol. ii, p. 540, Plate 125, figs. 7, 7*a*, 1858. *Arca pexata* Say, Jour. Acad. Nat. Sciences, Philad., vol. ii, p. 268, 1822; Gould, Invert., ed. i, p. 95, fig. 60; ed. ii, p. 147, fig. 456.

Florida and northern shores of Gulf of Mexico to Cape Cod; rare and local farther north, in Massachusetts Bay. Very common in Long Island Sound, low-water to 10 fathoms; Buzzard's Bay; Vineyard Sound; Great Egg Harbor, New Jersey. On beach at Provincetown, Massachusetts (S. I. Smith). Staten Island and Long Island, abundant (S. Smith). Fort Macon, North Carolina (Yarrow). Georgia (Couper). West Florida (Jewett). Texas (Rœmer).

Fossil in the Post-Pliocene of Gardiner's Island (?) (S. Smith); in the Miocene of South Carolina.

ARCA PONDEROSA Say.

Journ. Acad. Nat. Sciences, Philadelphia, vol. ii, p. 267, 1822; Binney's Say, p. 92.

This species occurs on the beach at Edgartown, Martha's Vineyard, associated with the other common sand-dwelling shells of that region. The valves are apparently tolerably fresh, though worn, and no fossil shells have been found in that vicinity. It occurs in the same way on the southern side of Long Island, near Fire Island (S. I. Smith and S. Smith). But I am not aware that it has been found living north of Cape Hatteras; nevertheless, it may occur locally in shallow water off shore. The specimens found may possibly have been washed out from submerged Post-Pliocene deposits.

It is found living at Fort Macon, North Carolina, and southward to the Gulf of Mexico.

HETEROMYARIA.

MYTILUS EDULIS Linné. Plate XXXI, fig. 234. (pp. 307, 432.)

Systema Naturæ, ed. xii, p. 1157, 1767; Gould, Invert., ed. i, p. 121, fig. 82; ed. ii, p. 183, figs. 483, 484. *Mytilus borealis* Lamarck, Anim. sans Vert., ed. ii, vol. vii, p. 46; Dekay, Nat. Hist. N. Y., Moll., p. 182, Plate 13, fig. 222, Plate 24, fig. 256. *Mytilus pellucidus* Pennant, Brit. Zoöl., vol. iv, p. 237, Plate 66, fig. 3, (t. Gould) = variety *pellucidus* Gould, Invert., ed. ii, p. 184, fig. 484. *Mytilus notatus* Dekay, op. cit., p. 182, Plate 13, fig. 223, 1843.

Circumpolar: Arctic Ocean south to North Carolina, on the American coast; south to Great Britain, France, and the Mediterranean and Black Seas, on the European coast; south to Monterey and San Francisco, on the North Pacific coast; south to China and Japan, on the Asiatic coast. Very abundant in Great Egg Harbor, New Jersey, Long

Island Sound, Buzzard's Bay, Vineyard Sound, Massachusetts Bay, Casco Bay, Bay of Fundy (littoral to 50 fathoms), and northward. Fort Macon, North Carolina (Coues).

Fossil in the Post-Pliocene of Greenland, Labrador, Canada, Lake Champlain, Maine, New Brunswick, Point Shirley, Massachusetts, and Saint John's River, Florida; in the Post-Pliocene of Scandinavia, Russia, and Great Britain; in the Red Crag and all later formations in England.

MODIOLA MODIOLUS Turton. Plate XXXI, fig. 237. (p. 309.)

British Bivalves, p. 199, Plate 15, fig. 3, 1822; Gould, Invert., ed. i, p. 123; ed. ii, p. 186, fig. 485; Dekay, op. cit., p. 185, Plate 24, fig. 257. *Mytilus modiolus* Linné, Syst. Nat., ed. xii, p. 1158. (?)*Modiola papuana* Lamarck, Anim. sans Vert., ed. ii, vol. vii, p. 17; Say, Amer. Conch., Plate 45.

Circumpolar: Greenland southward to New Jersey; on the European coast from Spitzbergen southward to Great Britain and France; in the North Pacific southward to Monterey, California, on the American coast; and southward to Northern Japan on the Asiatic coast. Long Island Sound, not very common; Vineyard Sound and Buzzard's Bay, not abundant; common in Massachusetts Bay; abundant in Casco Bay and Bay of Fundy, low-water to 80 fathoms. Staten Island and Long Island (S. Smith). Fossil in the Post-Pliocene of Point Shirley, Massachusetts, Montreal, Canada, Scotland, Ireland, Sicily, etc.; in the Coraline Crag, Red Crag, and later formations in England.

MODIOLA PLICATULA Lamarck. Plate XXXI, fig. 238. (p. 307.)

Anim. sans Vert., ed. i, 1819; ed. ii, vol. vii, p. 22; Gould, ed. i, p. 125, fig. 81; ed. ii, p. 188, fig. 486; Dekay, op. cit., p. 184, Plate 14, fig. 258; Hanley, Recent Shells, p. 240. *Mytilus plicatus* Deshayes, Encyclop. Meth., Plate 220, fig. 5; Stimpson, Shells of New England, p. 12. *Modiola semicosta* Conrad, Jour. Acad. Nat. Sci., Philad., vol. vii, p. 244, Plate 20, fig. 7, (t. Gould). *Mytilus demissus* Dillyn, Catal. Recent Shells, vol. i, p. 314 (t. Gould). *Brachydontes plicatulus* H. and A. Adams, Genera, vol. ii, p. 517; Perkins, op. cit., p. 156.

Georgia, to Casco Bay, Maine; more rare and local farther north; in the southern part of the Gulf of Saint Lawrence, and on the coast of Nova Scotia; nor observed on the coast of Maine east of the Kennebeck River, nor in the Bay of Fundy. Very abundant at Egg Harbor, New Jersey, Long Island Sound, Buzzard's Bay, and Vineyard Sound; less abundant in Massachusetts Bay, near Salem, Massachusetts, etc.; local in sheltered muddy coves about Casco Bay and Quahog Bay, Maine. Mouth of the Kennebeck River (C. B. Fuller). Prince Edward's Island (Dawson). Nova Scotia (Willis). Fort Macon, North Carolina (Coues). Georgia (Couper).

MODIOLA HAMATUS Verrill. (pp. 374, 475.)

American Journ. Science, vol. iii, p. 211, Plate 7, fig. 3, 1872. *Mytilus hamatus* Say, Journ. Acad. Nat. Sci., Philadelphia, vol. ii, p. 265, 1822; American Conchology, Plate 50; Binney's Say, pp. 91, 204, Plate 50. *Aulacomya hamatus* Adams, Genera, vol. ii, p. 513. *Brachydontes hamatus* Perkins, op. cit., p. 156, 1869.

Long Island Sound to Florida, and the shores of the Gulf of Mexico

to Vera Cruz. New Haven, common on oysters, living, but perhaps introduced from Virginia. New York Harbor, on oysters, (S. Smith). Fort Macon, North Carolina (Yarrow). Georgia (Couper). Tampa Bay, Florida (Conrad, Jewett). Texas (Rœmer). Near Vera Cruz (coll. T. Salt, in Yale museum).

MODIOLARIA NIGRA Lovén. Plate XXXI, fig. 236. (p. 433.)

Öfvers. af Kongl. Vet.-Akad., Förhandl., vol. iii, p. 187, 1846; Mörch, Naturhist. Bidrag, Grönland, p. 93, 1857; H. and A. Adams, Genera, vol. ii, p. 515, 1858; Gould, Invert., ed. ii, p. 190, figs. 487, 488. *Modiola nigra* Gray, Appendix to Parry's Voyage, p. 244, 1824; Hanley, Recent Shells, p. 242. *Mytilus discrepans* Stimpson, Shells of New England, p. 12, 1851 (not of European authors). *Modiola nexa* Gould, Invert., ed. i, p. 128, fig. 86 (young).

Circumpolar: Greenland, southward to Long Island; Spitzbergen, southward to Great Britain and Holland; Behring's Straits, southward to Okhotsk. Not uncommon and of good size in Vineyard Sound, 10 to 15 fathoms, off Gay Head, etc.; common in Casco Bay and Bay of Fundy, of large size, low-water to 60 fathoms; Stonington, Connecticut, in stomach of cod, (Linsley).

Fossil in the Post-Pliocene of Maine, Canada, Labrador, and Northern Europe.

MODIOLARIA DISCORS Beck.

Lovén, Öfvers. af Kongl. Vet.-Akad. Förhandl., vol. iii, p. 187, 1846; Gould, Invert., ed. ii, p. 83, figs. 489, 490. *Mytilus discors* Linné, Syst. Nat., ed. xii, p. 1159; Stimpson, Shells of New England, p. 12, (*non* Gould, ed. i). *Mytilus discrepans* Montagu, Test. Brit., p. 169. *Modiola discrepans* Lamarck, Anim. sans Vert., ed. ii, vol. vii, p. 23; Gould, Invert., ed. i, p. 129, fig. 83. *Modiola lævigata* Gray, Appendix to Parry's Second Voyage, p. 245. *Mytilus levigatus* Stimpson, Shells of New England, p. 12. *Modiolaria lævigata* Lovén, op. cit., p. 187, 1846; Stimpson, Check-List, p. 2, 1860; this Report, p. 509.

Circumpolar: Greenland, southward to Long Island; Finmark, southward to Great Britain; Behring's Straits, southward to Puget Sound. Very common in Casco Bay and Bay of Fundy, low-water to 100 fathoms; not uncommon in Massachusetts Bay; rare and local south of Cape Cod. Saint George's Bank and vicinity, common, (S. I. Smith, Packard). Gardiner's Bay, Long Island, rare, (S. Smith). North of Hebrides, in 530 fathoms, (t. Jeffreys).

Fossil in the Post-Pliocene of Canada, Greenland, and Northern Europe. I am unable to separate *M. lævigata*, as a species, from the ordinary New England form, usually referred to *M. discors*, the differences being due chiefly to age. The common European form of *discors* shows more differences, but is probably only a dwarf variety of the same species.

MODIOLARIA CORRUGATA Mörch. Plate XXXI, fig. 235. (p. 509.)

Op. cit., p. 94, 1857; Stimpson, Check-List, Smithsonian Inst., p. 2, 1860; Gould, Invert., ed. ii, p. 193, fig. 491. *Mytilus corrugatus* Stimpson, Shells of New England, p. 12, 1851. *Mytilus discors* Gould, Invert., ed. i, p. 130, fig. 84 (*non* Linné, sp.).

Long Island to Greenland and Northern Europe. Off Martha's Vine-