RADIATA.

ECHINODERMATA.

HOLOTHURIOIDEA.

THYONE BRIAREUS Selenka. (p. 362.)

Zeitschrift für Wissenschaftliche Zoologie, vol. xvii, p. 353, 1867. *Holothuria Briareus* Lesueur, Journ. Acad. Nat. Sciences, Philadelphia, ser. i, vol. iv, p. 161, 1824. *Sclerodactyla Briareus* Ayres, Proc. Boston Soc. Nat. Hist., vol. iv, pp. 6, 7, 101–3, 1851; Verrill, Proc. Boston Soc. Nat. Hist., vol. x, p. 342, 1866. *Anaperus Bryareus* Pourtales, Proceedings American Assoc. for Adv. of Science, for 1851, p. 10, 1852. *Anaperus Carolinus* Troschel, Müller's Arch. für Anat., 1846, p. 62; Pourtales, op. cit., p. 10.

Texas to Cape Cod. Long Island Sound, at West Haven, Connecticut, Thimble Islands, etc., not common; Vineyard Sound and Buzzard's Bay, 1 to 10 fathoms, not uncommon; Gardiner's Bay, Long Island; Great Egg Harbor, New Jersey; Fort Macon, North Carolina, common (coll. Dr. Yarrow); West Florida (coll. E. Jewett).

STEREODERMA UNISEMITA Ayres. (p. 503.)

Proc. Boston Soc. Nat. Hist., vol. iv, p. 46, 1851; Selenka, op. cit., p. 344, Plate 19, figs. 96, 97. *Anaperus unisemita* Stimpson, Proc. Boston Soc. Nat. Hist., vol. iv, p. 8, 1851; Verrill, op. cit., vol. x, p. 357, 1866. *Cucumaria fusiformis* Desor, Proc. Boston Soc. Nat. Hist., vol. iii, p. 67 (*non* Forbes).

Off Martha's Vineyard, 22 fathoms, sand; Banks of Newfoundland (Stimpson). South Shoals of Nantucket, 22 fathoms, (Desor).

PENTAMERA PULCHERRIMA Ayres. (p. 420.)

Proc. Boston Soc. Nat. Hist., vol. iv, p. 207, 1852; Selenka, op. cit., p. 346.

South Carolina to Vineyard Sound. Off Holmes's Hole, 4 to 5 fathoms; Nobsca Beach, after storms, abundant; Fort Macon, North Carolina (coll. Dr. Yarrow). Fort Johnson, South Carolina (Stimpson).

? MOLPADIA OÖLITICA Selenka. (p. 510.)

Op. cit., p. 257 (in part), 1867. *Chirodota oölitica* Pourtales, Proc. Amer. Assoc. for 1851, p. 13, 1852. *Embolus pauper* Selenka, op. cit., p. 359, Plate 20, fig. 132 1867.

Off Block Island, 29 fathoms, sandy mud; off Boon Island, 95 fathoms, muddy, (A. S. Packard). Massachusetts Bay, in fish stomachs, (Pourtales). Selenka gives "Cape Palmas (?)" as the locality for his "*Embolus pauper*," which was based on specimens sent from the Museum of Comparative Zoölogy—perhaps the original ones described by Pourtales; the locality given is evidently erroneous.

The single specimen from off Block Island is small and imperfect, and may not be this species.

CAUDINA ARENATA Stimpson. (p. 362.)

Marine Invert. of Grand Manan, p. 17, 1853; Selenka, op. cit., p. 358, Plate 20, figs. 129–131; Clark, Mind in Nature, p. 187, figs. 114–116; A. and E. C. Agassiz.

Sea-Side Studies, p. 97, fig. 126. *Chirodota arenata* Gould, Invert. of Mass., ed. i, p. 346, (figure), 1841; Ayres, op. cit., p. 143; Pourtales, op. cit., p. 13. *Caudina* (*Molpadia*) *arenata* Verrill, Proc. Boston Soc. Nat. Hist., vol. x, p. 345, 1866.

Vineyard Sound to Chelsea, Massachusetts. Sometimes abundant on Chelsea Beach, after storms. Wood's Hole (H. E. Webster). Selenka gives "Grand Manan" (? from specimens in Mus. Comp. Zoöl.), but after very careful search during several excursions to that island, I have never been able to find it there, and believe this to be an error. Stimpson knew it only from Massachusetts Bay.

LEPTOSYNAPTA GIRARDII Verrill. Plate XXXV, figs. 265, 266. (p. 361.)

Synapta Girardii Pourtales, Proc. Amer. Assoc. Adv. Science, for 1851, p. 14. *Leptosynapta tenuis* Verrill, Trans. Conn. Acad., vol. i, p. 325. *Synapta tenuis* Ayres, op. cit., p. 11, 1851, (*non* Quoy and Gaimard); A. and E. C. Agassiz, Sea-Side Studies, p. 95, figs. 124, 125; Verrill, Proc. Boston Soc. Nat. Hist., vol. x, p. 342. *Synapta Ayresii* Selenka, op. cit., p. 362, 1867. (?) *Synapta gracilis* Selenka, op. cit., p. 363, Plate 20, figs. 123, 124.

New Jersey to Massachusetts Bay. Common in Long Island Sound, at Savin Rock, and other localities near New Haven, in sand at low-water; abundant in Vineyard Sound, on Naushon Island, etc.; Cape Cod; Chelsea Beach, Massachusetts. Sag Harbor, Long Island, (Ayres). Selenka erroneously gives "Cape Florida" as the locality for *S. Girardii.* It was based on Massachusetts specimens.

LEPTOSYNAPTA ROSEOLA Verrill, sp. nov. (p. 362.)

Body long, slender; integument translucent, filled with numerous minute, scattered, opaque, light-red spots, oval or sub-circular in form; perforated plates smaller than in the preceding species; anchors relatively much longer, with a very slender, elongated shank. General color, rosy or pale red, due to the minute red spots. Length 100^{mm} to 150^{mm}; diameter about 5^{mm} to 6^{mm}.

Long Island Sound, at Savin Rock, near New Haven; Vineyard Sound, at Naushon Island; in sand at low-water mark.

ECHINOIDEA.

STRONGYLOCENTROTUS DRÖBACHIENSIS A. Agassiz. Plate XXXV, figs. 368. (p. 406.)

Revision of the Echini, Parts I and II, pp. 162, 277, Plate 4^a, figs. 2–4, Plate 9, Plate 10, 1872. *Echinus Dröbachiensis* Müller, Zoöl. Dan. Prod., p. 235, 1776, *Toxopneustes Dröbachiensis* Agassiz, Catal. Rais., in Annal. des Sci. Nat., vol. vi. p. 367, 1846. *Euryechinus Dröbachiensis* Verrill, Proc. Boston Soc. Nat. Hist. vol. x, pp. 341, 352, 1866; Trans. Conn. Acad., vol. i, p. 304, 1867; American, Jour. Science, vol. xlix, p. 101. *Echinus neglectus* Lamarck, Anim. sans vert., p. 49, 1816. *Echinus granularis* Say, Journ. Acad. Nat. Sci., Philad., vol. v, p. 225, 1827 (*non* Lamarck). *Echinus granulatus* Gould, Invert., ed. i, p. 344, 1841. *Euryechinus granulatus* Verrill, Proc. Boston Soc., vol. x, pp. 340, 352. *Strongylocentrotus chlorocentrotus* Brandt, Prodr., p. 264, 1835.

Circumpolar: New Jersey to the Arctic Ocean; Spitzbergen to Great

Britain; Behring Straits to Gulf of Georgia; Northern Siberia to Okhotsk Sea and De Castrie's Bay. Very abundant in the Bay of Fundy, from low-water to 109 fathoms; Casco Bay; Massachusetts Bay; mouth of Vineyard Sound and off Gay Head, 10 to 20 fathoms, common; off Holmes's Hole; off Watch Hill, Rhode Island, 4 to 5 fathoms, not uncommon; off New London, Connecticut, plenty, (coll. Prudden); Faulkner's Island, Thimble Islands, and near New Haven, 4 to 8 fathoms, uncommon and small. Off New Jersey, on a bank, in 32 fathoms, (Captain Gedney). Off Saint George's Bank, 430 fathoms, (S. I. Smith).

Fossil in the Post-Pliocene of Portland, Maine; New Brunswick; Canada; and Labrador.

ARBACIA PUNCTULATA Gray. (p. 406.)

Proc. Zoöl. Soc. of London, 1835, p. 58; A. Agassiz, Revision of the Echini, Parts I and II, pp. 91, 263, Plate 2, fig. 4, Plate 5, figs. 1 to 18, 1872. *Echinus punctulatus* Lamarck, Anim. sans vert., p. 47, 1816. *Echinocidaris punctulata* Desmoulin, Syn., p. 306, 1837. *Echinocidaris Davisii* A. Agassiz, Bulletin Mus, Comp. Zoölogy, vol. i, p. 20, 1863; Verrill, Proc. Boston Soc. Nat. Hist., vol. x, p. 340, 1866.

Vineyard Sound to the West Indies and Gulf of Mexico. Common at Wood's Hole, and in Vineyard Sound and Buzzard's Bay, 1 to 12 fathoms; off Watch Hill, Rhode Island, 4 to 5 fathoms; Long Island Sound, near New Haven, and at Charles Island, not common; Fort Macon, North Carolina (coll. Dr. Yarrow). Off Tortugas, 13 to 125 fathoms, (Pourtales). West Florida (E. Jewett).

ECHINARACHNIUS PARMA Gray. Plate XXXV, fig. 267. (p. 362.)

Ann. Phil., p. 6, 1825; A. Agassiz, Revision of Echini, Parts I and II, pp. 107, 316, Plates 11[d], figs. 4, 5, 11[e], figs. 4, 5, 12, figs. 1–13, 1872. *Scutella parma* Lamarck, Anim. sans vert., p. 11, 1816.

New Jersey to Labrador. According to Mr. A. Agassiz, it occurs in the North Pacific, on the west coast of America, from the Aleutian Islands to Vancouver Island, and on the coast of Asia at Kamtchatka, 30 to 70 fathoms; and also at New Holland; India; Indian Ocean; Red Sea, etc. Common along the entire coast of New England and Long Island, from low-water to 100 fathoms, sand. Off New Jersey, on a distant bank, in 32 fathoms, (Captain Gedney). Very abundant at Saint George's Bank and vicinity, 15 to 430 fathoms, (S. I. Smith).

MELLITA PENTAPORA Lütken.

Bidrag til Kundskab om Echiniderne, p. 107, in Vidensk. Middelelser, 1864; Verrill, Trans. Connecticut Academy, vol. i, p. 345, 1867. *Echinus pentaporus* Gmelin, Syst. Nat., p. 3189, 1788. *Encope pentapora* Agassiz, Monog. Scut., Plate 3, 1841. *Scutella quinquefora* Lamarck, Anim. sans vert., p. 9, 1816. *Mellita quinquefora* Agassiz, Mon. Scut., p. 36, 1841; Catal. Rais., in Ann. Sci., vol. vii, p. 138, 1847. *Mellita testudinaria* Gray, Proc. Zöol. Soc., London, 1851, p. 36; Verrill, this Report, pp. 427, 429, (see errata). *Mellita testudinata* Agassiz, Mon. Scut., p. 40, Plate 4[a], figs. 7–9, 1841; A. Agassiz, Revision of the Echini,

pp. 141, 322, Plate 11, figs. 13–22, Plate 12[a], Plate 12[c], figs. 1, 2, (name adopted from Klein, 1734, accidentally binomial).

New Jersey to Brazil; very abundant along the whole eastern coast of the United States, south of Cape Hatteras, and along the entire coast of the Gulf of Mexico; rare and local north of Cape Hatteras. Vineyard Sound, 5 to 8 fathoms, rare and dead; outer beach at Great Egg Harbor, New Jersey, dead. Nantucket (Agassiz).

ASTERIOIDEA.

ASTERIAS ARENICOLA Stimpson. Plate XXV, fig. 269. (p. 326.)

Proc. Boston Soc. Nat. Hist., vol. viii, p. 268, 1862; Verrill, vol. x, p. 339, 1866. *Asteracanthion berylinus* Ag. MSS., A. Agassiz, Embryology of Echinod., in Proc. Amer. Acad., 1863; Embryology of the Starfish, in Agassiz Contributions, vol. v, p. 3; Sea-Side Studies, p. 108, figs. 141–145, 1865 (t. Agassiz).

Massachusetts Bay to Northern Florida and the northern shores of the Gulf of Mexico; rare and local, in sheltered localities, north of Massachusetts, as at Quahog Bay, east of Portland, Maine; but not known from the eastern part of the coast of Maine, nor in the Bay of Fundy.

Very common in Long Island Sound; Buzzard's Bay; Vineyard Sound; and along the shores of Long Island, from low-water to 15 fathoms. Not uncommon in Massachusetts Bay, at Nahant, Beverly, &c.

ASTERIAS FORBESII Verrill.

Proc. Boston Soc. Nat. Hist., vol. x, p. 345, 1866. *Asteracanthion Forbesii* Desor, Proc. Boston Soc. N. H., vol. iii, p. 67, 1848.

Buzzard's Bay to Beverly, Massachusetts. Vineyard Sound and off Gay Head, 6 to 14 fathoms; Buzzard's Bay, 6 fathoms; Chelsea and Beverly, Massachusetts, low-water. Vineyard Sound, 8 fathoms, (Desor).

This is probably identical with the preceding species, the differences being, perhaps, chiefly sexual, but I have not yet had opportunities to satisfy myself fully in regard to this point, and, therefore, leave them, for the present, under separate names. Should they be united, the name *Forbesii* has the precedence over all others.

ASTERIAS VULGARIS Stimpson, MSS. (p. 496.)

Packard, in Canadian Naturalist and Geologist, Dec., 1863 (no description); Verrill, Proc. Boston Soc. Nat. Hist., vol. x, p. 347, 1866 (description). *Asteracanthion pallidus* Ag. MSS.; A. Agassiz, Embryology, in Proc. Amer. Acad., 1863 (no description); Embryology of the Starfish, in Agassiz' Contributions. vol. v, p. 3. *Asterias rubens* Gould, Invert., ed. i, p. 345 (*non* Linné).

Long Island Sound to Labrador, and (?) Greenland. Very abundant in Massachusetts Bay, Casco Bay, Bay of Fundy, from above low-water mark to 40 fathoms; in the deeper parts of Vineyard Sound and off Gay Head, in 6 to 25 fathoms, not uncommon; off Watch Hill, Rhode Island, 4 to 5 fathoms, common; Faulkner's Island, Connecticut, low-water, very rare.

LEPTASTERIAS COMPTA Verrill.

Proc. Boston Soc., vol. x, p. 350, 1866. *Asterias compta* Stimpson, Proc. Boston Soc. Nat. Hist., vol. viii, p. 270, 1862; Verrill, op. cit., p. 340.

Off New Jersey, 32 fathoms, (Captain Gedney). Off Martha's Vineyard, 20 to 25 fathoms, rare; off Casco Bay, 30 to 50 fathoms.

CRIBRELLA SANGUINOLENTA Lütken. (p. 407.)

Grœnl. Echinod., p. 31, 1859; Verrill, Proc. Boston Soc. Nat Hist., vol. x, p. 345, 1866. *Asterias sanguinolenta* Müller, Zoöl. Dan. Prod., 2836, 1776. *Asterias oculata* Pennant, Brit. Zoöl., vol. iv, p. 61, Plate 30, fig. 56, 1777. *Asterias spongiosa* Fabricius, Fauna Grœnl., p. 368, 1780. *Linkia oculata* Forbes, Wern. Mem., vol. viii, p. 120, 1839. *Cribella oculata* Forbes, British Starfishes, p. 100, (figure), 1841. *Echinaster oculatus* Müller and Troschel, Syst. Asterid., p. 24, 1842. *Linkia oculata* Stimpson, Invert. of Grand Manan, p. 14, 1853. *Linkia pertusa* Stimpson, op. cit., p. 14. *Echinaster sanguinolentus* Sars, Fauna Litt. Norveg., i, p. 47, Plate 8, figs. 3–6; Oversigt af Norges Echinodermer, p. 84, 1861.

Connecticut to the Arctic Ocean; northern coasts of Europe to Great Britain and France. Very common in the Bay of Fundy, Casco Bay, and on the entire coast of Maine, from low-water to 100 fathoms; Massachusetts Bay; Vineyard Sound, 5 to 20 fathoms, not uncommon; off Watch Hill, Rhode Island, 3 to 5 fathoms; off New London, Connecticut (coll. T. H. Prudden).

OPHIUROIDEA.

OPHIURA OLIVACEA Lyman. (p. 363.)

Ill. Catal. Mus. Comp. Zoölogy, No. 1, Ophiuridæ and Astrophytidæ, p. 23, 1865; Verrill, Proc. Boston Soc. N. H., vol. x, p. 339. *Ophioderma olivaceum* Ayres, Proc. Boston Soc. Nat. Hist., vol. iv, p. 134, 1852.

Cape Cod to North Carolina. Wood's Hole, Buzzard's Bay, and Vineyard Sound, not common; shores of Long Island, frequent; Fort Macon, North Carolina, common, (Dr. Yarrow).

OPHIOPHOLIS ACULEATA Gray. Plate XXXV, fig. 270. (p. 496.)

List of British Animals in Coll. of Brit. Mus., Part I, Rad. Anim., p. 25, 1848; Lütken Additamenta ad Hist. Ophiuridarum, p. 60, Plate 2, figs. 15,a. b, 16, a, b, 1858; Verrill, op. cit., p. 344, 1866. *Asterias aculeata* Linné (*pars*), Syst. Nat., p. 1101; Retzius Vetersk.-Akad., vol. iv, p. 240, 1783; Müller, Prod., 2841, 1776; Zoöl. Dan., vol. iii, p. 29, Plate 99, 1789. *Ophiura bellis* Fleming, Brit. Anim., p. 488, 1828. *Ophiocoma bellis* Forbes, Wern. Mem., vol. viii, p. 226; Brit. Starfishes, p. 53, figure. *Ophiopholis bellis* Lyman, op. cit., p. 96, Plate 1, figs. 4–6. *Ophiolepis scolopendrica* Müller and Troschel, Syst. Aster., p. 96, 1842. *Ophiopholis scolopendrica* Stimpson, Invert. of Grand Manan, p. 13, 1853.

Rhode Island and New Jersey to the Arctic Ocean; Iceland; Spitzbergen; northern coasts of Europe, to the English Channel, Ireland, etc. Very abundant in the Bay of Fundy, Casco Bay, and along the whole coast of Maine, from low-water to 100 fathoms; Massachusetts Bay; off Gay Head, 6 to 8 fathoms, rare; off Watch Hill, Rhode Island, in 4 to 5 fathoms, rocky. Off New Jersey, 30 to 38 fathoms, N. lat. 39° 54′; W. long. 73° 15′, (Josephine Exp., t. Ljungmann). A similar species, perhaps identical, occurs on the northwestern coasts of America.

AMPHIPHOLIS ELEGANS Ljungmann. (p. 420.)

Ophiuroidea viventia huc usque cognita, Öfvers. Kongl. Vet.-Akad. Förh., 1866, p. 312. *Ophiura elegans* Leach, Zoöl. Miscell., iii, p. 57, 1815. *Amphiura elegans* Norman, Ann. and Mag. Nat. Hist., vol. xv, p. 109, 1865. *Ophiocoma neglecta* Forbes, Brit. Starfishes, p. 30, 1841. *Ophiolepis tenuis* Ayres, Proc. Boston Soc. Nat. Hist., vol. iv, p. 133, 1852. *Amphiura tenuis* Lyman, Proc. B. S. N. H., vol. vii, p. 194, 1860. *Amphipholis tenuis* Ljungmann, Öfvers. af Kongl. Vet.-Akad. Förh., 1871, p. 635. *Amphiura squamata* Lyman, Catalogue Ophiur. and Astroph., p. 121, 1865 (*non* Delle Chiage, t. Ljungmann).

Off New Jersey to the Arctic Ocean; northern coasts of Europe to the English Channel. Common in Vineyard Sound, 4 to 15 fathoms; Massachusetts Bay; Casco Bay; Bay of Fundy, low-water to 60 fathoms. Greenland, 15 fathoms, (Lütken, as *A. neglecta*). Off New Jersey, 36 to 38 fathoms, N. lat. 39° 54′, W. long. 73° 15′, (Josephine Exp., t. Ljungmann).

Mr. Ljungmann, in his latest paper, regards this species as distinct both from the Mediterranean species (*Amphiura squamata*), and the English and Norwegian species (*Amphipholis elegans*). The former I have here regarded as distinct, but consider the latter identical with the American form, the differences mentioned being slight and apparently inconstant.

AMPHIURA ABDITA Verrill. (p. 433.)

Amphipholis abdita Verrill, Amer. Jour. of Science, ser. iii, vol. ii, p. 132, 1871; this Report, p. 433. (See errata).

Body plump, pentagonal; the interradial margins concave, and the angles, at base of arms, incised; margin thick, rounded; upper surface of disk covered with very numerous, minute, crowded scales, which encroach more or less upon the radial shields and run up between them in a wedge-like area; lower surface thickly covered with still more minute, granule-like scales. Radial shields elongated, three or more times longer than wide, curved; the outer end geniculate or bent downward, forming a prominent angle above; they are divergent, and separate for their whole length, or barely touch at the outer ends, and are more or less concealed laterally and proximally by the encroachment of the small scales. Arms or rays, 16 times as long as the diameter of the body, or even more, slender, flexible, gradually attenuated to the tips.

Six mouth-papillæ in each angle of the mouth, and two to four additional small rounded papillæ, or tentacle-scales, near the extreme outer angle. Two of the mouth-papillæ, on each side, are placed close together, at about the middle of the edge of the jaw; the outer of these, which is about twice as wide as the inner, is flat, scarcely longer than wide, with the end obtusely rounded or truncate; the inner one is scarcely wider than thick, oblong, rounded at the end; in one case these two papillæ are united together. The third mouth-papilla is stout and rounded, obtuse, larger and longer than either of the others, separated from them by a considerable interval, and brought close to the tooth at the end of the jaw, beyond which it projects inwardly and downwardly.

The mouth-shields are long-oval, or somewhat hexagonal, narrowed outwardly, the outer part of the lateral edges being nearly straight, the outer end rounded or sub-truncate, the inner end broadly rounded. Side mouth-shields triangular with the three edges concave, the inner ends not united, the surface finely granulated. The lower arm-plates are separated by the side plates; the first two are longer than broad, pentagonal, the inner end forming an obtuse angle, the outer edge straight; the next two are about as wide as long, squarish, with the corners rounded or truncate; the following ones are broader than long, somewhat octagonal, the outer and inner edges longest and nearly straight; beyond the middle of the arm they are again pentagonal, with an inner angle. On the first five joints of one specimen there is only a single pair of tentacle-scales, which are small and rounded; on the succeeding joints there are generally two pairs, one of them being considerably smaller than the other; the largest specimen has two pairs of tentacle-scales on all the joints.

Arm-spines three, on each side of all the joints, except the first, which has but two; they are thickened at base, gradually tapering, blunt at tip, sub-equal; the lower one a little curved downward; the upper one stoutest, flattened, scarcely tapering, obtuse; the middle one a little longer than the others, the length about equal to width of lower arm-plates. The upper arm-plates are transversely sub-elliptical, with the outer edge well rounded, the inner edge slightly prominent or angular in the middle, and a little concave to either side, so that the lateral portions are somewhat narrowed; the plates generally touch each other.

Color, when living, brown above, the central area dark brown, a radiating band of the same extending to each interradial margin, and bordered like the central area with pale gray; opposite the base of each arm is a squarish area or radial band of olive-brown; radial plates yellowish brown, the space between them bright blue. In the center of the disk is a small darker brown spot, and five similar ones, corresponding to the bases of the arms, form a circle around the center; five others, more distant, correspond to the interradial spaces; other more minute dark spots are scattered over the disk. Upper arm-plates are mostly dark brown, edged with pale brown or whitish; some of the plates are partially or wholly lighter, yellowish brown, and thus form transverse light bands, or mottlings, consisting of one or more plates; toward the tips these light bands become more numerous, and wider; spines bright brown. Lower side of disk yellowish brown, with a tinge of greenish; plates around the mouth whitish; each of the jaws with two brown spots; mouth-tentacles orange-yellow. Under arm-plates yellowish brown, with the edges paler, and with a distal median spot of whitish; lower arm-spines yellowish brown. In some specimens the arms are dull greenish above, instead of brown.

Diameter of the disk, of the largest specimen, 11^{mm}; length of arms, 180^{mm}.

Long Island Sound; off New Haven, in 4 to 6 fathoms, mud; off Thimble Islands, 3 to 8 fathoms, soft mud, rare.

This species is, in some respects, intermediate between *Amphipholis* and *Amphiura*. With the former it agrees best in the number of the arm-spines and general appearance; but in the structure of the mouth-parts it agrees better with the latter. It will, however, not go into any of the sections or sub-sections established by Ljungmann. It appears to be more nearly allied to *A. Eugeniæ* Ljung., from La Plata, than to any other species hitherto described; the latter has, however, four arm-spines instead of three.

ASTROPHYTON AGASSIZII Stimpson.

Invertebrata of Grand Manan, p. 12, 1853; Lyman, Catalogue, p. 186.

This species was first described from a specimen obtained "not far from the shoals of Nantucket," by Governor John Winthrop, in 1670 and 1671 (Philosophical Transactions), under the name of "Basket-fish" or "Net-fish." Crab Ledge, off Chatham, Massachusetts, (V. N. Edwards.) It occurs on the banks east and north of Cape Cod, and on Saint George's Bank, and is very common in the Bay of Fundy, low-water to 110 fathoms; and is especially abundant in Eastport Harbor, in 10 to 20 fathoms. According to Dr. Lütken it is also found at Greenland and Finmark.

CRINOIDEA.

Antedon dentatus Verrill.

Proc. Boston Soc. Nat. Hist., vol. x, p. 339, 1866. *Alecto dentata* Say, Journ. Acad. Nat. Sci., Philadelphia, vol. v, p. 153, 1825.

This species was described by Say, from a specimen obtained at Great Egg Harbor, New Jersey. It may possibly occur on the southern coast of New England, but I am not aware that it has actually been found so far north.

ACALEPHÆ.

CTENOPHORÆ.

MNEMIOPSIS LEIDYI A. Agassiz. (p. 449.)

Illustr. Catal. Mus. Comp. Zoölogy, North American Acalephæ, p. 20, figs. 22–24, 1865.

Buzzard's Bay and Vineyard Sound; Long Island Sound, off New Haven.

LESUEURIA HYBOPTERA A. Agassiz. (p. 454.)

Catal. North American Acalephæ, p. 23, figs. 25–28.

Newport, Rhode Island, to Massachusetts Bay (A. Agassiz).

PLEUROBRACHIA RHODODACTYLA Agassiz. (p. 448.)

Memoirs Amer. Academy, vol. iv, p. 314, Plates 1 to 5, 1849; Contributions to Nat. Hist. U. S., vol. iii, pp. 203, 294, Plate 2[a], 1860; A. Agassiz, Catalogue, p. 30, figs. 38–51, 1865.

Southern side of Long Island, to Greenland. Not uncommon in Long

Island Sound, near New Haven; common in Vineyard Sound and Massachusetts Bay; very abundant in Casco Bay, Bay of Fundy, and Gulf of Saint Lawrence. Off Saint George's Bank (S. I. Smith). Fire Island, Long Island (S. I. Smith).

IDYIA ROSEOLA Agassiz. (p. 451.)

Contributions to Nat. Hist. U. S., vol. iii, pp. 270–296, Plates 1, 2, 1860; A. Agassiz, Catalogue, p. 36, figs. 52–62, 1865.

Vineyard Sound to Labrador. Off Gay Head, not common; common in Massachusetts Bay and Casco Bay; very abundant in Bay of Fundy and Gulf of Saint Lawrence. Labrador (Packard).

? *Cestum Veneris* Lesueur.

Nouv. Bull. Soc. Phil., 1813, p. 281, Plate 5, fig. 1; Lesson, Zoöphytes Acalephes, p. 70, Plate 1, fig. 1.

Mr. S. I. Smith observed a species, apparently identical with this, at Saint George's Banks, and Mr. A. Agassiz has observed fragments of a similar species near Newport, Rhode Island. This is properly a more southern species, found in the warmer parts of the Atlantic and in the Mediterranean Sea.

DISCOPHORÆ.

AURELIA FLAVIDULA Péron and Lesueur. Plate XXXVI, fig. 271. (p. 449.)

Ann. Mus. Hist. Nat., vol. xiv, p. 47, 1809; Lesson, op. cit., p. 376, 1843; Agassiz, Contributions to Nat. Hist. U. S., vol. iii, Plates 6–11[b]; vol. iv, pp. 10, 160; A. Agassiz, Catalogue, p. 42, figs. 65, 66. *Aurelia aurita* Stimpson, Invert., of Grand Manan, p. 11, 1853.

Buzzard's Bay to Greenland. Common in the upper part of Buzzard's Bay, in spring; off Gay Head and in Vineyard Sound, in August; abundant in Massachusetts Bay; Casco Bay; Frenchman's Bay; Bay of Fundy; and Gulf of Saint Lawrence.

CYANEA ARCTICA Péron and Lesueur. (p. 449.)

Ann. Mus., vol. xiv, p. 51, 1809; Agassiz, Contributions, vol. iii, Plates 3, 4, 5, 5[a], 10, 10[a]; vol. iv, pp. 87, 162; A. Agassiz, Catalogue, p. 44, fig. 67. *Cyanea Postelsii* Gould, Invert., ed. i, p. 347; Stimpson, op. cit., p. 11 (*non* Brandt).

Long Island Sound to Greenland. Common near New Haven; in Buzzard's Bay; Vineyard Sound; very abundant in Massachusetts Bay; Casco Bay; Bay of Fundy; and Gulf of Saint Lawrence. Fire Island, Long Island (S. I. Smith).

Cyanea fulva Agassiz.

Contributions, vol. iv, pp. 119, 162, 1862; A. Agassiz, Catalogue, p. 46 (no description).

Long Island Sound (L. Agassiz). Vineyard Sound (A. Agassiz).

I have been unable to distinguish more than one species among the *Cyaneæ* of our waters, although they vary considerably in color, just as

they do farther north, as in the Bay of Fundy. This is probably only a color-variety of *C. arctica*.

DACTYLOMETRA QUINQUECIRRA Agassiz. Plate XXXVI, fig. 272. (p. 449.)

Contributions, vol. iv, pp. 125, 166, 1862; A. Agassiz, Catalogue, p. 48, fig. 69.

Pelagia quinquecirrha Desor, Proc. Boston Soc. Nat. History, vol. iii, p. 76, 1848.

Bermudas to Cape Cod. Long Island Sound, near New Haven; common in Buzzard's Bay and Vineyard Sound.

Pelagia cyanella Péron and Lesueur.

Ann. du Mus. Hist. Nat., vol. xiv, p. 37, 1809; Agassiz, Contributions, vol. iii, Plates 12, 13, 13[a]; vol. iv, pp. 128, 164; A. Agassiz, Catalogue, p. 47, fig. 68.

Off Saint George's Bank (S. I. Smith). This species inhabits the Gulf of Mexico; Caribbean Sea; and coasts of Florida and North Carolina. It is carried northward by the Gulf Stream to the vicinity of Saint George's Bank, and is, therefore, like the two following, likely to occur occasionally at Nantucket and Martha's Vineyard.

Stomolophus meleagris Agassiz.

Contributions, vol. iii, Plate 14, 1860; vol. iv, pp. 138, 151, 1862; A. Agassiz, Catalogue, p. 40.

Coast of Georgia (Agassiz). Off Saint George's Bank (S. I. Smith).

? *Charybdea periphylla* Péron and Lesueur.

Ann. du Mus. Hist. Nat., vol. xiv, p. 332, 1809; Edwards in Cuvier, Règne Anim., Pl. 55, fig. 2 (from Lesueur); Lesson, op. cit., p. 265, 1843; Agassiz, Contributions, vol. iv, p. 173.

This species was originally described and figured from mutilated specimens taken under the equator in the Atlantic Ocean, and seems not to have been seen by later writers. Mr. S. I. Smith has apparently rediscovered this interesting species off Saint George's Bank.

The specimen obtained by him, while on the United States Coast-Survey steamer Bache, in 1872, is not quite perfect, but agrees pretty nearly with the descriptions and figure cited.

The body in the alcoholic specimen is elevated, bell-shaped, rounded above, with a marked constriction toward the border; transparent, the inner cavity showing through as a large, conical, dark reddish brown spot, with the apex slightly truncated. Border deeply divided into sixteen long, flat lobes, which are of nearly uniform breadth throughout, and slightly rounded, or sub-truncate, at the end; the edges and end thin and more or less frilled; the inner side with two sub-marginal carinæ. Eyes inconspicuous, but small bright red specks are scattered over the marginal lobes. The intervals between the lobes are narrow and generally smoothly rounded, without distinct evidence of the existence of tentacles, except that, in one of these intervals, there is a small and short papilliform process, with brown pigment at the base. The

ovaries are mostly wanting, but portions are to be seen as slightly convoluted organs in the marginal region, opposite the intervals between the lobes.

TRACHYNEMA DIGITALE A. Agassiz. (p. 454.)

Catalogue, p. 57, figs. 81–86, 1865. *Medusa digitale* Fabricius, Fauna Grœnl., p. 366, 1780.

Vineyard Sound to Greenland. Wood's Hole, July 1, young specimens. Massachusetts Bay (A. Agassiz).

HYDROIDEA.

Sertularina.

TIAROPSIS DIADEMATA Agassiz. (p. 454.)

Memoirs Amer. Acad., vol. iv, p. 289, Plate 6, 1849; Contributions, vol. iii, p. 354, Plate 31, figs. 9–15; vol. iv, pp. 308, 311, figs. 45–48; A. Agassiz, Catalogue, p. 69, figs. 91–93.

Vineyard Sound to Bay of Fundy. Massachusetts Bay (A. Agassiz). Greenland (Mörch). Wood's Hole, April, 1873.

OCEANIA LANGUIDA A. Agassiz. (p. 454.)

In Agassiz, Contributions, vol. iv, p. 353, 1862; Catalogue, p. 70, figs. 94–102, 1865.

Buzzard's Bay to Bay of Fundy. Common in Vineyard Sound; not uncommon in Eastport Harbor.

EUCHEILOTA VENTRICULARIS McCready. (p. 454.)

Gymnophthalmata of Charleston Harbor, in Proc. of Elliott Society of Nat History, vol. i, p. 187, Plates 11, figs. 1–3, 12, figs. 1, 2, 1857; Agassiz, Contr butions, vol. iv, p. 353, 1862; A. Agassiz, Catalogue, p. 74, figs. 104, 105, 1865.

Charleston, South Carolina, to Vineyard Sound.

EUCHEILOTA DUODECIMALIS A. Agassiz. (p. 454.)

In Agassiz, Contributions, vol. iv, p. 353, 1862; Catalogue, p. 75, figs. 106–107[a].

Buzzard's Bay, Naushon Island (A. Agassiz).

CLYTIA JOHNSTONI Hincks. (p. 408.)

Hist. British Hydroid Zoöphytes, p. 143, Plate 24, fig. 1, 1868. *Campanularia Johnstoni* Alder, Northum. and Dur. Catal., in Trans. Tynes. F. C., vol. v, p. 126, Plate 4, fig. 8 (t. Hincks). *Sertularia uniflora* (*pars*) Pallas, Elench. Zoöph., p. 121, 1766. *Campanularia volubilis* Johnston, Brit. Zoöph., ed. ii, pp. 107, 108, fig. 18 (*not* of Linné and Pallas). *Clytia volubilis* Lamouroux, Expos. Meth., p. 15, Plate 4, figs. E, f, F, 1821. *Clytia bicophora* Agassiz, Contributions, vol. iv, pp. 304, 354, Plate 27, figs. 8, 9; Plate 29, figs. 6–9, 1862; A. Agassiz, Catalogue, p. 78, figs. 108–111.

Long Island Sound to the Arctic Ocean; northern coasts of Europe to Great Britain and France. Common near New Haven and at Thimble Islands, in tide-pools and 2 to 6 fathoms; Watch Hill, Rhode

Island, 3 to 5 fathoms; Buzzard's Bay; Vineyard Sound, 1 to 14 fathoms, common; off Block Island, 29 fathoms; abundant in Casco Bay and Bay of Fundy, low-water to 40 fathoms. Saint George's Bank (S. I. Smith).

This species is undoubtedly the one described by Pallas, and according to the strict rules of priority it should be called *Clytia uniflora*.

CLYTIA INTERMEDIA Agassiz. (p. 408.)

Contributions, vol. iv, p. 305, Plate 29, figs. 10, 11, 1862; A. Agassiz, Catalogue, p. 77 (no description).

Vineyard Sound, 6 to 8 fathoms, on *Phyllophora*. Massachusetts Bay (Agassiz).

PLATYPYXIS CYLINDRICA Agassiz. (p. 408.)

Clytia (*Platypyxis*) *cylindrica* Agassiz, Contributions, vol. iv, pp. 306, 354, figs. 42–44 (*not* 41, *nor* Plate 27, figs. 8, 9), 1862. *Platypyxis cylindrica* A. Agassiz, Catalogue, p. 80, figs. 112–114. *Campanularia volubilis* Leidy, Jour. Phil. Acad. Nat. Sciences, ser. ii, vol. iii, p. 138, 1855 (*not* Linné, sp.).

Long Island Sound to Massachusetts Bay. Near New Haven, 4 to 6 fathoms, on *Halecium*; Thimble Islands; Watch Hill, Rhode Island; Vineyard Sound; off Buzzard's Bay, 25 fathoms.

ORTHOPYXIS CALICULATA Verrill. (p. 408.)

Campanularia caliculata Hincks, in Annals and Mag. Nat. Hist., ser. ii, vol. xi, p. 178, Plate 5, B, 1853; Brit. Hydroid Zoöph., p. 164, Plate 31, figs. 2–2[d] *Clytia* (*Orthopyxis*) *poterium* Agassiz, Contributions, vol. iv, pp. 297, 302, fig. 40 Plate 28, Plate 29, figs. 1–5, 1862. *Orthopyxis poterium* A. Agassiz, Catalogue, p. 81, 1865.

Vineyard Sound to Labrador; northern coasts of Europe to Great Britain. Off Gay Head and in Vineyard Sound, 4 to 15 fathoms; common in Massachusetts Bay; Casco Bay; and Bay of Fundy, low water to 30 fathoms. Mingan Islands, Labrador, 6 fathoms, (A. E. V). Henley Harbor, Labrador, 20 to 30 fathoms (A. S. Packard, as *Clytia volubilis*).

CAMPANULARIA VOLUBILIS Alder. (p. 408.)

Catal. Zoöph. Northumb. and Durham, in Trans. Tynes. F. C., vol. iii, p. 125, Plate 4, fig. 7, 1857 (*not* of Johnston); Hincks, Brit. Hyd. Zoöph., p. 160, Plate 24, fig. 2. *Sertularia volubilis* Linné (*pars*), Syst. Nat., ed. x, sp. 19; ed. xii, p. 1311; Pallas, Elench. Zoöph., p. 122, 1766. *Clytia volubilis* A. Agassiz, Catalogue, p. 77 (*not* of Lamouroux).

Vineyard Sound to Greenland and Iceland; northern coasts of Europe to Great Britain; low-water to 100 fathoms. Common in the Bay of Fundy, low-water to 60 fathoms.

CAMPANULARIA FLEXUOSA Hincks. (p. 327.)

Brit. Hyd. Zoöph., p. 168, Plate 33. *Laomedea flexuosa* Hincks, Devon. and Cornwall Catalogue, in Ann. and Mag. Nat. Hist., ser. iii, vol. viii, p. 260, 1861.

Laomedea amphora Agassiz, Contributions, vol. iv, pp. 311, 314, fig. 50, p. 352, Plate 30, Plate 31, figs. 1–8, 1862; A. Agassiz, Catalogue, p. 93.

Long Island Sound to Gulf of Saint Lawrence; northern coasts of Europe, Isle of Man. New Haven, on piles of Long Wharf; Thimble Islands, near New Haven; Vineyard Sound, off Gay Head; abundant on the timbers of the wharves at Eastport, Maine.

OBELIA DIAPHANA Verrill. (p. 327.)

Thaumantias diaphana Agassiz, Mem. Amer. Acad., vol. iv, p. 300, figs. 1, 2, 1849 (? *non* Mörch). *Eucope diaphana* (*pars*) Agassiz, Contributions, vol. iv, Plate 33, fig. 2, 1862; A. Agassiz, Catalogue, p. 83, figs. 115–125.

Long Island Sound to Massachusetts Bay. Abundant in New Haven Harbor and Vineyard Sound, on *Zostera*, *Fucus*, etc.

OBELIA GENICULATA Allman. (p. 407.)

Annals and Mag. Nat. Hist., vol. xiii, May, 1864 (t. Hincks); Hincks, Brit. Hyd. Zoöphytes, p. 149, Plate 25, fig. 1, 1868. *Sertularia geniculata* Linné, Syst. Nat., ed. x, sp. 23; ed. xii, sp. 21, p. 1312; Pallas, Elench. Zooph., p. 117, 1766. *Laomedea geniculata* Lamouroux, Pol. Flex., p. 208; Johnston, Brit. Zoöph., ed. ii, p. 103, Plate 25, figs. 1, 2. *Eucope diaphana* (*pars*) Agassiz, Contributions, vol. iv, p. 322, Plate 34, figs. 1–9, 1862. *Eucope alternata* A. Agassiz, Catalogue, p. 86, 1865.

Long Island Sound to Labrador. Northern Europe, from North Cape to Great Britain. Common near New Haven; at Thimble Islands; Watch Hill, Rhode Island; Vineyard Sound, 4 to 15 fathoms; Massachusetts Bay; Casco Bay; Bay of Fundy, and northward, low-water to 40 fathoms, on *Laminaria*, *Rhodymenia*, etc.

OBELIA POLYGENA Verrill.

Eucope polygena A. Agassiz, Catalogue, p. 86, fig. 126, 1865.

Off Gay Head, 4 to 5 fathoms, not common. Nahant, Massachusetts (A. Agassiz).

OBELIA DIVARICATA Verrill.

Laomedea divaricata McCready, op. cit., p. 195, 1859. *Eucope ? divaricata* A. Agassiz, Catalogue, p. 91, 1865.

Charleston, South Carolina (McCready, Agassiz). A few specimens were found on floating algæ in Vineyard Sound, which appear to belong to this species. It is closely allied to *O. fusiformis* (A. Agassiz, sp.).

OBELIA PYRIFORMIS Verrill. (p. 390.)

Catalogue, p. 88, figs. 127–129, 1865. *Laomedea gelatinosa* Leidy, Journ. Acad. Nat. Sci., Philad., ser. ii, vol. iii, p. 138, 1855 (*not* Pallas, sp.).

Long Island Sound to Bay of Fundy. Very abundant on piles of wharves, etc., at Wood's Hole.

This species is closely allied to the following; in the latter the young medusæ have sixteen tentacles when set free, and the reproductive capsules differ slightly in form.

OBELIA DICHOTOMA Hincks. (p. 407.)

Brit. Hydroid Zoöphytes, p. 156, Plate 28, fig. 1, 1868. *Sertularia dichotoma* Linné, Syst. Nat., ed. x, sp. 24; ed. xii, sp. 22, p. 1312. *Laomedea dichotoma*, var. *a*, Johnston, Brit. Zoöph., ed. ii, p. 102, Plate 26, figs. 1, 2.

Vineyard Sound, northward; northern coasts of Europe to Great Britain. Off Gay Head, 8 to 10 fathoms, on ascidians; Eastport, Maine.

OBELIA LONGISSIMA Hincks.

Brit. Hydroid Zoöph., p. 154, Plate 27, 1868. *Sertularia longissima* Pallas, Elench. Zoöph., p. 119, 1766 (excl. synonymy). *Laomedea longissima* Alder, Trans. Tynes. F. C., vol. iii, p. 121 (t. Hincks). *Laomedea dichotoma*, var. *b*, Johnston, Brit. Zoöph., ed. ii, p. 102. *Campanularia gelatinosa* Van Beneden, Mém. sur le Campan., p. 33, Plates 1, 2 (t. Hincks).

Gay Head; Cape Ann, Massachusetts; Bay of Fundy. Coasts of Belgium and Great Britain.

OBELIA FLABELLATA Hincks. (p. 390.)

Brit. Hydroid Zoöph., p. 157, Plate 29, 1868. *Campanularia flabellata* Hincks, Ann. and Mag. Nat. Hist., ser. iii, vol. xviii, p. 297.

Off Thimble Islands, 4 to 5 fathoms, on *Astrangia*; Watch Hill, Rhode Island, on *Laminaria*; Wood's Hole, on old wreck, in the passage. Coasts of Great Britain.

The hydrarium of this species very closely resembles the *Obelia commissuralis* of Agassiz, and may prove to be identical with it. But the original *O. commissuralis* of McCready, from Charleston, South Carolina, is, perhaps, distinct from that described by Agassiz.

OBELIA COMMISSURALIS McCready. Plate XXXVII, fig. 281. (p. 327.)

Proc. Elliott Soc., vol. i, p. 197, Plate 11, figs. 5–7, 1859; (?) Agassiz, Contributions, vol. iv, pp. 315, 351, Plate 33 (except fig. 2), Plate 34, figs. 10–21, 1862; (?) A. Agassiz, Catalogue, p. 91, fig. 134. *Laomedea dichotoma* Leidy, op. cit., p. 138, Plate 11, fig. 36 (*not* Linné, sp.). ? *Laomedea gelatinosa* Stimpson, Invert. of Grand Manan, p. 8, 1853 (*not* Pallas, sp.).

Charleston, South Carolina (McCready). New Jersey (Leidy). Newport, Rhode Island, and Nahant, Massachusetts (A. Agassiz). New Haven Harbor, on piles; Vineyard Sound, on floating algæ. Grand Manan (Mills, t. A. Agassiz).

The northern specimens possibly belong to the preceding species.

OBELIA GELATINOSA Hincks. (p. 391.)

British Hydroid Zoöphytes, p. 151, Plate 26, fig. 1, 1868. *Sertularia gelatinosa* Pallas, Elench. Zooph., p. 116, 1766. *Laomedea gelatinosa* Lamouroux, Polyp Flex., p. 92; Johnston, Brit. Zoöph., ed. ii, p. 104, Plate 27, fig. 1 (var. *b*). *Campanularia gelatinosa* Lamarck, Anim. sans Vert., ed. ii, p. 134 (t. Hincks). *Laomedea gigantea* A. Agassiz, Catalogue, p. 86, 1865.

New Jersey to Massachusetts Bay; northern coasts of Europe, from North Cape to Belgium and Great Britain; low-water to 20 fathoms. Great Egg Harbor, New Jersey, on oysters; New Haven, on piles of Long Wharf, abundant. Mouth of Charles River, near Boston (H. J. Clark, t. A. Agassiz).

RHEGMATODES TENUIS A. Agassiz. (p. 454.)

In Agassiz, Contributions, vol. iv, p. 361, 1862; Catalogue, p. 95, figs. 136–138.

Buzzard's Bay and Vineyard Sound.

ZYGODACTYLA GRŒNLANDICA Agassiz. Plate XXXVII, fig. 275. (p. 449.)

Contributions, vol. iv, p. 360, 1862; A. Agassiz, Catalogue, p. 103, figs. 153–156. *Æquorea Grœnlandica* Péron and Lesueur, Ann. du Mus., vol. xiv, p. 27, 1809 (t. A. Agassiz).

Buzzard's Bay to Greenland. Common in Vineyard Sound, in June and July.

ÆQUOREA ALBIDA A. Agassiz. (p. 454.)

In Agassiz, Contributions, vol. iv, p. 359, 1862; Catalogue, p. 110, figs. 160–162.

Buzzard's Bay (A. Agassiz).

TIMA FORMOSA Agassiz. (p. 449.)

Contributions, vol. iv, p. 362, 1862; A. Agassiz, Catalogue, p. 113, figs. 164–172.

Vineyard Sound, February and April. Massachusetts Bay (A. Agassiz).

EUTIMA LIMPIDA A. Agassiz. (p. 454.)

In Agassiz, Contributions, vol. iv, p. 363, 1862; Catalogue, p. 116, figs. 173–178.

Buzzard's Bay, Naushon (A. Agassiz).

LAFOËA CALCARATA A. Agassiz. (p. 408.)

Catalogue, p. 122, figs. 184–194. *Lafœa cornuta* Agassiz, Contr., vol. iv, p. 351 (*not* of Lamouroux). *Laodicea calcarata* A. Agassiz, in Agassiz, Contributions, vol. iv, p. 350, 1862. *Campanularia dumosa* Leidy, op. cit., p. 138, 1855 (*not* of Fleming).

South Carolina to Vineyard Sound; Buzzard's Bay and Vineyard Sound. The hydrarium was abundant on floating *Zostera* and algæ in Vineyard Sound, creeping over *Sertularia cornicina;* also at low-water, and in 6 to 8 fathoms on *Phyllophora;* Thimble Islands, in tide-pool, on *Vesicularia.* Charleston, South Carolina (McCready, described as a constituent part of his *Dynamena cornicina*).

HALECIUM GRACILE Verrill, sp. nov. (p. 328.)

Stems slender, flexible, clustered, compound, consisting of many very slender, united tubes, light brown or yellowish, pinnately much branched; branches alternate, ascending, long, slender, tapering, similar to the main stem, and usually similarly subdivided; the branches and branchlets mostly arise from opposite sides of the stem, so that they stand nearly in one plane; ends of branches and the branchlets simple, very slender, translucent, whitish, divided into rather long segments; the articulations not very conspicuous, somewhat oblique; each segment usually with a prominent cylindrical process, arising from near the upper end, which, on the older branches, bears the hydroid cell, but on the young branchlets are themselves hydroid cells, furnished with a thin, slightly

expanded border, having a circle of dots near the edge; the older or secondary cells, arising from these, are rather elongated, narrow, cylindrical, with slightly expanded rim, more or less bent and crooked or geniculate at base, and usually with one or two irregular constrictions. Many of the older cells are much elongated, and have two or three old rims below, separated by distances equal to two or three times the diameter. The hydroids are long, slender, with numerous long tentacles, much exsert from the cells. The branchlets and gonothecæ (reproductive capsules) arise in the axils of the hydroid cells, and, like the latter, the gonothecæ are often secund on the branchlets. The male and female capsules are different in form. The male gonothecæ are oblong, subfusiform, about three times as long as broad, obtusely rounded at the end, more gradually tapered to the base; the female gonothecæ are broader, somewhat flattened, usually a little shorter, gradually expanding from the narrow base to near the distal end, which is emarginate; the outer angle broadly rounded and slightly produced; the inner angle prolonged into a short cylindrical hydroid cell, with the edge slightly everted, from which two hydroids usually protrude. Height, 75^{mm} to 150^{mm}; diameter of stems, seldom more than 1^{mm}; length of female gonothecæ, about 1^{mm}; breadth, 0.40^{mm} to 0.45^{mm}; length of male gonothecæ, 1^{mm} to 1.10^{mm}; breadth, 0.30^{mm} to 0.40^{mm}; diameter of hydrothecæ, about 0.12^{mm}.

Great Egg Harbor, New Jersey, on oysters, just below low-water mark; Long Island Sound, near New Haven, in 2 to 6 fathoms, abundant, and also in brackish water on floating timber; Thimble Islands, 2 to 6 fathoms; Buzzard's Bay and Vineyard Sound.

This species is more nearly allied to *H. halecinum* of Europe and Northern New England than to any other described species. It is a much more slender and delicate species, with longer joints, and narrower and more elongated hydrothecæ and polyps. The female gonothecæ, although similar, differ in having the distal ends decidedly emarginate, with the outer angle somewhat produced, though much less so than in those of *H. Beanii*.

ANTENNULARIA ANTENNINA Fleming. (p. 497.)

Brit. Anim., p. 546; Johnston, Brit. Zoöph., ed. ii, p. 86, Plate 19, figs. 1–3; Hincks, Brit. Hydr. Zoöph., p. 280, Plate 61. *Sertularia antennina* Linné, Syst. Nat., ed. x, 1758; ed. xii, p. 1310. *Antennularia indivisa* Lamarck, Anim. sans Vert., ed. ii, vol. ii, p. 156.

Martha's Vineyard to Bay of Fundy; northern coasts of Europe to Great Britain and France. Off Gay Head, 8 fathoms; Casco Bay, 6 to 30 fathoms; Bay of Fundy, 10 to 60 fathoms, not uncommon.

AGLAOPHENIA ARBOREA Verrill.

Plumularia arborea Desor, Proc. Boston Soc. Nat. Hist., vol. iii, p. 65, 1848; A. Agassiz, Catalogue, p. 140.

The original specimen of this species is still preserved in the collection

of the Boston Society. It consists of a large number of long, mostly simple, but occasionally forked stems, forming a dense plume-like cluster, united at base by an intricate mass of creeping stolons, which cover what looks like the dead axis of a *Gorgonia*, but is most probably a dried-up black alga, and is certainly not, as Desor supposed, a part of the hydroid. The stems are mostly 4 to 6 inches long, more or less recurved, composed of short joints, and densely covered with the secund pinnæ, which increase in length from the base toward the tips; the pinnæ arise from every joint, and form two close alternating rows along the inner side of the stems; they are directed upward, and more or less curved inward, toward each other, near the tips, and mostly 5^{mm} to 8^{mm} in length, composed of short, stout, oblique joints, not twice as long as broad. Hydra-cells deep, slightly flaring, rising at an angle of about 45°, attached only at base, the upper side less than half as high as the lower, border strongly dentate; one slender median denticle on the upper edge; four lateral ones on each side, of which three are subequal, triangular, rather wide, obtuse, with rounded intervals; the lower or outer lateral one is twice as long, rather acute; the single odd median one, on the outer margin, is equally long and more slender, and usually bent upward. A single large tubular median nematophore is attached to the outer side of the cell, along most of its length, but separated at the end, which is obliquely truncate, with the aperture on the inner side, its tip nor extending beyond the long lateral denticles of the hydra-cell. Lateral nematophores small, sessile, not so long as the upper or inner side of the cells. The large, closed, oblong corbulæ are irregularly scattered among the other pinnæ; they occupy the terminal part of the modified pinnæ, but there are usually three or four unaltered hydra-cells on the basal portion, below the corbula; the pinnæ bearing corbulæ are somewhat shorter than the others.

Shoals of Nantucket, ten miles east of Sancati Head, 14 fathoms, (Desor).

PLUMULARIA TENELLA Verrill, sp. nov. (p. 407.)

Stems clustered, simple, slender, 1 to 2 inches high, horn-colored; branches alternate, very slender, not very long, mostly unbranched, placed toward one face of the stem, inclining forward, and ascending at an angle of about 45°, and originating from the alternate joints of the stem, the internodes being longer than the joints that bear branches; at one side of the base of each branch there is a hydrotheca and accompanying nematophores; the internodes of the stem also bear one or two nematophores. The basal segment of each branch is short; the rest are of three kinds; every third one is usually stouter, and bears a hydrotheca; just in front of each hydrotheca there is usually a very short segment, scarcely longer than broad, and sometimes indistinct, destitute of nematophores; then follows a much longer, slender segment, five or six times as long as broad, articulated by a very oblique joint at its dis-

tal end with the thicker and shorter polypiferous segment, and bearing one or two nematophores on the median line, which may be either near the middle or toward the proximal end. Hydrothecæ broad, subcylindrical, a little longer than broad, with a slightly flaring, even rim; the axis forms an angle of about 45° with the branches; the free part of the distal side is about half the length of the proximal side. Nematophores relatively large, usually three with each hydrotheca: one on each side, shorter than the hydrotheca, trumpet-shaped, with a round, cup-like opening, narrowed below, nearly sessile; another, similar in form, placed toward the proximal end of the segment, inclined forward, and nearly reaching the base of the hydrotheca. Gonothecæ not observed.

Off Gay Head, 8 to 10 fathoms, among ascidians; Vineyard Sound, 8 fathoms.

This species is related to *P. Catharinæ* Johnston and *P cornucopiæ* Hincks, from the English coast. The former differs in having opposite branches, smaller and more elongated nematophores, etc.; the latter agrees in having alternate branches, but the nematophores are smaller, longer, and more slender, and the joints of the branches are different.

This is the first genuine species of *Plumularia* that has been discovered on the New England coast.

SERTULARIA ARGENTEA Ellis and Solander. Plate XXXVII, fig. 280. (p. 408.)

Zoöphytes, p. 38; Johnston, Brit. Zoöph., ed. ii, p. 79, Plate 14, fig. 3, Plate 15, figs. 1–3; Hincks, Brit. Hydr. Zoöph., p. 268, Plate 56; A. Agassiz, Catalogue, p. 144.

New Jersey to the Arctic Ocean; northern shores of Europe to Great Britain and France; low-water to 110 fathoms. Great Egg Harbor, New Jersey, in April; common and of large size in Long Island Sound, near New Haven, Thimble Islands, and at Faulkner's Island, 1 to 8 fathoms; Watch Hill, Rhode Island; Vineyard Sound, 1 to 15 fathoms, very common; abundant in Casco Bay; Bay of Fundy; Nova Scotia coast; and Gulf of Saint Lawrence, low-water to 110 fathoms. Saint George's Bank (S. I. Smith).

SERTULARIA CUPRESSINA Linné. (p. 408.)

Syst. Naturæ, ed. x, 1758; ed. xii, p. 1308; Pallas, Elench. Zooph., p. 142, 1766; Johnston, op. cit., p. 80, Plate 16, figs. 1, 2; Hincks, op. cit., p. 270, Plate 57; A. Agassiz, Catalogue, p. 143.

New Jersey to the Arctic Ocean; northern coasts of Europe to Great Britain and France. Great Egg Harbor, New Jersey, with reproductive capsules, in April; Vineyard Sound, not common; Massachusetts Bay; Casco Bay; Bay of Fundy, in tide-pools and from 1 to 110 fathoms, common. Saint George's Bank (S. I. Smith). Absecom Beach, New Jersey (Leidy).

SERTULARIA PUMILA Linné. Plate XXXVII, fig. 279. (p. 327.)

Syst. Naturæ, ed. x, 1758; ed. xii, p. 1306; Pallas, Elench. Zooph., p. 130; Johnston, op. cit., p. 66, Plate 11, figs. 3, 4; Hincks, Brit. Hydr. Zoöph., p. 260, Plate 53,

fig. 1. *Dynamena pumila* Lamouroux, Bulletin Soc. Phil., vol. iii, p. 184. 1812; Agassiz, Contributions, vol. iv, pp. 326, 355, Plate 32, 1862; A. Agassiz, Catalogue, p. 141, figs. 225, 226.

New Jersey to the Arctic Ocean; Finmark to Great Britain and France. Great Egg Harbor, New Jersey, on *Fucus;* abundant on the shores of Long Island Sound, Vineyard Sound, and northward, between tides.

SERTULARIA CORNICINA Verrill. (p. 408.)

Dynamena cornicina (*pars*) McCready, op. cit., p. 204, 1859; A. Agassiz, Catalogue, p. 142, 1865.

Charleston, South Carolina, to Vineyard Sound. Not uncommon in Vineyard Sound, 1 to 8 fathoms, often on *Halecium gracile;* also on floating *Zostera*, etc., and covered with *Lafoëa calcarata.*

This species somewhat resembles the preceding, but the hydra-cells are more distant, longer, more prominent, and freer, while the end is distinctly bent outward, making the lower side concave in the middle; aperture strongly bilabiate, often appearing tridentate.

HYDRALLMANIA FALCATA Hincks. (p. 408.)

Brit. Hyd. Zoöph., p. 273, Plate 58, 1868. *Sertularia falcata* Linné, Syst. Nat., ed. x, 1758; ed. xii, p. 1309; *Plumularia falcata* Lamarck, Anim. sans Vert., ed. ii, p. 160; Johnston, Brit. Zoöph., p. 90, Plate 21, figs. 1, 2. *Sertularia tenerissima* Stimpson, Mar. Invert. Grand Manan, p. 8, 1853.

Long Island Sound to the Arctic Ocean; northern shores of Europe to the British Channel. Common near New Haven, and off Thimble Islands, 4 to 8 fathoms; Watch Hill, Rhode Island; Vineyard Sound, and off Gay Head, 6 to 20 fathoms; Massachusetts Bay, abundant; very abundant in Casco Bay and Bay of Fundy, low-water to 110 fathoms; Mingan Islands, Labrador. Saint George's Bank, very abundant, 20 to 150 fathoms, (S. I. Smith, A. S. Packard).

Tubularina.

NEMOPSIS BACHEI Agassiz. (p. 454.)

Mem. Amer. Acad., vol. iv, p. 289, figure, 1849; Contributions, vol. iv, p. 345; A. Agassiz, Catalogue, p. 149, figs. 227–231. *Nemopsis Gibbesi* McCready, op. cit., p. 58, Plate 10, figs. 1–7, 1859.

Charleston, South Carolina, to Nantucket.

BOUGAINVILLIA SUPERCILIARIS Aggasiz. Plate XXXVII, fig. 276. (p. 328.)

Contributions, vol. iv, pp. 289, 291, figs. 37–39, Plate 27, figs. 1–7, 1862; A. Agassiz, Catalogue, p. 153, figs. 232–240. *Hippocrene superciliaris* Agassiz, Mem. Amer. Acad., vol. iv, p. 250, Plates 1–3, 1849.

Newport, Rhode Island, to Bay of Fundy; ? Greenland.

MARGELIS CAROLINENSIS Agassiz. (p. 450.)

Contributions, vol. iv, p. 344, 1862; A. Agassiz, Catalogue, p. 156, figs. 241–248. *Hippocrene Carolinensis* McCready, op. cit., p. 164 (separate copies, p. 62), Plate 10, figs. 8–10.

Charleston, South Carolina, to Vineyard Sound. Wood's Hole, at surface, evening.

EUDENDRIUM DISPAR Agassiz. (p. 408.)

Contributions, vol. iv, pp. 285, 289, 342, fig. 36, Plate 27, figs. 10–21, 1862; A Agassiz, Catalogue, p. 159, fig. 249.

Vineyard Sound to Bay of Fundy; 1 to 20 fathoms.

EUDENDRIUM TENUE A. Agassiz.

Catalogue, p. 160, fig. 250, 1865.

Buzzard's Bay to Bay of Fundy, low-water to 15 fathoms. This is closely allied to the English *E. capillare* Alder, but the latter seems to be a smaller and more delicate species.

EUDENDRIUM RAMOSUM Ehrenberg. (p. 408.)

Corall. roth. Meer, p. 72, 1834; Johnston, Brit. Zoöph., ed. ii, p. 46, Plate 6, figs. 1–3; Hincks, Brit. Hydr. Zoöph., p. 82, Plate 13; ? A. Agassiz, Catalogue, p. 160. *Tubularia ramosa* Linné, Syst. Nat., ed. xii, p. 1302.

Martha's Vineyard to Labrador; northern coasts of Europe to Great Britain. Off Gay Head, 8 to 20 fathoms; Casco Bay, 10 to 60 fathoms; Bay of Fundy, 6 to 100 fathoms. Off Saint George's Bank, 430 fathoms, (S. I. Smith).

DYSMORPHOSA FULGURANS A. Agassiz. (p. 448.)

Catalogue, p. 163, figs. 259, 260, 1865.

Buzzard's Bay, Naushon, and Massachusetts Bay (A. Agassiz).

TURRITOPSIS NUTRICULA McCready. (p. 454.)

Op. cit., pp. 55, 86, 127, Plates 4, 5, 8, fig. 1, 1857–9; Agassiz, Contributions, vol. iv, p. 347; A. Agassiz, Catalogue, p. 167, figs. 269, 270.

Charleston, South Carolina, to Vineyard Sound.

STOMOTOCA APICATA Agassiz. (p. 455.)

Contributions, vol. iv, p. 347, 1862; A. Agassiz, Catalogue, p. 168. *Saphenia apicata* McCready, op. cit., p. 129, Plate 8, figs. 2, 3, 1859.

Charleston, South Carolina (McCready); Newport, Rhode Island (A. Agassiz).

CLAVA LEPTOSTYLA Agassiz. (p. 328.)

Contributions, vol. iv, pp. 218, 222, fig. 32, Plate 20, figs. 11–16[a], Plate 21, figs. 1–10[a], 1862; A. Agassiz, Catalogue, p. 170, fig. 274; Hincks, op. cit., p. 6, Plate 2, fig. 1, 1868. *Clava multicornis* Stimpson, Invert. Grand Manan, p. 11, 1853; Leidy, Journ. Acad. Nat. Sciences, Philad., vol. iii, p. 135, Plate 11, figs. 33, 34, 1855 (*not* of Johnston).

Long Island Sound to Labrador; coasts of Great Britain. Near New Haven Light; Thimble Islands, in tide-pools; Beverly, Massachusetts; Casco Bay, on rocks and *Fucus*, abundant; Eastport, Maine, on piles. Point Judith, Rhode Island (Leidy). Nahant, Massachusetts (Agassiz). Morecombe Bay (Hincks).

CORDYLOPHORA, species undetermined.

Syncoryna, sp., Agassiz, Contributions, vol. iv, p. 339 (no description).

Newport Harbor, Rhode Island (Leidy, t. Agassiz). In 1860 I obtained a species of this genus from the vicinity of Cambridge, Massa-