swimming existence like true pelagic animals, until they become full-grown in the megalops state. Say mentions that his specimens were found cast upon the beach by the refluent tide and "appeared desirous to protect themselves by burrowing in the sand, in order to wait the return of the tide," but they were more likely awaiting the final change to the terrestrial state. The tufts of peculiar hairs between the bases of the second and third ambulatory legs, and, in the adult, connected with the respiration, are present in the full-grown megalops, and are undoubtedly provided to fit the animal for its terrestrial existence as soon as it is thrown upon the shore. The young in the magalops stage occur on the shore of Long Island, in August, and perhaps earlier. At Fire Island Beach in 1870 no specimens of *Ocypoda* were discovered till the last of August, and those first found were the smallest ones obtained; by the middle of September, however, they were common on the outer beach, and many of them were twice as large as those first obtained. Although careful search was made along the beach for several miles, not a specimen of the adult or half-grown crab could be found; every individual there had evidently landed and developed during the season. Probably all those living the year before had perished during the winter, and it is possible that this species never survives long enough to attain its full growth, so far north.

A small megalops, taken in the towing-nets in considerable numbers at Wood's Hole on the evening of September 3, resembles in several characters the megalops of *Ocypoda*, and is probably the young of one of the species of *Gelasimus*. The carapax is 1.0^{mm} long and 0.7 broad. The front is narrowly triangular, deflexed perpendicularly, somewhat excavated between the eyes, and terminates in a long, slender, and acute tip. The sides are high and impressed for the reception of the three anterior ambulatory legs as in the megalops of *Ocypoda*, although in the alcoholic specimens examined the legs are not closed against the sides. The posterior ambulatory legs are small, and lodged in grooves on the surface of the carapax, much as in the megalops of *Ocypoda*. The external maxillipeds are very much like those of the megalops of *Ocypoda*.

A peculiar megalops, belonging apparently to some Grapsoid group of crabs, was several times taken in the towing-net in Vineyard Sound from August 5 to September 3, on the latter date in the evening. In these the carapax is 1.2 to 1.3^{mm} in length and 0.9 to 1.0^{mm} in breadth. The front is broad, concave above between the eyes; the middle portion projects obliquely downward and terminates in a short, obtuse rostrum; while the lateral angles project forward into a prominent tooth above each eye, so that, when seen from above, the frontal margin appears transverse and tridentate, the teeth being separated by considerable spaces. There are no dorsal spines or tubercles upon the carapax. The sides are high, and are apparently impressed for the reception of the anterior ambulatory legs. The posterior ambulatory

legs are subequal with the others and have styliform dactyli. The ischial and meral segments of the external maxillipeds are short and broad.

Another megalops, of which several specimens were taken in the towing-net, in Vineyard Sound, August 5, has a remarkable, elongated and tuberculated carapax. The carapax, including the rostrum, is 1.3^{mm} long and 0.84^{mm} broad, is armed above with several large tubercles, and the posterior margin is arcuate and armed with a median tubercular prominence. The front is somewhat excavated above and expanded each side in front of the eyes, the anterior margin being transverse, as seen from above, with a short and spiniform rostrum curved obliquely downward. The chelipeds have slender hands and the ambulatory legs are long and slender, the posterior pair being subequal with the others, and all having the dactyli styliform. The abdominal legs are very long.

Several other forms of zoëa and megalops were taken in Vineyard Sound and vicinity, but, as they were not traced to the adult forms and were none of them very abundant, they are not here described.

Squilla empusa passes through a remarkable metamorphosis, but none of the earliest stages were observed. Specimens in one of the later larval stages (Plate VIII, fig. 36) were taken at the surface in Vineyard Sound, August 11. These are nearly 6^{mm} long. The carapax is proportionally much larger than in the adult, covering completely the whole cephalothorax, has a long slender rostrum projecting far in front of the eyes, and the lateral angles projecting backward in two slender processes as long as the rostrum. There is also on each side, just behind the eye, a small tooth on the margin of the carapax, and another similar one on the posterior margin just beneath each of the posterior processes. The eyes are very large and almost spherical. The antennulæ are short, projecting scarcely beyond the eyes, and biramous, one of the flagella being short and unsegmented, the other longer and composed of three segments. The antennæ are still without flagella, and the scale is quite small. The first pair of legs (the appendages corresponding to the first pair of maxillipeds in the Macroura, &c.) are well developed, long, and slender, like those of the adult. The great claws are proportionally larger than in the adult, and have very much the same structure. Of the six succeeding pairs of cephalothoracic legs, only the three anterior, subcheliform ones are as yet developed, and these are quite small, those of the third pair being smaller than the others, and projecting but slightly beyond the carapax; the three posterior, styliform legs are entirely wanting, or represented only by slight sack-like protuberances. The abdomen is not quite as long as the cephalothorax, including the rostrum and posterior processes, and the five anterior segments are subequal in length, smoothly rounded above, and furnished with well developed swimming-legs, much like those of many macrouranas. The sixth segment is much shorter than the others, and has rudimentary appendages

scarcely longer than the segment itself. In these appendages the spiniform process from the base is long and simple, not biramous, as in the adult, and the lamellæ are small, much shorter than this process, and the outer one has no articulated terminal portion. The terminal segment is as long as the four preceding segments, about as broad as long, the lateral margins slightly convex in outline, and each armed with two sharp teeth, while the posterior margin is concave in outline, with the lateral angles projecting into sharp teeth, between which the edge is armed with about twenty small and equal slender spines.

D.—CATALOGUE OF THE MARINE INVETEBRATE ANIMALS OF THE SOUTHERN COAST OF NEW ENGLAND, AND ADJACENT WATERS.—BY A. E. VERRILL, S. I. SMITH, AND OSCAR HARGER.

In the following catalogue nearly all the marine invertebrates which are known to inhabit the coast between Cape Cod and New York are included, except those belonging to certain groups which have not yet been studied by any one, sufficiently for their identification. Such are chiefly minute or microscopic species, belonging to the Entomostraca, Foraminifera, Ciliated Infusoria, &c., together with the intestinal worms of fishes and other animals. Our sponges, also, have hitherto received very little attention, and it has not yet been possible to identify but a small number of the species. It is not to be supposed, however, that the list is complete in any group, for every season in the past has served to greatly increase the number of species in almost every class and order, and this will doubtless be the case for many years to come. But as no attempt has hitherto been made to enumerate the marine animals of this region, excepting the shells and radiates, it is hoped that this catalogue will prove useful, both to show what is already known concerning this fauna, and to serve as a basis for future work in the same direction.

In some instances species that have not actually been found on the part of the coast mentioned, but which occur on the shores of Long Island and New Jersey, under such circumstances as to render it pretty certain that they will also be found farther north, have been included in the catalogue, but the special localities have always been given in such cases.

In order not to make the list too long, only those synonyms are given which are really necessary to make apparent the origin of the names, and to refer the student to some of the best descriptions and figures in the works that are generally most accessible, and in which more complete synonymy may be found.

For the same reason, in describing the new species, the descriptions have been made as brief as seemed consistent with the purpose in view, viz: to enable students and others who may not be experienced natu-

ralists to identify the species that they may meet with. To this end, the portions of the descriptions relating to strictly microscopic parts have frequently been omitted, when more obvious characters, sufficient to distinguish the species, could be found.

References to the plates at the end of this volume have been inserted, and also to the pages in the first part of the report where brief descriptions, remarks on the habits, or other information may be found.

The catalogue of the Crustacea was prepared by Mr. S. I. Smith and Mr. Oscar Harger. The rest of the catalogue is by Professor A. E. Verrill, with the exception of the descriptions of the insects, which have been furnished by Dr. A. S. Packard and Dr. G. H. Horn; the Pycnogonids, which have been determined by Mr. S. I. Smith; and a few of the Bryozoa, which were identified by Professor A. Hyatt, who also furnished most of the figures of the species belonging to that class.

Hitherto there has been no attempt to enumerate the marine invertebrates of the entire southern coast of New England. Several partial lists have been published, however, and these have been of considerable use in the preparation of the following catalogue.

In the Report on the Invertebrata of Massachusetts, by Dr. A. A. Gould, 1841, numerous localities for shells on the southern coast of Massachusetts are mentioned.

A catalogue of the shells of Connecticut, by James H. Linsley, was published in the American Journal of Science, vol. 48, 1845. In "Shells of New England," 1851, Dr. William Stimpson gave much accurate information concerning the distribution of our Mollusca. In 1869 Dr. G. H. Perkins published a very useful catalogue, in the Proceedings of the Boston Society of Natural History, vol. xiii, p. 109, entitled "Molluscan Fauna of New Haven."

The "Report on the Mollusca of Long Island, New York, and of its Dependencies," by Sanderson Smith and Temple Prime, in the Annals of the Lyceum of Natural History, vol. ix, p. 377, 1870, also contains much useful information.

A paper by Dr. Joseph Leidy, entitled "Contributions toward a Knowledge of the Marine Invertebrate Fauna of the Coasts of Rhode Island and New Jersey," in the Journal of the Philadelphia Academy, vol. iii, 1855, although very incomplete, contains the only published lists of the Annelids and Crustacea of this region. In his "Catalogue of North American Acalephæ," 1865, Mr. A. Agassiz has enumerated all the species discovered on this coast up to that time. Other papers will also be referred to in the synonymy.

ARTICULATA.

INSECTA.

The insects included in the following catalogue have mostly been determined by A. S. Packard, jr., M. D., and by George H. Horn, M. D., who have also kindly furnished descriptions of the new species. Our thanks are also due to Dr. H. A. Hagen, who has identified some of the species. The Pycnogonids have been determined by Mr. S. I. Smith.

DIPTERA.

CHIRONOMUS HALOPHILUS Packard, sp. nov. (p 415.)

Full-grown larvæ were dredged in 10 fathoms in Vineyard Sound, several miles from land, among compound Ascidians, (A. E. V.;) and several young larvæ were dredged in 8 to 10 fathoms in Wood's Hole Passage, September 10, (A. S. P.)

"This is a true *Chironomus*, the body being long and slender, with the usual respiratory filaments at the end of the body. Head red as usual, chitinous; antennæ slender, ending in two unequal spines; eyes black, forming conspicuous dots; mandibles acute, three-toothed.

From lower side of antepenultimate segment arise two pairs of long fleshy filaments, twice as long as the diameter of body, not containing tracheæ, so far as I can see; and from the end of penultimate segment a dorsal minute tubercle, forming a cylindrical papilla, giving rise to eight respiratory hairs about as long as the segment is thick; anal legs long and slender, with a crown of about twelve spines. Two prothoracic feet, as usual. In one larva the semi-pupa was forming; length, 11^{mm}, (.45 inch.)

This species belongs in the same section of the genus with *Chironomus plumosus*, figured by Reaumer, (vol. iv, Pl. 14, figs. 11 and 12; and vol. v.)"—A. S. P.

CHIRONOMUS OCEANICUS Packard. (p. 331.)

Proceedings of the Essex Institute, vol. vi, p. 42, figs. 1–4, 1869.

Specimens apparently belonging to this species have been obtained near New Haven, at low-water mark, among confervæ. It occurs at Salem, Massachusetts; Casco Bay; and the Bay of Fundy, from low-water mark to 20 fathoms.

CULEX, species undetermined. (p. 466.)

A species of mosquito is excessively abundant on the salt-marshes in autumn, and the larvæ inhabit the brackish waters of the ditches and pools.

MUSCIDÆ.—Larvæ of an undetermined fly. (p. 415.)

This larva was found living beneath the surface of the sand, at low-water mark, on the shore of Great Egg Harbor, at Beesley's Point, New Jersey, April 28, 1871. (A. E. V.) The same larva, or an allied species, was found May 5, under stones below high-water mark. "Specimens were brought to me from New Jersey, and kept living in sea-water for some time. The following description is from the living specimens: Body white, long, slender, cylindrical, tapering gradually from the penul-penultimate segment toward the head; thirteen segments, counting the head as one. Segments smooth, thickened at the hinder edge, the sutures being distinct; tegument very thin and transparent, allowing the viscera to be easily distinguished. The terminal segment of the body is conical; seen from beneath it is nearly a fourth longer than broad, the end subacute and deeply cleft by a furrow which diminishes in size and depth to beyond the middle of the segment, where it fades out. This conical extension is flattened vertically above; from the middle of the same ring project the supra-anal, conical, fleshy tubercles, one-fourth the length of the entire ring, which give rise to two main tracheæ running to the head, and which separate and close together at the will of the animal. When extended the prothoracic ring is considerably longer than the others. Head one-third as large as prothorax, and a little more than half as wide. Length, 9^{mm}.

I cannot detect any spiracles on either of the thoracic rings. The tracheæ are not nearly so regular as in the larvæ of the *Anthomyia ceparum*, with living specimens of which I placed it side by side; head much the same, showing it may be of this family. Minute antennæ present; no traces of them in *Anthomyia*, and their presence throws a doubt whether it be a muscid."—A. S. P.

ERISTALIS, species undetermined.

One large-sized larva was found in Vineyard Sound among algæ in April, by Mr. Vinal N. Edwards.

EPHYDRA, species undetermined. (p. 466.)

Packard, Proceedings Essex Institute, vol. vi, p. 50.

Shores of Narragansett Bay, puparium found under sea-weeds by Dr. T. d'Orexmieul. According to Dr. Packard, "scarcely distinguishable from *E. halophila* Packard, which lives in salt brine at the salt-works in Gallatin County, Illinois."

COLEOPTERA.*

A number of species of tiger-beetles (*Cicindela*) are common on the sandy shores and beaches just above high-water mark, and some of them are seldom found away from the sea-shore, while others are also found far inland. The larvæ of some of these, and perhaps of all, live below high water, but this has not yet been observed in the case of several

* The Coleoptera were mostly determined by Dr. George H. Horn.

in the following list, which includes those most characteristic of the sea-shores.

CICINDELA GENEROSA Dejean. (p. 336.)

Spécies Général des Coléoptères, vol. v, p. 231, (teste Lec.;) Gould. Boston Journal Nat. Hist., vol. i, p. 42. Pl. 3, fig. 2.

Adult common on sandy beaches at high-water mark; larvæ burrowing in sand below high-water mark, in company with the species of *Talorchestia*.

CICINDELA DORSALIS Say. (p. 364.)

Journal Academy Nat. Sciences of Philadelphia, vol. i, p. 20; Gould, op. cit., p. 47.

Martha's Vineyard, on the sandy beaches.

CICINDELA MARGINATA Fabricius. (p. 470.)

Systema Eleutheratorum, vol. i, p. 241; Gould, op. cit., p. 48.

Barren spots in salt marshes that are occasionally covered by the tides.

CICINDELA REPANDA Dejean. (p. 364.)

Spécies Gén. des Coléoptères, vol. i, p. 74.

With the last, and on sandy beaches at Martha's Vineyard, &c.

CICINDELA HIRTICOLLIS Say. (p. 364.)

Trans. Amer. Phil. Society, new series, vol. i, p. 411, Pl. 13, fig. 2.

With last, also at a distance from the coast.

CICINDELA DUODECIMGUTTATA Dejean.

Spéc. Gén. des Coléop., vol. i, p. 73; Gould, op. cit., p. 51.

Sandy beaches near the salt water; appears both in spring and autumn.

GEOPINUS INCRASSATUS (Dej.) (p. 364.)

Spécies Gén. des Coléopères, vol. iv, p. 21.

Several specimens were found on the outer beach of Great Egg Harbor, New Jersey, burrowing in sand between tides. This species is not confined to the coast, but occurs even west of the Mississippi in sandy places, (Horn.)

BEMBIDIUM CONSTRICTUM Leconte. (p. 464.)

Annals Lyceum Nat. Hist., N. Y., vol. iv, p. 362.

Between tides at Great Egg Harbor, New Jersey.

B. CONTRACTUM Say. (p. 464.)

Trans. Amer. Phil. Soc., vol. ii, p. 85.

Between tides at Great Egg Harbor. This and the preceding occur also along the margins of streams emptying into the ocean. (Horn.)

HYDROPHILUS (TROPISTERNUS) QUADRISTRIATUS Horn. (p. 466.)

Trans. Amer. Entomol. Soc., 1871, p. 331.

In brackish pools, near Beesley's Point, New Jersey, associated with *Palæmonetes vulgaris* and other brackish-water species.

"Elongate oval, more attenuate in front, black, with slight olivaceous tinge; surface densely, finely, and equally punctured. Head with a sigmoid row of coarse punctures on each side, meeting at the vertex. Antennæ and palpi testaceous. Thorax with a small fovea on each side, near the anterior margin, behind and within the eyes, and an angulate row of punctures on each side near the middle, and a few coarse punctures very irregularly disposed. Elytra with four striæ of moderate punctures, the first two sutural and extending nearly from base to apex, inclosing at base a short scutellar row; the outer two rows subhumeral, obliterated at base, extending nearly to apex, and becoming confused, extending toward the inner rows. Body beneath black, opaque, and pubescent, abdomen with a row of brownish patches at the sides of each segment. Legs pale testaceous, femora at base and tarsi black. Length, .38 inch; (9.5mm.)

Resembles *lateralis* in form, but more narrowed in front than behind. The elytra are evenly punctured, and the body along the median line moderately convex. It differs from all our species by the four distinct striæ of punctures on each elytron. The outer two correspond in position with the eighth and ninth, and traces of a third, fourth, and fifth are visible at base."—Horn.

PHILHYDRUS REFLEXIPENNIS Zimmermann.

Trans. Amer. Entomol. Soc., 1869, p. 250.

Great Egg Harbor, between tides.

This and the next occur also inland. (Horn.)

P. PERPLEXUS, Leconte.

Proc. Philad. Acad. Nat. Sci., 1855, p. 371.

Great Egg Harbor, between tides.

PHYTOSUS LITTORALIS Horn. (p. 464.)

Trans. Amer. Entomol. Soc., 1871, p. 331.

"Head brownish testaceous, moderately shining, sparsely clothed with yellowish hairs, front feebly concave; parts of mouth and antennæ testaceous, the latter darker at tip. Thorax paler than the head, as broad as long, disk depressed, sides strongly rounded in front, behind the middle sinuate; base truncate, feebly emarginate at middle, and but slightly broader than half the width of thorax at middle; surface sparsely punctured and pubescent. Elytra pale testaceous, sparsely punctured and pubescent, short, sides strongly divergent behind; body apterous. Abdomen elongate oval, broader behind the middle, piceous, shining, and very sparsely pubescent. Legs pale testaceous. Last segment of abdomen ♂ slightly prolonged at middle and sinuate on each side. Length, .08 inch, (2mm.)

The male resembles in its several characters *P. Balticus* Kraatz, of Europe, but the median prolongation of the last abdominal segment is broader. The penultimate segment is subcarinate along the median line behind. The mandibles in the present species are much more exsert than in the species from California.

This is an interesting addition to our insect fauna. Its occurrence has been looked for on the ground of the occurrence of a species on the Pacific Coast, for, as a rule, (rapidly losing its exceptions,) any genus represented in Europe and on the Pacific Coast will have a representation in the Atlantic faunal region."—Horn.

This species was found burrowing in sand, between tides, at Beesley's Point, New Jersey.

BLEDIUS CORDATUS (Say.) (p. 462.)

Trans. Amer. Phil. Soc., vol. iv, p. 461.

This small species occurred in considerable abundance near Beesley's Point. It forms its small burrows in the loose sand at and just below high-water mark, in company with *Talorchestia longicornis*, *Scyphacella arenicola* SMITH, &c. It throws up a small heap of sand around the opening of its burrows, which are much smaller than those of the following species.

"This species is somewhat variable in the form of the elytral dark spot. The elytra are pale testaceous or nearly white in color, and normally with a cordate space of brownish color, and with the apex in front. This spot may become a narrow median fusiform space, or be divided so that the suture is pale; the spot frequently becomes larger by the apex of the cordate spot, extending to the scutellum and along the basal margin."—Horn.

BLEDIUS PALLIPENNIS (Say.) (p. 462.)

Journal Acad. Nat. Sci., Philad., vol. iii, p. 155.

Shores of Great Egg Harbor, near Beesley's Point, common, burrowing perpendicularly in moist sand considerably below high-water mark. The holes are round, with a small heap of sand around the orifice. This species is also found far inland. (Horn.)

HETEROCERUS UNDATUS Melsheimer. (p. 464.)

Proc. Acad. Nat. Sci., Philad., vol. ii, p. 98.

Beesley's Point, burrowing in sand, between tides. This species occurs also on the margins of inland streams. (Horn.)

PHALERIA TESTACEA Say.

Long's Expedition, vol. ii, p. 280.

Somer's Point, on the shore of Great Egg Harbor, between tides.

NEUROPTERA.

MOLANNA, species undetermined. (p. 379.)

This larva was found in a firm, straight, flattened, tapering tube, made of grains of sand, and attached to the piles of a wharf, below high-water mark, at Menemsha Bight, on Martha's Vineyard, October, 1871, by Dr. Edward Palmer.

ANURIDA MARITIMA (Guerin.) (p. 331.)

This Podurid is very abundant on the under surfaces of large stones from high-water mark to about half tide, New Haven, Wood's Hole, Nantucket; also on the coasts of Europe and Greenland. (Fabricius.)

ARACHNIDA.

CHERNES OBLONGUS Say. (p. 331.)

Hagen, Record of American Entomology for 1868, p. 51.

Under stones near low-water mark, at Wood's Hole, (S. I. S.,) several specimens were found together. This species is recorded from Florida and Georgia. I am not aware that it has been observed below high-water mark before. These specimens were identified by Dr. Hagen.

TROMBIDIUM, species. (p. 331.)

Several species of mites belonging to this or allied genera are found beneath stones near high-water mark, or even running over the *fuci* and rocks near low-water mark, but it is uncertain whether they become submerged by the rising tide or rise on its surface.

BDELLA MARINA Packard, sp. nov. (p. 331.)

Savin Rock, near New Haven, under stones between tides.

"Elongated pyriform, of the usual form of the genus, the body being thickest at the insertion of the third pair of legs. Body with a few scattered hairs, especially toward the end. Palpi twice as long as labium, hairy toward the tip, four-jointed, basal joint not so long as second, third, and fourth conjointly; second a third shorter than third. Mandibles very acutely conical, projecting one-fourth their length beyond the beak, with about four hairs on the outer side; tips very slender acute, corneous. Legs rather hairy; fourth pair but little longer than the others. Claws consisting of two portions, the basal much compressed, subovate, with about six hairs on the under edge, and carrying a stout curved claw. Beak half as long as the body is wide. Length 2.5^{mm}.

"It differs from Say's *Bdella oblonga* ('from Georgia, under bark of trees,' &c.) in its pyriform shape, the shorter first joint of the palpi, and much shorter beak."—A. S. P.

PYCNOGONIDEA.

PHOXICHILIDIUM MAXILLARE Stimpson. Plate VII, fig. 35. (p. 415.)

Marine Invertebrata of Grand Manan, p. 37, 1853.

Common in Vineyard Sound and the Bay of Fundy.

PALLENE, species. (p. 421.)

A small species, perhaps young, found upon piles of the wharf at Wood's Hole, and dredged in Vineyard Sound, in 14 fathoms, off Tarpaulin Cove on Ascidians, and off Holmes's Hole on Hydroids; also off Watch Hill, Rhode Island, and New Haven.

CRUSTACEA.

The following catalogue of the Crustacea has been prepared by Mr. S. I. Smith, excepting the portion relating to the Isopoda, which has been written by Mr. O. Harger.* The list is by no means complete, even for the higher groups which are treated, and no attempt has been made to enumerate the Ostracoids and free-swimming Copepods. Among the Amphipods, the difficult group of Lysianassinæ has not been studied, as the species require careful comparison with those of our northern coast and of Europe. The same is true of the species of *Ampelisca*, and partially of some other genera. In several cases species are omitted which are as yet only represented in our collections by imperfect, young, or too few specimens. The catalogue is intended, however, to include every species which has been mentioned, on good authority, in any published work as inhabiting the southern coast of New England.

BRACHYURA.

GELASIMUS MINAX Leconte. (p. 467.)

Proceedings Acad. Nat. Sci., Philadelphia, vol. vii, 1855, p. 403; Smith, Trans. Conn. Acad., vol. ii, p. 128, Pl. 2, fig. 4, Pl. 4, fig. 1, 1870.

Southern coast of New England to Florida. This species, the largest of our "fiddler-crabs," lives upon salt marshes, usually farther from the sea than the others, and frequently where the water is most of the time nearly fresh.

GELASIMUS PUGNAX Smith. (p. 466.)

Trans. Conn. Acad., vol. ii, p. 131, Pl. 2, fig. 1, Pl. 4, fig. 2. *G. vocans*, var. A, De Kay, Nat. Hist. of New York, p. 14, Pl. 6, fig. 10, 1844, (not *Cancer vocans* Linné.) *G. pugilator* Leconte, loc. cit., p. 403, (not of Bosc.)

From Cape Cod to Florida, the Gulf of Mexico, and the West Indies. It makes its burrows only upon salt marshes, but is often seen in great companies wandering out upon muddy or sandy flats, or even upon the beaches of the bays and sounds.

GELASIMUS PUGILATOR Latreille. (p. 336.)

Nouveau Dictionnaire d'Hist. nat., 2e édit., tome xii, p. 520, 1817; Smith, Trans. Conn. Acad., vol. ii, p. 136, Pl. 4, fig. 7, 1870. *Ocypode pugilator* Bosc, Hist. nat. des Crust., tome i, p. 167, 1820. *Gelasimus vocans* DeKay, op. cit., p. 14, Pl. 6, fig. 9.

Cape Cod to Florida, upon muddy and sandy flats and beaches.

OCYPODA ARENARIA Say. (pp. 337, 534.)

Journal Acad. Nat. Sci., Philadelphia, vol. i, p. 69, 1817; Edwards, Hist. nat. des Crust., tome ii, p. 44, Pl. 19, figs. 13, 14.

This species, which is common upon the sandy beaches from New Jersey southward, and which I have found upon Fire Island Beach, Long

* The description of *Scyphacella arenicola* and the reference of *Idotea triloba* to *Epelys* are taken from Mr. Smith's unpublished manuscript, and his name, therefore, appears as authority in these cases.

Island, will very likely be found rarely upon the beaches at Nantucket, and on the southern part of Cape Cod. It lives in deep burrows, above the reach of tides, upon sandy beaches. It is readily distinguished from the "fiddlers" by the nearly equal claws or hands, which are alike in both sexes, and by its color, which is almost exactly like the sand upon which it lives. It is carnivorous and very active, running with great rapidity when pursued.

The synonymy of this species is in much confusion, and I have not attempted to rectify it here, although there are apparently several names which antedate that of Say. The Brazilian species, usually called *rhombea* appears to be identical with ours, and if it is really the *rhombea* of Fabricius, his name should undoubtedly be retained.

SESARMA RETICULATA Say. (p. 467.)

Journal Acad. Nat. Sci., Philadelphia, vol. i, pp. 73, 76, Pl. 4, fig. 6, 1817; p. 442, 1818; Smith, Trans. Conn. Acad., vol. ii, p. 156.

From Long Island Sound to Florida, usually upon salt marshes and associated with *Gelasimus pugnax*.

PINNIXA CYLINDRICA Say. Plate I, fig. 1. (p. 367.)

Journal Acad. Nat. Sci., Philadelphia, vol. i, p. 452, 1818.

Vineyard Sound and Long Island Sound to South Carolina.

PINNOTHERES OSTREUM Say. Plate I, fig. 2, male. (p. 367.)

Loc. cit., p. 67, Pl. 4, fig. 5, 1817; DeKay, op. cit., p. 12, Pl. 7, fig. 16.

Massachusetts to South Carolina.

PINNOTHERES MACULATUS Say. (p. 434.)

Loc. cit. p. 450, 1818.

It lives in *Mytilus edulis* on the New England coast, and is found from Cape Cod to South Carolina.

CANCER IRRORATUS Say. (pp. 312, 530.)

Loc. cit., p. 59, Pl. 4, fig. 2, 1817; Stimpson, Annals Lyceum Nat. Hist., New York, vol. vii, p. 50, 1859. *Platycarcinus irroratus* Edwards, Hist. nat. des Crust., tome i, p. 414, 1834; DeKay, op. cit., Pl. 2, fig. 2. *Cancer Sayi* Gould, Report on the Invertebrata of Massachusetts, 1st edit., p. 323, 1841. *Platycarcinus Sayi* DeKay, op. cit., p. 7. *Cancer borealis* Packard, Memoirs Boston Nat. Hist. Soc., vol. i, p. 303, 1867.

Labrador to South Carolina.

CANCER BOREALIS Stimpson. (pp. 486, 493.)

Loc. cit., p. 50, 1859. *Cancer irroratus* Gould, op. cit., p. 322.

Nova Scotia to Vineyard Sound and No Man's Land. It very likely occurs both north and south of these limits, as it seems to be rare or local, and is often, perhaps, confounded with the far more common *C. irroratus*, although it is a perfectly distinct species.

PANOPEUS HERBSTII Edwards. (p. 472.)

Op. cit., vol. i, 403, 1834; Smith, Proceedings Boston Soc. Nat. Hist., vol. xii, p. 276, 1859.

Long Island Sound to Brazil, but not common north of New Jersey. It is readily distinguished from the following species, by the tubercle on the subhepatic region, just below the first lobe of the antero-lateral border of the carapax; by the postorbital tooth being separated from the second tooth of the antero-lateral margin by a rounded sinus; and by the dactylus of the larger cheliped having a stout tooth near the base within.

PANOPEUS DEPRESSUS Smith. Plate I, fig. 3. (p. 312.)

Loc. cit., p. 283, 1859.

From Cape Cod to Florida, and often carried with oysters much farther north. It is, perhaps, native in Massachusetts Bay.

PANOPIUS SAYI Smith. (p. 312.)

Loc. cit., p. 284, 1859.

Associated with the last, and having the same range. It is easily distinguished from the last species by its narrower, more convex, and swollen carapax, and by the more projecting and arcuate front. The terminal segment of the abdomen of the male is also quite different in the two species; in *P. Sayi* it is broader than the preceding segment, about two-thirds as long as broad, the edges slightly concave, and the tip abruptly triangular, while in *P. depressus* it is narrower than the preceding segment, about three-fourths as long as broad, the edges convex, and the tip broadly rounded.

PANOPEUS HARRISII Stimpson. (p. 313.)

Loc. cit., p. 55, 1859. *Pilumnus Harrisii* Gould, op. cit., p. 326, 1841.

Massachusetts Bay to Florida.

CARCINUS GRANULATUS (Say, sp.) (p. 312.)

Cancer granulatus Say, loc. cit., p. 61, 1817. *Carcinus mœnas* Gould, op. cit., p. 321; DeKay, op. cit., p. 8, Pl. 5, figs. 5, 6. (?) *Carcinus mœnas* Leach, Edwards, &c.

Cape Cod to New Jersey, and perhaps much farther south. Our species may, very likely, be the same as the *Carcinus mœnas* of Europe, but its not extending north on our own coast throws some doubt upon this until there has been a careful comparison of specimens from the two sides of the Atlantic.

PLATYONICHUS OCELLATUS Latreille. Plate I, fig. 4. (pp. 338, 533.)

Encyclopédie méthodique, tome xvi, p. 152; DeKay, op. cit., p. 9, Pl. 1, fig. 1, Pl. 5, fig. 7. *Cancer ocellatus* Herbst, Krabben und Krebse, Band iii, erstes Heft, p. 61, Pl. 49, fig. 4, 1799. *Portunus pictus* Say, loc. cit., p. 62, Pl. 4, fig. 4, 1817.

Cape Cod to Florida.

CALLINECTES HASTATUS Ordway. (pp. 367, 468.)

Boston Journal Nat. Hist., vol. vii, p. 568, 1863. *Lupa hastata* Say, loc. cit., p. 65, 1817. *Lupa diacantha* DeKay, op. cit., p. 10, Pl. 3, fig. 3.

Cape Cod to Florida, and occasionally in Massachusetts Bay.

LIBINIA CANALICULATA Say. (p. 368.)

Loc. cit., p. 77, Pl. 4, fig. 1, 1817; DeKay, op. cit., p. 2, Pl. 4, fig. 4; Streets, Proceedings Acad. Nat. Sci., Philadelphia, 1870, p. 105, 1871.

Found as far north as Casco Bay, on the coast of Maine, and common from Massachusetts Bay southward, at least as far as Florida.

LIBINIA DUBIA Edwards. (p. 368.)

Op. cit., tome i, p. 300, Pl. 14 *bis*, fig. 2, 1834; Streets, loc. cit., p. 104.

Cape Cod to Florida.

PELIA MUTICA Stimpson. (p. 415)

Annals Lyceum Nat. Hist., New York, vol. vii, p. 177, 1860. *Pisa mutica* Gibbes, Proceedings Amer. Association Adv. Sci., 3d meeting, p. 171, 1850.

Vineyard Sound to Florida.

HYAS COARCTATUS Leach. (p. 504.)

Trans. Linn. Soc., London, vol. xi, p. 329, 1815. Régne animal de Cuvier, 3me édit., Pl. 32, fig. 3. *Lissa fissirostra* Say, loc. cit., p. 79, 1817.

Leidy mentions this species as having been found on the coast of New Jersey, and Say mentions it from the coast of Long Island, but it seems to be rare south of Cape Cod. It lives in deep water from Cape Cod northward, and on the European coast, and is frequently found in the stomachs of the cod-fish.

HETEROCRYPTA GRANULATA Stimpson. (p. 315.)

Annals Lyceum Nat. Hist., New York, vol. x, p. 102, 1871. *Cryptopodia granulata* Gibbes, loc. cit., p. 173; and Proceedings Elliott Soc., Charleston, vol. i, p. 35, wood cut.

This species, dredged several times in Vineyard Sound, was before known only from North Carolina to Florida and the West Indies.

ANOMOURA.

HIPPA TALPOIDA Say. Plate II, fig. 5. (pp. 338, 530.)

Loc. cit., p. 160, 1817.

Cape Cod to Florida.

EUPAGURUS POLLICARS Stimpson. (p. 313.)

Annals Lyceum Nat. Hist., New York, vol. vii, p. 92, 1859. *Pagurus pollicaris* Say, loc. cit., p. 162, 1817; Gould, op. cit., p. 329; DeKay, op. cit., p. 19, Pl. 8, fig. 21.

Massachusetts to Florida.

EUPAGURUS BERNHARDUS Stimpson. (p. 501.)

Loc. cit., p. 89, 1859. *Pagurus Bernhardus* (Linné sp.,) Fabricius, Entomologia systematica, vol. ii, p. 469, 1793; Gould, op. cit., p. 329; DeKay, op. cit., p. 20.

Vineyard Sound, &c., in deep water, more abundant north of Cape Cod, and extending to Northern Europe on one side, and to Puget Sound on the other.

EUPAGURUS PUBESCENS Stimpson.

Loc. cit., p. 89, 1859; and Proceedings Acad. Nat. Sci., Philadelphia, 1858, p. 237, 1859. *Pagurus pubescens* Kroyer, Naturh. Tidsskrift, Bind ii, p. 251, 1838.

This species has been taken in deep water off the coast of New Jersey, and will, doubtless, be found off Long Island and Vineyard Sounds. It extends northward to Greenland and Northern Europe.

EUPAGURUS LONGICARPUS Stimpson. (p. 339.)

Proceedings Acad. Nat. Sci., Philadelphia, 1858, p. 237, 1859. *Pagurus longicarpus* Say, loc. cit., p. 163, 1817; Gould, op. cit., p. 330; DeKay, op. cit., p. 20, Pl. 8, fig. 22.

Massachusetts Bay to South Carolina.

MACROURA.

GEBIA AFFINIS Say. Plate II, fig. 7. (pp. 367, 530.)

Loc. cit., p. 195, 1817.

Long Island Sound to South Carolina.

CALLIANASSA STIMPSONI Smith, sp. nov. Plate II, fig. 8. (p. 369.)

Carapax smooth and shining. Greater cheliped (fig. 8) about three times as long as the carapax; carpus and hand convex on both sides; carpus sometimes considerably longer, sometimes not at all longer than broad; both fingers of the same length, and about as long as the basal portion of the dactylus; the prehensile edge of the dactylus without a strong tooth or tubercle at base. Smaller cheliped about half as long as the greater; carpus and hand about equal in length; fingers equal, slender, as long as the basal portion of the propodus. Abdomen smooth and shining above, gradually increasing in breadth to the fifth segment; second segment longest, much longer than broad; third and fifth equal in length; fourth shorter, and sixth a little longer than third or fifth; telson much broader than long, shorter than the fourth segment.

Length of a large specimen, 61^{mm}; length of carapax, 15; length of larger cheliped, 44.

In the character of the chelipeds this species seems to be closely allied to *C. longimana* Stimpson, from Puget Sound.

Our species ranges from the coast of the Southern States north to Long Island Sound.

HOMARUS AMERICANUS Edwards. (pp. 395, 492, 522.)

Hist. nat. des. Crust., tome ii, p. 334, 1837. *Astacus marinus* Say, loc. cit., p. 165, 1817, (not of Fabricius.)

New Jersey to Labrador.

CRANGON VULGARIS Fabricius. Plate III, fig. 10. (pp. 339, 529.)

Supplementum Entomologiæ system., p. 410, 1798. *Crangon septemspinosus* Say, loc. cit., p. 246, 1818.

North Carolina to Labrador and Europe. In depth it extends from low water to 60 or 70 fathoms, and probably much deeper.

HIPPOLYTE PUSIOLA Kroyer. (p. 395.)

Monografisk Fremstlling Hippol., p. 319, Pl. 3, figs. 69–73, 1842.

Vineyard Sound and northward to Greenland and Europe.

VIRBIUS ZOSTERICOLA Smith, sp. nov. Plate III, fig. 11. (p. 369.)

Female: Short and stout. Rostrum about as long as the carapax, and reaching nearly, or quite, to the tip of the antennal scale; the upper edge nearly straight and unarmed, except by two, or rarely three, teeth at the base; under edge with three (sometimes two or four) teeth on the anterior half. Carapax smooth and armed with a stout (supra-orbital) spine on each side at the base of the rostrum and above and a little behind the base of the ocular peduncle, a small (antennal) spine on the anterior margin beneath the ocular peduncle, and a stout (hepatic) spine behind the base of the antennæ. Inner flagellum of the antennula extending very slightly beyond the tip of the antennal scale; outer flagellum considerably shorter. Abdomen geniculated at the third segment; the posterior margin of the third segment prominent above, but not acute.

The males differ from the females in being smaller, much more slender, and in having the rostrum narrower vertically.

The color in life is very variable. Most frequently the entire animal is bright green, sometimes pale, or even translucent, tinged with green. Others were translucent, specked with reddish brown, and with a broad median band of dark brown extending the whole length of the body.

Length of female, 20–26^{mm}; male 15–20.

It is at once distinguished from *V. pleuracanthus* Stimpson, to which, in many characters, it is closely allied, by its very much longer rostrum.

Among eel-grass about Vineyard Sound, and probably common at other points on the coast.

Virbius pleuracanthus Stimpson, (Annals Lyceum Nat. Hist., New York, vol. x, p. 127, 1871,) abundant upon the coast of New Jersey, will very likely be found farther north. In habit it is similar to the species just described.

PANDALUS ANNULICORNIS Leach. Plate II, fig. 6. (p. 493.)

Malacostraca Podophthalmata Britanniæ, Pl. 40, 1815.

Deep water in Vineyard Sound, off Newport, &c.

North of Cape Cod it is common, and extends to Greenland and Europe. In depth it extends down to 430 fathoms at least.

PALÆMONETES VULGARIS Stimpson. Plate II, fig. 9. (pp. 479, 529.)

Annals Lyceum Nat. Hist., New York, vol. x, p. 129, 1871. *Palæmon vulgaris* Say, Journal Acad. Nat. Sci., Philadelphia, vol. i, p. 224, 1818.

Massachusetts to South Carolina.

PENÆUS BRASILIENSIS Latreille.

Edwards, Hist. nat. des Crust., tome ii, p. 414; Gibbes, loc. cit., p. 198; Stimpson, Annals Lyceum Nat. Hist., New York, vol. x, p. 132.

According to Stimpson, this species has been found in the Croton River at Sing Sing, New York, by Professor Baird. It will therefore be very likely to occur in the rivers of Southern New England. It is common on the coast of the Southern States, and extends to Brazil.

SQUILLOIDEA.

SQUILLA EMPUSA Say. (pp. 369, 536.)

Loc. cit., p. 250, 1818; Dekay, op. cit., p. 32, Pl. 13, fig. 54; Gibbes, Proceedings Amer. Assoc., 3d meeting, p. 199.

Florida to Cape Cod.

The young of this species is figured on Plate VIII, fig. 36.

MYSIDEA.

MYSIS STENOLEPIS Smith, sp. nov. Plate III, fig. 12. (p. 370.)

Male: Anterior margin of the carapax produced into a very short, broad, and obtusely rounded rostrum, and each side at the inferior angle into a prominent, acutely triangular tooth, between which and the base of the ocular peduncle there is a broad and deeply rounded sinus. Peduncle of the antennula about a third as long as the carapax along the dorsal line; the sexual appendage slender, tapering, nearly as long as the peduncle; inner flagellum half as long as the outer. Antennal scale rather longer than the carapax along the dorsal line, narrow, about ten times as long as broad, tapering to a slender and acute point, both edges ciliated and nearly straight; flagellum about as long as the rest of the animal. Abdomen somewhat geniculated between the first and second segments; sixth segment about twice as long as the fifth. Appendages of the fourth segment reaching nearly to the distal extremity of the sixth segment; inner ramus slender, slightly longer than the base; outer ramus naked, composed of six segments; the first, third, and fourth subequal in length, and together equaling about three-fourths of the entire length; the second, fifth, and sixth subequal; penultimate segment armed with a stout spine on the outside at the distal extremity, and the last segment terminated by a similar spine. Inner lamella of the appendages of the sixth segment extending slightly beyond the telson, narrow and tapering to an obtuse tip; outer lamella narrow, linear, about seven times as long as broad, nearly a third longer than the inner, both edges ciliated and nearly straight, and the tip narrow and somewhat truncated. Telson considerably longer than the sixth segment, tapering slightly, the sides nearly straight, and each armed with about twenty-four spines; the extremity cleft by a deep sinus rounded at bottom, and its margins convex posteriorly and armed with very numerous slender spines.

Length of a male from tip of rostrum to extremity of telson, 23.2^{mm}; length of carapax along the dorsal line, 6.5; length of antennal scale, 6.7; length of telson, 3.8. Length of female, 30^{mm}.

The females differ but little from the males except in the usual sexual characters. The figure, (Plate III, fig. 12,) made from a small female specimen, does not properly represent the anterior margin of the carapax.

In life the young females are semi-translucent, a spot on each ocular peduncle, the peduncles and inner flagella of the antennulæ, the antennal scale, the telson and caudal lamellæ more or less blackish from deposits of black pigment, while each segment of the abdomen is marked with a rudely stellate spot of black.

Large males of this species were found in the autumn among eel-grass, at New Haven, Connecticut, and the young abundantly in the same situation in May. Young females were collected in abundance during June and July, among the eel-grass in the shallow bays and coves about Vineyard Sound, while adult females, with the marsupial pouches filled with young, were collected, at Wood's Hole, in abundance, April 1, by Mr. V. N. Edwards.

MYSIS AMERICANA. Smith, sp. nov. (p. 396.)

Anterior margin distinctly rostrated, but only slightly projecting; evenly rounded, the inferior angle projecting into a sharp tooth. Antennulæ, in the male, with the densely ciliated sexual appendage similar to that in *M. vulgaris* of Europe; the outer flagellum nearly as long as the body, the inner slightly shorter. Antennal scale about three-fourths as long as the carapax, about nine times as long as broad, tapering regularly from the base to a very long and acute tip; both margins ciliated. Appendages of the fourth segment of the abdomen in the male similar to those in *M. vulgaris*. The outer ramus is slender and naked, and its pair of terminal stylets are equal in length, slender, curved toward the tip, and the distal half armed with numerous short setæ; the ultimate segment of the ramus itself is little more than half as long as the stylets, the penultimate segment four or five times as long as the terminal. Inner lamella of the appendages of the sixth segment about as long as the telson, narrow, slightly broadened at the base, and tapering to a slender but obtuse point; outer lamella once and a half as long as the inner, and eight times as long as broad, slightly tapering, the extremity subtruncate. Telson triangular, broadened at base, the lateral margins slightly convex posteriorly, and armed with stout spines alternating with intervals of several smaller ones; the tip very narrow, truncate, armed with a stout spine each side, and two small ones filling the space between their bases. Length 10 to 12^{mm}.

This species was found, in April, at Beesley's Point, New Jersey, in pools, upon salt-marshes, and at the same locality the stomachs of the spotted flounder were found filled with them. Professor D. C. Eaton found it in great abundance among sea-weeds, &c., just below low-water mark, at New Haven, Connecticut, May 5, 1873. It was also taken in the dredge, in 4 to 6 fathoms, at New Haven, Connecticut, and in 25

fathoms off Vineyard Sound, and has been found in the stomachs of the shad, mackerel, &c.

HETEROMYSIS FORMOSA Smith, gen. et sp. nov. (p. 396.)

Body rather short and stout. Carapax broad behind and tapering anteriorly; the anterior margin produced into an obtusely triangular rostrum. Ocular peduncles short and thickened nearly to the base. Peduncle of the antennula stout, extending to the tip of the antennal scale; the terminal segment in the male wanting the usual elongated sexual process, but having in its place a very dense tuft of long hairs; inner flagellum nearly as long as the carapax; outer flagellum stout at base and more than twice as long as the inner. Antennal scale about three and a half times as long as broad, not quite reaching to the extremity of the peduncle of the antennula, ovate, obtuse at the tip, external margin without a spine and ciliated like the inner; peduncle elongated, penultimate segment considerably longer than the ultimate; flagellum nearly as long as the entire body. Mandibles, maxillæ, first and second maxillipeds, as in *Mysis*. The first pair of legs (second pair of gnathopoda) differ remarkably from those in all the described genera of Mysidæ. The whole leg is stouter than in the succeeding pairs, and the terminal portion, corresponding to the multiarticulate portion of the inner branch (endopodus) in *Mysis*, &c., consists of only three segments including the terminal claw; the first of these segments is stout, slightly shorter than the preceding (meral) segment, and armed with stout spines along the distal portion of the inner margin; the second segment is very short, not longer than broad, and closely articulated to the preceding segment so as to admit of very little motion; the ultimate article is a long, slightly curved claw, freely articulated to the preceding segment. In the five posterior pairs of legs the terminal portion of the inner branch is multiarticulate as in *Mysis*, in the first composed of five segments, besides a stout terminal claw like that in the preceding pair, and in the four remaining pairs of six segments and a slender terminal claw. The exopodal branches of all the legs are well developed.

Abdomen a little more than twice as long as the carapax, the sixth segment a little longer than the fifth. The appendages of the first five segments alike in both sexes; short, rudimentary, and like the same appendages in the female *Mysis*. Inner lamella of the sixth segment projecting very slightly beyond the extremity of the telson, broad, ovate; outer lamella only a little longer than the inner, about two-sevenths as long as broad, inner margin quite convex, outer very slightly, tip rounded. Telson short, broad at base, and narrowed rapidly toward the extremity, the width at base about two-thirds the length, at the extremity only a third as wide as at base; the lateral margins each armed with twelve to fourteen spines, which increase in size distally, and a very long terminal spine; the posterior margins cleft by a sinus deeper than broad, and armed with numerous small spines.

In life the males are semitranslucent and nearly colorless, while in the females the antennulæ, the flagella of the antennæ, the ocular peduncles, the thorax with the marsupial pouch, and the articulations of the caudal appendages are beautiful rose color.

Length of a male, 6.0^{mm}; carapax along the dorsal line, 1.8; antennal scale, 0.70; telson, 0.90. Length of a female, 8.5^{mm}; carapax, 2.5; antennal scale, 0.88; telson, 1.16.

The absence of the sexual appendages from the antennulæ of the male, the peculiar structure of the anterior legs, and the similarity of the abdominal appendages in the two sexes, at once separate the genus *Heteromysis* from all known allied genera.

THYSANOPODA, species. (452.)

A great number of small specimens were taken from the stomach of mackerel caught twenty miles off No Man's Land, July 18, 1871.

Several were also caught swimming at the surface in Vineyard Sound, April 30, 1873, by V. N. Edwards.

A single specimen of a species apparently the same as this was taken at New Haven, Connecticut, May 5, 1873, by Professor D. C. Eaton.

CUMACEA.

DIASTYLIS QUADRISPINOSA, G. O. Sars. Plate III, fig. 13. (p. 507.)

Öfversight af Kongl. Vet.-Akad. Förh., 1871, Stockholm, p. 72.

Dredged in 23 fathoms of Martha's Vineyard and in 29 fathoms of Buzzard's Bay. It is also found in the Bay of Fundy. Sars's specimens were dredged by the Josephine expedition in 18 fathoms off Skinnecock Bay, Long Island, and in 30 to 35 fathoms, latitude 39° 54′ north, longitude 73° 15′ west, off the coast of New Jersey.

Our specimens agree well with Sars's description, except that the second segment of the inner ramus of the lateral caudal appendages has but three, or rarely four, spines upon the inner margin, while in Sars's specimens there were five.

DIASTYLIS SCULPTA Sars.

Loc. cit., p. 71.

With the last species, in 18 fathoms, off Skinnecock Bay, according to Sars.

DIASTYLIS ABBREVIATA Sars.

Loc. cit., p. 74.

Rare in 30 to 35 fathoms, off the coast of New Jersey, with the first species, (Sars.)

EUDORELLA PUSILLA Sars.

Loc. cit., p. 79.

Not infrequent in 18 fathoms, off Skinnecock Bay, (Sars.)