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1843.

ZOOLOGY

OF

NEW-YORK,

OR THE

NEW-YORK FAUNA;

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

BY JAMES E. DE KAY.

PART VI. CRUSTACEA.

ALBANY:
PRINTED BY CARROLL AND COOK, PRINTERS TO THE ASSEMBLY.
.....
1841.

TO

WILLIAM C. BOUCK,

GOVERNOR OF THE STATE OF NEW-YORK.

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

And have the honor to be,

With great respect,

Your obedient servant,

JAMES E. DE KAY.

LIST

OF

WORKS RELATIVE TO THE CRUSTACEA, REFERRED TO IN THE FOLLOWING PAGES.

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SYNOPSIS

OF THE

GENERA OF NORTH AMERICAN CRUSTACEA HITHERTO OBSERVED.

I. DECAPODA.

Libinia, Leptopodia, Hyas, Mithrax, Xantho, Panopeus, Platycarcinus, Pilumnus, Carcinus, Platyonichus, Lupa, Pinnotheres, Ocypoda, Gelasimus, Sesarma, Nautilograpsus, Plagusia, Ilia, Hepatus, Lithodes, Hippa, Pagurus, Porcellana, Monolepis, Callianassa, Astacus, Homarus, Crangon, Alpheus, Hippolyte, Pandalus, Palemon, Peneus, Mulcion.

II. STOMAPODA.

Mysis, Diastylis, Squilla, Gonodactylus.

III. AMPHIPODA.

Orchestia, Talitrus, Gammarus, Amphithoe, Cerapus, Lepidactylis, Unciola, Hyperia, Podocerus.

IV. LŒMIPODA.

Cyamus, Caprella.

V. ISOPODA.

Idotea, Stenosoma, Anthura, Sphæroma, Næsa, Cymothoa, Limnoria, Asellus, Ligia, Philoscia, Oniscus, Porcellio, Armadillo, Fluvicola.

VI. PŒCILOPODA.

Polyphemus, Argulus, Caligus, Anthosoma, Pandarus, Cecrops, Lernea, Penella.

VII. PHYLLOPODA.

Apus.

VIII. LOPHYROPA.

Cyclops, Scopiphora.

IX. BRANCHIOPODA.

Branchipus.

X. OSTRAPODA.

Cypris, Cytherina, Daphnia.

THE NEW-YORK FAUNA.

CLASS VII. CRUSTACEA.

OVIPAROUS ARTICULATED ANIMALS, WITH THE BODY DIVIDED INTO MOVABLE RINGS MORE OR LESS DISTINCT; OUTER COVERING CALCAREOUS OR MEMBRANOUS, MORE OR LESS SOLID. MOST COMMONLY A HEART AND BLOODVESSELS, WITHOUT ANY INTERNAL SKELETON PROPERLY SO NAMED. A DOUBLE SERIES OF MEMBERS, SUCH AS ANTENNÆ, JAWS, FEET, etc. ALMOST ALWAYS DISTINCTLY ARTICULATED. EYES VARIABLE IN NUMBER, EITHER SESSILE OR SUPPORTED ON LONG PEDICELS. SEXES DISTINCT. FEET GENERALLY FROM FIVE TO SEVEN. RESPIRATION GENERALLY AQUATIC BY THE GILLS, OR REPLACED BY THE SKIN. INHABIT LAND, OR FRESH AND SALT WATER.

ORDER I. DECAPODA.

Branchiæ lamellar, of a pyramidal form, beneath the body and attached to the sides of the thorax, enclosed in special respiratory cavities. Eyes two, pedunculated and movable. Almost always five pair of ambulatory or prehensile thoracic feet.

Obs. This order is usually divided into two groups, namely, the *Brachyura* and *Macroura*, of which the common Crab and the Lobster stand as the respective types. Recent writers have introduced a third group *Anomoura*, which is intermediate between the two, and forms a passage from one to the other.

GENUS LIBINIA. *Leach. Edwards.*

Shield vaulted, orbicular or pyriform; rostrum notched at its extremity. Eyes scarcely thicker than their peduncles. Exterior antennæ as long as the rostrum; first joint longer than the second. Anterior feet thicker than the others; the pincers closing completely.

Libinia canaliculata.

PLATE IV. FIGURE.

(STATE COLLECTION.)

Libinia emarginata? Leach, Zoological Miscellany, Vol. 2, p. 130, pl. 108.
L. canaliculata. Say, Jour. Acad. Nat. Sc. Vol. 1, p. 77, pl. 4, fig. 1.
L. emarginata. Desmarest, Consid. générales, p. 162.
L. cannelée, L. caniculata. Edwards, Hist. Nat. des Crust. Vol. 1, p. 300.
L. douteuse, L. dubia. Id. Ib. pl. 14, fig. 2.
L. emarginata. Gould, Invertebrata of Mass. p. 328.

Description. Shield globular-pyriform, densely hairy, and usually coated with a thick greenish brown sordes. Rostrum produced, deeply notched at the tip, convex above, concave beneath. Orbits rounded, with a stout spine on the antero-superior border and a smaller one beneath, with an intermediate fissure above and beneath. The shield is impressed above by two deep parallel curvilinear furrows, approaching each other about the middle, then diverging, forming an intermediate oval area, and ultimately approaching each other on the posterior portion of the shield; in front, these furrows curve behind the orbital processes, and terminate at the base of the rostrum. A transverse series of four to six small spinous tubercles across the anterior part of the shield; several others irregularly distributed over the upper surface. Feet long, covered with short dense hair, the second and third pair rather longest, the others successively shorter. Hands sub-cylindrical, sub-compressed, linear. Fingers half as long as the hand, with from twelve to fifteen irregular obtuse teeth, and an impressed lateral line becoming effaced towards the tips. Nails acute, polished, with an impressed line on each side.

Color, soiled greenish or brownish. Hands and fingers reddish white at the tips.

Length of shield, 3·0. Transverse diameter, 2·4.

Length of anterior pair of feet, 5·1; of the succeeding pair, 5·5.

These dimensions are taken from a specimen of the average adult size. Younger individuals 1·4 in length are more pyrifom in shape, are entirely covered with a dense downy hair, and the spine not so prominent as in the adult. In this state I suppose it to be the *L. dubia* of Edwards, which he characterises by "the second pair of feet one and a fourth of the length of the shield, but much longer than the first pair;" while to the *L. canaliculata* he assigns the character of "the second pair one and a half the length of the shield, and slightly longer than the first pair of the male." The *emarginata* of Leach, referred to above, is probably identical with the *canaliculata;* and the name, on the score of priority, should have been retained, had the description been sufficiently detailed.

The *Sea-spider*, or *Spider Crab*, is very common on the coast of this State, and it has been observed from the Chesapeake northwardly, but its precise geographical limits are not known. It is not used as food, but I am assured that it is well flavored, particularly the female. Occasionally they are taken with the seine in such quantities as to be used as manure. Their usual places of resort are on oyster beds, where they are thought to commit great ravages by destroying the young spawn of the oyster.

(*EXTRA-LIMITAL.*)

Genus LEPTOPODIA, *Leach.* Exterior antennæ short. Rostrum slender and much elongated, not emarginate. The second pair of feet much longer than all the others; pincers slender, linear. Eyes not retractile, and on a short peduncle.

L. calcarata. (SAY, Jour. Acad. Nat. Sc. Vol. 1, p. 455. EDWARDS, l. c. Vol. 1, p. 276.) Third joint of the last four pair three-spined at their tips; the middle spine obtuse, and half as long as the next joint. Ocular peduncles slightly projecting before the eyes in an obtuse spine. Length, 1·0; transverse diameter, 0·25. *Charleston, S. C.*

GENUS HYAS. *Leach.*

Shield very tubercular, subtriangular, rounded behind, with the rostrum advanced and emarginate. First joint of the exterior antennæ larger than the second, and compressed and dilated externally. Pincers larger but shorter than the other feet. Eyes on short peduncles; orbits with a fissure above and behind. Feet all terminated with a long conic and somewhat arched nail.

HYAS COARCTATA.

PLATE VII. FIG. 14.

Hyas coarctata.	LEACH, Malacostr. Podopth. Brit. pl. 21, B.
H. id.	DESMAREST, Consid. générales, p. 148.
Lissa fissirostra.	SAY, Jour. Acad. Nat. Sciences, Vol. 1, p. 79.
H. coarctata.	MILNE-EDWARDS, Hist. Nat. des Crust. Vol. 1, p. 312.
H. id.	GOULD, Invertebrata of Mass. p. 326.

Description. Shield wide in front, tapering from behind to the orbits, verrucose, and covered with short hooked hairs. External angles of the orbits with a large triangular spine. Rostrum depressed, broad at the base, and deeply cleft. Hands equal, linear, not much larger than the feet, but shorter. The shield strongly coarctate on the sides behind the external orbital angles.

Color, greenish brown; but on the removal of the incrustation, brownish tinged with reddish.

Length, 2·0. Greatest transverse diameter, 1·5.

This Crab, which was first described by Leach, occurs along the coast of Long island, and is found in deep water along the northern coast, where it affords an abundant supply of food to the Cod-fish. It is probably a boreal species, not extending south of the seacoast of New-York.

GENUS MITHRAX. *Leach.*

Shield moderately convex above, longer than broad, and more or less narrowed behind, usually armed with spines. Rostrum short, bifid, and separated by an interval from the internal canthus. Orbits usually armed with spines above and beneath. External antennæ not concealed by the rostrum. Pincers enlarged towards the end, rounded and spoon-shaped.

Obs. We have no type of this numerous genus on our coast, except the following, which is cited by Mr. Say from Delaware bay, and which we think will be found on the coast of this State.

Mithrax hispidus.

Cancer hispidus. Herbst, pl. 18, fig. 100.
Maia spinicincta. Lamarck, An. sans vert. Vol. 2, p. 415, Ed. Brux.
Mithrax spinicinctus. Desm. Consid. sur les Crust. p. 150, pl. 23, fig. 1.
Maia id. Say, Journ. Acad. Nat. Sc. Vol. 1, p. 458.
Mithrax hispidus. Edwards, Hist. Nat. des Crust. Vol. 1, p. 322.

Description. Shield short, convex, with its surface and margin spinous. Rostrum not extending beyond the basal joint of the external antennæ, which are furnished with but two spines; the third joint of these antennæ considerably longer than the second. Upper border of the hands smooth. Pincers with about twenty indentations on the margin, but with no tuft of hairs in the cavity. A series of small points under the tarsus of the four posterior pairs of feet.

This species, of which a specimen exists in the Cabinet of the Academy of Natural Sciences at Philadelphia, from Delaware bay, extends through the Caribbean sea to the coast of Brazil. Its northernmost geographical range is not yet ascertained.

(*EXTRA-LIMITAL.*)

Genus Xantho, *Leach.* Exterior antennæ very short, inserted at the internal canthus of the eyes. Hands trenchant or rounded. A hiatus below the external orbital angle. Shield wider than long, arcuated in front, truncated behind.

X. mercenaria. (*L. id.* Say, Jour. Acad. Nat. Sc. Vol. 1, p. 448. Edwards, l. c. p. 399.) The anterior lateral borders of the shield with four obtuse teeth; front with a slightly sinuous fissure. Feet hairy. *Color*, maculated; fingers black at tip. Length, 3·25; diameter, 4·5. *Charleston, S. C.*

GENUS PANOPEUS. *Milne-Edwards.*

Many of the characters of the preceding genus. The anterior lateral borders of the shield short. A hiatus on the lower border of the orbits, below the external angle.

Panopeus herbsti.

PLATE IX. FIG. 26.

Cancer panope. Herbst, Versuch einer, etc. pl. 54, fig. 5.
C. id. Say, Jour. Acad. Nat. Sciences, Vol. 1, p. 58, pl. 4, fig. 3.
Panopeus herbsti. Milne-Edwards, Hist. Nat. des Crust. Vol. 1, p. 403.

Description. Shield transversely oval, granulated on the sides; its surface irregularly furrowed, with a subquadrate elevation in the centre, and another posterior to it. Three or four serrate and apparently truncate teeth on the antero-lateral margins: a small tooth at the external angle of the orbit, above the notch or hiatus. Anterior feet with minute granulations which disappear with age, large, ventricose, subcompressed, unequal: a small pointed tubercle on the inner border of the carpus or wrist. Second segment of the abdomen of the male as long as the two adjacent ones. Feet small and smooth.

Color, blackish brown. Hands yellowish, separated by a defined line from the black finger and thumb.

Length, 0·8. Transverse diameter, 1·1.

This species is commonly known on our shores by the names of *Mud Crab* and *Oyster Crab*. It is frequently taken while dredging for oysters, and is almost invariably found on oyster beds. It is also supposed to be injurious to the Oyster, by feeding on the young spawn. It has not yet been observed, as far as I am aware, north of Cape Cod. On the coast of New-York, New-Jersey and Virginia, it is very common.

Panopeus limosus.

Cancer limosus. Say, Journ. Acad. Nat. Sciences, Vol. 1, p. 446.
Panopeus id. Milne-Edwards, Hist. Nat. Crust. Vol. 1, p. 404.

Description. Rather smaller than the preceding, which it greatly resembles. Shield granulated; the antero-lateral margin with three serrate teeth, granulated on their edges, and a fourth anterior and scarcely distinct from the canthus of the orbits. A conic tooth below the anterior tooth of the edge of the shield. Anterior feet equal; carpus with a prominent obtuse spine on the internal surface, but with no angle beneath. Second segment of the abdomen in the male much shorter than the two adjacent ones.

Color, blackish brown; feet olive-green; fingers yellowish white.

Length, 1·0. Transverse diameter, 1·5.

This species is also known as the *Mud Crab*, and appears to have the same geographic range with the preceding.

GENUS PLATYCARCINUS. *Latreille.*

Shield wider than long, rounded in front, truncate behind. First joint of the exterior antennæ small; the second received like the first into a furrow, and scarcely reaching the front.

Platycarcinus irroratus.

PLATE II. FIG. 2.

Cancer irroratus. Say, Jour. Acad. Nat. Sciences, Vol. 1, p. 59.
C. id. Bell, Trans. Zool. Soc. Lond. Vol. 1, p. 340, pl. 46.
Platycarcinus id. Milne-Edwards, Hist. Nat. des Crust. Vol. 1, p. 414.
Cancer irroratus. Gould, Invertebrata of Mass. p. 322.

Description. Shield convex, transversely oval, with elevated granulations, and with nine crenate teeth on the antero-lateral margin. (In the female, these are rather indistinct; and the rostrum, if we take the internal canthi into account, is apparently five-toothed.) The lateral teeth often assume the appearance of blunt lobes, which are denticulated on the edges. Rostrum or front three-toothed; the middle one longest, but occasionally obscure. The surface of the shield with distinct granulations, and impressed with irregular furrows, some of which form an appearance resembling the letter H on the posterior portion. Legs shorter than in the following species; "the thighs of the second and third pair not attaining the margin" (*Gould*). Carpus with a robust spine on its inner anterior angle, which is hairy on its edges. Hands compressed, carinate above with serratures; four granulated lines, on the outer side of which two are continued on the fingers; occasionally two others, one above and the other below. Thumb and finger with eight to ten teeth; the finger much curved; the thumb somewhat shortest. Thighs compressed to an acute edge above, where they are hairy, with an elevated band round their tips. Extremities of the claws acute, with deeply impressed furrows. Abdomen, particularly in the female, very hairy.

Color. Above dark horn, with numerous red points which give the prevailing hue. This color extends over the superior part of all the feet; the upper internal parts of the thighs, and the carpus, deep red. Tips of the thumb and finger deep purplish black. Abdomen and inferior portions of the feet white. Furrows on the back dull yellowish.

Length, 3·0. Transverse diameter, 4·0.

This and the succeeding species are both designated by our fishermen as the *Spotted Crab* and *Sand Crab*, and are frequently seen in the months of July and August on the sandy shores of Long island in shallow waters. I have noticed them most abundantly in the markets of New-York about the beginning of April. They are considered inferior as an article of food to the *Lupa dicantha*, or common New-York Crab hereafter described. In individuals from Rhode-Island, larger than the specimen described above, the shell is of a bright indian red, with the finger and thumb deep jet black. They form an excellent bait for the large Black-fish (*Tautoga americana*). Dr. Gould, in the Report above referred to, has

separated from this a closely allied species, which he thinks has been confounded by Say himself with the preceding, supposing one to be the male and the other the female. It appears to have a wide geographical range, for Mr. Randall (*Jour. Acad. Nat. Sc.* Vol. 8) has noticed it on the northwest coast of North America.

Platycarcinus sayi.

Cancer irroratus. Say, Jour. Acad. Nat. Sc. partly, Vol. 1, p. 60, pl. 4, fig. 2.
C. sayi. Gould, Invertebrata of Massachusetts, p. 322.

Description. Shield smooth, less convex and more angular at the sides than in the preceding. The teeth on the antero-lateral margins nine, pointed, smooth, not denticulated. Legs longer in proportion than the preceding; the thighs of the second and third pair greatly exceeding the margin of the shield. Lines on the external part of the hand not conspicuously granulated. Abdominal segment of the male broader than in the preceding species.

Color, yellow, dotted with dark purplish brown. Finger and thumb scarcely dark colored; bend of the wrist and inner face of the hand bright rose-red.

Length, 2·75. Transverse diameter, 4·0.

This species was first separated from the preceding by Drs. Gould and Binney, and has been observed on this coast. According to Dr. Gould, it is common on rocky bottoms, and is brought in considerable numbers to market.

GENUS PILUMNUS. *Leach.*

Shield arched in front. Feet of the first pair unequal. The second joint of the external antennæ lodging in the internal canthus of the orbit, and the antennæ extending beyond the margin of the shield. In other respects, resembling Xanthus.

Pilumnus harrisi.

PLATE VII. FIG. 15.

Pilumnus harrisi. Gould, Invertebrata of Mass. p. 326.

Description. Shield quadrilateral, narrowed backwards, rounded before, rectilinear behind and at the sides. Three triangular teeth at the sides; eyes distant; orbits oval, with a fissure over the centre; front divided by a fissure into two lobes. Surface very minutely granulated, and hispid with very short hairs, which entangle the dirt: there are three or four broken series of curved transverse lines or ridges rising into little crests. Limbs slender, cylindrical. Carpus with a projecting angle in front. Hands robust, smooth, and with a double line along

the upper edge: finger deflexed and furrowed; thumb also furrowed and deflexed. Hands generally unequal; the smaller one sometimes with elevated lines on its outer face.

Color. Hands white within and without.

Length, 0·4. Transverse diameter, 0·5.

I have specimens of this species from the coast of Connecticut, but somewhat larger than the one above described. I have little doubt but that it will be found on our coast. In consequence of having mislaid my notes, I have cited in detail the description given by Dr. Gould, who states it to occur on the Cambridge marshes near Boston, and not unfrequently clinging to floating seaweed in Charles river.

(*EXTRA-LIMITAL.*)

P. aculeatus. (*Cancer id.* Say, Jour. Acad. Nat. Sc. Vol. 1, p. 449. Guerin, Icon. de Cuv. Crust. pl. 3, fig. 92. Laporte, Vol. 2, p. 78. Milne-Edwards, Vol. 1, p. 420.) Hirsute. Shield with about six blackish spines on each side, of which four are on the antero-lateral margin. Front emarginate, and four or six-spined. Orbits three-spined. Arms and feet above with numerous fissures. Shield varied with pale ferruginous. Length, 0·9; transverse diameter, 1·1. *Coast of Georgia and Florida.*

GENUS CARCINUS. *Leach.*

Shield nearly quadrilateral; front advanced. Five teeth on the latero-anterior margin. Ocular peduncles short. Tarsi of the posterior pair narrow, flattened, lanceolate.

Carcinus mœnas.

PLATE V. FIGS. 5 & 6.

Cancer mœnas. Lin. p. 1043.
Carcinus id. Leach, Mal. Podopth. pl. 5.
Cancer granulatus. Say, Jour. Acad. Nat. Sciences, Vol. 1, p. 61.
Carcinus mœnas. Milne-Edwards, Crustac. Vol. 1, p. 434, pl. 17, fig. 15, 16. Gould, Invertebrata of Mass. p. 321.

Description. Body and feet granulate; the surface of the shield with a few scattering hairs in front, irregularly impressed as exhibited in the figure, and margined laterally and posteriorly by moniliform lines. Front with three obtuse teeth; the central one slightly advanced. A rounded blunt process under the internal canthus beneath. Sides beneath with long yellowish silky hairs. Carpus with a white acute spine on the inner tip. Posterior pair of feet shortest; all the joints flattened, ciliate on the edges: terminal joint of the last pair falcate-lanceolate, with marginal hairs, and with two deeply impressed lines on the upper and under surfaces.

Color, deep bottle-green behind, where it is spotted with brown; sea-green in front. Beneath, in young individuals, light sea-green; in the adult, tinged with indian red. Body and feet with distant minute spots, arranged on the feet in more or less distinct series.

Length, 1·0 – 1·5. Transverse diameter, 1·3 – 1·8.

This Crab is so insignificant in its economical uses, that it has received no popular name. It occurs abundantly along the rocky shores of Long island sound, among seaweed. At Newport, it is of a larger size, and it appears to become larger northwardly. The *C. granulatus* of Say is passed over in silence in the latest and best treatise on these animals by Edwards, but we have no doubt that it is identical with the *C. mœnas* or common edible crab of Europe.

GENUS PLATYONICHUS. *Latreille.*

Shield nearly orbicular. Front narrow and toothed. The external antennæ of three joints, the first of which is not firmly united to the front, but movable. Second pair of tarsi somewhat flattened, lanceolate; the others acute; the posterior pair oval, and adapted for swimming.

Platyonichus ocellatus.

PLATE I. FIG. 1; AND PLATE V. FIG. 7.

Cancer ocellatus. Herbst, Versuch u. s. w. pl. 49, fig. 4.
Platyonichus id. Latreille, Encyclopédie, Vol. 16, p. 152.
Portunus pictus. Say, Jour. Acad. Nat. Sciences, Vol. 1, p. 62, pl. 4, fig. 4.
Platyonichus ocellatus. Milne-Edwards, Hist. Nat. des Crustacés, Vol. 1, p. 437.
P. id. Gould, Invertebrata of Massachusetts, p. 324.

Description. Shield and anterior pair of feet minutely granulate. Front and antero-lateral border with stout spines; five on each side of the shield, including the orbital spines, and one on the front beside the two formed by the inner angle of the orbits. A narrow fissure in the orbits above, and a long oblique spine beneath and internally. Third joint of the external pedipalpi deeply emarginate on its inner side, and elongate and rounded at the tip. Terminal joint of the abdomen very small, pentagonal. Second pair of feet not as long as the first, but longer than the others; the penultimate joint of the third and fourth with two impressed lines on the posterior, and one on the anterior surface. The tarsus of the second more compressed and broader than the first and third; the posterior tarsi oval. Hands large, subequal; the arm extending greatly beyond the margin of the shield, and three-spined on its inner edge. Carpus trigonal, with two spines, of which the internal is longest and most acute. Hand with the outer margin strongly carinate and tubercular; the inner ciliate, and with an acute spine at the inner tip. Thumb trigonal, depressed, with prominent edges, hooked at the tip with from ten to fifteen unequal tubercular prominences: finger straight, somewhat exceeding the thumb, and hooked at the tip. Series of long hairs on the shell, beneath the antero-lateral

margins, on the pedipalpi, anterior and posterior edges of the swimming feet, anterior edge of the carpus, and interior margin of the hand, finger and thumb.

Color. Shell light horn, with numerous reddish irregularly rounded spots having clear spaces in the centre. Hands and feet whitish tinged with reddish, and spotted with dull red. Hands silvery white beneath, bright red on the margins, and with large red spots. Tarsi bluish horn, tipped with reddish: finger and thumb with their tubercles dark red. Beneath, silvery white.

Length, 2·3. Transverse diameter, 2·8.

This beautiful species, of which the specimen described above is one of the largest size, is common along our sea-beaches. Although occasionally eaten, it is not much esteemed as an article of food. By the shore-dwellers, it is often designated as the *Lady Crab*, from the beauty of its colors.

GENUS LUPA. *Leach.*

Transverse diameter of the shield usually more than double its length. Each latero-anterior margin with nine prominent spines, of which the posterior is generally largest, and directed externally and laterally. The external antennæ inserted on the edge of the basillary joint, which moves in a wide cavity under the internal canthus. Abdomen of the male with its two last joints narrow; of the female, wide, with its last joint very small, triangular. Tarsi of the last pair oval, and adapted for swimming.

LUPA DICANTHA.

PLATE III. FIG. 3.

Portunus hastatus. FABRICIUS, Suppl. Entom. Syst. p. 367.
P. pelasgicus. BOSC, Hist. Nat. des Crustacés, Vol. 1, p 219, pl. 5, fig. 3.
P. dicanthus. LATREILLE, Hist. Nat. des Crust. etc. Vol. 10, p. 190.
Lupa hastata. SAY, Jour. Acad. Nat. Sciences, Vol. 1, p. 65.
Lupea dicantha. MILNE-EDWARDS, Hist. Nat. des Crust. Vol. 1, p. 451.
Lupa id. GOULD, Invertebrata of Mass. p. 324.

Description. Surface of the shield with distant granulations, becoming obsolete behind others arranged in four transverse series; two parallel with each other on the anterior part of the shell, and one on each side running to the tips of the long posterior spines. Front with three spines; two on the plane of the shield, and one beneath it. From the base of this last, arise the two internal antennæ, cleft at their tips. External antennæ long, filiform, reaching the fourth lateral spine. Anterior feet large, subequal, with three oblique spines on the anterior edge of the arm, another at the outer tip, and two others near it, obsolete. Hands swollen, sublinear, with five elevated granulated lines and a stout spine at the base, and three others which are often obsolete near the fingers. Fingers incurved, with 12 – 14 unequal tooth-like tubercles in each. Second and third pair of feet subequal; fourth shorter: all the joints of

the posterior or swimming pair ciliated. Outline of the abdominal segments of the male wide at base, but at the fourth joint suddenly narrowed and linear; of the unimpregnated female, pyramidal; of the old female, approaching to spherical.

Color. Back and upper surface of the hands dark green; beneath white. Feet blue, increasing in intensity to the tips. Spines on the shield, callosities and spines on the feet and the tips of the fingers, red.

Length, 2·5. Transverse diameter, 6·0.

This is the *Common Edible Crab* of the United States, being found from Florida to Cape Cod in Massachusetts, beyond which it is rarely seen. It abounds on the muddy shores of our bays, creeks and harbors, and furnishes a cheap and savory food. The process of sloughing or casting their shell occurs annually, and is of short duration, scarcely ever exceeding the period of forty-eight hours from the time of casting its old shell until the new one is firmly consolidated. During this interval, they are known under the name of *Soft-shell Crabs*, or *Shedders*, and are sought after with great avidity. They are considered a great luxury when fried, and are often sold at the rate of two dollars the dozen. In many places, this crab is caught in great abundance to feed hogs. This species frequently ascends streams to brackish water, and Mr. Say mentions having seen them in St. John's river in Florida, one hundred miles from the sea, where the water is potable. Mr. Godman, in his *Rambles of a Naturalist*, has given many curious and instructive details respecting this species, to which we refer the reader.

(*EXTRA-LIMITAL.*)

L. pelagica. Linn. (Say, l. c. Vol. 1, p. 97, 443. Pl. 6, fig. 8 of this work.) Small; front with four small spines; third joint of the anterior feet four-spined; carpus two-spined; hands ciliated on the upper anterior edge. *Color*, greenish varied with brown. Length, 0·8; diameter, 1·2. *Southern Coast.*

L. maculata. (Say, l. c. Vol. 1, p. 445.) Front with fours pines; third joint of the anterior fore feet three-spined before; hands with a strong spine at the base, and five elevated granulated lines, one of which terminates in a short spine at the base of the thumb; second abdominal segment with a spine on each side. *Color*, chocolate-brown, with crowded suborbicular white spots. Length, 2·5; transverse diameter, excluding the lateral spines, 4·0. *Coast of Georgia and Florida.*

GENUS PINNOTHERES. *Latreille.*

Form suborbicular, with the shield soft. Front broad, and covering entirely the internal antennæ. Contour of the mouth semilunar: internal antennæ transverse; external antennæ short, and placed at the internal angles of the orbits.

Obs. This genus, with four others, is included by the most recent writers in a group comprising nine or ten species. They are all small, and remarkable for their singular habit of living within certain marine bivalve shells, chiefly of *Ostrea*, *Mytilus*, *Mactra*, &c. It is also remarkable for the singular transformations it undergoes with age. According to the observations of Mr. Thompson (*Entomological Magazine*, No. 11), it appears that in the *P. pisum* of Europe, when young, the abdomen is much elongated, and ends in a fin; the shell has three large spines; the eyes are much enlarged; the feet dilated for swimming; in short, resembling very much the genus *Zoe*.

Pinnotheres ostreum.

PLATE VII. FIG. 16.

Pinnotheres ostreum.	Say, Jour. Acad. Nat. Sc. Vol. 1, p. 67, pl. 4, fig. 5 (female).
P. *depressum.*	Id. Ib. Vol. 1, p. 68 (male ?). Young ?
P. *ostreum.*	Gould, Invertebrata of Mass. p. 328.

Description. Female. Shell rounded, convex, its transverse slightly exceeding its longitudinal diameter, smooth, polished, slightly dilated behind; its texture exceedingly membranaceous. Front not exceeding the line of the shell above. Orbits rounded or subovate; eyes moderate. Hands equal, smooth, with a few short hairs towards the tips, abruptly dilated above the origin of the thumb (see figure). Fingers with a few obsolete tubercles, and slightly curved at the tips. All the articulations of the feet cylindrical; the last joints acute, with an impressed longitudinal line on each. Male or Young. Smaller; shell with a raised marginal line of short dense hair. Front prominent and advanced. Eyes large and prominent; the last abdominal joint smaller than the preceding, and rounded: penultimate joint of all the feet dilated for swimming. *Color*, in both, reddish brown above; whitish beneath, with a dull yellowish transverse band.

Length of female, 0·4; transverse diameter, 0·5.

Length of male or young, 0·1; transverse diameter, 0·13.

We think it extremely probable that the *P. depressum* of Say, is, as he himself suggests, the male, or as we suppose the young, of the *Common Oyster Crab*, as this species is commonly called. Mr. Say never saw but one individual, which he obtained on the coast of New-Jersey; and his notes are silent as to what shell it inhabited, or whether it was in any shell. Some recent writers have hesitated to admit *P. ostreum* as a distinct species. We have, however, made a direct comparison with the *P. pisum* of Europe, the species to which

it is supposed to be most closely allied. The shell of our species is more thin and membranaceous; the abdomen of the female is almost on a line with the front, has a greater transverse diameter, is reddish or yellowish, and the animal is larger. The *P. pisum*, on the contrary, is of a more solid structure, orbicular, very convex, abdomen of the female much shorter, and is of a uniform dull brown or stone-color; the terminal joints of the feet are long and incurved, whilst in the *Oyster Crab* they are short and nearly straight.

This species, or at least the female, is usually found in the common oyster; the male is more rare, and among thousands it is difficult to find one of that sex. They are eaten raw, and considered a great delicacy by epicures.

(*EXTRA-LIMITAL.*)

P. maculatum. (Say, op. cit. Vol. 1, p. 450.) Body covered with very short deciduous dense hair; clypeus obtusely angulated, indented above the tip; two whitish spots. *Color*, black above, beneath yellowish; female dull brownish immaculate. Male, 0·7; female, 0·4. Hab. *Pinna muricata. Southern Coast.*

P. byssomiæ. (Id. Ib. p. 451.) Female. Thorax somewhat transversely oval; clypeus hardly advanced, rounded, entire; hand not gibbous, near base of the thumb; tarsi unarmed. Male unarmed. Hab. (*Byssomia*) *Saxicava distorta* of the Southern coast.

P. cylindricum. (Id. Ib. p. 452.) Body transversely subcylindrical; anterior feet didactyle, equal; second and third pairs nearly equal, and with punctured tarsi; fourth pair very robust, larger and longer than the anterior ones; posterior pairs very small. Eyes approximated. Male 0·3 long, 0·65 broad. Female 0·35 long, 0·75 broad. With the following, types of a new genus. *Georgia.*

P. monodactylum. (Id. Ib. p. 454.) Thorax transversely subelliptical. Hands monodactyle; palm concave and ciliated in the middle; a spiniform angle instead of a finger, with a tooth at its base, and another at the base of the thumb, larger. Male, length 0·3, breadth 0·5. Hab. unknown, but presumed from the coast of America.

Genus Ocypoda, *Fabricius.* Shield subquadrate or rhomboidal; the eyes very large, oblong oval, occupying at least half of the length of the peduncles, and commencing near the base. Feet adapted for walking.

O. arenaria. (Say, op. cit. Vol. 1, p. 69. Edwards, Vol. 2, p. 44, pl. 19, fig. 13. *O. albicans*, Bosc, pl. 4, fig. 1.) Shield very minutely granulated; the edges minutely serrate. Hands unequal, the largest serrate and dentate with spines: the third joint of the second and third pairs of feet without spines; tarsi of the second, third and fourth pair flattened, and enlarged at their extremities. Feet very hairy. Transverse diameter, 1·4. *South-Carolina, Florida.*

GENUS GELASIMUS. *Latreille.*

With the general form of the preceding, but broader transversely, and more narrowed behind.

Eyes small, rounded, and occupying only the extremities of the peduncles.

Gelasimus vocans.

PLATE VI FIG. 9 & 10.

Cancer vocans. Linneus, Syst. Nat.
Ocypode vocans et *pugilator.* Bosc, Vol. 1, p. 197 and 198.
Ocypoda pugilator. Say, Journ. Acad. Nat. Sciences, Vol. 1, p. 71.
Gelasimus vocans. Milne-Edwards, Hist. Nat. des Crustacés, Vol. 2, p. 54.
G. id. Gould, Invertebrata of Mass. p. 325.

Description. Body broader than long, and broadest in front; lateral margins rounded, but defined by a slightly elevated line which forms with the anterior margin nearly a right angle. The cornea occupies an oblique space nearly at the tip of the peduncle, which is 0·2 long, with scattering solitary hairs; the fossa or furrow for its reception is narrow, nearly straight, and serrated and rounded on its under margin. The antennæ are hairy at their bases. Cheeks densely hirsute; abdominal segments polished, long, sublinear. The enlarged hand occurs indifferently on the right or left, but I think most frequently on the left side, and is often more than twice the length of the transverse diameter of the body. The movable finger is curved, and extends beyond the tip of the other, which is almost straight; from this results a figure somewhat resembling the bow of a violin, and has probably suggested its popular name of *Fidler Crab.* The inner margin of the movable finger has a double series of equal tubercles; the hand is minutely tubercular; the small hand has its fingers equal, and hollowed inwards as if bent: all the feet with rigid hairs.

Color, soiled brown above, with a bluish green mark on the anterior part of the shell; after death, the upper shell becomes polished black, with horn color towards its margins. Eyes black; peduncles light yellowish; hands and feet horn-color.

Length, 0·5. Transverse diameter, 0·6.

Var. a. Smaller and darker colored; the shell is not as ventricose, the anterior border more sinuous, and the posterior margin more narrowed behind (fig. 10); the lateral angles are much more acute, but in other respects I find no important difference.

This species, occupying oblique holes in marshes near the sea, occurs along our whole Atlantic coast as far as Cape Cod. In its movements, which are very rapid, it carries its enlarged hand raised from the ground, and, upon the slightest alarm, elevates it, and extends the fingers in a menacing attitude. This bold demeanor has doubtless given rise to the name of *Soldier Crab.* At the approach of winter, these holes are closed, and the animals remain torpid until the following spring. They appear to be equally at home on land or in water, but seem to spend most of their time on land. They are of little economical use, except as bait for fish, more particularly the Black-fish, or Tautog.

GENUS SESARMA. *Say.*

Shield quadrilateral, elevated in front, where it is broad and curved downwards, reticulated or granulated on the sides. Orbits deeply notched below their outer angle. Third joint of the outer jaw-feet longer than the second, much longer than wide, ovate, slightly subtruncate in front, and having an oblique crest on its outer surface. Tarsi styliform, hairy, and generally wanting spines.

SESARMA CINEREA.

Cancer cinereus. Bosc, Hist. Nat. des Crustacés, Vol. 1, p. 204, pl. 6, fig. 1.
Ocypode (Sesarma) reticulatus. SAY, Jour. Acad. Nat. Sc. Vol. 1, p. 73, pl. 4, fig. 6.
Sesarma cinerea. MILNE-EDWARDS, Hist. Nat. des Crust. Vol. 2, p. 75.

Description. Shell somewhat longer in its transverse diameter, with numerous minute irregular punctures, and with oblique scarcely elevated rugæ on each side behind. Cheeks and sides of the body with numerous parallel longitudinal lines of granules, surmounted at regular distances by perpendicular equal hairs; beneath the lateral edge of the shield are about six short ciliate curves, disposed in a longitudinal series. Front deeply hollowed in the middle. Thighs mucronate above near the tip, with minute aculeæ behind, which are wanting on the posterior ones. Tarsi striate with six ciliate lines. Hands subequal, scabrous, with a moniliform edge above.

Inhabits holes in salt-marshes, in the same manner with the preceding. It is found along the shores of the Southern States and among the Antilles, but I am not aware of its having been yet detected on the coast of this State.

GENUS NAUTILOGRAPSUS. *Milne-Edwards.*

The shield shortest in its transverse diameter, convex. Tarsi large and spinous. Third joint of the external jaw-feet not crested. Front lamellar, advanced, not bent over, but simply inclined downward: lateral edges of the shield thin. Legs short; the four posterior pair acute at their tips.

NAUTILOGRAPSUS MINUTUS.

Cancer minutus. LIN. HERBST, pl. 2, fig. 32.
Grapsus minutus. LATREILLE, Hist. Nat. des Crust. et des Ins. Vol. 6, p. 68.
G. cinereus. SAY, Jour. Acad. Nat. Sciences, Vol. 1, p. 99.
Nautilograpsus minutus. EDWARDS, Hist. Nat. des Crust. Vol. 2, p. 90.

Description. Body small, subquadrate, depressed; the anterior angles acute, with a sinus behind them on the edge. A small spine, more or less distinct, behind the external canthus.

Front entire: third joint of the anterior pair serrate on the inner edge, and four-toothed at the tip. Hands large, granulate beneath. Carpus with an obtuse spine. Tarsi short and spinous beneath.

Color, variable, but most usually brownish, mottled with ash. Eyes reddish brown.

Length, 0·3. Transverse diameter, 0·2.

This little species is usually found upon seaweed, or the larger marine animals in the ocean. It has been noticed on seaweed off the harbor of New-York. But a single species is yet known.

GENUS PLAGUSIA. *Latreille.*

General form of the preceding, but the internal antennæ are short, vertical, and moving in deep cavities which are open above, and formed in the substance of the shield. Mouth nearly closed in front.

Plagusia sayi.

Plagusia depressus. Say, Jour. Acad. Nat. Sc. Vol. 1, p. 100.

Description. Shield with numerous distant punctures, having the appearance of being covered with scales, each of which is bounded before by a line of impressed points furnishing hairs. Sides of the shield with three serrate teeth; the posterior canthus of the eye elevated into a tooth, with a small tubercle within its base. Carpus with a depressed spine within, which is emarginate at tip. Hands granulate above, with small tubercles and two impressed lines. Tarsi with a double line of movable spines beneath; tip of the preceding joint about five-spined beneath.

Color, variegated; tibia darker, spotted; beneath white, immaculate.

Mr. Say received this species from the Gulf stream, and considered it as synonimous with the *P. depressa* from the Indian ocean and coast of China. From this it is distinguished by the hairy tubercles on its shield. I agree with M. Milne-Edwards in considering it more allied to *P. squamosa* from the Red sea and Indian ocean. This latter, however, is characterized by its shield bristling with elevated tubercles, each of which is furnished with a series of stiff hairs directed forward, and resembling scales. It may provisionally, until a direct comparison is made, be considered as a new species, taking of course the name of its learned and indefatigable discoverer

(*EXTRA-LIMITAL.*)

Genus Ilia, *Leach.* Shield oval or circular. Anterior feet very long, slender, and terminating in long filiform fingers.

I. punctata. (Edw. Vol. 2, p. 125. *Leucosia id.* Say, loc. cit. p. 457.) Shield with three long conical teeth behind, directed backwards. Surface granular, terminated by a granulated margin. *Coast of Georgia and Florida.*

Genus Hepatus, *Latreille.* Shield broad, arched in front, narrowed and truncated behind. External antennæ short; the four posterior pair of feet terminated by a small pointed tarsus.

H. fasciatus. (Desmarest, Consid. pl. 9, fig. 2. Say, loc. cit. p. 457.) The antero-lateral margin of the shield divided into 12 – 13 more or less rectangular teeth, which are dentated on their edges. *Color*, variable, yellowish; in the young, banded; in the adult, maculate with reddish spots. *Coast of Georgia and Florida.*

GENUS LITHODES. *Latreille.*

Shield cordiform, tubercular; the rostrum elongated. Eyes approximated, with the four short antennæ between them. The first four pair of feet successively longer; the fifth pair very short and rudimentary.

Obs. This genus is one of a group which forms the transition between the *Decapoda brachyura* and the *D. macroura.* It constitutes the section *Decapodes anomoures* of Milne-Edwards. Of the genus *Lithodes,* we have as yet but one representative on our coast.

Lithodes arctica.

PLATE VI. FIG. 11.

Cancer maia. Lin. Syst. Nat. p. 1046.
Lithodes arctica. Latreille, Genera, Vol. 1, p. 40.
L. maja. Leach, Zool. Miscell. Vol. 1, p. 40. Lam. Vol. 2, p. 414. Ed. Brux.
L. arctica. Lat. in Griffith's Cuvier, Vol. 13, p. 172, pl. 1, fig. 1.
L. id. Milne-Edwards, Hist. Nat. Vol. 2, p. 186. Gould, Invertebrata of Mass. p. 327.

Description. Shield heart-shaped, covered with conical tubercles, and a series of large pointed spines along its lateral margins; the rostrum elongated, slender, bifid, or with two slightly diverging points at the end, two pair of lateral teeth, and one above, and the other larger one beneath the rostrum. Second joint of the external antennæ with a tooth on its outer surface. Pincers with tufts of hairs. All the feet, except the last pair, with series of stout spines.

Length, 4·0. Transverse diameter, 3·5.

This is a boreal species, very common on the coast of Norway. On our coast it is very rare. Dr. Gould obtained, through Dr. Prescott of Lynn, a specimen from the stomach of a codfish on the coast of Massachusetts; and, under similar circumstances, it may present itself to the naturalists of this State.

GENUS HIPPA. *Fabricius.*

Body oblong-oval, convex, truncated in front, with a small triangular rostrum. Tail short, with a lamellar appendix on each side of its base. Hands without pincers, compressed, oval. External antennæ usually rolled up, but, when extended, long and filiform, with a double series of long hairs. Tarsus of the second and third pairs of feet lunated; of the fourth, triangular.

HIPPA TALPOIDA.

PLATE VII. FIG. 17.

Hippa talpoida. SAY, Jour. Acad. Nat. Sciences, Vol. 1, p. 160.
H. emerita? MILNE-EDWARDS, Hist. Nat. des Crust, Vol. 2, p. 209. GOULD, loc. cit. p. 328.

Description. Shield with interrupted rugous lines in front, smooth behind. Tail more than half the length of the shield, sublanceolate, with reflected lateral margins; the external spine of the large basal articulation of the external antennæ extends somewhat beyond the globular part of the fourth articulation. Body convex-oval when the tail is inflected upon it, concave above, on the sides, in front, and very convex behind. Immediately behind the rostrum is a deep transversal furrow 0·25 in length, its end turned slightly backwards; a similar furrow, but curved with its concavity forwards, and with a smooth elevated margin, is placed somewhat in advance of the central portion of the thorax. Rostrum small, triangular, with a deep emargination on each side, terminated by a small tooth exceeding somewhat the rostrum. External antennæ longer than the shield, but frequently folded up, and almost entirely concealed between the mouth and the external jaw-feet. Eyes very small, on filiform pedicels. Internal antennæ short. Tail pointed with a double series of hairs. Terminal articulation of the anterior feet oval.

Color, light reddish brown; the shield purple.

Total length, excluding the antennæ, 2·0. Transverse diameter, 0·6. Tail, 0·6.

The original describer of this species, Mr. Say, stated that it was very closely allied to the *H. emerita* of authors; but was of opinion that the great length of the antennæ, and the shape of the tail, indicated a distinct species. Milne-Edwards has, however, in the work cited above, referred it with doubt to the *H. emerita*, and in this he is followed by our distinguished crustaceologist Dr. Gould. In his description of the *H. emerita* from Brazil, M. Edwards says, "L'épine externe du grand article basilaire des antennes externes, *dépassent de beaucoup* "la portion globuleuse formée par le quatrième article pédonculaire de ces organes." An inspection of the magnified figure on the plate, will show that the foregoing phrase does not apply to this species.

This species is known under the popular name of *Sand-bug*, and burrows in the sand between high and low-water mark. The ease and rapidity with which they burrow, has given rise to its trivial name. They are occasionally used as bait. It occurs along the coast of the United States, from near Cape Cod southwardly.

GENUS PAGURUS. *Fabricius.*

Anterior part of the body crustaceous; the lower long and cylindrical, soft, and rolled upon itself. Interior antennæ short, bifid at the tip, and scarcely reaching beyond the peduncle of the external antennæ. Extremity of the tail with an unequal pair of appendiees.

Obs. This genus, which is at present subdivided into four others, now comprises nearly fifty speeies distributed throughout the world. They are all in the habit of oeeupying the dead shell of a univalve, whieh is exehanged for a larger one as they increase in sizc. This singular habit has suggested the popular name of *Hermit Crab*. Some species live on land, oeeupying of eourse univalve terrestrial shells.

Pagurus pollicaris.

PLATE VIII. FIG. 21.

(STATE COLLECTION.)

Pagurus pollicaris.		Say, Journ. Acad. Nat. Sciences, Vol. 1, p. 163.
P.	*id.*	Milne-Edwards, Hist. Nat. des Crustacés, Vol. 2, p. 237.
P.	*id.*	Gould, Invertebrata of Mass. p. 329.

Description. Anterior segment of the thorax subeordate; truncate behind. Eyes on pedicels 0·3 long, with a small pointed scale at the inner base. Interior antennæ shortest; the penultimate joint extending beyond the oeular pedicels. External antennæ 1·2 long; the last joint eomposed of about sixty artieulations, with a long spinous appendix at its base, nearly as long as the oeular pedicels. Hands unequal, opposed; the right one nearly twiee as long as the left, mueh eompressed, crested; the upper ridge eonvex, dentate; the finger longer than the thumb, with a series of tubercles becoming double towards the angle. Thumb with a stout projection or knob beneath, giving a rectangular appearanee to the lower part of this member, and with about eight tubereular teeth. Left hand similar to the right, but wanting the tubercular knob beneath. Both hands, together with the carpus and succeeding joints, strongly tubereular, not hairy. Thighs of the second and third pair smooth below, tubercular above. Carpus of the right not as long as the hand, above rounded; of the left, angular. Terminal joints of the second and third pair slender, nearly equal in length to the two preeeding joints, compressed, ciliate on the two edges, with a double series of punetures and a medial impressed line.

Color, red when reeent; pearly grey in cabinet speeimens.

Length of the thorax, 0·5; of the right hand, 0·8. Width of the same, 0·6.

This is the largest Ameriean species that I have seen. It is frequently found in the shell of the *Fulgur carica*. It is rare to meet with a perfeet speeimen, as they are frequently found deprived of their antennæ, and of one or both their eyes. This is attributed by fisher-

men to the common Black-fish (*Tautoga americana*). I am indebted to my friend Mr. I. Cozzens for an opportunity of examining many individuals of this species. It is sometimes distinguished as the *Warty Hermit Crab.*

Pagurus longicarpus.

PLATE VIII. FIG. 22.

Pagurus longicarpus.		Say, Journ. Acad. Nat. Sciences, Vol. 1, p. 163.
P.	*id.*	Milne-Edwards, Hist. Nat. des Crustacés, Vol. 2, p. 237.
P.	*id.*	Gould, Invertebrata of Mass. p. 330.

Description. Thorax for the most part concealed in the shell; its first segment rounded, narrowed and truncate behind; second segment emarginate behind for the reception of the abdomen. External antennæ longer than the left hand, filiform, with an accessory filament on the basal joint; internal antennæ setigerous at the tips. The ocular pedicels equal the first segment of the thorax in length; at the base of the pedicel, on the upper surface, is a small scale, concave above, dilated behind, and pointed in front with a few setæ. Second and third pairs of feet subequal; the two last joints, and more especially the penultimate joint, punctured, with a series of setæ above: the last joint with a lateral impressed line. Hand linear, granulate, with a slightly serrated edge beneath, extending nearly to the tips of the fingers, which are smooth and polished; internally the hand is somewhat ventricose. Carpus equal in length to the hand, long, linear, with a raised moniliform edge on its upper surface, with elevated dots and rigid setæ.

Color. Body dark reddish brown; fingers grey or whitish.

Length of the whole animal, 1·5.

This description is taken from an unusually large specimen; they are, in general, much smaller. It is the most common species on our coast, and may be seen running about our shores with their attached shells. It is known as the *Little Hermit Crab.*

(*EXTRA-LIMITAL.*)

P. bernhardus. (Desmarest, loc. cit. p. 173, pl. 30, fig. 2. Gould, loc. cit. p. 329.) Shell with an elevated medial line. Anterior feet with spinous tubercles. Second and third pair spinous and tubercular above; the last joint very thick, compressed, twisted upon itself, enlarging itself slightly towards the extremity, which suddenly narrows to a point. Carpus as long as the palm of the hand, rough and hairy. *Color*, bright cherry-red. Length, 5·0 – 6·0.

This Pagurus of Northern Europe has been observed by Dr. Gould on the coast of Massachusetts.

P. vittatus. (Bosc, Hist. Nat. des Crustaces, Vol. 2, p. 78, pl. 12, fig. 1.) Pincers nearly equal, tubercular and hairy; the second and third pair robust, with white longitudinal stripes. Thorax short, flattened, slightly dentated in front, and furnished with long hairs. Common on the shores of South-Carolina.

Genus Porcellana, *Lamarck.* Body suborbicular or subquadrate. External antennæ very long, setaceous, placed behind the eyes; the internal concealed in cavities. Anterior feet very large; the carpus very long, with a lamellar prolongation. Posterior pair small and slender, folded over the base of the others, and ending in a small didactyle pincer. Tail fan-shaped, bilamellate on each side.

P. pilosa. (Milne-Edwards, loc. cit. Vol. 2, p. 255.) Shield elongated: front divided into three lobes, of which the central one is triangular and prominent, the others small and rounded; extremities very hairy. Carpus middle sized, and armed towards the base of its anterior edge with a denticulated lobe; a few spines before this lobe. Hands short and wide; the following members almost cylindrical. *Color*, brownish. Length, 0·5. *Charleston, S. C.*

P. sociata. (Say, loc. cit. Vol. 1, p. 456.) Carpus and hand tuberculate before: tubercles very obtuse, each composed of from four to nine granules. Anterior part of the thorax deeply crenate; crenæ inflected: in the two lateral ones are placed the eyes and antennæ; feet hairy. Length of thorax, 0·2. Probably the same with the preceding. *Coast of Georgia.*

P. galathina. (Bosc, Hist. Nat. des Crust. Vol. 1, p. 233, pl. 6, fig. 2. Say, Ac. Sc. Vol. 1, p. 458.) Shield flattened, striated longitudinally; pincers compressed; thighs dentate. This is all the information we have respecting this species. From an inspection of the figure, it appears to have the carpus strongly serrated, and the body and limbs punctate or tubercular; the length 0·4. Bosc states its habitat to be unknown, and Mr. Say merely cites the name, and states it to be common on the coast of Georgia and Florida. Edwards does not cite it, but it may possibly be his *P. pilosa.**

Genus Monolepis, *Say.* Shield convex, oblong, with a small rostrum. Eyes very large and distant. Intermediate antennæ stout, bifid at the end, and concealed under the rostrum. First pair of feet didactyle; the three following monodactyle; the fifth very small, folded over the posterior part of the shield, and terminating in long setæ. Tail ending in three plates. A double series of false swimming feet beneath the abdomen.

Obs. This genus is composed of minute species. M. Milne-Edwards suspects that this and its allied genus *Megalops* may possibly include merely the young of some other crustacean. They form the passage from the *Decapoda anomoura* to the *D. macroura.*

M. inermis. (Say, Acad. Nat. Sc. Vol. 1, p. 157.) Front unequal, extended into a short rostrum, with a tooth on each side near the eyes. A large truncate tubercle behind each eye. Tarsi simple. Hind feet very small, terminated by three setæ. *Color*, olive green. Length of thorax, 0·25. *Eastern shore of Maryland.*

M. spinitarsus. (Say, loc. cit. Vol. 1, p. 58.) Tubercle behind the eyes obsolete. Tarsi armed beneath with about seven rigid spines, of which the fifth is largest and the sixth smallest; the tip incurved, acute. Length of thorax, 0·3. *Coast of South-Carolina.*

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* Dr. Leach (*Nouv. Dict. des Sc.* Vol. 18, p. 54) has arranged this and a few others under a subdivision of *Porcellana*, which he calls *Pisidia*, but which has not been adopted by many subsequent writers. He calls it *Pisidia sayana*, and describes "the shield and pincers marked with short and transverse lines; front trifid, with the elongated medial one itself tridentate and finely granular." The *P. galathina* of Bosc, is supposed by Dr. Leach to be different, and more closely allied to the *sociata*, and he adds the following characters: Shield striate; front smooth and undivided; pincers large, equal, chagrined above, with three very sharp spines on the inside; hands nearly triangular; fingers short, without any dentations within.

Genus Callianassa, *Leach.* Abdomen elongated, membranous. Terminal filaments of the internal antennæ much longer than the peduncle. No respiratory appendices under the abdomen. Lateral plates of the caudal fin foliaceous and very broad. First and second pair of feet didactyle; third pair enlarged towards their extremities.

C. major. (Say, Journ. Ac. Nat. Sc. Vol. 1, p. 238.) Hands unequal: carpus granulated, trilateral, not concave. Hand much elongated, sublinear, compressed, glabrous. Abdomen membranaceous, of six segments; lateral lamellæ simple, larger than the tail. Length, 4·5. Burrows in sand. *Florida.*

Genus Gebia, *Leach.* Characters of the preceding, but the first and second pair of feet with a movable finger, and projecting angle for a thumb. Rostrum elongated and broad, concealing the eyes.

G. affinis. (Say, loc. cit. Vol. 1, p. 241.) Thorax glabrous, covered in front with tufts of hair arising from tubercles. Rostrum short, canaliculate, hairy. Hands not broader than the carpus, linear, nearly equal to the third joint. Length, 2·25. *Coast of Georgia.*

GENUS ASTACUS. *Fabricius.*

Rostrum depressed, wide at base, and with not more than one lateral spine. Lamellar appendix of the external antennæ large; the fifth thoracic ringis articulated with the preceding, and not soldered to them. Six anterior feet didactyle. Exclusively fluviatile.

Astacus bartonii.

PLATE VIII. FIG. 25.

(STATE COLLECTION.)

Astacus bartonii. Fab. Entom. Systematica, Suppl. p. 407.
A. id. Bosc, Hist. Nat. des Crust. Vol. 2, p. 62, pl. 11, fig. 1.
A. id. Say, Jour. Acad. Nat. Sc. Vol. 1, p. 167.
A. id. Harlan, Med. and Phys. Researches, p. 230, pl. fig. 2. Gould, loc. cit. p. 330.
A. affinis. Milne-Edwards, Hist. Nat. des Crustacés, Vol. 2, p. 332.

Description. Body with scattered punctures. Rostrum mucronate, concave, elongated, suddenly attenuated, but with lateral angles rather than spines at the point of attenuation. No spines on the thorax. An acute triangular spine, rather exceeding the rostrum in length, articulated to the outer side of the base of the external antennæ; below the base of the spine, on each side, an oculiform tubercle. Movable finger slightly shorter than its opposite, and a number of foveolæ or pits in such a regular series on both as to produce the appearance of one or more elevated lines. Carpus with a deep furrow on its upper surface, and one or more spines on its inner angle. Shield with a transversal lunate furrow. The first segment of the middle caudal lamella with one or two short spines on each side.

Color of the body and claws, greenish brown; tips of the rostrum, of the hands and feet (and sexual appendices of the male), reddish. Lighter beneath.

Total length, 2·0 – 3·0.

This little *Craw-fish*, or *Fresh-water Lobster*, is exceedingly common in most of the mountain streams of this and the adjoining States. It has been noticed by Bosc in Carolina, and by Dr. Gould in Massachusetts. I am not aware of its extreme northern geographic range. Their habits are nocturnal, concealing themselves during the day under stones. They are rarely eaten, except by children in sport, although they are undoubtedly as palatable as their European congener. The following species I have not seen, although it is said to be found in the Delaware. I have searched for it without success in the tributaries of that stream within the limits of this State. Milne-Edwards has made a singular transposition of the names of these two species.

(*EXTRA-LIMITAL.*)

A. affinis. (Say, loc. cit. p. 168 and 443. Harlan, op. cit. p. 230, pl. fig. 3?) Rostrum mucronate, subcanaliculate, two-spined; a spine behind each eye, and a larger geminate one on each side of the thorax; hand and thumb, on the inner edge, scabrous. Length, 3·3. *River Delaware and its tributaries.*

A. blandingii. (Harlan, loc. cit. p. 229, pl. fig. 1.) Rostrum mucronate, canaliculate, slightly notched at the extremity; a spine behind each eye. Arms tuberculated, elongated; fingers slender, unequal; penultimate and antepenultimate legs of the male with an obtuse process at base of the second joint. Length, 3·8. *Marshes and Rivulets of the Southern States.*

A. oreganus. (Randall, Jour. Acad. Nat. Sc. Vol. 8, p. 138, pl. 7.) Body granulated; beak a long slender spine, with a short spine on each side. *Color*, fuscous, with a large reddish spot on each side posteriorly. Length, 4·0. *Oregon Territory.*

GENUS HOMARUS. *Edwards.*

Form of the preceding. Rostrum slender, narrow, and armed with many teeth on both sides. Eyes spherical. Last ring of the thorax firmly united to the preceding. Hands excessively developed. Medial caudal plate with lateral spines. Exclusively marine.

Homarus americanus.

PLATE XII. FIGS. 52, 53.

(STATE COLLECTION.)

Astacus marinus americanus. Seba, Thesaurus, Vol. 3, pl. 17, fig. 3.
A. marinus. Say, Jour. Acad. Nat. Sciences, Vol. 1, p. 165.
A. id. Milne-Edwards, Hist. Nat. des Crustacés, Vol. 2, p. 334.
A. id. Gould, Invertebrata of Massachusetts, p. 330.

Description. Rostrum narrow, acute, turned up at the tip, with two short spines at its base and posterior to the eyes; two or three spines on each side of the rostrum, followed by a series of minute ones in large individuals; one or two spines on the under side, near the tip;

a small spine on the anterior edge of the thorax. The rostrum is slightly furrowed on its dorsal surface, and a linear furrow extends from it along the medial line to the first abdominal segment. The accessory plates to the peduncle of the external antennæ spinous; the superior with a ciliate lamella. The last abdominal segment with a pencil of hairs on its external angle, and occasionally another on each side of its posterior margin; a single central spine on the under side of the second, third, fourth and fifth abdominal rings. The caudal plates all distinctly pencilled behind; the first segment of the external one denticulate; the central plate rounded behind, with a spine on each side, which disappears in older individuals. Hands compressed, for the most part unequal, owing to their having been casually detached and renewed at different periods; they have from five to nine spines on the inner edge, a rounded tubercle on the upper or inner surface near the joints of the pincers, and a small blunt spine on the superior and posterior surface of the hand. Carpus as in the European lobster, with five spinous tubercles above and another beneath.

Color, olivaceous green above, and in very old individuals verging to deep blackish green; darker spots and blotches over the body, hands and feet, spines and tubercles; sides of the thorax and of the abdominal segments, under side of the hands and the caudal hairs brick red.

Length of the body, 12·0 – 24·0. Weight, 2 – 10 lbs.

The *Common Lobster* is well known, although it has not until recently been well distinguished from the Lobster of Europe. Ours, however, attains a greater size, and is perhaps the largest species yet known among the Crustacea. The average weight may be stated at about four pounds, but I have frequently seen them of the weight of fifteen to twenty pounds. The largest I have heard of, was sold in the Fulton market, and weighed, as I am credibly informed, thirty-five pounds. They are common in our markets during the whole year, but more especially during the summer, when they are most highly relished, selling at from four to eight cents per pound. The smaller ones are derived from the rocky shores of the East river and Long-island sound. The larger individuals are brought to us alive from Fisher-island sound and the rocky coasts north of Cape Cod. Fishermen suppose the small lobster to be a different species, but without any foundation.

There is a variety of the Lobster, termed *Bluebacks*, on account of their dark bluish color. They are derived from the coast about Cape Cod, have comparatively thin shells, and are highly prized by epicures; they are seen chiefly at the commencement of the lobster season in the early part of May. In June, 1840, I saw in the Fulton market a lobster which was of two colors, distinctly separated by a medial line from the tip of the rostrum to the middle extremity of the plate of the tail. On one side the body and all the members were of a light sky blue, and the other of the usual olivaceous green. It was doubtless occasioned by some morbid change in the condition of the animal. The change of color which takes place when this and several other crustacea (but not all) are placed in boiling water, is owing to a peculiar pigment* in the shell, which is usually brownish or greenish, but which changes to red at the temperature of about 190° Fahrenheit, and also by the action of acids and alcohol.

* Lassaigne, Journal de Pharmacie, Vol. 6, p. 174.

The apparent disappearance and reappearance of lobsters in the neighborhood of New-York, and in other localities, which has given rise to many popular fallacies, may be explained by considering the following facts. They naturally diminish rapidly when taken in such vast numbers as we have known them to be, especially when near to a large market. When the fishing ground is apparently exhausted, they are declared to have disappeared. In the mean time they are undisturbed, and allowed to increase, recourse being had to other fishing grounds; and many females, with the impregnated ova, are brought to market, and kept in cars for a longer or shorter period: the young are excluded, and in this way various broods are produced. Many of these are caught at the docks in the vicinity of the markets, but the greater number go on increasing until the word is given that lobsters are again to be found in our waters.

The geographical range of the Lobster does not extend much farther south than the coast of New-York, and ascends to the extremest north. It is taken in comparatively small quantities on the coast of New-Jersey; but I learn from my valued and learned friend Dr. Pickering, that two years after building the Breakwater in Delaware bay, lobsters made their appearance there in great quantities. I know of no other instance where their range has been extended, except by Gen. Pinckney, now deceased, who, about thirty years since, caused a car full of lobsters to be emptied into the harbor of Charleston, S. C. A few of the survivors, or their descendants, were captured about ten years since, but, as I am informed, they were the last.

GENUS CRANGON. *Fabricius.*

Anterior feet monodactyle, and furnished with a spurious finger; second and third pairs very slender, simple; fourth and fifth more robust. Antennæ inserted in nearly the same horizontal line; exterior ones long, setaceous, with a large scale at the base; intermediate ones short, bifid. Gills seven in number on each side of the thorax.

Obs. This genus, established by Fabricius, comprises about six species chiefly from the polar seas. The *C. vulgaris* is the true *Shrimp* of Europe, with which our species is closely allied, and by some writers considered identical.

Crangon septemspinosus.

PLATE VIII. FIG. 24.

Crangon	*septemspinosus.*	Say, Jour. Acad. Nat. Sc. Vol. 1, p. 246.
C.	*id.?*	Milne-Edwards, Hist. Nat. des Crustacés, Vol. 2. p. 342.
C.	*vulgaris.*	Gould, Invertebrata of Mass. p. 331.

Description. Body with seven spines; one on the thorax, and one on each side in the same line; one at the external canthus of each eye, and one beneath on each side. Rostrum not extending to the eyes, obtuse, with elevated margins which form a furrow on each side ex-

tending nearly to the posterior margin of the thorax. Eyes sessile, and resting upon the concave surface of the peduncle of the interior antennæ. Outer antennæ nearly equalling the total length, and furnished with an oblong tapering plate, truncate at the tip, nearly as long as the internal antennæ, with a raised external border, and ciliate on the internal margin with long hairs. Anterior feet with a slender curved claw, opposable to a sharp prominent spine. Second and third pair of feet exceedingly slender; the remainder more robust, and all with simple acute tips. Middle caudal plate simple, conic, concave beneath; outer plates oblong-oval, margined with hairs.

Color, very pale greenish, frequently translucent; the basal plates of the external antennæ, and the caudal plates, punctate with brown.

Length, 1·5 – 1·75.

This is a lively little animal, and known under the popular name of *Bait Shrimp*, being used exclusively for bait. M. Edwards observes that this differs very little from the *C. vulgaris*, or *Common Shrimp* of Europe, but admits that it may probably be a new species. In his edition of Lamarck's *Animaux sans vertèbres*, published subsequently to his work on the Crustacea, he passes it over in silence. Dr. Gould considers the two species as identical; there appears, however, to be a notable difference in the shape of the basillary plates of the external antennæ.

In many parts of Europe, the Shrimp is eaten in great quantities. Our species has a wide geographical range, being found from Florida to the Arctic ocean.

(*EXTRA-LIMITAL.*)

C. boreas. (Phipps, Voyage, p. 194. Muller, Zool. Dan. Vol. 4, pl. 132, fig. 1.) Shell rough, armed along the medial line with a trifid crest. The plate of the external antennæ short and very wide. Second and third pair of feet filiform; feet of the two last pair very large. Medial plate of the tail with seven spines. *Color*, variegated with reddish. Length, 5·0 – 7·0. Stomachs of Cod-fish. *Coast of Massachusetts.*

Genus Alpheus, *Fabricius.* Antennæ arranged in two series, the internal above the external. First and second pair of feet didactyle. Hands of the first pair large and unequal; the three last pair monodactyle. Shield advanced above the eyes. Inhabiting the seas of warm climates.

A. heterochelis. (Say, loc. cit. Vol. 1, p. 243.) Rostrum simple, spiniform, acute, carinate in the middle. Shield smooth, without spines. Larger hand deformed, compressed, abruptly constricted near the fingers on each edge. *Color*, green, with small brownish spots; hand beneath white. Length, 1·5. *Florida, South-Carolina.*

A. minus. (Id. loc. cit.) Rostrum and shield over the eye, forming three spines in front. Larger hand not compressed, inflated. External jaw-feet obtuse at point, and crowned with spines. *Color:* Large hand white, the tip red, banded near the bases of the fingers with white in the female; white tipped with green in the male. Length, 0·8. *South-Carolina and Florida.*

GENUS HIPPOLYTE. *Leach.*

Antennæ arranged in two series. Rostrum large, immovable, lamellar, compressed and dentated. Feet all slender; the two first pair didactyle. Internal antennæ ending in two long threads. Inhabiting all seas, and occasionally found in fresh water.

Hippolyte sowerbyi.

(CABINET OF THE LYCEUM OF NATURAL HISTORY.)

Cancer spinus. Sowerby, British Miscell. pl. 21.
Hypolite sowerbyi. Leach, Mal. Podopth. Britt. pl. 39.
H. id. Desmarest, Consid. sur les Crustacés, p. 222, pl. 39, fig. 1.
H. id. Milne-Edwards, Hist. Nat. des Crustacés, Vol. 2, p. 380.

Description. Rostrum short and wide in front, truncated at the end, rising from the posterior part of the shield, with four or five teeth on the part attached to the shield, and with seven or eight small ones on the upper side of the detached portion. The under side of the detached portion with two teeth, of which one almost extends to the tip. Lamellar appendix of the external antennæ large, ovate, and extending beyond the rostrum. The spine-like plate of the pedunele of the internal antennæ very long; the terminal threads of these organs very short. Outer jaw-feet moderate. Anterior feet scarcely exceeding the pedunele of the outer antennæ. The carpus of the second pair divided into seven or eight very distinct articulations. Third abdominal segment with a sharp medial process, advanced over the next segment. Medial caudal plate with six to ten teeth on each side.

Color, light greenish horn.

Length, 1·5 – 2·0.

A specimen of this species is now in the Cabinet of the Lyceum, obtained by Mr. Zabriskie from the stomach of a Cod-fish on the coast of this State.

Hippolyte aculeatus.

PLATE IX. FIG. 31.

Cancer aculeatus. Fabricius, Faun. Grœnlandica, p. 239.
Alpheus id. Sabine, Appendix to Parry's Voyage, pl. 2, fig. 9.
Hippolyte aculeatus. Milne-Edwards, Hist. Nat. des Crustacés, Vol. 2, p. 380.
H. id. Gould, Invertebrata of Massachusetts, p. 332.

Description. Shield arched above. Rostrum slender, scarcely exceeding the pedunele of the upper antennæ, and continuing posteriorly until near the posterior margin of the shield. Four or five large teeth on the attached part of the rostrum; three or four very small teeth on the upper edge of its anterior portion, and three on its lower edge. Jaw-feet long, ex-

ceeding the lamellar appendix of the external antennæ, and very wide and truncate at the end. Anterior feet large, and of moderate length. Five pair of spines on the medial caudal plate. Abdominal segments on each side acute.

Length, 1·0 – 1·5.

This species has been obtained by Dr. Gould, rather abundantly, from the stomachs of fishes on the coast of Massachusetts. It is properly a boreal species, and abundant in the polar seas.

GENUS PANDALUS. *Leach.*

General form of the preceding. The first pair shortest, and ending in a slender point; second pair very slender, and didactyle. Twelve branchiæ on each side. Upper antennæ longer than the body, ending in two filaments.

Pandalus annulicornis.

PLATE VII. FIG. 18.

Pandalus annuliformis.		Leach, Mal. Podopth. pl. 40; and Lin. Trans. Vol. 11, p 346.
P.	*id.*	Desmarest, Consid. sur les Crustacés, p: 220, pl. 38, fig. 2.
P.	*id.*	Milne-Edwards, Hist. Nat. des Crustacés, Vol. 2, p. 384.
P.	*id.*	Gould, Invertebrata of Massachusetts, p. 332.

Description. Rostrum as long as the shield, with eight to ten teeth above; lower side of the rostrum with a few teeth near the tip, separated by a smooth interval from others near the base. Feet slender; those of the first pair scarcely exceeding the lamellar appendix of the external antennæ; the three last pair armed with spines.

Color. The antennæ marked with eight or ten reddish rings, as broad as the intervening white spaces.

Length, 3·0 – 4·0.

Found in the stomachs of fishes on the coast of Massachusetts.

GENUS PALEMON. *Fabricius.*

General form of the preceding. The internal antennæ arise above the external ones, and terminate in three filaments. The first two pair of feet didactyle; the second longer and more robust than the first; the remaining feet monodactyle.

Palemon vulgaris.

PLATE IX. FIG. 30.

Palemon vulgaris. Say, Jour. Acad. Nat. Sciences, Vol. 1, p. 248.
P. *id.* Milne-Edwards, Hist. Nat. des Crustacés, Vol. 2, p. 396.
P. *squilla?* Gould, Invertebrata of Massachusetts, p. 332.

Description. Rostrum acute, cultrate, dilated, and deepest under the middle, extending somewhat beyond the lamellar appendices of the external antennæ, with eight or nine teeth on the upper edge, and three or four beneath with setæ between them. Shield with two minute spines on the antero-lateral border at the bases of the external and internal antennæ; between the two spines, an obsolete furrow directed backwards. Peduncle of the lamellar appendix with a spine at the exterior tip. Two spines on the first joint of the interior antennæ. The fingers of the first pair scarcely reaching middle of the palm of the second; its carpus with a spine, and longer than that of the second; its fingers hirsute, minute, and nearly equalling the palm. The second pair with its fingers shorter than the palm; carpus shorter than the following joint; hands elongate; finger somewhat deflexed; thumb straight. Medial caudal plate with two movable prostrate spines placed on each side; tip with three or four movable spines. External antennæ two inches long.

Color, light transparent sea-green mottled with brown; ocular peduncles spotted with yellow.

Total length from the extremity of the rostrum, 1·5.

This species is closely allied to the *P. serratus*, or *Prawn* of England, which is there considered as a great delicacy. Our species is usually termed *Shrimp*, or *Big Shrimp*, to distinguish it from the *C. septemspinosus* before described. It is distinguished from the English *Prawn* by the rostrum, which in this latter is bifid at the tip, and greatly exceeds the lamellar appendix of the external antennæ; it is also smooth near the front above, and the animal is from three to five inches in length. It is closely allied to *P. squilla* of Europe (*La Crevette* of the French), which is somewhat larger, with the rostrum straight, and not exceeding the lamellar appendix of the external antennæ. The relative lengths of the fingers of the second pair in the two species disagree; but without a direct comparison of specimens, it is impossible to determine in what particulars they may differ.

The *American Prawn* is common on the shores of this State, and is particularly abundant in creeks and grassy bays in the river Hudson. It has been noticed by Say as far south as Florida, and by Dr. Gould along the coast of Massachusetts. It probably ranges still farther north.

(*EXTRA-LIMITAL.*)

P. tenuicornis. (Say, loc. cit. Vol. 1, p. 249.) Rostrum with about eleven or twelve teeth above, and six or seven beneath. Carpus of the first pair of feet unarmed. Fingers of the larger feet as long or rather longer than the palm of the hand. Length, 1·2. *Northern Coast.*

Genus Penœus, *Fabricius.* General form of the preceding. The three first pair of feet didactyle; the false abdominal feet terminating in two ciliate plates. Medial caudal plate triangular.

P. setiferus. (*P. fluviatilis*, Say, loc. cit. Vol. 1, p. 236. Edwards, Vol. 2, p. 414.) Rostrum serrate above, with about nine teeth above and two beneath. Last abdominal segment and tail carinate. *Color*, white tinged with reddish; abdominal segments greenish yellow spotted with brown; caudal plates tipped with green, the ciliæ red. Length, 7·0 – 8·0. Abundant on the shores of the Carolinas and Florida.

Genus Mulcion, *Latreille.* Body soft; thorax ovoid. Eyes concealed. Internal antennæ conic, inarticulated and very short; lateral ones composed of a peduncle and a filament, without distinct articulations, and without a prominent scale at the base. Feet thread-like, and usually with an appendix at their base; the fourth pair widest.

M. lesueuri. (Latreille, Griffith's Cuvier, Vol. 13, p. 195, but without any details, except that it was collected by M. Bosc in the seas of North America.)

ORDER II. STOMAPODA.

Shield divided into two parts, the anterior supporting the pedunculated eyes and the antennæ. Gills not lodged in thoracic cavities, but exposed and adhering to five pair of appendages, sometimes rudimentary or obsolete. The jaw-feet, and most of the feet, which are more than ten in number, approximating to the mouth on two lines converging behind, and giving rise to the name of the order.

Obs. This order comprises few species, but which differ widely in form. Only a few of these species have been yet observed on our coast.

GENUS MYSIS. *Latreille.*

Body compressed laterally. Six to eight pair of thoracic feet, and furnished with greatly developed palpi, which make them appear double. Mouth placed near the base of the antennæ. No thoracic branchiæ ; the false abdominal feet very small, and without branchial appendages.

Obs. The animals of this genus occur in immense multitudes, especially in the northern polar seas. According to Fabricius, they form the principal food of the Whale.

Mysis spinulosus.

PLATE VII. FIG. 20.

Mysis spinulosus. M. Edwards, Hist. Nat. des Crustacés, Vol. 2, p. 457.
M. id. Gould, Invertebrata of Mass. p. 333.

Description. Rostrum depressed, triangular, and about one-third of the length of the ocular peduncles. Peduncle of the internal antennæ thick and very short ; the lamellar appendix of the outer antennæ narrow, and ciliated only within and at the end. Medial caudal plate with spines on its sides, and deeply notched at the end ; the internal plates of the lateral appendices become gradually narrowed towards the end ; the external plates very obtuse (See Desmarest, pl. 40, fig. 6, a.).

Color, brownish ; each abdominal ring marked above by a black star.

This is abundant in winter on our coast. It is called *Opossum Shrimp* in England, from the circumstance that it carries a sac under the thorax, in which the eggs are hatched, and where they are carried for some time. It is supposed by more recent writers to be the males only which carry the young in pouches after exclusion, similar to what has been observed in the family *Syngnathidæ* among the fishes. It is also stated to migrate regularly into fresh water, but I have had no opportunity of verifying the fact. It occurs on both sides of the Atlantic.

(*EXTRA-LIMITAL.*)

Genus DIASTYLIS, *Say.* Thorax smooth, six-jointed; the anterior larger than all the others, compressed and rostrated; the four antennæ placed on the same plane. Five pairs of bifid feet; the anterior truncated. Abdomen five-jointed; the first and second with natatory feet. Tail with a single bifid style on each side of the first segment.

OBS. I place this genus where it was supposed by its author to belong. He did not observe the eyes, which he says were probably retractile. All the species of this order, hitherto observed, have pedunculated eyes. It may possibly be the young of some other crustacean.

D. arenarius. (SAY, loc. cit. p. 314.) Thorax minutely crenate on the anterior portion of the sides. Lateral caudal styles divaricated, longer than the tail; terminal style less than half the length of the lateral ones. Length, 0·2. Pools on the coast of Georgia and Florida. See MONTAGU, *Linnean Transactions*, Vol. 7, pl. 6, for *C. scorpoides*, which Mr. Say thinks a congeneric species.

GENUS SQUILLA. *Fabricius.*

Shield divided into three lobes. Lateral appendix of the three last pair of thoracic feet slender and pointed. External antennæ terminating in a broad oval ciliated plate. Second pair of jaw-feet expanded into large lamellar hand-claws, stoutly toothed on the edges.

SQUILLA EMPUSA.

PLATE XIII. FIG. 54.

(STATE COLLECTION.)

Squilla empusa. SAY, Jour. Acad. Nat. Sciences, Vol. 1, p. 250.
S. id. MILNE-EDWARDS, Hist. Nat. des Crustacés, Vol. 2, p. 525.

Description. Thorax narrowed in front, dilated behind, and deeply concave on the posterior margin. Surface with a medial longitudinal ridge, and two on each lateral lobe; the interior short, the exterior terminating abruptly before it reaches the posterior rounded termination: an obtuse angle on the side of this lobe, which is not very obvious in the desiccated specimen. Anterior margin with slightly prominent spines. Last joint of the hand-claw slender, with

five long sharp spines along its anterior edge, and ending in an acute spine ; this is received into a corresponding cavity in the edge of the hand, which is pectinated, and has three movable inflected spines near its base. Abdomen with six series of elevated lines arranged in pairs longitudinally ; one pair medial, and the two others lateral ; all becoming more elevated, and ending in small points on each segment as they approach the tail. Last abdominal segment, or tail, longer than broad, with a stout bony medial ridge terminating, before reaching the posterior margin, in a spine ; sides with eight prostrate robust spines directed backwards ; the space on the margin between the third and fourth spines on each side, with six or seven denticulations ; the posterior pair of spines serrated on their edges.

Color, brownish horn ; abdominal segments irregularly blotched with dusky ; caudal lamellæ yellow bordered with blackish ; eyes green.

Length, 4·0 – 6·0.

This species is frequently taken in our waters, but is not common enough to have received a popular name. It occurs along the whole southern coast to East Florida, and is but rarely found beyond the shores of this State. It was observed by Lesueur on the coast of Rhode-Island, but has not, as far as I know, been observed farther north. M. Milne-Edwards, who does not appear to have had an opportunity of examining our species, thinks that it approaches the *S. raphidea* by the lateral angle of the shield, but resembles in other respects the *S. mantis*. With that humble deference to foreign authority which characterizes so many of our naturalists, we shall of course not be surprised to find this very distinct species treated as identical with that of Europe. In those countries where species of the *Squill* abound, they are highly esteemed as food.

GENUS GONODACTYLUS. *Latreille.*

General shape of the preceding genus, but the enlarged jaw-feet not toothed along their edges.

Gonodactylus setimanus.

PLATE VIII. FIG. 23.

(CABINET OF THE LYCEUM.)

Description. Shield oblong, with its side much elongated; a transverse lunate suture on its lower portion in front, with two spinous projecting teeth covering the ophthalmic ring. Internal antennæ long, smooth, and furnished with plumose setæ; external shorter, bifid at their extremities, which are articulated. The penultimate segment of the jaw-foot is flattened, carinate on its upper margin, dilated and furnished with long plumose setæ; beyond this are three segments gradually diminishing in size to the last, which is oblong-oval, plumose on both margins. First two pair of feet didactyle; the two following with the terminal joints flat and rounded, the edges ciliated. The penultimate abdominal segment slightly arcuated, without spines, and with three rounded unarmed fins on each side, of which the inferior is largest.

Color, greyish; tips of the claws of the anterior pair, ciliæ on the extremities of the others, and the fins, black.

Total length, 3·2; of the anterior pair of feet, 1·5.

This species was obtained from the stomach of a Cod-fish in the market. I have to regret that it was too much mutilated to enable me to present its characters more in detail. It is only provisionally placed here, for in many particulars it is much more nearly allied to the family *Erichthidæ*.

ORDER III. AMPHIPODA.

Head separated from the segment which supports the second jaw-feet. Eyes sessile and immovable. Post-abdomen with narrow elongated swimming appendages below, which are striated transversely, and furnished with ciliæ or hairs, and not with scales. Mandibles furnished with a palpus. Body usually compressed, and curved underneath posteriorly. Thorax usually divided into seven segments. Inhabits fresh and salt water.

GENUS ORCHESTIA. *Leach.*

The four anterior feet ending in a compressed claw; that of the second pair being much larger, its terminal joint long, arched, and applied to the sharp edge of the hand: this edge, in the female, has a single tooth.

Orchestia longicornis.

PLATE IX. FIG. 28 & 28 A. FEMALE.

(STATE COLLECTION.)

Talitrus (*Orchestia*) *longicornis.* Say, Jour. Nat. Sciences, Vol. 1, p. 334.
Orchestia *id.* Gould, Invertebrata of Mass. p. 334.

Description. Eyes oval. Lower antennæ longer than the body; the third joint, under the lens, armed with series of short spines; the fourth joint with about thirty articulations, minutely spinous beneath. Second pair of feet with the hands dilated, oval, smooth, with two obtuse spines on the anterior margin; one at the lower angle, and the other more elevated in the middle: the thumb much curved, acute at its tip, which rests on the interval between the two tubercles (see fig. 28, A.). The two posterior pairs of feet longest. Upper pair of antennæ short, not extending beyond the second joint of the lower pair.

Length, 0·5 – 1·0.

These small crustaceans are well known under the name of *Sand-flea*, or *Beach-flea*, occurring along the shores of Long island, digging holes in the sand in which they conceal themselves, and living upon dead animal substances. They furnish an abundant supply of food to the numerous birds found along that coast.

Orchestia gryllus.

PLATE VII. FIG. 19.

(STATE COLLECTION.)

Talitrus gryllus, Bosc, Hist. Nat. des Crustacés, Vol. 2, p. 152, pl. 15, fig. 2.
T. (Orchestia) id. Say, Journ. Acad. Nat. Sciences, Vol. 1, p. 386.
Orchestia id. Gould, Invertebrata of Mass. p. 334.

Description. Lower antennæ much shorter than the body, slightly hairy, but not rugose upon the third peduncular joint; last article with about twenty-five articulations. Anterior pair of feet with a prominent obtuse tubercle on the antepenultimate joint; penultimate joint dilated into an obtuse tubercle at the inner tip to receive the thumb. Palm convex so as to receive the thumb without an interval, as long as the lower edge of the hand.

Length, 0·5 – 0·6.

Habit of the preceding, and abundant along the sandy beaches above the influence of the tide.

GENUS TALITRUS. *Latreille.*

Body composed of thirteen segments, exclusive of the head. Third articulation of the lower antennæ longer than the preceding two united. Upper antennæ scarcely longer, or not as long as the peduncle of the lower antennæ. No feet in the form of a claw; the second pair not larger than the first.

Talitrus quadrifidus.

PLATE IX. FIG. 27.

(STATE COLLECTION.)

Description. Head compressed; eyes obliquely oval. Lower antennæ shorter than the body, and only reaching as far back as the fourth segment, slightly hairy and somewhat rugose on the third joint. Upper antennæ very short, scarcely exceeding the second joint of the lower ones. Body compressed. Tail with three appendices terminating in four spines, each furnished with a series of rigid setæ. All the feet armed with a slender acute claw.

Color, dark horn; eyes blackish brown.

Length, 0·3 – 0·5.

This species also passes under the name of *Beach-flea*, and is frequently found concealed under stones and seaweed.

GENUS GAMMARUS. *Fabricius.*

Antennæ with the last joint composed of numerous minute ones; upper antennæ as long or longer than the lower, with four articulations, the last ending in a bristle; lower antennæ with five articulations. Feet fourteen; the two anterior pair monodactyle, subequal; the two following pair terminate in a simple curved nail. Tail with small fasciculate spines above, and bifid ones at the tip.

GAMMARUS MINUS.

PLATE IX. FIG. 29.

Gammarus minus. SAY, Jour. Acad. Nat. Sciences, Vol. 1, p. 376.

Description. Body incurved, subcompressed. Upper antennæ longest, with the setæ short, attaining the tip of the second articulation of the terminal joint, which has about twelve articulations. Eyes reniform.

Color. Body whitish, with a few pale fulvous spots on the sides. In dried specimens, the color becomes reddish, and the lateral spots, more particularly towards the tail, are bright red.

Length, 0·15 – 0·3.

This species is common in most of our fresh-water streams, and may often be detected under stones and pieces of wood. It is extremely active, and is popularly known under the name of *Fresh-water Shrimp.*

(*EXTRA-LIMITAL.*)

G. mucronatus. (SAY, loc. cit. p. 376.) Antennæ subequal. Eighth, ninth and tenth segments of the body mucronate above, more distinctly on the female. Length, 0·4. This and the succeeding will in all probability be found in this State. Inhabits the coast from New-Jersey to Florida.

G. fasciatus. (ID. Ib. p. 374.) Eyes at the outer base of the antennæ, reniform; terminal joint of the upper antennæ with about thirty articulations. *Color*, whitish, fasciate with faint green which becomes reddish after death. Length, 0·4. Fresh water. *Pennsylvania.*

G. locusta. (MONTAGU, Lin. Tr. Vol. 9, p. 359, pl. 4, fig. 1. GOULD, loc. cit.) Eyes linear, almost lunulated; antennæ covered with hairs; threads of the caudal appendices subequal. Allied to the preceding. *Massachusetts.*

G. appendiculatus. (SAY, l. c. p. 377.) Caudal segments, and three terminal segments of the body, dentated on their posterior edges. Feet in one sex with the second pair didactyle. Length, 0·3. *Georgia.*

Genus Amphithoe, *Leach.* General characters of the preceding. No setaceous appendix to the third joint of the upper antennæ. Tail without fasciculated spines, armed with bifid spines at the tip. Hands of the two anterior pair oval. Inhabiting fresh and salt water.

A. serrata. (Say, l. c. p. 383.) Antennæ equal, short, stout; eyes large, approximated, suboval; eighth, ninth and tenth segments of the body serrated; three spines on the lower edge of the palm. Length, 0·4. *Egg harbor, New-Jersey.*

A. dentata. (Id. Ib.) Posterior edge of the dilated thighs strongly serrated; eyes distant above; clypeus obtuse; hand truncate at tip, destitute of prominent teeth, but with a few rigid hairs. Length, 0·3. Fresh water marshes. *South-Carolina.*

A. punctata. (Id. Ib.) Lower antennæ nearly as long as the body; hands oval, not dentated nor larger than the carpus. Body and antennæ sprinkled with black points. Length, 0·35. *Egg harbor, New-Jersey.*

Genus Cerapus, *Say.* Antennæ very large and robust, nearly equal; the upper of four joints, the lower or lateral ones of five. Anterior pair of feet small, monodactyle; the second pair with a broad palm and a two-jointed thumb. Head distinct, ending in a small rostrum.

C. tubularis. (Id. p. 49. *C. abditus*, Templeton, Tr. Ent. Soc. Lond. Vol. 1, pl. 20, fig. 5. See Pl. 10, fig. 43 of this work.) Head with a mucronate carina before; hand and first joint of the thumb with one or two obtuse teeth; eyes oval, black. *Color.* Body above blackish, with irregular paler spots; antennæ and feet white; joints tipped with blackish: two hind pair of feet and tail white. Inhabiting a membranous tube open at both ends. Length, 0·25. *Sea-beach, Egg harbor, New-Jersey.*

Genus Lepidactylis, *Say.* Upper antennæ with a setaceous appendix at the tip of the third joint. Head produced into a point. Body compressed, oval. Feet fourteen. Two anterior pair of feet simple, equal; third and fourth subequal, didactyle, fingers lamelliform; the remaining pairs spinous, without nails.

L. dytiscus. (Say, l. c. p. 380.) Eyes orbicular; setaceous appendix reaching the tip of the fourth segment of the terminal joint; anterior pairs of feet hairy. *Color:* Body, when recent, white, with a ferruginous short stripe within. Length, 0·15 – 0·25. *Coast of Georgia.*

Genus Unciola, *Say.* Upper antennæ robust, subpediform, with an articulated seta at the base of the fourth joint. Feet fourteen, of which the first pair are monodactyle, the second with adactyle compressed hands with two minute hooks at the tip; coxæ simple, not dilated. Allied to *Podocerus.*

U. irrorata. (Id. Ib. p. 389.) Eyes conspicuous, rounded. Hands of the anterior feet with a longitudinal palm and prominent tooth; those of the second pair compressed, ciliated, with a subtriangular hand. *Color*, when recent, pale with numerous red points. Length, 0·3. Hab. seaweed on the coast of New-Jersey.

Genus Hyperia, *Latreille.* Body subconical, short. Head moderately large, round and pointed in front. Antennæ short and setaceous. Feet simple, terminating in a slender point, and subequal. Three first rings of the abdomen very large; the four following very small, and forming a sort of caudal fin furnished laterally with three pair of long and slender appendices, each terminating in two very minute lanceolated plates. Parasitic.

H. latreilli. (Edw. An. Sc. Nat. Vol. 20, p. 388. Say, *Lanceola pelagica*, Ac. Sc. Vol. 1, p. 318. Gould? loc. cit. p. 335.) Anterior pair of feet shortest; third, fourth and seventh equal; fifth longer; sixth longer than the thorax. This species is probably the same noticed by Dr. Gould under the name of *H. galba*, Mont., as occurring in the pouches of the *Medusa* ——, on the coast of Massachusetts. Mr. Say's specimen was obtained from the Gulf stream.

Genus Podocerus, *Leach.* Antennæ pediform; the lower longest and much more robust, with the terminal joint inarticulate or obscurely jointed. The two anterior pairs of feet monodactyle; hands dilated; those of the second pair largest, the palms unarmed. Allied to *Corophium.*

P. cylindricus. (Say, Jour. Acad. Nat. Sc. Vol. 1, p. 387) Hands of the second pair not larger than the carpus, somewhat cylindrical; third, fourth and fifth pairs of feet short, much compressed. Eyes small, not prominent. Length, 0·15. Hab. seaweed. *Egg harbor, New-Jersey.*

ORDER IV. LŒMIPODA.

Head united to the first segment of the thorax. Eyes sessile. Branchial apparatus, or what is presumed to be such, vesicular, and from four to twelve in number. Abdomen rudimentary, having the form of a small tubercle, without distinct appendices. Marine.

GENUS CYAMUS. *Latreille.*

Body broad, depressed. Head short, truncate. Antennæ four, approximated at their bases; the two upper setaceous, longest. Feet twelve, of which eight are perfect, and the others in the form of slender jointed appendices under the second and third segments of the body. Two compound sessile eyes on the anterior and lateral portions of the head, and two others, smooth, on the vertex. Parasitic.

CYAMUS CETI.

PLATE VI. FIG. 14.

Oniscus ceti. LIN. Syst. Nat. 3011.
Cyamus id. LATREILLE, Gen. Crustac. Vol. 1, p. 60.
C. id. GOULD, Invertebrata of Mass. p. 335.

Description. Head small, conical. Body depressed, oval-orbicular, composed of six segments somewhat distant from each other; the last with a small terminal appendix. Antennæ of four articulations, the last of which is small and conic; the upper as long as the head and first segment. Mouth with the lower lip formed by two jointed unguiculated palpi. First pair of feet short, of six articulations terminating in a hand with movable curved claw. Second and third pairs replaced by slender appendices, at the bases of which are the branchial vesicles. Fourth, fifth and sixth pairs complete; the fourth largest, the others successively smaller, all robust; the first joint large and rounded, the penultimate oval, the last pointed and forming with the preceding a monodactyle claw. *Color*, yellowish white.

Length, 0·5 – 0·8.

This species, which is known under the name of *Whale Louse*, is usually found attached to the bodies of whales along our coast, and occasionally on tunnies and other large marine animals. It varies much in form according to its degree of development, and this has given rise to several nominal species, which have not yet been sufficiently examined.

(*EXTRA-LIMITAL.*)

C. abbreviatus. (SAY, Jour. Ac. Vol. 1, p. 393.) Hands of the second pair with the palm two-toothed and much larger than the others; one tooth near the base, and the other near the tip. Branchial vesicles half as long as the feet. Length, 0·1. Hab. *Bal.*

GENUS CAPRELLA. *Lamarck.*

Body linear or filiform, composed of unequal segments. The upper antennæ with the last segment many-jointed, and as long as the three others. Two sessile compound eyes. Feet ten, elongated, arranged by pairs in an interrupted series, unguiculated; the second and third segments furnished with branchial vesicles. Marine.

Caprella geometrica.

C. geometrica. Say, Journ. Acad. Nat. Sciences, Vol. 1, p. 390.

Description. Body smooth above. Head obtuse, with a short spine in front; three last segments of the body shorter, convex above; terminal one smallest, and truncate at the tip. Second pair of feet with dilated oval compressed hands armed with teeth; one of which is near the base, linear, and almost parallel with the palm; the other large, obtuse, little elevated, placed near the base of the claw: thumb curved, attenuated at the tip, where it closes on the posterior tooth. Branchial vesicles short, oval. Terminal pair of feet longest.

Color. Body with a few scattering reddish brown spots; eyes red; antennæ and feet annulate with reddish brown.

Length, 0·3.

This species is found among sponges and seaweed along the coast, on which it walks after the manner of some caterpillars called *Measuring worms*. It swims by alternate curvatures of the body. Dr. Gould has indicated two species on the coast of Massachusetts, which are very probably distinct from any hitherto described.

(*EXTRA-LIMITAL.*)

C. ——. (Gould, Mass. Rep. p. 335.) Delicate, without any spines on any part. *Color*, thickly dotted on the back with dark green. Length, 0·5. *Massachusetts.*

C. sanguinea. (Id. Ib. p. 335.) Head blunt. Lower antennæ ciliated, and extending to the second segment, and the upper ones to the third segment: a spine on the middle of the first segment. Two last segments short and heart-shaped. *Color*, bright crimson. Length, 1·0. *Coast of Massachusetts.*

C. equilibra. (Say, l. c. Vol. 1, p. 391.) First and second segments of the body equal to one half of the whole length. Second pair of feet placed in the middle of the body. Hand toothless: nail closing without an interval. Second pair very large; the hand oblong-oval; palm rectilinear, bidentate. Length, 1·0. *South-Carolina.*

ORDER V. ISOPODA.

Body more or less depressed, divided into segments varying in number from three to seven. Head distinct from the first segment of the body. Mandibles without palpi. Mouth with three pair of jaws. Feet ten to fourteen. Tail of one or more segments, supporting the branchiæ. Eyes sessile.

GENUS IDOTEA. *Fabricius.*

Body oblong-ovate. External antennæ moderately long, setaceous; the peduncle with four joints, and the extremity many-jointed: internal antennæ placed slightly above the outer, small, filiform. Head subquadrate. Two sessile eyes. Tail large, of three segments, the last without any terminal appendices, and covering the branchiæ and the two laminæ which protect them. Feet subequal.

IDOTEA CÆCA.

Idotea cæca. SAY, Journ. Acad. Nat. Sciences, Vol. 1, p. 424.
I. id. GOULD, Invertebrata of Mass. p. 337.

Description. Body oblong-oval, broadest at the third or fourth segment, attenuated behind. Head quadrate, depressed, with a deep fissure on the sides. Antennæ approximated at the base. First segment of the tail short; second somewhat trilobate; last segment nearly or quite half the length of the body, attenuated to an acute conic point, subcarinate above. Three anterior pairs of feet robust, monodactyle; the remainder simple, unarmed, and with rigid hairs. Nails of the hind pairs rectilinear. Eyes inconspicuous.

Color, whitish varied with brown dots, occasionally confluent into bands; eyes milk white; head with a transverse black band.

Length, 0·3 – 0·5.

This little species occurs on all sandy shores from Massachusetts to Florida, where it forms the little serpentine tracks noticed in the sand. The figure of the *I. tricuspis* of Europe (Pl. 9, fig. 35), is introduced to illustrate the genus, as no opportunity has presented itself of figuring the American species.

(*EXTRA-LIMITAL.*)

I. triloba. (Say, l. c. Vol. 1, p. 425.) Body oval, somewhat oblong; its segments with the lateral processes very convex, lobated. Eyes very prominent. Middle lobe of the tail the largest; the last longer than all the others together, subtriangular. Feet armed with very strong acute incurved nails. Length, 0·25. *Egg harbor.*

GENUS STENOSOMA. *Leach.*

With the general characters of the preceding. Body sublinear. External antennæ nearly as long as the body, not comprising the tail; internal antennæ very short. Feet robust.

Obs. This genus has been united by recent authors with the preceding.

Stenosoma irrorata.

PLATE X. FIG. 42.

(STATE COLLECTION.)

Stenosoma irrorata. Say, Jour. Acad. Nat. Sciences, Vol. 1, p. 423.
S. *id.* Gould, Invertebrata of Mass. p. 338.

Description. Body oblong, somewhat tapering at each extremity, and composed of seven segments; those in the midde of the body largest; no appearance of articulation on the sides of the second or following segments. Eyes prominent, brilliant, black and lateral. Tail of four segments; the three first small, subequal; the third obsolete above. The fourth or terminal segment is nearly as long as four of the body segments, obsoletely carinate on the dorsal surface; tip with an elongated central point, and an obtuse tooth on each side. Lateral appendices oblong, rounded, with a transverse articulation near the posterior tip. Feet multiarticulate, hispid at the joints with acute incurved claws. External antennæ scarcely exceeding in length the ultimate segment of the tail, with a minute spine on the inner side of the tip of the first joint; but this is not observable except in the largest specimens. Internal antennæ very short, scarcely reaching the tip of the third joint of the outer antennæ. The last joint of the exterior antennæ is composed of more than twenty articulations.

Color, varies from deep purple to sea-green and even reddish. Some are of a uniform color, whilst others are varied with light sea-green and cinereous brown. The specimen figured in the plate, represents one with two longitudinal sea-green bands. Scarcely any two individuals are alike in their markings.

Length, 0·2 – 1·0. Width, 0·03 – 0·05.

This beautiful and active species is seen swimming with a rapid vibrating motion in clear salt water, in recesses among the rocks. It appears to be most abundant in August and September. As far as we know at present of its geographical distribution, it is found from Boston harbor to Cape May, but it probably extends along our whole coast.

(*EXTRA-LIMITAL.*)

S. filiformis. (Say, l. c. p. 424.) Body very much elongated, linear; segments distant, emarginate each side. Eyes very prominent. Antennæ robust; outer more than half the length of the body; the last joint enlarged. Length, 0·4. *Egg harbor.*

GENUS ANTHURA. *Leach.*

Body oblong-linear, vermiform. Tail furnished with foliaceous laminæ on each side; penultimate segment very short, the last much longer. Antennæ short; the intermediate ones rather shortest. Anterior feet with a movable nail.

Anthura gracilis.

PLATE IX. FIG. 34.

Oniscus gracilis. Montagu, Tr. Lin. Soc. Vol. 9, p. 366.
Anthura id. Leach, Desm. Consid. Crustacés, p. 291, pl. 46, fig. 13.
A. id. Gould, Invertebrata of Mass. p. 338.

Description. Body elongated. Feet subequal; the second pair smallest; the first pair largest, robust, terminating in a small subcheliform hand. Two pair of foliaceous elongated laminæ on each side of the last caudal segment, which is subtruncate behind.

Length, 0·25.

(*EXTRA-LIMITAL.*)

Genus Sphæroma, *Latreille.* Body oblong, convex, with subimbricated transverse segments, and contractile into a sphere. Antennæ four, small; the external slightly longest. Tail of two segments; the last with a fin on each side, formed of two scales. Marine.

S. quadridentata. (Say, l. c. p. 400.) Body oval, punctured. Tail with its last segment semioval; the internal lateral lamella acute, entire; the external one serrate on the outer edge with four teeth. *Color*, brownish ferruginous, often varied with white or rosaceous. Length, 0·45. *Coast of Georgia and Florida.*

GENUS NÆSA. *Leach.*

Body ovate-oblong, with many of the characters of the preceding. Last segment of the tail largest, and furnished on each side with a simple pedunculated appendix; penultimate joint of the thorax larger than the last. Nails bifid.

Næsa ovalis.

Næsa ovalis. Say, Jour. Acad. Nat. Sciences, Vol. 1, p. 484.

Description. Body oval, depressed. Caudal segments three; the last half as long as the body, triangular, obtusely rounded at the tip, with three longitudinal raised lines at the base, of which the middle one is most conspicuous. Lateral processes dilated, depressed, rectilinear within, and rounded on the external margin. Head somewhat unequal. Eyes conspicuous, hemispherical. Antennæ equal. Labrum triangular, advanced, very conspicuous, and forming with the base of the superior antennæ a rounded termination. Feet all armed with bifid nails, none of which close on the preceding joint.

Length, 0·15.

According to Mr. Say, this species, which I have not seen, is common in the bays and inlets of the United States, creeping on seaweed and other marine plants. It occurs as far south as Florida.

(*EXTRA-LIMITAL.*)

N. caudata. (Id. Ib. p. 482.) Body oblong-oval, semicylindrical. Last segment of the tail tuberculated, as long as the four preceding ones united, with a deep sinus at the tip, within which are two to four teeth, and a larger vertical one above its base. First caudal segment conspicuous. *Color*, fuscous. Length, 0·25. *Egg harbor, N. J.*

N. depressa. (Id. Ib. p. 483.) Body broad, depressed, punctured, linear. Hands of the anterior feet dilated, ovate, monodactyle; thumb as long as the palm. Second pair with cylindric hands, with an incurved thumb; the others ciliated. First caudal segment concealed. Length, 0·5; breadth, 0·2. Hab. with the preceding.

GENUS CYMOTHOA. *Fabricius. Lamarck.*

Body oval, oblong, subconvex, of six transverse segments. Tail of six segments, narrower than those of the body; the last segment largest, and having on each side a fin composed of two compressed scales. Feet fourteen, with stout nails; the coxæ large, and resembling an accessory lateral articulation of the thoracic segments. Two sessile eyes. Antennæ four, setaceous, rather short; the external slightly longest.

Obs. This large genus has been erected by recent writers into a family composed of ten genera. We retain at present the original genus *Cymothoa*. The species are all parasitic, being attached to the mouths and gills of fishes.

Cymothoa triloba.

PLATE X. FIG. 40.

(STATE COLLECTION.)

Description. Body elongate, elliptic; the transverse more than half the longitudinal diameter of the body. First segment as broad on the medial dorsal line as the two following segments united; it is emarginate on its anterior edge, to correspond with the trilobed division of the head: its accessory lateral plate united so closely as to form a continuity with the segment; last segment lunate. Surface of all the segments smooth, with irregular opaque marks; the posterior margins opaque, polished. Head ovate in front, where it is slightly reflected downward, trilobed behind; the middle lobe largest. Eyes inconspicuous. Anterior pair of antennæ shortest. Segments of the tail gradually decreasing in breadth, with an obsolete elevation on the medial line; terminal segment equal in length to the five preceding, subquadrate, narrowed and rounded behind, with a membranous tip, and a faint elevated transverse line on the upper surface. Lateral appendices about equal in length to the terminal segment; the external lamella longest.

Length, 1·0. Extreme breadth, 0·6.

This species has many characters in common with the *C. impressa* of Say; but (independent of marked differences) his doubts whether it might not be synonimous with *C. ichthyola*, Latr., induces me to believe that he had in view a species entirely distinct from that described above. It differs from *C. oculata*, Say, by the conspicuous eyes and the size of the middle lobe of the head in the latter species. I am unacquainted with the *C. trigonocephala* of Leach, except by a brief notice in the *Dictionnaire des Sciences Naturelles*.

This species is very common on various fishes. The specimen here described was detached from the surface of the Common American Codfish.

Cymothoa prægustator.

Oniscus prægustator. Latrobe, Am. Phil. Trans. Vol. 5, p. 77, Pl. 1.
Cymothoa (Æga) id. Say, Jour. Acad. Nat. Sciences, Vol. 1, p. 395.

Description. Body ovate, elongated, gradually tapering before from the sixth segment; the first four segments nearly equal in length; the three following shorter. Head not tapering, elongated, much longer than broad, transversely impressed near the tip, which is not narrowed. Eyes conspicuous, oval, composed of punctures instead of granules. Antennæ subequal, hardly attaining the middle of the eyes. Last segment of the tail as long as the seven preceding ones united, gradually narrowed towards a point at the tip, with a perceptible longitudinal line on the middle. Lateral styles membranaceous, almost filiform, longer than the peduncles, and much shorter than the segment to which they are attached. Feet gradually longer to the seventh pair, which are much longer than the others.

Length, 2·0.

This species is very abundant in the mouth of the *American Alewife* (*Alosa tyrannus* of the New-York Report).

Cymothoa olivacea.

PLATE X. FIG. 41, 41 a. MAGNIFIED.

Description. Body oblong-oval, attenuated in front, smooth; the transverse equal to half the longitudinal diameter. Head pyramidal, rounded anteriorly; first segment with three emarginations, of which the central is most superficial. Bases of the antennæ contiguous, of eight articulations each, the anterior slightly longest. Eyes black, reticulated, conspicuous. First segment broader than the following, and without an accessory lateral plate; third and fourth subequal; fifth, sixth and seventh broader, the last lunate. Segments of the tail smooth, with no elevated medial line. Terminal segments subacutely ovate; lateral appendices longer than the terminal segment. Three last pairs of feet longest.

Color. The three anterior segments olive-green; all the others sparsely punctate with white, and of a polished white on their posterior margins. Segments of the tail black. Abdomen tumid, and of a rich olive-green or yellowish.

Length, 0·75.

I found numerous specimens of this species in the month of August in the harbor of New-York, adhering to the gills and inside of the mouth of the *Rhombus triacanthus*, or *Short-finned Harvest-fish* of this Report.

(*EXTRA-LIMITAL.*)

C. ovalis. (Say, l. c. Vol. 1, p. 394.) Body oval; eyes concealed; head attenuated and rounded before. Terminal segment rounded at tip, as long as the four preceding ones united. Length, 1·0; breadth, 0·5. Hab. mouth of *Tautoga americana* and *Labrax rufus* of this report.

C. impressa. (Id. Ib. p. 397.) Body oblong; head attenuated, terminating acutely between the bases of the antennæ. Tail widely emarginate at tip, depressed in the middle so as to appear almost bilobate, as long as the seven preceding. Length, 1·0. Hab. ———. *Cape May, N. J.*

C. lanceolata. (Id. Ib.) Body ol long-oval; head broader than long. Last caudal segment dilated, lanceolate, longitudinally carinate above, as long as the six preceding. Length, 0·7. *Cumberland island, Ga.*

C. (*Æga*) *oculata.* (Id. Ib.) Body elongate-oval. Head trilobate behind; middle lobe smallest. Abdominal segments not shorter than the terminal thoracic ones. Eyes large: facets regularly hexagonal. Last segment of the tail rounded, ciliate, shorter than the four preceding. Length, 0·5. Hab. *Sargus ovis* of this report. *Florida.*

C. immersa. (Id. Ib. p. 399.) Head subquadrate; first segment of the thorax profoundly emarginate for the head; last segment of the tail large, membranaceous towards the tip; lateral appendices very short; large joint of the fourth pair of feet extended behind into a spine. Length, 1·75. *Southern States.*

C. æstrum. (Leach, Dict. Sc. Nat. Vol 12. Desmarest, pl. 47, fig 6, 7.). Oblong, sublinear. Carinæ of the eight last coxæ acuminate at their base. Head subquadrate, transverse; last segment of the tail subquadrate, truncate behind, broadly emarginate. According to Dr. Gould, found on the coast of Massachusetts.

GENUS LIMNORIA. *Leach.*

Body oblong-linear, convex. Head nearly as large as the first segment, with the eyes on the upper surface distant, distinct, granular. Antennæ subequal. Tail of six distinct rings. Caudal appendices composed of two lamellæ on each side of the tail. Marine.

Limnoria terebrans.

PLATE IX. FIG. 33.

Limnoria terebrans.		Leach, Lin. Trans. Lond. Vol. 11, p. 370. Sup. Encycl. Ed. Vol. 7, p. 433.
L.	*id.*	Desm. Consid. Crustacés, p. 312.
L.	*id.*	Coldstream, Ed. Phil. Jour. 1834, pl. 6, fig. 1–18.
L.	*id.*	Thompson, Ib. 1835.
L.	*id.*	Gould, Invertebrata of Mass. p. 338 and 354, cum fig.

Description. Body oblong-linear, with both extremities rounded, composed of seven segments, each bearing a pair of short feet; the following segments small, except the penultimate and the last which are broad. Female larger than the male, and recognized by the pouch in which she carries her eggs and young. Capable of rolling themselves up in a ball.

Color, ashen grey. Eyes of a blackish brown. Length, 0·15. Breadth, 0·06.

This apparently insignificant and minute animal is capable of great injury to wood exposed to salt water. It attacks in countless numbers the piers of bridges, wooden wharves, and all submerged timber, piercing it in every direction, and soon rendering it useless. It has been computed that a stick of timber exposed to these animals, where they are abundant, will lose an inch of its diameter annually. They act chiefly below low-water mark. The best mode of protection yet discovered is a coat of verdigris, or of metallic copper. The same purpose is effected by covering the whole surface with broad-headed copper nails. This animal attacks in preference pine and other soft woods, although none, except perhaps live oak, is exempted from its ravages. Its injuries are very partially counterbalanced by its benefits in destroying sunken timber, or vessels, which might obstruct channels or tideways.

GENUS ASELLUS. *Geoffroy.*

Body oblong, depressed. Head distinct. Segments transverse, crustaceous. Tail of a single segment, with two bifid appendices. Feet fourteen. Four apparent antennæ, setaceous, unequal; the two superior much shorter, four-jointed; the two lower much longer, of five joints. Several pairs of jaws. Eyes two, simple, sessile.

Asellus communis.

Asellus communis. Say, Journ. Acad. Nat. Sciences, Vol. 1, p. 427.

Description. Segments transverse, subequal, indistinctly emarginate on the lateral edges, furnished with short rigid hairs. Head narrower than the first segment, and not longer. Eyes obovate, oblique, black, prominent. Inferior antennæ equal to the peduncle of the superior ones, which latter extend to the base of the tail. Tail as broad as the segments of the body, and equal to the two preceding ones united. Appendices as long as the tail; laciniæ subequal, peduncle dilated. Anterior feet monodactyle, unarmed; thumb as long as the hand. Hand oval; carpus triangular, remaining gradually longer to the hind pair.

Length, 0.25. Breadth, 0·09.

This is a very common species in our freshwater streams, and usually found under stones and bits of wood. The female is distinguished by a valvular follicle beneath, covering the young.

(*EXTRA-LIMITAL.*)

A. lineatus. (Id. Ib. p. 428.) Body oblong, not distinctly attenuated in front. The two lower antennæ shorter than the peduncle of the upper antennæ, which latter are as long or longer than the body. Peduncle of the caudal appendices cylindrical. *Color*, pale brown, with a double dorsal brown line united at the tip of the tail, and with a brown line or two on each side of the tail. Length, 0·25. Swamps in the forests of South-Carolina. An *Janira?*

A. vulgaris? Lam. (Gould, op. cit. p. 337. Pl. 9, fig. 32 of this work.) Larger than the preceding, according to Dr. Gould. *Massachusetts.*

Genus Ligia, *Fabricius.* Body oval-oblong, with transverse segments. Two short bifid appendices at the extremity of the tail. Feet fourteen. The two outer antennæ very conspicuous, with the terminal article many-jointed; the inner antennæ not distinct. Two sessile eyes.

L. oceanica, Fab. (Desm. Consid. Pl. 6, fig. 13 of this work.) It is doubtful whether this species has been observed on our coast. Dr. Gould has noticed a species of this genus about the timbers of a decaying wharf, but which, he states, seems to be smaller than *L. oceanica.*

Genus Philoscia, *Latreille.* Body oval, with transverse crustaceous segments, narrowed towards the tail. Caudal styles four, subequal; the lateral ones biarticulate. Eyes sessile. Two outer antennæ very distinct, of eight joints, naked at their base; the inner antennæ not distinct. Terrestrial.

P. vittata. (Say, loc. cit. p. 429.) Head transversely oval; eyes longitudinally oval; antennæ with minute distant hairs; first segment of the body rather longer than the others. *Color:* Head, body and tail, with the margin and two broad vittæ, cinereous. Length, 0·2. Under stones and wood in damp places.

P. spinosa. (Id. Ib.) Body elongate-oval, armed with numerous spine-like tubercles above; sixth and seventh segments produced on each side behind, acute. Feet beneath, armed with short distant setæ. *Color*, brown. Length, 0·2. Under stones, etc. in damp places. *Savannah, Georgia.*

GENUS ONISCUS. *Linneus.*

Body oval, with transverse crustaceous subimbricated segments, susceptible of being rolled into a ball. The two outer antennæ very conspicuous, setaceous, bent, of eight joints; the inner antennæ obsolete. Two sessile eyes. Two prominent caudal appendices. Terrestrial.

Oniscus asellus.

PLATE VI. FIG. 12.

Oniscus asellus. Lin., Fab., Lat., Desm. Consid. Gen. p. 320, pl. 49, fig. 5.
O. affinis. Say, Journ. Acad. Nat. Sciences, Vol. 1, p 430.
O. asellus. Gould, Invertebrata of Massachusetts, p. 366.

Description. Body oval, and roughened on its anterior portion. Segments of the body rounded in front on the lateral edges, and pointed behind. Tail smooth, of six segments (overlooked by the lithographer in the figure); the third, fourth and fifth with lateral prolongations; the sixth or last segment pointed with four styles, longer than the last segment. Feet fourteen, gradually increasing in size from before.

Color, dusky brown, with many irregular ashen points and marks; beneath greyish white:

Length, 0·5. Breadth, 0·3.

This is the common *Sow-bug* of cellars and gardens, and found also under stones and decaying wood. The female carries its eggs in an oval sac beneath the body, where they are hatched. The Sow-bug was formerly employed in medicine as a diuretic, but is now very properly abandoned. It feeds on decomposed vegetables, and is in no wise injurious to man. I coincide with Dr. Gould in considering the *affinis* of Say to be identical with that of Europe.

GENUS PORCELLIO. *Latreille.*

Body resembling that of the preceding genus, with the same characters, except that the outer antennæ are composed of but seven articulations.

Obs. This genus has been united by most recent writers with the preceding.

Porcellio spinicornis.

Porcellio spinicornis. Say, Jour. Acad. Nat. Sciences, Vol. 1, p. 431.

Description. Body elongate-oval, roughened with numerous granules. Third joint of the antennæ elevated above, and armed with an acute spine. Terminal joint of the tail canaliculate, hardly surpassing the first joint of the outer styles.

Color, blackish brown; cinereous on the edges. Three dorsal lines of alternate yellowish subquadrate spots. Tail with two or three small yellowish spots on each side at the base.

Length, 0·4.

This is also known under the name of *Sow-bug*, and is found in similar situations with the preceding.

(*EXTRA-LIMITAL.*)

P. nigra, Say. (*O. granulatus*, Lam.? Vol. 2, p. 354. Ed. Brux.) Very rough with elevated granules. Last caudal segment margined behind with abbreviated lines. *Color*, black, immaculate. Length, 0·3. This is found in Pennsylvania, and, according to Dr. Gould, in Massachusetts.

P. lævis? Latr. (Gould, l. c. p. 337.) Body smooth; caudal appendices larger than in the preceding. *Color*, dark ash, varied with soiled yellowish.

GENUS ARMADILLO. *Latreille.*

Habit and many of the characters of the preceding. Outer antennæ of seven joints; inner obsolete. Feet fourteen. Caudal appendices not prominent. Roll themselves up into a complete ball. Terrestrial.

Armadillo pillularis.

Armadillo pillularis. Say, Jour. Acad. Nat. Sciences, Vol. 1, p. 432.
A. *id.* Gould, Invertebrata of Mass. p. 336.
A. *pustulatus?* Desm. Consid. Gen. pl. 49, figs. 6 and 7.

Description. Body minutely punctured. Caudal segments slightly smaller than those of the body.

Color. Dull lead-color, with three lines of large yellowish spots above. Posterior margin of the segments light colored.

Length, 0·5.

This is known under the name of *Pill-bug*, from its form, in a contracted state, completely resembling a pill, and by this alone it is at once distinguished from the preceding genera. It casts its shell once a year at least, and these are frequently found under stones and boards in fields which have been their habitual resort. It appears in its markings to be closely allied to the European *A. pustulatus* of Dumeril, or *variegatus* of Lamarck; but I have had no opportunity of making a direct comparison.

It is here, at the end of this order, that we arrange the *Brongniarta trilobitoides* of Dr. Eights (*Serolis id.* of Audouin and Edwards, *Arch. Mus.* 1841, p. 29), found off the coast of Patagonia, and which appears, with the three other known species, to form a passage to the

exclusively fossil genera known under the name of *Trilobites*. It is here also that I venture to place a curious crustacean, which I find no where described. In my original notes I find it arranged under the order *Pœcilopoda*, but I prefer placing it provisionally at the end of this order.

GENUS FLUVICOLA.

Body elliptical or oval, slightly narrowed behind. Antennæ four, all concealed beneath the buckler; the outer curved and longest, of three articulations; the two posterior straight, and scarcely half the length of the others. Segments of the body trilobate. Feet three pair. Fluviatile.

Fluvicola herricki.

PLATE X FIG. 37. FIG. 38 & 39, Magnified.

(STATE COLLECTION.)

Description. Body ovate-elliptical, membranous and flexible, consisting of twelve segments vaulted in the center, and becoming thin and translucent on the edges; its whole disk margined with subequal closely approximated hairs. The head or anterior segment with faint sutures, dividing it into three pieces; near its junction with the first segment of the body is a dark colored spot, which, under the lens, presents a tubercular appearance. The two following segments are broader than the eight succeeding ones, and all, except the last, are divided by two longitudinal fissures into three series of lobes, giving to the animal a striking resemblance to trilobites. The edges of the central plates, where they touch each other, are considerably elevated; the lateral plates free, and admit of motion over each other. The whole upper surface is irregularly marked with serpentine lines and small round spots. Beneath, the mouth appears under the junction of the anterior segment with the following, resembling a short sac or tube with a transverse opening; and on each side, two dark processes, apparently the rudiments of jaws. Antennæ four; the two anterior longest, curved, not reaching the outer margin of the buckler; the two inferior straight. Immediately posterior to the mouth arise three pair of unguiculated feet, of which the posterior pair is shortest; they are furnished with scattering rigid hairs, and with a single black hook at the tip. Posterior to these feet are five pair of branchiopodal processes, resembling bunches of white tendinous filaments. Under a powerful lens, a dorsal vessel may be traced on each side, communicating with each tuft of filaments. Each tuft appears divisible into two, and these again are composed of seven or eight single filaments. *Color*, greyish brown.

Length, 0·2 – 0·3.

This singular crustaceous animal is found adhering to rocks in and near the water of West-Canada creek. It is detached with considerable difficulty, and when so detached, partially rolls itself up. It was thought a singular coincidence, that animals bearing so strong an external resemblance to trilobites should be found at the most remarkable locality in the United States for these extinct animals. It is not supposed that they properly belong to this order, to which, they are, however, allied by external form; but the form of the mouth compels us to arrange it among the Branchiopodal Crustacea, or *Crustacés suceurs* of more recent writers. I feel much indebted to Mr. I. Cozzens for another species from Rye, Westchester county.

Fluvicola tuberculata.

(STATE COLLECTION.)

Description. Body ovate-oblong, sublinear, arched along the medial line. Anterior segment rounded in front, terminating in produced points on each side behind; second and third segments larger than the following, which become successively smaller; the lateral segments oblong, quadrangular: the whole disk margined with closely beset hairs as in the preceding. On each side of the dorsal ridge, and closely contiguous to it, is a longitudinal series of abbreviated oblong elevations, which, on the three anterior segments, become more elongated, and form a depression between them instead of a ridge. Near this series, and parallel to it on each side, is a similar series of somewhat oblique tubercles, and a third series more distant, and apparently defining the boundaries of the lateral lobes. In desiccated specimens, these series of tubercles, crossing the raised edges of the segments, divide the surface into a series of quadrangular compartments. In other respects resembling the preceding. *Color*, reddish brown.

Length, 0·2–0·5.

Attached to stones in brooks at Rye, Westchester county.

ORDER VI. PŒCILOPODA.

Head confounded with the trunk; the anterior part of the body in the form of a shield. Mouth beak-shaped, or composed of appendices occupying the place of jaws. Antennæ short and simple or obsolete, usually sessile and distinct. Anterior feet terminated by one or more hooks or pincers adapted for walking or prehension; the posterior for swimming, and composed of, or attached to, branchial plates or processes.

GENUS POLYPHEMUS. *Lamarck.*

No antennæ. Shield very large, subcoriaceous, rounded in front, convex above, separated into two parts by a transverse articulation, the posterior part smallest, spinous on the sides, deeply notched behind. Tail long, trigonal, robust and pointed. Eyes two, sessile, distant, compound, semilunar. Haunches of the first six pair of feet spinous, and act as jaws. Feet twenty-two. Marine.

Obs. This genus is arranged by Lamarck under a section which he terms *Branchiopodes géants*, in allusion to the gigantic stature of some of the species. M. Edwards, however, has shown that it is not a natural group, and should not be adopted. Latreille has placed it under a family of this order, which he designates under the name of *Xyphosures*, and this has been erected into an order by M. Edwards under the same name. According to Straus-Durckheim, they are more allied in their organization to Spiders than to Crustaceans.

Polyphemus occidentalis.

PLATE XI. FIG. 50. Pincer of the male, 51.

(STATE COLLECTION.)

Limulus cyclops. Fabricius, Syst. Vol. 2, p. 488.
L. polyphemus. Latreille, Genera, Vol. 1, p. 11.
L. id. Bosc, Crust. Vol. 2, pl. 16, fig. 6. *L. albus*, Id. Shell of the young.
Polyphemus occidentalis. Lam. An. sans vert. Ed. prior, Vol 5, p. 147; Ed. Brux. Vol. 2, p. 339.
Limulus americanus. Leach, Dict. Sc. Nat. Vol. 14, p. 537.
L. sowerbei. Id. Zool. Mis. Vol. 2, p. 72, pl. 34, young.
Arana carafecho. Parra, Descripcion, pl. 56.
Limulus polyphemus. Say, Jour. Acad. Nat. Sc. Vol. 1, p. 435.
L. id. Dekay, Annals of Lyceum Nat. Hist. Vol. 1, p. 181.

Description. Body large, particularly of the females. The anterior portion of the shield largest, rounded in front, with a narrow elevated rim; reflected beneath, and there forming

a large triangular cavity in front. It is by a separation of this rim or border, that the animal is enabled to leave its old shell. The upper surface of this anterior portion is marked by three longitudinal carinæ, more or less elevated, and separated in the adult by a deep fissure nearest the central carina, and continuous with the series of branchial openings to be noticed on the posterior portion. On the central carina, the first spinous tubercle is equidistant between the central one and the anterior rounded margin. Central tubercle often effaced. Eyes oblong-lunate, reticulated, scarcely elevated above the shield, and placed exterior to the anterior part of the lateral carina. Posterior portion of the shield produced at the sides into spinous tips, which are minutely serrate, and thickly beset with long hairs. The posterior or abdominal portion trapezoidal, deeply notched behind for the reception of the tail, where it has upturned acute spines on each side. The lateral edges, including these last, have seven ciliated serrated triangular spines; between these are six flat acute elongated slightly curved movable spines, ciliated on both edges, and gradually diminishing in length from before: the largest of these exceed an inch in length. At the junction of the two large portions of the shield is an irregularly shaped tuberculous spine with a broad basis, denticulate on its edge, ending in an acute point, and suddenly descending behind to the plane of the shell. Six apertures arranged in two longitudinal converging series; and between them, on the medial line, two minute spinous tubercles, one of which is near the anterior margin, the other just behind the line of the two posterior apertures; the under side of both portions with scattering hairs. In front of the mouth a pair of feet, with small didactylous claws, which are considered by some authors as antennæ; then follow ten feet, their haunches with a lobed projection covered with long spines over the mouth, and performing the functions of jaws: there are also distant spines on the succeeding joints. In the female, all these terminate in didactylous or multidactylous claws. In the male the anterior pair is of a different configuration (see fig. 51.): the penultimate joint ventricose, with a small tubercle at the apex; the last joint single, and shaped not unlike the toe of a bird with its claw. The last pair terminates in four movable foliaceous convex joints, which are rounded at tip, and a fifth cylindrical joint which itself ends in two movable claws. Posterior to these pairs is a large foliaceous multiarticulate structure, having at its posterior base the sexual organs. Posterior to this are ten fin-feet, united at their base in pairs, and supporting the gills on their posterior faces. Tail rigid, partially flexible in the living animal, nearly as long as the shield, triangular, rounded and smooth beneath, carinate and spinous above, ending in a sharp point.

Color, of a uniform dark brown; eyes somewhat lighter; the abandoned shells of the young white.

Total length of female, 19·0 – 22·0; of tail, 9·0 –10·0.
Extreme width, 9·5. Height, 3·0 – 4·0.

This common species on our shores is known here under the popular name of *Horse-foot*, on account of its shape, and still retains in some districts the name given to it by the early English colonists, of *King Crab*, in allusion to its size. The males may be distinguished at

once by their inferior size. It is also sometimes called the *Sauce-pan*, in allusion to the shape of its shield, which is frequently used as a bale for boats. They come up on the shore at high water in May, when the sexes are frequently found attached. They are speared at that time in great numbers, and eaten with great avidity by hogs and poultry; but care must be taken to give them other food for some time previous to being killed, or their flesh will have a rank disagreeable taste. It is even said that this flavor will be communicated to the eggs of fowls which have fed on these animals. When, however, the flesh of this crab is carefully separated from the other parts, and boiled, it becomes a delicious savory food. They crawl slowly along the bottom, and I have never seen them swimming near the surface. When thrown upon their backs, they inflect the anterior portion of the shield upon the posterior, and likewise turn it so far back, that with the aid of their tail as a lever, they succeed, after many awkward attempts, in recovering their natural position. They are frequently caught so abundantly as to be used as a manure.

The geographical distribution of this species on our coast is not yet determined. It occurs from Massachusetts to Virginia, and probably farther south to the Gulf of Mexico, if the following, which is supposed by Mr. Say to be probably distinct, should prove to be a mere variety.

(*EXTRA-LIMITAL.*)

P. australis. (Say, Jour. Ac. Vol. 1, p. 436.) Disk five-spined; three in a longitudinal line, and a smaller one on each side in a transverse line with the anterior spine, and nearer to the elevated lateral angles. *Carolina and Florida.*

Genus Argulus, *Muller.* Body oblong, covered by a rounded oval membranous shield, somewhat flattened, emarginated behind. Feet twelve, of three kinds: the two anterior tubular, subhemispherical, adapted for prehension; those of the second pair biunguiculate; the remainder natatory, having at their tips two lobes ciliated on their edges. Antennæ four, very minute. Two distant eyes. Mouth externally a sucker of a conical shape, directed downwards. Parasitic.

A. catostomi. (Dana & Herrick, Am. Jour. Sc. Vol. 31, p. 297.) Shell nearly circular, transparent, slightly convex. Eyes compound. Antennæ before the eyes; posterior pair with four joints, one-third longer than the anterior pair, which has but two. *Color*, light sea-green. Attached to the inside of the gill-cover of a species of *Catostomus*. *Connecticut.*

A. alosæ. (Gould, Invert. Mass. p, 340 and figure. See Pl. 10, fig. 45 of this book.) Shield obcordate, covering only the first two pairs of legs. Abdomen narrow and half as long as the shield, bearing the next three pairs; these, as well as the preceding, have long fringed tips. Inferior caudal plates two, and covered by two others which are long and broad. Length, 0·5. Gills of the Alewife, *A. vulgaris*. *Massachusetts*

Genus Caligus, *Muller.* Body elongated, depressed, and apparently divided into two parts: the anterior covered by a shield in a single piece; the posterior oval or oblong, often with terminal lamellar appendages, and in the female with two long filiform appendages. Feet ten to fourteen, of two kinds: the anterior pairs unguiculate; the posterior lamellar, natatory and pectinated. Antennæ two, very small, setaceous. Eyes two, distant, and placed under the anterior rim of the shield. Mouth forming a sucker externally as in the preceding, bent downwards, pectoral. Parasitic.

C. americanus. (Pickering & Dana, Am. Jour. Sc. Vol. 34, pl. 3, 4 and 5. Pl. 10, fig. 46 (male) and fig. 47 (female) of this work.) Oval-oblong. Length, 0·5 – 0·6. Found attached to the outer surface of the *M. americana*, or common Cod-fish of our coast.

C. piscinus. Latreille. (Say, Ac. Sc. Vol. 1, p. 437. Gould, l. c. p. 340.) Disk small and rounded, with two flattened jointed appendages behind, sometimes an inch long. Occurs on the cod and other marine fishes. Length, 0·2. *Northern Coast.*

C. cristatus. (Gould, l. c. p. 340.) Two little elevated crests within each posterior angle of the shield, at right angles to each other. Abdominal and caudal plates very long and broad. Margin of shield behind the antennæ, thin, and minutely fringed. Total length, with the caudal appendages, 1·5. Dr. Gould suggests that it may prove to be *Pterygopoda latreilli.* Attached to *Lamna punctata.*

GENUS ANTHOSOMA. *Leach.*

Shield suborbicular. Antennæ two, six-jointed. Fect twelve. Abdomen much narrower than the shield, with two foliaceous plates on the back, and six others beneath; first pair of feet unguiculated, the tip opposed to a small tooth on the preceding joint; second pair with a compressed nail; third pair with its last joint very thick, dentate in front. Beak a siphon. Two long caudal filaments. Parasitic.

Anthosoma smithii.

Anthosoma smithii. Leach, Dict. Sc. Naturelles, Vol. 14, p. 533.
A. *id* Griffith's Cuvier's Règne Animal, Vol. 13, p. 374, pl 21, fig. 3.

Description. Whitish tinged with reddish; the filaments of the tail slender, cylindrical, much elongated: the three posterior pairs form a case enveloping the post-abdomen.

Length, 1·0.

This small crustacean appears to be a parasite peculiar to the Shark family. It was first noticed by Leach on the *Lamna cornubica;* then by Risso (*Ichthyol.* p. 38), on the *Squalus ferox* (*Scyllium*); and subsequently by Storer, on the *Lamna punctata* of our coast.

(*EXTRA-LIMITAL.*)

Genus PANDARUS, *Leach.* Body ovate, occasionally elongate, ending in two long filaments. Shield rounded in front, truncate behind. Antennæ two. Feet fourteen; the six anterior unguiculated, the others bifid. Body covered with transverse scales, dentate on their posterior edges. Parasitic.

P. sinuatus. (SAY, l. c. p. 436.) Body oblong, quadrate, dilated. Scales six: four subequal, in a transverse line at the base of the abdomen, rounded at tip; two larger, arising beneath the preceding, slightly dentate at the tip, and not concealing half the abdomen, which is sinuate behind. Length, 0·2. Hab. body of *Mustelus canis*, or *American Hound-fish.*

Genus CECROPS, *Leach.* Body oval, obtuse at the extremities, covered with four unequal scales which are emarginate. No posterior filament. Feet fourteen: the six anterior unguiculate; fourth or fifth bifid; sixth and seventh with dilated coxæ; the others membranous, dilated, natatory. Antennæ two, very small. Parasitic.

C. latreilli, LEACH. (DESM. pl. 50, fig. 2. STORER, Rep. Fishes, p. 172. PL. 10, fig. 44 of this work.) Shield coriaceous, bipartite: the anterior portion obcordate, deeply emarginate behind; the posterior consists of three, overlapping each other, and becoming gradually larger from before. Antennæ of two joints, terminated by a single hair. Hab. *Orthagoriscus mola. Northern Coast.*

GENUS LERNEA. *Cuvier.*

Body long, cylindrical, more or less filiform; enveloping membrane sub-coriaceous. Head enlarged, with processes varying in number and size. Caudal extremities variously terminated. Parasitic.

OBS. The animals of this and the following genus were originally arranged under the *Intestinal worms.* They have, however, notwithstanding their anomalous vermiform appearance, too many characters in common with the crustaceans, to leave them where they were originally placed. Some late writers have proposed to erect them into a distinct class between Insects and Worms.

LERNEA CRUCIATA.

Lerneocera cruciata. LESUEUR, Ac. Nat. Sciences, Vol. 3, p. 286, pl. 11, fig. 4.

Description. Body slender before, dilated behind, transparent; mouth central, surrounded by five robust processes. On the caudal extremity are five rounded tubercular processes.

Found attached to the *Cichla ænea*, or *Rock Bass* of Lake Erie.

Lernea radiata.

Leech. Latrobe, Trans. Am. Phil. Soc. Vol. 5, p. 80, pl. 1.
Lerneocera radiata. Lesueur, Jour. Acad. Nat. Sciences, Vol. 3, p. 288, pl. 11, fig. 1.

Description. Body filiform in front; somewhat enlarged behind. Head with five flexible processes. Caudal extremity with a short central lobe, and a long filiform process behind on each side. Found on the *Alewife*.

GENUS PENELLA. *Oken.*

Head enlarged, and furnished at the nape with two small horns; the neck corneous. Body long, wrinkled transversely, and furnished behind with small filaments disposed like the barbs of feathers. Two very long filaments originate at the commencement of this pinnated portion.

Penella plumosa.

Description. Body susceptible of great contraction and dilatation. Head enlarged, with numerous foramina at its extremity. The rudiment of a third elongated process on the nape. Caudal extremity with a series of processes on each side, eighteen to twenty in number, which, under the lens, appear bulbous.

Color. All the free portion of a dark red or purple.

Length, 2·0 -- 3·0.

Found on the bodies of *Rhombus ferrugineus* and *Diodon plumosus* of this report.

(*EXTRA-LIMITAL.*)

P. filosa. (Cuv. Griff. Vol. 12, p. 466. Ellis, Tr. Phil. Vol. 63, p. 15, 20. Gould, op. cit. p. 341.) Seven or eight inches long. Found attached and deeply buried in the body of the *Orthagoriscus mola*.

ORDER VII. PHYLLOPODA.

Shield delicate, of a single piece, free behind. Two corneous mandibles, semicylindrical, without palpi; the tip compressed, straight and dentate. First pair of feet oar-shaped, and terminating in articulated setæ; the others branchial, and composed of more than sixty pairs.

(*EXTRA-LIMITAL.*)

Genus Apus, *Scopoli.* Head confounded with the shield, which is soft, subcrustaceous, rounded, oval, emarginate behind. Tail short, jointed, ending in two long threads. Antennæ two, short, simple. Three sessile, unequal eyes.

A. caudatus. (*Binoculus id.* Say, l. c. Vol. 1, p. 437.) Body subovate. Antennæ more than half as long as the body. Tail of three segments, half as long as the body; second segment transversely quadrate, narrower than the first in the female, elongated and attenuated in the male. Length, 0·01. *Florida.*

Obs. I place this species here with some hesitation. It is probable also that near this will be placed that singular crustaceous fossil described in the *Annals of the Lyceum of Natural History of New-York*, Vol. 1, p. 375, pl. 29, under the name of *Eurypterus remipes*. Milne-Edwards appears disposed to think that it forms a passage between the *Isopoda* and *Branchiopoda.*

ORDER VIII. LOPHYROPA.

Head confounded with the anterior portion of the body. Eye or eyes sessile and compound. Shield variable in form and size. Mandibles without palpi. No branchiæ near the mouth. Feet variable in number, natatory, sometimes simple or branched, occasionally lamellar and furnished with hairs.

(*EXTRA-LIMITAL.*)

Genus Cyclops, *Muller.* Body elongated, narrowed behind, divided into transverse segments, of which the first is largest. Tail ending in two setaceous points. Antennæ two to four, simple. A single eye on the back of the first segment. Feet six to twelve, hairy.

C. navicularis. (Say, op. cit. Vol. 1, p. 441.) Body oval, truncate behind. Tail as long as the thorax; terminal joint bifid, with four setæ, and two small equal spines at the base of each pair of seta. Anterior antennæ two-thirds the length of the body. *Color*, sanguineous; tail and feet white. Stagnant fresh water. *Southern States.*

Obs. Closely allied to this is a minute crustacean, found abundantly in deep water in Lake Ontario. I am indebted to my friend Dr. Charles Pickering for the following notes on this animal.

Genus Scopiphora, *Pickering.* Body small. Eye single, near the anterior margin of the shield. Antennæ large, and as long as in the preceding genus, and has the same motions in the water. Abdomen terminating in two styles, each with three setæ; a brush under the last or last three joints. Ovaries none. Legs spiny.

S. vagans. (Pickering, MSS.)

ORDER IX. BRANCHIOPODA.

Body often minute, with a subcrustaceous covering. Two pedunculated eyes. Feet solely adapted for swimming, and supporting the branchial apparatus.

GENUS BRANCHIPUS. *Latreille.*

Body elongated, soft, transparent, divided into eleven segments. Tail of six to nine segments, long, subcylindrical, gradually diminishing and terminating in two ciliated fins. Feet lamellar, of twelve pairs. Antennæ two or four, setaceous. Two compound pedunculated eyes. Two movable horns on the front, forked at the tips. Mouth presenting a beak-shaped papilla, and four small lateral pieces. Stagnant pools of fresh water.

Branchipus stagnalis.

PLATE IX. FIG. 36.

Cancer stagnalis, Lin. *Gammarus id.* Fab. Syst. Vol. 2, p. 518.
Branchipus stagnalis. Desm. Considerations, &c. p. 389, pl. 56, figs. 2 – 5.
Branchipus stagnalis. Gould, Invertebrata of Mass. p. 339.

Description. Horns of the male horizontal; terminal caudal fins broad. Antennæ four. Length one inch.

According to Dr. Gould, this species is common in most of our stagnant pools. I have not studied it carefully, and have introduced a foreign figure to illustrate the species.

ORDER X. OSTRAPODA.

Body small, enclosed between two lateral valves. No distinct head. A single compound sessile eye. Feet formed for walking. Mandibles bearing palpi. Antennæ long, setaceous, and terminated by a fasciculus of hairs.

GENUS CYPRIS. *Muller. Straus.*

Shield opening and closing like the valves of a bivalve mollusk. Tail soft, reflected on itself, and with two filaments at its extremity. Feet three pair. Eye large and spherical.

Obs. This genus appears to be very numerous, upwards of twenty species having been more or less well characterized. It has also been noticed in a fossil state.

Cypris hispida.

PLATE X. FIG. 48, 49 (Magnified).

(STATE COLLECTION.)

Description. Valves, when viewed together, resemble a minute *Modiola.* Epidermis uniform jet black, and covered with numerous whitish rigid hairs.

Length, 0·09 – 0·1.

I have never had an opportunity of examining this species alive. It appears to be allied to the *Monoculus puber* of Jurine (*Hist. des Monocles,* p. 171), in its hirsute appearance; but it has neither the color, nor the two parallel oblique bands attributed to that species. My specimens were obligingly communicated by Dr. Budd, from the neighborhood of Lake Champlain. I have seen others from Hoboken, New-Jersey.

(*EXTRA-LIMITAL.*)

C. agilis. (Haldeman, Proc. Acad. Nat. Sc. 1841.) Height rather more than half the length. Base subrectilinear. *Color*, light ochraceous. Ditches. *Lancaster county, Pennsylvania.*

C. simplex. (Id. Ib.) Elongated, nearly straight; both ends alike. The same locality with the preceding.

Genus Cytherina, *Lamarck.* Form of the preceding; antennæ two, hairy throughout their length; head concealed. Feet eight, chiefly marine.

C. bifasciata. (Say, l. c. p. 439.) Valves clothed with minute dense hairs. Antennæ as long as the valves. *Color*, greenish testaceous tipped with black; two black bands; feet white. Length, 0·05. Pools of fresh water. *Georgia and Florida.*

Genus Daphnia, *Muller.* Shield subunivalve, opening longitudinally on one side. Two branched antennæ, or anterior feet, arising from the sides of the neck. Eight to twelve feet. Fresh-water pools.

D. angulata. (Say, l. c. p. 440.) Sides striate with numerous parallel minute oblique lines; hind edge of the body with a prominent angle in the middle. Antennæ with four filaments on the upper and five on the lower branch. *Color*, white or red. Length, 0·1. Stagnant water in the forests of the Southern States.

D. rotundata. (Id. l. c.) Body rounded behind. Upper antennæ three-branched: a small spine above at the joints; lower, five-branched. *Color*, white. Length, 0·05. Same locality with the preceding.

LIST

OF

PLATES OF THE CRUSTACEA.

PLATE 1.

FIG.

1 Platyonichus ocellatus.

PLATE 2.

2 Platycarcinus irroratus.

PLATE 3.

3 Lupa dicantha.

PLATE 4.

4 Libinia canaliculata.

PLATE 5.

5 Carcinus mœnas.
6 — —
7 Platyonichus ocellatus.

PLATE 6.

8 Lupa pelagica.
9 Gelasimus vocans.
10 — —
11 Lithodes arctica.
12 Oniscus asellus.
13 Ligia oceanica.
14 Cyamus ceti.

PLATE 7.

FIG.

14 Hyas coarctata.
15 Pilumnus harrisi.
16 Pinnotheres ostreum.
17 Hippa talpoida.
18 Pandalus annuliformis.
19 Orchestia gryllus.
20 Mysis spinulosus.

PLATE 8.

21 Pagurus pollicaris.
22 — longicarpus.
23 Gonodactylus setimanus.
24 Crangon septemspinosus.
25 Astacus bartoni

PLATE 9.

26 Panopeus herbsti.
27 Talitrus quadrifidus.
28 Orchestia longicornis.
29 Gammarus minus.
30 Palemon vulgaris.
31 Hypolite aculeatus.
32 Asellus vulgaris.
33 Limnoria terebrans.

FIG.

34 Anthura gracilis.
35 Idotea tricuspis:
36 Branchipus stagnalis.

PLATE 10.

37 Fluvicola herricki.
38 (Underside magnified.)
39 (Upperside ditto.)
40 Cymothoa triloba.
41 — olivacea.
42 Stenosoma irrorata.
43 Cerapus tubularis.
44 Cecrops latreillii.
45 Argulus alosæ.
46 Caligus americanus(male)
47 — — female.
48 Cypris hispida.
49 (Valves of the same.)

PLATE 11.

50 Polyphemus occidentalis.

PLATE 12.

51 Homarus americanus.
52 (Lateral view of the beak.)

INDEX.

CORRECTION.

In Mollusca, page 124, line 17, for "*penesma* et *disseminata*," read "*penes me*, and *Disseminator*."

PLATES

OF THE

CRUSTACEA.

Plate I.

Fig. 1

Lith of Endicott New

Fig. 2

Lith. of Bradcott N. Y.

Plate 3.

Fig 3

Lith of Endicott New York

Fig 4.

lith of Endicott New York

Fig 5

Fig 6

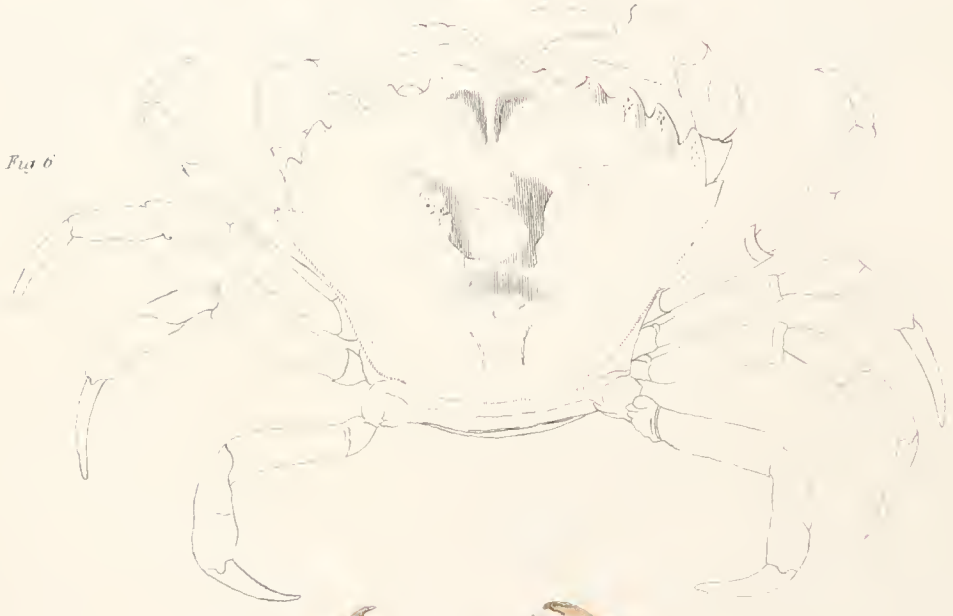


Fig 7

Lith. of Endicott New York

Fig 8

Fig 9

Fig 10

Fig 11

Fig 12

Fig 14

Fig 13

Lith of Endicott New York

Plate 7.

Fig 17

Fig 16

Fig 18

Fig 19

Fig 20

Fig 21

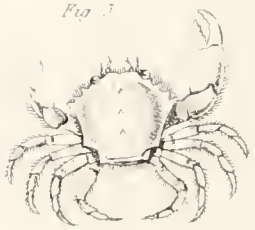


Fig 14

Lith of Endicott New York

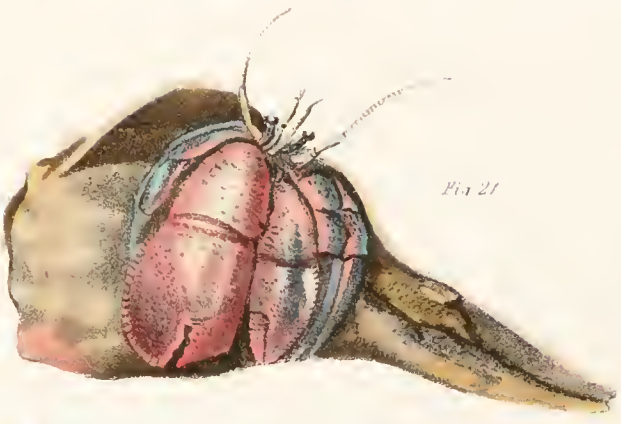
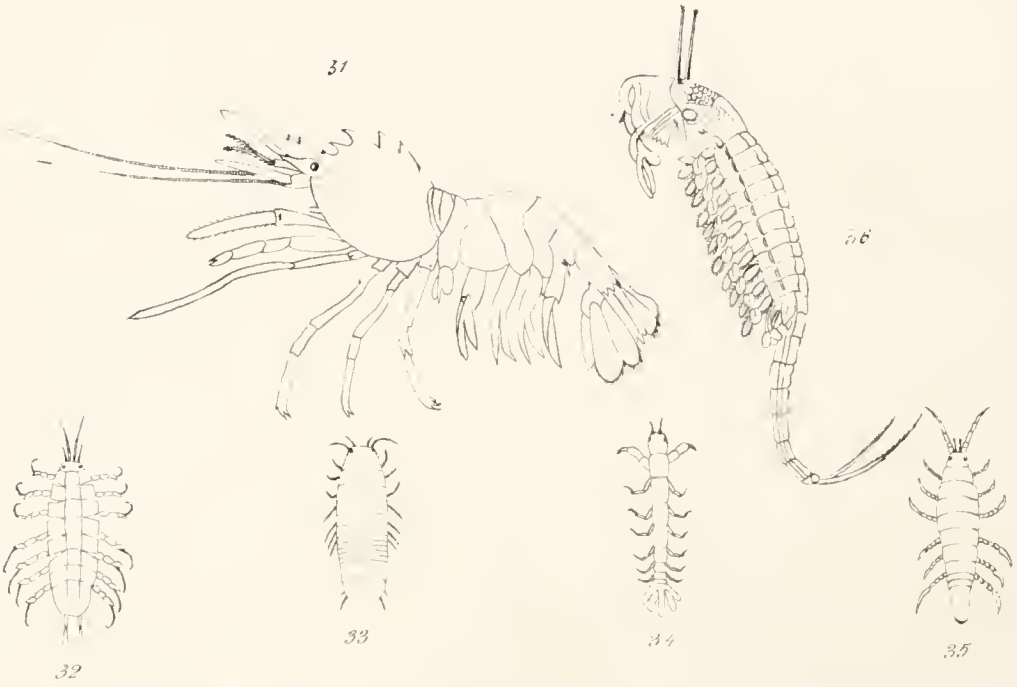


Fig 21

Fig 24



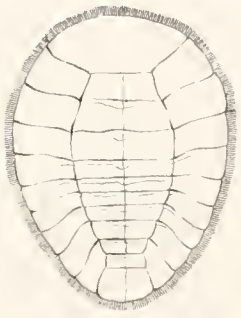
Lith. of Endicott New York

Plate 10.

38

37.

39



41 a

41

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49.

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40.

47.

45.

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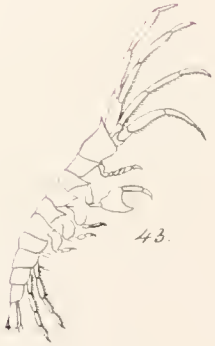

43.

Lith. of Endicott & Co. New York.

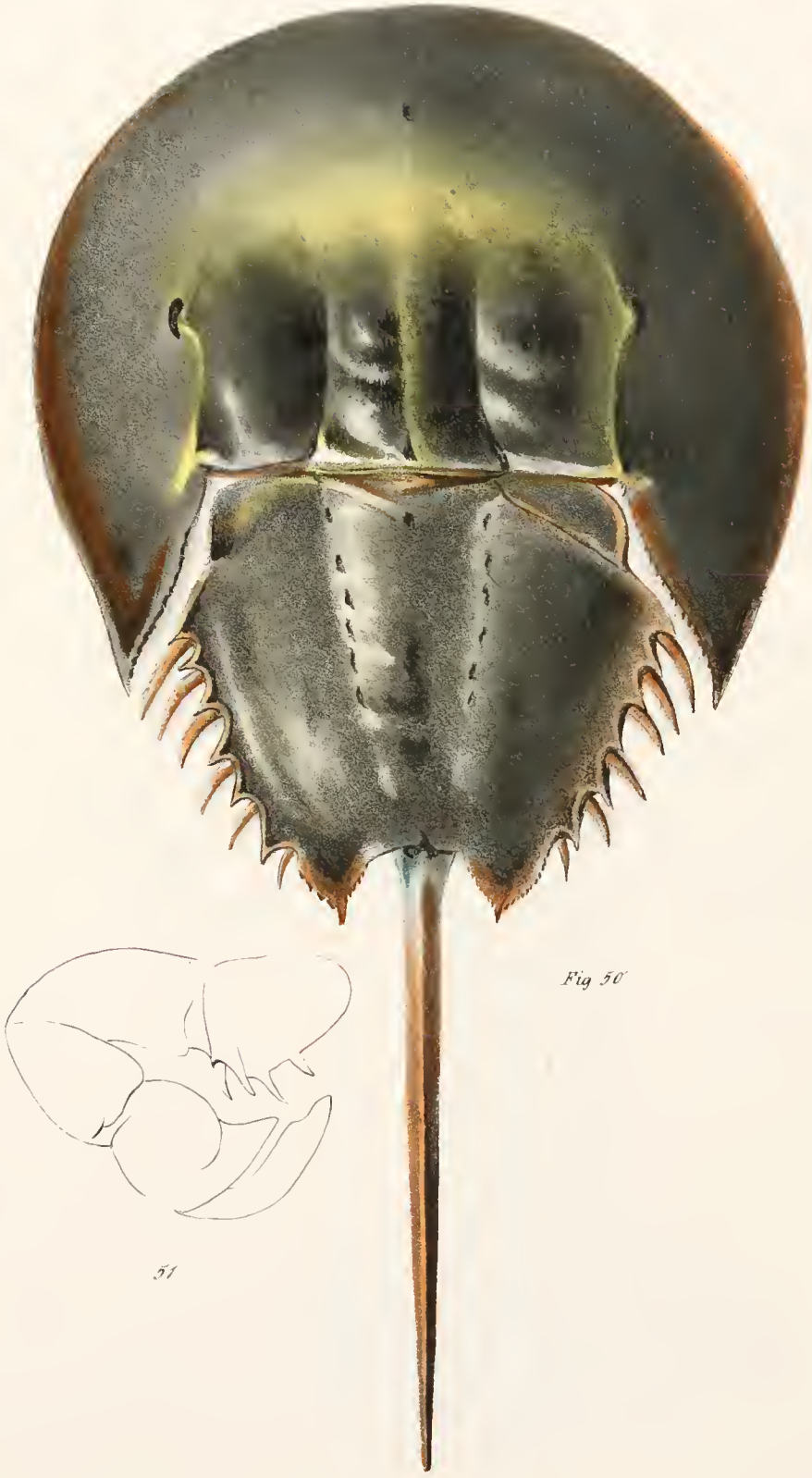

Fig 50

51

Lith of Endicott New York

Fig 52

53

Lith. of Endicott New York

Plate 13.

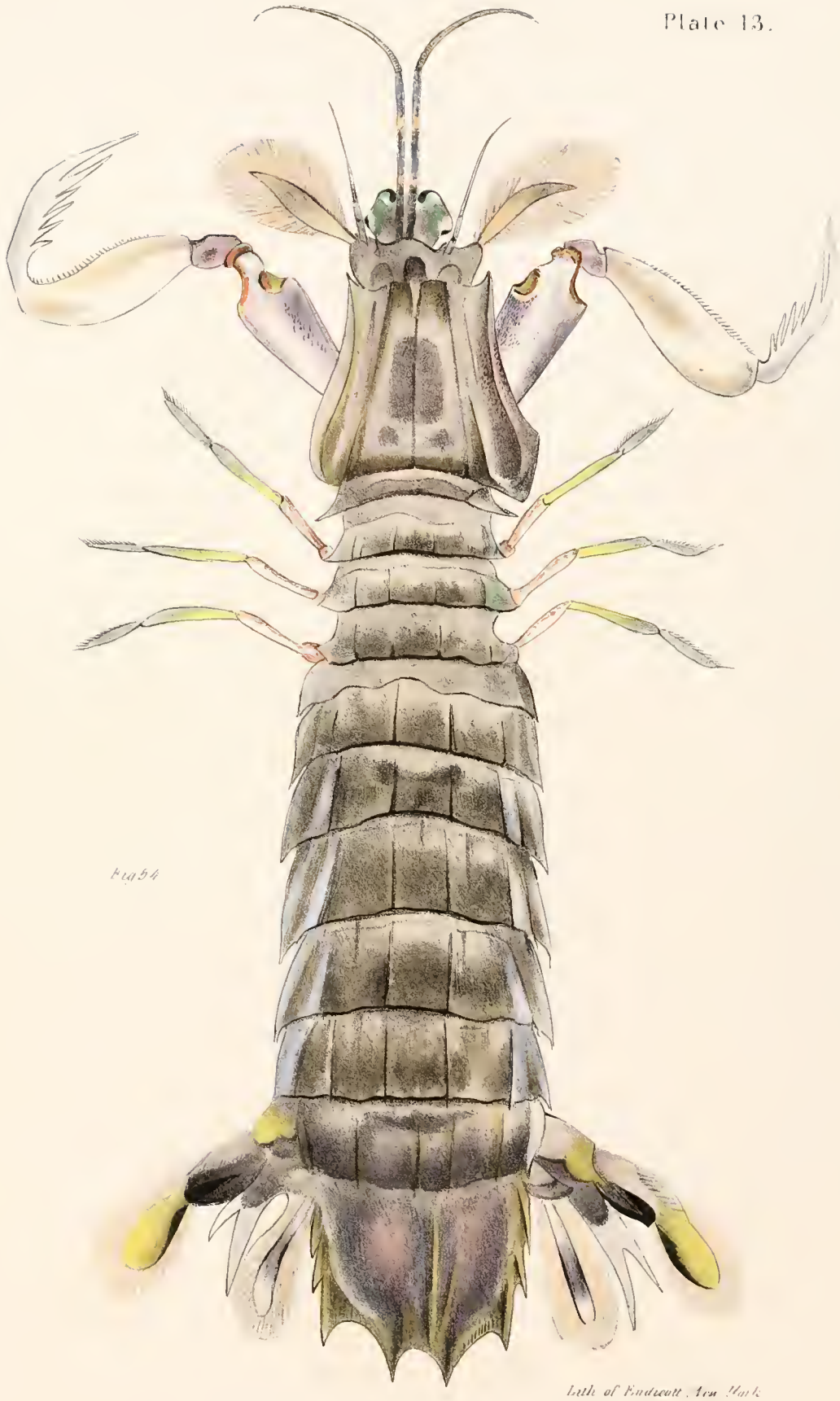

Fig 54

Lith. of Endicott, New York