[EXTRACTED FROM THE ANNUAL REPORT OF THE COMMISSIONER OF FISH AND FISHERIES FOR 1885.]

REPORT

ON THE

DECAPOD CRUSTACEA

OF THE

ALBATROSS DREDGINGS

OFF THE EAST COAST OF THE UNITED STATES

DURING THE

SUMMER AND AUTUMN OF 1884,

BY

SIDNEY I. SMITH.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1886.

000.—REPORT ON THE DECAPOD CRUSTACEA OF THE ALBATROSS DREDGINGS OFF THE EAST COAST OF THE UNITED STATES DURING THE SUMMER AND AUTUMN OF 1884.

By Sidney I. Smith.

In addition to all the true Decapoda which have been submitted to me for examination from Albatross dredgings during the summer and autumn of 1884, this report includes a few specimens taken in 1883, but omitted from the report for that year.

In the tables of specimens examined the following abbreviations are used to indicate the nature of the bottom:

Materials.	Colors.	Other qualities.
C. for clay.	bk. for black.	brk. for broken.
Cr. for corals.	bn. for brown.	crs. for coarse.
F. for foraminifera.	bu. for blue.	fne. for fine.
G. for gravel.	dk. for dark.	glb. for globigerina.
M. for mud.	gn. for green.	hrd. for hard.
O. for ooze.	gy. for gray.	rky. for rocky.
P. for pebbles.	lt. for light.	sft. for soft.
R. for rocks.	rd. for red.	sml. for small.
S. for sand.	wh. for white.	
Sh. for shells.	yl. for yellow.	
Spg. for sponges.		
St. for stones.		

In the column of temperatures the degrees are given in whole numbers; fractions of half a degree or less are omitted, and when the fraction is more than half a degree the next higher whole number is used. In the column for the number of specimens examined, *l* is used to indicate large specimens; *s*, small specimens; *y*, young; and *f*. fragments or very imperfect specimens. In a few cases specimens which I have not seen are recorded, but the numbers of all such specimens are inclosed in brackets. When the sexes were not counted separately the whole number of specimens examined is placed in the middle of the column; when the sexes were counted separately the number of males is put on the right, the number of females on the left, and the number of young, whose sex was indeterminable, in the middle, followed by the letter *y*. When the number of egg-bearing females was counted it is entered in the appropriate column; when specimens carrying eggs were found, but not counted, a plus sign (+) is used; and when none of the speci-

mens examined were carrying eggs a zero (0) is used. The National Museum Crustacea Catalogue numbers are given in the tables of specimens examined, or are simply placed in parentheses after the mention of the specimens. In a few cases among the Paguroidea, specimens selected for their carcinœcia, were catalogued among Actinozoa, in a different catalogue from the crustacea, and such catalogue numbers are preceded by an A, to distinguish them from the Crustacea catalogue numbers.

In the first report on the crustacea of the Albatross collections, I gave no general statement of results, but confined myself strictly to the enumeration of the specimens taken and the description of the many new forms discovered. Here, however, I propose to discuss some of the results of the examination of the Decapoda of the two seasons' work. The collections made in the West Indian region by the Albatross, during the winters of 1884 and 1885, have not yet been fully examined, and are not referred to in the following statements, which apply exclusively to the region north of Cape Hatteras; but some of the results, in regard to bathymetrical range, &c., of a partial examination of the collection of the summer of 1885 are included.

The most interesting feature of the crustacea collected by the Albatross is the great number of very deep-water, or abyssal, species of Decapoda which it contains. The whole number of species of true Decapoda dredged by the Albatross north of Cape Hatteras is over 130, but nearly one-half of these are from shallow or comparatively shallow water. None of the shallow-water species were taken below 1,000 fathoms, and it is, perhaps, best to limit the abyssal fauna to species occurring in depths greater than this, although some true deep-water species are probably excluded by adopting so great a depth. Taking this limit strictly, however, we have 43 abyssal species, of which 22 have been taken below 2,000 fathoms, as shown in the following list:

LIST OF DECAPODA TAKEN NORTH OF CAPE HATTERAS, BELOW 1,000 *FATHOMS, BY THE ALBATROSS IN* 1883-'84-'85, *WITH THE BATHYMETRICAL RANGE OF EACH SPECIES AND A BRIEF STATEMENT OF THE CHARACTER OF THE EYES.*

BRACHYURA.

CANCROIDEA.

1. *Geryon quinquedens.* 105 to 1,081 fathoms.
   Eyes well developed, black.

DORIPPOIDEA.

2. **Ethusina abyssicola.** 1,497 to 2,221.
   Eye-stalks very small, immovably imbedded in the orbits, and tipped with minute, distinctly faceted, black eyes, much smaller than the diameter of the stalks.

LITHODOIDEA.

3. *Lithodes Agassizii.* 410 to 1,255.
   Eyes well developed, black.

PAGUROIDEA.

4. **Parapagurus pilosimanus.** 250 to 2,221.
   Eyes very small, no larger than the diameter of the stalks, distinctly faceted, black.

GALATHEOIDEA.

5. *Munidopsis curvirostra.* 75 to 1,290.
   Eye-stalk very short, capable of considerable motion, and its whole terminal portion covered with an ovoid, unfaceted cornea; pigment white.

6. **Munidopsis crassa.** 1,742 to 2,620.
   Eye-stalks short, capable of very little motion, bearing the small hemispherical cornea partially imbedded near the distal end, which projects in a spine; cornea unfaceted; pigment white.

7. *Munidopsis similis.* 1,060.
   Eyes as in the last species.

8. *Munidopsis Bairdii.* 1,497 to 1,742.
   Eyes nearly as in 6 and 7.

9. *Munidopsis rostrata.* 1,098 to 1,356.
   Eye-stalks short, capable of some motion, cornea terminal, large, swollen, reniform, unfaceted; pigment white.

MACRURA.

ERYONTIDÆ.

10. *Pentacheles sculptus.* 250 to 1,081.
    Eyes reduced to lobes of the ocular somite imbedded in sinuses in the front of the carapax; each lobe with a small cornea-like area above and a smaller one below tipping a projecting process; no colored pigment nor faceted surface.

11. *Pentacheles nanus.* 705 to 1,917.
    Eyes as in the last species.

12. *Pentacheles debilis.* 1,290 to 1,309.
    Eyes nearly as in 10 and 11.

CRANGONIDÆ.

13. **Pontophilus abyssi.** 1,917 to 2,221.
    Eye-stalks very short; eyes about as large as in most species of the genus, but much smaller than in the closely allied species (*P. gracilis*) inhabiting 200 to 500 fathoms; cornea rather indistinctly hexagonally faceted; pigment almost colorless except over an area on the outer dorsal side (which is apparently of somewhat different structure from the rest of the eye), where there are many points of dark pigment.

GLYPHOCRANGONIDÆ.

14. *Glyphocrangon sculptus.* 1,006 to 1,434.
Eyes very large, almost spherical, and mounted on very short stalks; cornea distinctly faceted; pigment purplish brown; a minute papilla on the mesial side of the stalk, but perhaps not of the same nature as that in the Miersiidæ and Penæidæ.

15. *Glyphocrangon longirostris.* 828 to 1,081.
Eyes similar to those of the last species.

ALPHEIDÆ.

16. *Bythocaris gracilis.* 888 to 1,043.
Eyes hemispherical, small, little larger than the diameter of the stalks; cornea distinctly faceted; pigment black.

17. *Heterocarpus oryx* A. M.-Edwards.* 1,081.
Eyes well developed, black, but smaller than in the species of the closely allied genus *Pandalus.* †

NEMATOCARCINIDÆ.

18. **Nematocarcinus ensiferus.** 588 to 2,033.
Eyes rather small, but well developed, black; papilla minute and very obscure; no dorsal area.

MIERSIIDÆ.

19. **Acanthephyra Agassizii.** Surface and 105 to 2,949.
Eyes rather small, but highly developed; stalks expanded distally and capable of great mobility; pigment black and abundant; papilla well developed, prominent; dorsal area present.

20. **Acanthephyra,** sp.‡ 2,069.
Eyes imperfect in the single specimen seen, but apparently nearly as in the last species; pigment black; papilla prominent; dorsal area present.

21. **Acanthephyra microphthalma.** 2,574 to 2,620.
Eyes imperfectly developed; stalks capable of comparatively little motion, and contracted distally to the very small eyes; pigment light brownish; papilla minute; apparently no dorsal area.

22. **Acanthephyra brevirostris.** 1,395 to 2,949.
Eyes much less highly developed than in 19, but larger than the diameter of the stalks; pigment brownish black; papilla well developed; dorsal area apparently absent.

---

* Station 2550, August 9, 1885, north latitude 39° 44′ 30″, west longitude 70° 30′ 45″ 1,081 fathoms, brown mud, temperature 30°,—1 ♀ (10661).

† The peculiar, conspicuously faceted area on the dorsal side of the eye and near to the margin of the cornea proper, and often darker than it, which is conspicuous in many Alpheidæ and Palæmonidæ, is entirely absent in this species. This area, however, is also absent in *Pandalus propinquus*, although it is very conspicuous in *P. Montagui, leptocerus,* and *borealis.* For convenience, I refer to this area, in the following part of the list, as the "dorsal area."

‡ A single very imperfect specimen of this species, which is very distinct from any other in the collections of the Fish Commission, was taken at station 2565, August 28, 1885, north latitude 38° 19′ 20″, west longitude 69° 02′ 30″, 2,069 fathoms, gray and brown ooze, temperature 37°.

23. **Acanthephyra gracilis.** 1,632 to 2,512.
Eyes highly developed; cornea more expanded than in 19; pigment black and abundant; *two* well-developed papillæ on each stalk; dorsal area conspicuous, elongated, in contact with the cornea proper.

24. *Notostomus robustus.* 1,309 to 1,555.
Eyes rather small, but larger than the diameter of the stalks, which are somewhat expanded distally; pigment black; papilla well developed; dorsal area absent or perhaps represented by a conspicuous narrow process from the margin of the cornea.

25. **Notostomus vescus.** 2,949.
Eyes larger than the diameter of the stalks; pigment black; papilla well developed.

26. *Meningodora mollis.* 1,106 to 1,632.
Eyes imperfectly developed, smaller than the diameter of the stalks, which are somewhat tapered distally; pigment black; papilla conspicuous; dorsal area absent.

27. **Hymenodora glacialis.** 2,369 to 2,949.
Eyes similar to those of 26, except that the pigment is brownish white.

28. **Hymenodora gracilis.** 826 to 2,949.
Eyes as in the last species, but the pigment apparently a little darker in color.

PASIPHAIDÆ.

29. *Pasiphaë princeps.* 444 to 1,342.
Eyes highly developed, black; no distinct papilla nor dorsal area.

30. **Parapasiphaë sulcatifrons.** 516 to 2,949.
Eyes somewhat similar to those of 27 and 28; cornea hemispherical, not larger than the non-expanded stalks; pigment brown; papilla very conspicuous, projecting by the margin of the cornea; dorsal area absent.

31. *Parapasiphaë cristata.* 826 to 1,628.
Eyes similar to those of the last species, but the cornea a little smaller and the papilla very much larger, broad at base and tapered to an obtuse tip, which reaches considerably beyond the whole cornea.

32. **Parapasiphaë compta.** 1,537 to 2,369.
Eyes similar to those of 30, but somewhat smaller, and the pigment black.

PENÆIDÆ.

33. **Hymenopenæus microps.** 906 to 2,620.
Eyes very much smaller than in any of the closely allied species, yet slightly larger than the diameter of the stalks, and hemispherical; pigment black; papilla well developed and situated near the middle of the stalk.

34. **Aristeus ? tridens.** 843 to 2,620.
Eyes rather small but well developed, larger than the diameter of the stalks and hemispherical; pigment black or brownish black; papilla well developed, broad and low, and on the middle of the stalk.

35. **Hepomadus tener.** 1,209 to 2,949.
Eyes as in the last species, except that the papilla is more prominent.

36. **Amalopenæus elegans.** 445 to 2,369.
Eye-stalks not expanded distally, with a spot of black pigment on the outer side a little way from the cornea, which is hemispherical and little larger than the diameter of the stalks; pigment brown; papilla very prominent, conical, directed upward and inward from the middle of the stalk.

37. *Benthœcetes Bartletti.* 578 to 1,081.
Eyes about as large and of the same color as in the last species; papilla very conspicuous, but low and obtuse; a mass of black pigment near the middle of the stalk, more distinctly visible from the ventral than from the dorsal side.

38. *Benthonectes filipes.* 693 to 1,043.
Eyes very large, swollen, reniform, extending far along the mesial side of the stalk; pigment dark brown, abundant; papilla prominent.

39. *Benthesicymus? carinatus.* 1,020.
Eyes apparently very nearly as in 37, but imperfect in the single known specimen.

40. *Benthesicymus? moratus.* 1,537 to 1,710.
Eyes nearly as in 38, except that the pigment is apparently white or very light in color.

SERGESTIDÆ.

41. **Sergestes arcticus.** 221 to 2,516.
Eyes highly developed, large; pigment black; apparently neither papilla nor dorsal area.

42. **Sergestes robustus.** 372 to 2,574.
Eyes similar to those of the last species, but even larger, the cornea being nearly hemispherical.

43. **Sergestes mollis.** 373 to 2,949.
Eyes small, little larger than the diameter of the stalks; pigment black, abundant.

The following species, though not yet recorded from below 1,000 fathoms, might properly enough be added to this list, as they undoubtedly all extend below the 1,000-fathom line:

44. *Sclerocrangon Agassizii.* 390 to 959.
Eyes small, no larger than the stalks, which are very little dilated distally; pigment black or nearly so.

45. *Sabinea princeps.* 353 to 888.
Eyes highly developed, large; pigment black.

46. *Nematocarcinus cursor.* 384 to 838.
Similar to 18, but somewhat larger, and with the papilla very distinct, though small.

47. *Acanthephyra eximea.* 938.
Eyes very nearly as in 19.

48. *Ephyrina Benedicti.* 959.
Eyes rather small, apparently not capable of great mobility, very little larger than the diameter of the stalks; pigment black; papilla distinct; dorsal area absent.

The first question which arises in discussing the bathymetrical habitats of the species in this list is, Which of them actually inhabited the bottom, or the region near the bottom, at the depths from which they are recorded, and what depths do the remaining species inhabit? That none of them are truly pelagic surface species may, I think, be taken for granted, for, with the single exception of *Acanthephyra Agassizii*, none of the free-swimming species have been taken anywhere near the

surface. Species well known to be inhabitants of the surface are sometimes found in the trawl (and of course excluded from the list of species dredged), but are rarely so taken.

The first fifteen species in the list, and 44 and 45 as well, are unquestionably inhabitants of the bottom, and never swim any great distance from it. Nos. 16, 17, 18, and 46, though species which may swim freely for considerable distances from the bottom, undoubtedly rest upon it a part of the time, the structure of the peræopods being fitted, apparently, to do this.

The species of *Acanthephyra*, *Ephyrina*, *Notostomus*, *Meningodora*, and *Hymenodora*, which are very much alike in the structure of the articular appendages and branchiæ and are here grouped together as Miersiidæ, are among the most common and characteristic forms taken in trawling at great depths, but it is perhaps doubtful whether any of them are, strictly speaking, inhabitants of the bottom. The occurrence at the surface of a living and active specimen of *Acanthephyra Agassizii*, shows that this species at least is capable of living at the surface in water of a temperature of more than 30 degrees higher than that of the abyssal depths. Such facts make it very difficult to draw any conclusions from the mere finding of specimens of any free-swimming species in the trawl coming from particular depths, and we are compelled to resort to the structure of the animal itself for evidence as to the depth of its habitat. The highly developed black eyes, the comparatively small eggs, and the firm integument of *A. Agassizii* and *A. eximea* are some evidence, though perhaps inconclusive, that these species do not normally inhabit the greatest depths from which the former species has been recorded; and neither the length nor the structure of the peræopods shows special adaptation for resting on soft oozy bottoms. We are therefore led to conclude that these two species normally inhabit the upper part of the vast space between the surface and the bottom regions. The similarity in the structure of the peræopods in all the species of the genus except *A. gracilis*, apparently indicates similarity in habits, but the imperfectly developed eyes and soft integument of *A. microphthalma* and *brevirostris* are evidence that these species inhabit greater depths than *A. Agassizii* and *eximea*, and that they are truly abyssal if not bottom-inhabiting species, and their absence from the trawl when coming from moderate depths, as shown in the records of their capture, helps to confirm this. The small number and great size of the eggs of *A. gracilis* would seem to indicate an abyssal habitat for that species also, but the large black eyes are probable evidence that it does not descend to the extreme depths inhabited by *A. microphthalma*.

Their similarity of structure makes it probable that the species of *Ephyrina*, *Notostomus*, *Meningodora*, and *Hymenodora* are similar in habits to the species of *Acanthephyra*, and the structure of their eyes and integument and the small number and great size of the eggs, in the spe-

cies in which they are known, as well as the records of their capture, indicate that they are all abyssal, or at least deep-water species.

The form of the body and the structure of the peræopods of *Pasiphaë princeps* indicate that, like the other species of the genus, it is a free-swimming species, probably never resting on the bottom. It is probably neither a truly abyssal, nor, judging from the size of the eggs as well as the record of its capture, a surface species. The structure of the eyes, the very small number and great size of the eggs, and the soft integument of the species of *Parapasiphaë* render it probable that they are really abyssal species, though probably not confined to the immediate region of the bottom.

The eight species of Penæidæ in the list are undoubtedly all free-swimming forms not confined to the immediate region of the bottom, but, judging from the relatively small size of the eyes and the presence of well-developed ocular papillæ, they are all deep-water if not abyssal species.

The records of the occurrence of the three species of *Sergestes* show that they are not confined to abyssal depths. The relatively small eyes and exceedingly soft integument of *S. mollis* would seem to indicate that it inhabited much greater depths than the other species, but the records of its capture afford no additional evidence of this.

We may then divide these species provisionally into the four following classes:

I.—*Species inhabiting the bottom or its immediate neighborhood.*

Geryon quinquedens.
Ethusina abyssicola.
Lithodes Agassizii.
Parapagurus pilosimanus.
Munidopsis curvirostra.
Munidopsis crassa.
Munidopsis similis.
Munidopsis Bairdii.
Munidopsis rostrata.
Pentacheles sculptus.
Pentacheles nanus.
Pentacheles debilis.
Sclerocrangon Agassizii.
Pontophilus abyssi.
Sabinea princeps.
Glyphocrangon sculptus.
Glyphocrangon longirostris.
Bythocaris gracilis.
Heterocarpus oryx.
Nematocarcinus ensiferus.
Nematocarcinus cursor.

II.—*Species probably not confined to the immediate neighborhood of the bottom, but showing structural evidences of inhabiting abyssal depths.*

Acanthephyra microphthalma.
Acanthephyra brevirostris.
Notostomus robustus.
Notostomus vescus.
Meningodora mollis.
Hymenodora glacialis.
Hymenodora gracilis.
Parapasiphaë sulcatifrons.
Parapasiphaë cristata.
Parapasiphaë compta.

III.—*Doubtful, but probably inhabiting abyssal depths.*

Acanthephyra gracilis.
Ephyrina Benedicti.
Hymenopenæus microps.
Aristeus? tridens.
Hepomadus tener.
Amalopenæus elegans.
Benthœcetes Bartletti.
Benthonectes filipes.
Benthesicymus? carinatus.
Benthesicymus? moratus.
Sergestes mollis.

IV.—*Species probably not inhabiting abyssal depths.*

Acanthephyra Agassizii.
Acanthephyra eximea.
Acanthephyra, sp.
Pasiphaë princeps.
Sergestes arcticus.
Sergestes robustus.

Summing up these lists according to the greatest depths from which the species are recorded we have the following:

Class.	Number of species.		
	Total.	Below 1,000 fathoms.	Below 2,000 fathoms.
I.—From the neighborhood of the bottom	21	18	5
II.—Abyssal, but not confined to the bottom	10	10	7
III.—Doubtful, but probably abyssal	11	10	6
IV.—Probably not abyssal	6	5	4
Total	48	43	22

The great differences in depth through which some of the species, unquestionably inhabiting the region of the bottom, are recorded as ranging is worthy of notice. Of the 18 inhabitants of the neighborhood of the bottom which are recorded as taken below 1,000 fathoms, 9 have a recorded range of over 800 fathoms, and one of them, *Parapagurus pilosimanus*, of nearly 2,000 fathoms. The case of the *Parapagurus* is very remarkable. It was taken at fifteen stations and in 250 to 640 fathoms by the Fish Hawk and Blake in 1880–'81–'82, and in great abundance at one station in 319 fathoms, where nearly four hundred large specimens were taken at once. All these earlier specimens were inhabiting carcinœcia of *Epizoanthus paguriphilus*. In the Albatross dredgings of 1883–'84–'85, it was taken at twenty-one stations, ranging in depth from 353 to 2,221 fathoms; but at fourteen of these stations, all of which were below 1,500 fathoms, none of the specimens were associated with the same species of *Epizoanthus*, some of them being in *Epizoanthus abyssorum*, others in naked gastropod shells, and still others in an actinian polyp, apparently the *Urticina consors* Verrill, which often serves for the carcinœcium of *Sympagurus pictus*, from 164 to 264 fathoms.

The color of the abyssal crustacea is very characteristic. A few species are apparently nearly colorless, but the great majority are some

shade of red or orange, and I have seen no evidence of any other bright color. A few species from between 100 and 300 fathoms are conspicuously marked with scarlet or vermilion, but such bright markings were not noticed in any species from below 1,000 fathoms. Below this depth, orange red of varying intensity is apparently the most common color, although in several species, very notably in *Notostomus robustus*, the color is an exceedingly intense dark crimson.

The structure of the eyes of the abyssal Decapoda is of the highest interest, and worthy of the most minute and careful investigation and comparison with the corresponding structures of the shallow-water and surface forms. Such an investigation I have not been able thus far to make, but the importance of the subject induces me to record the results of a superficial examination of the external characters of the eyes of most of the abyssal species from the Albatross collections. These imperfect observations have been briefly given under each species in the list of species taken below 1,000 fathoms.

If we exclude from this list all the species whose bathymetrical habitats are in any degree doubtful, and examine the 21 species given as inhabiting the immediate neighborhood of the bottom, we find that *Geryon quinquedens*, *Lithodes Agassizii*, and *Sabinea princeps* have normal, well-developed large black eyes apparently entirely similar to those of allied shallow-water species. *Sclerocrangon Agassizii*, *Bythocaris gracilis*, *Heterocarpus oryx*, *Nematocarcinus ensiferus*, and *N. cursor* have normal black eyes apparently a little smaller than those of the allied shallow-water species. *Ethusina abyssicola* and *Parapagurus pilosimanus* have distinctly faceted black eyes, which, though very much smaller than in most shallow-water species, are still fully as large and apparently quite as perfect as in those of some shallow-water species in which they are evidently sensitive to ordinary changes of light. The eyes of the species of *Glyphocrangon* are very large, with the faceted surface much larger than the allied shallow-water species, but they are borne on very short stalks with comparatively little mobility, and have dark purple instead of black pigment. The eyes of *Pontophilus abyssi* are lighter in color than those of the species of *Glyphocrangon*, but are faceted and apparently have some of the normal visual elements. All the species of *Munidopsis* and of *Pentacheles* have peculiarly modified eyes from which the normal visual elements are apparently wanting. Of these 21 abyssal species, 7 are thus seen to have normal black eyes, 2 have abnormally small eyes, and 3 have large eyes with purplish or very light colored pigment, while 8 have eyes of perhaps doubtful function. If we confine this examination to the 5 species taken below 2,000 fathoms, we have 1 species with well-developed black eyes, 2 with abnormally small black eyes, 1 with light colored eyes, and 1 with eyes of doubtful function.

These facts and the comparison of the eyes and the color of the abyssal species with the blind and colorless cave-dwelling crustaceans cer-

tainly indicates some difference in the conditions as to light in caverns and in the abysses of the ocean, and make it appear probable, in spite of the objections of the physicists, that some kinds of luminous vibrations do penetrate to depths exceeding even 2,000 fathoms. The fact that, excluding shallow-water species, there is no very definite relation between the amount of the modification of the eyes and the depth which the species inhabit, many of the species with the most highly modified eyes being inhabitants of much less than 1,000 fathoms, might at first be thought antagonistic to this view. But when we consider how vastly greater the purity of the water must be in the deep ocean, far from land, than in the comparatively shallow waters near the borders of the continents, and how much more transparent the waters of the ocean abysses than the surface waters above, we can readily understand that there may usually be as much light at 2,000 fathoms in mid ocean as at 500 or even at 200, near a continental border. These considerations also explain how the eyes of specimens of species like *Parapagurus pilosimanus*, coming from 2,220 fathoms, are not perceptibly different from the eyes of specimens from 250 fathoms.

Although some abyssal species do have well-developed black eyes, there can be no question that there is a tendency toward very radical modification or obliteration of the normal visual organs in species inhabiting deep water. The simplest and most direct form of this tendency is shown in the gradual reduction in the number of the visual elements, resulting in the obsolescence and, in some cases, in final obliteration of the eye. The stages of such a process are well represented, even among the adults of living species. The abyssal species with black eyes, referred to in a previous paragraph, contains the first part of such a series, beginning with species like *Geryon quinquedens* and *Lithodes Agassizii* and ending with *Ethusina abyssicola*, in which there are only a very few visual elements at the tips of the immobile eye-stalks. A still later stage is represented by A. M.-Edwards's genus *Cymonomus*, in which the eye-stalks are immobile, spiny rods, tapering to obtuse points, without visual elements, or even (according to the description) a cornea. *Cymonomus* is not known to be an abyssal genus, neither of the species having been recorded from much below 700 fathoms, and is a good example of the fact already mentioned, that many of the species with the most highly modified eyes are inhabitants of comparatively shallow water. There are, however, several cases of very closely allied species inhabiting different depths, where the eyes of the deeper-water species are much the smaller, for example: *Sympagurus pictus*, 164 to 264, and *Parapagurus pilosimanus*, 250 to 2,221 fathoms; *Pontophilus gracilis*, 225 to 458, and *P. abyssi*, 1,917 to 2,221 fathoms; and *Nematocarcinus cursor*, 384 to 838, and *N. ensiferus*, 588 to 2,033 fathoms.

In a large number of deep-water and abyssal species the ocular pigment is deep purplish, brownish, reddish, light purplish, light reddish,

or even nearly colorless, while the number of visual elements may be either very much less or very much greater than usual. The eyes of the species of *Glyphocrangon* and of *Benthonectes* are good examples of well-developed eyes of this class. In many cases the presence of light-colored pigment is accompanied with reduction in the number of visual elements precisely as in black eyes, *Parapasiphaë sulcatifrons*, *P. cristata*, *Acanthephyra microphthalma*, and the species of *Hymenodora* being good examples.

In other cases there are apparently radical modifications in the structural elements of the eye without manifest obsolescence. The large and highly developed but very short-stalked eyes of the species of *Glyphocrangon*, apparently specialized for use in deep water, probably represent one of the earlier stages of a transformation which results finally in the obliteration of the visual elements of the normal eye and the substitution of an essentially different sensory structure. In *Pontophilus abyssi* the transformation has gone further; the eyes, though fully as large as in the allied shallow-water species, are nearly colorless, not very distinctly faceted, and have probably begun to lose the normal visual elements over a portion of the surface. In the eyes of several of the species of *Munidopsis* the normal visual elements have entirely disappeared and there is an expanded transparent cornea backed by whitish pigment and some kind of nervous elements. I am very well aware that there is as yet no conclusive evidence that these colorless eyes in the species of *Munidopsis* are anything more than the functionless remnants of embryonic or inherited organs, but the fact that in some species they are as large as the normal eyes of allied shallow-water species is certainly a strong argument against this view.

In the species of *Pentacheles* there is better evidence that the eyes are not functionless, for, although they have retreated beneath the front of the carapax, they are still exposed above by the formation of a deep sinus in the margin, and the ocular lobe itself has thrown off a process which is exposed in a special sinus in the ventral margin. It is very easy to conceive how the eyes of *Pentacheles*, probably as highly modified as those of any deep-water species, may have been derived from eyes like those of the species of *Glyphocrangon* and *Pontophilus abyssi* through a stage like the eyes of *Calocaris*, which are practically sessile, have lost all the normal visual elements, and have only colorless pigment, but still present large flattened transparent non-faceted corneas at the anterior margin of the carapax. It is interesting to note that the highly modified eyes of *Pentacheles* are found in a well-defined group confined to deep water and of which all the species have probably been inhabitants of deep water for considerable geological periods, while the equally deep-water species with less modified or obsolescent eyes are much more closely allied to shallow-water species, from whose ancestors they may have been derived in comparatively recent times.

Many of the deep-water Caridea have a peculiar papilla-like process

on the mesial or mesio-dorsal side of the eye-stalk, somewhere between the middle of the stalk and the cornea. This organ is very highly developed in many of the Miersiidæ and deep-water Penæidæ, appears to receive a branch of the optic nerve, is apparently sensory in its function, and has sometimes been referred to as a phosphorescent organ. A somewhat similar, though very small, papilla is present in some shallow-water Caridea and Schizopoda, but, having no knowledge whatever of its function, I have simply described it, in the list of abyssal species already given, as the "papilla."

The large size and small number of the eggs is a very marked characteristic of many deep-water Decapoda. The eggs are extraordinarily large in several species of *Munidopsis*, *Glyphocrangon*, and *Bythocaris*, and in *Elasmonotus inermis*, *Sabinea princeps*, *Acanthephyra gracilis*, and *Pasiphaë princeps*. But the largest crustacean egg which I have seen is that of the little shrimp *Parapasiphaë sulcatifrons*, which carries only fifteen to twenty eggs, each of which is more than 4 millimeters in diameter, and approximately equal to a hundredth of the bulk of the animal producing it—a case in which the egg is relatively nearly as large as in many birds! My suggestion (Amer. Jour. Sci., II, xxviii, p. 56, 1884) that the great size of the eggs in the deep-water Decapoda was probably accompanied by an abbreviated metamorphosis within the egg, thus producing young of large size and in an advanced stage of development, specially fitting them to live under conditions similar to those environing the adults, has already been proved true by Prof. G. O. Sars, in the case of *Bythocaris leucopis*, in which the young are in a stage essentially like the adult before leaving the egg.

Although the great size of the eggs is highly characteristic of many deep-water species, it is by no means characteristic of all, and, as the following table of measurements shows, the size of the eggs has no definite relation to the bathymetrical habitat, and is often very different in closely allied species, even where both are inhabitants of deep water. For example, the eggs of *Acanthephyra gracilis* are very large, while those of *A. brevirostris* and *Agassizii* are normally small, and those of *Pontophilus abyssi* are fully as small as in the comparatively shallow-water species of the genus, and much smaller than those of many shallow-water Crangonidæ.

For the purpose of comparing the size of the eggs of the deep-water and shallow-water species, I have measured a considerable number of Decapod eggs, and in several cases have estimated approximately the number of eggs carried by an individual. The results are given in the following table, in which the bathymetrical habitat is given approximately in even hundreds of fathoms, habitats of less than 100 fathoms being indicated by —100; the diameter is the approximate average of the longer and shorter diameters, usually of several eggs from two or three

individuals; and the number of eggs is the estimate for a single individual of medium or large size, or the extremes of variation in two or more individuals. The measurements given have all been made from alcoholic specimens, and in some cases, where the eggs were not very well preserved, may not agree perfectly with measurements of fresh eggs, though all the measurements are probably within the range of variation for the species. Measurements of fresh eggs of *Homarus Americanus* and *Palæmonetes vulgaris*, and of the same eggs after preservation in alcohol, show no marked shrinkage in the diameter of the chorion, and this probably holds good for other Decapod eggs when well preserved. In many cases the form of the egg, and possibly the size also, changes slightly during the development of the embryo, there being a tendency for the egg to elongate as development proceeds. For this reason, as well as for greater ease of comparison, the average of the longer and shorter diameters is given.

Diameter and number of Decapod eggs.

Species and bathymetrical habitat.	Fathoms.	Diameter.	Number.
BRACHYURA.			
MAIOIDEA.			
		Millim.	
Hyas araneus	—100	0.67	
Hyas coarctatus	—100 to 200	0.60	
Lispognathus Thomsoni	200 to 300	0.7	
Collodes depressus	—100	0.48	
Collodes robustus	—100 to 400	0.80	
Euprognatha rastellifera	—100 to 200	0.65	
Metoporhapis calcaratus	—100	0.57	
Leptopodia sagittaria	—100	0.50	
Podochela Riisei	—100	0.57	
CANCROIDEA.			
Callinectes hastatus	—100	0.28	4,500,000
Neptunus Sayi	—100	0.33	
Achelous anceps	—100	0.26	
Geryon quinquedens	—100 to 1,100	0.74	47,000
OCYPODOIDEA.			
Nautilograpsus minutus	—100	0.35	
Pinnixa chætopterana	—100	0.26	
ANOMURA.			
LATREILLIOIDEA.			
Latreillia elegans	—100 to 200	0.45	1,660
HOMOLOIDEA.			
Homola barbata	—100 to 400	0.36	
LITHODOIDEA.			
Lithodes Agassizii	400 to 1,300	2.6	
PAGUROIDEA.			
Eupagurus bernhardus	—100	0.57	
Eupagurus politus	—100 to 600	1.12	2,000
Eupagurus pubescens	—100 to 600	0.70	
Eupagurus Krøyeri	—100	0.90	
Catapagurus Sharreri	—100 to 300	0.65	
Catapagurus gracilis	—100 to 200	0.52	
Parapagurus pilosimanus	300 to 2,200	1.2	

Diameter and number of Decapod eggs—Continued.

Species and bathymetrical habitat.	Fathoms.	Diameter.	Number.
ANOMURA—Continued.			
GALATHEOIDEA.		*Millim.*	
Munida Caribæa? Smith	—100 to 300	0.47	
Munidopsis curvirostra	—100 to 1,300	1.6	14 to 52
Munidopsis Bairdii	1,500 to 1,800	3.1	
Munidopsis crassa	1,700 to 2,600	3.5	
Munidopsis similis	1,060	2.8	22
Munidopsis rostrata	1,100 to 1,400	3.7	304
Anoplonotus politus	—100 to 200	1.1	25
MACRURA.			
ERYONTIDÆ.			
Pentacheles sculptus	300 to 1,100	0.75	
Pentacheles nanus	700 to 1,900	0.77	1,250 to 1,500
HOMARIDÆ.			
Homarus Americanus	—100	1.9	12,000 to 20,000
CRANGONIDÆ.			
Crangon vulgaris	—100	0.47	
Sclerocrangon Agassizii	400 to 1,000	2.5	
Sclerocrangon boreas	—100	2.1	
Pontophilus brevirostris	—100 to 200	0.70	
Pontophilus Norvegicus	—100 to 600	1.1	
Pontophilus abyssi	1,900 to 2,200	0.7	
Nectocrangon lar	—100	1.6	
Sabinea septemcarinata	—100	1.4	
Sabinea Sarsii	—100 to 200	1.3	
Sabinea princeps	300 to 900	2.8	353
GLYPHOCRANGONIDÆ.			
Glyphocrangon sculptus	1,000 to 1,400	3.0	97
Glyphocrangon longirostris	800 to 1,100	3.0	86
ALPHEIDÆ.			
Hippolyte spinus	—100	0.90	.....
Hippolyte Gaimardii	—100	0.95	.....
Hippolyte polaris	—100 to 300	1.6	.....
Bythocaris gracilis	900 to 1,100	1.6	.....
Bythocaris nana	—100 to 200	0.9	.....
Latreutes ensiferus	—100	0.42	.....
Virbius zostericola	—100	0.40	.....
Pandalus propinquus	200 to 600	1.0	.....
Pandalus borealis	—100 to 200	1.2	.....
Pandalus leptocerus	—100 to 300	0.7	.....
PALÆMONIDÆ.			
Palæmon forceps	—100	0.60	7,000
Leander tenuicornis	—100	0.60	.....
Palæmonetes vulgaris	—100	0.70	360
NEMATOCARCINIDÆ.			
Nematocarcinus ensiferus	600 to 2,000	0.68	16,000 to 21,000
Nematocarcinus cursor	400 to 800	0.64	20,000
MIERSIIDÆ.			
Acanthephyra Agassizii	—100 to 3,000	0.85	5,000
Acanthephyra brevirostris	1,400 to 3,000	0.70	.....
Acanthephyra gracilis	1,600 to 2,500	2.5	21
Hymenodora gracilis	800 to 3,000	2.6	.....
PASIPHAIDÆ.			.....
Pasiphaë tarda	—100 to 200	2.0	94
Pasiphaë princeps	400 to 1,400	3.5	....
Parapasiphaë sulcatifrons	500 to 3,000	4.2	15 to 19

BRACHYURA.

MAIOIDEA.

LEPTOPODIA SAGITTARIA Leach.

Station 2280, October 19, off Cape Hatteras, north lat. 35° 21′, west long. 75° 21′ 30″, 16 fathoms, gray sand; 2 ♂, 1 ♀ (8841).

METOPORHAPIS CALCARATUS Stimpson.

Leptopodia calcarata Say, Jour. Acad. Nat. Sci. Phila., i, p. 455, 1818.

Metoporhapis calcarata Stimpson, Ann. Lyceum Nat. Hist. New York, vii, p. 198 (70), 1860.

Metoporhapis forficulatus A. M.-Edwards, Crust. Région Mexicaine, p. 174, pl. 31, figs. 3-3*e*, 1878.

Specimens examined.

[Locality: Off Cape Hatteras.]

Catalogue number.	Station number.	Locality.		Depth and nature of bottom.		Date.	Specimens.		
		N. lat.	W. long.	Fathoms.	Materials.		Number.		With eggs.
		° ′ ″	° ′ ″			1884.	♂	♀	
7269	2285	35 21 25	75 24 25	13	crs. gy. S.	Oct. 19	1	1	1
8845	2286	35 21 30	75 25 00	11	crs. gy. S.	Oct. 19	..	1	1
7270	2296	35 35 20	74 58 45	27	crs. gy. S.	Oct. 20	3	3	3

PODOCHELA RIISEI Stimpson.

Podochela Riisei Stimpson, Ann. Lyceum Nat. Hist. New York, vii, p. 196 (68), pl. 2, fig. 6, 1860. A. M.-Edwards, Crust. Région Mexicaine, p. 193, pl. 34, figs. 1-1*a*, 1879.

Podonema Riisei Stimpson, Bull. Mus. Com. Zool., ii, p. 126, 1870.

Coryrhynchus Riisei Kingsley, Proc. Acad. Nat. Sci. Phila., 1879, p. 384, 1880.

Specimens examined.

[Locality: Off Cape Hatteras.]

Catalogue number.	Station number.	Locality.		Depth and nature of bottom.		Date.	Specimens.		
		N. lat.	W. long.	Fathoms.	Materials.		Number.		With eggs.
		° ′ ″	° ′ ″			1884.	♂	♀	
8777	2275	35 20 40	75 18 40	16	gy. S.	Oct. 19	..	1y	.....
8773	2277	35 20 50	75 19 50	16	gy. S.	Oct. 19	..	1y	0
8792	2285	35 21 25	75 24 25	13	crs. gy. S.	Oct. 19	1	1	1
7268	2285	35 21 25	75 24 25	13	crs. gy. S.	Oct. 19	1	..	
8814	2296	35 35 20	74 58 45	27	crs. gy. S.	Oct. 20	1	1	1
8799	2297	35 38 00	74 53 00	49	bk. M. brk. Sh.	Oct. 20	1	..	
7253	2297	35 38 00	74 53 00	49	bk. M. brk. Sh.	Oct. 20	1	..	

COLLODES DEPRESSUS A. M.-Edwards.

Crust. Région Mexicaine, p. 176, pl. 32, figs 4-4 *e*, 1878. Smith, Proc. National Mus., vi, pp. 5, 8, 1883.

Station 2296, off Cape Hatteras, October 20, north lat. 35° 35′ 20″, west long. 74° 58′ 45″, 27 fathoms, coarse gray sand; three females, two of which were carrying eggs (7248).

COLLODES ROBUSTUS Smith.

Specimens examined.

[Locality: Off Chesapeake Bay.]

Catalogue number.	Station number.	Locality.		Depth, temperature, and nature of bottom.			Date.	Specimens.	
		N. lat.	W. long.	Fathoms.	°	Materials.		Number.	With eggs.
		° ′ ″	° ′ ″				1884.	♂ ♀	
7211	2265	37 07 40	74 35 40	70	63	gn. M. G.	Oct. 18	6 1	0

[Locality: Off Cape Hatteras.]

8901	2297	35 38 00	74 53 00	49	....	bk.M.brk.Sh.	Oct. 20	1	.....
7261	2297	35 38 00	74 53 00	49	....	bk.M.brk.Sh.	Oct. 20	1	0

EUPROGNATHA RASTELLIFERA Stimpson.

Specimens examined.

[Locality: Off Chesapeake Bay.]

Catalogue number.	Station number.	Locality.		Depth, temperature, and nature of bottom.			Date.	Specimens.	
		N. lat.	W. long.	Fathoms.	°	Materials.		Number.	With eggs.
		° ′ ″	° ′ ″				1884.	♂ ♀	
8741	2264	37 07 50	74 34 20	167	58	gy. S.	Oct. 18	4 2	+
8906	2265	37 07 40	74 35 40	70	63	gn. M. G.	Oct. 18	42 61	+
8775	2265	37 07 40	74 35 40	70	63	gn. M. G.	Oct. 18	23 31	+

[Locality: Off Cape Hatteras.]

8748	2269	35 12 30	75 05 00	48	76	gy. M.	Oct. 19	3	.....
8864	2308	35 43 00	74 53 30	45	....	gy. S.	Oct. 21	1	.....

LISPOGNATHUS THOMSONI A. M.-Edwards.

Dorynchus Thomsoni Norman, in Thomson, Depths of the Sea, p. 174 (cut), 1873.

Lispognathus Thomsoni A. M.-Edwards, Rapport sur la Faune sous-marine dans les grandes profondeurs de la Méditerranée et de l'Océan Atlantique (Arch. Missions Sci. et Littéraires, ix), pp. 16, 39, 1882; Recueil de figures de Crustacés nouveaux ou peu connus, pl. [3], 1883.

Lispognathus furcatus Smith, Proc. National Mus., vi, p. 12, 1883.

(Plate I, Figs. 1, 1*a*.)

Specimens examined.

Catalogue number.	Station number.	Locality.		Depth, temperature, and nature of bottom.			Date.	Specimens.	
		N. lat.	W. long.	Fathoms.	°	Materials.		Number.	With eggs.
		° ′ ″	° ′ ″				1881.	♂ ♀	
.....	951	39 57 00	70 31 30	225	....	M.	Aug. 23	1	
							1882.		
.....	1096	39 53 00	69 47 00	317	....	sft. gn. M.	Aug. 11	1	1
							1883.		
7190	2262	39 54 45	69 29 45	250	42	M. S.	Sept. 28	1	1

The specimens taken in 1881 and 1882 were referred very doubtfully to A. M.-Edwards's *L. furcillatus** before I had seen the figure in his great work on the crustacea of the Mexican region. A comparison with Milne-Edwards's figure (which is that of a female, and not of a male as stated in the explanation of the plate) appears to indicate that our specimens are specifically distinct, but a comparison of them with four females of *L. Thomsoni*, from the Bay of Biscay, received from the Rev. Dr. Norman, shows that they are very closely allied to that species, and probably only a robust variety of it. Our specimens are all considerably larger than any of those from the Bay of Biscay, and have the carapax broader and its spines larger and stouter. These differences are so slight, however, that I think a large series of specimens from the two sides of the Atlantic would show all intermediate forms. On account of the differences exhibited, I give the following full description of the three specimens enumerated above:

The carapax, excluding the rostral and lateral spines, is about four-fifths as broad as long in the male, and slightly broader and much thicker and more swollen in the female. The rostral horns are acicular, very slightly divergent, and slightly ascending, and in the male nearly three-

* In Bull. Mus. Comp. Zool., vii, p. 9, 1880, the species is described as new under the name *furcatus*, but in the Crust. Région Mexicaine, p, 349, pl. 31 *A*, fig. 4, 1880, the same specimen, apparently, is described under the name *furcillatus*, which is also used in the Rapport sur la Faune sous-marine dans les grandes profondeurs de la Méditerranée et de l'Océan Atlantique, pp. 16, 39, 1882. The first two of these works bear the same date, and, although the Cambridge Bulletin probably appeared first, it seems best to use the name *furcillatus*, apparently adopted by Milne-Edwards himself, and the one used in connection with the first-published figure.

tenths as long as the rest of the carapax. The three erect gastric and the postorbital spines are subequal and very slender and acute, and the postorbital spine each side is situated slightly in front of a line from the middle to the lateral gastric in the females, but slightly in front of it in the male. The cardiac spine is considerably stouter and a little higher than the gastric spines, and either side of it on the dorsal part of the branchial region there is a much smaller erect spine, and on a line between this and the lateral gastric there is a similar spine in the females, but only a minute spine or tubercle in the male. There are two or three minute spines or tubercles on the protuberant superior lobe of the hepatic region, and about as many more back of these on the side of the branchial region, while on the inferior hepatic lobe, opposite the middle of the buccal area, there is a much larger spine directed downward, and back of this a smaller one, near the base of the cheliped. The supraorbital spine is slender and about as long as the gastric spines, and in the male the interantennular is fully as long, stouter, and directed downward and curved slightly forward. The basal segment of the antenna is irregularly armed beneath with small spines or teeth, and in the male with a slender spine at the distal end. The eye-stalk is armed with a minute spine or tubercle in front, and above with a small tubercle at the emargination of the cornea. The exposed surface of the ischium and merus of the external maxillipeds is armed conspicuously with marginal and submarginal spines, of which one on the inner edge of the merus is very long.

The chelipeds in the male are stout and nearly twice as long as the carapax, including the rostral horns; the merus is a little shorter than the chela and triquetral, with all three of the angles thickly armed with very long and slender spines; the carpus is rounded externally, but armed like the merus; the chela is longer than the carapax, excluding the rostral horns, and naked and unarmed except by a few spines along the proximal part of the dorsal edge; the body is stout and swollen, and the digits slightly shorter than the body, nearly straight vertically but strongly curved laterally, very much compressed, grooved longitudinally on the sides and on the rather broad dorsal edge of the dactylus, and the prehensile edges crenately serrate and in contact throughout when closed. In the female the chelipeds are only about once and a half as long as the carapax, including the rostral spines, much more slender than in the male, and armed with proportionally longer spines; the chela is much shorter than the carapax, excluding the rostral horns; the body is scarcely at all swollen, and is armed with slender spines along both edges and with minute spines or tubercles on the sides, and the digits are proportionally longer and narrower than in the male.

The ambulatory legs are very long and slender, clothed to the tips of the dactyli with numerous curved setiform hairs which persistently retain mud and other foreign substances, and each is armed with a slender spine on the upper side of the distal end of the merus.

In the male the abdomen is much broader relatively to the sternum than in *Euprognatha rastellifera*, and has a low tuberculiform elevation on each somite. The first and second somites are narrow, the third broadest of all, the fourth and fifth successively a very little narrower, the fifth fully twice as broad as long, and the sixth and seventh consolidated as in *Euprognatha* and *Collodes*, together much broader than long and very broad and obtuse at the tip. The appendages of the first somite reach nearly to the tip of the abdomen, and their tips are stout and curved outward very strongly.

The eggs are numerous, nearly spherical, and approximately 0.7^{mm} in diameter in alcoholic specimens.

These specimens and three others from the Bay of Biscay give the following:

Measurements in millimeters and hundredths of length of carapax.

Station.	951.	1,096.	2,262.	Bay of Biscay.		
Sex	♂	♀	♀	♀	♀	♀
Length of carapax, including rostral spines	12.0	12+	.....	8.2	7.2	7.1
Length of carapax, excluding rostral spines	9.3	10.8	10.5	7.0	6.2	6.3
Breadth of carapax, including spines	7.6	9.6	9.4	5.8	5.2	5.2
Breadth of carapax, excluding spines	7.6	9.3	9.3	5.7	5.1	5.1
Same in hundredths of the length, exlcuding rostral spines	82	86	98	81	82	81
Breadth of front between orbits	2.0	2.1	2.0	1.6	1.4	1.4
Length of cheliped	23.0	19.0	20.0	13.0		
Length of chela	10.0	8.0	8.5	5.4		
Breadth of chela, excluding spines	3.1	2.1	2.0	1.3		
Length of dactylus	4.6	4.0	4.5	2.6		
Length of first ambulatory peræopod	41.0	38.0	.....	27.0		
Length of propodus	13.5	12.0	.....	9.0		
Length of dactylus	8.6	8.0	.....	6.0		
Length of second ambulatory peræopod	37.0	34.0	36.0	24.0		
Length of propodus	10.8	9.9	10.7	7.1		
Length of dactylus	7.0	6.8	7.3	5.3		
Length of fourth ambulatory peræopod	31.0	30.0	31.0	20.0		
Length of propodus	9.0	8.0	8.8	6.0		
Length of dactylus	5.5	6.0	6.1	4.2		

ANAMATHIA AGASSIZII Smith.

Amathia Agassizii Smith, Bull. Mus. Comp. Zool., x, p. 1, pl. 2, figs. 2, 3, 1882; Proc. Nat. Mus., vi, p. 3, 1883; Report U. S. Fish Com., x, for 1882, p. 346, 1884.

Anamathia Agassizii Smith, Proc. National Mus., vii, p. 497, 1885.

(Plate I, Figs. 2, 3, 3*a*.)

Specimens examined.

Catalogue number.	Station number.	Locality.		Depth, temperature, and nature of bottom.			Date.	Specimens.	
		N. lat.	W. long.	Fathoms.	°	Materials.		Number.	With eggs.
		° ′ ″	° ′ ″				1884.	♂ ♀	
8042	2183	39 57 45	70 56 30	195	44	gn. M. S.	Aug. 2	1 ..	.....
8043	2200	39 53 30	69 43 20	148	45	crs. S.	Aug. 6	1 ..	.....

Measurements in millimeters.

Catalogue number	8043
Station	2200
Sex	♂
Length of carapax, including rostral and posterior spines	70
Length of carapax, excluding rostral and posterior spines	57
Length of rostral horns or spines	13
Breadth of carapax, including lateral spines	48
Breadth of carapax, excluding lateral spines	45
Length of branchial spines	4
Length of cheliped	109
Length of chela	51
Breadth of chela	6.5
Length of dactylus	18
Length of first ambulatory peræopod	180
Length of dactylus	29
Length of second ambulatory peræopod	144
Length of dactylus	27
Length of fourth ambulatory peræopod	114
Length of dactylus	24

Prof. G. O. Sars, in his great work on the Crustacea of the Norwegian North-Atlantic Expedition, states that this species is evidently congeneric with *Scyramathia Carpenteri* A. M.-Edwards, and his excellent figures and description of that species incline me not only to adopt the same view, but to include, with *A. Agassizii*, all the other American species, and, moreover, to be somewhat doubtful of the validity of the genus *Scyramathia*, notwithstanding that Professor Sars regards it as widely separated from *Anamathia*. In regard to the systematic position of *Scyramathia*, Professor Sars says: "It should certainly, from the structure of the orbita and other characters, be classed under the family Maiidæ, within the limits at present usually assigned to that family, hence comparatively remote alike from the genus *Amathia* and from the genus *Scyra*, the first of which belongs to the family Pericerídæ, according to the revision of the Oxyrhyncha lately published by E. Miers. Again, among the Maiidæ it unquestionably belongs to the sub-family Maiinæ, and would seem to approximate closest to the genus *Hyastenus* White, chiefly represented in the northern part of the Pacific Ocean."

When proposing the genus *Scyramathia*, A. Milne-Edwards (Comp. rend. Acad. Sci. Paris, xci, p. 356, 1881) gives no characters whatever by which it may be distinguished from *Anamathia*, but from the fact that he places in it *Scyra umbonata* Stimpson, it is very readily inferred that he regarded the peculiar truncated tubercles with which the carapax is armed in both species as the principal generic character. That he did not base the separation on the character of the orbits is evident from the fact that he has retained in the genus *Amathia* several species (one of which is very likely specifically identical with *A. Agassizii*) in which the structure of the orbits is similar to that in *Scyramathia Carpenteri*. Unfortunately I have seen no specimens of the Mediterranean *A. Rissoana*, the type of the genus *Anamathia*, but judging by the figures given by Roux, and more particularly those in the third edition of Le Règne Animal de Cuvier, it is very closely allied to the American species referred to the genus, and the structure of the orbits appears to be not unlike that in *Scyramathia Carpenteri*, except that no supraorbital or preorbital spines or processes are shown in the figures, and their ab-

sence is confirmed by Miers's diagnosis of the genus. The preorbital spines, though prominent in *A. Agassizii*, *crassa*, *Tanneri*, and *hystrix*, are small and inconspicuous in *Scyramathia Carpenteri*, their absence would apparently change the character of the orbits very little, and, as Miers has said in another place, is "a character which by itself cannot be considered of generic importance." It is still quite possible that *A. Rissoana* is different enough to be separated from the American species, in which case they should all, apparently, be referred to *Scyramathia*, which, as Professor Sars remarks, belongs most properly to the Maiidæ. Miers, however, evidently saw the resemblance between *A. Rissoana* and the Maiidæ, for he says that the genus *Halimus*, which he places next to *Amathia*, "establishes a transition to the *Maiidæ*." Until *A. Rissoana* is carefully compared with the other species, it seems best to retain them all in the genus *Anamathia*.

Though Professor Sars is "greatly disposed to regard the two forms as identical," I think there can be very little doubt that Stimpson's *Scyra umbonata* is at least specifically distinct from *Anamathia Carpenteri*. Stimpson says of his species that "the rostrum is rather longer than the interorbital width of the carapax," while in *A. Carpenteri* the rostrum is more than twice as long as the interorbital width of the carapax. Moreover, Stimpson compares his species with *Scyra acutifrons* Dana, which has a broad lamellar rostrum, divided only at the tip, and very unlike the long and spreading rostral horns of the species of *Anamathia*, and he nowhere alludes to rostral horns, as he does under his *Amathia modesta*, or even mentions that the rostrum is divided at all. It is, perhaps, useless to speculate upon the affinities of Stimpson's species until it is rediscovered, but I am confident that it will be found to have a rostrum very different from that of *Anamathia Carpenteri*.

ANAMATHIA TANNERI Smith.

Amathia Tanneri Smith, Proc. National Mus., vi, p. 4, 1883.
Anamathia Tanneri Smith, Proc. National Mus., vii, p. 493, 1885.

(Plate I, Fig. 4.)

I have seen only the type specimens taken by the Fish Hawk in 1881. The figure is from the larger of these specimens.

HYAS COARCTATUS Leach.

Specimens examined.

Catalogue number.	Station number.	Locality.		Depth, temperature, and nature of bottom.			Date.	Specimens.	
		N. lat.	W. long.	Fathoms.	°	Materials.		Number.	With eggs.
		° ′ ″	° ′ ″				1884.	♂ ♀	
7168	2253	40 34 30	69 50 45	32	53	gy. S.	Sept. 27	3s. 1s.	0
8733	2253	40 34 30	69 50 45	32	53	gy. S.	Sept. 27	1s. ..	.....
8660	2255	40 46 30	69 50 15	18	56	gy. S.	Sept. 27	1 ..	.....
7169	2256	40 38 30	69 29 00	30	53	yl. S.	Sept. 28	2 3	1
8657	2257	40 32 30	69 29 00	33	52	yl. S.	Sept. 28	1 1	1
8860	2308	35 43 00	74 53 30	45	....	gy. S.	Oct. 21	.. 1	1

Station 2308, off Cape Hatteras, is the farthest south that this species has been observed.

LIBINIA EMARGINATA Leach.

Libinia emarginata Leach, Zoological Miscellany, ii, p. 130, pl. 108, 1815.
Libinia canaliculata Say, Jour. Acad. Nat. Sci. Phila., i, 77, pl. 4, fig. 1, 1817.

Specimens examined.

[Locality: Off Cape Hatteras.]

Catalogue number.	Station number.	Locality.		Depth, temperature, and nature of bottom.			Date.	Specimens.	
		N. lat.	W. long.	Fathoms.	°	Materials.		Number.	With eggs.
		° ′ ″	° ′ ″				1884.	♂ ♀	
8743	2268	35 10 40	75 06 10	68	77	gy. M.	Oct. 19	.. 1*y*.	0
7238	2285	35 21 25	75 24 25	13	....	crs. gy. S.	Oct. 19	.. 1*y*.	0
8877	2286	35 21 30	75 25 00	11	....	crs. gy. S.	Oct. 19	2 ..	.....
7247	2296	35 35 20	74 58 45	27	....	crs. gy. S.	Oct. 20	.. 1*y*.	0
8862	2298	35 39 00	74 52 00	80	....	bk. M. brk. Sh.	Oct. 20	.. 7*y*.	0

NIBILIA ERINACEA A. M.-Edwards.

Crust. Région Mexicaine, p. 133, pl. 25, 1878.

Station 2301, October 21, off Cape Hatteras, north lat. 35° 11′ 30″, west long. 75° 05′, 59 fathoms, coarse sand, temperature 75°; two specimens (7256), which give the following:

Measurements in millimeters.

Sex	♂	♀
Length of carapax, including rostral and posterior spines	39.0	48.0
Length of carapax, excluding rostral and posterior spines	29.3	40.0
Length of rostral spines or horns	9.2	7.7
Breadth of carapax, including lateral spines	21.3	31.0
Breadth of carapax, excluding lateral spines	18.4	27.4
Length of cheliped	32.0	45.0
Length of chela	13.5	19.8
Breadth of chela	2.4	3.3
Length of dactylus	5.0	7.6
Length of first ambulatory peræopod	45.0	60.0
Length of dactylus	8.7	11.3
Length of fourth ambulatory peræopod	33.0	40.6
Length of dactylus	7.2	10.2

Both specimens are small and the female apparently immature. In the female the spines of the carapax are shorter and more obtuse than in the male, and the rostral horns shorter and less divergent.

PERICERA, species.

Station 2268, October 19, off Cape Hatteras, north lat. 35° 10′ 40″, west long. 75° 06′ 10″, 68 fathoms, temperature 77°, gray mud; a single young specimen, with the carapax, excluding the rostrum, scarcely 10^{mm} in length. It resembles the *P. spinosissima* Saussure, but the carapax is armed with fewer and smaller spines.

LAMBRUS VERRILLII Smith.

Proc. National Mus., iii, p. 415, 1881; vi, p. 14, 1883.

(Plate II, Fig. 2.)

Specimens examined.

[Locality: Off Martha's Vineyard.]

Catalogue number.	Station number.	Locality.		Depth, temperature, and nature of bottom.			Date.	Specimens.	
		N. lat.	W. long.	Fathoms.	°	Material.		Number.	With eggs.
8655	2244	° ′ ″ 40 05 15	° ′ ″ 70 23 00	67	53	gn. M. S.	1884. Sept. 26	♂ ♀ 1 1 *y.*	.....

[Locality: Off Cape Hatteras.]

7217	2268	35 10 40	75 06 10	68	77	gy. M.	Oct. 19	2 *s.* ..	.....
7218	2268	35 10 40	75 06 10	68	77	gy. M.	Oct. 19	1 *s.* ..	.....
7255	2301	35 10 30	75 05 00	59	73	crs. S.	Oct. 21	1 *l.* ..	.....

Measurements in millimeters.

Catalogue number	8655	7217	7218	8655	7217	7255
Station	2244	2268	2268	2244	2268	2301
Sex	Young.	♂	♂	♂	♂	♂
Length of carapax	9.6	12.7	13.7	14.6	15.7	28.4
Breadth, including lateral spines	10.4	14.3	16.4	17.6	18.9	35.0
Breadth, excluding lateral spines	9.7	13.0	15.0	15.8	16.5	30.8
Length of cheliped	21.0	29.0	35.0	36.0	38.0	88.0
Length of merus	7.3	11.0	12.5	13.5	14.0	34.0
Length of propodus	10.0	13.5	16.0	16.5	17.5	41.0

Some of these specimens vary considerably from those originally described. The small male, 7218, is armed with fewer and much less conspicuous tubercles and teeth, all the spiniform elevations of the dorsal surface of the carapax being reduced to low and inconspicuous tubercles, the teeth of the anterior part of the antero-lateral margin are nearly obsolete, and the marginal teeth of the chelipeds are much shorter and some of them, especially on the outer edge of the chela, are obsolete. On the other hand, in the two small males, 7217, and the large male, 7255, the tubercles of the dorsal surface of the carapax and many of those of the chelipeds are much more prominent than in the specimens originally described, the rostrum is more abruptly constricted and the terminal portion narrower, longer, spiniform, and armed with lateral tubercles.

These variations incline me to the belief that this species is really the *L. Pourtalesii* of Stimpson and that A. Milne-Edwards's figure of that species is either incorrect or based on some other species.

LAMBRUS AGONUS Stimpson.

Bull. Mus. Comp. Zool., ii, p. 131, 1870. A. M.-Edwards, Crust. Région Mexicaine, p. 151, pl. 28, figs. 3–3*b*, 1878.

Station 2296, October 20, off Cape Hatteras, north lat. 35° 35′ 20″, west long. 74° 58′ 45″, 27 fathoms, coarse gray sand; one male (7250).

PLATYLAMBRUS SERRATUS A. M.-Edwards.

Lambrus serratus M.-Edwards, Hist. Nat. Crust., i, p. 357, 1834 (teste A. M.-Edwards).

Lambrus crenulatus Saussure, Crust. Mexique et des Antilles, p. 13, pl. 1, fig 4, 1858. Stimpson, Ann. Lyceum Nat. Hist. New York, vii, p. 201 (73), 1860; Bull. Mus. Comp. Zool., ii, p. 129, 1870 (*Platylambrus* is suggested as an appropriate name for a group, to which this species and *L. laciniatus* De Haan belong, if future studies prove it to be distinct from the triangular *Lambri*, but the new name is not adopted).

Platylambrus serratus A. M.-Edwards, Crust. Région Mexicaine, p. 156, pl. 30, 1-1*c*, 1878.

With the last species at station 2296; one male and one small female (7249).

CANCROIDEA.

CANCER BOREALIS Stimpson.

Specimens examined.

[Locality: Off Chesapeake Bay.]

Catalogue number.	Station number.	Locality. N. lat.	Locality. W. long.	Depth, temperature, and nature of bottom. Fathoms.	°	Material.	Date.	Specimens. Number.		With eggs.
	—	° ′ ″	° ′ ″				1884.	♂	♀	
8938	2170	37 57 00	73 53 30	155	....	gy. S.	July 20.	8	8	0

[Locality: Off Long Island.]

8005	2177	39 33 40	72 08 45	87	52	gn. M. S.	July 22	..	2 *s.*	0

[Locality: Off Martha's Vineyard.]

8038	2185	40 00 45	70 54 15	129	51	gn. M. S.	Aug. 2	2 *s.*		.....
8039	2197	39 56 30	69 43 20	84	52	S. brk. Sh.	Aug. 6	3 *s.*		.....
8040	2199	39 57 30	69 41 10	78	....	gy. S.	Aug. 6	2 *s.*	4 *s.*	0
8662	2239	40 38 00	70 29 45	32	....	gn. M.	Aug. 26	1 *s.*		.....
8656	2240	40 27 30	70 29 00	44	....	gn. M.	Sept. 26	2 *s.*		.....
8648	2240	40 27 30	70 29 00	44	....	gn. M.	Sept. 26		1	0
8645	2241	40 21 00	70 29 15	50	51	gn. M.	Sept. 26	1	2	0
8654	2241	40 21 00	70 29 15	50	51	gn. M.	Sept. 26	2 *s.*	2 *s.*	0
8658	2242	40 15 30	70 27 00	58	51	gn. M.	Sept. 26	1		.....
8644	2243	40 10 15	70 26 00	63	52	gn. M.	Sept. 26	4	2 *s.*	0
8647	2244	40 05 15	70 23 00	67	53	gn. M. S.	Sept. 26	3 *s.*	3	0
8652	2245	40 01 15	70 22 00	98	51	gn. M. bk.S.	Sept. 26	1		.....
8643	2247	40 03 00	69 57 00	78	52	gn. M. S.	Sept. 27		3 *l.*	0
8649	2248	40 07 00	69 57 00	67	52		Sept. 27		1 *l.*	0
8650	2249	40 11 00	69 52 00	53	51		Sept. 27	1 *l.*		.....
8653	2250	40 17 15	69 51 45	47	51		Sept. 27	6 *s.*	8 *s.*	.....
8659	2253	40 34 30	69 50 45	32	53	gy. S.	Sept. 27		1 *y.*	0
8663	2259	40 19 30	69 29 10	41	50	gy. S.	Sept. 28	1 *s.*		.....
8651	2260	40 13 15	69 29 15	46	50	gy. S.	Sept. 28	8	3	0
8646	2261	40 04 00	69 29 30	58	54	gy. S.	Sept. 28	12 *s.*	3 *s.*	0

[Locality: Off Chesapeake Bay.]

8757	2264	37 07 50	74 34 20	167	58	gy. S.	Oct. 18	13	12	0
8749	2264	37 07 50	74 34 20	167	58	gy. S.	Oct. 18	5	4	0
8767	2265	37 07 40	74 35 40	70	63	gn. M. G.	Oct. 18	5	9	0

[Locality: Off Cape Hatteras.]

8897	2297	35 38 00	74 53 00	49	....	M. brk. Sh.	Oct. 20	1	[30] 3	0
8797	2297	35 38 00	74 53 00	49	....	M. brk. Sh.	Oct. 20		5 *y.*	0
8801	2298	35 39 00	74 52 00	80	....	M. brk. Sh.	Oct. 20	4	2	0
8909	2299	35 40 00	74 51 30	296	....	brk. M.	Oct. 20	4	3	0
8900	2307	35 42 00	74 54 30	43	57	gy. S.	Oct. 21	2	[63] 2	0
										0

CANCER IRRORATUS Say.

Specimens examined.

[Locality: Off Martha's Vineyard.]

Catalogue number.	Station number.	Locality.		Depth, temperature, and nature of bottom.			Date.	Specimens.		With eggs.
		N. lat.	W. long.	Fathoms.	°	Materials.		Number.		
		° ′ ″	° ′ ″				1884.	♂	♀	
7167	2253	40 34 30	69 50 45	32	53	gy. S.	Sept. 27	2 *s.*	1 *y.*	.....
8661	2256	40 38 30	69 29 00	30	53	yl. S.	Sept. 28		5 *s.*	0
8664*	.....	-- -- --	-- -- --	.....	....	.....	Sept. 23	3 *f.*		.....
[Locality: Off Chesapeake Bay.]										
7207	2264	37 07 50	74 34 20	167	58	gy. S.	Oct. 18	..	1	.....
[Locality: Off Cape Hatteras.]										
8857	2297	35 38 00	74 53 00	49	....	M. brk. S.	Oct. 20	1		.....
8898	2297	35 38 00	74 53 00	49	....	M. brk. S.	Oct. 20	4	[275+]	.....
8780	2298	35 39 00	74 52 00	80	...	M. brk. S.	Oct. 20	26	5	0
8858	2298	35 39 00	74 52 00	80	..	M. brk. S.	Oct. 20	1		.....
8908	2299	35 40 00	74 51 30	296	....	bk. M.	Oct. 20	4		.....
8859	2307	35 42 00	74 54 30	43	57	gy. S.	Oct. 21	1	2	.....
8861	2308	35 43 00	74 53 30	45	....	gy. S.	Oct. 21	5		0
8899	2309	35 43 30	74 52 00	56	....	gy. S.	Oct. 21	5	[220] 1	0

* Stomach of dogfish.

Cancer amœnus Herbst, Krabben und Krebse, vol. iii, part 1, p. 64, pl. 49, Fig. 3, 1799, is evidently this species, and the name should be substituted for the later name given by Say.

XANTHO, sp.

Station 2280, October 19, off Cape Hatteras, north lat. 35° 21′, west long. 75° 21′ 30″, 16 fathoms, gray sand; eight specimens (8851).

PILUMNUS ACULEATUS M.-Edwards.

Cancer aculeatus Say, Jour. Acad. Nat. Sci. Phila., i, p. 420, 1818.
Pilumnus aculeatus M.-Edwards, in Guérin, Iconog. Règne Animal, Crust., pl. 3, Fig. 2; Hist. Nat. Crust., i, p. 420, 1834. A. M.-Edwards, Crust. Région Mexicaine, p. 282, pl. 50, Figs. 1–1*c*, 1880.

Station 2287, off Cape Hatteras, October 20, north lat. 35° 22′ 30″, west long. 75° 26″, 7 fathoms, coarse sand; one young specimen (7245).

GERYON QUINQUEDENS Smith.

Specimens examined.

[Locality: Off Chesapeake Bay.]

Catalogue number.	Station number.	Locality. N. lat.	Locality. W. long.	Depth, temperature, and nature of bottom. Fathoms.	°	Materials.	Date.	Specimens. Number.	With eggs.
		° ′ ″	° ′ ″				1884.	♂ ♀	
8001	2171	37 59 30	73 48 40	444	39	gn. M.	July 20	1 *l.*	
8003	2172	38 01 15	73 44 00	568	39	gn. M.	July 20	1 *s.*	0
		[Locality: Off Long Island.]							
8000	2179	39 30 10	71 50 00	510	39	bk. M.	July 23	34 22	14
	2180	39 29 50	71 49 30	523	39	bk. M.	July 23		
7799	2181	39 29 00	71 46 00	693	39	gn. M., fne. S.	July 23	5 *l.* 1 *l.*	0
8004	2181	39 29 00	71 46 00	693	39	gn. M., fne. S.	July 23	1 *y.*	
8002	2182	39 25 30	71 44 00	861	39	gn. M.	July 23	1	
		[Locality: Off Martha's Vineyard.]							
8037	2186	39 52 15	70 55 30	353	40	gn. M., S.	Aug. 2	2 *l.*	
8035	2187	39 49 30	71 10 00	420	40	gn. M., S.	Aug. 3	1 2	0
8036	2189	39 49 30	70 26 00	600	40	gn. M., S.	Aug. 4	1	1
8188	2201	39 39 45	71 35 15	538	39	bu. M.	Aug. 19	8 *l.* 8 *l.*	2
8172	2202	39 38 00	71 39 45	515	39	gn. M.	Aug. 19	6 *s.* 5 *s.*	0
8175	2202	39 38 00	71 39 45	515	39	gn. M.	Aug. 19	1 *s.* 1 *s.*	0
8188	2202	39 38 00	71 39 45	515	39	gn. M.	Aug. 19	15 *l.*	
8188	2203	39 34 15	71 45 15	705	39	gn. M., S.	Aug. 19	1 *l.*	
8188	2204	39 30 30	71 44 30	728	39	bu. M.	Aug. 19	1 *l.*	
8188	2206	39 35 00	71 24 30	1043	38	gn. M.	Aug. 20	11 *l.* 9 *l.*	0
8188	2215	39 49 15	70 31 45	578	....		Aug. 22	9 *l.* 2 *l.*	1
8188	2216	39 47 00	70 30 30	963	39	gn. M.	Aug. 22	2 *l.* 4 *l.*	0
8626	2234	39 09 00	72 03 15	816	39	gn. M.	Sept. 13	3	
8627	2235	39 12 00	72 03 30	707	39	gn. M.	Sept. 13	13 8	0
8628	2236	39 11 00	72 08 30	636	39	gn. M.	Sept. 13	11	

The eggs of this species are nearly spherical and about 0.74^{mm} in diameter. A female, from station 2189, measuring 70 by 85^{mm} in length and breadth of carapax, including lateral teeth, was carrying, approximately, 47,000 eggs.

PLATYONICHUS OCELLATUS Latreille.

Specimens examined.

[Locality: Off Cape Hatteras.]

Catalogue number.	Station number.	Locality. N. lat.	Locality. W. long.	Depth, temperature, and nature of bottom. Fathoms.	°	Materials.	Date.	Specimens. No.	With eggs.
		° ′ ″	° ′ ″				1884.	♂ ♀	
8751	2269	35 12 30	75 05 00	48	76	gy. M.	Oct. 19	2	
8779	2271	35 16 00	75 09 00	26	....		Oct. 19	1	
7228	2283	35 21 15	75 23 15	14	....	gy. S.	Oct. 19	2 1	0
7237	2285	35 21 25	75 24 25	13	....	crs. gy. S	Oct. 19	2	0
8791	2286	35 21 30	75 25 00	11	..	crs. gy. S.	Oct. 19	3	0
7244	2289	35 22 50	75 25 00	7	....	crs. S.	Oct. 20	1 *y.*	0
8856	2291	35 25 30	75 20 30	15	...	gy. S. brk. Sh.	Oct. 20	2	0
8811	2302	35 14 00	75 03 00	49	71	S. Cr.	Oct. 21	1	0
8813	2303	35 17 00	75 01 00	41	....	fne. gy. S.	Oct. 21	2	

All the specimens from stations 2269, 2271, 2283, 2291, 2302, and 2303 differ conspicuously in color from all the specimens from stations 2285 and 2286, and from all ordinary specimens from the New England coast, and represent a well marked variety. These specimens, though recently preserved, like the others, in strong alcohol, present no trace whatever of the beautiful dark purplish red markings upon the dorsal surface of the carapax, chelipeds, and ambulatory peræopods, these parts being a uniform obscure brownish yellow, except the spine on the inner side of the carpus and a few tubercles on the chela, which are dark reddish brown in many of the specimens. The smooth areas between the teeth of the antero-lateral margin of the carapax are very much larger and more conspicuous, and the tubercles of the margin itself are larger and more regular, as are also the tubercles on the dorsal surface of the chelæ in most of the specimens. The following measurements of seven specimens of the unspotted variety, followed by similar measurements of four normal specimens from the same region, and two others from Vineyard Sound, show no noticeable differences in the proportions of the carapax or chelæ:

Measurements in millimeters.

Catalogue number	7228.	8779.	8813.	7283.	8751.	8811.	8856.
Station	2283.	2271.	2303.	2383.	2269.	2302.	2291.
Sex	♂	♂	♂	♂	♂	♀	♀
Length of carapax, including frontal spine	42.0	45.5	47.5	50.0	51.5	49.7	52.0
Breadth of carapax in front of lateral spine	48.0	51.0	54.0	56.5	58.5	56.6	59.0
Breadth of carapax, including lateral spine	52.0	54.5	57.3	60.0	63.0	60.0	63.0
Breadth between external angles of orbits	22.3	25.6	25.3	26.7	26.6	26.0	27.6
Length of chela	35.5	39.5	42.0	48.0	49.0	39.8	42.0
Height of chela	11.4	12.2	12.7	14.0	14.0	13.2	13.8
Length of dactylus	19.0	20.8	22.0	24.8	26.0	22.0	24.5

Catalogue number	8791.	7237.	7237.	8791.		
Station	2286.	2285.	2285.	2286.	V. S.	V. S.
Sex	♀	♀	♀	♀	♀	♂
Length of carapax, including frontal spine	37.5	45.6	49.0	50.0	56.3	69.0
Breadth of carapax in front of lateral spine	43.9	51.8	56.1	57.0	65.0	80.0
Breadth of carapax, including lateral spine	47.0	56.0	60.7	61.2	68.4	84.5
Breadth between external angles of orbits	22.3	26.1	27.7	28.0	32.0	37.2
Length of chela	31.0	37.0	40.5	42.2	45.0	71.0
Height of chela	11.1	12.7	14.0	13.5	14.3	18.5
Length of dactylus	17.8	21.8	23.7	24.0	25.0	40.0

BATHYNECTES LONGISPINA Stimpson.

Bathynectes longispina Stimpson, Bull. Mus. Comp. Zool., Cambridge, ii, p. 146, 1870 (young ♂). A. M.-Edwards, Crust. Région Mexicaine, p. 234, pl. 42, fig. 1, 1879 (young ♂). Smith, Proc. National Mus., iii, p. 418, 1881; vi, p. 17, 1883.

Bathynectes brevispina Stimp., loc. cit., p. 147, 1870 (large ♀). A. M.-Edwards, op. cit., p, 235, 1879 (=Stimpson).

Specimens examined.

[Locality: Off Martha's Vineyard.]

Catalogue number.	Station number.	Locality.		Depth, temperature, and nature of bottom.			Date.	Specimens.	
		N. lat.	W. long.	Fathoms.	°	Materials.		Number.	With eggs.
		° ′ ″	° ′ ″					♂ ♀	
8041	2199	39 57 30	69 41 10	78	....	gy. S.	1884. Aug. 6	.. 1	0

[Locality: Off Chesapeake Bay.]

7209	2264	37 07 50	74 34 20	167	58	gy. S.	Oct. 18	3 ..	.....
7210	2265	37 07 40	74 35 40	70	63	gn. M. G.	Oct. 18	3 ..	.....

Measurements in millimeters.

Catalogue number	7209	7210	8041
Station	2264	2265	2199
Sex	♂	♂	♀
Length of carapax, including frontal teeth	29.6	37.0	35.0
Length of carapax, excluding frontal teeth	28.7	35.2	31.1
Breadth of carapax in front of lateral spines	36.0	45.1	42.0
Breadth of carapax, including lateral spines	51.2	63.0	61.0
Length of lateral spine	8.5	10.2	10.3
Length of right cheliped	50.	62.	55.
Length of chela	26.5	32.0	30.0
Height of chela, excluding spines	8.7	12.0	12.0
Length of dactylus	14.0	17.0	15.5
Length of left cheliped	49.	66.	55.
Length of chela	25.7	34.8	29.0
Height of chela	10.0	13.0	11.0
Length of dactylus	13.3	17.2	15.3
Length of third ambulatory leg	69.	87.	80.
Length of fourth ambulatory leg	46.	57.	53.
Length of dactylus	14.5	17.3	16.0
Breadth of dactylus	5.6	7.3	6.8

CALLINECTES ORNATUS Ordway.

Jour. Bost. Soc. Nat. Hist., vii, p. 571 (6), 1863. Smith, Trans. Conn. Acad., ii, pp. 8, 34, 1869. Stimpson, Bull. Mus. Comp. Zool., ii, p. 148, 1870. A. M.-Edwards, Crust. Région Mexicaine, p. 225, 1879.

Station 2283, off Cape Hatteras, October 19, north lat. 35° 23′ 15″, west long. 75° 23′ 15″, 14 fathoms, gray sand; one male (8863).

Stimpson's statement, that the Brazilian species which I have referred to as the *C. ornatus* is probably not the same as that of Ordway, is an error evidently resulting from a careless reading of my account of the species, where, after referring to a male specimen agreeing perfectly

with Ordway's description, I mention an indeterminable "sterile" female from the same locality as possibly belonging to *ornatus* or to *larvatus*.

ACHELOUS SPINIMANUS De Haan.

Portunus spinimanus Latreille.

Lupa spinimana Leach, in Desmarest, Considérat. Crust., p. 98, 1825.

Achelous spinimanus De Haan, Fauna Japonica, Crust., p. 8, 1833. A. M.-Edwards, Archives Mus. Hist. Nat., x, p. 341, pl. 32, fig. 1, 1861; Crust. Région Mexicaine, p. 230, pl. 39, figs. 2-2*a*, 1879.

Station 2285, October 19, off Cape Hatteras, north lat. 35° 21′ 30″, west long. 75° 24′ 25″, 13 fathoms, gray sand; 1 ♂, and 7 ♀ (8853).

ACHELOUS GIBBESII Stimpson.

Lupa Gibbesii Stimpson, Ann. Lyceum Nat. Hist. New York, vii, p. 57 (11), 1859.

Achelous Gibbesii Stimpson, loc. cit., p. 222 (94), 1860.

Neptunus Gibbesii A. M.-Edwards, Archives Mus. Hist. Nat., x, p. 326, pl. 31, fig. 1, 1861; Crust. Région Mexicaine, p. 215, 1879.

Specimens examined.

[Locality: Off Cape Hatteras.]

Catalogue number.	Station number.	Locality.		Depth, temperature, and nature of bottom.			Date.	Specimens.		
		N. lat.	W. long.	Fathoms.	°	Materials.		Number.		With eggs.
		° ′ ″	° ′ ″				1884.	♂	♀	
7219	2269	35 12 30	75 05 00	48	76	.....	Oct. 19	..	2	0
8850	2277	35 20 50	75 19 50	16	....	gy. S.	Oct. 19	2	..	.....
8776	2277	35 20 50	75 19 50	16	....	gy. S.	Oct. 19	2	1	0
7230	2283	35 21 15	75 23 15	14	...	gy. S.	Oct. 19	1	..	.....
7232	2285	35 21 25	75 24 25	13	....	crs. gy. S.	Oct. 19	4 4*y*.		.....

ACHELOUS ANCEPS Stimpson.

Lupa anceps Saussure, Crust. Antilles et Mexique, p. 18, pl. 2, fig. 11, 1858.

Achelous anceps Stimpson, Ann. Lyc. Nat. Hist. New York, x, p. 113, 1871.

Neptunus anceps A. M.-Edwards, Archives Mus. Hist. Nat., x, 328, 1861; Crust. Région Mexicaine, 213, 1879.

Specimens examined.

[Locality: Off Cape Hatteras.]

Catalogue number.	Station number.	Locality.		Depth, temperature, and nature of bottom.			Date.	Specimens.		
		N. lat.	W. long.	Fathoms.	°	Materials.		Number.		With eggs.
		° ′ ″	° ′ ″				1884.	♂	♀	
8852	2281	35 21 05	75 22 05	16	....	gy. S.	Oct. 19	1*s*.	1*s*.	0
7233	2285	35 21 25	75 24 25	13	....	crs. gy. S.	Oct. 19	..	..	.....
8854	2287	35 22 30	75 26 00	7	....	crs. gy. S.	Oct. 20	..	1	1
8842	2288	35 22 40	75 25 30	7	....	crs. S.	Oct. 20	.	2	0
8855	2289	35 22 50	75 25 00	7	....	crs. S.	Oct. 20	7	8	6

ACHELOUS SPINICARPUS Stimpson.

Bull. Mus. Comp. Zool., ii, p. 148, 1870.

Neptunus spinicarpus A. M.-Edwards, Crust. Région Mexicaine, p. 221, pl. 40, figs. 1–1*b*, 1879.

Specimens examined.

[Locality: Off Cape Hatteras.]

Catalogue number.	Station number.	Locality.		Depth, temperature, and nature of bottom.			Date.	Specimens.	
		N. lat.	W. long.	Fathoms.	°	Materials.		Number.	With eggs.
		° ′ ″	° ′ ″				1884.	♂ ♀	
7216	2268	35 10 40	75 06 10	68	77	gy. M.	Oct. 19	1 ..	.....
8796	2301	35 11 30	75 05 00	59	75	crs. S.	Oct. 21	1 3	0
7257	2302	35 14 00	75 03 00	49	71	S. Cr.	Oct. 21	2 2	0
7254	2307	35 42 00	74 54 30	43	57	gy. S.	Oct. 21	.. 1	0

DORIPPOIDEA.

ETHUSINA ABYSSICOLA Smith.

Specimens examined.

Catalogue number.	Station number.	Locality.		Depth, temperature, and nature of bottom.			Date.	Specimens.	
		N. lat.	W. long.	Fathoms.	°	Materials.		Number.	With eggs.
		° ′ ″	° ′ ″				1884.	♂ ♀	
8566	2226	37 00 00	71 54 00	2221	37	glb. O.	Sept. 10	2 ..	.....
8565	2228	37 25 00	73 06 00	1582	37	bn. M.	Sept. 11	.. 1	0

LEUCOSOIDEA.

CALAPPA MARMORATA Fabricius ex Herbst.

Specimens examined.

[Locality: Off Cape Hatteras.]

Catalogue number.	Station number.	Locality.		Depth, temperature, and nature of bottom.			Date.	Specimens.	
		N. lat.	W. long.	Fathoms.	°	Materials.		Number.	With eggs.
		° ′ ″	° ′ ″				1884.	♂ ♀	
7226	2282	35 21 10	75 22 10	14	....	bk. S.	Oct. 19	.. 1	0
7227	2283	52 21 15	75 23 15	14	....	gy. S.	Oct. 19	.. 1	0
7285	2285	35 21 25	75 24 25	13	....	crs. gy. S.	Oct. 19	1 ..	.....
8817	2296	35 21 30	75 25 00	27	....	crs. gy. S.	Oct. 20	1*y*. ..	.....

HEPATUS DECORUS Gibbes ex Herbst.

Specimens examined.

[Locality: Off Cape Hatteras.]

Catalogue number.	Station number.	Locality.		Depth, temperature, and nature of bottom.			Date.	Specimens.	
		N. lat.	W. long.	Fathoms.	°	Materials.		Number.	With eggs.
		° ′ ″	° ′ ″				1884.	♂ ♀	
8782	2282	35 21 10	75 22 40	14	....	bk. S.	Oct. 19	1 ..	.....
8784	2283	35 21 15	75 23 15	14	....	gy. S.	Oct. 19	3 1	1
8787	2284	35 21 20	75 23 50	13	....	crs. gy. S.	Oct. 19	1 ..	.....
8783	2285	35 21 25	75 24 25	13	....	crs. gy. S.	Oct. 19	3 2*y.* 3	0
7239	2286	35 21 30	75 25 00	11	....	crs. gy. S.	Oct. 19	1 1	0

Measurements in millimeters.

Catalogue number.	Sex.	Length of carapax.	Breadth of carapax, including teeth.
8783	.....	13.1	17.8
8783	.....	16.8	23.6
7239	♀	27.0	37.5
8783	♀	29.7	42.3
8783	♀	39.8	59.2
8783	♀	42.1	62.0
8784	♀	46.5	69.5
8784	♂	27.7	40.1
8783	♂	30.6	45.0
8784	♂	33.0	49.5
8784	♂	34.0	50.0
7239	♂	38.7	58.8
8783	♂	43.7	63.8
7239	♂	45.8	68.0
8782	♂	45.5	67.0
8782	♂	47.0	70.0

In the first of these measured specimens the color markings of the carapax are indistinct, but are apparently all narrow and transversely elongated spots, arranged in transverse bands. The second specimen has large color spots on the central portions of the carapax, nearly as in the adult, and a few indistinct markings along the edges of the carapax, but is without the smaller spots usually present on the inner portions of the branchial regions. The third specimen has the markings very nearly as in the first, but much more distinct. All the other specimens have the usual coloration of the adult.

OSACHILA TUBEROSA Stimpson.

Bull. Mus. Comp. Zool., ii, p. 154, 1870.

Station 2269, October 19, off Cape Hatteras, north lat. 35° 12′ 30″, west long. 75° 07′, 48 fathoms, temperature 76°; one female (8746).

Measurements in millimeters.

Length of carapax to middle of front	18.0
Length of carapax, including lobes of front	18.4
Breadth of carapax, including lateral teeth	20.2
Greatest breadth, excluding lateral teeth	19.8
Length of cheliped	20.0
Length of chela	10.2
Breadth of chela, including teeth	6.1
Length of dactylus	5.0
Length of first ambulatory peræopod	20.6
Length of second ambulatory peræopod	15.5

PERSEPHONE PUNCTATA Stimpson ex Browne.

Specimens examined.

[Locality: Off Cape Hatteras.]

Catalogue number.	Station number.	Locality.		Depth, temperature, and nature of bottom.			Date.	Specimens.	
		N. lat.	W. long.	Fathoms.	°	Materials.		Number.	With eggs.
		° ′ ″	° ′ ″				1884.	♂ ♀	
8771	2277	35 20 50	75 19 50	16	....	gy. S.	Oct. 19	2 ..	.....
7229	2283	35 21 15	75 23 15	14	....	gy. S.	Oct. 19	.. 1	.....
7231	2284	35 21 20	75 23 50	13	....	crs. gy. S.	Oct. 19	1 ..	.....
7236	2285	35 21 25	75 24 25	13	....	crs. gy. S.	Oct. 19	3 1	0
7240	2286	35 21 30	75 25 00	11	....	crs. gy. S.	Oct. 19	1 ..	.....

ANOMURA.

LATREILLIOIDEA.

LATREILLIA ELEGANS Roux.

Station 2199, August 6, off Martha's Vineyard, north lat. 39° 57′ 30″, west long. 69° 41′ 10″, 78 fathoms, gray sand; 1 female carrying eggs (8044). The eggs are about 0.44 by 0.46^{mm} in shorter and longer diameter, and this specimen, in which the carapax, excluding rostral spines, measures 12^{mm} in length, was carrying approximately 1650.

HOMOLOIDEA.

HOMOLA BARBATA White.

(Plate II, Fig. 1.)

Station 2197, August 6, off Martha's Vineyard, north lat. 39° 56′ 30″, west long. 69° 43′ 20″, 84 fathoms, sand and broken shells, temperature, 52°; 1 small male (8045). Station 2265, October 18, off Chesapeake Bay, north lat. 37° 7′ 40″, west long. 74° 35′ 40″, 70 fathoms, mud and gravel, temperature, 63°; 1 female (8770).

PORCELLANOIDEA.

PORCELLANA SAYANA White.

Specimens examined.

[Locality: Off Cape Hatteras.]

Catalogue number.	Station number.	Locality.		Depth, temperature, and nature of bottom.			Date.	Specimens.	
		N. lat.	W. long.	Fathoms.	°	Materials.		Number.	With eggs.
		° ′ ″	° ′ ″				1884.	♂ ♀	
8793	2283	35 21 15	75 23 15	14	....	gy. S.	Oct. 19	3*s*. ..	0
8878	2285	35 21 25	75 24 25	13	....	crs. gy. S.	Oct. 19	3*s*. ..	0
8883	2286	35 21 30	75 25 00	11	....	crs. gy. S.	Oct. 19	.. 1*s*.	1
7252	2296	35 35 20	74 58 45	27	....	bk. M. brk. Sh.	Oct. 20	1*s*. ..	0

PORCELLANA SOCIATA Say.

Station 2280, October 19, off Cape Hatteras, north lat. 35° 21′, west long. 75° 21′ 30″, 16 fathoms, gray sand; fifty or more specimens (8843).

PTEROLISTHES SEXSPINOSUS Stimpson ex Gibbes.

Station 2280, with the last species; 2 ♂ and 3 young.

HIPPOIDEA.

ALBUNEA GIBBESII Stimpson.

Ann. Lyceum Nat. Hist. New York, vii, 78 (32), pl. 1, fig. 6, 1859. Miers, Jour. Linn. Soc. London, Zool., xiv, 329, 1878.

Station 2274, October 19, off Cape Hatteras, north lat. 35° 20′ 35″, west long. 75° 18′ 5″, 16 fathoms, gray sand; one small male.

LITHODOIDEA.

LITHODES AGASSIZII Smith.

(Plate III, Figs. 1, 2.)

Specimens examined.

Catalogue number.	Station number.	Locality.		Depth, temperature, and nature of bottom.			Date.	Specimens.	
		N. lat.	W. long.	Fathoms.	°	Materials.		Number.	With eggs.
		° ′ ″	° ′ ″				1884.	♂ ♀	
8046..	2193	39 44 30	70 10 30	1122	38	gn. M.	Aug. 5	.. 1*l*.	1
8047..	2196	39 35 00	69 44 00	1230	38	gn. M.	Aug. 6	.. 1*l*.	1
8049..	2196	39 35 00	69 44 00	1230	38	gn. M.	Aug. 6	.. 1*l*.	1
8048..	2196	39 35 00	69 44 00	1230	38	gn. M.	Aug. 6	1*s*. ..	.....
8050..	2196	39 35 00	69 44 00	1230	38	gn. M.	Aug. 6	1*y*. ..	.....
8187..	2203	39 34 15	71 45 15	705	39	gn. M. S.	Aug. 19	.. 1*l*.	1
							1883.		
5718..	2115	35 49 37	74 34 45	843	39	.....	Nov. 11	1*l*. ..	.....

Measurements in millimeters.

Catalogue number	8050	8048	5718	8049	8046
Station	2196	2196	2115	2196	2193
Sex	♂	♂	♂	♀	♀
Length of carapax, including rostrum and posterior spines	41	115	176	204	210
Length of carapax, excluding rostrum and posterior spines	18.2	56	142	152	158
Breadth of carapax between tips of hepatic spines	28	71	70	97	101
Breadth of carapax between tips of branchial spines	30	77	138	147	165
Greatest breadth of carapax, excluding spines	14.5	46	141	131	143
Length of rostrum	17.5	37.3	19	44	37
Length of spines at base of rostrum	16.6	41	18	28	31
Length of anterior gastric spines	15.7	39	13	27	23
Length of anterior cardiac spines	13.0	33.5	15	20	22
Length of right cheliped	28	82	230	220	250
Length of right chela	11.4	31.5	86	81	90
Breadth of right chela	3.5	8.8	36	34	39
Length of dactylus of right chela	6.7	21	56	50	48
Length of left cheliped	29	83	230	215	246
Length of left chela	11.4	34	82	74	82
Breadth of left chela	3.0	7.0	24	25	26
Length of dactylus of left chela	7.3	24	60	45	48
Length of first ambulatory peræopod	48	158	405	355	430
Length of second ambulatory peræopod	52	172	445	395	460
Length of third ambulatory peræopod	52	175	450	390	475
Greatest expanse of ambulatory peræopods	100	375	980	850	1,000

PAGUROIDEA.

EUPAGURUS BERNHARDUS Brandt ex Linné.

Specimens examined.

[Locality: Off Martha's Vineyard.]

Catalogue number.	Station number.	Locality. N. lat.	Locality. W. long.	Depth, temperature, and nature of bottom. Fathoms.	°	Materials.	Date.	Specimens. Number.	With eggs.
		° ′ ″	° ′ ″				1884.	♂ ♀	
8709	2253	40 34 30	69 50 45	32	53	gy. S.	Sept. 27	2 2	
8695	2254	40 40 30	69 50 30	25	54	gy. S.	Sept. 27	4 4	0
8694	2255	40 46 30	69 50 15	18	56		Sept. 27	9 1	0
7177	2256	40 38 30	69 29 00	30	53	yl. S.	Sept. 28	13 8	0
8696	2256	40 38 30	69 29 00	30	53	yl. S.	Sept. 28	1 *s.* E.	
8698	2257	40 32 30	69 29 00	33	52	yl. S.	Sept. 28	.. 2	0
8710	2258	40 26 00	69 29 00	36	51	gy. S.	Sept. 28	1 ..	

NOTE.—Under this and the following species of *Eupagurus* and *Catapagurus*, in the column giving the number of specimens, E. indicates that the carcinœcia were formed of *Epizoanthus Americanus*.

EUPAGURUS POLITUS Smith.

Specimens examined.

[Locality: Off Chesapeake Bay.]

Catalogue number.	Station number.	Locality. N. lat.	Locality. W. long.	Depth, temperature, and nature of bottom. Fathoms.	°	Materials.	Date.	Specimens. Number.	With eggs.
		° ′ ″	° ′ ″				1884.	♂ ♀	
7939	2170	37 57 00	73 53 30	155	....	gy. S.	July 20	2 6	6

Specimens examined—Continued.

[Locality: Off Long Island.]

Catalogue number.	Station number.	Locality.		Depth, temperature, and nature of bottom.			Date.	Specimens.	
		N. lat.	W. long.	Fathoms.	°	Materials.		Number.	With eggs.
		° ′ ″	° ′ ″				1884.	♂ ♀	
7940	2176	39 32 30	72 21 30	302	41	bk. M.	July 22	-- 2 *y.* --	0
7941	2177	39 33 40	72 08 45	87	52	gn. M., S.	July 22	9	1
7942	2178	39 29 00	72 05 15	229	42	gn. M., S.	July 22	3	

[Locality: Off Martha's Vineyard.]

8055	2183	39 57 45	70 56 30	195	44	gn. M., S.	Aug. 2	60	
8056	2184	40 00 15	70 55 30	136	49	gn. M., S.	Aug. 2	1 *l.*	
8057	2185	40 00 45	70 54 15	129	51	gn. M., S.	Aug. 2	4 *l.* 14 *l.*	10
8058	2186	39 52 15	70 55 30	353	40	gn. M., S.	Aug. 2	12	0
8228	2187	39 49 30	71 10 00	420	40	gn. M., S.	Aug. 2	6	0
8059	2198	39 56 30	69 43 20	84	52	S., brk. Sh.	Aug. 6	1 *s.*	
8060	2199	39 57 30	69 41 10	78	....	gy. S.	Aug. 6	1 2	1
8061	2200	39 53 30	69 43 20	148	45	crs. S.	Aug. 6	1	
8174	2212	39 59 30	70 30 45	428	40	gn. M.	Aug. 22	4	
8617	2232	38 37 30	73 11 00	243	43	gn. M.	Sept. 12	3 *s.*	
8699	2240	40 27 30	70 29 00	44	....	gn. M.	Sept. 26	1 *s.*	0
8700	2241	40 21 00	70 29 00	50	51	gn. M.	Sept. 26	6 *s.*	0
8701	2243	40 10 15	70 26 00	63	52	gn. M.	Sept. 26	57 *s.*	1
A. 8294	2243	40 10 15	70 26 00	63	52	gn. M.	Sept. 26	2 *s.* E.	
8702	2244	40 05 15	70 23 00	67	53	gn. M., S.	Sept. 26	15	2
7171	2245	40 01 15	72 22 90	98	51	gn. M., bk. S.	Sept. 26	13	0
8703	2246	39 56 45	70 20 30	122	48	gn. M.	Sept. 26	10 *s.*	3
8704	2247	40 03 00	69 57 00	78	52	gn. M., S.	Sept. 27	9 *s.*	0
8705	2248	40 07 00	69 57 00	67	52		Sept. 27	12 *s.*	0
8706	2249	40 11 00	69 52 00	53	51		Sept. 27	11 *s.*	0
8707	2250	40 17 15	69 51 45	47	51		Sept. 27	30	2
8691	2250	40 17 15	69 51 45	47	51		Sept. 27	15	0
8692	2251	40 22 17	69 51 30	42	51		Sept. 27	7 *l.*	.....
8708	2252	40 28 00	69 51 00	38	50		Sept. 27	1 *l.* 1	0
8711	2259	39 19 30	69 29 00	41	50	gy. S.	Sept. 28	3	.....
8712	2260	40 13 15	69 29 15	46	50	gy. S.	Sept. 28	13	2
8713	2261	40 04 00	69 29 30	58	54	gy. S.	Sept. 28	3	.....
8714	2262	39 54 45	69 29 45	250	42	gn. M., S.	Sept. 28	10	.....

[Locality: Off Chesapeake Bay.]

8754	2264	37 07 50	74 34 20	167	58	gy. S.	Oct. 18	53	20
8769	2265	37 07 40	74 35 40	70	63	gn. M. G.	Oct. 18	2	0

[Locality: Off Cape Hatteras.]

8887	2299	35 40 00	74 51 30	296	....	bk. M.	Oct. 20	1 *l.*	.....

A female from station 2185, measuring 14.5^{mm} in length of carapax, was carrying approximately 2,000 eggs, of which the average diameter was about 1.12^{mm}.

EUPAGURUS PUBESCENS Brandt ex Kröyer.

Specimens examined.

[Locality: Off Martha's Vineyard.]

Catalogue number.	Station number.	Locality.		Depth, temperature, and nature of bottom.			Date.	Specimens.
		N. lat.	W. long.	Fathoms.	°	Materials.		
		° ′ ″	° ′ ″				1884.	
8054	2199	39 57 30	69 41 10	78	...	gy. S.	Aug. 6	1 *s.* E.
7179	2243	40 10 15	70 26 00	63	52	gn. M.	Sept. 26	3(1 E.)
7206	2250	40 17 15	69 51 45	47	51	gn. M., S.	Sept. 27	22 *s.*
A. 8291	2250	40 17 15	69 51 45	47	51	gn. M., S.	Sept. 27	5 *s.* E.
7173	2254	40 40 30	69 50 30	25	54	gy. S.	Sept. 27	9 *s.*
7174	2256	40 38 30	69 29 00	30	53	yl. S.	Sept. 28	50 *s.*
A. 8287	2256	40 38 30	69 29 00	30	53	yl. S.	Sept. 28	28 *s.* E.
7176	2257	40 32 30	69 29 00	33	52	yl. S.	Sept. 28	26 *s.*
A. 8289	2257	40 32 30	69 29 00	33	52	yl. S.	Sept. 28	3 *s.* E.
7175	2258	40 26 00	69 29 00	36	51	gy. S.	Sept. 28	2 *s.*
A. 8288	2258	40 26 00	69 29 00	36	51	gy. S.	Sept. 28	47 *s.* E.
7186	2259	40 19 30	69 29 10	41	50	gy. S.	Sept. 28	3 *s.*
A. 8292	2259	40 19 30	69 29 10	41	50	gy. S.	Sept. 28	6 *s.* E.
7187	2260	40 13 15	69 29 85	46	52	gy. S.	Sept. 28	3 *s.*

EUPAGURUS KRÖYERI Stimpson.

Specimens examined.

[Locality: Off Long Island.]

Catalogue number.	Station number.	Locality.		Depth, temperature, and nature of bottom.			Date.	Specimens.
		N. lat.	W. long.	Fathoms.	°	Materials.		
		° ′ ″	° ′ ″				1884.	
7943	2177	39 33 40	72 08 45	87	52	gn. M., S.	July 22	1 E.

[[Locality: Off Martha's Vineyard.]

8051	2183	39 57 45	70 56 30	195	44	gn. M., S.	Aug. 2	27 *s.* E.
8053	2197	39 56 30	69 43 20	84	52	S., brk. Sh.	Aug. 6	2 *s.* E.
8052	2199	39 57 30	69 41 10	78	....	gy. S.	Aug. 6	2 *s.* E.
7172	2243	40 10 15	70 26 00	63	52	gn. M.	Sept. 26	8 *s.* (3 E.)
A. 8294	2243	40 10 15	70 26 00	63	52	gn. M.	Sept. 26	2 *s.* E.
7179	2244	40 05 15	70 23 00	67	53	gn. M., S.	Sept. 26	4 *s.* E.
7180	2245	40 01 15	70 22 00	98	51	gn. M., bk. S.	Sept. 26	4 *s.* E.
A. 8295	2245	40 01 15	70 22 00	98	51	gn. M., bk. S.	Sept. 26	1 *s.* E.
7203	2246	39 56 45	70 20 30	122	48	gn. M.	Sept. 26	18 *s.*
A. 8290	2246	39 56 45	70 20 30	122	48	gn. M.	Sept. 26	52 *s.* E.
7205	2247	40 03 00	69 57 00	78	52	gn. M., S.	Sept. 27	2 *s.* E.
7185	2250	40 17 15	69 51 45	47	51	.....	Sept. 27	7 *s.*
7188	2261	40 04 00	69 29 30	58	54	gy. S.	Sept. 28	5 *s.* E.
7189	2262	39 54 45	69 29 45	250	42	gn. M., S.	Sept. 28	3 *l.* ♂

[Locality: Off Chesapeake Bay.]

7212	2265	37 07 40	74 35 40	70	63	gn. M., G.	Oct. 18	1 *y.*

EUPAGURUS LONGICARPUS Stimpson ex Say.

Station 2288, Oct. 20, 1884, off Cape Hatteras, north lat. 35° 22′ 40″, west long. 75° 25′ 30″, 7 fathoms, coarse gravel; 1 specimen (8885).

EUPAGURUS POLLICARIS Stimpson ex Say.

Specimens examined.

[Locality: Off Cape Hatteras.]

Catalogue number.	Station number.	Locality.		Depth, temperature, and nature of bottom.			Date.	Specimens.	
		N. lat.	W. long.	Fathoms.	°	Materials.			
		° ′ ″	° ′ ″				1884.	♂	♀
8879	2280	35 21 00	75 21 30	16	....	gy. S.	Oct. 19	1	
8880	2282	35 21 10	75 22 40	14	....	bk. S.	Oct. 19		1*y.*
8888	2283	35 21 15	75 23 15	14	....	gy. S.	Oct. 19		1
8781	2283	35 21 15	75 23 15	14	....	gy. S.	Oct. 19		2
8881	2285	35 21 25	75 24 25	13	....	crs. gy. S.	Oct. 19	10	
7234	2285	35 21 25	75 24 25	13	....	crs. gy. S.	Oct. 19	1	
8882	2286	35 21 30	75 25 00	11	....	crs. gy. S.	Oct. 19	2	
8884	2287	35 22 30	75 26 00	7	....	crs. gy. S.	Oct. 20	3	
8803	2290	35 23 00	75 24 30	9¾	....	S. brk. Sh.	Oct. 20	1	

CATAPAGURUS SHARRERI A. M.-Edwards.

Specimens examined.

[Locality: Off Martha's Vineyard.]

Catalogue number.	Station number.	Locality.		Depth, temperature, and nature of bottom.			Date.	Specimens.	
		N. lat.	W. long.	Fathoms.	°	Materials.		Number.	With eggs.
		° ′ ″	° ′ ″				1884.	♂ ♀	
8693	2245	40 01 15	70 22 00	98	51	gn. M., bk. S.	Sept. 26	104 15	11
7195	2245	40 01 15	70 22 00	98	51	gn. M., bk. S.	Sept. 26	1 1	1
7204	2247	40 03 00	69 57 00	78	52	gn. M., S.	Sept. 27	1E.	1
[Locality: Off Chesapeake Bay.]									
8889	2264	37 07 50	74 34 20	167	58	gy. S.	Oct. 18	24 9	7
8905	2265	37 07 40	74 35 40	70	63	gn. M., G.	Oct. 18	10 7	5

CATAPAGURUS GRACILIS Smith.

Specimens examined.

[Locality: Off Martha's Vineyard.]

Catalogue number.	Station number.	Locality.		Depth, temperature, and nature of bottom.			Date.	Specimens.	
		N. lat.	W. long.	Fathoms.	°	Materials.		Number.	With eggs.
		° ′ ″	° ′ ″				1884.	♂ ♀	
7170	2245	40 01 15	70 22 00	98	51	gn. M., bk. S.	Sept. 26	1E. 1E.	1
[Locality: Off Chesapeake Bay.]									
7213	2265	37 07 40	74 35 40	70	63	gn. M., G.	Oct. 18	2	.....

PARAPAGURUS PILOSIMANUS Smith.

*Specimens examined.**

Catalogue number.	Station number.	Locality.		Depth, temperature, and nature of bottom.			Date.	Specimens.	
		N. lat.	W. long.	Fathoms.	°	Materials.		Number.	With eggs.
		° ′ ″	° ′ ″				1884.	♂ ♀	
7944	2174	38 15 00	72 03 00	1,549	....	gy. M.	July 21	2s. G. 1s. G.	1
8007	2174	38 15 00	72 03 00	1,549	....	gy. M.	July 21	1s. Ea.	.....
8062	2186	39 52 15	70 55 30	353	40	gn. M., S.	Aug. 2	30 Ep. 1s. Ep.	.....
8064	2187	39 49 30	71 10 00	420	40	gn. M., S.	Aug. 3	6 Ep.	.....
8173	2212	39 59 30	70 30 55	428	40	gn. M.	Aug. 22	1s. Ep. 20 Ep.	.....
8572	2226	37 00 00	71 54 00	2,021	37	glb. O.	Sept. 10	8 Ea. 6 Ea.	6
8697	2262	39 54 45	69 29 45	250	42	gn. M., S.	Sept. 28	2 Ep.	.....

*In the column giving the number of specimens G. indicates that the carcinœcia were naked gastropod shells; Ea., that the carcinœcia were formed of *Epizoanthus abyssorum*; and Ep., that they were formed of *Epizoanthus paguriphilus*.

The figures of the branchiæ of this species and *Sympagurus pictus*, given in the Proceedings of the National Museum, vol. vi, plate 5, figures 2, 2a and 3, 3a were accidentally transposed; 2 and 2a are of this species, and 3, 3a are of *Sympagurus pictus*.

GALATHEOIDEA.

GALATHEA, species.

Station 2269, October 19, off Cape Hatteras, north lat. 35° 12′ 30″, west long. 75° 5′, 48 fathoms, temperature 76°; one small male (7271).

MUNIDA CARIBÆA? Smith.

Specimens examined.

[Locality: Off Long Island.]

Catalogue number.	Station number.	Locality.		Depth, temperature, and nature of bottom.			Date.	Specimens.	
		N. lat.	W. lat.	Fathoms.	°	Materials.		Number.	With eggs.
		° ′ ″	° ′ ″				1884.	♂ ♀	
7945	2177	39 33 40	72 08 45	87	52	gn. M., S.	July 22	2s.	.....

[Locality: Off Martha's Vineyard.]

8065	2197	39 56 30	69 43 20	84	52	S. brk. Sh.	Aug. 6	1	2	0
8066	2199	39 57 30	69 43 10	78	....	gy. S.	Aug. 6	1		.....
8720	2243	40 10 15	70 26 00	63	52	gn. M.	Sept. 26	1		.....
8721	2247	40 03 00	69 57 00	78	52	gn. M., S.	Sept. 27		1	1
8722	2248	40 07 00	69 57 10	67	52	gn. M., S.	Sept. 27	1y.		.....
8723	2261	40 04 00	69 29 30	58	54	gy. S.	Sept. 28	1		.....

Specimens examined—Continued.

[Locality: Off Chesapeake Bay.]

Catalogue number.	Station number.	Locality.		Depth, temperature, and nature of bottom.			Date.	Specimens.	
		N. lat.	W. long.	Fathoms.	°	Materials.		Number.	With eggs.
		° ′ ″	° ′ ″				1884.		
8752	2264	37 07 50	74 34 20	167	58	gy. S.	Oct. 18	74	5
8753	2264	37 07 50	74 34 20	167	58	gy. S.	Oct. 18	206	9
8890	2264	37 07 50	74 34 20	167	58	gy. S.	Oct. 18	55	.....
8758	2265	37 07 40	74 35 40	70	63	gn. M., G.	Oct. 18	200+	.....
8759	2265	37 07 40	74 35 40	70	63	gn. M., G.	Oct. 18	200+	.....
8760	2265	37 07 40	74 35 40	70	63	gn. M., G.	Oct. 18	180+	.....
8761	2265	37 07 40	74 35 40	70	63	gn. M., G.	Oct. 18	250+	.....
8762	2265	37 07 40	74 35 40	70	63	gn. M., G.	Oct. 18	250+	.....
8763	2265	37 07 40	74 35 40	70	63	gn. M., G.	Oct. 18	100+	.....
8764	2265	37 07 40	74 35 40	70	63	gn. M., G.	Oct. 18	200+	.....
8765	2265	37 07 40	74 35 40	70	63	gn. M., G.	Oct. 18	250+	.....
8766	2265	37 07 40	74 35 40	70	63	gn. M., G.	Oct. 18	150+	.....
8902	2265	37 07 40	74 35 40	70	63	gn. M., G.	Oct. 18	300+	.....
8903	2265	37 07 40	74 35 40	70	63	gn. M., G.	Oct. 18	180+	.....

[Locality: Off Cape Hatteras.]

8747	2269	35 12 30	75 05 00	48	76		Oct. 19	5	0
8892	2297	35 38 00	74 53 00	49	....	bk. M.	Oct. 19	5	0
8898	2297	35 38 00	74 53 00	49	76	bk. M., G.	Oct. 19	19	0
8893	2298	35 39 00	74 52 00	80	...	bk. M., G.	Oct. 20	5	0
8795	2301	35 11 30	75 05 00	59	75	crs. S.	Oct. 21	160	13
8894	2307	35 42 00	74 54 30	43	57	gy. S.	Oct. 21	3	0
8808	2307	35 42 00	74 54 30	43	57	gy. S.	Oct. 21	1	0
8807	2309	35 43 30	74 52 00	56	....	gy. S.	Oct. 21	97	8
8895	2309	35 43 30	74 52 00	56	....	gy. S.	Oct. 21	7	0

MUNIDOPSIS Whiteaves.

Amer. Jour. Sci., III, vii, p. 212, 1874; Smith, Proc. National Museum, vii, p. 493, 1885.

As I have stated in a paper referred to above, a careful examination of the structural characters of the type species of this genus with A. Milne-Edwards's *Galacantha rostrata*, my *G. Bairdii*, and the two species here described, induces me to refer them all to a single genus. The oral appendages are almost exactly alike in all the species, except unessential differences in the armament of the second gnathopods. The number and arrangement of the branchiæ are the same in all, and like that in the typical species of *Munida*, though the number of epipods varies. In *Munidopsis curvirostra* and *Bairdii* there are only two epipods on each side, as in the typical species of *Munida*, one at the base of the maxilliped and the other at the base of the second gnathopod; in *Munidopsis crassa* and *similis* there is an additional pair at the base of the first peræopod; while in *Munidopsis rostrata* there are additional ones at the bases of each of the first three pairs of peræopods. The eyes in *Munidopsis Bairdii*, *crassa*, and *similis* are much alike and considerably different from those of the other species, but it does not seem desirable to consider such differences or those in the number of epipods as of generic value.

MUNIDOPSIS CURVIROSTRA Whiteaves.

Specimens examined

Catalogue number.	Station number.	Locality.		Depth, temperature, and nature of bottom.			Date.	Specimens.	
		N. lat.	W. long.	Fathoms.	°	Materials.		Number.	With eggs.
		° ′ ″	° ′ ″				1884.	♂ ♀	
8067	2196	39 35 00	69 44 00	1,230	38	gn. M.	Aug. 6	1 *s.*	1
8248	2205	39 35 00	71 18 45	1,073	38	gy. O.	Aug. 20	1 1	2
8249	2206	?39 35 00	?71 24 30	1,043	38	gn. M.	Aug. 20	2	2
8250	2209	39 34 45	71 21 30	1,080	39	glb. O.	Aug. 21	2	1
8251	2210	?39 37 45	?71 18 45	991	38	gy. glb. O.	Aug. 21	1 1	1
8252	2211	?39 35 00	?71 18 00	1,064	38	gn. M.	Aug. 21	1 1	
8253	2213	?39 58 30	?70 30 00	384	39	gn. M.	Aug. 22	1	0
8254	2218	39 46 22	69 29 00	948	39	gy. M.	Aug. 23	1 *s.*	
8559	2233	?38 36 30	?73 06 00	630	39	gn. M.	Sept. 12	1	2
8561	2234	39 09 00	72 03 15	816	39	gn. M.	Sept. 13	1 2 *y.* 2	1
8562	2235	39 12 00	72 03 30	707	39	gn. M.	Sept. 13	4 1 *y.* 2	1
8560	2236	39 11 00	72 08 30	636	39	gn. M.	Sept. 13	1 1	1
8567	2237	39 12 17	72 09 30	520	39	gn. M.	Sept. 13	1 2	
8609	.....	.....	.....	.....	.....	.....	.....	1	

Measurements in millimeters.

Catalogue number	8248	8254	8248	8250
Station	2205	2218	2205	2209
Sex	♂	♀	♀	♀
Length from tip of rostrum to tip of telson	29.5	20.0	27.0	37.0
Length of carapax, including rostrum	17.1	12.3	16.0	21.0
Length of carapax, excluding rostrum	9.7	7.0	10.0	12.7
Length of rostrum	7.7	6.0	6.8	10.2
Breadth of carapax at antero-lateral angles	7.4	5.3	7.2	9.7
Greatest breadth	7.4	5.4	7.5	10.1
Diameter of eye	1.2	0.7	1.0	1.4
Length of cheliped	25.5	16.5	20.5	27.0
Length of chela	10.0	5.6	8.0	10.3
Breadth of chela	1.9	1.4	1.7	2.1
Length of dactylus	4.9	3.0	3.9	5.0
Length of first ambulatory peræopod	20.5	13.5	17.5	22.0

MUNIDOPSIS CRASSA Smith.

Proc. National Mus., viii, p. 494, 1885.

(Plate IV.)

Station 2224, September 8, north lat. 36° 16′ 30″, west long. 68° 21′, 2,574 fathoms, globigerina ooze, temperature 37°, one female (8563).

Three additional specimens of this species were taken in 1885, a male and a female (10802), at station 2566, August 29, north lat. 37° 23′, west long. 63° 8′, 2,620 fathoms, gray ooze, temperature 37°; and a single female (10803) at station 2573, north lat. 40° 34′ 18″, west long. 66° 9′, 1,742 fathoms, gray mud and sand, temperature 37°.

This species resembles *M. Bairdii* in having spine-tipped eye-stalks and the dorsum of the pleon without median teeth or spines, but is at once distinguished from it by the broad and stout non-spined rostrum, the spiny propodi of the ambulatory peræopods, and the very different armament of the carapax.

Female.—The carapax is very broad and the lateral margins nearly parallel. The front is gradually narrowed from between the bases of the peduncles of the antennæ into a very broad, stout, triangular, and nearly horizontal rostrum about half as long as the greatest breadth of the carapax, and over the bases of the ocular spines fully half as broad as long. The rostrum is flat or very slightly concave, and nearly smooth beneath, but the dorsal side has a strong median carina, and is roughened with small tubercles; the sharp lateral edges are armed with a few minute teeth. There is a prominent acutely triangular spine on the anterior margin over the base of the antenna each side, and outside of this a conical spine directed forward from the angle of the small hepatic region, which really forms the antero-lateral angle of the carapax, though the anterior lobe of the branchial region expands laterally much beyond the hepatic region, and is armed at its anterior angle with a great dentiform spine, back of which there are several smaller spines on the lateral margin of this lobe and a single small one at the anterior angle of the posterior branchial lobe. The gastric region is prominent, and armed in front with a pair of sharp conical spines, and back and outside of these with many smaller spines and tubercles, as are also the anterior branchial lobes, and the extreme anterior portions of the branchial and cardiac regions. The cervical suture and the suture between the anterior and posterior lobes of the branchial region are marked by smooth grooves, of which the gastro-cardiac portion of the cervical is the most conspicuous. The whole posterior part of the cardiac and branchial regions is armed with sharply crenulated, transverse, and broken rugæ with smooth spaces between, and a broader smooth space along the posterior margin, which is armed with a high double crest, the edges of which are sharply crenulated.

The eye-stalks are short, broad, and somewhat cuboidal in form, are capable of very little motion, bear the rather small hemispherical white eye partially embedded at the end, which projects on the dorso-mesial side in a slender spine longer than the diameter of the cornea, and are armed with a much smaller spine on the outer edge just back of the eye, and with a very small spine or tubercle similarly situated on the lower mesial angle.

The stout first segment of the peduncle of the antennula is armed distally with two long spines on the outer side, and beneath with a short, somewhat truncated and minutely dentate process. The second segment of the peduncle of the antenna is armed with a dentiform process below and a sharp tooth on the outer side; the third segment is armed with a single large distal spine on the outside; the fourth and fifth segments are only inconspicuously armed. The flagellum is slightly compressed, more than twice as long as the carapax, and sparsely clothed with slender setæ.

The infero-mesial edge of the merus of the second gnathopod is armed with three conical spines.

The chelipeds are not very much longer than the carapax, including the rostrum, and very stout; the merus is considerably shorter than the chela and armed with a few sharp spines along the dorsal edge and at the distal end, and with numerous small tubercles; the carpus is armed somewhat like the merus, but there are more and smaller spines at the distal end; the chela is about as long as the breadth of the carapax between the hepatic spines, more than a third as broad as long, considerably compressed vertically, somewhat roughened with small tubercles, especially along the inner edge, and with the stout and straight digits making more than half the whole length. The three pairs of ambulatory peræopods are very nearly alike and a little longer than the chelipeds; the meri and carpi are roughened with small tubercles, angulated, and armed with a series of spines above; the propodi are angulated, with all the angles rough and tuberculous and the dorsal spiny; the dactyli are very stout, very slightly tapered except near the curved, acute, and chitinous tip, and armed along the lower edge with a series of stout spiniform teeth which rapidly decrease in size and become obsolete proximally. The posterior peræopods are very nearly as in the allied species.

The pleon is about as broad as the carapax, only slightly narrowed posteriorly, and the dorsum is transversely rounded and devoid of longitudinal carinæ, teeth, or spines. The second and third somites each have two slightly roughened transverse ridges upon the dorsum separated by a smooth sulcus, but the dorsa of the succeeding somites are nearly smooth. The posterior margin of the sixth somite projects in a prominent median lobe, with a smaller and much less prominent lobe either side. The exposed parts of all the pleura are sparsely tuberculous and their lower edges obtuse. The second pleuron is broader than the others and its anterior edge upturned, leaving a broad depression between it and the prolongation of the transverse carina of the dorsum, which makes a median ridge.

The telson, uropods, and pleopods are very nearly as in *M. Bairdii* ane *M. rostrata.*

The eggs in the recently preserved alcoholic specimen measure 3.4 by 3.6^{mm} in less and greater diameter.

Measurements are given farther on with those of the next species.

MUNIDOPSIS SIMILIS Smith.

Proc. National Mus., vii, p. 496, 1885.

(Plate V, Figs. 1–1*e*; Plate VI, Figs. 2, 2*a*.)

Station 2192, August 5, 1884, north lat. 39° 46′ 30″, west long. 70° 14′ 45″, 1,060 fathoms, globigerina ooze, temperature, 38.6°; one female (8255).

This species, represented by a single egg bearing female, is very closely allied to *M. crassa*, and will possibly prove to be a variety of it. The single specimen is very much smaller than those of *M. crassa*, but

is evidently fully adult if not grown to the full size to which the species attains.

Female.—The form and proportions of the carapax are almost exactly as in the last species, but all the marginal spines are more slender and the only spines on the dorsal surface proper are a single pair on the anterior part of the gastric region; the rest of the anterior part of the carapax being only slightly roughened with minute transverse broken rugæ, while the posterior portions are armed very nearly as in *crassa*, though the carina of the posterior margin is proportionally wider and not distinctly double nor sharply crenulated.

The eyes, antennulæ, and antennæ are almost exactly as in the last species, and so are the oral appendages, except the merus of the second gnathopod, which is armed with a few scarcely spiniform tubercles in place of conical spines.

The right cheliped is considerably smaller than the left, and is apparently a reproduced appendage. The left is considerably more slender and much longer than in *crassa*, being fully once and two-thirds as long as the carapax, including the rostrum; the merus is armed along all the angles, except the outer or posterior, as well as at the distal end, with long spines; the carpus is armed dorsally with three spines at the distal end, and with one or two on the inner edge; the chela is much longer than the greatest breadth of the carapax, a third as broad as long, armed along the inner edge with two or three spines, and has the digits about half the whole length. The ambulatory peræopods are nearly alike and a little longer than in *crassa;* the meri and carpi are armed nearly as in that species, but the propodi each have only a single spine on the dorsal edge.

The whole dorsal surface of the pleon is nearly smooth, though there is a shallow transverse sulcus on the second and third somites. The middle of the posterior margin of the sixth somite is truncated and less prominent than the small lobe on either side.

The eggs are apparently considerably smaller than in *crassa*, measuring 2.7 by 2.9^{mm} in the recently preserved alcoholic specimen, which was carrying only 24 eggs, the bulk of which was equal to between an eighth and a ninth of the bulk of the entire animal excluding the eggs.

Measurements in millimeters.

	M. crassa.	M. similis.
Catalogue number	8563	8255
Station	2224	2192
Sex	♀	♀
Length from tip of rostrum to tip of telson	125	45
Length of carapax, including rostrum	65	24.2
Length of rostrum	19.2	7.5
Greatest breadth of carapax, including spines	39.2	13.7
Breadth of bases of antero-lateral spines	29.4	10.5
Breadth at branchial regions	38.0	13.3
Length of eye-stalk, including spine	7.5	2.3

Measurements in millimeters—Continued.

	M. crassa.	M. similis.
Length of spine	3.0	1.5
Diameter of eye	2.7	1.2
Length of right cheliped	73	37
Length of right chela	29.3	13.5
Breadth of right chela	10.9	3.2
Length of dactylus	16.8	7.1
Length of left cheliped	74.0	41
Length of left chela	29.5	15.0
Breadth of chela	11.0	5.0
Length of dactylus	16.8	7.6
Length of first ambulatory peræopod	85	40
Length of propodus	22.0	5.9
Length of dactylus	15.4	11.3
Length of posterior peræopod	48	22
Length of telson	16.0	6.0
Breadth of telson	23.5	7.4
Length of inner lamella of uropod	13.0	5.0
Breadth of inner lamella of uropod	14.5	4.0
Length of outer lamella of uropod	14.5	5.2
Breadth of outer lamella of uropod	12.7	4.0

MUNIDOPSIS ROSTRATA Smith.

Galacantha rostrata A. M.-Edwards, Bull. Mus. Comp. Zool., viii, p. 52, 1880. Smith, *ibid.*, x, p. 21, pl. 9, figs. 2–2*a*, 1882; Report U. S. Fish Com., x, for 1882, p. 355, 1884.

Munidopsis rostrata Smith, Proc. National Mus., vii, p. 493, 1885.

(Plate VI, Figs. 1, 1*a*.)

Specimens examined.

Catalogue number.	Station number.	Locality.		Depth, temperature, and nature of bottom.			Date.	Specimens.	
		N. lat.	W. long.	Fathoms.	°	Materials.		Number.	With eggs.
		° ′ ″	° ′ ″				1884.	♂ ♀	
8176	2208	39 33 00	71 16 15	1178	38	gn. M. S.	Aug. 21	.. 1	1
8564	2230	38 27 00	73 02 00	1168	37	gy. O.	Sept. 12	.. 1*s*	0

MUNIDOPSIS BAIRDII Smith.

Galacantha Bairdii Smith, Report U. S. Fish Com., x, for 1882, p. 356, 1884.
Munidopsis Bairdii Smith, Proc. National Mus., vii, p. 493, 1885.

(Plate V, Fig. 2.)

No specimens of this species were taken in 1884. Two additional specimens (10801) were, however, taken in 1885 with a specimen of *M. crassa*, at station 2,573, in 1,742 fathoms. The figure is from the type taken in 1883.

In the original description of the species, in my report on the Albatross crustacea of 1883, the transverse ridges on the dorsum of the second, third, and fourth somites of the pleon are described, by an evident mistake, as on the first, second, and third.

EUMUNIDA PICTA Smith.

Proc. National Mus., vi, p. 44, pl. 2, fig. 2, pl. 3, figs. 6–10, pl. 4, figs. 1–3a, 1883.

Station 2264, October 18, off Chesapeake Bay, north lat. 37° 07′ 50″, west long. 74° 34′ 20″; 167 fathoms, gray sand, temperature, 58°; one male and one small female (8891). The male, which is larger than any previously seen, gives the following:

Measurements in millimeters.

Length from tip of rostrum to tip of telson	50
Length of carapax, including rostrum	26.2
Length of rostrum	8.2
Breadth of front	6.9
Breadth at basis of antennal spines	12.4
Greatest breadth, including spines	18.7
Length of eye-stalk and eye	3.9
Greatest diameter of eye	3.1
Length of cheliped	70
Length of merus	29
Length of carpus	5.5
Length of chela	30
Breadth of chela	3.4
Length of dactylus	15
Length of first ambulatory peræopod	42
Length of propodus	13.3
Length of dactylus	6.3
Length of telson	4.4
Breadth of telson	9.5
Length of inner lamella of uropod	4.5
Breadth of inner lamella of uropod	3.1
Length of outer lamella of uropod	5.5
Breadth of outer lamella of uropod	3.2

MACRURA.

ERYONTIDÆ.

PENTACHELES SCULPTUS Smith.

Specimens examined.

Catalogue number.	Station number.	Locality.		Depth, temperature, and nature of bottom.			Date.	Specimens.		
		N. lat.	W. long.	Fathoms.	°	Materials.		Number.		With eggs.
		° ′ ″	° ′ ″				1884.	♂	♀	
8242	2202	39 38 00	71 39 45	515	39	gn. M.	Aug. 19	..	1	.....
8243	2202	39 38 00	71 39 45	515	39	gn. M.	Aug. 19	1 *y.*	1 *y.*	.....
8244	2213	39 58 30	70 30 00	384	39	gn. M.	Aug. 22	1 *y.*	..	.....
8568	2233	38 36 30	73 06 00	630	39	gn. M.	Sept. 12	1 *s.*	..	.....
7164	2235	39 12 00	72 03 30	707	39	gn. M.	Sept. 13	1 *s.*	..	.....

PENTACHELES NANUS Smith.

(Plate VII, Figs. 1, 1*a*.)

Specimens examined.

Catalogue number.	Station number.	Locality.		Depth, temperature, and nature of bottom.			Date.	Specimens.		
		N. lat.	W. long.	Fathoms.	°	Materials.		Number.		With eggs.
		° ′ ″	° ′ ″				1884.	♂	♀	
7946	2182	39 25 30	71 44 00	861	39	gn. M.	July 23	1	..	.....
8068	2192	39 46 30	70 14 45	1,060	39	gy. O.	Aug. 5	..	1	1
8235	2203	39 34 15	71 45 15	705	39	gn. M., S.	Aug. 19	..	1	0
8236	2204	39 30 30	71 44 30	728	39	bn. M.	Aug. 19	..	1 *y*. ..	0
8237	2205	39 35 00	71 18 45	1,073	38	gy. O.	Aug. 20	1	4	2
8238	2206	39 35 00	71 24 30	1,043	38	gn. M.	Aug. 20	..	1 *y*. 1	1
8239	2209	39 34 45	71 21 30	1,020	39	glb. O.	Aug. 21	..	2	0
8240	2210	39 37 45	71 18 45	991	38	gy. glb. O.	Aug. 21	..	1 *y*.	0
8241	2217	39 47 20	69 39 15	924	38	gy. M.	Aug. 23	..	1	0
8571	2230	38 27 00	73 02 00	1,168	37	gy. O.	Sept. 12	..	2	0
8570	2231	38 29 00	73 09 00	965	39	gy. O.	Sept. 12	1	..	.....
8545	2234	39 09 00	72 03 15	816	39	gn. M.	Sept. 13	1 *s*.	..	.....
8569	2235	39 12 00	72 03 30	707	39	gn. M.	Sept. 13	1 *s*.	..	.....

PENTACHELES DEBILIS Smith.

(Plate VII, Fig. 2.)

No specimens have been taken since 1883.

CRANGONIDÆ.

CRANGON VULGARIS Fabricius.

Specimens examined.

[Locality: Off Martha's Vineyard.]

Catalogue number.	Station number.	Locality.		Depth, temperature, and nature of bottom.			Date.	Specimens.		
		N. lat.	W. long.	Fathoms.	°	Materials.		Number.		With eggs.
		° ′ ″	° ′ ″				1884.	♂	♀	
8684	2253	40 34 30	69 50 45	32	53	gy. S.	Sept. 27	..	1	0
8685	2256	40 38 30	69 29 00	30	53	yl. S.	Sept. 28	..	1	1

[Locality: Off Cape Hatteras.]

7259	2307	35 42 00	74 54 30	43	57	gy. S.	Oct. 21	1 *y*.	.....

SCLEROCRANGON AGASSIZII.

Ceraphilus Agassizii Smith, Bull. Mus. Comp. Zool., x, p. 32, pl. 7, figs. 4-5*a*, 1882; Rep. U. S. Fish Com., x, for 1882, p. 362, 1884.

Specimens examined.

Catalogue number.	Station number.	Locality.		Depth, temperature, and nature of bottom.			Date.	Specimens.	
		N. lat.	W. long.	Fathoms.	°	Materials.		Number.	With eggs.
		° ′ ″	° ′ ″				1884.	♂ ♀	
7949	2171	37 59 30	73 48 40	444	39	gn. M.	July 20	.. 1	1
7950	2172	38 01 15	73 44 00	568	39	gn. M.	July 20	.. 1	1
8178	2201	39 39 45	71 35 15	538	39	bu. M.	Aug. 19	.. 5 *s.*	0
.....	2202	39 38 00	71 39 45	515	39	gn. M.	Aug. 19	.. 1	0
8603	2237	39 12 17	72 09 30	520	39	gn. M.	Sept. 13	.. 3	2

This species should evidently be referred to G. O. Sars's genus *Sclerocrangon*, which includes *Ceraphilus boreas* and *C. ferox*. The genus is distinguished from the typical species of *Ceraphilus* by the inner lamellæ of the pleopods being very much smaller than the outer and without the stylet on the mesial edge. The thick, rough integument and the very slender second peræopods with minute chelæ are, perhaps, also characteristic.

PONTOPHILUS NORVEGICUS Sars.

(Plate XI, Figs. 6, 6*a*, 7.)

Specimens examined.

[Locality: Off Long Island.]

Catalogue number.	Station number.	Locality.		Depth, temperature, and nature of bottom.			Date.	Specimens.	
		N. lat.	W. long.	Fathoms.	°	Materials.		Number.	With eggs.
		° ′ ″	° ′ ″				1884.	♂ ♀	
7947	2178	39 29 00	72 05 15	229	42	gn. M., S.	July 22	.. 1	0

[Locality: Off Martha's Vineyard.]

8069	2183	39 57 45	70 56 30	195	44	gn. M., S.	Aug. 2	1	.....
8070	2186	39 52 15	70 55 30	353	40	gn. M., S.	Aug. 2	2	0
8071	2187	39 49 30	71 10 00	420	40	gn. M., S.	Aug. 3	1 3	.....
8171	2212	?39 59 30	?70 30 45	428	40	gn. M.	Aug. 22	3	0
8618	2232	?38 37 30	?73 11 00	243	43	gn. M.	Sept. 12	1 2	.....
7197	2246	39 56 45	70 20 30	122	48	gn. M.	Sept. 26	1*y*	0
8674	2262	39 54 45	69 29 45	250	42	gn. M., S.	Sept. 28	8	2
8689	2262	39 54 45	69 29 45	250	42	gn. M., S.	Sept. 28	1	0
7192	(?)	.....	.....	.....	.....	.....	.....	1 ..	

PONTOPHILUS BREVIROSTRIS Smith.

Specimens examined.

[Locality: Off Long Island.]

Catalogue number.	Station number.	Locality. N. lat.	Locality. W. Long.	Depth, temperature, and nature of bottom. Fathoms.	°	Materials.	Date.	Specimens. Number.	Specimens. With eggs.
		° ′ ″	° ′ ″					♂ ♀	
7948	2177	39 33 40	72 08 45	87	52	gn. M., S.	1884. July 22	.. 1	1

[Locality: Off Martha's Vineyard.]

.....	2183	39 57 45	70 56 30	195	44	gn. M., S.	Aug. 2	.. 1	0
7193	2243	40 10 15	70 26 00	63	52	gn. M.	Sept. 26	1 2	1
7194	2244	40 05 15	70 23 00	67	53	gn. M., S.	Sept 26	.. 2	1
7196	2247	40 03 00	69 57 00	78	52	gn. M., S.	Sept. 27	.. 6	3
7198	2248	40 07 00	69 57 00	67	52	gn. M., S.	Sept. 27	1 5y. 2	1

[Locality: Off Chesapeake Bay.]

8904	2265	37 07 40	74 35 40	70	63	gn. M., G.	Oct. 18	.. 15	4

[Locality: Off Cape Hatteras.]

7243	2287	35 22 30	75 26 00	7	....	crs. gy. S.	Oct. 20	2 ..	.....

PONTOPHILUS ABYSSI Smith.

(Plate XI, Figs. 3, 3*a*, 4, 5.)

Station 2226, September 10, north lat. 37°, west long. 71° 54′, 2,021 fathoms, globigerina ooze, temperature 37°; 3 ♂ and 2 ♀ carrying eggs (8600). The station of another female (8525) is unfortunately not given.

These specimens are in much better condition than those originally described, and show that the species is perfectly distinct from *P. gracilis*. A large female gives the following:

Measurements in millimeters.

Length from tip of rostrum to tip of telson	62.0
Length of carapax, including rostrum	17.0
Length of rostrum	2.8
Breadth of carapax at antennal spines	8.0
Greatest breadth of carapax	8.8
Greatest diameter of eye	1.8
Length of antennal scale	9.1
Breadth of antennal scale	2.7
Length of first peræopod	21.0
Length of chela	7.5
Length of dactylus	3.1

Length of second peræopod	9.5
Length of third peræopod	25.0
Length of merus	6.0
Length of carpus	7.3
Length of propodus	3.7
Length of dactylus	1.9
Length of fourth peræopod	23.0
Length of merus	5.4
Length of carpus	3.3
Length of propodus	4.5
Length of dactylus	2.8
Length of sixth somite of pleon	11.0
Height of sixth somite of pleon	3.5
Length of telson	11.5
Length of inner lamella of uropod	9.0
Breadth of inner lamella of uropod	1.7
Length of outer lamella of uropod	8.4
Breadth of outer lamella of uropod	2.5

PONTOPHILUS GRACILIS Smith.

Bull. Mus. Comp. Zool., x, p. 36, pl. 7, figs. 2, 2*a*, 2*b*, 2*c*, 3, 3*a*, 1882.

(Plate XI, Figs. 1, 1*a*, 2.)

This species, first described from a single specimen in the Blake collection of 1880, has not yet been found in the Albatross collections, although two specimens were taken by the Fish Hawk in 1881 off Martha's Vineyard: Station 994, September 8, north lat. 39° 40′, west long. 71° 30′, 368 fathoms, mud, temperature 40°—one female; and station 1029, September 14, north lat. 39° 57′ 6″, west long. 69° 16′, 458 fathoms, mud and sand, temperature 40°—one male.

SABINEA PRINCEPS Smith.

(Plate X, Figs. 1, 1*a*, 1*b*, 2.)

Specimens examined.

Catalogue number.	Station number.	Locality.		Depth, temperature, and nature of bottom.			Date.	Specimens.	
		N. lat.	W. long.	Fathoms.	°	Materials.		Number.	With eggs.
		° ′ ″	° ′ ″				1884.	♂ ♀	
7951	2171	37 59 30	73 48 40	444	39	gn. M.	July 20	2 *l.*	1
7952	2172	38 01 15	73 44 00	568	39	gn. M.	July 20	1 *y.*	0
7953	2179	39 30 10	71 50 00	510	39	bk. M.	July 22	4 3	1
7954	2180	39 29 50	71 49 30	523	39	bk. M.	July 23	1 4	1
8072	2186	39 52 15	70 55 30	353	40	gn. M., S.	Aug. 2	1 *y.* 2	0
8074	2187	39 49 30	71 10 00	420	40	gn. M., S.	Aug. 3	1	0
8170	2201	39 39 45	71 35 15	538	39	bu. M.	Aug. 19	1 *y.*	0
8168	2202	39 38 00	71 39 45	515	39	gn. M.	Aug. 19	4 10	6
8165	2213	?39 58 30	?70 30 00	384	39	gn. M.	Aug. 22	7 15	8
8163	2214	39 57 00	70 32 00	475	39	gn M.	Aug. 22	1 2	2
8593	2233	?38 36 30	?73 06 00	630	39	gn. M.	Sept. 12	1 3	0
8580	2237	39 12 17	72 09 30	520	39	gn. M.	Sept. 13	5	0

A female 130mm in length, taken in 1885 at station 2546, was carrying 353 eggs, about 2.6 by 3.0mm in shorter and longer diameter. Although so few in number the eggs were equal to a fifth of the bulk the entire animal exclusive of the eggs.

SABINEA SARSII Smith.

(Plate X, Figs. 3, 3*a*, 4.)

This northern species was not taken in 1884 and is figured from specimens taken the year previous.

GLYPHOCRANGONIDÆ.

GLYPHOCRANGON SCULPTUS Smith.

(Plate VIII, Fig. 3; Plate IX, Figs. 1, 2.)

Station 2196, August 6, north lat. 39° 35′, west long. 69° 44′, 1,230 fathoms, green mud, temperature 38°; one female carrying 97 eggs (8073). The eggs measured 2.6 by 3.4mm in shorter and longer diameter, and the entire number were equal to rather more than a tenth of the bulk of the entire animal exclusive of the eggs.

GLYPHOCRANGON LONGIROSTRIS Smith.

Rhachocaris longirostris Smith, Bull. Mus. Comp. Zool., x, p. 51, pl. 5, fig. 1, pl. 6, fig. 1, 1882.

Glyphocrangon longirostris Smith, Report U. S. Fish Com., x, for 1882, p. 365, 1884.

(Plate VIII, Figs. 1, 2; Plate IX, Figs. 3, 4, 5.)

Specimens examined.

Catalogue number.	Station number.	Locality.		Depth, temperature, and nature of bottom.			Date.	Specimens.	
		N. lat.	W. long.	Fathoms.	°	Materials.		Number.	With eggs.
		° ′ ″	° ′ ″				1884.	♂ ♀	
8256	2205	39 35 00	71 18 45	1,073	38	gy. O.	Aug. 20	.. 1	1
8257	2206	39 35 00	71 24 30	1,043	38	gn. M.	Aug. 20	2 ..	.....

These specimens obtained by the Albatross are all adult, and differ considerably from the young female originally described. The adult specimens have dark-colored eyes as in the other species, and in several particulars are more like *G. sculptus* than the young specimen was, although the two species are specifically very distinct, as the accompanying figures and the following description of the adults will show.

The rostrum is relatively shorter than in the young specimen but still rather longer than in *G. sculptus;* the basal two-thirds is horizontal, but the tip strongly upturned, regularly tapered, and acute; there is a slight median carina nearly or quite the whole length; there are lateral spines and the corresponding pair of spines at the base of the rostrum as in *G. sculptus;* and between the lateral spines and the curved tip the surface is irregularly corrugated. The inferior edge of the rostrum is grooved, the groove being broadest at the beginning of the curved por-

tion, and toward the tip there is in addition a slight median carina. The carinæ of the carapax have nearly the same arrangement as in *G. sculptus*. The tubercles of the slightly prominent dorsal carinæ are all very low, obtuse, and punctate, and the space between the carinæ unarmed or armed only by a few small tubercles in front. On the lateral lobes of the gastric region the tubercles are all low and more or less obtuse, except the anterior, which is acute and much more prominent than the others. The antennal and antero-lateral spines are nearly as in *G. sculptus*. The lateral carina of the antennal region is continuous and terminates anteriorly in a sharp tooth, back of which the edge is obtuse and punctate. Back of the cervical suture the upper lateral carina is prominent; the tubercles with which it is surmounted are all obtuse and punctate. The middle lateral carina is continuous, broad, and punctate, and the lower carina is very low, but well marked by being punctate. The inferior margin of the carapax is carinated, as in the other species.

The eye-stalks are very short, and the eyes themselves relatively about as broad as in the other species, and in the alcoholic specimen are dark purplish brown.

The peduncles of the antennulæ reach to the tips of the antennal scales in the female and a little beyond in the male, and are less hairy than in *G. sculptus*. The inner flagellum is very slender, regularly tapered, slightly longer than the outer, about as long as the carapax excluding the rostrum, in the male, and considerably shorter in the female, but in other respects not different in the two sexes. The proximal half of the outer flagellum is very broad and strongly compressed vertically in the male, and tapers suddenly to the very slender terminal portion, while in the female the proximal half, though compressed and expanded, is only about half as broad as in the male. The antennal scales are smaller than in *G. sculptus*, being only about three-sevenths as long as the carapax, excluding the rostrum, ovate, about three-fifths as broad as long, and have a very indistinct tooth about the middle of the outer margin, which is only obscurely ciliated back of the tooth.

The second gnathopods and first peræopods are almost exactly as in *G. sculptus*. The second peræopods are alike in the two sexes and very nearly like those of *G. sculptus*, but a little longer, reaching slightly by the tips of the antennal scales, and the right carpus has about twenty-five segments, two or three more than the left, which is very slightly shorter than the right. The third peræopods are nearly as in the other species, reach a little beyond the tips of the antennal scales, and their dactyli are a little more than a third as long as the propodi and very slender. The fourth and fifth pairs of peræopods are but very little if at all stouter than the third; the fascicles of setæ at the tips of the propodi are about half as long as the propodi themselves, and the propodi are about as long as in the third pair, strongly compressed as in *G. Agassizii*, but slender and not expanded at all in the middle.

The sculpturing of the abdomen resembles that of *G. sculptus*, but the dorsal carina is less prominent and more obtuse, and the tubercles are fewer in number, obtuse, and punctate. The marginal spines of the pleura of the second to the fifth somite are all short, and there is usually no posterior spine on the fifth. The lateral spines of the sixth somite are about as prominent and fully as stout as in *G. sculptus*.

The telson is shorter than in the young specimen originally described, being considerably shorter than the carapax exclusive of the rostrum, and has nearly the same form and sculpturing as in *G. sculptus*, though the tip is slightly more upturned and the carinæ smoother toward the base. The outer lamella of the uropod is only about three-fourths as long as the telson, rather more than a third as broad as long, with the lateral spine farther from the tip than in the other species. The inner lamella is narrow and usually longer than the outer. The uropodal lamellæ are, however, occasionally subject to considerable variation, as shown in the first column of the accompanying table of measurements. There is no appearance of injury or redevelopment in the uropods of the specimen from which these measurements were taken, although the abnormal variation is very likely due to some such cause.

A female 104^{mm} long, taken, 1885, at station 2550, was carrying 86 eggs, 2.8 by 3.1^{mm} in shorter and longer diameter, and the entire number were equal to a little more than a tenth of the bulk of the entire animal, exclusive of the eggs.

Measurements in millimeters.

Catalogue number	8257		8257		8256	
Station	2206		2206		2205	
Sex	♂		♂		♀	
Length from tip of rostrum to tip of telson	99		101		107	
Length of carapax, including rostrum	41.2				43.4	
Length of rostrum	19.0				18.0	
Breadth of carapax in front, including spines	20.3				20.0	
Breadth of carapax at cervical suture	13.5				15.0	
Breadth of carapax back of cervical suture	16.0				18.6	
Length of eye-stalk and eye	5.6		5.8		5.5	
Greatest diameter of eye	5.5		5.7		5.8	
Length of antennal scale	8.7				11.0	
Breadth of antennal scale	5.7				6.5	
Length of second gnathopod	22				23	
Length of first peræopod	21				22	
Length of merus	8.2				8.8	
Length of carpus	2.2				2.1	
Length of propodus	4.1				4.6	
Length of dactylus	2.5				2.8	
	right.	left.			right.	left.
Length of second peræopod	29	28			33	32
Length of merus	5.3	5.4			5.5	5.5
Length of carpus	13.5	12.0			15.0	14.5
Length of chela	1.2	1.5			1.3	1.6
Length of third peræopod	35				35	
Length of propodus	8.5				8.2	
Length of dactylus	2.5				2.6	
Length of fifth peræopod	34				36	
Length of propodus	8.0				8.4	
Length of dactylus	2.3				2.9	
Length of sixth somite of pleon	8.0				9.0	
Length of telson	17.5		18.3		20.0	
	right.	left.	right.	left.	right.	left.
Length of inner lamella of uropod	13.3	11.3	13.6	13.6	14.5	14.6
Breadth of inner lamella of uropod	2.9	2.8	3.0	3.0	3.5	3.5
Length of outer lamella of uropod	12.6	13.6	13.0	13.0	14.0	14.0
Breadth of outer lamella of uropod	4.8	4.7	4.7	4.7	5.8	5.7

ALPHEIDÆ.

ALPHEUS MINUS Say.

Station 2280, October 19, off Cape Hatteras, north lat. 35° 21′, west, long. 75° 21′ 30″, 16 fathoms, gray sand; 15 specimens (8846).

HIPPOLYTE LILJEBORGII Danielssen.

Specimens examined.

[Locality: Off Long Island.]

Catalogue number.	Station number.	Locality.		Depth, temperature, and nature of bottom.			Date.	Specimens.	
		N. lat.	W. long.	Fathoms.	°	Materials.		Number.	With eggs.
		° ′ ″	° ′ ″		°		1884.	♂ ♀	
7956	2175	39 33 00	72 18 30	452	40	gn. M.	July 22	.. 1	0
7957	2178	39 29 00	72 05 15	229	42	gn. M. S.	July 22	.. 2	0

[Locality: Off Delaware Bay.]

8606	2232	38 37 30	73 11 00	243	43	gn. M.	Sept. 12	3 ..	0

[Locality: Off Martha's Vineyard.]

7200	2262	39 54 45	69 29 45	250	42	gn. M. S.	Sept. 28	5 ..	0

[Locality: Off Chesapeake Bay.]

7208	2264	37 07 50	74 34 20	167	58	gy. S.	Oct. 18	2 ..	0
7214	2265	37 07 40	74 35 40	70	63	gn. M. G.	Oct. 18	1 ..	0

BYTHOCARIS GRACILIS Smith.

Proc. National Mus., vii, p. 497, 1885.

Specimens examined.

(Plate XII, Figs. 3, 4.)

[Locality: Off Cape Hatteras.]

Catalogue number.	Station number.	Locality.		Depth, temperature, and nature of bottom.			Date.	Specimens.	
		N. lat.	W. long.	Fathoms.	°	Materials.		Number.	With eggs.
		° ′ ″	° ′ ″				1883.	♂ ♀	
7132	2116	35 45 23	74 31 25	888	39	bu. M. fne S.	Nov. 11.	 1	1

[Locality: Off Martha's Vineyard.]

8258	2206	39 35 00	71 24 30	1043	38	gn. M.	1884. Aug. 20	 1	1

This species is closely allied to *B. Payeri* G. O. Sars, but the specimens differ conspicuously from specimens of *B. Payeri* from the Faröe Channel, received from the Rev. Dr. Norman, in the size of the eyes and the form of the antennal scales.

Female.—The carapax is about two-thirds as broad as its length along the dorsum, and the front about a sixth as broad as the length and very nearly as in *B. Payeri*, but the lateral teeth are a little more prominent than in that species. The short median carina on the gastric region terminates abruptly in a small tooth anteriorly, not present in any of the specimens of *B. Payeri*. The eye-stalk and eye are about a fourth as long as the dorsum of the carapax, and the diameter of the black eye about three-fifths of the length of the stalk and eye. In the specimens of *B. Payeri* the eyes are considerably smaller, about a fifth as long as the carapax, and the diameter about half the length of the eye and stalk. The first segment of the peduncle of the antennula is armed with a very slender and acute lateral spine, which reaches nearly as far forward as the segment itself. The antennal scale is fully as long as the dorsum of the carapax and less than a third as broad as long, while in *B. Payeri* it is rather shorter and considerably broader. The peræopods and pleon are very nearly as in *B. Payeri*.

The eggs in the alcoholic specimens are about 1.8 by 1.4^{mm} in longer and shorter diameter.

In the following table similar measurements of this species and a specimen of *B. Payeri* are given for comparison.

Measurements in millimeters and hundredths of length of carapax.

	B. gracilis.		B. Payeri.	
Station	2116			
Sex	♀		♀	
	Mm.	*Per cent.*	*Mm.*	*Per cent.*
Length from front to tip of telson	39.0	=464	50.0	=476
Length of carapax	8.4	100	10.5	100
Breadth of carapax	5.5	65	6.7	64
Breadth of front	1.4	17	1.6	15
Length of eye-stalk and eye	2.0	24	2.0	19
Greatest diameter of eye	1.3	15	1.0	10
Length of antennal scale	8.5	101	9.6	92
Breadth of antennal scale	2.8	35	4.3	41
Length of sixth somite of pleon	6.1	73	8.0	76
Height of sixth somite of pleon	2.3	27	3.6	34
Length of telson	7.5	89	9.0	86
Length of inner lamella of uropod	5.6	67	7.3	70
Breadth of inner lamella of uropod	1.8	21	2.4	23
Length of outer lamella of uropod	7.0	83	8.8	84
Breadth of outer lamella of uropod	2.4	29	3.5	33

Bythocaris Payeri and the following species, *B. nana*, differ remarkably from *Hippolyte* and the allied genera in the reduced number of the branchiæ and epipods. There are no epipods proper at the bases of any

of the gnathopods or peræopods, and no podobranchiæ nor arthrobranchiæ on any of the somites, as the following branchial formula shows:

Somites.	VII.	VIII.	IX.	X.	XI.	XII.	XIII.	XIV.	Total.
Epipods	1	0	0	0	0	0	0	0	(1)
Podobranchiæ	0	0	0	0	0	0	0	0	0
Arthrobranchiæ	0	0	0	0	0	0	0	0	0
Pleurobranchiæ	0	0	0	1	1	1	1	1	5
									5+(1)

BYTHOCARIS NANA Smith.

Proc. National Mus., vii, p. 499, 1885.

(Plate XII, Fig. 2.)

Specimens examined.

[Locality: Off Martha's Vineyard.]

Catalogue number.	Station number.	Locality.		Depth, temperature, and nature of bottom.			Date.	Specimens.		
		N. lat.	W. long.	Fathoms.	°	Materials.		Number.		With eggs.
		° ′ ″	° ′ ″				1880.	♂	♀	
.....	865	40 05 00	70 23 00	65	68	fne. S. M.	Sept. 4	3	5	5
.....	872	40 05 39	70 23 52	86	50	S. G. Sh. Spg.	Sept. 4	.....	2	1
.....	874	40 00 00	70 57 00	85	51	sft. M.	Sept. 14	1	.....	.....
.....	878	39 55 00	70 54 15	142	52	M.	Sept. 24	2	6	6

[Locality: Off Chesapeake Bay.]

7215	2265	37 07 40	74 35 40	70	63	gn. M. G.	1884. Oct. 18	2	.....	.....

This is a small species, at once distinguished from *B. Payeri* and *B. gracilis* by the very much broader and differently shaped front, and the much longer eye-stalks.

The carapax is about three-fourths as broad as its length along the dorsum, and the breadth of the front fully a third of the length. The supraorbital teeth are very large, and project as far forward as the very small rostral tooth. The median carina of the gastric region is low and inconspicuous.

The eyes are well developed, placed obliquely upon the stalks, and black. The length of the eye and stalk is about equal to the breadth of the front, and the diameter of the eye considerably greater than that of the stalk, equaling about a fifth the length of the carapax. The first segment of the peduncle of the antennula reaches a little beyond the eye, and its lateral spine is slender and falls considerably short of the dis-

tal end of the segment itself. The outer flagellum is very stout in both sexes, and tapers rapidly to a very slender tip, reaching to, or a little beyond, the tip of the antennal scale. The inner flagellum is very slender, and slightly longer than the outer. The antennal scale is shorter than the dorsum of the carapax, a little more than a third as broad as long, and has the tip more elongated than in the last species. The flagellum of the antenna is very slender, subcylindrical, and much longer than the body of the animal.

The endopod of the second gnathopod reaches nearly to the tip of the antennal scale; the distal and proximal of the three segments of which it is composed are approximately equal in length; the middle segment is about two-fifths as long as the proximal, and the exopod scarcely reaches to the middle of the proximal segment of the endopod and is very slender. The first peræopods reach to near the tips of the peduncles of the antennæ; the carpus and chela are together as long as the rest of the endopod; the chela is about once and two-thirds as long as the carpus, slightly stouter, about a fourth as broad as long, and the digits slender and a little less than half as long as the whole length of the chela. The second peræopods are very slender and reach considerably beyond the antennal scales; the ischium and merus are subequal in length; the carpus is a little less than twice as long as the merus, and composed of eight segments; the chela is nearly cylindrical and about once and two-thirds as long as the distal segment of the carpus, and no stouter. The third, fourth, and fifth peræopods are nearly alike, and about as long as the second; the meri and propodi are subequal in length, and the meri are armed with three to seven spines along the distal part of the lower edge; the lower edges of the propodi are clothed with a few plumose hairs, and armed with several very slender spines; the dactyli are approximately a fourth as long as the propodi, slightly curved, regularly tapered to an acute tip, and armed along the lower edge with a regular series of spinules.

The pleon is somewhat geniculated and slightly compressed dorsally at the third somite, but none of the somites are carinated. The telson is a little shorter than the sixth somite, evenly rounded above, and regularly tapered to a narrow truncated tip armed with six slender spines, of which the sublateral pair are much larger than the lateral and median.

The eggs, in the alcoholic specimens, are approximately 1.0 by 0.8^{mm} in longer and shorter diameter.

Many of the specimens, after long preservation in alcohol, show dark bands of pigment spots across the antennal scales, uropodal lamellæ, and somites of the pleon.

This is the species to which I have referred as *Bythocaris*, sp. indet., in Proc. National Mus., iii, p. 437, 1881, and Bull. Mus. Comp. Zool., x, p. 55, 1882.

Measurements in millimeters and hundredths of length of carapax.

Station	878.		878.	
Sex	♂		♀	
	Mm.	*Per cent.*	*Mm.*	*Per cent.*
Length from front to tip of telson	25.5	=455	25.0	=455
Length of carapax	5.6	100	5.5	100
Breadth of carapax	4.3	77	4.2	76
Breadth of front	2.0	36	1.9	35
Length of eye-stalk and eye	2.0	36	1.9	35
Greatest diameter of eye	1.1	20	1.1	20
Length of antennal scale	5.0	89	4.6	84
Breadth of antennal scale	1.8	32	1.7	31
Length of sixth somite of pleon	4.1	73	4.0	73
Height of sixth somite of pleon	1.7	30	1.8	33
Length of telson	4.9	87	5.0	91
Length of inner lamella of uropod	3.8	68	3.8	69
Breadth of inner lamella of uropod	1.1	20	1.1	20
Length of outer lamella of uropod	4.2	75	4.3	78
Breadth of outer lamella of uropod	1.3	23	1.4	26

PANDALUS MONTAGUI Leach.

(Plate XIII, Fig. 2.)

Not taken in 1884.

PANDALUS PROPINQUUS G. O. Sars.

(Plate XIII, Fig. 1.)

Specimens examined.

[Locality: Off Long Island.]

Catalogue number.	Station number.	Locality. N. lat.	Locality. W. long.	Depth, temperature, and nature of bottom. Fathoms.	°	Materials.	Date.	Specimens. Number. ♂	♀	With eggs.
		° ′ ″	° ′ ″				1884.			
7958	2175	39 33 00	72 18 30	452	40	gn. M.	July 22	2	1[1]	0
7959	2178	39 29 00	72 05 15	229	42	gn. M., S.	July 22	..	2[1]	0
7960	2179	39 30 10	71 50 00	510	39	bk. M.	July 23	2	..	.....
7961	2180	39 29 50	71 49 30	523	39	bk. M., S.	July 23	1	1	0

[Locality: Off Martha's Vineyard.]

8076	2186	39 52 15	78 55 30	353	40	gn. M., S.	Aug. 2	3	1	0
8075	2187	39 49 30	71 10 00	420	40	gn. M., S.	Aug. 3	3	2	0
8162	2201	39 39 45	71 35 15	538	39	bu. M.	Aug. 19	2	..	.....
8161	2202	39 38 00	71 39 45	515	39	gn. M.	Aug. 19	..	2	.....
8160	2212	?39 59 30	?70 30 45	428	40	gn. M.	Aug. 22	..	1	0
8586	2237	39 12 17	72 09 30	520	39	gn. M.	Sept. 13	..	2	2
8673	2262	39 54 45	69 29 45	250	42	gn. M., S.	Sept. 28	45		0

PANDALUS LEPTOCERUS Smith.

Specimens examined.

[Locality: Off Chesapeake Bay.]

Catalogue number.	Station number.	Locality.		Depth, temperature, and nature of bottom.			Date.	Specimens.		
		N. lat.	W. long.	Fathoms.	°	Materials.		Number.		With eggs.
		° ′ ″	° ′ ″				1884.	♂	♀	
7962	2170	37 57 00	73 53 30	155	....	gy. S.	July 20	2 *l.*	14 *l.*	0
7963	2176	39 32 30	72 21 30	302	41	bk. M.	July 22	..	2	0
7964	2177	49 33 40	72 08 45	87	52	gn. M. S.	July 22	3		0

[Locality: Off Martha's Vineyard.]

8077	2184	40 00 15	70 55 30	136	49	g. M., S.	Aug. 2	1	2	0
8078	2185	40 00 45	70 54 15	129	51	g. M., S.	Aug. 2	2	1	0
8079	2197	39 56 30	69 43 20	84	52	S., brk. Sh.	Aug. 6	12	29	0
8080	2198	39 56 30	69 43 20	84	52	S., brk. Sh.	Aug. 6	..	2	0
8081	2199	39 57 30	69 41 10	78	...	gy. S.	Aug. 6	10	9	0
8082	2200	39 53 30	69 43 20	148	45	crs. S.	Aug. 6	60		0
8690	(?)	...	.....	.....	....	.....	.....	14		8
8676	2239	40 38 00	70 29 45	32	....	gn. M.	Sept. 26	8		1
8677	2240	40 27 30	70 29 00	44	....	gn. M.	Sept. 26	36		3
8678	2241	40 21 00	70 29 15	50	51	gn. M.	Sept. 26	26		2
8679	2242	40 15 30	70 27 00	58	51	gn. M.	Sept. 26	20		3
8680	2243	40 10 15	70 26 00	63	52	gn. M.	Sept. 26	5		2
8667	2244	40 05 15	70 23 00	67	53	gn. M., S.	Sept. 26	75		27
8668	2244	40 05 15	70 23 00	67	53	gn. M., S.	Sept. 26	45		.....
8669	2244	40 05 15	70 23 00	67	53	gn. M., S.	Sept. 26	130		.....
8670	2245	40 01 15	70 22 00	98	51	gn. M., bk. S.	Sept. 26	95		19
8671	2245	40 02 15	70 22 00	98	51	gn. M., bk. S.	Sept. 26	105		
8681	2246	39 56 45	70 20 30	122	48	gn. M.	Sept. 26	15		12
8672	2247	40 03 00	69 57 00	78	52	gn. M., S.	Sept. 27	74		4
8682	2248	40 07 00	69 57 00	67	52	gn. M., S.	Sept. 27	8		0
8683	2249	40 11 00	69 52 00	53	51	gn. M., S.	Sept. 27	30		1
8666	2250	40 17 15	69 51 45	47	51	gn. M., S.	Sept. 27	190		11
8686	2257	40 32 30	69 29 00	33	52	yl. S.	Sept. 28	1		0
8687	2259	40 19 34	69 29 10	41	50	gy. S.	Sept. 28	5		0
8675	2260	40 13 15	69 29 15	46	50	gy. S.	Sept. 28	50		5
8688	2261	40 04 00	69 29 30	58	54	gy. S.	Sept. 28	18		1

[Locality: Off Chesapeake Bay.]

8755	2264	37 07 50	74 34 20	167	58	gy. S.	Oct. 18	126	12
8756	2264	37 07 50	74 34 20	167	58	gy. S.	Oct. 18	130	13
8865	2264	37 07 50	74 34 20	167	58	gy. S.	Oct. 18	50	3
8768	2265	37 07 40	74 35 40	70	63	gn. M., S.	Oct. 18	68	14

[Locality: Off Cape Hatteras.]

8810	2307	35 42 00	74 54 30	43	57	gy. S.	Oct. 21	1 *y.*	0

NEMATOCARCINIDÆ.

NEMATOCARCINUS ENSIFERUS Smith.

(Plate XVII, Fig. 2.)

Specimens examined.

Catalogue number.	Station number.	Locality.		Depth, temperature, and nature of bottom.			Date.	Specimens.		
		N. lat.	W. long.	Fathoms.	°	Materials.		Number.		With eggs.
		° ′ ″	° ′ ″				1884.	♂	♀	
7965	2173	37 57 00	72 34 00	1,600	37	glb. O.	July 21	....	2 *l.*	1
7966	2174	38 15 00	72 03 00	1,594	....	gy. M.	July 21	2 *l.*	9 *l.*	6
7967	2182	39 25 30	71 44 00	861	39	gn. M.	July 23	1 *s.*	1 *s.*	0
8084	2193	39 44 30	70 10 30	1,122	38	gn. M.	Aug. 5	....	2 *s.*	0
8083	2196	39 35 00	69 44 00	1,230	38	gn. M.	Aug. 6	2 *s.*	....	.....
8158	2205	39 35 00	71 18 45	1,073	38	gy. O.	Aug. 20	7 *s.*	3 *s.*	0
8157	2206	?39 35 00	?71 24 30	1,043	38	gn. M.	Aug. 20	2 *s.*	2 *s.*	0
8156	2208	39 33 00	71 16 15	1,178	38	gn. M., S.	Aug. 21	1	1	0
8154	2209	39 34 45	71 21 30	1,080	39	glb. O.	Aug. 21	5 *s.*	6 *s.*	0
8153	2210	?39 37 45	?71 18 45	991	38	gy. glb. O.	Aug. 21	8 *s.*	14 *s.*	0
8152	2211	?39 35 00	?71 18 00	1,064	38	gn. M.	Aug. 21	2	2	0
8159	2216	39 47 00	70 30 30	963	39	gn. M.	Aug. 22		5 *y.*	0
8619	2221	39 05 30	70 44 33	1,525	37	gy. O.	Sept. 6	4	5	2
8620	2222	39 03 15	70 50 45	1,537	37	gy. O.	Sept. 6	....	2 *l.*	1
8621	2226	37 00 00	71 54 00	2,021	37	glb. O.	Sept. 10	1	1 *y.* 2	0
8622	2229	?37 38 40	73 16 30	1,423	38	glb. O.	Sept. 11	5 *l.*	....	.....
8623	2230	38 27 00	73 02 00	1,168	37	gy. O.	Sept. 12	1	1	.....
8596	2231	38 29 00	73 09 00	965	39	gy. O.	Sept. 12	....	1	0
8624	2234	39 09 00	72 03 15	816	39	gn. M.	Sept. 13		2 *s.*	0
8625	2235	39 12 00	72 03 30	707	39	gn. M.	Sept. 13		3 *s.*	0
7165	?	.....	.....	.....	....	.....	.....		1 *y.*	0
8582	?	.....	.....	.....	....	.....	.....	1 *l.*	....	.....

The anterior margin of the carapax below the orbit and the base of the antenna were not accurately represented in the figure of this species given in my last report, and a corrected figure is therefore given with the illustrations accompanying this report.

The eggs are comparatively small and considerably elongated, being about 0.55^{mm} in shorter and 0.75 to 0.80^{mm} in longer diameter in recently preserved alcoholic specimens. A large female from station 2173 was carrying approximately 16,000 eggs, which were equal to about one-sixth of the bulk of the entire animal, exclusive of the eggs. A specimen 143^{mm} in length, taken in 1885, station 2564, was carrying over 20,000 eggs, which were equal to approximately a fourth the bulk of the animal, exclusive of the eggs.

NEMATOCARCINUS CURSOR A. M.-Edwards.

Ann. Sci. Nat., Zool., VI, ix, No. 4, p. 14, 1881; Recueil de figures de Crustacés nouveaux ou peu connus, pl. [37], 1883.

(Plate XVII, Figs. 1, 1*a*.)

Specimens examined.

Catalogue number.	Station number.	Locality.		Depth, temperature, and nature of bottom.			Date.	Specimens.		
		N. lat.	W. long.	Fathoms.	°	Materials.		Number.		With eggs.
		° ′ ″	° ′ ″				1884.	♂	♀	
7968	2171	37 59 30	73 48 40	444	39	gn. M.	July 20	..	1 *l.*	1
7969	2179	39 30 10	71 50 00	510	39	bk. M.	July 23	2	2 *l.*	1
7970	2180	39 29 50	71 49 30	523	39	bk. M.	July 23	..	1 *l.*	1
7971	2180	39 29 50	71 49 30	523	39	bk. M.	July 23	2	....	.....
7972	2180	39 29 30	71 49 30	523	39	bk. M.	July 23	4	1	.....
7973	2181	39 29 00	71 46 00	693	39	gy. M., fne. S.	July 23	..	1 *l.*	1
8150	2201	39 39 45	71 35 15	538	39	bu. M.	Aug. 19	..	2	1
8151	2201	39 39 45	71 35 15	538	39	bu. M.	Aug. 19	1	2	0
8146	2202	39 38 00	71 39 45	515	39	gn. M.	Aug. 19	2	9	3
8147	2202	39 38 00	71 39 45	515	39	gn. M.	Aug. 19	..	1	1
8148	2202	39 38 00	71 39 45	515	39	gn. M.	Aug. 19	..	1	0
8149	2202	39 38 00	71 39 45	515	39	gn. M.	Aug. 19	..	1	0
8144	2212	?39 59 30	?70 30 45	428	40	gn. M.	Aug. 22	..	1	1
8145	2213	?39 58 30	?70 30 00	384	39	gn. M.	Aug. 22	..	1 *l.*	1
8602	2233	?38 36 30	?73 06 00	630	39	gn. M.	Sept. 12	..	1	0
8592	2237	39 12 17	72 09 30	520	39	gn. M.	Sept. 13	3	....	.....

A single female was taken by the Fish Hawk in 1880, station 892, October 2, north lat. 39° 46′, west long. 71° 5′, 487 fathoms, soft brown mud and small stones, but no other specimens were found until 1884. During the winter cruise of the Albatross in 1884, a considerable number of specimens (6,810) were taken in the Eastern Caribbean, station 2117, January 27, north lat. 15° 24′ 40″, west long. 63° 31′ 30″, 683 fathoms, yellow mud and fine sand, temperature 40°.

This species is closely allied to *N. ensiferus*, but is readily distinguished by the very much shorter rostrum and larger eyes.

Aside from the rostrum the carapax is nearly as in *N. ensiferus*, but the rostral carina is not quite so high in front, and the rostrum itself is short—less than a third as long as the rest of the carapax—scarcely reaches the distal segment of the peduncle of the antennula, is horizontal, obtusely pointed, the dorsal edge armed with a series of small spines as in *N. ensiferus*, and usually with a minute tooth beneath the tip. The eyes are similar to those of *N. ensiferus*, but much larger, the length of the eye and stalk fully equaling or exceeding the breadth of the antennal scale, and the diameter of the eye equaling about three-fourths of the same amount. The antennulæ, antennæ, and oral appendages differ very little from those of *N. ensiferus*.

The peræopods are similar to those of *N. ensiferus*, but are apparently even longer than in that species. The first pair reach by the tips of the antennal scales by the length of the chelæ or a little more, are naked except at the tips of the digits and unarmed except by single spines at the distal ends of the ischia. The second pair are nearly as long as the length from tip of rostrum to tip of telson, unarmed except by a very few spines on the ischia and meri, and nearly naked except at the tips

of the digits. The merus is slightly longer than the carapax, excluding the rostrum, and reaches by the tips of the antennal scales, often by half its length. The carpus is much longer than the merus, and the chela is scarcely more than a tenth as long as the carpus. The third, fourth, and fifth peræopods are approximately equal in length and nearly as long as the length from tip of rostrum to tip of telson, or even considerably longer; the ischia and meri are armed nearly as in the second pair, and the propodi and dactyli have the same structure and nearly the same relative proportions as in *N. ensiferus*.

The pleon is, in general, as in *N. ensiferus;* the dorsum of the third somite, however, is slightly prolonged over the fourth, but not in a prominent tooth, and the pleuron of the fifth somite, though slightly produced posteriorly, is obtusely angular and not prolonged in an acute tooth.

The eggs are apparently very slightly smaller than in *N. ensiferus*, measuring about 0.52mm in shorter and 0.75mm in longer diameter. A specimen 101mm in length from station 2180, was carrying approximately 20,000 eggs, which were equal to nearly one-fourth the bulk of the animal, exclusive of the eggs.

Measurements in millimeters.

Catalogue number	8147	7971	7970	8147
Station	2202	2180	2180	2202
Sex	♀	♂	♀	♀
Length from tip of rostrum to tip of telson	77	90	101	102
Length of carapax, including rostrum	24.2	28.2	30.5	31.0
Length of rostrum	5.4	6.5	7.2	8.3
Height of carapax	10.1	11.1	12.7	12.5
Breadth of carapax	9.4	11.0	13.0	12.7
Length of eye-stalk and eye	3.6	4.4	4.6	4.6
Greatest diameter of eye	2.7	3.1	3.3	3.4
Length of antennal scale	13.2	16.3	17.6	17.7
Breadth of antennal scale	3.2	3.9	4.4	4.5
Length of first peræopod	31	40	.....	40
Length of merus	8.5	10.0	.....	10.5
Length of carpus	12.5	16.0	.....	16.0
Length of chela	3.6	4.0	.....	4.4
Breadth of chela	0.7	0.7	.....	0.75
Length of dactylus	1.5	1.6	.....	1.7
Length of second peræopod	72	88	.....	90
Length of merus	22	26	.....	27
Length of carpus	30	36	.....	38
Length of chela	3.5	3.8	.....	4.1
Breadth of chela	0.55	0.60	.....	0.65
Length of dactylus	1.2	1.4	.....	1.7
Length of third peræopod	80	110	100	104
Length of merus	28	36	32	33
Length of carpus	32	44	38	40
Length of propodus	2.5	2.4	2.5	2.6
Length of dactylus	3.0	4.0	4.3	4.5
Length of fourth peræopod	79	108	99	104
Length of merus	28	36	33	34
Length of carpus	31	45	39	40
Length of propodus	2.5	2.6	3.0	2.6
Length of dactylus	3.0	3.3	3.6	3.6
Length of fifth peræopod	80	110	104	105
Length of merus	29	35	33.5	36
Length of carpus	32	46	41	42
Length of propodus	2.4	2.5	3.0	2.8
Length of dactylus	0.5	0.6	0.5	0.6
Length of sixth somite of pleon	12.2	13.8	14.5	15.5
Height of sixth somite of pleon	6.0	6.7	7.3	7.5
Length of telson	12.6	14.8	15.6	16.0
Length of inner lamella of uropod	9.9	11.3	13.0	12.9
Breadth of inner lamella of uropod	.....	2.4	2.7	2.9
Length of outer lamella of uropod	11.2	13.2	14.7	14.3
Breadth of outer lamella of uropod	.....	3.0	3.4	3.5

MIERSIIDÆ.

ACANTHEPHYRA EXIMEA Smith.

(Plate XIV, Fig. 1.)

This species is still represented only by the single specimen taken in 1883.

ACANTHEPHYRA AGASSIZII Smith.

(Plate XV, Figs. 1, 6, 6*a*, 7; Plate XVI, Fig. 2.)

Specimens examined.

Catalogue number.	Station number.	Locality.		Depth, temperature, and nature of bottom.			Date.	Specimens.	
		N. lat.	W. long.	Fathoms.	°	Materials.		Number.	With eggs.
		° ′ ″	° ′ ″				1884.	♂ ♀	
7977	2174	38 15 00	72 03 00	1,594	....	gy. M.	July 21	2*l.*	.....
7978	2182	39 25 30	71 44 00	861	39	gn. M.	July 23	1*s.*	0
8086	2190	39 40 00	70 20 15	1,800	....	glb. O.	Aug. 4	1	.....
8085	2192	39 46 30	70 14 45	1,060	39	gy. O.	Aug. 5	2	.....
8087	2195	39 44 00	70 03 00	1,058	38	gn. M.	Aug. 5	1	1
8143	2206	39 35 00	71 24 30	1,043	38	gn. M.	Aug. 20	1*l.*	.....
8142	2208	39 33 00	71 16 15	1,178	38	gn. M., S.	Aug. 21	1	.....
8155	2209	39 34 45	71 21 30	1,080	39	glb. O.	Aug. 21	1	.....
8141	2210	39 37 45	71 18 45	991	38	gy. glb. O.	Aug. 21	1	.....
8138	2211	?39 37 00	?71 18 00	Surface!	74		Aug. 21	1	0
8139	2211	39 37 00	71 18 00	1,064	38	gn. M.	Aug. 21	1	.....
8134	2215	39 49 15	70 31 45	578	....		Aug. 22	1*y.*	.....
8140	2220	39 43 30	69 23 00	1,054	38	gy. M.	Aug. 23	3	.....
8610	2223	37 48 30	69 43 30	2,516	37	glb. O.	Sept. 7	1	.....
8691	2224	36 16 30	68 21 00	2,574	37	glb. O.	Sept. 8	2*s.*	1
8611	2231	38 29 00	73 09 00	965	39	gy. O.	Sept. 12	1*l.*	.....
8612	2234	39 09 00	72 03 15	816	39	gn. M.	Sept. 13	1	.....
8613	2235	39 12 00	72 03 30	707	39	gn. M.	Sept. 13	2*y.*	.....
8614	2236	39 11 00	72 08 30	636	39	gn. M.	Sept. 13	2*s.*	.....

No. 8,138, a small specimen 76^{mm} in length, and apparently an immature female, is of special interest. It was taken by Mr. Willard Nye, jr., at 10.45 p. m., *at the surface*, in a dip-net, and was kept alive for half an hour, and then put in alcohol while still alive. Messrs. Nye and Benedict both noticed the close resemblance to the *Acanthephyra* with which they were familiar from deep water, and made a special note of the facts in regard to the occurrence of this specimen. The specimen could not have been brought to the surface by the trawl, as no haul had been made for some time previously. In the Albatross dredgings in 1883 and 1884, this species is recorded as having been taken at forty-five different stations ranging in depth from 105 to 2,949 fathoms, and nearly all of the specimens have been in far better condition than most of those of the supposed deep-water species. These facts lead me to suppose that this species is not a habitual inhabitant of the bottom at great depths, but more probably a truly free-swimming inhabitant of some part of the vast

region intermediate between the surface and the bottom, such a one as might occasionally stray to the surface or to considerable depths. There is nothing in the structure of this species or of *A. eximea* to render this supposition improbable; in the two next following species, however, the structure of the eyes makes it extremely improbable that they ever approach the surface.

ACANTHEPHYRA MICROPHTHALMA Smith.

Proc. National Mus., vii, p. 502, 1885.

(Plate XIII, Fig. 3.)

Station 2224, September 8, north lat. 36° 16′ 30″, west long. 68° 21′, 2,574 fathoms, globigerina ooze, temperature 37°; two males and two females (8584).

Also taken in 1885, station 2566, August 29, north lat. 37° 23′, west long. 63° 8′, 2,620 fathoms, gray ooze, temperature 37°; one male and two females (10831).

This species differs remarkably in general appearance from those previously described, but agrees with them in all important generic characters. The rudimentary character of the eyes would seem to indictate that this, at least, is a true deep-water species.

The carapax is scarcely as broad in front as at the middle of the branchial region, and is neither compressed nor carinated dorsally, but broadly rounded, except at the high and laterally compressed base of the very slender rostrum, which is strongly upturned, wholly unarmed above except by three very obscure teeth above the orbit, and armed beneath with a series of about seven small and nearly equidistant teeth on the distal two-thirds of the length, but not quite reaching the very slender and acute tip. The orbital sinus is much smaller than in *A. Agassizii*, the lobe beneath is much broader and somewhat truncated, and the antennal and branchiostegal spines are less prominent.

The eye-stalks are much shorter than in *A. Agassizii*, strongly tapered from near the base to the minute brownish eyes, which are placed obliquely upon the outer side of the tip of the stalk.

The proximal segment of the peduncle of the antennula is less deeply excavated for the reception of the eye than in *A. Agassizii*, and the expanded proximal portion of the outer flagellum is a little narrower, but otherwise the antennula is as in that species.

The antennal scale is about two-thirds as long as the carapax excluding the rostrum, near the base about a fourth as broad as long, and narrowed to a truncated tip about a third as broad as the base. The spine upon the second segment of the peduncle below the articulation of the scale is much shorter than in *A. Agassizii*.

The oral appendages differ only slightly from those of *A. Agassizii*. The mandibles are thicker and heavier, the opposing edges of the ven-

tral processes a little narrower, and their teeth fewer in number, thick and obtuse, and the terminal segment of the palpus is a little narrower. The mandibles are in fact more like those of *A. eximea.* The fold on the ventral side near the tip of the endopod of the first maxilla is armed, in place of the two to four short spines in *A. Agassizii*, with a series of ten to twelve setæ, of which the proximal are stout, and somewhat spiniform, but the distal very slender. The two lobes of the distal segment of the protognath and the endognath of the second maxilla are slightly more slender than in *A. Agassizii.* The anterior lobe of the scaphognath is much longer and narrower, contracted near the middle and slightly expanded at the obtuse and somewhat truncated tip, while the posterior lobe is slightly broader. The endopods and exopods of the maxillipeds are much longer and more slender than in *A. Agassizii*, but these appendages do not differ in other respects. The propodus and dactylus of the first gnathopod are a little more narrowed distally, and the line of articulation between them slightly less oblique than in *A. Agassizii.* The second gnathopods differ scarcely at all.

The peræopods are similar to those of *A. Agassizii*, but are a little more slender, somewhat less hairy, and the proportions of the segments slightly different; the carpus in the second pair is nearly as long as the merus and much longer than the chela, which is considerably shorter and much more slender than in the first; and the carpi in the third, fourth, and fifth pairs are relatively shorter than in *A. Agassizii.*

The first and second somites of the pleon are rounded above, but the third and fourth are very strongly compressed dorsally and project in a very high and sharp crest, highest at the articulation between the two somites and on the third produced into a very long, slender, compressed, and spiniform tooth which is arched over nearly or quite the whole length of the fourth somite, which is itself without any carinal tooth. The fifth and sixth somites are sharply carinated dorsally, but the carina does not project in a tooth or spine on either. The pleura are of about the same form as in *A. Agassizii*, but are somewhat less deep.

The telson is very long and slender, only very obscurely sulcated above, armed with seven or eight pairs of small dorsal aculei, and tipped with three to five slender spines between a pair of much larger lateral ones.

The uropods and pleopods are nearly as in *A. Agassizii*, but the ovate inner lamelliform ramus of the first pleopod of the male is a little narrower and the marginal stylet reaches slightly beyond the tip of the lamella itself.

Measurements in millimeters.

Sex	♂	♀
Length from tip of rostrum to tip of telson	98	100.0
Length of carapax, including rostrum	40	41.0
Length of rostrum	22.5	22.0
Length of carapax, excluding rostrum	22.0	22.8
Height of carapax	13.5	13.5
Breadth of carapax at branchiostegal spines	9.0	8.7
Greatest breadth of carapax	9.8	9.9
Length of eye-stalk and eye	2.7	2.8
Greatest diameter of eye	0.8	0.8
Length of antennal scale	14.5	15.0
Breadth of antennal scale	3.6	3.7
Length of second gnathopod	22.0	.....
Length of first peræopod	18.0	.....
Length of chela	3.6	.....
Breadth of chela	0.9	.....
Length of dactylus	1.2	.....
Length of second peræopod	21.0	.....
Length of chela	3.4	.....
Breadth of chela	0.7	.....
Length of dactylus	1.1	.....
Length of third peræopod	25.0	.....
Length of propodus	6.4	.....
Length of dactylus	1.7	.....
Length of fourth peræopod	24.0	.....
Length of propodus	6.1	.....
Length of dactylus	1.6	.....
Length of fifth peræopod	22.0	.....
Length of propodus	7.5	.....
Length of dactylus	0.3	.....
Height of third somite of pleon	16.0	17.0
Length of its dorsal spine	9.5	10.0
Length of sixth somite of pleon	10.5	10.8
Height of sixth somite of pleon	6.0	5.9
Length of telson	17.0	17.0
Length of inner lamella of uropod	12.1	12.5
Breadth of inner lamella of uropod	2.7	.....
Length of outer lamella of uropod	13.4	14.0
Breadth of outer lamella of uropod	3.3	.....

ACANTHEPHYRA BREVIROSTRIS Smith.

Proc. National Mus., vii, p. 504, 1885.

(Plate XIV, Fig. 2; Plate XV, Figs. 2, 8; Plate XVI, Figs. 1, 6.)

Specimens examined.

Catalogue number.	Station number.	Locality.		Depth, temperature, and nature of bottom.			Date.	Specimens.	
		N. lat.	W. long.	Fathoms.	°	Materials.		Number.	With eggs.
		° ′ ″	° ′ ″				1883.	♂ ♀	
5448	2099	37 12 20	69 39 00	2949	....	glb. O.	Oct. 2	.. 2	1
5449	2101	39 22 00	68 34 30	1686	37	glb. O.	Oct. 3	1 ..	.....
7019	2101	39 22 00	68 34 30	1686	37	glb. O.	Oct. 3	1 ..	.....
5673	2105	37 50 00	73 03 50	1395	41	glb. O.	Nov. 6	1 ..	.....
							1885.		
10832	2566	37 23 00	63 08 00	2620	37	gy. O.	Aug. 29	1? ..	.....

This species was not taken in 1884, but, as indicated above, a large male, nearly 80^{mm} in length, was taken in 1885.

It is at once distinguished from the others of the genus by the very short rostrum (which, though considerably longer, strikingly recalls that of *Hymenodora glacialis*), and the very large, laterally compressed,

and carinate tooth of the third somite of the pleon. All the specimens are in bad condition, very largely due, apparently, to the soft and membranaceous character of the integument, which resembles that of *Meningodora mollis* and several other deep-water species.

The carapax proper is higher and more compressed at the base of the rostrum than in *A. Agassizii* and the branchiostegal spines are less prominent. The rostrum is approximately a fourth as long as the rest of the carapax, very high at base as in *A. eximea*, acutely triangular in a side view, terminates in a slender and slightly upturned tip, and is unarmed below but armed above, at base and back upon the carina of the carapax, with a series of five or six very small and obscure teeth.

The eye-stalks are a little shorter than in *A. Agassizii* and the eyes a little smaller, but broader than the stalks, somewhat compressed vertically, face obliquely inward and forward, and are black or brownish black. The peduncle of the antenna and its scale are nearly like those of *A. microphthalma.*

The oral appendages are very nearly as in *A. Agassizii.* The opposing edges of the ventral processes of the mandibles are a little narrower, almost exactly alike on the two sides, armed with about seven teeth each, and without the small anterior teeth seen in *A. Agassizii.* The first maxillæ show no differences. The divisions of the distal segment of the protognath of the second maxilla are very slightly broader than in *A. Agassizii*, the endognath and the anterior lobe of the scaphognath are both considerably longer and the posterior lobe of the scaphognath slightly narrower. The exopod of the maxilliped does not reach beyond the endoped and the tip is broader and more truncated than in *A. Agassizii.* The gnathopods do not differ essentially from those of *A. Agassizii.*

The peræopods are very similar to those of *A. Agassizii*, but are all considerably longer and more slender; the first reach to the middle of the antennal scale, the fourth to considerably by its tip, and the fifth to about the same point as the first.

The pleon is smaller relatively to the cephalo-peræon than in *A. Agassizii* and the third somite very differently armed. The first and second somites are rounded above, but the third is strongly compressed dorsally into a very high and sharp carina which projects in a great laterally compressed tooth high at base, tapered to an acute point and overhanging the fourth somite and part of the fifth. The fourth, fifth, and sixth somites are compressed and armed with a sharp carina which projects posteriorly in a conspicuous tooth on the fourth, and in a similar but much smaller tooth on the fifth and sixth. The pleura are similar to those of *A. Agassizii*, but relatively less deep, the second is considerably broader, and the third, fourth, and fifth more produced and more evenly rounded posteriorly.

The telson is very long and slender, only very obscurely sulcated above, armed with approximately five pairs of minute dorsal aculei and

tipped with three slender spines between a pair of much larger lateral ones with a small subterminal spine near the base of each.

The uropods and pleopods are nearly as in *A. Agassizii.*

Measurements in millimeters.

Station	2105	2099
Sex	♂	♀
Length from tip of rostrum to tip of telson	65	77
Length of carapax, including rostrum	23.0	26.0
Length of rostrum	5.1	6.9
Height of carapax	10.6	11.7
Length of eye-stalk and eye	2.8	3.1
Greatest diameter of eye	1.5	1.8
Length of antennal scale	10.7	12.1
Breadth of antennal scale	3.1	3.5
Length of second gnathopod	.....	21.0
Length of first peræopod	17.5	19.0
Length of chela	3.9	4.4
Breadth of chela	0.8	0.9
Length of dactylus	1.2	1.3
Length of second peræopod	20	22
Length of chela	4.2	4.9
Breadth of chela	0.5	0.6
Length of dactylus	1.2	1.4
Length of third peræopod	.....	27.0
Length of propodus	.....	8
Length of dactylus	.....	1.9
Length of fourth peræopod	26	.....
Length of propodus	7.1	.....
Length of dactylus	2.1	.....
Length of fifth peræopod	21	25
Length of propodus	7.6	8.7
Length of dactylus	0.5	0.6
Height of third somite of pleon	11.0	12.0
Length of its dorsal spine	8.4	9.0
Length of sixth somite of pleon	8.2	9.3
Height of sixth somite of pleon	4.6	5.2
Length of telson	14.0	15.3
Length of inner lamella of uropod	9.7	.....
Breadth of inner lamella of uropod	2.1	2.5
Length of outer lamella of uropod	10.6	11.0
Breadth of outer lamella of uropod	2.8	3.1

ACANTHEPHYRA GRACILIS.

Miersia gracilis.Smith, Bull. Mus. Comp. Zool., x, p. 70, pl. 11, figs. 4–4*d*, pl. 12, fig. 10, 1882.

Acanthephyra debilis, var. *Europæa* A. M.-Edwards, Recueil Figs. Crust., pl. [33], fig. 2, 1883.

Station 2225, September 9, north lat. 36° 5′ 30″, west long. 69° 51′ 45″, 2,512 fathoms, yellow ooze, temperature 37°; 1 ♀ carrying eggs (8597).

Although there has been no opportunity of directly comparing this specimen with the young male originally described from the Blake collection of 1880, I have very little doubt that the two specimens are specifically identical. In the present specimen the middle dorsal teeth of the fourth and fifth somites of the pleon are a little smaller than in the young male, and the dorsal part of the margin either side is dentate, as shown in Milne-Edwards's figure above referred to, while in the young male this dentation was either absent or overlooked, as might readily have happened in the case of so small an individual. In all other respects this specimen agrees perfectly with my figures and description of the original specimen.

The epipod of the fourth peræopod is much further developed than in any other of the species which I have seen,* but it is still apparently of little or no functional importance, as it consists only of a simple elongated horizontal lamella, corresponding to the horizontal basal portion of the epipods in front of it.

The eggs are very few and very large, being approximately 4 by 3mm in longer and shorter diameter.

Measurements in millimeters.

Length from tip of rostrum to tip of telson	80+
Length of carapax, excluding rostrum	15.3
Length of rostrum	20+
Height of carapax	9.5
Breadth of carapax	7.5
Length of eye-stalk and eye	3.2
Greatest diameter of eye	2.5
Length of antennal scale	11.4
Breadth of antennal scale	2.5
Length of first peræopod	14.0
Length of chela	4.2
Breadth of chela	0.8
Length of dactylus	1.8
Length of second peræopod	15.0
Length of chela	4.5
Breadth of chela	0.6
Length of dactylus	1.9
Length of third peræopod	23.0
Length of propodus	5.4
Length of dactylus	4.4
Length of fourth peræopod	22.0
Length of propodus	5.0
Length of dactylus	4.2
Length of fifth peræopod	16.0
Length of propodus	4.0
Length of dactylus	1.1
Length of sixth somite of pleon	11.0
Height of sixth somite of pleon	4.3
Length of telson	12.7
Length of inner lamella of uropod	10.1
Breadth of inner lamella of uropod	1.7
Length of outer lamella of uropod	11.0
Breadth of outer lamella of uropod	1.9

EPHYRINA Smith.

Proc. National Mus., vii, p. 506, 1885.

This genus, which is based on a single specimen, wanting the greater part of the second, third, and fourth peræopods, is readily distinguished from *Acanthephyra* by the ischial and meral segments of the fifth peræopods, which are compressed, very broad, and form broad lamellar oper-

*In all the other species here recorded there is an obscure rudiment of this epipod, a minute appressed lamelliform lobe, not longer than broad, which is not indicated in the branchio-epipodal formulæ I have given for them.

cula along the sides of the carapax. The single species is further distinguished by the unarmed rostrum, the non-carinated pleon, and the broad anterior division of the distal segment of the protognath of the second maxilla. In all other characters it agrees essentially with the species of *Acanthephyra*.

EPHYRINA BENEDICTI Smith.

Proc. National Mus., vii, p. 506, 1885.

(Plate XIV, Fig. 3, Plate XVI, Fig. 4.)

Station 2083, September 5, 1883, north lat. 40° 26′ 40″, west long. 67° 5′ 15″, 959 fathoms, gray mud, temperature 40°; one female (7156).

In general the form of the carapax proper is very similar to that of *Acanthephyra Agassizii*, but the antennal and branchiostegal spines are less prominent. An obtuse dorsal carina extends forward from near the posterior margin and gradually rises in front into a very high and sharp carina at the base of the laterally compressed lamellar rostrum, which is short, not reaching beyond the peduncle of the antennula, acutely triangular in a side view, considerably upturned, and wholly unarmed.

As in *Acanthephyra Agassizii*, the eye-stalks are short and terminated by small hemispherical black eyes, which face slightly inward when the stalks are directed forward.

The antennulæ, too, are very nearly as in *Acanthephyra Agassizii*, except that the proximal portion of the outer flagellum is much less expanded, though very much stouter than the inner. The antennal scales are imperfect at the tips, but are less rapidly narrowed distally, and are apparently more nearly as in *Acanthephyra microphthalma*.

The mandibles are essentially as in *Acanthephyra Agassizii*, but are very nearly alike on the two sides, the posterior part of the mesial edge of the ventral process in each being armed with six or seven acutely triangular teeth, in front of which the margin is sharp and chitenous, but not serrated, though there is a small tooth at the anterior end of this unserrated edge in the right mandible and a sharp angle at the same point in the left. The first maxillæ are very like those of *Acanthephyra Agassizii*. The anterior division of the distal segment of the protognath of the second maxilla is much expanded at the mesial edge, where it projects farther forward and is more than twice as broad as the posterior division; the endognath is more slender; the anterior lobe of the scaphognath is a little narrower and more evenly rounded at the end. The maxillipeds do not differ from those of *A. Agassizii*, except that the antero-mesial angle of the exopod is a little more obtusely rounded; nor do the first gnathopods, except the distal part of the endopod, which is more nearly as in *Acanthephyra gracilis*, the dactylus being longer than broad and terminally attached to the propodus by a slightly oblique articulation. The second gnathopods are imperfect at the tips,

but are evidently very nearly as in *A. Agassizii*, and apparently reach to about the tips of the antennal scales.

The first peræopods are about as long as the carapax including the rostrum, and are clothed with numerous hairs; the ischium and merus make about half the length of the endopod, and are strongly compressed and broad, the merus being considerably more than a third as broad as long; the carpus is about three-fifths as long and half as broad as the merus; the chela is somewhat stouter than the carpus, not far from twice as long, and tapered distally to the bases of the digits, which are about a third of the whole length, very slender and strongly curved at the tips. The fifth peræopods are about a fourth longer than the first and are clothed with very few hairs; the ischium and merus make fully half the entire length; both are broad and strongly compressed, and the latter is fully a third as broad as long, with the dorsal margin nearly straight and the ventral strongly curved upward to the articulation with the carpus, which is very slender and scarcely longer than the breadth of the merus; the propodus is about twice as long as the carpus and no stouter; the dactylus, exclusive of the terminal spines and setæ, is stout and about twice as long as the distal diameter of the propodus.

There is no carina on any somite of the pleon, but the dorsum of the third somite projects back in a small, vertically compressed spine over the fourth somite, in the dorsum of which there is an obscure, and possibly accidental, sulcus. The pleura are similar in outline to those of *Acanthephyra Agassizii*, but the second is relatively a little broader, the third and fourth more evenly rounded posteriorly, and the fifth a little more obtuse at the posterior angle. The sixth somite is about two-thirds as long as the carapax, excluding the rostrum, and less than half as high as long.

The telson is very much longer than the sixth somite, tapers into a very long and narrow tip, and is armed along the distal two-thirds of either edge with numerous (twenty to twenty-five) small aculei. The inner lamellæ of the uropods are about as long as the sixth somite of the pleon, lanceolate in outline, and less than a sixth as broad as long. The outer lamellæ reach to near the tip of the telson, are about six times as long as broad, and evenly rounded at the tips.

Measurements in millimeters.

Length from tip of rostrum to tip of telson	56.0
Length of carapax, including rostrum	17.0
Length of rostrum	4.8
Height of carapax	8.3
Breadth of carapax	6.2
Length of eye-stalk and eye	2.8
Greatest diameter of eye	1.7
Length of peræopod	16.0
Length of merus	4.6

Breadth of merus	1.7
Length of carpus	2.9
Length of chela	5.0
Breadth of chela	0.8
Length of dactylus	1.8
Length of fifth peræopod	20.5
Length of merus	7.5
Breadth of merus	2.7
Length of carpus	2.9
Length of propodus	5.8
Length of dactylus	0.8
Length of sixth somite of pleon	8.8
Heighth of sixth somite of pleon	4.1
Length of telson	11.0
Length of inner lamella of uropod	8.6
Breadth of inner lamella of uropod	1.3
Length of outer lamella of uropod	9.8
Breadth of outer lamella of uropod	1.6

NOTOSTOMUS ROBUSTUS Smith.

(Plate XII, Fig. 5.)

Station 2228, September 11, north lat. 37° 25′, west long. 73° 6′, 1,582 fathoms, brown mud, temperature 37°; one young specimen, in bad condition (8543).

In this specimen the rostrum is much longer than in the adults originally described, being only a little less than half as long as the rest of the carapax, and has the terminal fourth of its length slender and unarmed. The eyes are proportionally larger than in the adults, as usual in the young. In other respects the specimen agrees essentially with the adults referred to.

Measurements in millimeters.

Length from tip of rostrum to tip of telson	53
Length of carapax, including rostrum	23
Length of rostrum	7.2
Length of eye-stalk and eye	3.2
Greatest diameter of eye	2.1
Length of antennal scale	8.3
Breadth of antennal scale	2.5
Length of sixth somite of pleon	5.1
Height of sixth somite of pleon	3.5
Length of telson	10.0

NOTOSTOMUS VESCUS, sp. nov.

This species, although represented only by a single imperfect male specimen, is so different from the other species of the genus that I venture to describe it. It has no dorsal tooth on the third somite of the pleon, the carapax is apparently not at all gibbous, and the dorsum is nearly straight. It is probably a very much smaller species than the *robustus*, *gibbosus*, or *elegans*, and is perhaps more nearly allied to *N.*

corallinus A. M.-Edwards (Recueil de figures de Crustacés nouveaux ou peu connus, pl. [32], 1883) than any other known species, although the areolation of the carapax and the form and dentation of the rostrum are very different.

The rostrum is a little more than a third as long as the rest of the carapax, strongly compressed laterally, vertically rather broad at base, but regularly tapered to an acute tip; the lower edge is armed with two slender teeth about a third of the way from the tip to the base, and the dorsal edge is nearly straight, approximately horizontal, and unarmed at the tip, but with four teeth above and in front of the orbit and six others in the same series back of them on the dorsal crest of the carapax proper, which is a sharp but not very high carina extending nearly to the posterior margin and entirely smooth and unarmed back of the teeth above mentioned, which do not extend more than a fourth of the way from the orbit to the posterior margin. The anterior margin is very nearly as in *N. robustus*. The upper lateral carina is conspicuous, approximately straight, nearly parallel with the dorsum, and extends very nearly to the posterior margin. The lower lateral carina is conspicuous anteriorly, but is not distinct back of the short vertical hepatic carina.

The eyes and eye-stalks are very nearly as in *N. robustus;* the eyes are slightly swollen, more than half as wide as the antennal scale, and black. The antennal scales are imperfect at the tips, but are apparently very nearly as in *N. robustus*.

The dorsum of the third and succeeding somites of the pleon are distinctly carinated, and the carina projects in a very small tooth on the fourth and fifth somites, but there is no evidence whatever of any dorsal tooth or projection on the third. The sixth somite of the pleon is more than half as long as the carapax, exclusive of the rostrum, and less than half as high as long. The telson is a little longer than the sixth somite, strongly sulcated dorsally the whole length, and armed at the tip with five spines, of which the outer are much the longer. The inner lamella of the uropod reaches to the tip of the telson, is lanceolate in outline, and between four and five times as long as broad. The outer lamella is considerably longer than the inner, nearly a fourth as broad as long, and broadly rounded at the tip.

Measurements in millimeters.

Length from tip of rostrum to tip of telson	45.0
Length of carapax, including rostrum	17.5
Length of rostrum	4.6
Length of eye-stalk and eye	2.3
Greatest diameter of eye	1.1
Breadth of antennal scale	2.0
Length of sixth somite of pleon	7.3
Height of sixth somite of pleon	3.1
Length of telson	8.3

Length of inner lamella of uropod	6.9
Breadth of inner lamella of uropod	1.5
Length of outer lamella of uropod	8.0
Breadth of outer lamella of uropod	1.9

Station 2099, October 2, 1883, north lat. 37° 12′ 20″, west long. 69° 39′, 2,949 fathoms, globigerina ooze; one male (5434).

HYMENODORA GLACIALIS G. O. Sars.

Pasiphaë glacialis Buchholz, Zweite deutsche Nordpolfahrt, ii, p. 279, pl. 1, fig. 2, 1874.

Hymenodora glacialis G. O. Sars, Archiv Mathem. Naturvid., Kristiania, ii, p. 341, 1877; Norwegian North-Atlantic Expedition, Crust., i, pp. 37, 275, pl. 4, 1885. Norman, Proc. Royal Soc. Edinburgh, 1881–'82, 684, 1882. Smith, Proc. National Mus., vii, p. 501, 1885.

(Plate XV, Figs. 3, 10; Plate XVI, Fig. 5.)

Specimens examined.

Catalogue number.	Station number.	Locality.		Depth and nature of bottom.		Date.	Specimens.	
		N. lat.	W. long.	Fathoms.	Materials.		♂ ♀	With eggs.
		° ′ ″	° ′ ″			1883.		
7159	2039	38 19 26	68 20 20	2,369	glb. O.	July 28	1♂. 1♀.	0
5456	2099	37 12 20	69 36 00	2,949	glb. O.	Oct. 2	2♂. 1♀.	0

In a paper in the Proceedings of the National Museum, above referred to, I have given a considerable list of fragmentary and imperfect specimens as belonging to this species, of which I had authentically labeled specimens from the Faröe Channel, received from the Rev. A. M. Norman; but a more critical examination of all the specimens from the Albatross collections shows that a considerable number of them are specifically distinct. An approximately perfect female, from station 2099, of which the oral appendages, branchiæ, &c., were carefully examined for comparison with the Faröe Channel specimens when writing the previous notice, and several fragmentary specimens from the same station and from station 2039, are apparently specifically identical with the arctic specimens in every particular; but all the other specimens, which I had taken for young individuals of the same species, while differing only slightly in external characters, have distinct podobranchiæ at the bases of the first gnathopods, though in some of the smaller specimens these branchiæ are very small or even rudimentary. These specimens are described further on as a new species, *H. gracilis*.

The arctic specimens and those taken by the Albatross enable me to compare the genus with the closely allied forms, and particularly with my genus *Meningodora*.

The eye-stalks and eyes are very similar to those of *Meningodora mollis*, but the eyes are apparently a little smaller and are reddish, instead of black, in recently preserved alcoholic specimens.

The mandibles are similar to those of *Meningodora mollis*, but still more like those of *Acanthephyra Agassizii*, the mesial edges being armed very nearly as in that species. The distal segment of the protognath of the first maxilla is very much broader than in *Meningodora mollis* or any of the species of *Acanthephyra* which I have examined, the mesial edge being fully as long as that of the proximal segment, which, however, is considerably narrower mesially than in *Meningodora mollis;* the endognath is like that of the *Meningodora*. The two divisions of the distal segment of the protognath of the second maxilla are nearly equal and much broader and shorter than in *Meningodora mollis*, and do not project mesially beyond the proximal segment, as they do in the species of *Acanthephyra*, *Meningodora*, *Notostomus*, and *Ephyrina;* otherwise the second maxillæ do not differ from those of *Meningodora*. The maxillipeds differ essentially from those in the allied genera in having the endopod composed of two segments only, a very short proximal segment and a long unsegmented distal one.

The first gnathopods bear no podobranchiæ in the typical species, though there are small or rudimentary podobranchiæ in *H. gracilis*, and the distal part of the endognath differs from that of *Meningodora mollis* in having the dactylus nearly as long as broad and attached to the propodus by a much less oblique articulation. The number and arrangement of the branchiæ and epipods on the succeeding somites are the same as in the allied forms, so that there are in all, on each side, six epipods, six arthrobranchiæ, and five pleurobranchiæ. The second gnathopods and first and second peræopods do not differ essentially from those of *Meninogodora mollis*, although the second peræopods are less slender and more like the first than in that species, and both pairs are somewhat more hairy. There is a peculiar excavation on the inner dorsal surface of the carpus in the first pair, as in the allied genera and as shown conspicuously in the species of *Notostomus*. This excavation is longitudinal, deepest at the distal end, and the mesial margin hairy or setose, while the opposite margin rises suddenly into a tubercular or spiniform protuberance just over the articulation with the chela. The third and fourth peræopods are more like those of *Acanthephyra Agassizii* than those of *Meningodora mollis*, being armed with small spines and setæ, and the propodi and dactyli neither grooved conspicuously nor carinated. The fifth peræopods are shorter and stouter than in *Meningodora* and very distinctly subchelate, the stout and conspicuous, though short, dactylus closing against a digital process of the propodus fully half its own length.

The dorsum of the pleon is neither carinated nor toothed. The pleura of the second somite are not as figured by Buchholz, but overlap those

of the first and third as in the allied genera, and the pleura of the third, fourth, and fifth somites are evenly and similarly rounded posteriorly.

In G. O. Sars's elaborate and very fully illustrated work on the crustacea of the Norwegian North-Atlantic expedition, which I had not seen when the above was written, the telson of *H. glacialis* is described and figured as armed at the tip with seven slender spines, a pair of long lateral separated by five much smaller ones; while in the female from station 2039, the only one of the Albatross specimens in which the telson is perfect, there are only six spines, there being no odd median one, and the same is true of the two specimens from the Faröe Channel.

Partial measurements of two specimens of *H. glacialis* are given under the next species.

HYMENODORA GRACILIS, sp. nov.

(Plate XII, Fig. 6.)

This species is apparently somewhat smaller than *H. glacialis*, and is distinguished by its more slender form and longer and more slender rostrum, which is prolonged in a slender, unarmed tip, reaching as far forward as the tips of the eyes. The antennal scale is apparently considerably narrower. In the only specimen in which the tip of the telson is perfect, the male from station 2036, it is armed with only four spines, there being only two between the long lateral spines. The most remarkable difference, however, is in the first gnathopods, which, as already remarked, bear distinct podobranchiæ. In the larger specimens these branchiæ are conspicuous and composed of several lamellæ each, being nearly as large in proportion to the size of the animal as in *Meningodora mollis;* but in some of the smaller specimens they are represented by only one or two small lamellæ attached near the base of the epipod, and are very easily overlooked. There are well-developed podobranchiæ at the bases of the first gnathopods in all the species of the allied genera known to me, *Acanthephyra*, *Ephyrina*, *Notostomus*, and *Meningodora*, and I had regarded their absence as one of the best generic characters of *Hymenodora*, but their occurrence and variability in a species so very closely allied to the typical species of the genus shows that they are not always of generic importance. The two species of *Hymenodora* still differ, however, from the species of the allied genera above-named in the form of the protognath of the second maxilla and in the number of segments in the endopod of the maxilliped, characters which, for the present at least, may be regarded as of generic value.

Measurements in millimeters.

	H. glacialis.		*H. gracilis.*	
Catalogue number	.....	5456	7974	7158
Station	Faröe.	2099	2182	2036
Sex	♂	♀	♂	♂
Length, from tip of rostrum to tip of telson	70	54+	55	43
Length of carapax, including rostrum	23.0	19.0	18.0	13.0
Length of rostrum	3.0	2.5	3.0	2.3
Height of carapax	.....	10.0	8.4	6.8
Breadth of carapax	.....	.....	7.3	5.5
Length of eye-stalk and eye	3.0	2.3	2.5	2.0
Greatest diameter of eye	1.0	0.8	0.8	0.6
Length of antennal scale	9.0	.....	6+	5.7
Breadth of antennal scale	3.1	2.4	2.0	1.5
Length of first peræopod	18.0	.....	11.5	10.0
Length of chela	4.8	.....	3.1	2.5
Breadth of chela	0.9	.....	0.7	0.5
Length of dactylus	1.8	.....	1.1	1.0
Length of second peræopod	18.0	.....	11.5	10.0
Length of chela	4.9	.....	3.2	2.5
Breadth of chela	0.7	.....	0.5	0.4
Length of dactylus	2.0	.....	1.2	0.9
Length of third peræopod	.....	.....	.....	14.0
Length of propodus	.....	.....	.....	3.5
Length of dactylus	.....	.....	.....	1.3
Length of fourth peræopod	.....	.....	21.0	16.0
Length of propodus	.....	.....	6.3	4.3
Length of dactylus	.....	.....	2.6	1.9
Length of fifth peræopod	.....	.....	16.0	13.0
Length of propodus	.....	.....	4.6	3.6
Length of dactylus	.....	.....	0.8	0.6
Length of sixth somite of pleon	8.3	7.5	7.5	6.5
Height of sixth somite of pleon	4.0	3.5	3.3	2.8
Length of telson	14.5	8+	10.5	7.8
Length of inner lamella of uropod	10.1	.....	.....	5.8
Breadth of inner lamella of uropod	2.0	.....	.....	1.1
Length of outer lamella of uropod	11.5	.....	.....	6.5
Breadth of outer lamella of uropod	2.7	.....	.....	1.3

Specimens examined.

Catalogue number.	Station number.	Locality.		Depth, temperature, and nature of bottom.			Date.	Specimens.	
		N. lat.	W. long.	Fathoms.	°	Materials.		Number.	With eggs.
		° ′ ″	° ′ ″				1883.	♂ ♀	
7158	2036	38 52 40	69 24 40	1735	38	glb. O.	July 18	1	
7160	2083	40 26 40	67 05 15	959	40	gy. M.	Sept. 5	1 1*y.*	
7161	2083	40 26 40	67 05 15	959	40	gy. M.	Sept. 5	2*y.*	
7017	2095	39 29 00	70 58 40	1342	....	glb. O.	Sept. 30	1 2	1
7162	2099	37 12 20	69 36 00	2949	....	glb. O.	Oct. 2	1*f.* 1	
7018	2100	39 22 00	68 34 30	1628	37	glb. O.	Oct. 3	1 2*f.*	
5467	2101	39 18 30	68 24 00	1686	37	glb. O.	Oct. 3	3*y.*	
7151	2116	35 45 23	74 31 25	888	39	bn. M., fne. S.	Nov. 11	1	
							1884.		
7974	2182	39 25 30	71 44 00	861	39	gn. M.	July 23	1	
8337	2193	39 44 30	70 10 30	1122	38	gn. M.	Aug. 5.	1*s.*	

PASIPHAIDÆ.

PASIPHAË PRINCEPS Smith.

Specimens examined.

Catalogue number.	Station number.	Locality.		Depth, temperature, and nature of bottom.			Date.	Specimens.	
		N. lat.	W. long.	Fathoms.	°	Materials.		Number.	With eggs.
		° ′ ″	° ′ ″				1884.	♂ ♀	
7975	2171	37 59 30	73 48 40	444	39	gn. M.	July 20	1	0
7976	2181	39 29 00	71 46 00	693	39	gy. M., fne. S.	July 23	1*s.*	.....
8137	2201	39 39 45	71 35 15	538	39	bu. M.	Aug. 19	1	.....
7166	2237	39 12 17	72 09 30	520	39	gn. M.	Sept. 13	1*y.*	.....

These specimens are very much smaller than the single one originally described and differ from it slightly in the form of the rostrum, which in the later specimens is only very slightly or not at all upturned at the tip, which is very short and dentiform even in the smallest specimen, and very different from the spiniform and strongly upturned rostrum of *P. tarda*.

Measurements in millimeters.

Catalogue number	7976	7975	8137
Station	2181	2171	2201
Sex	♀?	♀	♂
Length from tip of rostrum to tip of telson	77	144	115
Length of carapax, including rostrum	24.1	49.0	38.0
Length of rostrum	1.5	3.1	3.0
Height of carapax	11.7	24.5	17.9
Breadth of carapax	7.0	15.0	11.5
Length of eye-stalk and eye	3.7	5.3	4.8
Greatest diameter of eye	2.1	3.3	3.0
Length of antennal scale	10.1	22.0	17.1
Breadth of antennal scale	3.0	6.0	5.1
Length of second gnathopod	.....	41	35
Length of first peræopod	33.	63	50
Length of chela	12.0	23.0	17.5
Breadth of chela	1.8	3.5	2.7
Length of dactylus	5.3	10.2	8.0
Length of second peræopod	40	74	59
Length of chela	15.2	29	22.3
Breadth of chela	1.7	3.4	2.8
Length of dactylus	8.0	14.3	11.9
Length of third peræopod	23+	47	35+
Length of merus	12.2	26.0	19.2
Length of carpus	0.7	1.3	1.1
Length of propodus	4.4	8.1	6+
Length of dactylus	.....	0.7	.....
Length of fourth peræopod	12.8	26	20.0
Length of propodus	2.5	5.5	4.1
Length of dactylus	0.6	1.7	1.2
Length of fifth peræopod	21	43	34
Length of propodus	5.7	12.3	9.7
Length of dactylus	1.8	3.5	3.0
Height of second somite of pleon	12.8	27.0	20.0
Length of sixth somite of pleon	11.5	18.3	15.3
Heigth of sixth somite of pleon	8.0	12.8	10.2
Length of telson	11.0	19.0	15.6
Length of inner lamella of uropod	9.7	18.0	14.0
Breadth of inner lamella of uropod	.....	5.0	4.2
Length of outer lamella of uropod	12.8	24.0	19.6
Breadth of outer lamella of uropod	.....	6.5	5.3

In the largest specimen (7975) the superior flagellum of the antennula is 88mm long; the inferior 52mm; and the flagellum of the antenna 240mm.

PARAPASIPHAË SULCATIFRONS Smith.

Specimens examined.

Catalogue number.	Station number.	Locality.		Depth, temperature, and nature of bottom.			Date.	Specimens.	
		N. lat.	W. long.	Fathoms.	°	Materials.		Number.	With eggs.
		° ′ ″	° ′ ″				1884.	♂ ♀	
8261	2202	39 38 00	71 39 45	515	39	gn. M.	Aug. 19	1 y.	.....
8259	2211	39 35 00	71 18 00	1064	38	gn. M.	Aug. 21	1	1
8260	2219	39 46 22	69 29 00	948	39	gy. M.	Aug. 23	1	0
8594	2223	37 48 30	69 43 30	(*)	....	.....	Sept. 7	1	.....
8533	2223	37 48 30	69 43 30	2516	37	glb. O.	Sept. 7	1 y.	.....
8601	2231	38 29 00	73 09 00	965	39	gy. O.	Sept. 12	1	.....
8598	2235	39 12 00	72 03 30	707	39	gn. M.	Sept. 13	1	.....

* The bottle containing the specimen from this station had in it a printed label for "surface" specimens, which was undoubtedly put there by mistake.

PARAPASIPHAË COMPTA Smith.

Station 2222, September 6, north lat. 39° 03′ 15″, west long. 70° 50′ 45″, 1,537 fathoms, gray ooze, temperature 37°; one male in rather bad condition (8589).

Measurements in millimeters.

Sex	♂
Length of carapax, including rostrum	50
Length of rostrum	4.2
Length of eye-stalk and eye	6.4
Length of antennal scale	18.6
Breadth of antennal scale	5.0
Length of second gnathopod	45
Length of first peræopod	67
Length of chela	26
Breadth of chela	4.3
Length of dactylus	12.6
Length of second peræopod	74
Length of chela	30.2
Breadth of chela	4.0
Length of dactylus	16.0
Length of third peræopod	56
Length of merus	28.5
Length of carpus	1.3
Length of propodus	15+
Length of fourth peræopod	23
Length of propodus	4.1
Length of dactylus	2.1
Length of fifth peræopod	36
Length of propodus	10.5
Length of dactylus	3.0
Length of sixth somite of pleon	13
Length of telson	23.5
Length of inner lamella of uropod	19.0
Breadth of inner lamella of uropod	5.0
Length of outer lamella of uropod	21.5
Breadth of outer lamella of uropod	6.0

PENÆIDÆ.

SICYONIA BREVIROSTRIS Stimpson.

Sicyonia cristata Saussure, Crust. Antilles et Mexique, p. 55, pl. 3, fig. 25, 1858 (not of De Haan).

Sicyonia brevirostris Stimpson, Ann. Lyceum Nat. Hist. New York, x, p. 132, 1871.

Station 2296, October 20, off Cape Hatteras, north lat. 35° 38′ 20″, west long. 74° 58′ 45″, 27 fathoms, coarse gravel and sand; eight males and four females (8815).

?SICYONIA DORSALIS Kingsley.

Proc. Acad. Nat. Sci. Philadelphia, 1878, p. 97 (9), 1878.

Off Cape Hatteras: Station 2279, October 19, north lat. 35° 20′ 55″, west long. 75° 20′ 55″, 16 fathoms, gray sand, one young specimen (8866); and station 2280, October 19, north lat. 35° 21′, west long. 75° 21′ 30″, 16 fathoms, gray sand, two small specimens (7223).

The specimens agree well with Kingsley's short description, except that the third and fourth somites of the pleon have no spines at the postero-inferior angles.

PENÆUS BRASILIENSIS Latreille.

Specimens examined.

[Locality: Off Cape Hatteras.]

Catalogue number.	Station number.	Locality.		Depth, temperature, and nature of bottom.			Date.	Specimens.	
		N. lat.	W. long.	Fathoms.	°	Materials.			
		° ′ ″	° ′ ″				1884.	♂	♀
7224	2283	35 21 15	75 23 15	14	....	gy. S.	Oct. 19	1*s*.	
8788	2285	35 21 25	75 24 25	13	....	crs. gy. S.	Oct. 19	3*s*.	3*s*.
7242	2286	35 21 30	75 25 00	11	....	crs. gy. S.	Oct. 19		1*l*.

The genus *Penæus*, as usually understood, includes species which differ remarkably in the structure of the oral appendages, the number and arrangement of the branchiæ, and in the presence of exopods and epipods at the bases of the gnathopods and peræopods, but I have recently restricted it to species like *P. carimonte*, *canaliculatus*, *Brasiliensis*, *semisulcatus*, *setiferus*, and *stylirostris*, in which the antennular flagella are very short; the distal segment of the mandibular palpus is much larger than the proximal, very broad, and not prolonged into a narrow tip; the endognath of the first maxilla is greatly elongated and segmented; the endopod of the maxilliped is slender and composed of four segments, and the exopod is lamellar and unsegmented; both pairs of gnathopods have well-developed epipods and large exopods; all the peræopods have small exopods, but only the first, second, and third are furnished with

epipods; there is a well-developed pleurobranchia on the fourteenth somite. The number and arrangement of the branchiæ and epipods are the same for all these species, and as indicated in the following formula:

Somites.	VII.	VIII.	IX.	X.	XI.	XII.	XIII.	XIV.	Total.
Epipods	1	1	1	1	1	1	0	0	(6)
Podobranchiæ	0	1	0	0	0	0	0	0	1
Arthrobranchiæ	r.	2	2	2	2	2	1	0	11+r.
Pleurobranchiæ	0	0	1	1	1	1	1	1	6
									18+r.+(6)

PARAPENÆUS Smith.

The species referred to this genus are at once distinguished from the species of *Penæus* proper in having the endognath of the first maxilla short and unsegmented, the second gnathopod without an epipod, and the fourteenth somite (posterior somite of the peræon) wholly without branchiæ. The species examined further agree in having none of the sulci of the carapax conspicuous except the cervical, and in having the antennular flagella shorter than the carapax. In *Parapenæus longirostris*, *politus*, and *megalops*, the mandibular palpi are as in the typical species of *Penæus*, there are no exopods at the bases of any of the peræopods, and the branchio-epipodal formula is as follows:

Somites.	VII.	VIII.	IX.	X.	XI.	XII.	XIII.	XIV.	Total.
Epipods	1	1	0	1	1	1	0	0	(5)
Podobranchiæ	0	1	0	0	0	0	0	0	1
Arthrobranchiæ	r.	2	2	2	2	2	1	0	11+r.
Pleurobranchiæ	0	0	1	1	1	1	1	0	5
									17+r.+(5)

While in *Parapenæus constrictus* and some other species the distal segment of the mandibular palpus is slightly elongated and narrowed distally, there are very small narrow lamellar exopods at the bases of all the peræopods, there is no pleurobranchia on the thirteenth somite, and the branchio-epipodal formula is as follows:

Somites.	VII.	VIII.	IX.	X.	XI.	XII.	XIII.	XIV.	Total.
Epipods	1	1	0	1	1	1	0	0	(5)
Podobranchiæ	0	1	0	0	0	0	0	0	1
Arthrobranchiæ	0	2	2	2	2	2	1	0	11
Pleurobranchiæ	0	0	1	1	1	1	0	0	4
									16+(5)

These characters are, however, combined to a certain extent in two other species which I have examined: A Japanese species, which closely resembles the *constrictus* in general appearance, but has no exopods at the bases of the posterior peræopods and has the epipods and branchiæ