slightly enlarged, showing the spiniform terminations of the acanthopores and the perforated tabulæ closing the tube-mouths. (Copied from Lonsdale.)

Fig. 12. A few of the cell-mouths of *Stenopora tasmaniensis,* enlarged about twenty-four times. The acanthopores are seen, and some of the tube-mouths are furnished with a perforated tabula.

Fig. 13. Longitudinal section of a frondescent specimen of *S. tasmaniensis,* enlarged about twenty-four times.

Plate IV.

Fig. 1. Transverse section of the type-specimen of *Stenopora crinita,* Lonsd., enlarged about twelve times.

Fig. 2. Part of the same section, enlarged about twenty-four times.

Fig. 3. Longitudinal section of the same, enlarged about twenty-four times.

Fig. 4. Tangential section in the peripheral region of the corallum of another specimen of *S. crinita,* enlarged about twenty-four times. The section traverses in part the thickened portions of the corallites and in part the unthickened segments.

Fig. 5. Longitudinal section of the same specimen, enlarged about twenty-four times.

XVII.—*The Abyssal Decapod Crustacea of the 'Albatross' Dredgings in the North Atlantic* *. By Sidney I. Smith.

The most interesting feature of the Crustacea collected by the 'Albatross' is the great number of very deep-water or abyssal species of Decapoda obtained in a restricted region of the western North Atlantic. The whole number of species of true Decapoda dredged by the 'Albatross' is over 130; but nearly half of these are from shallow or comparatively shallow water. None of the shallow-water species were taken below 1000 fathoms, and it is perhaps best to limit the abyssal fauna to depths greater than this, although some true deep-water species are excluded by adopting so great a depth. Taking this limit strictly we have 44 abyssal species, as shown in the following:—

* This article is in the main abstracted from the introductory portion of the author's "Report on the Decapod Crustacea of the 'Albatross' Dredgings off the East Coast of the United States during the Summer and Autumn of 1884," with twenty plates, recently presented to the U.S. Commissioner of Fish and Fisheries, by whose permission it is here published in advance of the Government report. The collections made by the 'Albatross' in the West-Indian region during the winters of 1884 and 1885 are not referred to in this article, which applies exclusively to the region north of Cape Hatteras; but some of the results of a partial examination of the collections made in the summer of 1885 are included.

List of Decapoda taken below 1000 *Fathoms in the North Atlantic by the 'Albatross' in* 1883–85, *with the Bathymetrical Range of each Species.*

BRACHYURA.

Cancroidea.

	faths.
1. Geryon quinquedens, *Smith*	105 to 1081

Dorippoidea.

2. Ethusina abyssicola, *Smith*	1497 to 2221

ANOMURA.

Lithodoidea.

3. Lithodes Agassizii, *Smith*	410 to 1255

Paguroidea.

4. Parapagurus pilosimanus, *Smith*....	250 to 2221

Galatheoidea.

5. Munidopsis curvirostra, *Whiteaves*..	75 to 1290
6. —— crassa, *Smith*	1742 to 2620
7. —— similis, *Smith*	1060
8. —— Bairdii, *Smith*	1497 to 1742
9. —— rostrata (*A. M.-Edwards* sp.) .	1098 to 1356

MACRURA.

Eryontidæ.

10. Pentacheles sculptus, *Smith*	250 to 1081
11. —— nanus, *Smith*	705 to 1917
12. —— debilis, *Smith*	1290 to 1309

Crangonidæ.

13. Pontophilus abyssi, *Smith*	1917 to 2221

Glyphocrangonidæ.

14. Glyphocrangon sculptus, *Smith*	1006 to 1434
15. —— longirostris, *Smith*.	

Alpheidæ.

16. Bythocaris gracilis, *Smith*	888 to 1043
17. Heterocarpus oryx, *A. M.-Edwards*.	1081

Nematocarcinidæ.

18. Nematocarcinus ensiferus, *Smith* ..	588 to 2033

MIERSIIDÆ.

		faths.
19.	Acanthephyra Agassizii, *Smith*	Surface * and 105 to 2949
20.	——, sp.	2069
21.	—— microphthalma, *Smith*	2574 to 2620
22.	—— brevirostris, *Smith*	1395 to 2949
23.	—— gracilis, *Smith*..............	2512
24.	Oplophorus, sp.	1356
25.	Notostomus robustus, *Smith*	1309 to 1555
26.	—— viscus, *Smith*	2949
27.	Meningodora mollis, *Smith*........	1106 to 1630
28.	Hymenodora glacialis, *G. O. Sars*..	2369 to 2949
29.	—— gracilis, *Smith*..............	826 to 2949

PASIPHAIDÆ.

30.	Pasiphaë princeps, *Smith*	444 to 1342
31.	Parapasiphaë sulcatifrons, *Smith* ..	516 to 2949
32.	—— cristata, *Smith*..............	826 to 1628
33.	—— compta, *Smith*..............	1537 to 2369

PENÆIDÆ.

34.	Hymenopenæus microps, *Smith*....	906 to 2620
35.	Aristeus ? tridens, *Smith*..........	843 to 2620
36.	Hepomadus tener, *Smith*..........	1209 to 2949
37.	Amalopenæus elegans, *Smith*	445 to 2369
38.	Benthœcetes Bartletti, *Smith*	578 to 1081
39.	Benthonectes filipes, *Smith*	693 to 1043
40.	Benthesicymus ? carinatus, *Smith* ..	1020
41.	—— moratus, *Smith*	1537 to 1710

SERGESTIDÆ.

42.	Sergestes arcticus, *Kröyer*	221 to 2516
43.	—— robustus, *Smith*	500 to 2574
44.	—— mollis, *Smith*	373 to 2949

The following species, though not yet recorded from below 1000 fathoms, might properly enough be added to this list, as they all undoubtedly extend below the 1000-fathom line:—

		faths.
45.	Sclerocrangon Agassizii, *Smith*	390 to 959
46.	Sabinea princeps, *Smith*	353 to 888
47.	Nematocarcinus cursor, *A. M.-Edw.*	384 to 838
48.	Acanthephyra eximia, *Smith*	938
49.	Ephyrina Benedicti, *Smith*	959

* A small specimen, unquestionably of this species, was taken at the surface in a hand-net at 10.45 P.M., Aug. 11, 1884, north lat. 39° 35′, west long. 71° 18′ approximately. The specimen was kept alive for half an hour, and then placed in alcohol while still alive.

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.

The first fifteen species in the list, and 45 and 46 as well, are unquestionably inhabitants of the bottom, and never swim any great distance from it. Nos. 16, 17, 18, and 47, 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*, *Oplophorus*, *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; and 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 more than thirty 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 *Acanthephyra Agassizii* and *A. eximia* 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 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 *A. brevirostris* are evidence that these species inhabit greater depths than *A. Agassizii* and *A. eximia*, 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 *Oplophorus*, *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 species 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 records 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 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 Neighbourhood.*

Geryon quinquedens.
Ethusina abyssicola.
Lithodes Agassizii.
Parapagurus pilosimanus.
Munidopsis curvirostra.
—— crassa.
Munidopsis similis.
—— Bairdii.
—— rostrata.
Pentacheles sculptus.
—— nanus.
—— debilis.

Sclerocrangon Agassizii.
Pontophilus abyssi.
Sabinea princeps.
Glyphocrangon sculptus.
—— longirostris.
Bythocaris gracilis.
Heterocarpus oryx.
Nematocarcinus ensiferus.
—— cursor.

II. *Species probably not confined to the immediate Neighbourhood of the Bottom, but showing structural evidence of inhabiting Abyssal Depths.*

Acanthephyra microphthalma.
—— brevirostris.
Oplophorus, sp.
Notostomus robustus.
—— viscus.
Meningodora mollis.
Hymenodora glacialis.
—— gracilis.
Parapasiphaë sulcatifrons.
—— cristata.
—— 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.
—— moratus.
Sergestes mollis.

IV. *Species probably not inhabiting Abyssal Depths.*

Acanthephyra Agassizii.
—— eximia.
——, sp.
Pasiphaë princeps.
Sergestes arcticus.
—— robustus.

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

Class.	Abyssal.	Below 1000 faths.	Below 2000 faths.
I. From the neighbourhood of the bottom	21	18	5
II. Abyssal, but not confined to the bottom.	11	11	7
III. Doubtful, but probably abyssal	11	10	6
IV. Probably not abyssal..	6	5	4
Total........	49	44	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 neighbourhood of the bottom which are recorded as taken below 1000 fathoms, 9 have a recorded range of over 800 fathoms, and one of them, *Parapagurus pilosimanus*, of nearly 2000 fathoms. The case of the *Parapagurus* is very remarkable. It was taken at fifteen stations and in from 250 to 640 fathoms by the 'Fish Hawk' and 'Blake' in 1880–82, 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 1883–85 it was taken at twenty-one stations, ranging in depth from 353 to 2221 fathoms; but at fourteen of these stations, all of which were below 1500 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 others still in an actinian polyp, apparently the *Urticina consors*, Verrill, which often serves for the carcinœcium of *Sympagurus pictus* from 164 to 264 fathoms.

The large size of many of the species is very remarkable, but no more so than the apparent absence of all very small species of Decapoda from the abyssal fauna. Of the forty-nine species enumerated above, not one can be considered small for the group to which it belongs, while more than a dozen of them are very large. *Geryon quinquedens* is one of the largest Brachyurans known, the carapace in some specimens being 5 inches long and 6 broad; specimens of the great spiny *Lithodes Agassizii* measure 7 inches in length and 6 in breadth of carapace, and the outstretched legs over 3 feet in extent; *Munidopsis crassa*, *Bairdii*, and *rostrata* are the three largest known species of Galatheidæ; *Sabinea princeps* reaches over 5 inches in length, and is probably the largest known Crangonid, though its size is very nearly equalled by the species of *Glyphocrangon*; *Notostomus robustus* is often 6 inches in length and very stout; *Pasiphaë princeps* attains a length of nearly 3 inches, and is a giant in the family to which it belongs; *Aristeus? tridens* equals a foot in length, and is but little larger than *Hepomadus tener*; and *Sergestes robustus* and *mollis* are apparently the largest known species of Sergestidæ.

The colour of the abyssal Decapoda is very characteristic. A few species are apparently nearly colourless; but the great majority are some shade of red or orange, and I have seen no evidence of any other bright colour. 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 1000 fathoms. Below this depth orange-red of varying intensity is apparently the most common colour, although in several species, very notably in *Notostomus robustus*, the colour 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 shallow-water species. 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.

If we exclude from this examination all the species whose bathymetrical habitat is in any degree doubtful, and examine the twenty-one species given as inhabiting the immediate neighbourhood 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 the allied shallow-water species; *Sclerocrangon Agassizii*, *Bythocaris gracilis*, *Heterocarpus oryx*, *Nematocarcinus ensiferus*, and *N. cursor* have normal black eyes a little smaller than 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 in 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 colour 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 *Pentacheles* have peculiarly modified eyes from which the normal visual elements are apparently wanting. Of these twenty-one abyssal species, eight are thus seen to have normal black eyes, two have abnormally small eyes, and three have eyes with purplish or very light-coloured pigment, while eight have eyes of doubtful function. If we confine the examination to the five species taken below 2000 fathoms, we have one with well-developed black eyes, two with abnormally small black eyes, one with light-coloured eyes, and one with eyes of doubtful function.

These facts and the comparison of the eyes and the colour of the abyssal species with the blind and colourless cave-dwelling Crustaceans certainly indicate 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 kind of luminous vibrations do penetrate to depths exceeding even 2000 fathoms. The fact that, excluding shallow-water species, there is no 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 1000 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 2000 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 *Paropagurus pilosimanus*, coming from 2220 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 towards 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 contain 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 few visual elements at the tips of the immobile eyestalks. A still later stage is represented by A. Milne-Edwards's genus *Cymonomus*, in which the eyestalks 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 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 2221 fathoms; *Pontophilus gracilis*, 225 to 458, and *P. abyssi*, 1917 to 2221 fathoms; and *Nematocarcinus cursor*, 384 to 838, and *N. ensiferus*, 588 to 2033 fathoms.

In a large number of deep-water and abyssal species the ocular pigment is dark purplish, brownish, reddish, light purplish, light reddish, or even nearly colourless, 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 highly developed eyes of this class. In many cases the presence of light-coloured 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 compound 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 colourless, 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 nervous elements of some kind. I am well aware that there is as yet no conclusive evidence that these colourless eyes are anything more than the functionless remnants of post-embryonic or inherited organs; but the fact that in some species they are as large as the normal eyes of allied shallow-water forms is certainly a strong argument against this view. In the species of *Pentacheles* there is still better evidence that the eyes are not functionless; for, although they have retreated beneath the front of the carapace, 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 easy to conceive how these highly modified eyes of *Pentacheles* 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 of the normal visual elements, and have only colourless pigment, but still present a large flattened transparent cornea at the anterior margin of the carapace.

It is interesting to note that the highly modified eyes of *Pentacheles* are found in a well-defined group, all the species of which 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.

The large size and small number of the eggs is a very marked characteristic of many deep-sea Decapoda. The eggs are extraordinarily large in several species of *Munidopsis*, *Glyphocrangon*, and *Bythocaris*, and in *Elasmonotus inermis*, *Sabinea princeps*, and *Pasiphaë princeps*. But the largest Crustacean egg which I have seen is that of the little shrimp *Parapasiphaë sulcatifrons*, which carries only from fifteen to twenty eggs, each of which is more than 4 millim. in diameter, and approximately equal to a hundredth of the bulk of the animal producing it. My suggestion (Amer. Journ. Sci. 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 when both are inhabitants of deep water. For example, the eggs of *Acanthephyra gracilis* are very large, while those of *A. brevirostris* and *A. 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 species of Crangonidæ.

For the purpose of comparing the size of the eggs of deep- and shallow-water species, measurements of the eggs of a number of species of Decapoda, and in some cases the number, or approximate number, carried by an individual, are given in the following Table, in which the bathymetrical habitat is given approximately in even hundreds of fathoms, habitats of less than one hundred 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, or estimated number, of eggs is for a single individual of medium or large size, or the extremes of variation in two or more individuals.

Diameter and Number of Decapod Eggs.

Species and Bathymetrical Habitat.		Diameter.	Number.
Brachyura.	fathoms.	millim.	
Callinectes hastatus	−100	0·28	4,500,000
Geryon quinquedens	100 to 1100	0·74	47,000
Anomura.			
Latreillia elegans........	−100 to 200	0·45	1,660
Eupagurus bernhardus ..	−100	0·57	
—— politus............	−100 to 600	1·12	2,000
Parapagurus pilosimanus..	300 to 2200	1·2	
Munidopsis curvirostra ..	100 to 1300	1·6	14 to 52
—— crassa	1700 to 2600	3·5	
—— rostata............	1100 to 1400	3·7	230
Anoplonotus politus	−100 to 200	1·1	25
Macrura.			
Pentacheles nanus	700 to 1900	0·77	1250 to 1500
Homarus americanus	−100	1·9	12,000 to 20,000
Crangon vulgaris........	−100	0·47	
Sclerocrangon Agassizii ..	400 to 1000	2·5	
Pontophilus norvegicus ..	100 to 600	1·1	
—— brevirostris........	−100 to 200	0·7	
—— abyssi	1900 to 2200	0·7	
Sabinea princeps........	300 to 900	2·8	353
—— Sarsii	100 to 200	1·3	
Glyphocrangon sculptus..	1000 to 1400	3·0	97
—— longirostris........	800 to 1100	3·0	86
Palæmon forceps	−100	0·6	7000
Palæmonetes vulgaris ..	−100	0·7	360
Nematocarcinus ensiferus	600 to 2000	0·68	16,000 to 21,000
—— cursor	400 to 800	0·64	20,000
Acanthephyra Agassizii..	−100 to 3000	0·85	5,000
—— brevirostris........	1400 to 3000	0·70	
—— gracilis	1600 to 2500	2·5	21
Pasiphaë tarda	100 to 200	2·0	94
—— princeps	400 to 1400	3·5	
Parapasiphaë sulcatifrons	500 to 3000	4·2	15 to 19

New Haven, Connecticut, U. S. A.,
December 1885.