

from the loss and reproduction of the limb, but in other specimens there are considerable differences in the form of the right chela which are apparently not the result of loss and reproduction, though it may be possible that all the cases of considerable variation in the form of the chelæ are due to this cause. The right chela is, in both sexes, usually very broad, half or more than half as broad as long, but in some specimens, as shown in the second column of the table of measurements, it is much narrower, only about three-eighths as broad as long.

The appendages of the second abdominal somite of the male are frequently very distinctly unequal in size, the right being longer than the left, but in many specimens they are exactly alike. The appendages of the first somite are apparently perfectly symmetrical in all the specimens examined.

The females appear to be a little smaller than the males, but apparently do not differ in the form or proportions of any of the cephalothoracic appendages. There are four well-developed biramus appendages on the left side of the abdomen as in the species of *Eupagurus*, and the third, fourth, and fifth somites are each furnished with a diffuse dorsal tuft of long hairs. The eggs are nearly spherical and larger than in *Eupagurus bernhardus*, being nearly a millimeter in diameter in alcoholic specimens.

In life the general color of the naked and exposed parts is pale, dull orange, darker at the tips of the ambulatory legs, without any of the conspicuous red markings characteristic of *Sympagurus pictus*.

All of the carcinœcia seen are formed by colonies of *Epizoanthus paguriphilus* Verrill, which at first invest spiral shells which are finally absorbed by the basal cœnenchyma of the growing polyps. In some of the very small specimens the investing walls of the polyp are so thin that the form and markings of the inclosed shell are distinctly visible through them, but in all the larger specimens the shell is completely absorbed.

Measurements.

	Station—				
	947.	947.	894.	947.	647.
Sex.....	♂	♂	♀	♀	♂
Length front to tip of telson.....	62.0	65.0	38.0	60.0	50.0
Length of carapax along dorsal line.....	23.3	23.0	15.0	18.8	22.5
Breadth of carapax at bases of antennæ.....	13.0	13.3	9.0	11.3	13.0
Length of eyestalks.....	6.4	6.7	4.7	6.0	6.3
Greatest diameter of eye.....	1.2	1.3	1.0	1.1	1.2
Length of right cheliped.....	68.0	66.0	41.0	48.0	50.0
Length of carpus.....	20.0	18.0	11.0	12.5	13.0
Length of chela.....	29.0	27.5	17.9	20.0	19.0
Breadth of chela.....	15.0	10.5	10.8	12.0	7.2
Length of dactylus.....	15.5	14.3	10.3	11.0	10.5
Length of left cheliped.....	51.0	52.0	30.0	35.0	40.0
Length of carpus.....	12.5	13.0	7.0	9.3	13.0
Length of chela.....	16.0	17.2	9.9	11.3	15.7
Breadth of chela.....	7.0	7.6	4.5	5.5	7.0
Length of dactylus.....	9.2	9.8	6.1	6.8	9.1
Length of first ambulatory leg, right side.....	98.0	100.0	58.0	63.0	96.0
Length of propodus.....	23.0	23.0	13.0	14.2	23.2
Length of dactylus.....	31.0	33.0	17.5	18.3	31.5

Sympagurus, gen. nov.

The single species of the genus here proposed is readily distinguished from *Parapagurus* by the shortness of the peduncles of the antennulæ and the well developed eyes, in which respects it agrees essentially with *Eupagurus*. It differs essentially from *Parapagurus* in having phyllobranchiæ, which are the same in number and arranged in the same way as in *Parapagurus* and *Eupagurus*, but differ much from the branchiæ of *Eupagurus* and the ordinary Paguroids in having the lamellæ long, narrow, attached by one end to the narrow stem of the branchia and arranged in two loosely packed longitudinal series either side of the axis of the branchia. At the extremity of the branchiæ, however, the lamellæ become very narrow, and at the extreme tips apparently papilliform as at the tips of the branchiæ of *Parapagurus*. The oral, thoracic, and abdominal appendages are essentially as in *Parapagurus*, the sexual appendages of the first and second somites of the abdomen of the male are, however, much smaller and less perfectly developed.

Sympagurus pictus, sp. nov. (Pl. 5, Figs. 2, 2a; Pl. 6, Figs. 5-8.)

The carapax is divided by a deep, cervical suture, which is arcuate as in *Parapagurus pilosimanus*, but is narrowed anteriorly much more than in that species, the breadth at the bases of the antennæ scarcely equaling the length in front of the cervical suture. The anterior margin projects in a prominent triangular rostrum with a distinct longitudinal carina, and either side is considerably oblique, with only a slight prominence between the base of the eyestalk and the peduncle of the antenna.

The eyestalks, including the eyes, are about two-fifths as long as the carapax along the dorsal line, stout, and expanded at the very large black eyes, which are terminal, not oblique, compressed vertically, and from two-fifths to nearly a half as broad as the length of the stalks. The ophthalmic scales are small, spiniform, and acute as in *Parapagurus pilosimanus*.

The peduncle of the antennula is a little longer than the breadth of the carapax in front, the second segment reaches to the tip of the eye, and the ultimate segment is about half the entire length. The upper flagellum is about as long as the ultimate segment of the peduncle, while the lower is only about half as long, slender, and composed of seven or eight segments. The peduncle of the antenna reaches slightly by the eye and the ultimate segment is nearly twice as long as the penultimate. The acicle is slender, sparsely setigerous, and reaches to the tip of the peduncle, and outside its base there is a dentiform process, but no tooth or spine inside. The flagellum is nearly naked and about four times as long as the carapax.

The oral appendages are all nearly as in *Parapagurus pilosimanus*, except that, in the second maxilla, the endognath is broader at the base, the anterior lobe of the scaphognath is shorter and broader, though still triangular at the tip, and the posterior lobe is shorter,

broader, and approximately triangular; while, in the first maxilliped, the endopod and exopod are a little shorter and the latter rounded at the extremity.

The chelipeds are densely pubescent, as in *Parapagurus pilosimanus*, and resemble those of that species closely until the pubescence is removed, when they are seen to be different in form and armament. The right cheliped in fully grown specimens is about three times as long as the carapax along the dorsal line. The carpus is slightly longer than the merus, obscurely angulated along the inner dorsal edge, and the dorsal surface covered with small tubercles which are acute and almost spiniform along the inner edge. The chela is at least once and two-thirds as long as the carpus, much less than half as broad as long, compressed vertically, convex, and only slightly tuberculous above and below, but armed along the edges with sharp tubercles, which are most conspicuous along the inner edge and particularly on the dactylus, where they become spiniform. The digits are longitudinal, not turned to the right as in *Parapagurus pilosimanus*, about as long as the body of the chela, regularly tapered toward the strongly hooked tips, and the prehensile edges armed with irregular, low, and obtuse tubercles. The left cheliped is about two-thirds as long as the right, very slender, and clothed with pubescence like the right. The carpus is scarcely longer or stouter than the merus, and angulated and armed with a few sharp tubercles along the inner dorsal edge. The chela is about once and two-thirds as long as the carpus, scarcely stouter, rounded and unarmed, with the digits much longer than the body, slender, slightly curved downward at the tips, not gaping, and the prehensile edges sharp and armed with a closely set series of minute spines.

The ambulatory legs reach to or a little by the right cheliped, are smooth and nearly naked, except near the tips, and unarmed, except a small dentiform tooth at the distal end of the dorsal edge of the carpus. The dactyli are longer than the propodi, slender, laterally compressed, strongly curved toward the acute tips, and setigerous along the dorsal edge and on the inner side. The fourth and fifth pairs of legs and the sterna of all the thoracic somites are as in *Parapagurus pilosimanus*.

The appendages of the first and second abdominal somites of the male arise in the same way as in *Parapagurus pilosimanus*. The appendages of the first somite are like those of *Parapagurus pilosimanus* in form, but are very much smaller, being scarcely $3\frac{1}{2}$ millimeters in length in the largest specimen examined, and project only a little way below the coxæ of the posterior thoracic legs. The appendages of the second somite are very unequally developed; the right is nearly as in *Parapagurus pilosimanus* in form, but is much smaller, being only 7 millimeters long in the largest male examined, and the terminal lamelliform segment is a little broader in proportion, being about a fourth longer than the basal portion and a fourth as broad as long, and is apparently less deeply grooved; while the left is very much smaller, only 4.8 millime-

ters long in the specimen just referred to, and the terminal lamella smaller even than the basal portion, very narrow, and scarcely at all grooved.

The appendages of the left side of the third, fourth, and fifth somites of the abdomen of the male, the four ovigerous appendages of the left side of the abdomen of the female, and the uropods in both sexes, are as in *Parapagurus pilosimanus* and *Eupagurus bernhardus*. The telson is about as broad as long, but bilaterally unsymmetrical, the left side being longer than the right, and the posterior margin oblique, with a slight anal emargination a little to the right of the center.

The carcinoecium of the specimen from station 895 is formed by *Epizoanthus Americanus* Verrill, but the carcinoecia of all the other specimens examined are formed by the base of a single polyp of *Urticina consors* Verrill (Amer. Jour. Sci., III, xxiii, p. 225, 1882).

Measurements.

	Station—		
	939.	924.	1114.
Sex	♂	♂	♀
Length from front to tip of telson	27.0	50.0	54.0
Length of carapax along dorsal line	10.0	18.0	20.0
Breadth of carapax at bases of antennæ	5.5	9.8	11.0
Length of eye-stalks	4.0	7.0	8.0
Greatest diameter of eye	1.9	2.8	3.1
Length of right cheliped	23.6	54.0	60.0
Length of carpus	6.0	13.0	13.5
Length of chela	10.0	22.0	24.0
Breadth of chela	4.6	10.0	10.5
Length of dactylus	5.1	11.0	12.0
Length of left cheliped	18.5	35.0	40.0
Length of carpus	4.7	8.8	10.0
Length of chela	7.0	12.5	14.5
Breadth of chela	2.6	4.5	5.0
Length of dactylus	5.0	9.0	10.0
Length of first ambulatory leg, right side	32.0	60.0	69.0
Length of propodus	7.5	13.7	16.0
Length of dactylus	9.7	16.8	19.2

In the large male from station 924, the appendage of the right side of the second somite of the abdomen is 7^{mm} long, and its terminal lamella 4^{mm} long and 1^{mm} broad; while the appendage of the left side is 4.8^{mm} long, and its terminal lamella only 2.3^{mm} long and 0.5^{mm} broad.

In life the front part of the carapax is orange red bordered with white along the margin. The eye-stalks and the peduncles of the antennulæ and antennæ are white, except the undersides of the eye-stalks, which are vermilion. The flagella of the antennulæ and antennæ are pale orange. A large spot of vermilion covers nearly the whole of the outer surface and extends over upon the inferior edge of the meri of the ambulatory legs, and the inferior edges of the carpi and propodi and the tips of the dactyli are marked with the same color, while the rest of the surface is white. The posterior part of the carapax and the abdomen are translucent whitish specked above with orange red, and the telson and uropods are similarly but more thickly specked with the same color. The eyes are black.

Specimens examined.

Station No.	Locality.						Depth in fathoms.	Nature of bottom.	When collected.	No. of specimens.		With eggs.	Dry or alc.
	N. lat.			W. long.						♂	+ ♀		
	OFF MARTHA'S VINEYARD.												
895	°	'	"	°	'	"	238	sft. M.	1880. Oct. 2	1s.			Alc.
924	39	57	30	70	46	00	164	S.	1881. July 16	21. s.			Alc.
939	39	53	00	69.	50	30	264	gn. M. S.	Aug. 4	2s. 1s.	0		Alc.
1114	39	58	00	70	38	00	171	gn. M.	1882. Aug. 22	11. 11.	0		Alc.

GALATHEIDEA.

Munida Caribæa? Smith. (Pl. 3, Fig. 11.)

Munida Caribæa? Smith, Proc. National Mus., iii, p. 423, 1881.

Munida, sp. *indet.* Smith, Bull. Mus. Comp. Zool. Cambridge, x, p. 22, pl. 10, fig. 1, 1882.

? *Munida Caribæa* Stimpson, Ann. Lyceum Nat. Hist. New York, vii, p. 244 (116), 1860.—A. M.—Edwards, Mus. Comp. Zool. Cambridge, viii, p. 49, 1880 (*Caribæa*).

In my preliminary notice of two years ago I referred this species doubtfully, as indicated above, to Stimpson's species described from a single very small specimen which is no longer extant. Almost simultaneously Milne-Edwards published ten new species of the genus from the Blake dredgings in the Caribbean region, and referred specimens of still another to Stimpson's *Caribæa*, but without describing them at all. It seems best to restrict Stimpson's name to the species called *Caribæa* by Milne-Edwards, whatever that may be, but it is quite impossible to determine from Milne-Edwards's descriptions alone whether the species which I have called *Caribæa* belongs to either of the eleven species enumerated by him and, until it is possible to settle this point satisfactorily, the species may be conveniently designated *Munida Caribæa*? Smith, as above.

The species attains greater size than any of the specimens taken in 1880, measurements of some of the largest of which were given in my preliminary notice of two years ago. The specimens from the same station are usually approximately alike in size, those from one station being nearly all small, while those from another, even near by and on the same day, are nearly all large. The largest specimens are from station 1043, off Delaware Bay, and six of these give the following measurements in millimeters:

	1.	2.	3.	4.	5.	6.
Sex.....	♂	♂	♂	♂	♂	♂
Length.....	52.0	51.0	47.0	57.0	57.0	62.0
Length of carapax including rostrum.....	26.3	25.5	24.9	28.3	29.3	30.0
Length of rostrum.....	9.4	9.5	8.4	9.2	10.4	9.5
Breadth of carapax in front of cervical suture.....	12.2	11.7	11.8	13.4	13.4	14.4
Greatest breadth excluding spines.....	14.3	13.8	13.0	16.2	16.1	18.1
Length of cheliped.....	83.0	87.0	78.0	117.0	110.0	107.0
Length of merus.....	33.0	36.0	32.0	49.0	46.0	45.0
Length of carpus.....	7.1	6.8	7.0	8.3	8.5	8.4
Length of chela.....	38.3	40.0	38.0	55.0	51.5	49.0
Length of dactylus.....	18.5	18.5	17.0	23.1	21.4	21.3
Length of first ambulatory leg.....	49.0	50.0	49.0	64.0	63.0	66.0
Greatest diameter of eye.....	4.3	4.2	4.0	4.6	4.5	4.7

The specimens from which the last four columns of measurements were taken have the chelæ modified, as usual in the old males of the species of the genus, by the proximal curvature and expansion of the digits, particularly the propodal, so as to leave them gaping at base; while the specimen from which the second column of measurements was taken has the chelæ slender and unmodified as in the female.

Specimens examined.

Station No.	Locality.			Depth in fathoms.	Nature of bottom.	When collected.	No. of specimens.	
	N. lat.	W. long.						With eggs.
OFF MARTHA'S VINEYARD.								
	o	'	"	o	'	"		
365	40 05 00	70 23 00	65	fne. S. M.	1881.			
871	40 02 54	70 23 40	115	M. fne. S.	Sept. 4	2		
872	40 05 39	70 23 52	86	S. G. Sh. & sponges.	Sept. 4	150+		
873	40 02 00	70 57 00	100	sft. M.	Sept. 13	3		
874	40 00 00	70 57 00	85	sft. M.	Sept. 13	6		
877	39 56 00	70 54 18	126	sft. M.	Sept. 13	1		
878	39 55 00	70 54 15	142	M.	Sept. 13	6		
921	40 07 48	70 43 54	67	gn. M.	July 16	440+		+
922	40 03 48	70 45 54	71	gn. M. S.	July 16	1,300+		+
923	40 01 24	70 46 00	98	S.	July 16	8		
939	39 53 00	69 50 30	264	gn. M. S.	Aug. 4	1		
940	39 54 00	69 51 30	134	hrd. S. sponges.	Aug. 4	80+		+
941	40 01 00	69 56 00	79	hrd. S. M.	Aug. 4	500+		+
944	40 01 00	71 14 30	128	M. S. Sh.	Aug. 9	15		
949	40 03 00	70 31 00	100	yL M.	Aug. 23	500+		+
1038	39 58 00	70 06 00	146	S. and Sh.	Sept. 21	8		
1040	40 00 00	70 06 00	93	S. and Sh.	Sept. 21	7		
1151	39 58 50	70 37 00	125	S.	Oct. 4	1♂		
OFF DELAWARE BAY.								
1043	38 39 00	73 11 00	130	S.	1881.			
1046	38 33 00	73 18 00	104	S.	Oct. 10	154		18
1047	38 31 00	73 21 00	156	S.	Oct. 10	10		4
					Oct. 10	2		
OFF CHESAPEAKE BAY.								
896	37 26 00	74 19 00	56	S. Sh.	1880.			
899	37 22 00	74 29 00	57	S.	Nov. 16	3		
					Nov. 16	72		

The Blake dredgings of 1880 extend the range southward considerably beyond the above, as the following record of the occurrence of the species in these dredgings shows :

Station.	N. lat.			W. long.			Fathoms.	Specimens.
	°	'	"	°	'	"		
311	39	59	30	70	12	00	143	1
314	32	24	00	78	44	00	142	50+
315	32	18	20	78	43	00	225	1
333	35	45	25	74	50	30	65	100+
335	38	22	25	73	33	40	89	31
336	38	21	50	73	32	00	197	6
344	40	01	00	70	58	00	129	1

Munida valida, sp. nov. (Pl. 1.)

A large species with the general appearance of *M. Bamffia*, but at once distinguished from it, and from *M. tenuimana*, and *Caribæa*? Smith as well, by the short and obtusely rounded epimera of all the abdominal somites.

Excluding the rostrum, the carapax is about three-fourths as broad as long; including the rostrum, about four-sevenths as broad as long, the rostrum being more than a fourth the entire length. The rostrum and the spines at its base are shorter and stouter than the *M. Bamffia*, and the latter are about three-fifths as long as the rostrum, strongly divergent and directed somewhat upward, while the rostrum is horizontal. The number and position of the spines on the dorsal surface and along the lateral margins of the carapax are very nearly as in *M. Bamffia*, except that there are no spines along the raised posterior margin. The orbital part of the anterior margin is more oblique than in *M. Bamffia*, and the antennal spine is not, as in that species, at the antero-lateral angle, but the margin between the antennal and hepatic spines is only a very little more oblique than the orbital margin, and the antero-lateral angle is really formed by the hepatic spine. The carapax is apparently wider and less convex than in *M. Bamffia*, the sutures of the dorsal surface are deeper, and the transverse rugæ are apparently fewer and more conspicuous.

The eyes are about as large as in *M. Bamffia*, but not so strongly compressed.

The basal segment of the antennula is armed with a slender spine arising from the prominence on the outer margin and directed forward, a larger spine on the outer edge of the distal end, and between these two a long spine, two-thirds as long as the segment itself, directed obliquely upward, while at the distal end of the inner side there is only an inconspicuous dentiform spine in place of the very long and slender spine found there in *M. Bamffia*, *tenuimana*, and *Caribæa*? Smith. The flagella of the antennæ are subcylindrical, slender, nearly naked, and not far from twice as long as the entire length of the body.

The merus of the external maxilliped is not distinctly tapered dis-

tally, and the ventral edge is armed with a slender spine at the distal end and a larger one a little way from the proximal end.

The chelipeds are equal, and in the male about two and a half times as long as the carapax, and resemble those of *M. Bamffia* very closely. In the male, the merus is nearly as long as the carapax, the carpus about two-fifths as long as the merus, and the chela much longer than the merus, much more slender, with the digits fully three-fourths as long as the body, slender, straight, and the prehensile edges in contact throughout. Although the single male seen is very large, there is no sign whatever of the expansion of the chela at the base of the digits, due largely to a curvature in the basal part of the propodal digit, which seems to be characteristic of the old males of all the species of the genus.

The dorsal surface of the abdomen is sculptured very much like the carapax, and the second and third somites are each armed with a series of small spines along the anterior edge above the facet, but there are no similar spines on the succeeding somites. The epimera of the second to the sixth somite are short, and obtusely rounded below, but those of the second and fifth are broader than the others. The telson and uropods are as in *M. Bamffia*.

As in all the other species of the genus which I have seen, the appendages of the first abdominal somite are shorter than those of the second, and composed of a slender protopod and a single thin lamella, which is much shorter than the protopod, broad, obtuse at the distal extremity, with a few marginal setæ, and rolled together anteriorly into a spoon-shaped appendage; while the protopod in the second pair of appendages is much longer than in the first, and bears a narrow, setigerous, and somewhat twisted lamella, with a minute rudiment of a second lamella at its base. The appendages of the third, fourth, and fifth somites are alike, and in each the protopod (apparently) is expanded into a broad oval lamella, margined with long setæ along the outer edge and at the tip, and bearing, on the inside near the tip, a small styliform appendage, composed of two segments. In the female the appendages of the second somite, though apparently not ovigerous, are about half as long as those of the third, with the protopod about as long as the endopod, which is composed of two subequal segments, and all the segments bear numerous long plumose setæ; the appendages of the third, fourth, and fifth somites are ovigerous, alike, nearly equal in size, and the two distal segments are subequal in length, and each about as long as the protopod.

I have seen only two specimens, from which the following measurements, in millimeters, were taken:

	1.	2.
Sex.....	♂	♀
Length, tip of rostrum to top of telson.....	83.0	70.0
Length of carapax, including rostrum.....	43.0	39.0
Length of rostrum.....	11.8	10.8
Breadth of carapax at cervical suture.....	20.0	18.0
Greatest breadth.....	24.0	22.0
Length of cheliped.....	110.0	75+
Length of merus.....	41.0	29.0
Length of carpus.....	16.0	14.0
Length of chela.....	48.0	28+
Length of dactylus.....	21.0
Length of first ambulatory leg.....	77.0	62.0
Greatest diameter of eye.....	5.2	5.0
Length of telson.....	10.0	9.7
Breadth of telson.....	16.0	14.0

Station—	N. lat.	W. long.	Fathoms.	Specimens.
1112.....	39 56	70 35	245	1♂
1124.....	40 01	68 54	640	1♀

Eumunida, gen. nov.

The single species of the genus here proposed has the general appearance of *Munida*, but is at once distinguished from it and all the allied genera by the five-spined front, the position and structure of the peduncles of the antennæ, the absence of branchiæ at the bases of the external maxillipeds, the very broad and transversely segmented telson, and the absence of appendages upon the first five somites of the abdomen of the male.

The carapax is strongly contracted below anteriorly, so that the peduncles of the antennæ are near together and immediately beneath the well-developed eyes. The proximal segment of the peduncle of antennula is slender, subcylindrical, but with a small protuberance near the base where the auditory organ is situated, and unarmed. The peduncle of the antenna is highly developed and armed with numerous spines, of which one is articulated by a broad base to the second segment and evidently represents the antennal scale. The oral appendages and thoracic legs are similar to those of *Munida*, but there are neither branchiæ nor epipods at the bases of the external maxillipeds, though in other respects the branchial formula is the same. The telson is short and broad, more or less membranaceous, and divided by a transverse articulation, so that the distal part may be folded beneath the basal part. The female has well-developed appendages, all apparently ovigerous, upon the second to the fifth somite of the abdomen, but there are no appendages whatever on any of the first five somites in the adult male.

Eumunida picta, sp. nov. (Pl. 2, Fig. 2; Pl. 3, Figs. 6-10; Pl. 4, Figs. 1-3a.)

The carapax at the posterior part of the branchial region is about as

broad as the length, excluding the rostrum, but is rapidly narrowed anteriorly, and at the bases of the antennæ is scarcely half as broad. Back of the cervical suture the dorsal surface is regularly convex transversely, but the anterior part of the elevated gastric region is flat or slightly concave, and the orbital margins are perpendicular and hidden from above by the bases of the supraorbital spines. The anterior edge of the front is slightly arcuate and armed with five slender, acute, and subcylindrical spines, a median with two supraorbital each side; the median, or rostrum proper, is about half as long as the rest of the carapax, straight and horizontal; the supraorbital spines each side are approximately parallel with the rostrum, but directed slightly upward so that their tips are a little above the plane of the rostrum, are separated from the rostrum more widely than from each other, and the inner is nearly three-fourths as long as the rostrum while the outer is scarcely half as long as the inner. Immediately back of the outer of these spines there is a prominent and acute spine directed forward, and on a line between this and the hepatic spine of the lateral margin there are two much smaller spines on the steep side of the gastric region back of the orbit. The lateral margin is arcuate in outline and armed with seven acute spiniform teeth directed forward and decreasing successively in size posteriorly; the anterior, or antennal, is separated from the base of the antenna by a considerable space and is nearly as long as the outer supraorbital spine, the second is on the hepatic region, and the remaining five are all on the branchial region, the posterior one being very small in adult specimens and nearly or quite obsolete in young specimens 15^{mm} in length. The dorsal surface is marked with transverse rugæ, is sparsely clothed with minute hairs, and, except the spines already mentioned, is unarmed. The cervical suture is well marked and the gastro-hepatic distinct. The infero-lateral region is of nearly the same form as in the typical species of *Munida* and terminates anteriorly in an acute spine a little in front of the first lateral spine.

The eyes are black, smaller than in the typical species of *Munida*, nearly globular, and are borne on short stalks, the whole length being scarcely more than a fourth greater than the diameter of the cornea.

The peduncle of the antennula reaches to about the tip of the rostrum; the segments are all approximately equal in length, nearly naked, entirely unarmed, slender, and subcylindrical, though the proximal segment is considerably stouter than the others, and has a conspicuous protuberance over the auditory organ. The upper flagellum is about as long as the distal segment of the peduncle, swollen toward the base, and tapered to a very slender tip. The lower flagellum is very slender throughout and shorter than the upper. The peduncle of the antenna reaches to about the tip of the second segment of the peduncle of the antennula, and is armed with numerous spines; the first segment is exposed at the antero-lateral angle of the carapax and projects anteriorly in a sharp tooth; the second segment is very short, armed externally

with a stout dentiform spine directed forward, and above bears a slender spiniform appendage curved slightly upward and outward, and a little longer than the fourth segment; the third segment projects below the fourth segment in a slender spiniform process reaching by the fourth segment; the fourth segment is nearly as long as the diameter of the eye, beyond which it reaches considerably, and is armed at the distal end by a long spine projecting beneath and beyond the ultimate segment, and above and on the outer side by two small teeth; the ultimate segment is little more than half as long as the fourth, about once and a half as long as broad, and armed at the distal end with three long and approximately equal and equidistant spines. The flagellum is nearly as long as the whole body, slender, slightly compressed vertically, sparsely armed with minute setæ, and, at long intervals, with a few very long and slender setæ.

The mandibles and maxillæ are very nearly as in *Munida Bamffia*, but the proximal lobe of the protognath of the first maxilla is broader and less prolonged and more obtusely rounded anteriorly.

The proximal lobe of the protopod of the first maxilliped projects very little anteriorly, and the distal lobe is fully twice as long as broad. The endopod projects considerably beyond the protopod, is less curved than in *Munida Bamffia*, scarcely at all tapered distally, and clothed with slender setæ along the inner edge and at the obtuse tip. The basal portion of the exopod is longer than the endopod, from a sixth to an eighth as broad as long, sparsely setigerous along the edges, and bears a slender flagellum slightly less than half as long as the basal part, and obscurely multiarticulate distally. The epipod is small, about half as long as the endopod, tapered to the tip, and setigerous distally.

The second maxilliped resembles closely that of *Munida Bamffia*, but the endopod is shorter and stouter, the merus being scarcely more than twice as long as broad, and the basal part of the exopod is a little shorter, scarcely narrowed distally, and somewhat less setigerous.

The ischium and merus in the external maxilliped are approximately equal in length, the ischium unarmed at the distal end, but with the inner angle dentate as usual; the merus is only very slightly expanded on the inner side, and bears only a small spine near the distal end; the propodus is narrow, with a very slight expansion on the inner side; and the dactylus is considerably smaller than the propodus, and subcylindrical. The basal part of the exopod does not reach the distal end of the merus. There are no maxillipedal arthrobranchiæ, as there are in the species of *Munida*.

The chelipeds are not far from three times as long as the carapax, including the rostrum, and are apparently not much shorter proportionally in the females and young than in the adult males. The merus is subcylindrical, considerably longer than the carapax, including the rostrum, and is armed with four longitudinal series of spines, of which those forming the two series on the inner side are much larger than

those of the outer series, and these larger still than those of the lower series, which are quite small; there are eight to twelve of the larger spines in each series, and the surface between the spines, and also on the carpus and the body of the chela, is roughened with small squamiform and sparsely setigerous elevations. The carpus is short and armed with three distal spines on the inner side, and with a few small spines and tubercles on the outer side. The chela is just about as long as the merus and no stouter; the body is subcylindrical, considerably longer than the digits, and armed along the inner side with two series of spines corresponding with the two inner series on the merus, but the spines are much smaller and more crowded; the digits are slender, nearly straight laterally, but curved slightly downward at the tips, and the prehensile edges are irregularly dentate.

The first pair of ambulatory legs reach about to the middle of the carpi of the chelipeds; the dorsal edge of the merus is compressed and armed with a series of about ten large spines; the antero-inferior angle is armed with a similar series of much smaller spines, and there is, in addition, a large spine on the posterior side below the articulation with the carpus; the carpus is short and crested above with a series of spines like the merus, and the posterior side in both carpus and merus is roughened like the surface of the chelipeds; the propodus is about as long as the merus, slender, compressed laterally, with a few long setæ on the upper edge and a series of short spiniform setæ below, but without true spines or teeth; the dactylus is nearly half as long as the propodus, broad, strongly compressed, terminates in a strong chitinous tip, and is armed below with a closely set series of setiform chitinous spines decreasing in size proximally. The second pair are like the first, except that the merus is unarmed below. The third pair are considerably shorter than the second, reaching scarcely to the tips of the propodi of the second pair, and there is a series of small spines along the middle posterior side of the merus, but in other respects they are like the third pair.

The posterior pair of thoracic legs are much shorter than in the typical species of *Munida*, being only about as long as the meri of the third pair of ambulatory legs; the merus and carpus are about equal in length, and each is considerably longer than the ischium; the chela is little more than half as long as the carpus, but swollen distally, so as to be much broader, and the prehensile edge of the propodus and the articulation with short, stout, and strongly curved dactylus is terminal and nearly transverse, the propodal digit being reduced to a slight angular projection. The chela and distal end of the carpus are densely clothed with long setæ.

The consolidated sternal plates between the bases of the chelipeds and true ambulatory legs are marked by a deep longitudinal median sulcus on each somite, are separated from each other by conspicuous sulci, and the plate between the bases of the chelipeds is armed each

side with a small spiniform tooth projecting forward, and the plane of the plate is much below the very narrow sternal plate at the bases of the external maxillipeds. The sternum of the last thoracic somite is entirely membranaceous, without any calcified plate or bar between the bases of the posterior legs.

The abdomen is broad, evenly rounded above, and without longitudinal carinæ; the epimera are all very short; and the sterna of all the somites are almost entirely membranaceous, like that of the last thoracic somite. The dorsum of the first somite rises in a sharp and very narrow transverse ridge back of the facet which slides beneath the carapax, and is inclosed either side by the anterior projection of the epimera of the second somite. The epimeron of the second somite is truncated below, but projects forward in a sharp angle at the side of the carapax, and above the angle is armed with a large, curved, and acute spine, directed forward above the lateral margin of the carapax. The epimera of the third, fourth, and fifth somites are truncated, with the angles more or less rounded, and those of the sixth obtuse. The second and third somites are each marked above by two transverse ciliated rugæ, the fourth and fifth each by three similar but less conspicuous rugæ in adults, or only two in the young, and the sixth somite and all the epimera are marked by broken and irregular rugæ or squamiform elevations. The sixth somite is much longer than the fifth, about a third as long as broad, and the postero-lateral edge outside the articulation of the uropod is oblique and nearly straight.

The telson in full-grown specimens is only as long as the sixth somite, and twice as broad as long, but in young specimens is proportionally longer and narrower. The whole appendage is thin and slightly calcified; the lateral margins are deeply incised about the middle and the incisions connected by a transverse membranous articulation, so that the distal part is readily folded beneath the proximal. The distal part is notched at the middle of the posterior edge and longitudinally divided by a membranous line, so that it appears to be formed of two transverse elliptical plates, each nearly twice as broad as long, and of which the posterior and lateral edges are thickly ciliated. The inner lamella of the uropod is fully as long as the telson, about two-thirds as broad as long, elliptical, the inner and distal edges armed with spines, which are small on the inner and very minute and crowded on the distal edge, and the entire margin, except near the base, is ciliated with numerous long hairs. The outer lamella is longer and broader than the inner, narrowed and somewhat excavated on the inner edge near the base, and margined with hairs like the inner.

There are no appendages whatever on any of the first five abdominal somites in any of the adult males examined. In young specimens, 15^{mm} or less in length, in which the sexual characters are not manifest, but which are possibly immature males, or more probably immature females, there are, however, on the second to the fifth somite, rudimentary, very

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minute, and naked appendages, obscurely divided into a large proximal and a small distal segment. In the adult female the appendages of the second to the fifth somite are similar, approximately alike in size, apparently all ovigerous, and each appears to be composed of only two segments, of which the distal is about half as long as the proximal. None of the specimens seen are carrying eggs.

Five specimens give the following measurements in millimeters:

	Station—				
	1152.	1152.	1043.	1097.	1097.
Sex	Young.	♂	♂	♀	♀
Length, tip of rostrum to tip of telson	15.0	23.5	43.0	24.0	40.0
Length of carapax, including rostrum	8.5	13.0	23.7	13.4	22.1
Length of rostrum	2.5	4.5	8.1	4.6	8.0
Breadth at bases of antennal spines	4.1	6.0	11.0	6.2	10.2
Greatest breadth, including spines	5.5	8.5	15.6	9.0	14.5
Length of cheliped	27.0	34.0	68.0	40.0	57.0
Length of merus	10.5	15.0	30.0	18.0	24.0
Length of carpus	1.5	2.5	5.2	2.6	4.3
Length of chela	11.0	15.0	30.0	18.0	24.5
Length of dactylus	4.7	6.4	14.0	7.5	11.4
Length of first ambulatory leg	13.5	20.0	38.0	21.0	35.0
Diameter of eye	1.3	1.7	3.0	1.8	3.0
Length of telson	1.4	2.1	4.0	2.2	4.0
Breadth of telson	2.0	3.7	8.0	3.9	8.0

Specimens examined.

Station No.	Locality.		Depth in fathoms.	Nature of bottom.	When collected.	No. of specimens.		With eggs.	
	N. lat.	W. long.				♂	♀		
	OFF MARTHA'S VINEYARD.								
1038	39 58	70 06	146	S. Sh.	1881. Sept. 21	1	1	1	0
1097	39 54	69 44	158	fine S.	1882. Aug. 11		2		0
1098	39 53	69 43	156	fine S.	Aug. 11	1	1		0
1152	39 58	70 35	115	S.	Oct. 4	2	1		
	OFF DELAWARE BAY.								
1043	38 39	73 11	130	S.	1881. Oct. 10	1			

In the specimen from station 1152, after preservation in alcohol for a short time, the coloration had apparently not changed very materially, and was very striking. The whole dorsal surface of the carapax and abdomen was light red, lightest on the abdomen and darkest on the rostrum and spines of the carapax. The chelipeds and three pairs of ambulatory legs were very intense bright red, except the digits of the chelæ

and the distal extremities of the ambulatory legs to very near the bases of the propodi, which parts were white, the color stopping on each of these appendages very suddenly at the point where they cease to be armed with spines. All the other specimens show more or less distinct indications of the same coloration.

Anoplnotus politus, gen. et sp. nov. (Pl. 2, Fig. 1; Pl. 3, Figs. 1-5 a.)

Excluding the rostrum, the carapax is nearly as broad as long; including the rostrum, seven to eight tenths as broad as long, the rostrum being rather less than a fourth of the entire length. The rostrum is vertically flattened, though obscurely carinated longitudinally above, horizontally triangular, but not acute at the tip, and slightly curved downward distally. There are no spines or tubercles upon the carapax, but the gastric region is somewhat protuberant and separated from the branchial regions by a broad sulcus each side, and from the prominent cardiac region by a still deeper sulcus which extends either side as a shallow sulcus across the branchial region, which is again crossed by a narrower sulcus in front, but the cardiac region is not conspicuously separated from the branchial region either side of it. The orbital portion of the anterior margin is narrow and advanced considerably in front of the antero lateral angles, which are formed by the hepatic regions and are nearly right-angular. The lateral margins are slightly curved, and the greatest breadth is a little back of the middle. The surface of the carapax is granulose, particularly along the sides, where the granules are arranged in transverse lines.

The small eyes are partially beneath the rostrum, and scarcely reach its middle; there is a slight protuberance on the outer side of the stalk near the base; and the eye itself is semitranslucent in the alcoholic specimens; its diameter is rather less than that of the stalk and about half the whole length, and the cornea is apparently entirely without facets.

The basal segment of the peduncle of the antennula is a little shorter than the rostrum, about three-fourths as broad as long, somewhat swollen on the outer side, and armed with two teeth at the distal extremity. The second and third segments are slender, subequal in length and each scarcely as long as the basal. The upper flagellum is about as long as the distal segment of the peduncle, the basal portion swollen and composed of numerous short segments, while the distal portion is very slender and composed of about five elongated segments. The lower flagellum is little more than half as long as the upper, slender throughout, and composed of about three segments. The peduncle of the antenna arises just outside the peduncle of the antennula and at some distance from the antero-lateral angle of the carapax, scarcely reaches the tip of the rostrum, and its three distal segments are slender. The flagellum is very slender, and reaches to about the tips of the chelipeds.

The mandibles are of essentially the same form as in *Munida*; the molar area is transverse to the body of the mandible, narrow, naked, and separated from the broad and edentulous ventral process by a deep excavation; and the palpus is slender, triarticulate, and armed with few and short setæ. The protognathal lobes of the first maxilla are approximately equal in size, rather broad at the ends, and armed as usual with slender spines upon the distal, and numerous setæ upon the proximal lobe. The endognath is much shorter than the distal lobe of the protognath, slender, tapered to an obtuse point, and armed with two series of small setæ, one at the tip and the other below the middle. The protognathal lobes of the second maxilla are approximately equal in size, and each lobe is divided into two lobules very unequal in width, the two middle lobules being approximately a third as wide as the anterior and posterior, though all four of the lobules are of about the same length. The endognath is a little longer than the distal lobe of the protognath, tapers to a slender tip, and is armed with a very few setæ along the middle of its length. The anterior portion of the scaphognath is a little shorter than the endognath, broad, slightly narrowed anteriorly, but broad and obtusely rounded at the tip, while the posterior portion is short, transversely truncated behind, broader than long, and somewhat triangular in outline, with the angles rounded.

The tips of the lobes of the protopod of the first maxilliped are rounded and nearly alike, but the distal lobe is considerably longer than the proximal, being about twice as long as broad. The endopod is about as long as the distal lobe of the protopod, narrow, tapered to an obtuse tip, very strongly curved, the outer edge margined with slender setæ distally, and proximally with a very few setæ near the inner edge. The exopod is lamellar, a little longer than the endopod and much broader, being about a fifth as broad as long, rapidly narrowed at the extremity, and margined with slender setæ along the outer edge. The epipod is about as broad but scarcely as long as the distal lobe of the protopod, triangular at the extremity, and ciliated at the tip and along the outer edge. The endopod of the second maxilliped is of nearly equal breadth from the base to the dactylus; the ischium is scarcely longer than broad; the merus nearly three times as long as broad and about as long as the three terminal segments taken together; the carpus and propodus are subequal in length; the dactylus is shorter and much narrower than the propodus, and rounded at the tip; and all the segments are more or less armed as usual with setæ of different forms, and at the distal end of the inner edge there is a single slender spine or spiniform setæ in addition to a few short setæ. The exopod is much larger than the endopod; the unsegmented basal portion is nearly uniform in breadth for about the proximal two-thirds of its length, where it expands in an obtuse prominence opposite the carpus of the endopod, but from this prominence it tapers to the articulation with the slender flagellum; except near the tip both edges are margined with short setæ, and the

prominence of the inner edge bears in addition a submarginal series of six to eight long setæ; the flagellum is about half as long as the basal part, distinctly articulated near the middle, and the terminal fourth of the whole length very obscurely multiarticulate and furnished with long setæ.

The external maxillipeds, when extended, reach a little by the tip of the rostrum; the ischium is nearly twice as long as broad and triquetral, with the dorso-internal angle sharply and regularly dentate; the merus is slightly shorter than the ischium, nearly as broad as long, expanded distally and armed with two obtuse teeth on the inner side and with a single tooth outside the articulation of the carpus; the three distal segments are slender and together about equal in length to the ischium and merus, the propodus being about as long as the merus, and the carpus and dactylus successively a little shorter. The epipod and exopod are well developed, and the basal part of latter reaches considerably by the merus.

The chelipeds are equal and about three times as long as the carapax, the merus being about as long as the carapax, and the chela considerably longer. In the females and young males the chelipeds are very slender and subcylindrical throughout, with the chela scarcely, if at all, stouter than the carpus, and with the digits straight and very slender. In the large males the chelipeds are very much stouter; the body of the chela is expanded and vertically flattened distally, and the digits gape widely at the base, the proximal half of the propodal digit being strongly curved and unarmed, while the distal part of the prehensile edge is straight and minutely serrate like the corresponding part of the dactylus, with which it is in contact when the digits are closed; the basal part of the dactylus is only slightly curved, but is armed with an obtuse tubercle on the prehensile edge near the base; and the whole prehensile edges of both digits are more or less hairy.

The three pairs of ambulatory legs are slender and subequal in length, about as long as the body, and the dactyli are slender, strongly curved, more than half as long as the propodi, and unarmed. The posterior legs are very small and slender and of essentially the same form as in *Munida*. There are no epipods at the bases of any of the thoracic legs.

The abdomen is considerably shorter and much narrower than the carapax, and its dorsal surface is nearly smooth and devoid of carinæ, except on the edges of the sixth somite, as described beyond, though there is a slight transverse sulcus on the middle portion of the second somite, which is also raised sharply above the small facet which slides under the carapax. The epimera of the second somite are broad; the third and fourth somites are short, and their epimera very narrow and acute; the fifth somite is a little longer than the fourth, and its epimera broader and more obtuse than those of the fourth; while the sixth somite is slightly longer than the fifth, and the postero-lateral margins

of its epimerà are excavated to fit accurately the outer edges of the bases of the uropods, and are margined with a narrow carina.

The telson is approximately two-thirds as long as broad, narrowed posteriorly, with the posterior angles rounded and the posterior edge slightly emarginate in the middle. The telson is stiffened by eight distinct calcified plates; a broad median basal plate, with a small one either side at the base of the uropod and a small median one behind it and between a pair of broad lateral plates, still behind which there is a second pair which meet in the middle line and form the tips and lateral angles.

The lamellæ of the uropods are about as long as the telson, a little longer than wide, the inner slightly longer than the outer, and each widest near the extremity, which is broadly rounded in outline, while the outer edge is nearly straight.

In the male the first and second pairs of abdominal appendages are well developed and of nearly the same form as in the species of *Munida*. Those of the first pair are about as long as the protopods of the second pair, with the protopod somewhat triquetral and naked except a few setæ along the distal part of the inner edge, and with the single terminal lamella slightly shorter than the protopod but much broader, very thin, margined with setæ distally and along the outer edge, and the edges rolled together on the anterior side. In the second pair the protopod is slender and naked, and bears a narrow, lanceolate lamella a little shorter than the protopod and clothed with numerous setæ along both edges and on the proximal part of the anterior side, and at its base a minute second lamella much narrower than the other, scarcely as broad as long, and naked. The appendages of the third, fourth, and fifth somites are rudimentary, very minute, and almost wholly naked; they are scarcely an eighth as long as the appendages of the second somite, very slender, and with a single terminal lamella smaller than the protopod. In the female there are no appendages upon the first somite of the abdomen, and the appendages of the second somite are very minute, slender, and tipped with a few small setæ. The appendages of the third, fourth, and fifth somites are well developed, uniramous, and ovigerous; they increase in size successively from the third to the fifth, and each appendage is composed of a slender protopod and a shorter terminal portion composed of two segments of which the terminal is the longer.

The eggs in the alcoholic specimens are approximately spherical, 1.50^{mm} to 1.75^{mm} in diameter, and very few in number, the two largest egg-bearing specimens carrying less than thirty eggs each, while the three smaller specimens carry nine, three, and two each, though a very few eggs may have been lost from these last specimens.

Three specimens from station 941 give the following measurements in millimeters:

	1.	2.	3.
Sex	♂	♂	♀
Length, tip of rostrum to tip of telson	22.0	17.5	17.5
Length of carapax, including rostrum	12.2	9.4	9.3
Length of rostrum	3.0	2.3	2.2
Breadth of carapax at anterior angles	7.0	5.4	5.3
Greatest breadth of carapax	9.0	7.3	7.0
Length of cheliped	35.0	31.0	28.0
Length of merus	12.0	11.0	10.0
Length of carpus	5.0	4.3	3.8
Length of chela	15.9	13.3	11.5
Greatest breadth of chela	4.0	2.1	1.3
Length of dactylus	6.5	5.2	4.6
Length of first ambulatory leg	22.0	19.0	17.5
Length of telson	3.3	2.5	2.5
Breadth of telson	4.5	3.6	3.5
Diameter of eye	0.6	0.5	0.5

Specimens examined.

Station No.	Locality.		Depth in fathoms.	Nature of bottom.	When collected.	No. of specimens.		With eggs.	Dry or alcoholic.
	N. lat.	W. long.				♂	♀		
	OFF MARTHA'S VINEYARD.								
	° ' "	° ' "			1880.				
871	40 02 54	70 23 40	115	fine. S. M.	Sept. 4	1	0		Alc.
873	40 02 00	70 57 00	100	sft. M.	Sept. 13	1	1		Do.
874	40 00 00	70 57 00	85	M.	Sept. 13	1	0		Do.
					1881.				
940	39 54 00	69 51 30	134	{ hrd. S. and sponges. }	Aug. 4	2	1	1	Do.
941	40 01 00	69 56 00	79	hrd. S., M.	Aug. 4	13	3	3	Do.

In the manuscript sent to the printer I referred this species to *Elasmonotus* with considerable hesitation, though it agreed very well with the brief diagnosis given by Milne-Edwards (Bull. Mus. Comp. Zool. Cambridge, viii, p. 60). The recently published figures of *E. Vaillantii* (Recueil de figures de Crustacés nouveau ou peu connus, April, 1883), however, seem to show that my species is generically as well as specifically distinct from *Elasmonotus*, being distinguished by the short and broad merus of the external maxilliped, the absence of spines, teeth, or carinæ upon the carapax and abdomen, and by the greater breadth of the carapax, if the measurements given by Milne-Edwards, are correct.* The species here described is apparently also distinguished generically by the small and non-segmented exopod of the first maxilliped, and specially by the rudimentary character of the appendages of the third, fourth, and fifth somites of the abdomen. The number

and arrangement of the branchiæ, as indicated in the following formula, is the same as in *Munida* :

	Somite—								Total.
	VII.	VIII.	IX.	X.	XI.	XII.	XIII.	XIV.	
Epipods.....	1	0	1	0	0	0	0	0	(2)
Podobranchiæ.....	0	0	0	0	0	0	0	0	0
Arthrobranchiæ.....	0	0	2	2	2	2	2	0	10
Pleurobranchiæ.....	0	0	0	0	1	1	1	1	4
									14+(2)

*There is a perplexing disagreement in Milne-Edwards's characterization of his species between the descriptions of the proportions of the carapax and the accompanying measurements. *E. brevimanus* and *abdominalis* are each said to have the carapax narrower ("plus étroite") than *E. longimanus*, though the measurements given show *E. brevimanus* to be very much, and *E. abdominalis* slightly, broader than *E. longimanus*.

NEW HAVEN, CONN., December 28, 1882.

EXPLANATION OF PLATES.

All the figures on Plates I and II; Figs. 4 and 5, Plate IV; Figs. 4, 4a, 4b, and 5, Plate V; and Fig. 5, Plate VI, were drawn by J. H. Emerton. All the other figures were drawn by the author.

PLATE I.

Munida valida Smith. Dorsal view of male, from station 1112, natural size.

PLATE II.

FIG. 1.—*Anoplnotus politus* Smith. Dorsal view of a male, from station 941, enlarged two diameters.

FIG. 2.—*Eumunida picta* Smith. Dorsal view of a male, from station 1043, natural size.

PLATE III.

FIG. 1.—*Anoplnotus politus*. First maxilla of the right side, seen from below, of a male from station 941, enlarged twelve diameters.

FIG. 2.—Second maxilla of the right side of the same specimen, enlarged twelve diameters.

FIG. 3.—First maxilliped of the right side of the same specimen, enlarged twelve diameters.

FIG. 4.—Second maxilliped of the right side of the same specimen, enlarged twelve diameters.

FIG. 5.—External maxilliped of the right side of same specimen, enlarged eight diameters.

FIG. 5a.—Ischium and merus of the same appendage, seen from above, enlarged eight diameters.

FIG. 6.—*Eumida picta*. First maxilla of the right side of a male, from station 1098, seen from below, enlarged eight diameters.

FIG. 7.—Second maxilla of the right side of the same specimen, enlarged eight diameters.

FIG. 8.—First maxilliped of the right side of the same specimen, enlarged eight diameters.

FIG. 9.—Posterior thoracic leg of the same specimen, enlarged eight diameters.

FIG. 10.—Appendage of the fifth somite of the abdomen of a young specimen, 15^{mm} long, from station 1152, enlarged twenty-four diameters.

FIG. 11.—*Munida Caribæa*? Smith. First maxilliped of a male, from station 1043, enlarged eight diameters.

PLATE IV.

FIG. 1.—*Eumida picta*. Extremity of the abdomen of a male, from station 1098, dorsal view, enlarged three and a half diameters.

FIG. 2.—Extremity of the abdomen of a young male, from station 1152, enlarged four diameters.

FIG. 3.—Peduncle of right antenna of a male, dorsal view, from station 1152, enlarged eight diameters; *a*, acicle, or articulated spine, of the second segment, representing the antennal scale; *b*, third segment, projecting anteriorly in a long spine.

FIG. 3a.—The same, side view; *a*, as in last figure.

FIG. 4.—*Eupagurus politus* Smith. Lateral view of left side of a male, from station 922, natural size.

FIG. 5.—*Catapagurus Sharreri* A. M.-Edwards. Lateral view of left side of a male in a carcinoecium, formed by *Adamsia sociabilis* Verrill, from station 940, enlarged two diameters.

PLATE V.

FIG. 1.—*Eupagurus bernhardus* Brandt. Outline of transverse section through the lower part of the anterior arthrobranchia of the thirteenth somite (penultimate thoracic), showing the form of the lamellæ, enlarged eight diameters; *a*, afferent, and *b*, efferent vessel.

FIG. 2.—*Sympagurus pictus* Smith. Outline of similar section of the corresponding branchia of a female, from station 924, enlarged eight diameters, and lettered as in the last figure.

FIG. 2a.—Extremity of the same branchia, side view, enlarged eight diameters.

FIG. 3.—*Parapagurus pilosimanus* Smith. Outline of similar section of the corresponding branchia of a male, from station 880, enlarged eight diameters, and lettered as in Figs. 1 and 2.

FIG. 3a.—Extremity of the same branchia, side view, enlarged eight diameters.

FIG. 4.—*Parapagurus pilosimanus*. Lateral view of the left side of the originally described male specimen, taken on a trawl-line off Nova Scotia, half natural size.

FIG. 4a.—Dorsal view of the carapax and anterior appendages of the same specimen, natural size.

FIG. 4b.—Dorsal view of the chelipeds of the same specimen, half natural size.

FIG. 5.—Dorsal view of a male in the carcinoecium (*Epizoanthus paguriphilus* Verrill), from station 947, natural size.

PLATE VI.

FIG. 1.—*Parapagurus pilosimanus*. First maxilla of the right side, seen from below, of a male from station 880, enlarged six diameters.

FIG. 2.—Second maxilla of the right side of the same specimen, enlarged six diameters.

FIG. 3.—First maxilliped of the right side of the same specimen, enlarged six diameters.

FIG. 4.—Appendage of the right side of the first somite of the abdomen of the same specimen, seen from behind, enlarged four diameters.

FIG. 4a.—Appendage of the right side of the second somite of the abdomen of the same specimen, seen from behind, enlarged four diameters.

FIG. 5.—*Sympagurus pictus*. Dorsal view, from life, of a male in the carcinoecium (*Urticina consors* Verrill), from station 924, one-half natural size.

FIG. 6.—First maxilla of the right side of a female, from station 1114, enlarged six diameters.

FIG. 7.—Second maxilla of the right side of the same specimen, enlarged six diameters.

FIG. 8.—First maxilliped of the right side of the same specimen, enlarged six diameters.

FIG. 9.—*Eupagurus bernhardus*. First maxilliped of the right side of a male, from station 119 (Halifax, Nova Scotia), enlarged six diameters.

PLATE I.

(Drawing by Mr. J. H. Emerton.)

Munida valida Smith. (p. 42.) Dorsal view of male, from station 1112, natural size.

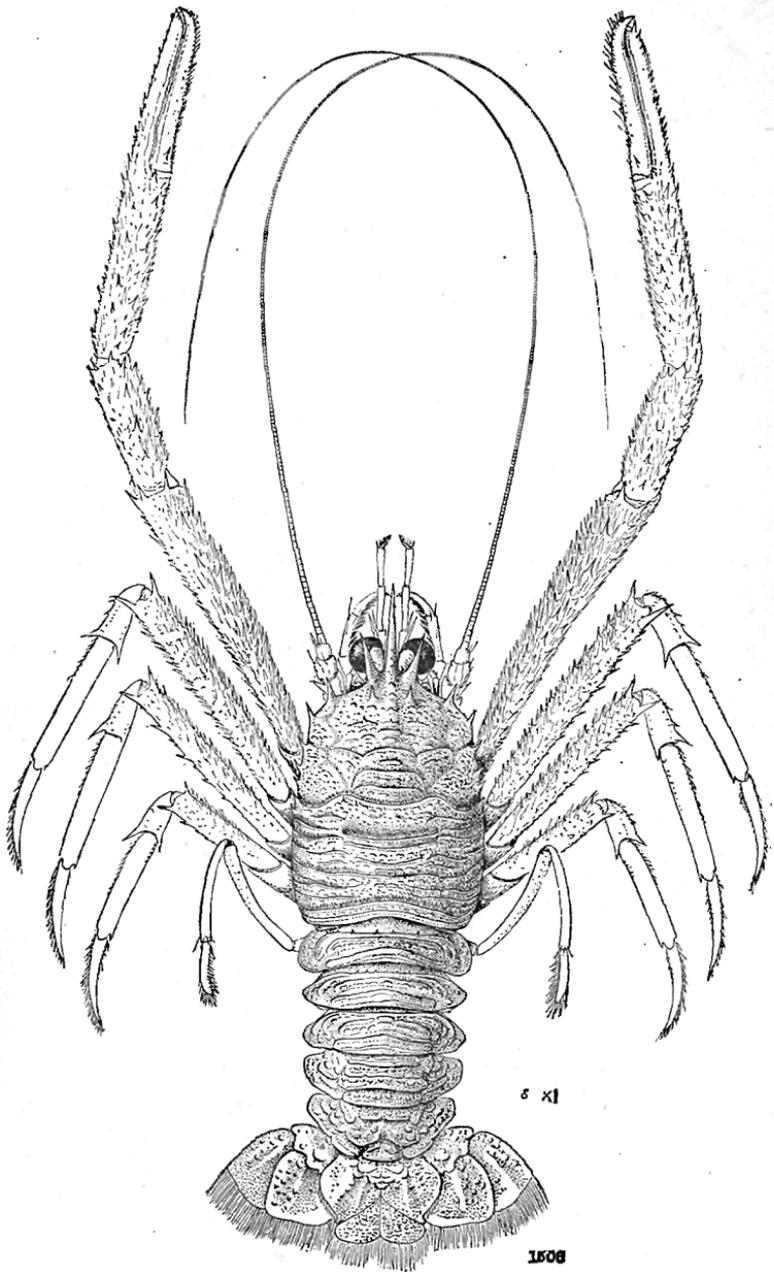


PLATE II.

(Drawings by Mr. J. H. Emerton.)

FIG. 1.—*Ancplonotus politus* Smith. (p. 50.) Dorsal view of a male, from station 941, enlarged two diameters.

FIG. 2.—*Eumunida picta* Smith. (p. 44.) Dorsal view of a male, from station 1043, natural size.

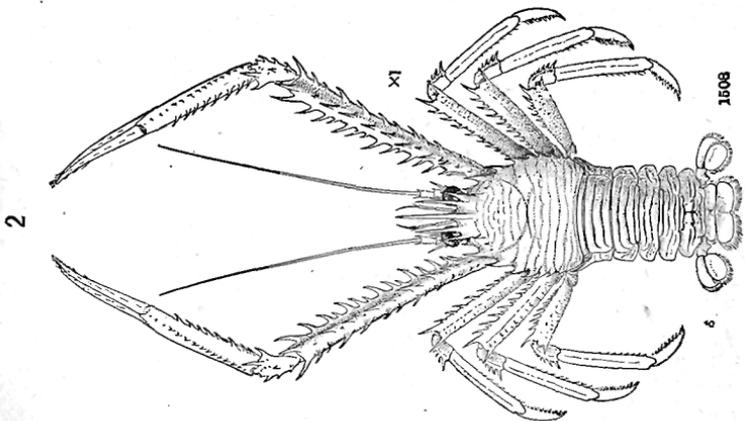
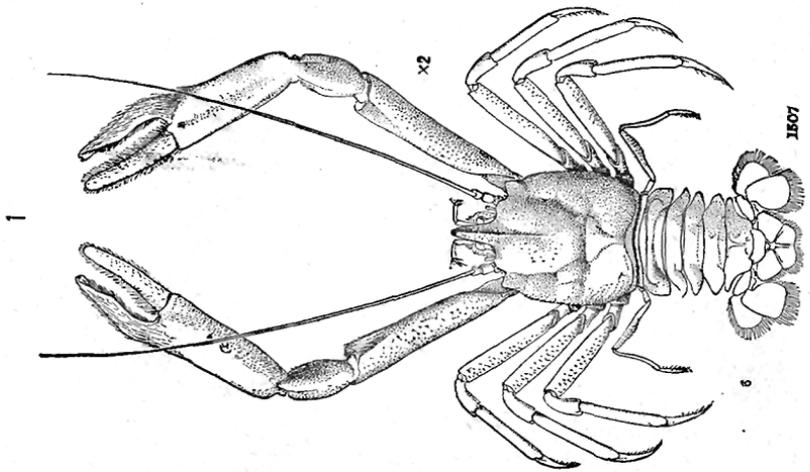


PLATE III.

(Drawings by Prof. S. I. Smith.)

- FIG. 1.—*Anoplonotus politus*. (p. 50.) First maxilla of the right side, seen from below, of a male from station 941, enlarged twelve diameters.
- FIG. 2.—Second maxilla of the right side of the same specimen, enlarged twelve diameters.
- FIG. 3.—First maxilliped of the right side of the same specimen, enlarged twelve diameters.
- FIG. 4.—Second maxilliped of the right side of the same specimen, enlarged twelve diameters.
- FIG. 5.—External maxilliped of the right side of the same specimen, enlarged eight diameters.
- FIG. 5a.—Ischium and merus of the same appendage, seen from above, enlarged eight diameters.
- FIG. 6.—*Eumunida picta*. (p. 44.) First maxilla of the right side of a male, from station 1098, seen from below, enlarged eight diameters.
- FIG. 7.—Second maxilla of the right side of the same specimen, enlarged eight diameters.
- FIG. 8.—First maxilliped of the right side of the same specimen, enlarged eight diameters.
- FIG. 9.—Posterior thoracic leg of the same specimen, enlarged eight diameters.
- FIG. 10.—Appendage of the fifth somite of the abdomen of a young specimen, 15^{mm} long, from station 1152, enlarged twenty-four diameters.
- FIG. 11.—*Munida Caribæa* Smith. (p. 40.) First maxilliped of a male, from station 1043, enlarged eight diameters.