

SMITHSONIAN MISCELLANEOUS COLLECTIONS

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REPORTS ON THE COLLECTIONS OBTAINED BY THE FIRST
JOHNSON-SMITHSONIAN DEEP-SEA EXPEDITION
TO THE PUERTO RICAN DEEP

NEW SPECIES OF MYSIDACID CRUSTACEANS

BY

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NEW SPECIES OF MYSIDACID CRUSTACEANS

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I am indebted to the courtesy of the United States National Museum for the opportunity of examining the collections of Euphausiacea and Mysidacea made by the Johnson-Smithsonian Deep-Sea Expedition to the Puerto Rican Deep of 1933.

The Euphausiacea did not include any new species or unexpected forms and are not further dealt with in this paper. They belonged to well-known West Atlantic tropical species.

Among the Mysidacea I detected specimens of five new species, descriptions and figures of which are offered below. In addition to the new species, mention should be made of the following rare forms also contained in the collection :

- Lophogaster longirostris* Faxon. Serial numbers 117 and 542.
Two specimens.
- Lophogaster spinosus* Ortmann. Serial number 495.
Four specimens.
- Petalophthalmus oculatus* Illig. Serial number 573.
Three specimens.

Lophogaster longirostris has been recorded only once previously, by Faxon (1896), from the Gulf of Mexico. *L. spinosus* is a rare deep-water Atlantic species noted on three occasions only, by Ortmann (1906), Zimmer (1914), and Tattersall (1926), all from the deep water of the Atlantic Ocean. *Petalophthalmus oculatus* is a very remarkable species so far recorded only from the Indian Ocean, Illig (1930).

In order to avoid repetition I give below a list of the localities concerned with this paper, as follows:

Serial number	Station number	Date, 1933	Latitude N.	Longitude W.	Depth in fathoms
27	6	Feb. 1	18° 30' 45"	66° 00' 50"	100
117	23	" 4	18° 32' 00"	66° 21' 15"	260
173	29	" 8	18° 40' 30"	66° 21' 15"	1100
175	30	" 8	18° 40' 30"	66° 36' 15"	1200
310 B		" 17	Anchorage, Santa Barbara, Bahamas.		0
321	60	" 18	19° 16' 45"	69° 04' 45"	500
358 A		" 23	Anchorage, Puerto Rico.		0
383	74	" 24	18° 36' 10"	65° 48' 30"	?
387 B		" 24	Icacos Bay, Puerto Rico.		0
406	} 25	" 25	Luis Pena Channel, Puerto Rico.		0
407 B					
444	82	" 26	18° 32' 45"	65° 23' 45"	300
495	86	" 27	19° 18' 30"	65° 16' 00"	?
521		Mar. 1	Brewers Bay, Virgin Islands.		0
542	96	" 3	18° 37' 15"	65° 03' 00"	300
567	98	" 3	18° 39' 30"	64° 56' 00"	300
573	99	" 3	18° 40' 00"	64° 51' 00"	220
730	106	" 8	18° 31' 30"	66° 18' 20"	?

Order MYSIDACEA

Suborder LOPHOGASTRIDA

Family LOPHOGASTRIDAE

PARALOPHOGASTER HANSEN, 1910

In an earlier paper (Tattersall, 1926) I recorded *Paralophogaster glaber* from six stations in the Western Atlantic, pointing out certain characters in which the specimens differed from Hansen's description and figures (Hansen, 1910). I have now to record a further series of specimens from practically the same area which show the same small differences from the type form. It is obvious that these differences are constant for the area under notice, and the question now arises whether they are to be considered as of specific rank.

Colosi (1930 and 1934) has described three new species of this genus from the Red Sea, *P. sanzoi*, *P. microps*, and *P. macrops*. These species are separated from the type on characters of precisely the same order as the differences I have pointed out as existing between the Atlantic specimens already referred to, and *P. glaber* as described by Hansen, namely, the proportions of the antennal scale, the form of the rostral plate, and the details of the armature of the telson. In *P. microps* the size of the eye is the main specific difference.

The characters in question may be briefly reviewed as follows:

Eyes.—In *P. microps* the eyes are very small, the cornea being very much shorter than the breadth of the basal joint of the antennular peduncle. In all the other species the eye is large, the cornea considerably broader than the basal joint of the antennular peduncle. There seem to be no tangible differences between the sizes of the eye in *P. glaber*, *P. sanzoi*, and *P. macrops*. The Atlantic specimens are large-eyed.

Antennal scale.—In *P. microps* and *P. sanzoi* the antennal scale extends for only one-third of its length beyond the distal end of the peduncle of the antennule. In the other described species the scale extends for one-half of its length beyond the distal end of the antennular peduncle. The Atlantic specimens belong to the first group.

Rostral plate.—In all the species the rostral plate is tridentate with the exception of *P. macrops*, in which the median tooth is wanting. In *P. glaber* the rostral plate is semicircular, with the lateral teeth rather far back on the lateral margin. In *P. sanzoi* it is large, with the lateral margins parallel and the whole plate rectangular in form. In *P. microps* it is large with the lateral margins incurving slightly posteriorly. The Atlantic specimens have the rostral plate more like that of *P. glaber* than the other two species, but the lateral teeth are more nearly on a level with the median tooth, so that the lateral margins are longer than in *P. glaber*.

Telson.—In this genus the telson is armed distally with two pairs of large spines, between which is a group of smaller spines in a graded series. Between the distal pair of large spines, at the apex of the telson, is a plate armed with five or six teeth, between which are long feathered setae. Proximal to the large spines on each lateral margin are a number of small spines. The details of the armature of the telson in each of the species may be tabulated as follows:

	Pairs of large spines	Spines between large spines	Spines proximal to large spines
<i>P. glaber</i>	2	6-7	4
<i>P. sanzoi</i>	2	3	8
<i>P. microps</i>	2	5	3
<i>P. macrops</i>	2	4	3
Atlantic spec.	2	3	3-4

It is thus clear that all the established species are very closely allied to one another, but it is equally obvious that the Atlantic specimens are as much entitled to specific rank as any of the species established by Colosi, for the differences from the type are of the same magnitude as in the other species. If the isolated geographical area of the Atlantic

specimens is added to the other differences a further reason for specific separation is apparent. Under the circumstances, therefore, it seems best to separate the Atlantic specimens under a new name, which I propose as *P. atlanticus*. When more material is available from intermediate waters, it may be possible to unite all these species under one name and regard them as races or varieties of a single widely distributed deep-sea species.

PARALOPHOGASTER ATLANTICUS, n. sp.

Text figs. 1 and 2

P. glaber, Tattersall, 1926.

Localities.—Serial numbers 27, 173, 175, 321, 383, 444, 495, 567, 573, 730.

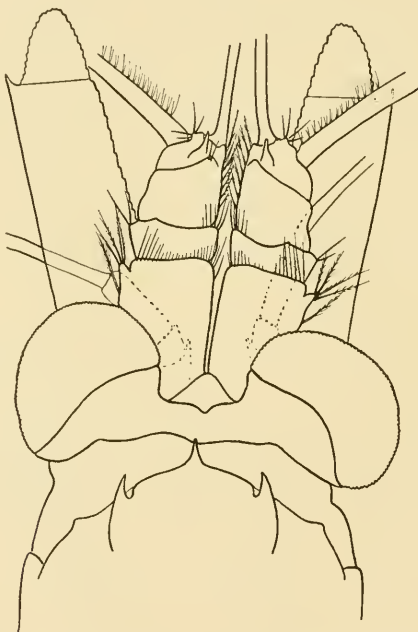


FIG. 1.—*Paralophogaster atlanticus*, n. sp. Dorsal view of anterior end to show the rostral plate, eyes, antennular peduncle and antennal scale. $\times 50$.

Description.—Agreeing with the description and figures given by Hansen (1910) for *P. glaber* except that (1) the rostral plate is tridentate, more distinctly so than in *P. glaber*, the lateral teeth are more prominent and more on a level with the median tooth, the lateral margins curved (fig. 1); (2) the antennal scale is three and one-half times as long as broad and one and one-half times as long as the an-

tennular peduncle (fig. 1); and (3) the lateral margins of the telson are armed with three or four short and two long spines between which are three smaller spines graded in size (fig. 2).



FIG. 2.—*Paralophogaster atlanticus* n. sp. Telson and uropods. $\times 50$.

Type.—U.S.N.M. no. 72866.

A key to the species of the genus may be useful, as follows:

1. Eyes small *P. microps* Colosi
- Eyes large 2
2. Antennal scale twice as long as the antennular peduncle..... 3
- Antennal scale one and a half times as long as the antennular peduncle.... 4
3. Rostral plate tridentate..... *P. glaber* Hansen
- Rostral plate without median tooth, front margin slightly convex with a
 tooth at each corner..... *P. macrops* Colosi
4. Rostral plate tridentate, lateral margins parallel; telson with eight proximal
 small spines and two distal large spines between which are three graded
 smaller spines *P. sanzoi* Colosi
- Rostral plate tridentate, lateral margins curved; telson with three to four
 proximal small spines and two distal large spines between which are three
 graded smaller spines..... *P. atlanticus* Tattersall

It should be remarked that *P. glaber* and *P. macrops* are very closely similar and differ mainly in the form of the rostral plate. Hansen has figured the rostral plate of a half-grown specimen of *P. glaber* in which the rostral plate is exactly as figured for *P. macrops* by Colosi, that is, the central tooth of the trident is missing and the front margin is slightly convex with a tooth at each corner. Hansen gives the size of adult specimens of *P. glaber* as 18 mm, whereas *P. macrops* was founded on specimens 12-13 mm in length. It is not unlikely that *P. macrops* represents not fully grown specimens of *P. glaber*.

Suborder MYSIDA

Family MYSIDAE

Subfamily SIRIELINAE

SIRIELLA Dana

SIRIELLA OCCIDENTALIS, n. sp.

Text figs. 3 and 4

Localities.—Serial numbers 310 B, 358 A, 406, 407 B.

Description.—In his Siboga report Hansen (1910) divides the species of *Siriella* into four groups. Using his grouping as a basis, this species belongs to the second group, characterized as follows: End of the telson with three small spines and a single pair of more lateral long spines. Proximal joint of the exopod of the uropods with much more than half of its outer margins furnished with spines, and at least about twice as long as broad. Proximal widened part of the telson with three pairs of marginal spines; spines along the distal third of the lateral margins of the telson closely set but irregular as to length, as several long spines are found, and between each two of these some, or near the end of the telson only two or one, smaller or small spines are inserted. Both rami of fourth pair of male pleopods terminating in very modified setae. Pseudobranchial rami of second to fourth pairs of male pleopods spirally twisted. (Hansen, 1910.)

Within this group the species may further be described as follows:

Carapace somewhat produced but leaving the eyes and eyestalks completely uncovered, frontal plate a broad, low triangle with the apex slightly produced into an acute point.

Eyes large and black.

Antennal scale (text fig. 3a) extending forward as far as the distal end of the antennular peduncle, three and one-fourth times as long as broad, terminal lobe broader than long.

Sixth joint of the endopod of the third to the eighth thoracic limbs (text fig. 3b) divided by a suture into two sub-joints; in the third limbs the proximal one is half as long as the distal and the dactylus

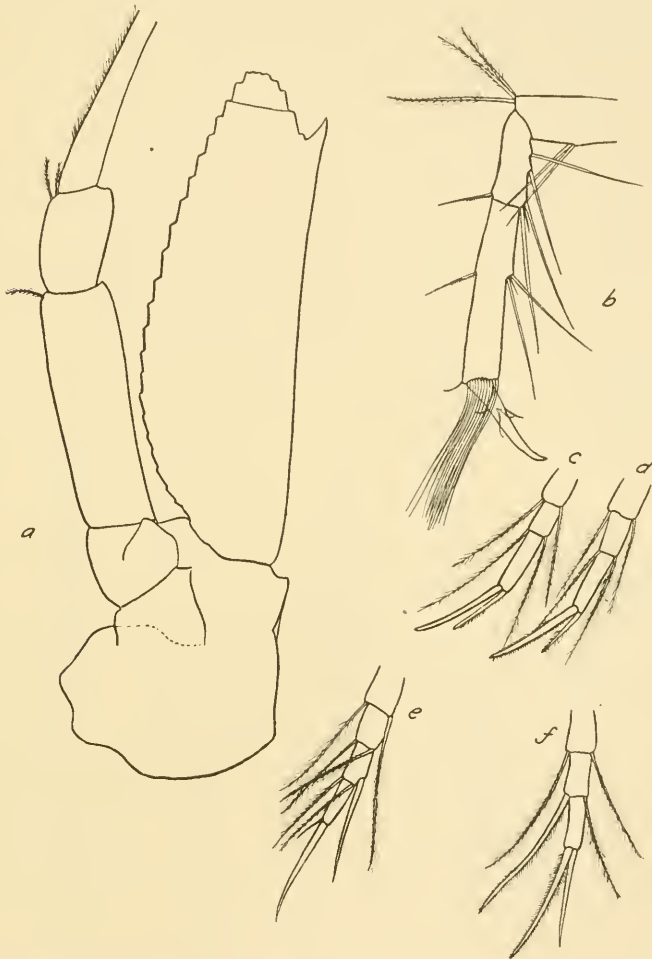


FIG. 3.—*Siriella occidentalis*, n. sp. *a*, antennal scale and peduncle; *b*, sixth and seventh joints of the endopod of a thoracic limb; *c*, distal extremity of the endopod of the third pleopod of the male; *d*, distal extremity of the exopod of the third pleopod of the male; *e*, distal extremity of the endopod of the fourth pleopod of the male; *f*, distal extremity of the exopod of the fourth pleopod of the male. All $\times 64$.

is more than one-third but less than one-half of the length of the sixth joint.

Telson (text fig. 4a) rather narrowly lanceolate in form, three and one-third times as long as broad at the base, lateral margins with

three large proximal spines separated by an interval from the distal series of spines in which the larger spines are separated by groups of three, four, or five smaller spines, apex armed with a single pair of long stout spines, between which are three equal small spines and a pair of plumose setae.

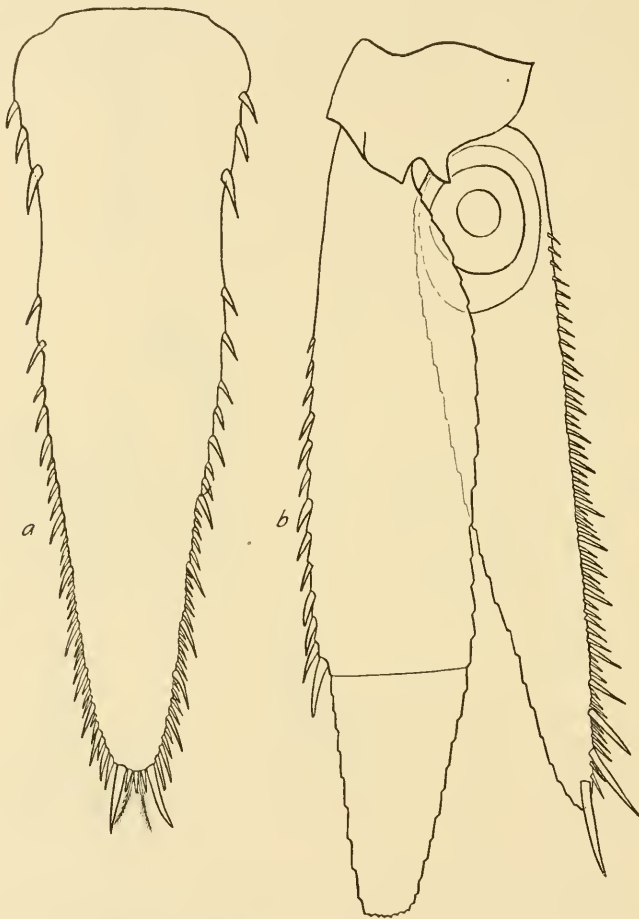


FIG. 4.—*Siriella occidentalis*, n. sp. a, telson; b, uropods. All $\times 64$.

Uropods (text fig. 4b) with the exopod longer than the endopod; proximal joint of the exopod twice as long as the distal joint, with about 13 spines on the outer margin occupying more than half the margin; distal joint of the exopod almost twice as long as broad; endopod with a closely set row of spines on the inner margin extending from the statocyst to the apex, arranged as larger spines separated by groups of smaller spines.

Pleopods of the male with both rami of the third and fourth pairs with modified setae on the terminal and penultimate joints. In the third pair the terminal joint of the endopod (text fig. 3c) bears two modified setae, a large, blunt simple one and a smaller, more acute plumose one. The exopod of the third pair (text fig. 3d) has a pair of similarly modified setae, both plumose, on the terminal joint. In the fourth pair the endopod (text fig. 3e) has the terminal joint furnished with two modified setae, the longer very closely and finely feathered but much stouter than the normal plumose setae arming the rest of the limb, the shorter stout and simple; the penultimate joint has one of its plumose setae modified in the same way as the longer of the two setae on the terminal joint, that is, it is stouter and more closely and finely feathered. The exopod of the fourth pair (text fig. 3f) has the terminal joint armed with one long, stout, simple spiniform seta and a rather short, fine, simple seta; the penultimate joint, in addition to the normal plumose seta at each distal corner, has a single long, stout, simple seta inserted some little way behind the distal margin on one side.

Length of adult specimens of both sexes, 10 mm.

Type.—U.S.N.M. no. 72867.

Remarks.—In the group of species of *Siriella* to which this species belongs *S. occidentalis* is distinguished by having both the third and fourth pleopods of the male furnished with modified setae. Only one other species, *S. anomala* Hansen, has both third and fourth pleopods of the male modified in this way. *S. anomala*, however, has the pseudo-branchial rami of the second to the fourth pleopods of the male nearly straight and not spirally twisted as in *S. occidentalis*.

Otherwise *S. occidentalis* is very closely allied to the other species within its group, especially to *S. inornata* Hansen, and can only be certainly determined from an examination of adult male specimens. The species is apparently a very abundant one in the inshore waters of the islands of the West Indies.

Subfamily GASTROSACCINAE

GASTROSACCUS Norman

GASTROSACCUS JOHNSONI, n. sp.

Text figs. 5-7

Localities.—Serial numbers 358 B, 387 B, 406, 407 B, 521.

Description.—*Carapace* (text fig. 5a) produced in front into a short triangular rostral plate with a subacute rounded apex; dorsal posterior

margin of the carapace (text fig. 5*b*) with a median triangular lobe and a broad rectangular lobe on each side of it, none of the lobes reflexed.

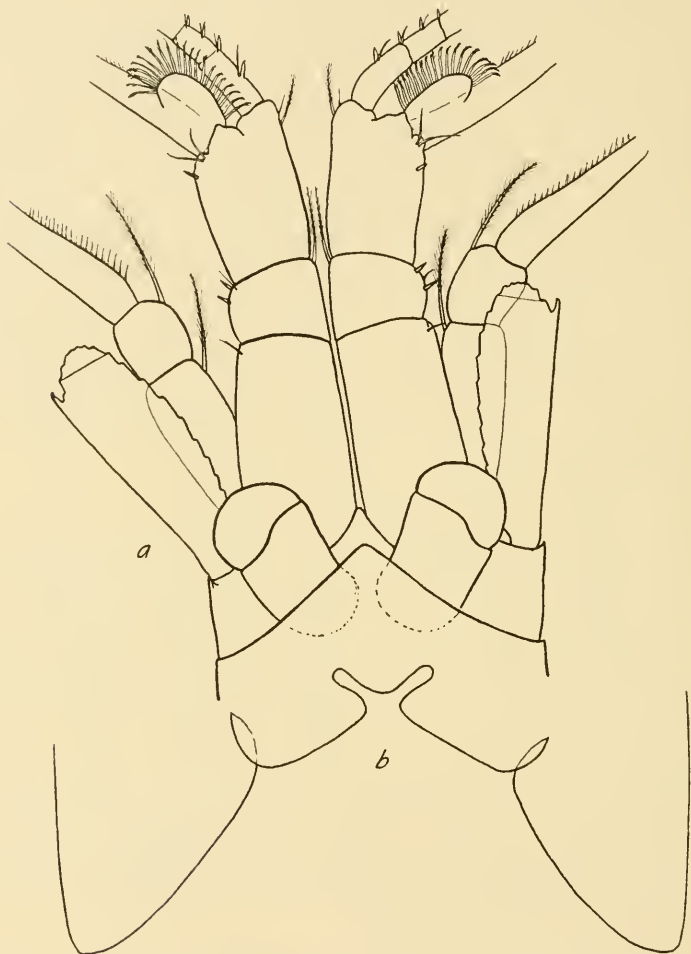


FIG. 5.—*Gastrosaccus johnsoni*, n. sp. *a*, dorsal view of the anterior end to show the rostral plate, eyes, antennular peduncle and the antennal scale; *b*, outline of the posterior margin of the carapace. All $\times 50$.

Eyes small, including the eyestalks twice as long as broad, cornea occupying the distal third of the whole eye and wider than long.

Antennular peduncle (text fig. 5*a*) with the first joint equal to the combined length of the second and third; two spines on the outer margin of the second joint and a similar spine near the distal end of the outer margin of the third joint.

Antennal peduncle extending forward to the level of the distal end of the second joint of the antennular peduncle.

Antennal scale (text fig. 5a) shorter than the first two joints of the antennular peduncle, about three and one-half times as long as broad, terminal joint marked off by a distinct suture.



FIG. 6.—*Gastrosaccus johnsoni*, n. sp. a, First pleopod of the male, $\times 50$; b, second pleopod of the male, $\times 50$; c, third pleopod of the male, $\times 37\frac{1}{2}$; d, fourth pleopod of the male, $\times 50$; e, fifth pleopod of the male, $\times 50$; f, sixth and seventh joints of the endopod of one of the thoracic limbs, $\times 50$; g, one of the lateral setae of the sixth joint of the thoracic limbs enlarged.

Mouth parts and thoracic limbs essentially as in *G. sanctus*; sixth joint of the endopod of the third thoracic limb (text figs. 6f and 6g) divided into 7 joints, that of the eighth limb into 12 joints, the dactylus in all the limbs reduced; basal plate of the exopod of the first thoracic limb with the outer distal corner rounded, those of the remaining limbs with a distinct tooth at the outer corner.

Uropods (text fig. 7b) with 13 spines on the outer margin of the exopod and 2 spines on the inner margin of the endopod.

Telson (text fig. 7a), including terminal spines, slightly shorter than the inner uropod, two and one-half times as long as broad at the base, cleft of the usual type and with the usual armature, lateral margin with nine spines extending throughout their entire length, the distal pair of spines on each margin much larger than the rest,

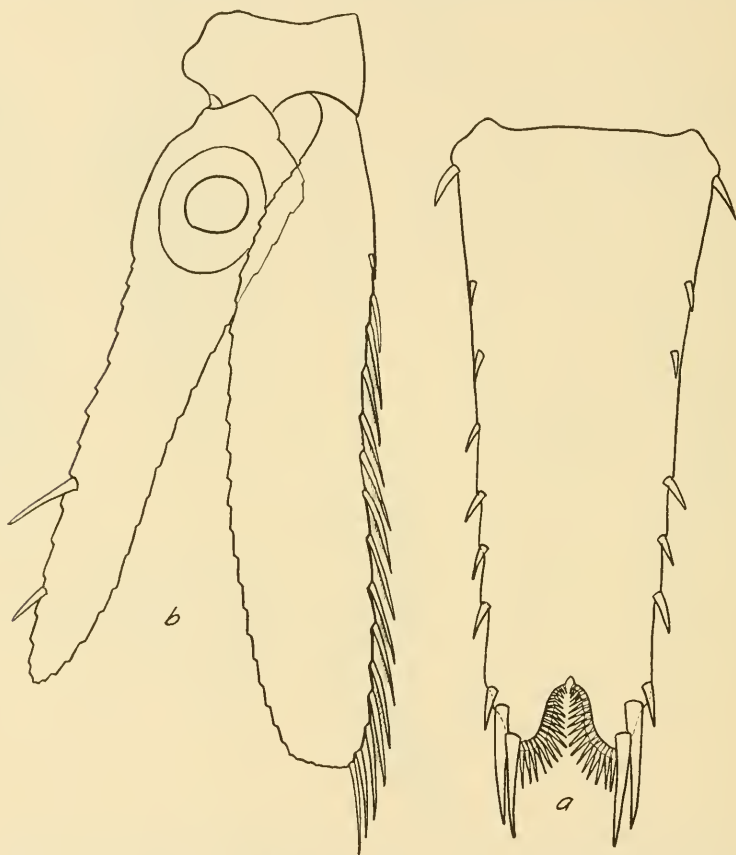


FIG. 7.—*Gastrosaccus johnsoni*, n. sp. a, telson; b, uropods. All $\times 62\frac{1}{2}$.

about three times as long as the antepenultimate spines, subequal in length and placed close together.

Male pleopods very distinctive, especially those of the second and third pairs; the endopod of all the male pleopods is composed of a single short joint; in the first pair of male pleopods (text fig. 6a) the exopod is much longer than the endopod and is divided into four joints; in the second pair (text fig. 6b), the pleopod is very long and stout, one and one-half times as long as the exopod, the endopod

is single-jointed and furnished with eight or nine delicate plumose setae, the exopod is seven-jointed, the terminal joint furnished with two long plumose setae; in the third pair (text fig. 6c) the protopod is about two and one-half times as long as broad, shorter and not so stout as the protopod of the second pair and shorter than its own exopod, endopod single-jointed and furnished with two short curved spines at the apex, the exopod long and modified in the most extraordinary way into a very complicated copulatory organ. (It is quite impossible to describe this appendage intelligibly, and reference must be made to the figure 6c, where all the essential processes and parts are figured as accurately as possible.) The fourth and fifth pairs of pleopods of the male (text figs. 6d and 6e) are very similar to one another, with short rectangular protopod, a single-jointed endopod and a two-jointed exopod, all furnished with the usual long plumose setae.

Length of adults of both sexes 10 mm. The female carries about 25 eggs in the brood pouch.

Type.—U.S.N.M. no. 72868.

Remarks.—The females of this species are very closely similar to those of most species of the genus, differing only in minor characters. The males, on the other hand, are clearly distinguished by the structure of the pleopods, especially those of the second and third pairs. I know of no other species in which the exopod of the third pair of male pleopods is modified in the same way as in this species, and the form of this pleopod at once distinguishes *G. johnsoni* from all other species of the genus. The second pair of male pleopods are also much more robust than in any other species. *G. johnsoni* is much the most remarkable species in the collection, and I have much pleasure in associating it with the name of the leader of the expedition. It is a very abundant species in the coastal waters of the Virgin Islands and Puerto Rico, where several hundred specimens were captured at night with nets.

Subfamily MYSINAE

Tribe ERYTHROPINI

HYPERERYTHROPS Holt and Tattersall

HYPERERYTHROPS CARIBBAEA, n. sp.

Text fig. 8

Locality.—Serial number 573, one specimen (male).

Description.—Carapace (text fig. 8a) hardly produced into a rostral plate, front margin broadly and evenly arcuate, slightly upturned in lateral view, anterolateral corners produced but rounded.

Eyes (text fig. 8a) large, flattened, kidney-shaped, pigment red-brown, without papillae.

Antennal scale (text fig. 8a) four times as long as broad, extending forward as far as the distal end of the antennular peduncle, outer margin entire and terminating in a prominent spine extending only slightly beyond the apex of the scale, a small distal joint marked off by a suture; the outer corner of the joint from which the scale springs not produced into a spine.

Inner uropods (text fig. 8b) twice as long as the telson with two spines on the inner margin in the region of the statocyst.

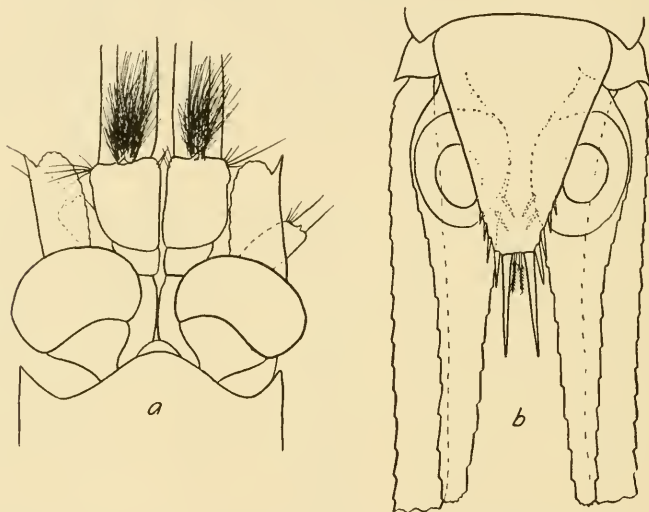


FIG. 8.—*Hypererythrops caribbaca*, n. sp. a, dorsal view of the anterior end of a male specimen to show rostral plate, eyes, antennular peduncle and antennal scale, $\times 22\frac{1}{2}$; b, telson and uropods, $\times 50$.

Telson (text fig. 8b) one and one-third times as long as broad at its base, having the shape of a truncated triangle extending backward about halfway along the inner uropods, apex truncate, armed with one pair of long powerful spines about half the length of the telson, between which is a pair of short plumose setae; lateral margins with four spines confined to the distal quarter of the margin.

Pleopods of the male as in the genus *Erythrops*.

Length of an adult male, 8 mm.

Type.—U.S.N.M. no. 72869.

Remarks.—The single specimen is badly damaged. All the thoracic limbs are broken away, and the outer uropods are likewise broken. I am unable to detect any sternal processes such as are characteristic

of the type species, but the specimen is so imperfect that I cannot be sure that they are really absent. The species is distinguished from the other described forms by the combination of the characters of the eye, antennal scale, and telson. The latter resembles very closely the telson of *Gibberythrops acanthura* (Illig), but the eye and antennal scale are very different from those of this species. In spite of the imperfect condition of the only specimen, I think that the species should be easy to recognize from the characters given above.

METAMBLYOPS Tattersall

METAMBLYOPS MACROPS, n. sp.

Text figs. 9 and 10

Locality.—Serial number 573, one specimen, female.

Description.—*Carapace* (text fig. 9a) hardly or not at all produced into a rostral plate, leaving the whole of the eyestalks and eyes, the antennular and antennal appendages completely uncovered, front margin broadly and evenly arcuate, anterolateral corners rounded.

Eyes (text fig. 9a) relatively large and on enormous stalks; in lateral view the cornea is large and globular, without papillae, pigment reddish brown.

Antennal scale (text fig. 9a) extending for one-quarter of its length beyond the antennular peduncle, rather narrow, six times as long as broad; terminal lobe extending some distance beyond the spine of the outer margin, twice as long as broad, with a distal joint marked off by a suture.

Telson (text fig. 9b) narrowly triangular in shape, two and one-half times as long as broad at its base, apex rounded and entire, lateral margins armed along the distal half with about 15 spines increasing somewhat in size toward the apex (spines on the apex broken away so that their exact arrangement cannot be established).

Uropods (text fig. 9b) both rather slender, inner one and one-half times as long as the telson, with a single spine on the inner margin in the region of the statocyst; outer twice as long as the telson.

Length of an adult female, 11 mm.

Type.—U.S.N.M. no. 72870.

The form of the endopods of the second and third thoracic limbs is shown in text figure 10a and 10b. They are of the typical Erythropini form, rather long and slender, the sixth joint of the third endopod divided by a proximal oblique and a distal transverse suture into three subjoints.

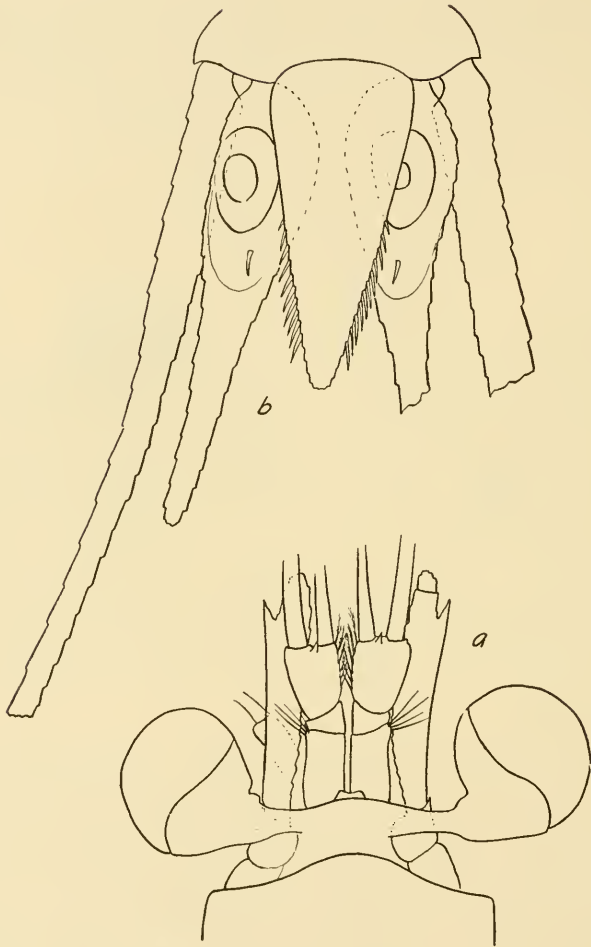


FIG. 9.—*Metamblyops macrops*, n. sp. *a*, dorsal view of the anterior end to show the rostral plate, eyes, antennular peduncle and antennal scale, $\times 22\frac{1}{2}$; *b*, uropods and telson, $\times 40$.

Remarks.—The exact generic position of this specimen is somewhat doubtful and must remain so until more complete and adult male specimens are available. It differs from the only other described species of the genus, *M. oculata* Tattersall (1911), in the practical absence of a rostral plate, in the large and peculiar form of the eyes,

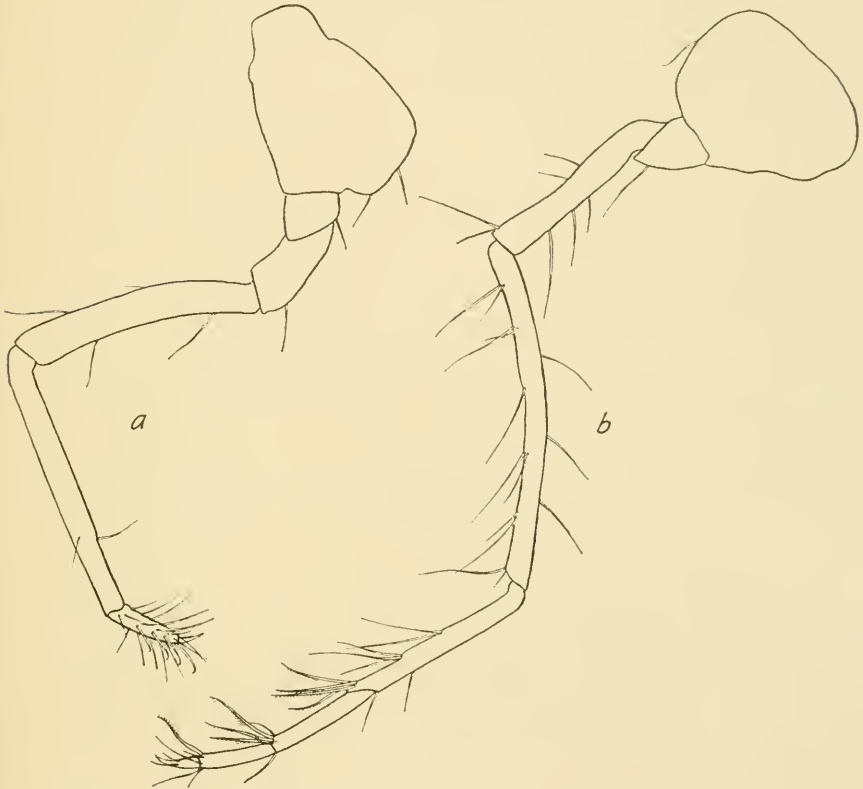


FIG. 10.—*Metamblyops macrops*, n. sp. *a*, endopod of the second thoracic limb; *b*, endopod of the third thoracic limb. All $\times 50$.

and in the smaller and narrower antennal scale. On the other hand there is no other genus to which it can be referred. Although the spines on the telson are broken, I think it is clear that the general form and armature of the telson are perhaps nearer to this genus than to any other. I refer it provisionally to *Metamblyops*, and rely on the combination of characters of the carapace, eyes, antennal scale, and telson for its specific recognition.

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