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## NEW SPECIES OF POLYCHÆTOUS ANNELIDS IN THE COLLECTIONS OF THE AMERICAN MUSEUM OF NATURAL HISTORY, FROM PORTO RICO, FLORIDA, LOWER CALIFORNIA, AND BRITISH SOMALILAND

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The collections of The American Museum of Natural History contain a number of polychætous annelids, collected at various times and at various localities. In a study of these annelids a number of new species were discovered. Their descriptions follow.

### Nereidæ

#### *Ceratonereis singularis*, new species

Figures 1 to 8

Small annelids averaging 15 mm. in length, with a prostomial width of not over 1 mm. The coloration (in preserved material) is variable, some being marked dorsally by a dense brown pigment, others nearly colorless. The general plan of pigment-distribution is that at the anterior end of each somite are two transverse dorsal bands of brown pigment, the posterior band being the wider. Sometimes it is spread over a larger area of the surface and in that case the coloration is less dense. In some individuals this coloration holds through as many as 16 somites, while in others, after the first 3 or 4, the posterior band extends until it becomes confluent with the anterior and in this case the darker region is at the posterior part of the somite. The parapodia are unpigmented except that sometimes a line of pigment extends out over the parapodial surface. In still other cases, especially through and behind the median region the pigment divides into 4 or 5 narrower bands, sometimes showing an especially prominent spot on the median dorsal surface. At the extreme posterior end of the body where the somites are closely crowded together the coloration is often more intense than anywhere else. On the prostomium is an oval, transversely arranged brown patch between the posterior eyes, and another patch is located just where the anterior end of the prostomium divides to form the cirrophores for the antennæ. There may be a similar patch on the base of each palp. The above description applies to over 100 specimens collected by C. H. Townsend at Carmen Island, Lower California. More than 100 were taken at San José Island in the same region, and these, in general, are much lighter in color. Where color appeared it was distributed essentially as above.

The prostomial length (Fig. 1) is about equal to its breadth, but its anterior margin has a deep incision, each part lateral to this incision forming a cylindrical cirrophore for the antenna. The eyes are very large and black, with prominent lenses.

Those of the same side are almost in contact and those of the anterior pair are slightly farther apart than the posterior ones. The lenses of the anterior pair point anterolaterally, those of the posterior a little lateral of dorsally. The palps are about twice as long as the prostomium and are cylindrical with little narrowing toward the ends. The terminal joint is about one-quarter as long as the basal, the latter often bent and twisted so as to give the impression of a joint near its middle. Of the paragnaths, I is missing; II, a crescent-shaped double row; III, a circular area of about 15; IV, small rounded area of about 9. No proboscis is fully extended and the arrangement of the other paragnaths is not clear. The maxillæ are light brown in color with deeper margins. Each has 5 or 6 teeth in addition to the terminal one.

In most cases the tentacular cirri are lost and in an examination of over 150 individuals I was able to find only the two basal ones remaining. That of the anterior pair is about as long as the antenna and a trifle stouter than the one of the second pair which extends to somite 7. The antennæ offer the most remarkable feature of the head region. They are nearly twice as long as the prostomium, the length being accentuated by the cirrophores formed by the division of the prostomium. Their form is lanceolate with the width of their bases equal to that of the cirrophores.

In the first parapodium the dorsal cirrus (Fig. 2) is inserted into a notch of the notopodium which is continued beyond this point as a cirrus-like process that is rather more slender than the dorsal cirrus. The neuropodium has a slender postsetal lobe into which the acicula extends, and a much shorter presetal one. Ventral to this it is continued as a tapering, cylindrical process extending a short distance beyond the setal lobe. The ventral cirrus is very long, longer than the neuropodium. The somites following the first are larger than it, and separation of the parapodium into neuropodia and notopodia soon occurs (Fig. 3, fifth parapodium). The dorsal cirrus is slender and long, extending far beyond the end of the parapodium. The notopodium has two conical lobes with an acicula coming to the surface between them. The neuropodium has a slender postsetal-lobe, and rounded presetal lobes with an acicula. The ventral lobe of the neuropodium is relatively much smaller than in the first parapodium and is about as long as the presetal lobe. The ventral cirrus is extremely slender.

In some specimens this type of parapodium is continued for a considerable distance along the body while in others a change takes place after the sixteenth somite, this change being associated with the assumption of the epitokal phase. The first change to be noticed is the appearance of the setæ with broad paddle-shaped terminal joints (Fig. 8), which occur in parapodia which have not begun to modify and are not markedly different from that shown in Fig. 3. In others, which I interpret as a later stage, the parapodia are very much changed (Fig. 4). The conical notopodial lobe is much smaller than the setal portion and dorsal to the base of the dorsal cirrus is a small rounded lobe. Two similar but larger lobes lie, one on either side, at the base of the ventral cirrus. The setal lobes are equal to one another in length and are very broad, the notopodial lobe having a finger-shaped process on its ventral margin, and the neuropodium a conical lobe on its lower margin. Posterior to these is a broad rounder thin expansion covering the gap between the two halves of the parapodium.

At the posterior part of the body is a region of about 25 somites in which the parapodia do not show these epitokal modifications. One of these from the anterior end of the series is shown in Fig. 5. The dorsal cirrus is very prominent, the dorsal notopodial lobe appearing as merely a conical protrusion attached to the cirrus near

its base. The setal lobes are acutely conical and the ventral neuropodial lobe is slender. The ventral cirrus is about the same size as in the earlier somites. In most cases, I was unable to find any setæ in these parapodia, but in one instance there were two kinds represented. One was the broad paddle-shaped ones found in the epitokal condition, the other had a camerated shaft and very short terminal joint. The latter was hooked at the end and had a row of fine spines along one margin.

In the first parapodium are two kinds of setæ. They both have camerated shafts, but differ in the form of the terminal joint. In one, this joint is very long and slender and very sharply pointed (Fig. 6). A row of delicate spines occurs along one border. In the other the terminal joint has the marginal row of spines but it is shorter than in the first mentioned, is somewhat broader, and its apex is a blunt hook instead of a sharp point (Fig. 7). In the first parapodium the setæ protrude above and below the acicula, and there is no sharp division into two groups. In later parapodia, where this division appears, the setæ with the longer terminal joints make up all of the notopodial tuft and a part of the neuropodial, those with the hooked terminal joint are limited to the notopodium. In these somites, the setæ are essentially of the same form as in the first. In the epitokal region they all have the paddle-shaped terminal joint shown in Fig. 8.

There are about 200 specimens in the collection marked "Carmen Id. E. side electric light"; "Carmen Id. S. E. side electric light"; and "San José Id.."

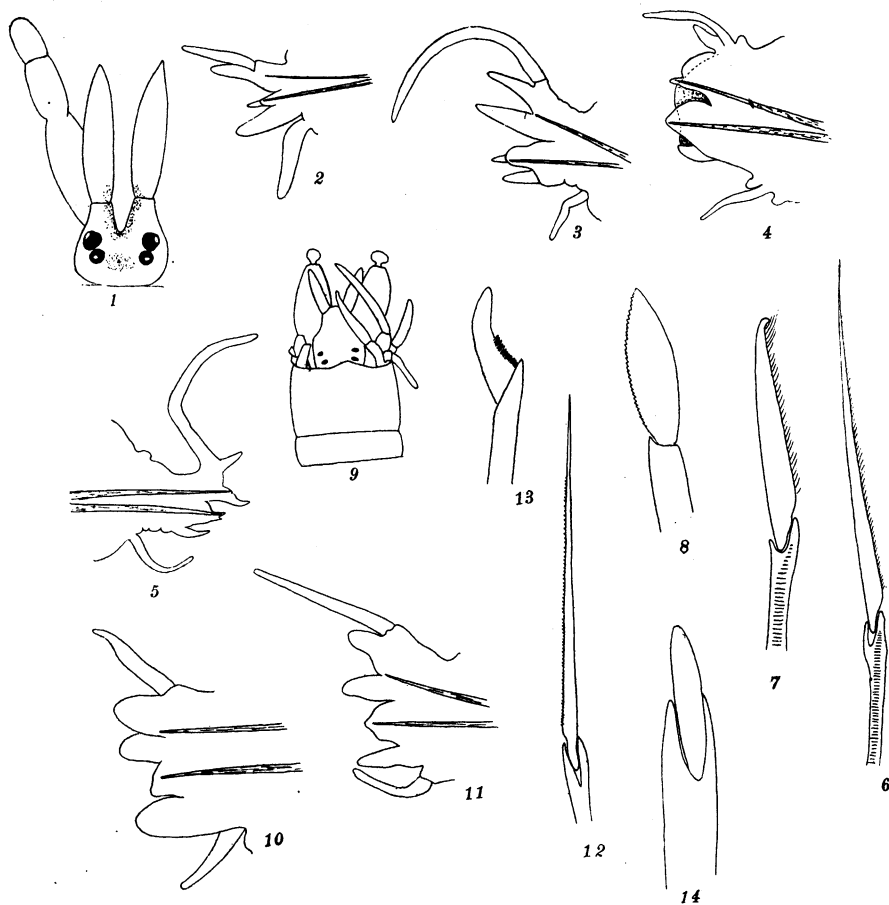
The type is from San José Island, Lower California, and is Cat. No. 1986 in The American Museum of Natural History.

### ***Nereis brevicirrata*, new species**

Figures 9 to 14

The type specimen is 120 mm. long, with a peristomial breadth of 6 mm. The body reaches its greatest width in the region of the eighth somite where it is 7 mm. wide. At the fourteenth somite the body begins to narrow and the pygidium is 1 mm. wide. There are 78 somites. Anal cirri are lacking in all of the specimens. The prostomium is 3 mm. wide and 3 long. The basal two-thirds is fused on either side with the palps, and beyond this fusion the margins converge so that the apex is about half as wide as the base (Fig. 9). The antennæ are rather stout, about one-half as long as the prostomium, separated at their bases. The palps are heavy, the basal joint extending as far as the end of the antennæ, terminal joints globular, supported on a slender stalk. The prostomium is as long as the two following somites. The tentacular cirri have prominent cirrophores but short styles. The longest one is the anterior dorsal, reaching to the end of the palp; the posterior dorsal is a very little shorter, barely reaching to the posterior border of the prostomium. The anterior ventral is stouter than the corresponding dorsal and about one-half as long. The posterior ventral has similar relations to the posterior dorsal. All cirri and the antennæ have superficial markings resembling articulations toward their ends. The eyes are small, the posterior pair near the posterior prostomial margin, the anterior pair farther apart than the posterior and separated from them by three or four times their diameter. On the anterior margin of the peristomium a median lobe protrudes over the posterior end of the prostomium. The body shows no color markings.

In general, the anterior parapodia have stouter lobes with blunter ends than do the posterior, and the dorsal cirrus is nearer the apex of the lobe posteriorly than



*Ceratonereis singularis.*

Fig. 1. Head,  $\times 10$ . Fig. 2. First parapodium,  $\times 28$ . Fig. 3. Fifth parapodium,  $\times 28$ . Fig. 4. Epitokal parapodium,  $\times 28$ . Fig. 5. Posterior parapodium,  $\times 28$ . Fig. 6. Compound seta,  $\times 250$ . Fig. 7. Compound seta,  $\times 250$ . Fig. 8. Epitokal seta,  $\times 250$ .

*Nereis brevicirrata.*

Fig. 9. Head,  $\times 12$ . Fig. 10. Fifth parapodium,  $\times 13$ . Fig. 11. Posterior parapodium,  $\times 13$ . Fig. 12. Seta,  $\times 150$ . Fig. 13. Seta,  $\times 250$ . Fig. 14. Seta,  $\times 250$ .

anteriorly. In other respects there are practically no differences in parapodial structure throughout the body. The fifth parapodium (Fig. 10) has two bluntly conical notopodial lobes of which the dorsal is the heavier. A single black acicula and a tuft of setæ come to the surface between these lobes. The dorsal cirrus extends for more than half its length beyond the dorsal lobe and arises near its base. The neuropodium has truncated anterior and posterior setal lobes and a ventral lobe similar in form and size to the dorsal one of the notopodium. It carries a single black acicula. The ventral cirrus arises ventral to the base of the ventral parapodial lobe and is somewhat larger than the dorsal. A posterior parapodium (Fig. 11) has the same general appearance as the anterior but the lobes are more slender and, in the notopodium, more widely separated from one another. The dorsal cirrus arises from farther out on the dorsal lobe and is four times as long as this lobe. The ventral cirrus is longer than the ventral lobe but is more slender than the dorsal cirrus.

The notopodial setæ of the anterior somites are few in number, slender, compound, the slender terminal joint toothed along one margin (Fig. 12). In the neuropodium there are, in addition to these slender setæ, other much heavier ones, the terminal joint stout, blunt-ended, with a row of heavy spines along the concave margin (Fig. 13). In the posterior end of the body, the slender setæ of the dorsal tuft become very few or are absent altogether, their place being taken by a few heavy, dark-brown compound ones with the terminal joint lenticular in form and imbedded for about one-half its length in a cavity at the apex of the basal joint (Fig. 14). The neuropodium has the same forms of setæ as in anterior somites but the heavier ones are stouter, their diameter being equal to that of the lenticular setæ. The lenticular setæ resemble those found in *N. procera* Ehlers (1868, 'Die Borstenwürme,' pp. 557-559, Pl. xxiii, fig. 2) and have been regarded as an adaptation to a tube-dwelling mode of life (Johnson, 'Polychæta of the Puget Sound Region,' Proc. Boston Soc. Nat. Hist., XXIX, pp. 400 and 401, Pl. iv, fig. 47, Pl. v, figs. 53 to 59).

The paragnath arrangement is I, one very small one; II, longitudinal rows of about 200 each; III, a patch similar to II, but more numerous paragnaths and arranged transversely; IV, small irregular patch of very few paragnaths; V, absent; VI, four in a rectangle; VII, and VIII, a row of large paragnaths with irregularly arranged smaller ones in front of it.

The type was collected at Key Largo, Florida, by William Beebe and is Cat. No. 1987 in The American Museum of Natural History.

### ***Nereis spinifera*, new species**

Figures 15 to 20

A single specimen, marked as collected in Puget Sound by E. C. Starks. It is 130 mm. long and has a peristomial width of 5 mm. This width is retained in the anterior somites but the body begins to narrow from the 12th somite backward, the pygidium being only about 1.5 mm. wide. One slender, pointed, anal cirrus remains. The prostomium (Fig. 15) is 2 mm. wide, its length about equal to its width. The eyes are prominent, the anterior being the larger. Just in front of the anterior eye the prostomium narrows abruptly and is definitely coalesced with the inner margin of the palp from here to the anterior angle of the prostomium. The antennæ are conical, about one-quarter longer than wide, and are not in contact at their bases. The palps are heavy, the basal joint extending beyond the ends of the antennæ, the terminal

joint having a narrow base and much wider terminal portion. The cirrophores of the tentacular cirri are long as compared with their styles. Of the latter, the posterior dorsal is the longest, reaching to about the middle of the first setigerous somite. The posterior ventral is much shorter, barely longer than the cirrophore of the dorsal. The anterior dorsal has a slender style, shorter than the basal joint of the palp. The anterior ventral has a conical style about twice as long as its cirrophore.

Dorsally the peristomium (Fig. 15) has a lobe protruding over the posterior edge of the prostomium in the mid-dorsal line. On either side of this lobe its length is about equal to that of somite 2, and on the lateral margins it is about one-third longer. The setigerous somites are all of about the same length though varying somewhat in width in different parts of the body.

The first parapodium (Fig. 16) has pre- and postsetal lobes about equal in length, the anterior one entire, the posterior one bifid. There is one very black acicula. Setæ of the dorsal bundle all have long terminal joints. The dorsal-most of the ventral bundle are similar to these but with shorter terminal joints, while the remainder of the ventral bundle have very short but relatively heavy, terminal joints. The dorsal and the ventral cirri are quite similar in form, but the dorsal one is a trifle the longer. Above and below the setal lobe is a heavy rounded lobe, the ventral one of the two being a little more sharply pointed.

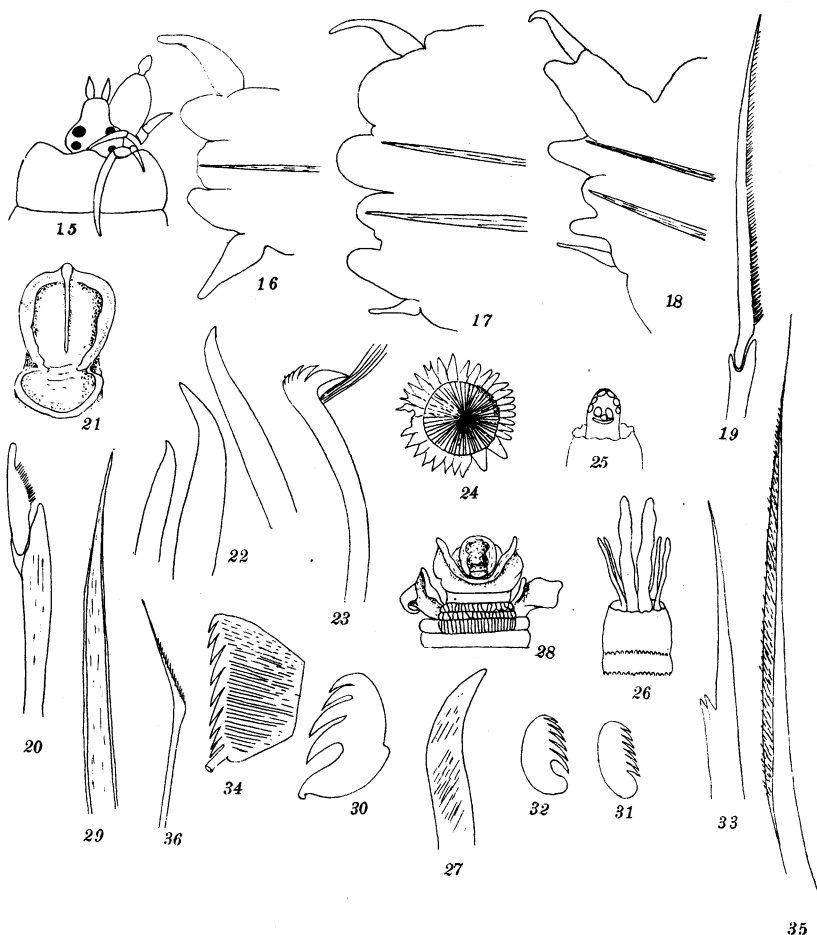
In the 10th parapodium (Fig. 17) the notopodium is composed of two heavy rounded lobes between which the setæ come to the surface. There is no noticeable post- or presetal lip. The dorsal cirrus is short, hardly longer than the setæ. The neuropodium has a thick, conical, ventral lobe and post- and presetal lips. The former is straight, the latter forms a lobe at the end of the acicula, but slopes downward and backward from there. The ventral cirrus is slender and conical, hardly as long as the ventral lobe.

Except that the dorsal cirrus becomes longer and more slender, this type of parapodium is continued to beyond the middle of the body. Toward the posterior end, the dorsal notopodial lobe enlarges, carrying the dorsal cirrus with it (Fig. 18). The figure is drawn from the 90th parapodium, there being about 100 in the entire animal.

The setæ are of two kinds. Those of the dorsal tuft are all alike, with long, pointed, and slightly curved terminal joint. A characteristic feature of these terminal joints is the relatively heavy, spike-like character of the marginal spines (Fig. 19), which are longer than half the width of the joint itself. A few of these setæ occur in the neuropodial tuft, but most of the latter have short, marginally spiny, terminal joints (Fig. 20). The figures are drawn from the setæ of the 1st parapodium. In later ones, there is practically no change in the form of the dorsal setæ and in the ventral ones the apex of the basal joint becomes heavier and dark-colored and the terminal joint is a little shorter.

The arrangement of paragnaths is: I, one large one; II, six or seven small ones in an irregular group; III, about sixteen small ones in an irregularly oval patch; IV, about twenty in an elongate oval figure, those nearest the jaws being much the largest, those farthest away the smallest; V, one large one; VI, one on either side, larger than in V, transversely oval in form, with lateral to each of these a single row of three; VII and VIII, two or three rows running around the pharynx. All paragnaths are dark brown in color. The jaws are dark brown, each having six marginal lobings hardly large enough to be called teeth.

The type is Cat. No. 1988 in The American Museum of Natural History.



*Nereis spinifera.*

Fig. 15. Head,  $\times 8$ . Fig. 16. First parapodium,  $\times 18$ . Fig. 17. Tenth parapodium,  $\times 35$ . Fig. 18. Ninetieth parapodium,  $\times 18$ . Fig. 19. Compound seta,  $\times 250$ . Fig. 20. Compound seta,  $\times 250$ .

*Maldanella corallicola.*

Fig. 21. Head,  $\times 5$ . Fig. 22. Hooks,  $\times 68$ . Fig. 23. Seta,  $\times 106$ . Fig. 24. Anal plate,  $\times 5$ .

*Stylarioides dubius.*

Fig. 25. Head,  $\times 7.5$ . Fig. 26. Tentacles,  $\times 7.5$ . Fig. 27. Hook,  $\times 250$ .

*Loimia minuta.*

Fig. 28. Head,  $\times 5$ . Fig. 29. Seta,  $\times 250$ . Fig. 30. Uncinus,  $\times 250$ .

Fig. 31. Ucinus of *Eupomatus similis*.

*Hydroides californicus.*

Fig. 32. Uncinus,  $\times 250$ . Fig. 33. Seta,  $\times 106$ .

*Placostegus calciferus.*

Fig. 34. Uncinus,  $\times 250$ . Fig. 35. Seta,  $\times 175$ . Fig. 36. Abdominal seta,  $\times 250$ .

**Maldanidæ****Maldanella corallicola**, new species

Figures 21 to 24

One specimen, collected by the writer in June, 1909, in coral rock near the lighthouse on Loggerhead Key, Dry Tortugas, Florida. The total length is 100 mm. and the greatest width, at the fifth somite, is 4 mm. At the ninth setigerous somite there is a sudden narrowing to 2 mm. in body width and this continues throughout the remainder of the body. There are 19 setigerous somites. In the first two the length is about equal to the width, in the third the length is about one-quarter less than the breadth and this proportion is maintained as far as, and including the eighth somite. Beginning with the ninth setigerous somite, they elongate relatively so that their length is three or four times their breadth. Because of distortion in the preservation, however, significant measurements are hard to get.

The cephalic plate (Fig. 21) makes an angle of about 30° with the first setigerous somite. The center of its anterior margin is marked by a conical protrusion which is the anterior end of a longitudinal ridge which is continued more than half-way across the dorsal surface of the plate. The entire margin of the cephalic plate, except for a considerable notch on either side, is expanded into a prominent fold.

The first setigerous somite has a dorsal tuft of slender, sharp-pointed setæ and a ventral one of three heavy hooks. The setæ are straight or very slightly bent and vary considerably in size. They are bilimbate, though this feature is much less easily seen in the smaller ones. The hooks (Fig. 22) have darker bases with much lighter apices. Their relative sizes are shown in the figure. At the fourth setigerous somite the places of the hooks are taken by a torus carrying a single row of stout setæ. Each seta (Fig. 23) has a heavy stem, terminating in an expanded head. The latter carries a strong ventral tooth with a diminishing row of smaller ones dorsal to it. A tuft of long, slender threads rises from the lower side of the large ventral tooth. In all subsequent somites both forms of setæ occur. Toward the posterior regions the notopodial lobe protrudes farther from the surface than in the anterior, and the torus is elevated above the general surface level. The first torus is short, but later ones are much elongated, leaving in each somite a space between the ventral ends not more than one-sixth the length of either torus. The tori make up the equivalent of stiff belts around the middle of the somites and their protrusion may be in part due to the shrinkage of the softer portions of the body wall as a result of the preservation.

The anal funnel (Fig. 24) has 29 marginal lobes, but a gap a little to the left of the midline on the ventral margin may indicate the loss of a lobe or lobes at this place. The lobes are very unequal in size and there is no regularity in their arrangement. The smallest are on the dorsal margin and are blunt-pointed, while much larger sharp-pointed ones lie opposite them on the ventral margin. Two lobes are larger than any of the others, and some are bifid.

The type is Cat. No. 1989 in The American Museum of Natural History.



**Flabelligeridæ*****Stylarioides dubius*, new species**

Figures 25 to 27

The body length averages about 15 mm. with a width in the widest portion of less than 2 mm. From the head region there is a very gradual increase in width up to the fifth somite. This width is maintained for the next 10 somites when there follows a progressive narrowing for 5 or 6, while the last 25 of the body somites are not more than half the width of the widest anterior portion. There is a very thin incrustation over the entire body and on the dorsal surface of the first 5 somites this is thickened by a deposit of fine white sand grains. Small papillæ occur all over the body. In the first 4 setigerous somites they are definitely arranged in a band around the middle of the somite, in later ones they still have in general a circular arrangement but this is more irregular and in the posterior part of the body they are quite irregularly distributed and are comparatively scarce.

The first 3 setigerous somites are obliquely truncated dorsally, the truncated surface being flat and covered with white sand. In only one specimen is there any indication of a head (Fig. 25). Here there is a narrow "neck," evidently the peristomium, with the horseshoe-shaped prostomium on its anterior end. The latter shows the scars of attachment of 6 distinct appendages, and 3 lobes surround the mouth. In another specimen there were two larger lobes which I consider to be the palps and on either side two smaller ones which are the tentacles (Fig. 26). In all of the other specimens the head is entirely retracted into the first setigerous somite. From the ventro-lateral surface of the first setigerous somite a tuft of very long setæ extends for a considerable distance in front of the head.

These setæ evidently correspond to the neuropodial. I was unable to find any trace of notopodial ones in any part of the body. A ring of the entire body, cut from the abdominal region and covering several somites was split and the internal organs removed so that there remained only the body wall. This was spread out flat on a slide and examined under a lens. No trace of notopodial setæ could be found, though the two bundles of neuropodial spines were very easily seen. These spines (Fig. 27), are very stout, curved, and only moderately pointed. This lack of neuropodial setæ may possibly indicate a new genus.

Collected by the writer at the Dry Tortugas, Florida, in 1910.

The paratypes are Cat. No. 1990 in The American Museum of Natural History.

In 1928, in a collection of polychætes from Haiti, I described ('Treadwell, 'Polychæteous Annelids from the "Arcturus" Oceanographic Expedition,' Zoologica, New York Zoölogical Society, VIII, No. 8, Dec.) a new species, *Semiiodera glabra*, and with it a tentatively new species, *stylarioides*. The latter is identical with *S. dubius*.

The collections of The American Museum of Natural History contain specimens from British Somaliland. While most of these belong to easily recognized old species, two are obviously new. Each is represented by only one incomplete specimen so that I am unwilling to attempt species diagnoses, but it seems wise to record them on the chance

that they may appear in other collections, in which case the record of their occurrence in Somaliland will be of interest. One of these is the *Audouinea* to be immediately described and the other is *Eupomatus operculata* whose description will be found under the family Serpulidæ.

### **Cirratulidæ**

#### ***Audouinea maculata*, new species**

A single specimen, about 20 mm. long and 4 mm. wide. The body is densely spotted with dark brown or black so that its naked-eye appearance is almost black. The lateral cirri apparently extend throughout the body, but they are now in such a tangled mass that their precise arrangements are very difficult to determine. Dorsal cirri occur in a transverse row on the sixth setigerous somite. These are much smaller than the lateral ones and are either colorless or marked with narrow dark bands on the white surface.

Somite I, in dorsal view, is about as wide as long, narrowing a very little toward the anterior end. The mouth is ventral and is overhung by the margin of the prostomium, the boundary between the pro- and peristomium having been obliterated. The second somite is a little wider than the first and subsequent ones widen rather rapidly up to the region of the twelfth setigerous somite where the body reaches its full width. Setæ begin on the third somite.

Setæ occur in dorsal and ventral bundles and, except that the dorsal setæ are the longer, there is practically no difference between them. They are all narrow, curved, and very sharp-pointed, but, especially in the ventral bundle, differ somewhat in length.

Collected at Berbera, British Somaliland, Feb. 21, 1921, by Barnum Brown.

The type is Cat. No. 1991 in The American Museum of Natural History.

### **Terebellidæ**

#### ***Loimia minuta*, new species**

Figures 28 to 30

A single small specimen, collected by the author at the Dry Tortugas, Florida, in 1910. The thoracic region is 11 mm. long and 2.5 mm. wide at the eighth somite. From this latter point there is a very slight narrowing toward the head but hardly any narrowing to the posterior end of the thorax. The anterior abdominal somites narrow regularly so that the sixth is about one-half as wide as the first. Behind the sixth the abdominal width is constant to the end of the body which is incomplete. The portion of the abdomen remaining is 11 mm. long.

The upper lip (Fig. 28) is horseshoe-shaped, with the margins more or less recurved. The tentacles occupy the usual position on the dorsal surface. Most of them have been lost but those remaining are relatively long and stout, and marked with narrow transverse brown bands, set close together. The lower lip is inconspicuous, being largely hidden by the anterior margin of a transverse fold which runs across the ventral face of the second somite and widens at either end to form a broad plate which extends dorsally so far as to conceal the first somite when viewed from the side.

A smaller lateral fold appears on either side the third somite but does not extend across the ventral surface.

The first ventral plate (Fig. 28) is common to the second and third somites, though these somites are distinct dorsally and laterally. A very delicate transverse furrow marks the boundary of these two somites on the plate and a similar line runs across the middle of the part of the plate belonging to the second somite. Irregular lines cut up the latter into small areas while in the part of the plate belonging to somite 3 these lines all run longitudinally. The following ventral shields are marked by longitudinal lines only. The plates are entire as far as the tenth but the eleventh, twelfth and thirteenth are bisected by a transverse line, while the fourteenth and last is trisected by two transverse lines.

There are three pairs of dichotomously branched gills on somites 2, 3 and 4. The first pair has the largest stalk and the third is smaller than the second, but the size differences between them are not very noticeable.

Setæ begin on the fourth somite, and tori with uncini on the fifth. There are seventeen setigerous somites. The setæ are quite similar in form, differing only in size. They (Fig. 29) are very sharp-pointed and slightly curved. In the larger ones the bilimbate character is very clearly seen, but in the smaller this is more obscure. The uncini have four prominent teeth (Fig. 30).

The type is Cat. No. 1992 in The American Museum of Natural History.

### **Serpulidæ**

In a bottle labeled "from Lower California," collected by C. H. Townsend in 1911, but giving no other locality data, was a mass of limestone tubes containing serpulids. Unfortunately, no record was made of the character of the tubes which were necessarily destroyed in removing the animals and it was not until later that I discovered that two genera are represented.

### ***Eupomatus similis*, new species**

#### **Figure 31**

The total length is 12 mm. of which the branchiæ make up 2 mm. There are 12 or 13 branchiæ on either side, each having a long and slender apical portion free from branchiales. In two of the three specimens the opercular stalk is on the right side, in the other it is on the left. The stalk extends to the end of the branchiæ as a cylindrical structure nearly twice as great in diameter as a branchia. At the apex it expands into a shallow cup with approximately 40 blunt marginal teeth. On its distal face a cup-shaped structure rises from its center. This has a heavy base and its margin carries approximately 20 stout hooks inwardly curved at the ends. As is characteristic of the genus *Eupomatus*, these hooks have no lateral branches. The only trace of color shown on the entire animal is on the base of the distal opercular cup which is dark brown, and similar color occurs on the marginal teeth of the proximal cup. The collar is thin, extending anteriorly nearly one-quarter of the length of the branchiæ.

On either side of the dorsal surface, the dorsal end of each row lying close to the opercular stalk of its side, is a diagonal row of stout setæ, recognizable from their

golden color against the white body. These setæ are of two kinds: the larger having heavy stalks and trifid ends, two of these terminal divisions being short, and blunt; the other long and sharp-pointed. Together with these is a smaller number of long, slender setæ. In the following six setigerous somites there are dorsal bundles of long, slender, curved awl-shaped setæ and ventral tori. The uncini each have 7 teeth (Fig. 31).

Collected in Lower California in 1911, by C. H. Townsend.

The type is Cat. No. 1993 in The American Museum of Natural History.

#### ***Eupomatus operculata*, new species**

A single specimen, incomplete posteriorly, the fragment being 10 mm. long and more than 0.5 mm. wide. The collar is well developed, its margin extending rather more than halfway from the base of the gill to where the latter divides into separate filaments. Seven much coiled filaments make up the gill of one side but they are broken away from the other. On the right side is an operculum with a stalk twice as long as the gill. On the left side is another operculum exactly like this in form, but with a much shorter stalk. The operculum proper has the usual form of an inverted cone or funnel, with its margin cut into about 40 sharp-pointed, colorless spines. From the center of the truncated end arises a central dark-colored, rather heavy stalk, prolonged into 7 long, curved processes.

Collected at Berbera, British Somaliland, Feb. 21, 1921, by Barnum Brown.

The type is Cat. No. 1994 in The American Museum of Natural History.

#### ***Hydroides californicus*, new species**

Figures 32 and 33

In size, body color and general appearance this shows no differences from the above described *Eupomatus*, the only distinction being in the structure of the operculum. In this the stalk is like that of *E. similis* but the marginal teeth of the terminal expansion are about 30 in number and long and sharp-pointed. There are 9 opercular spines which are longer and more decidedly curved than in *E. similis*, and each has a small spine on either side, attached about midway of its length and extending at right angles to the main axis. The presence of these spines places this specimen in the genus *Hydroides*. The setæ (Fig. 33) are exactly similar to those of *E. similis*, and the uncini are essentially similar but have 6 instead of 7 teeth (Fig. 32).

Collected by C. H. Townsend in 1911, in Lower California.

The type is Cat. No. 1995 in The American Museum of Natural History.

#### ***Placostegus calciferus* new species**

Figures 34 to 36

A single specimen which at first was difficult to locate in its proper species because of the apparent lack of collar setæ. However, these are present, though deeply imbedded in the collar tissue and difficult to find. The animal is 20 mm. long, the gills making up 3 mm. of this length. On either side are about 23 branchiæ of unequal lengths, the longest being on the dorsal surface, those of the ventral end being much shorter and inrolled for more than a complete circle. They are rather heavy and are

united for more than half their length by a basal membrane. In this preserved specimen the bases of the branchial lobes, as far as the outer margin of the basal membrane, are brown in color. The free portions of the branchiæ are alternately banded with colorless and brown. The operculum arises in the mid-dorsal line and in the contracted condition of the preserved specimen extends considerably beyond the ends of the branchiæ. From base to apex, its stalk is strongly calcified and marked with longitudinal ridges. At the outer end, the stalk expands rather asymmetrically into the 2 mm. wide opercular plate. On the margin this plate carries (seen to best advantage when viewed from below) a marginal row of bluntly rounded, brown-colored teeth. Some have been broken away, but, if evenly spaced all the way around the margin, the total number should be about 16. Distally the plate carries a thick deposit of limestone which is hollowed to form a shallow cup and from the margin of this cup series of irregular lamellar ridges extend to converge at the center, the whole resembling a water-worn coral cup with its septa.

The thoracic membrane is very prominent, its dorsal margin extending as far as the ends of the branchiæ. About halfway to the ventral surface on either side it becomes abruptly shorter and is continued with this length to the ventral surface. It is too badly preserved to allow of accurate description or drawing. It covers only the first setigerous somite of the thorax, leaving the other six entirely uncovered. In each of these the raised posterior margin, carrying the uncini, extends as a fold over the anterior margin of the somite behind it. The abdomen tapers gradually to a blunt end. Ventrally it shows a wide shallow depression which is most in evidence at the posterior end.

The thoracic uncini are trapezoidal in outline and each has 9 sharp teeth, the largest in the middle of the series (Fig. 34). Basal to the last tooth is a cylindrical process a little longer than the tooth and distinctly hollowed at the end. There are two kinds of thoracic setæ, the larger having shafts about twice as thick as the smaller. Toward the apex each larger one bends and from the point of bending tapers to an acute tip. This tapered portion may be straight or it may bend in either direction. Along the convex surface is a marginal wing which is covered by fine striations (Fig. 35). A very narrow wing lies along one margin of the finer seta, but the bending is never as marked in these as it is in the larger ones. The abdominal setæ (Fig. 36) have extremely long and slender stalks and are geniculate at the ends with a row of fine teeth along the apical margin. The abdominal uncini are similar to those of the thorax.

The specimen was collected in Julia Cove, Guanica Harbor, Porto Rico, by R. W. Miner, June 23, 1915 "from calcareous tube grown firmly on a shell." The specific name refers to the calcified character of the operculum.

The type is Cat. No. 1996 in The American Museum of Natural History.





