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INTRODUCTION

ALTHOUGH MANY COLLECTIONS of polychaetes have been made in the Gulf of Mexico and Caribbean area, most of our knowledge concerning these annelids derives from work done by Schmarda (1861), Treadwell (1901, 1917, 1921, 1924a, 1924b, 1928, 1936, and 1939), Augener (1906, 1922a, and 1927b), Monro (1928, 1933a, 1933b, and 1933c), Hartman (1942b and 1951b), and Rioja (1946). More recently, single papers have been contributed by Carpenter (1956), on the polychaetes of the northern Gulf, Renaud (1956), on those of Miami, Florida, and Bimini, Bahamas, and Marsden (1960), on the polychaetous annelids of Jamaica and Barbados.

In spite of the number of faunistic and distributional studies of this area, the present work, as well as the preliminary examination of other collections from northwest Florida, indicates that there is still much to be done in the compiling of a definitive species list of polychaetes for the Gulf of Mexico and the Caribbean.

The 21 species reported upon in the present paper were collected and kindly sent to me by Dr. Ivan M. Goodbody, Department of Zoology, University College of the West Indies, Jamaica. Duplicate specimens are in the reference collection at the University College, and all type material has been deposited in the collections of the American Museum of Natural History. One additional species (*Eunice*, new species) will be considered later in a separate paper.

It will be noted that in some cases, i.e., the cosmopolitan species, the synonymies given below are not complete. It was felt that, for the present, it would be best to restrict the synonymies and locality records to those of the Gulf of Mexico and Caribbean region. In addition, it should be noted that certain of the synonymy entries are enclosed in quotation marks; these signify that the citation in question refers, not to a new locality record, but to generalized localities that are based on previous records in the literature.

The following determinations have been made for this collection:

Polyodontes oculaea (Treadwell), 1901
Pareulepis sulcatisetis, new species
Chloeia viridis Schmarda, 1861
Hesione picta Müller, 1858
Typosyllis corallicola (Verrill), 1900
Glycera abbranchiata Treadwell, 1901
?Eunice tridentata Ehlers, 1905
Lysidice ninetta Audouin and Milne-Edwards, 1833
Polydora ancistrata, new species
Nerinides goodbodyi, new species
Armandia nonpapillata, new species
Dasybranchus sp.
Nicomache antillensis Augener, 1922
Sabella melanostigma Schmarda, 1861
Branchiomma nigromaculata (Baird), 1865
Branchiomma arenosa (Treadwell), 1924
Pseudobranchiomma emersoni, new genus, new species
Sabellastarte magnifica (Shaw), 1800
Olga elegantissima, new genus, new species
Salmacina amphidentata, new species
Eupomatus alatalateralis, new species

SYSTEMATIC TREATMENT

FAMILY POLYODONTIDAE PFLUGFELDER, 1934

GENUS POLYODONTES RENIERI IN AUDOUIN AND
MILNE-EDWARDS, 1832

Polyodontes oculate (Treadwell), 1901

Panthalis oculate TREADWELL, 1901, pp. 188-189; Puerto Rico.

Polyodontes oculate, MONRO, 1928, pp. 572-575; Trinidad, Colón (Caribbean end of the Panama Canal); Panama [City], Taboga, Balboa (Pacific end of the Panama Canal).

Panthalis oculate, TREADWELL, 1939, pp. 192-193; "Puerto Rico."

U.C.W.I. COLLECTION: One ovigerous specimen, in two fragments, measures 38 mm. in total length and has 68 setigerous segments. The specimen, 3 mm. in width, excluding parapodia, and 6 mm. in width, including parapodia, was dredged near Pickinng Beacon on January 29, 1960.

DISTRIBUTION: Tropical: throughout the Greater and Lesser Antilles, from Jamaica to Trinidad; on both sides of Panama.

FAMILY PAREULEPIDAE HARTMAN, 1939

GENUS PAREULEPIS DARBOUX, 1899

Pareulepis sulcatisetis, new species

Figures 1-27

DIFFERENTIAL DIAGNOSIS: *Pareulepis* with 12 fringed elytra which bear no dorsal tubercles; with tripartite marginal processes on the twelfth elytra; with three pairs of prostomial eyes; with heavy, bent notosetae, the tips of which may be spatulate or gouge-like; and with 32 setigerous segments.

U.C.W.I. COLLECTION: Two specimens of *Pareulepis sulcatisetis* were collected in mud, Green Bay, Jamaica, on February 11, 1960. The holotype is 9.5 mm. long and approximately 2.5 mm. broad, including parapodia. The paratype, which is fragmented into two pieces, has a total length of 10.0 mm. and is also approximately 2.5 mm. wide. Both specimens are comprised of 32 setigerous segments.

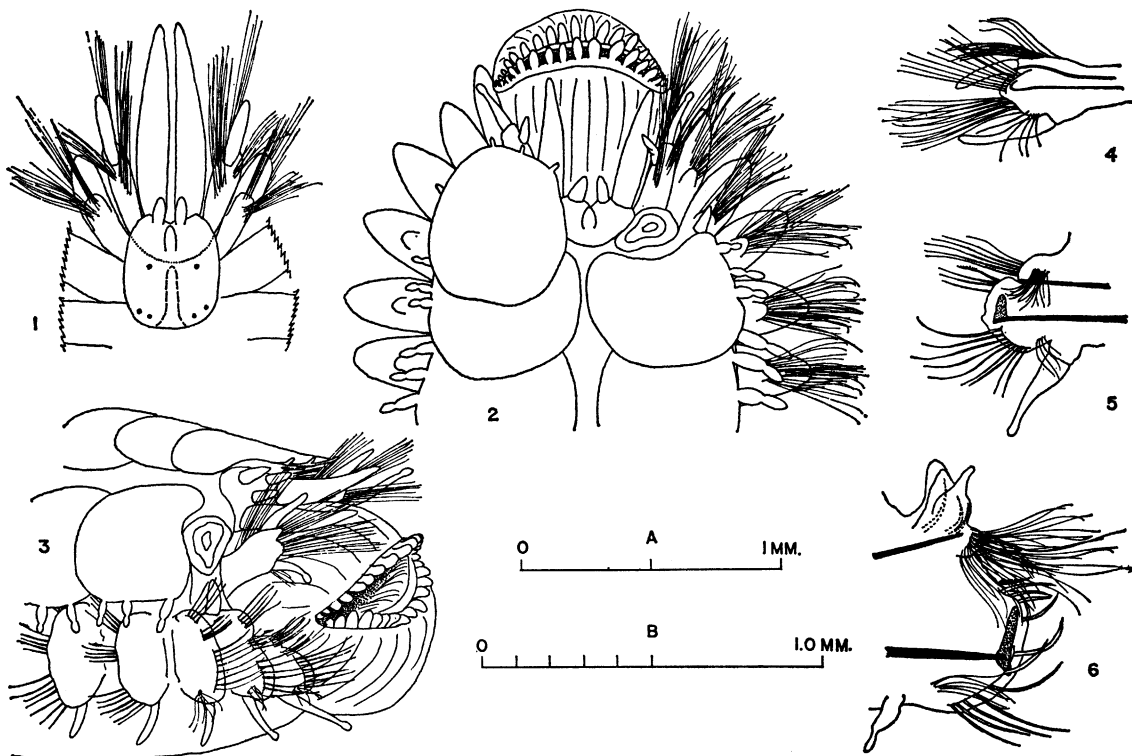
DESCRIPTION: The prostomium (fig. 1), which is slightly longer than wide, bears a pair of tapering palpi on its anterior margin. The bases of these are but barely separated at the point of insertion. Just dorsal to the

bases of the palpi, there are two short conical tentacles. An unpaired tentacle, similar in shape to the anterior pair, arises on the mid-line in the anterior third of the prostomium. About midway along the length of the prostomium there is a pair of eye spots, and near the posterior prostomial margin there are two more pairs of eye spots. The sides of the prostomium are nearly straight, the posterior margin is broadly rounded, and the anterior margin, in the vicinity of the palpi, is very slightly attenuated. The posterior two-thirds of the prostomium is hidden by medial extensions of the first elytophores. These are fused to the dorsal mid-line of the prostomium and the point of fusion extends anteriorly, to the level of the anterior pair of eye spots.

The first three parapodia are directed anteriorly, and the fourth is at right angles to the anteroposterior axis. In the holotype, the prostomium of which is not everted, all these anterior parapodia are in the same frontal plane.

In the paratype (figs. 2 and 3), the everted proboscis has caused a shifting of the relative position of certain structures. The bases of the pair of palpi are separated and are lateral to the pair of prostomial tentacles. The first parapodia come to lie directly above the second, almost in line with the first elytophore. The proboscis of *Pareulepis sulcatisetis* has a smooth exterior, and its opening is bordered with a single row of papillae, approximately 15 above and 18 below. The mouth opening of the proboscis of the paratype is sufficiently wide so that it can be seen that there are no chitinous teeth or jaws associated with this structure.

The first parapodium (fig. 4) is more elongate than the remaining parapodia. Both the ventral cirrus and the notopodial lobe (not a dorsal cirrus, because it is supported by the notoaciculum and a number of setae are inserted on its dorsomedial surface) appear to insert on the parapodium by means of an articulation. The ventral cirrus is longer, and it tapers to a somewhat capitate tip, while the dorsal lobe tapers to a rounded tip. The parapodium is supported by a pair



FIGS. 1-6. *Pareulepis sulcatisetis*, new species. 1. Dorsal view of prostomium, tips of third and fourth parapodia omitted. Central dashed line in posterior part of prostomium indicates point of fusion with base of first elytraphore; dotted line, anterior overhang of base of first elytraphore. 2. Dorsal view of anterior region of paratype, with proboscis extruded. Setae omitted from left side, and right first elytrium is missing. 3. Lateral and slightly dorsal view of paratype. 4. Anterior view of right first parapodium. 5. Posterior view of left second parapodium. 6. Posterior view of right sixth parapodium. 1-3, scale A; 4-6, scale B.

of acicula, with the notoaciculum extending into the base of the dorsal lobe and the neuroaciculum recurving dorsally near the tip of the neuropodial lobe.

The second parapodium (fig. 5) has the general shape of succeeding parapodia, i.e., the notopodial lobe is rather rounded and the neuropodial lobe is somewhat flattened in a transverse plane. In the second parapodium the neuropodial lobe shows a rounded lateral margin, and it is supported by a heavy aciculum which is inserted upon the anterior face of a flattened chitinous plate. In more posterior parapodia the acicular plate becomes elongated, and the aciculum comes to be inserted in the mid-region of the plate. The anterior notoacacula have straight tips, but the tips of those more posterior are ventrally recurved.

Ventral cirri are present from the first parapodium (fig. 4) and in the anterior region (fig. 5) are relatively long and narrow and have capitate tips. By the sixth parapodium (fig. 6) they are quite short, less than one-fourth of the length of the ventral cirrus of the second parapod, and are composed of two parts, a round, basal portion and a narrow, apical piece. The ventral cirri tend to be inserted on the posterior face of the parapodia.

Dorsal cirri first appear on the third parapodium as pyriform structures (fig. 3) which are laterally situated, near the fascicle of heavy notosetae. After two setigers with elytra, they are next present on the sixth parapodia and are more medially placed, in line with the elytraphores of the fifth and seventh parapodia (fig. 7). In addition to the dorsal cirrus the sixth parapod also bears a

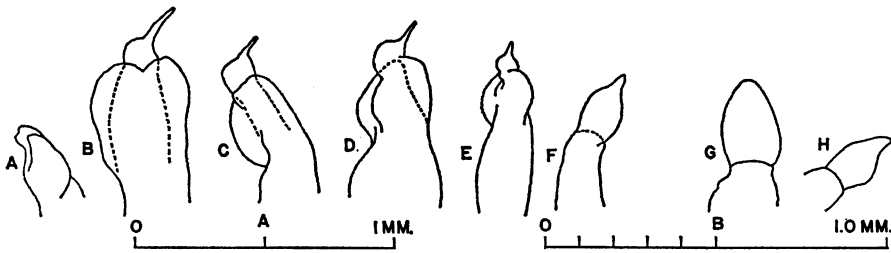


FIG. 7. *Pareulepis sulcatisetis*, new species, dorsal views of right dorsal cirri. A. Of sixth setiger. B. Of tenth setiger. C. Of fourteenth setiger. D. Of twentieth setiger. E. Of twenty-fifth setiger. F. Of twenty-eighth setiger. G. Of thirtieth setiger. H. Of thirty-second setiger. 7A-F, scale A; 7G, H, scale B.

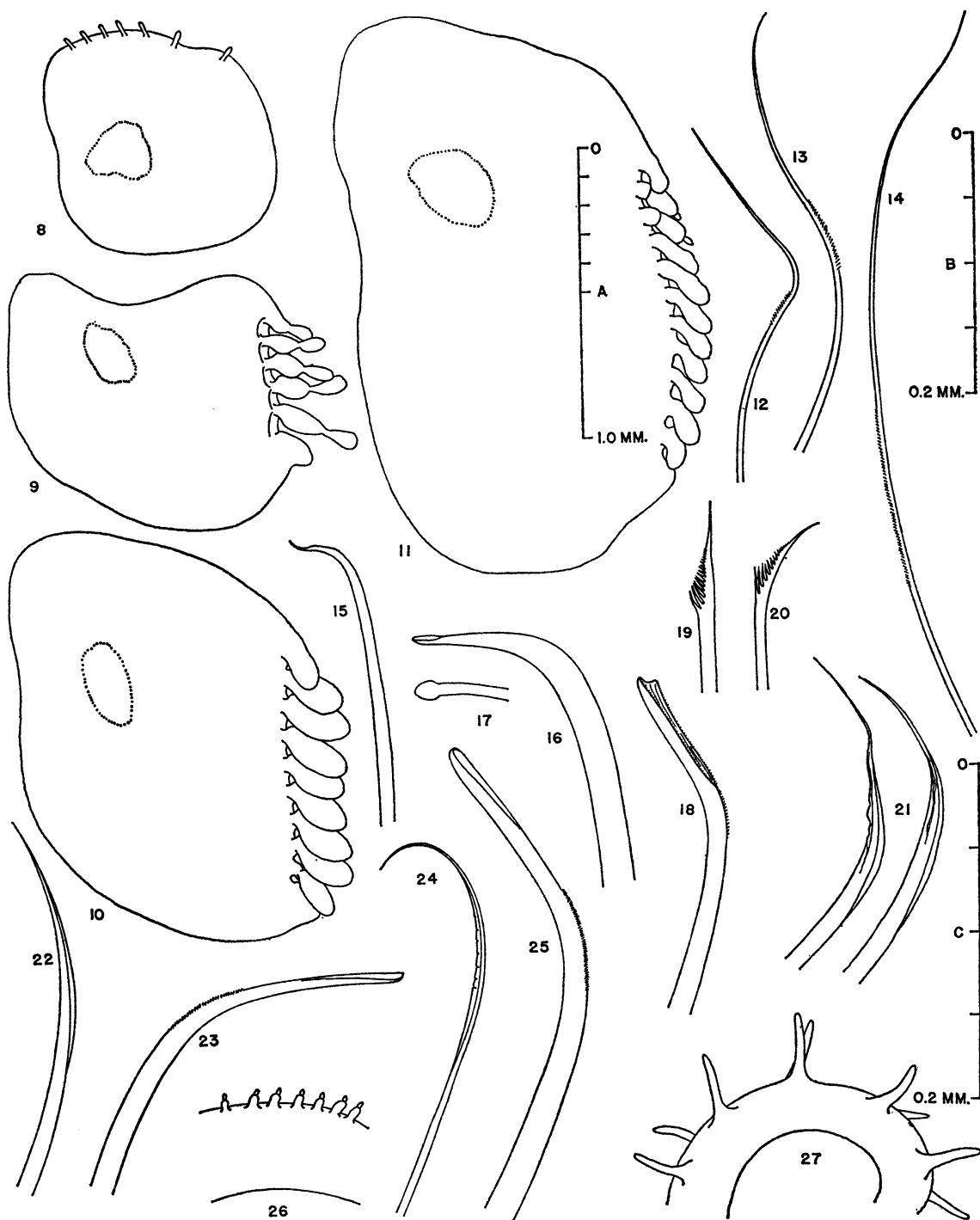
pyriform structure on the posterior face of the notopodial lobe. Dorsal cirri posterior to the sixth parapodium become larger, so that by the tenth, the dorsal cirrus is as long as the parapodium. It is here a broad lobe, the sides of which are extended into wide margins and the generally pyriform tips of which appear to be articulated to the base. The dorsal surfaces of these cirri are smooth, but their ventral surfaces bear two or three ridges which appear to be ciliated. By the twenty-fifth dorsal cirri (fig. 7), the lateral limbations are less obvious, and those more posterior show only flattened, articulated, pyriform tips of decreasing size (fig. 7).

Pareulepis sulcatisetis has 12 elytra which are inserted on parapodia 2, 4, 5, 7, 9, . . . 19, 21, and 24. The first elytrium (fig. 8) is sub-circular, with relatively straight medial and posterior margins. Several papillar processes are inserted on the dorsal surface along the anterior edge. The second to fourth elytra (fig. 9) increase both in length and width. From the fifth to twelfth (figs. 10 and 11), the width remains approximately the same, but there is a gradual lengthening of elytra to the twelfth, which is the longest. Pairs of elytra nearly meet at the mid-line, and the posterior edge of the last pair extends posteriorly to cover the twenty-eighth parapodia; the last four pair of parapodia and the pygidial structures are visible from above. All elytra but the first have a series of from three to 10 processes inserted dorsally along their lateral margins (figs. 9, 10, and 11). In addition to these lobular structures, the bases of which are constricted at their point of attachment, the free margin of the elytron is drawn out into an additional pair of processes,

one anterior and one posterior to the lateral series. The lateral elytral processes are generally clavate, but those of the second and third elytra (fig. 9) show a constriction midway along their length, and some of those of the last (twelfth) elytrium (fig. 11) are actually tripartite and articulated. No microstructures were seen on the dorsal surfaces of the elytra, and they are not pigmented.

With the exception of the first, the parapodia of *Pareulepis sulcatisetis* bear the same types of setae, with some minor structural variations along the length of the animal. The first parapodium bears three types of capillary setae. Two of the three types originate medial to the cirrus-like notopodial lobe on the posterior face of the first parapod. The setae of the more proximal fascicle (fig. 12) are abruptly bent at approximately the mid-point of their length, and there is a short series of serrations just proximal to the bend. Those of the second type (fig. 13), inserted just distal to the first, are gently curved and show a longer series of serrations in the mid-region. The remaining setae of this parapodium are all smooth, thin capillaries, and arise from three areas of the neuropodial lobe: from the anterior face, dorsal to the recurved neuroaciculum; from the posterior face, ventral to the neuroaciculum; and from the anterior face, near the base of the ventral cirrus.

On all of the remaining parapodia, a fascicle of many capillaries is found on a lobe just ventral to the notoaciculum, on the posterior parapodial face. Two types occur here, thin smooth capillaries and serrate capillaries (fig. 14) which are similar to one of the capillary types of the first parapod



FIGS. 8-27. *Pareulepis sulcatisetis*, new species. 8. Dorsal view of right first elytrum. 9. Dorsal view of right third elytrum. 10. Dorsal view of right eighth elytrum. 11. Dorsal view of right twelfth elytrum. 12. Proximal notoseta from first parapodium. 13. Distal notoseta from first parapodium. 14. Serrate capillary notoseta. 15. Pointed, bent notoseta. 16. Spatulate, bent notoseta. 17. Surface view of spatulate tip of figure 16. 18. Gouge-tipped, bent notoseta. 19. Dorsal neuroseta from an anterior setiger. 20. Dorsal neuroseta from a posterior setiger. 21. Dorsal limbate neurosetae. 22. Ventral limbate neuroseta. 23. Scoop-tipped, bent neuroseta. 24. Posterior limbate neuroseta. 25. Far posterior, scoop-tipped, bent neuroseta. 26. Proximal region of anal cirrus. 27. Distal region of anal cirrus. 8-11, scale A; 12-25, scale B; 26, 27, scale C.

(fig. 13). Another type of seta occurs on the anterior face of the notopodial lobe. In anterior parapodia the latter change from bilimbate pointed setae in the second parapodia, to heavy to stout, sharply bent setae, the tips of which are either pointed (fig. 15) or have a spatulate tip (figs. 16 and 17). The latter, which are found from the third parapodium to at least the twenty-fifth parapodium, have smooth shafts. By the twenty-ninth parapodium these setae have become further modified, and in the last four parapodia of *Pareulepis sulcatisetis*, they are heavy and sharply bent, with fine teeth on the convex surface of the bend (fig. 18). The shaft, distal to the bend, has the appearance of a gouge chisel, the margin of which bears more fine teeth.

The most dorsal of the neurosetae is a heavy, pointed seta which carries a subterminal, pectinate row of 12–14 teeth. The more proximal teeth are longitudinally directed, and the more distal are nearly at right angles to the setal axis. In anterior parapodia, this seta is straight (fig. 19), but from the twenty-first parapodia, this seta is bent (fig. 20). Usually there is but one of these pectinate setae per parapodium, but occasionally there may be two. They are found on all parapodia from the second to the next to last. In anterior parapodia the remaining heavy neurosetae are all pointed and appear to be of the same type, with a grading of thickness of shaft from the heavier, more dorsal setae (fig. 21) to somewhat more slender ventral setae (fig. 22). There also seems to be a tendency for the more dorsal of these to be bilimbate and the more ventral to be unilimbate. Through the mid-region the difference in limbation becomes obscure, and it is only at approximately the twenty-fifth parapodium that two setal types finally emerge. The dorsalmost of these setae are here rather sharply bent (fig. 23), and their tips have become rather scooped (similar to the gouge-chisel type of the posterior notopodia, fig. 18). There are fine teeth on the convex surface of the bend, but the terminal portion is without denticulations of any kind. The more ventral setae in this region are gently recurved and are unilimbate (fig. 24). Posterior to the twenty-ninth parapodia, the scooped neurosetae become heavier (fig. 25),

with the same distribution of fine teeth as on those setae of the mid-region, and the ventral unilimbate setae remain unchanged.

The only remaining group of setae is to be found on the posterior face of the parapodium, lateral to the ventral cirrus. These thin, smooth capillaries are present on all parapodia from the second to the next to last.

The single anal cirrus (figs. 26 and 27) arises from a small, knob-like cirrophore on the right side. The left cirrophore is also a knob-like structure, but it shows no evidence of bearing, or having borne, a cirrus. The anal cirrus is ornamented along its length by a series of small papillar structures, some of which are similar in shape to the posterior ventral cirri, i.e., there is a bulbous basal portion and a more slender terminal portion. These appear to be distributed in a single row along the cirrus; on the basal one-tenth of its length, these structures are relatively small and numerous (fig. 26). More distally, they are less numerous and are cirriform (fig. 27).

The trivial name, *sulcatisetis*, refers to the peculiar gouge-like setae of the posterior region.

TYPE DISPOSITION: The holotype (A.M.-N.H. No. 3605) and the paratype (A.M.-N.H. No. 3606) are both deposited in the collections of the American Museum of Natural History.

DISCUSSION: Previous to the present writing, eight species of *Pareulepis* had been proposed: *P. hamifera* (Grube), 1875, the type species, from the Philippines; *P. challengeriae* (McIntosh), 1885, from a "Challenger" station near Sombrero Island, the West Indies; *P. wyvillei* (McIntosh), 1885, from another "Challenger" station near Bermuda; *P. fimbriata* (Treadwell), 1901, and *P. splendida* (Treadwell), 1901, both from "Fish Hawk" stations near Puerto Rico; *P. malayana* (Horst), 1913 (and Horst, 1917), from a "Siboga" station near Great Kei Island; *P. geayi* (Fauvel), 1918, from Madagascar; and *P. weberi* (Horst), 1922, from Curaçao. However, Augener (1906, p. 129; 1918, p. 156) has suggested that *P. splendida* is synonymous with *P. wyvillei* (McIntosh), 1885, and the suggestion has been confirmed by Hartman (1959); thus, there were seven recognized species of *Pareulepis*.

The most obvious initial separation of species in this genus is concerned with the number and the marginal ornamentation of the elytra. *Pareulepis weberi* is the only species with 36 elytra rather than 12; *P. challengeriae* is the only species of which the elytral margins are entire; and the elytral margins of *P. hamifera* (Grube, 1878, pp. 52-53), *P. wyvillei*, and *P. malayana* are merely notched, and are not provided with dependent processes. *Pareulepis fimbriata*, *P. geayi*, and *P. sulcatisetis* all exhibit such dependent processes.

As Augener (1918, p. 153), and Fauvel (1919b) in his second description of *P. geayi*, have pointed out, Treadwell's description of *P. fimbriata* is rather brief. Fauvel (1919b) and Hartman (1939) have presented further comments and observations on *P. fimbriata*; the latter suggested that *P. geayi* is synonymous with *P. fimbriata* (Treadwell) 1901. Recently, Day (1951 and 1957) and Tebble (1955) have maintained that *P. geayi* is a valid species. They base this contention on the posterior, or at least central, placement of the unpaired, median, prostomial antenna (as contrasted with the extreme anterior location in *P. fimbriata*) and the lack of eyes (in *P. fimbriata*, there are three eyes, two posterior and lateral, and a single one medial and anterior). The absence of eyes may well be of questionable validity, for Fauvel, in his subsequent description (1919b, p. 338), mentions that a smaller specimen of *P. geayi* carries, on the lateral posterior borders of the prostomium, very small black eyes, one on each side, which are not visible dorsally. He makes no mention of an anterior medial eye.

It is also well to note that Fauvel has apparently contradicted himself as regards the number of anal cirri of *P. geayi*. In his original description (1918, p. 504), he states that there are two long filamentous anal cirri, but in the subsequent treatment (1919b, p. 338, paragraph 2), he comments that there is a single filiform cirrus (its counterpart on the other side is degenerate) and later (p. 338, paragraph 3), that the anal cirrus is clearly unpaired.

Apparently the latter-day discussions concerning *P. geayi* (Fauvel) have convinced Hartman of its validity, for she has recently listed it as a valid species of *Pareulepis* (Hartman, 1959, p. 123).

Pareulepis sulcatisetis can be separated from *P. fimbriata* and *P. geayi* on the basis of the following criteria: (1) the tripartite marginal processes of the twelfth elytra (fig. 11); (2) the presence of two pairs of posterior and one pair of central eyes (fig. 1); (3) the free ends of anterior, heavy, bent notosetae (fig. 17) are provided with spatulate tips (note, however, that Hartman [1939, p. 144] states, in a figure legend, that the free end of these setae in *P. fimbriata* are flattened and depressed; she makes no further mention of them, nor does she figure them), and those of the posterior region are gouge-like (fig. 18); and (4) there are only 32 setigerous segments (rather than 33 to 39, as in *P. fimbriata*, or 36 to 38, as in *P. geayi*).

FAMILY AMPHINOMIDAE SAVIGNY, 1818

GENUS CHLOEIA SAVIGNY, 1818

Chloeia viridis Schmarda, 1861

Chloeia viridis SCHMARDA, 1861, pp. 144-146; Jamaica; Caribbean region (= Antillenmeer?).

Chloeia euglochis EHLERS, 1887, pp. 18-24; [Dry] Tortugas, Florida; Cape Florida [?].

Chloeia modesta EHLERS, 1887, pp. 21-23; [Dry] Tortugas, Florida; Cape Florida [?].

Chloeia euglochis, TREADWELL, 1901, p. 194; Puerto Rico.

Chloeia euglochis, AUGENER, 1906, p. 96; Dominica; Barbados.

Chloeia candida KINBERG, 1910, p. 33; St. Thomas.

Chloeia euglochis, AUGENER, 1922a, p. 51; "West Indies."

Chloeia viridis, MONRO, 1933a, pp. 1-10; Taboga Island, Panama (Pacific side).

Chloeia euglochis, TREADWELL, 1939, pp. 176-177; "Tortugas, Cape Florida [?], and Puerto Rico."

Chloeia viridis, HARTMAN, 1942b, p. 96; Bahia de Cochinos, Cuba.

Chloeia viridis, HARTMAN, 1951b, p. 29; southern Florida.

Chloeia viridis, ANDREW AND ANDREW, 1953, pp. 3-4; Bimini, Bahamas.

Chloeia viridis, RENAUD, 1956, pp. 7-8; Fort Lauderdale and Biscayne Bay, Florida (Atlantic side).

U.C.W.I. COLLECTION: A single specimen of 30 setigers (length, 45 mm.; width, 8 mm.) was collected at Port Royal, Jamaica, on November 18, 1959. It was swimming free in the surface waters.

DISTRIBUTION: Subtropical to tropical:

from south Florida throughout the Greater and Lesser Antilles; Pacific side of Panama.

FAMILY HESIONIDAE MALMGREN, 1867

GENUS HESIONE SAVIGNY, 1818

***Hesione picta* Müller, 1858**

Hesione picta MÜLLER, 1858, p. 213; St. Catherine Island, Brazil [approximately latitude 27° S.].

Hesione proctochona SCHMARD, 1861, pp. 79–80; Jamaica.

Fallacia proctochona, WEBSTER, 1884, p. 311; Bermuda; Sarasota Bay to Key West, Florida.

Hesione vittigera EHLERS, 1887, pp. 143–147; Key West, Florida.

Hesione proctochona, TREADWELL, 1901, p. 187; Puerto Rico.

Fallacia proctochona [sic], VERRILL, 1901, p. 39; Bermuda.

Hesione proctochona, HOAGLAND, 1919, p. 571; Bermuda.

Hesione proctochona, AUGENER, 1922a, p. 52; "West Indies."

Hesione proctochona, HORST, 1922, pp. 200–201; Curaçao.

Hesione proctochona, AUGENER, 1927b, p. 49; Curaçao.

Hesione proctochona, TREADWELL, 1928, p. 473; near Saba Island.

Hesione proctochona, AUGENER, 1933a, p. 224; Santa Marta, Colombia; Isla de Margareta, Venezuela.

Hesione proctochona, TREADWELL, 1939, pp. 217–218; "Key West; Bermuda; west Florida; near Saba Island; Puerto Rico."

Hesione picta, HARTMAN, 1951b, p. 35; southwestern Florida.

U.C.W.I. COLLECTION: Five specimens, all of 17 setigers (lengths are 28, 27, 23, 16, and 8 mm.), come from Kingston Harbor, Jamaica. The collection was made on January 29, 1960.

DISTRIBUTION: Subtropical to tropical: from Florida throughout the Greater and Lesser Antilles; northern coast of South America.

FAMILY SYLLIDAE GRUBE, 1850

GENUS TYPOSYLLIS LANGERHANS, 1879

***Typosyllis corallicola* (Verrill), 1900**

Figures 28–40

Syllis (*Typosyllis*) *corallicola* VERRILL, 1900, p. 603; Bermuda.

Syllis (*Typosyllis*) *corallicola* var. *lineolata* VERRILL, 1900, p. 604; Bermuda.

Syllis (*Typosyllis*) *catenula* VERRILL, 1900, p. 604; Bermuda.

Syllis jugularis VERRILL, 1900, p. 606; Bermuda.

Typanosyllis [sic] *fertilis* VERRILL, 1900, pp. 616–617; Bermuda.

Typosyllis corallicola, TREADWELL, 1924b, p. 10; Pelican Island, Antigua.

Syllis corallicola, MONRO, 1933c, pp. 249–250; Dry Tortugas, Florida.

Typosyllis corallicola, TREADWELL, 1936, p. 50; Bermuda.

Syllis (*Typosyllis*) *corallicola*, TREADWELL, 1939, pp. 212–213; near Culebra Island, Puerto Rico (latitude 18° 19' N., longitude 65° 19' W.).

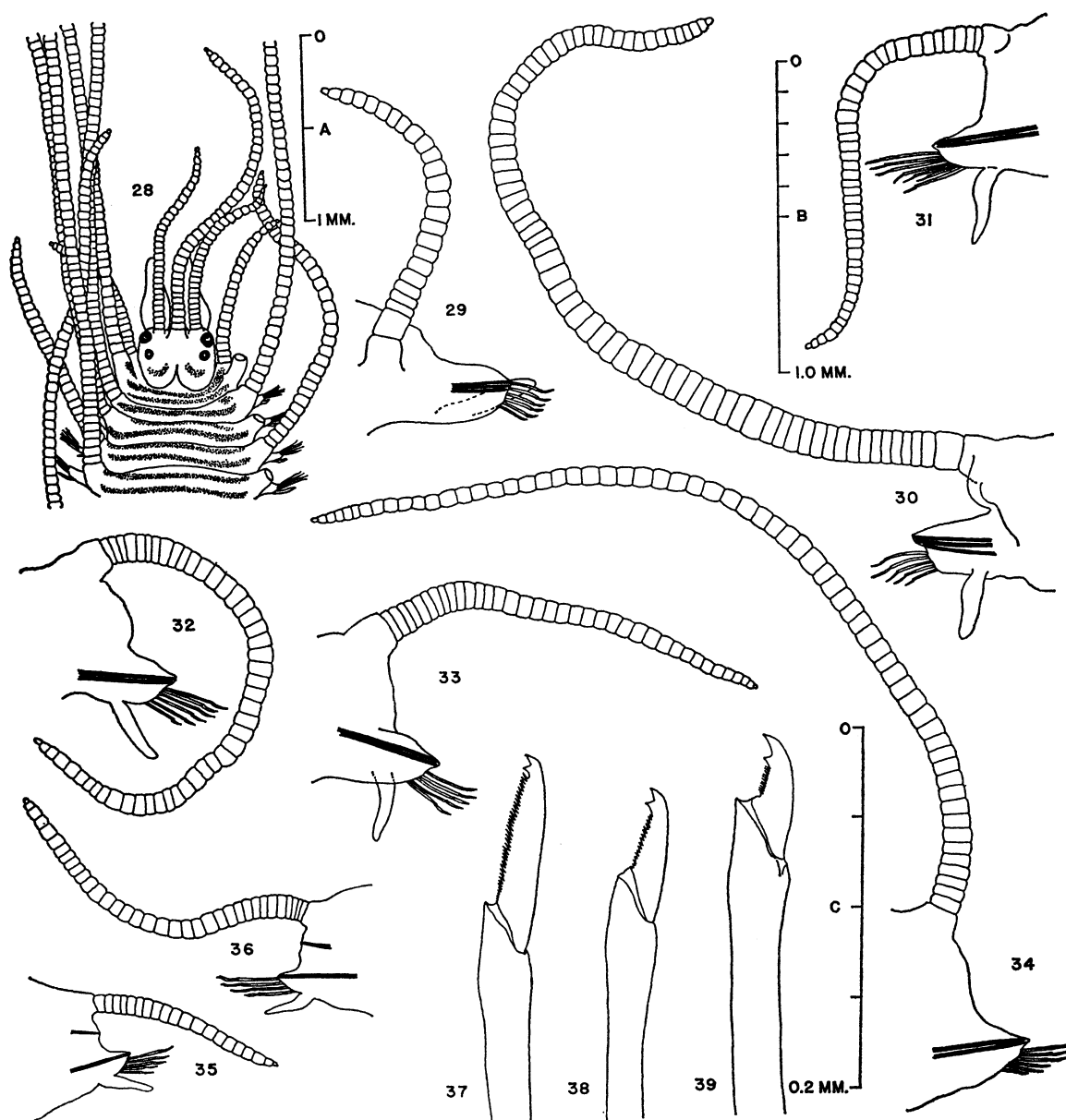
Typosyllis corallicola, HARTMAN, 1942a, pp. 47–48; Bermuda.

U.C.W.I. COLLECTION: A single ovigerous specimen of 198 setigers, 64 mm. in length and from 1.5 to 2.0 mm. in width, was collected from sponges at Kingston Harbor, Jamaica, on January 29, 1960.

DISCUSSION: The original description of this species was not accompanied by figures, and it remained for Monro (1933c) and Hartman (1942a) to present figures of certain structures of this species. Certain other features have been noted in the present study which make it desirable to present further figures of *Typosyllis corallicola*.

The prostomium is basically oval, with an extensive, wide cleft in the posterior margin (fig. 28). Of the two pairs of eyes, the anterior pair are the larger and are somewhat more laterally placed than the posterior pair. Both pairs have lenses. The paired prostomial palps are separate along their medial length and have somewhat swollen bases. The unpaired median prostomial antenna is nearly four times the length of the palps and is moniliform, with approximately 50 articles. The two lateral prostomial tentacles are nearly two-thirds of the length of the medial and consist of approximately 35 articles. Dorsal and ventral peristomial cirri are comprised of approximately 50 and 24 articles, respectively.

Dorsal cirri are also moniliform and alternate regularly in the anterior and posterior regions, both in length and in number of articles (figs. 29, 30, 33, and 34). In the mid-region, consecutive dorsal cirri are of approximately the same length and have approximately the same number of articles



FIGS. 28-39. *Typosyllis corallicola* (Verrill). 28. Dorsal view of anterior region, some dorsal cirri on right side lacking. 29. Posterior view of right fourteenth setiger. 30. Anterior view of right fifteenth setiger. 31. Posterior view of left seventieth setiger. 32. Anterior view of left seventy-first setiger. 33. Anterior view of left 110th setiger. 34. Anterior view of left 111th setiger. 35. Posterior view of right 170th setiger. 36. Anterior view of right 171st setiger. 37-39. Three compound setae from left seventy-first setiger. 28, scale A; 29-36, scale B; 37-39, scale C.

(figs. 31 and 32). The ratio of number of articles in dorsal cirri of anterior setigers is approximately 1:3, but in more posterior setigers it is closer to 1:2.

Parapodia are uniramous, and there are

from three to four acicula in those of the anterior and middle regions and only a single aciculum in the more posterior parapodia. In the posterior parapodia (figs. 35 and 36), dorsal cirri are shorter, and there are second-

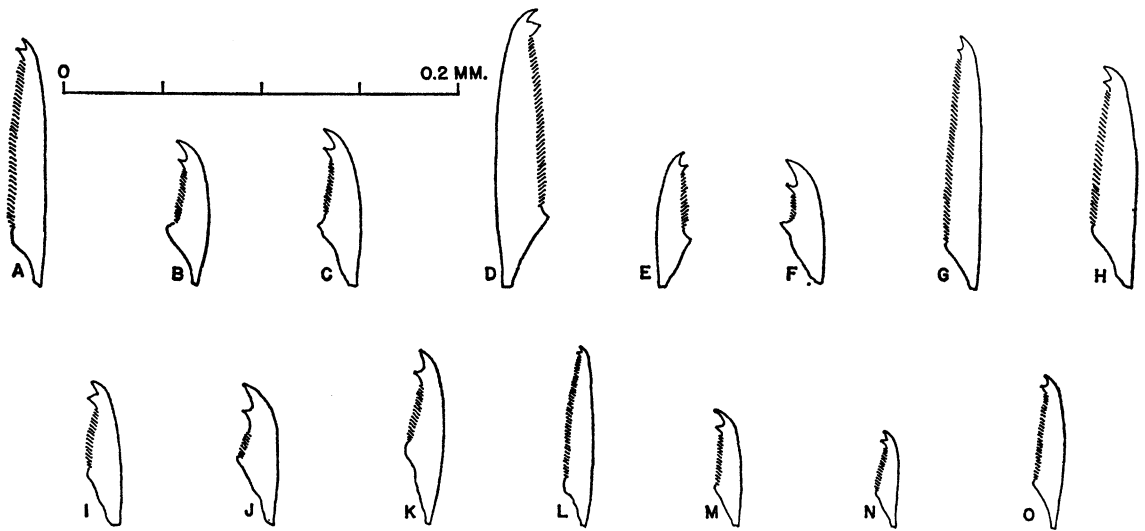


FIG. 40. *Typosyllis corallicola* (Verrill), blades of compound setae. A. From setiger 10, dorsal. B. From setiger 10, ventral. C. From setiger 10, ventral. D. From setiger 15, dorsal. E. From setiger 15, ventral. F. From setiger 61, ventral. G. From setiger 71, dorsal. H. From setiger 71, dorsal. I. From setiger 71, ventral. J. From setiger 111, ventral. K. From setiger 111, ventral. L. From setiger 170, dorsal. M. From setiger 170, ventral. N. From setiger 170, ventral. O. From setiger 171, dorsal.

ary acicula embedded in the parapodia between the dorsal cirri and the setal bundle. This has been noted in setigers posterior to number 167 (of 198 setigers). In all cases ventral cirri are smooth and tapered, and the single pair of anal cirri are similar to the dorsal cirri of the mid-region.

Setae are all composite; the basal shafts are all similar, and the general structure of the blades is constant throughout, i.e., they are bidentate falcigers with fine serrations along the cutting edge (figs. 37 to 39). However, the length of the blade varies among setae of the same segment and from parapodium to parapodium. Generally, the blades of those setae that are more dorsally placed (fig. 40A, D, G, H, L, and O) tend to be longer than those that are more ventral (fig. 40B, C, E, F, I, J, K, M, and N). There is also variation in the size of the apical teeth, as well as in the distance that separates them (fig. 40). No rigid pattern of distribution is apparent in regard to this latter variation.

The dorsum of the anterior quarter is flecked with minute reddish brown spots. These usually are found in two rows on the dorsum of a given segment. The anterior

pigment streaks are the shorter; those more posterior extend from the cirrophore of one side to that of the other (fig. 28).

Monro (1933c) has found that *T. corallicola* from Dry Tortugas exhibits dorsal cirri which alternate in length (approximately 65 and 35 articles) and that setae from the anterior region have longer blades than those from the middle and posterior regions. Hartman (1942a), on the other hand, has found, in viewing Verrill's types, that the alternating dorsal cirri have somewhat fewer articles (approximately 40 and 25) and that superior setae, apparently regardless of position along the length of the body, have longer blades than those more ventrally placed. Present observations agree with those of Hartman, except that longer and shorter blades may be intermixed to some extent, although the longer blades do tend to be more superior.

Hartman (1942a, p. 48), in her account of Verrill's types, also points out that *Trypanosyllis fertilis* might be a specimen of *Typosyllis corallicola*, but questions this on the basis of a larger number of acicula (three to four) present in parapodia of the former. On the basis of my observations on the Jamaican specimen of *T. corallicola*, I confirm her sug-

gestion of synonymy, for the number of acicula here varies from three to four in anterior setigers, to one in posterior setigers.

DISTRIBUTION: Tropical: Bermuda; Key West; throughout the Antillean chain from Jamacia to Antigua.

FAMILY GLYCERIDAE GRUBE, 1850

GENUS GLYCERA SAVIGNY, 1818

***Glycera abbranchiata* Treadwell, 1901**

Figures 41–48

Glycera abbranchiata TREADWELL, 1901, pp. 200–201; Puerto Rico.

Glycera abbranchiata, TREADWELL, 1924b, p. 14; Antigua.

Glycera abbranchiata, TREADWELL, 1928, p. 473; near Saba Island (latitude 17° 39' N., longitude 63° 17' W.).

Glycera abbranchiata, TREADWELL, 1939, pp. 260–261; "Puerto Rico and near Saba Island."

U.C.W.I. COLLECTION: One incomplete specimen of 109 setigers, 31 mm. long and 1.5 mm. in diameter, was collected at Ocho Rios, Jamaica, on August 11, 1957.

DISCUSSION: This specimen agrees with the description given by Treadwell (1901) and with specimens in the collections of the American Museum of Natural History which were identified by Treadwell (A.M.N.H. Nos. 561, 907, 1280, and 2633). Treadwell, in his description of this species, did not comment on the structure of the proboscoidal organs, and this omission led Augener (1922b, p. 205), Horst (1922, p. 201), and Hartman (1950, pp. 77–78) to synonymize this species with *Glycera tessellata* Grube.

Observations of the proboscoidal organs of this specimen show that two types are present. The first, and more common (figs. 41 and 42), is rather slender, with a number of oblique ridges and a constriction at its base. The second is larger and more oval in "frontal" view (fig. 43) and from the "side" shows one surface to be flat and the other to be convex (fig. 44). This latter type has no ridges. Proboscoidal organs of a museum specimen (A.M.N.H. No. 907) are nearly identical (figs. 45 and 46). Hartman (1950, pl. 10, fig. 11) shows the proboscoidal organ of *G. tessellata* to be a relatively long, narrow structure with a non-constricted base and longitudinal ridges. This is quite different

from either of the two types present in *G. abbranchiata*.

As a further extension of Treadwell's description of this species, figures of a parapodium (fig. 47) and of a composite seta (fig. 48) are presented. The parapodia are supported by two acicula, the tips of which extend barely beyond the parapodial lobes. A dorsal cirrus is inserted at the base of the parapodium, and the triangular ventral cirrus is broadly inserted on the posterior surface of the ventral parapodial margin. There are two presetal lobes, which are somewhat longer than those shown for *G. tessellata* by either Ehlers (1864–1868, pl. 24, fig. 33) or Fauvel (1923, fig. 152c). Notosetae are simple, and neurosetae are composite. The blades of the composite setae (fig. 48) have a gentle sigmoid curvature and are serrate along one margin.

DISTRIBUTION: Tropical: Jamaica, Puerto Rico, and the Lesser Antilles.

FAMILY EUNICIDAE SAVIGNY, 1818

GENUS EUNICE CUVIER, 1817

?*Eunice tridentata* Ehlers, 1905

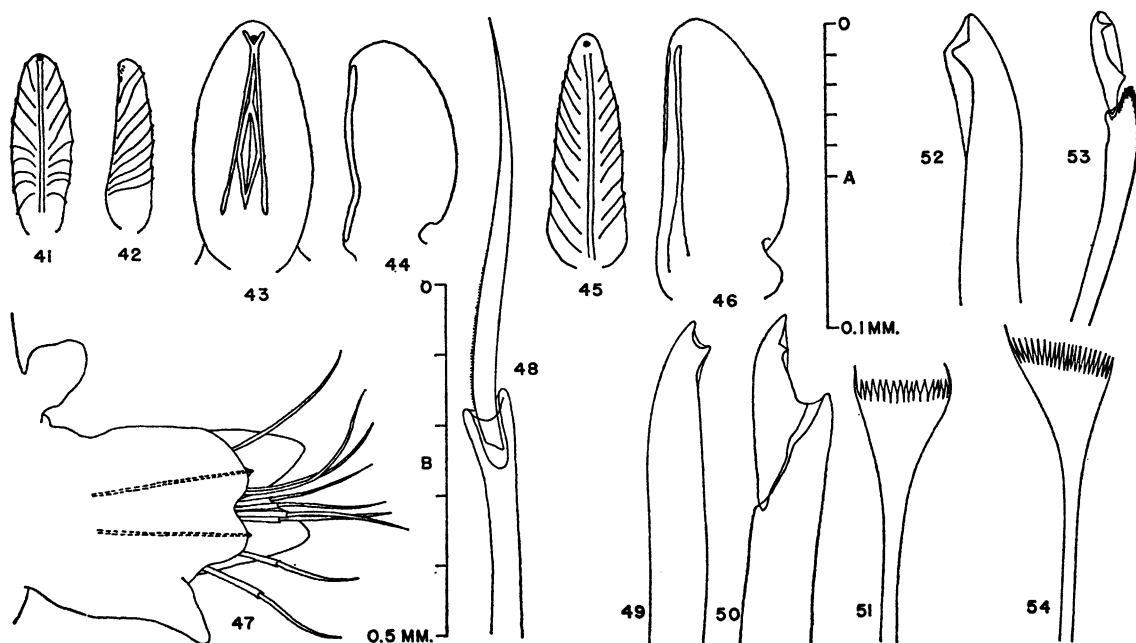
Figures 49–51

Eunice tridentata, MONRO, 1933a, pp. 63–65; Coiba Island, Panama (Pacific end of the Panama Canal).

Eunice tridentata, MARSDEN, 1960, p. 996; Barbados.

U.C.W.I. COLLECTION: A single posterior fragment of 125 setigerous segments (95 mm. long and 3 mm. wide at the anterior end) was collected at Lime Cay, Jamaica, on August 7, 1960.

DISCUSSION: The anterior 55 setigers (approximately 65 mm.) comprise a greenish ovigerous section; the remainder of the specimen is reddish and is terminated by a single pair of anal cirri. Ventral cirri are approximately one-half of the length of the single dorsal cirri. No branchiae were seen on this posterior fragment. Subacicular hooks are brownish yellow and have bidentate tips (fig. 49). Composite setae have short falcigerous blades which have bidentate tips (fig. 50). The subapical tooth is often somewhat obscure, and the cutting edge of blades is occasionally eroded. Pectinate setae (fig. 51) are symmetrical and are provided with ap-



FIGS. 41-48. *Glycera abranchiata* Treadwell. 41. "Frontal" view of smaller proboscis organ. 42. Profile of figure 41. 43. "Frontal" view of larger proboscis organ. 44. Profile of figure 43. 45. "Frontal" view of smaller proboscis organ of A.M.N.H. No. 907. 46. "Frontal" view of larger proboscis organ of A.M.N.H. No. 907. 47. Posterior view of right twentieth parapodium. 48. Compound seta from twentieth parapodium.

FIGS. 49-51. ?*Eunice tridentata* Ehlers. 49. Posterior subacicular hook. 50. Posterior compound seta. 51. Posterior pectinate seta.

FIGS. 52-54. *Lysidice ninetta* Audouin and Milne-Edwards. 52. Subacicular hook from 100th setiger. 53. Compound seta from second setiger. 54. Pectinate seta from fiftieth setiger.

41-46, 48-54, scale A; 47, scale B.

proximately 16 subequal terminal teeth and a lateral pair of teeth which are somewhat longer. The subacicular hooks and composite setae agree with figures presented by Hartman (1944, pl. 7, figs. 146, 148, and 149), but the pectinate setae differ, in that there are two longer teeth at each end of the row of teeth rather than a single longer tooth at one end.

DISTRIBUTION: Tropical: scattered throughout the Caribbean (Jamaica, Barbados, and Pacific side of Panama).

GENUS *LYSIDICE* SAVIGNY, 1818

Lysidice ninetta Audouin and Milne-Edwards, 1833

Figures 52-54

Lysidice brachycera SCHMARDA, 1861, p. 121; Jamaica.

Lysidice notata EHLERS, 1887, pp. 100-102;

off Tortugas; latitude 23° 03' N., longitude 83° 10' 05" W. (off the north coast of Cuba, west of Havana).

Lysidice bilobata VERRILL, 1900, p. 645; Bermuda.

Lysidice notata, TREADWELL, 1921, pp. 86-88; Key West; Bermuda; Dry Tortugas.

Lysidice notata, AUGENER, 1922a, p. 52; "West Indies."

Lysidice ninetta, AUGENER, 1927b, p. 62; Curaçao.

Lysidice notata, TREADWELL, 1928, p. 477; near Saba Island.

Lysidice ninetta, AUGENER, 1933b, pp. 143-144; Jamaica; Curaçao; Santa Marta, Colombia.

Lysidice ninetta, MONRO, 1933a, pp. 70-71; Taboga Island; Coiba Island; Balboa; Gorgona Island (all on Pacific side of Panama).

Lysidice ninetta, RIOJA, 1946, p. 194; Veracruz, Mexico.

Lysidice ninetta, HARTMAN, 1951b, p. 58; "Veracruz, Mexico."

Lysidice ninetta, ANDREWS AND ANDREWS, 1953, p. 10; Bimini, Bahamas.

U.C.W.I. COLLECTION: An anterior portion of a single individual, in two fragments (total length, 58 mm. for 103 setigers), comes from the lagoon at Port Royal, Jamaica. The specimen was collected on January 29, 1960.

DISCUSSION: Subacicular hooks are dark and bidentate, with a terminal sheath (fig. 52). Composite setae (fig. 53) are provided with falcigerous blades which are bidentate and sheathed. Pectinate setae (fig. 54) are asymmetrical and have about 25 subequal terminal teeth and a longer tooth on one side.

DISTRIBUTION: Tropical: throughout the Caribbean area from Bermuda and Dry Tortugas, through the Greater and Lesser Antilles, to the northern coast of South America; Mexico on the Gulf of Mexico; on the Pacific end of the Panama Canal.

FAMILY SPIONIDAE GRUBE, 1850

GENUS POLYDORA Bosc, 1802

Polydora ancistrata, new species

Figures 55-65

DIFFERENTIAL DIAGNOSIS: *Polydora* with posterior notosetae modified as slightly recurved falcate hooks; with special setae of the fifth setiger provided with a subterminal collar and bifid tips; and with no notosetae on the first setiger.

U.C.W.I. COLLECTION: Numerous individuals come from Port Royal, Jamaica. They were collected in May, 1960, and were associated with an unidentified sponge. Adult specimens are 6 mm. in length, approximately 0.25 mm. wide, and have about 45 setigerous segments.

DESCRIPTION: The prostomium (fig. 55) is subtriangular from above and is slightly wider than long. The anterior tip is blunt, and the medial region is slightly raised in a caruncle and extends back, with nearly straight sides, to between the prostomial palpi. The palpi in preserved specimens are about as long as the first 12 setigerous segments (fig. 56); however, in life they may be longer and their appearance here may be a fixation artifact. There are no eye spots associated with the prostomium.

Branchiae begin on the seventh setiger and

are continued posteriorly as strap-like structures with rounded tips.

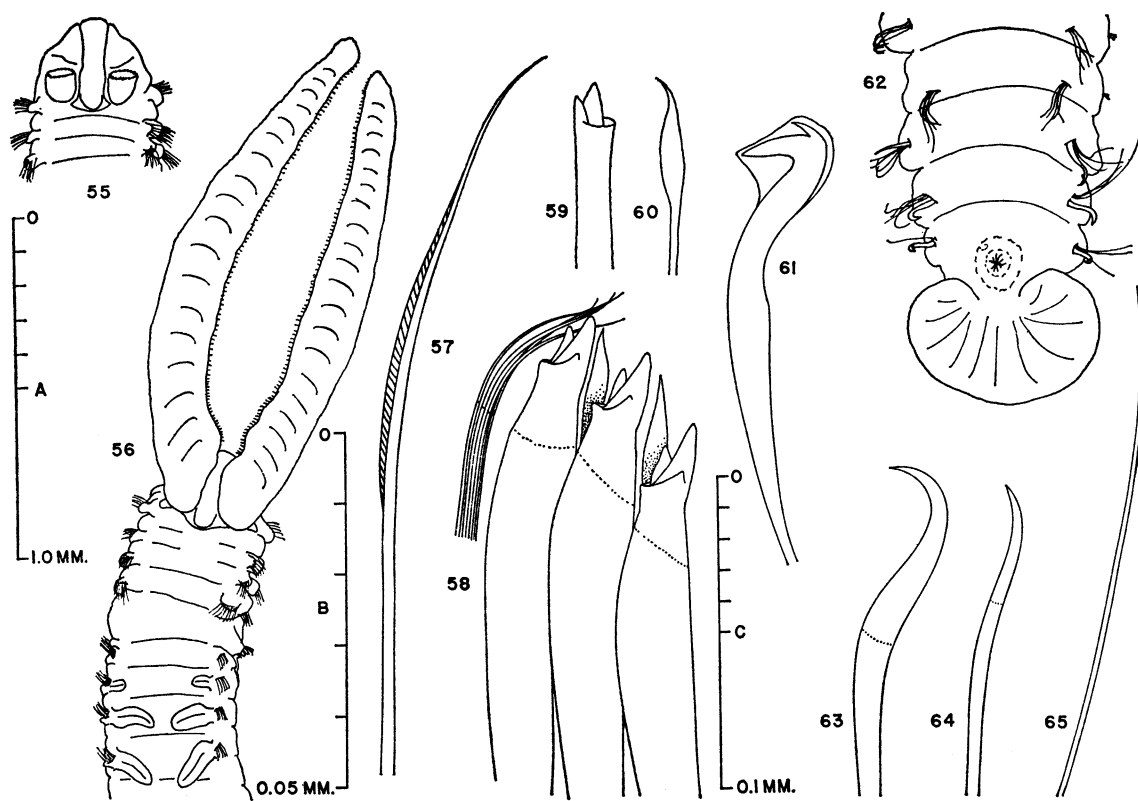
The most common setal type throughout is a unilimbate capillary (fig. 57) which is found in nearly all notopodia and in anterior neuropodia, including the first setiger, which bears neurosetae only. The modified setae of the fifth setiger (fig. 58) are bidentate and bear a subterminal collar which extends halfway around the circumference (fig. 59). These three to four special setae are accompanied by several short, plain, pointed capillaries and a few flattened, pointed, transparent, lanceolate setae (figs. 58 and 60). The sixth setiger bears only neuropodial and notopodial fascicles of unilimbate capillaries (fig. 57) and the seventh, as well as all remaining setigers, bears neuropodial hooks in addition to the unilimbate capillaries. The hooks (fig. 61) are hooded and have one large tooth, with a somewhat smaller terminal tooth on the most distal part of the seta. In the pygidial region still another setal type is to be found. On the last two to four setigers, neuropodial fascicles are provided with special simple falcate hooks (figs. 62-64), and the unilimbate capillary setae of the more anterior setigers here have only a narrow limbation (fig. 65). The special hooks are oriented with their tips pointing from dorsal to posterior.

The anus is dorsal, and the pygidium is a flattened, subcordate structure posterior to the anal opening (fig. 62).

The trivial name, *ancistrata*, refers to the shape of the notopodial falcate setae found in the posterior region of this species.

TYPE DISPOSITION: The holotype (A.M.-N.H. No. 3607) and paratypes (A.M.N.H. No. 3608) of *Polydora ancistrata* are deposited in the collections of the American Museum of Natural History.

DISCUSSION: Of the approximately 50 species of *Polydora*, the majority are provided with unmodified posterior notosetae. Eight species have posterior notosetae which are somewhat modified in that they are relatively heavy and awl-shaped or needle-like (*P. armata* Langerhans, 1880 [see also Fauvel, 1927, and Hartman, 1941]; *P. caeca* (Oersted), 1843 [also Fauvel, 1927 and 1953]; *P. cardalia* Berkeley, 1927; *P. caulleryi* Mesnil, 1897 [also Fauvel, 1927]; *P. magna* (Berkeley),



FIGS. 55–65. *Polydora ancistrata*, new species. 55. Dorsal view of anterior region, palpi missing. 56. Dorsal view of anterior region of intact specimen. 57. Unilimbate capillary seta from setiger 6. 58. Setal complement of setiger 5. 59. Modified seta from setiger 5. 60. Transparent lanceolate seta from setiger 5. 61. Neuropodial hooded hook from setiger 20. 62. Dorsal view of posterior region. 63. Posterior, special falcate hook. 64. Second, posterior, special falcate hook. 65. Posterior unilimbate capillary seta. 55, 56, 62, scale A; 57, 61, scale B; 58–60, 63–65, scale C.

1927; *P. quadrilobata* Jacobi, 1883 [also Fauvel, 1927]; and *P. saint josephi* Eliason, 1920).

The last group, into which *P. ancistrata* falls, has posterior notosetae which are modified as falcate hooks, the tips of which may be more or less recurved. *Polydora ancistrata* can be separated, on the structure of the special setae of the fifth setigerous segment, from *P. hamata* Webster, 1879, and *P. hamata* Langerhans, 1880 (the special setae are simple and pointed in both), and from *P. hoplura* Claparède, 1869 (the special setae are bifid, but lack the subterminal collar).

Polydora colonia Moore, 1907, *P. hoplura inhaca* Day, 1957, and *P. ancistrata* all have the same type of subterminal collar on the special setae of the fifth setiger. However,

P. colonia has a slightly emarginate prostomium (the prostomium of *P. ancistrata* is bluntly rounded) and bears notosetae on the first setigerous segment (*P. ancistrata* has only non-setigerous notopodial lobes on the first setiger). In addition, there are differences in the morphology of the hooded hooks and in the relative length of the apical teeth of the special setae of the fifth setiger. *Polydora ancistrata* and *P. hoplura inhaca* are more similar morphologically, and the primary difference lies in the shape of the modified posterior notosetae. In *P. hoplura inhaca* these are strongly recurved, like a fish-hook, and they lack an enlargement in the mid-region, while in *P. ancistrata* they are but barely recurved and show an enlargement in the mid-region.

It will be noted above that a homonymy

exists in the case of *Polydora hamata* Webster, 1879, and *Polydora hamata* Langerhans, 1880. For some time this has been recognized, for Mesnil (1896, p. 235) mentioned it and pointed out that the two species appeared to be different. Fauvel (1927, p. 50) listed them as "? *P. hamata* Webster, Langerhans 1880" in his synonymy of *Polydora hoplura*, and Hartman (1959, p. 384) listed *P. hamata* Langerhans as a homonym of *P. hamata* Webster. Inspection of the original descriptions and figures (Webster, 1879; Langerhans, 1880) confirms Mesnil's comments and reveals that there are major differences in the structure of the pygidium, of the special setae of the fifth setiger, and of the modified posterior notosetae. Therefore, I propose a new name, *Polydora posthamata*, for *Polydora hamata* Langerhans, 1880.

GENUS **NERINIDES** MESNIL, 1896

Nerinides goodbodyi, new species

Figures 66-82

DIFFERENTIAL DIAGNOSIS: *Nerinides* with no occipital prostomial tentacle; with a pointed prostomium and no obvious pattern of pigmentation; with palpi which lack a basal sheath; with bidentate hooded hooks which are recurved; and with strap-like ventral cirri.

U.C.W.I. COLLECTION: Twelve specimens were collected at Green Bay, Port Henderson, Jamaica, on August 11, 1960. Adults are from 16 to 17 mm. in length (approximately 60 setigers) and are nearly 0.5 mm. in diameter. Several are ovigerous.

DESCRIPTION: The prostomium (fig. 66) tapers to an acute point and overlies the peristomium which is approximately one-half of the length of the prostomium. The posterior portion of the prostomium is set off from the peristomium by nearly straight lateral margins. The occipital portion is slightly raised and contains four embedded eye spots. The lateral pair are the larger, and all four form a straight line. A pair of palpi are inserted on the peristomium near the base of the prostomium, just anterior to the first setiger. The posterior portion of the prostomium appears to extend back onto the first setiger and is not tapered.

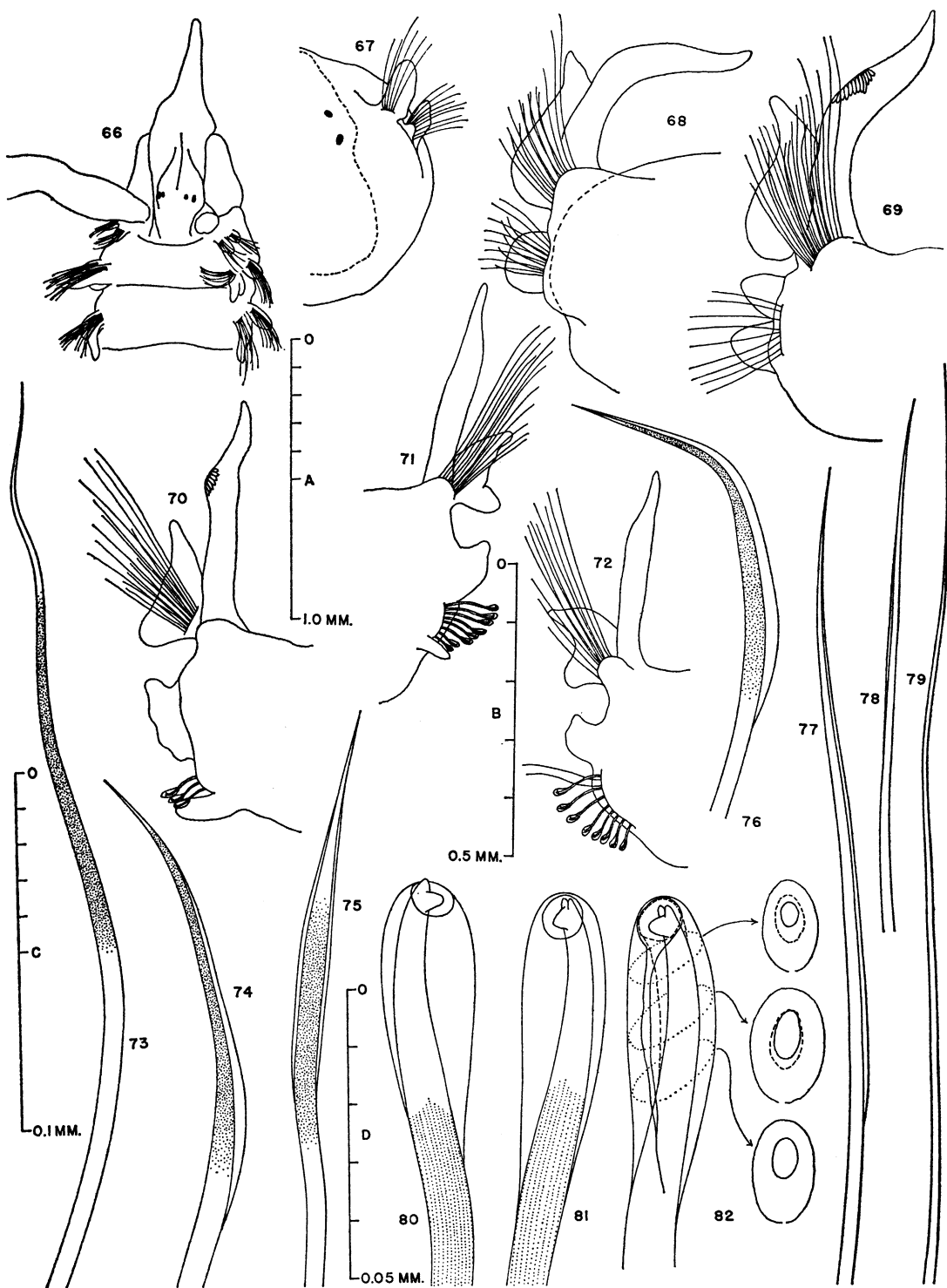
The first setiger (fig. 67) bears dorsal and ventral post-setal lamellae only; branchiae begin on the second setiger. By the fifth

setiger (fig. 68) the branchiae are long, gently tapered, and are basally fused with the dorsal lamellae. The dorsal lamellae are asymmetrically cordate, and the ventral lamellae are semicircular lobes. The twentieth setiger (fig. 69) bears branchiae and dorsal lamellae similar to those on the fifth, but at this level, ventral lamellae are two-parted. The more dorsal of these is the smaller, and both are rounded. The thirtieth setiger shows elongate, tapered branchiae fused to the bases of the dorsal lamellae (fig. 70), which are here subtriangular in shape. The two parts of the ventral lamellae are to be found on each side of the fascicle of hooded hooks; the ventral part is rather strap-like, with a rounded tip, and the dorsal part is broadly attached between the notopodial and neuropodial setae, and there is the suggestion of a dorsal attenuation. The dorsal lamellae of the forty-fifth setiger (fig. 71) are still basically triangular but here are nearly bifid. The dorsal portion of the ventral lamellae is broadly attached and rounded; the ventral portion is smaller than its more anterior counterpart, and its tip is more pointed. The ventral lamellae of the fiftieth setiger are represented only by the counterpart of the dorsal portion of the ventral lamellae of previous setigers and this is smaller, with a rounded ventral margin; its dorsal margin still shows a slight attenuation.

It is of interest to note that, although all branchiae have essentially the same shape, there is a group of what appear to be glandular cells on the distolateral margin of the branchiae of the mid-region (from the fifteenth setiger to the thirtieth; figs. 69 and 70).

All setae of the anterior region are pointed capillaries which bear extremely fine spinules (figs. 73 to 76). Both neurosetae and notosetae are disposed in anterior (longer) and posterior (shorter) series. The anterior notosetae (fig. 73) are non-limbate and gently sinuous; the posterior notosetae (fig. 74) are unilimbate and curved. The anterior neurosetae (fig. 75) are bilimbate and nearly straight; the posterior neurosetae (fig. 76) are unilimbate and abruptly curved so that their apical regions are nearly parallel to the surface of the body.

Hooded hooks begin at about the twenty-



FIGS. 66–82. *Nerinides goodbodyi*, new species. 66. Dorsal view of prostomial region, right palp missing. 67. Anterior view of left first setiger, dotted line indicating contour of prostomium and black spots showing position and shape of prostomial eye spots. 68–72. Anterior views. 68. Right fifth setiger. 69. Right twentieth setiger. 70. Right thirtieth setiger. 71. Left forty-fifth setiger. 72. Right fiftieth setiger. 73–76. Fifteenth setiger. 73. Anterior notoseta. 74. Posterior notoseta. 75. Anterior neuroseta. 76. Posterior neuroseta. 77, 78. Thirty-fifth setiger. 77. Anterior notoseta. 78. Posterior notoseta. 79. Capillary neuroseta accompanying hooded hooks of fiftieth setiger. 80–82. Hooded hooks from fiftieth setiger. 80. Bidentate. 81. Tridentate. 82. Tridentate, showing details of hood structure. 66, scale A; 67–72, scale B; 73–78, scale C; 79–82, scale D.

eighth setiger and, throughout the length of *Nerinides goodbodyi*, are confined to the neuropodia. The notopodial capillary setae are devoid of spinelets and are provided with very narrow limbations. As in the anterior segments, there are two series of setae in the notopodial fascicles. The setae of both are quite slender, and those of the anterior series (fig. 77) are longer than those of the posterior series (fig. 78).

The hooded hooks are accompanied by non-limbate, slender, pointed capillaries (fig. 79) only in the most posterior setigers. The hooks themselves may bear either one (fig. 80) or two (fig. 81) apical teeth. There is no apparent order to the distribution of these types (table 1); however, there is a general increase in the number of hooks per fascicle in the more posterior setigers.

The hoods of the hooks of *Nerinides goodbodyi* (figs. 80 and 81) nearly envelop their toothed tips, and the apertures of the hoods are occasionally eccentrically placed. The hoods are quite transparent, and observations of hooks that are not properly orientated suggest that the hoods are entire and have no cleft. However, observations with oil-immersion optics show that there is actually a cleft in the hood and, further, that there is a second structure, a transparent cylinder, between the hood proper and the hook (fig. 82). The distal margin of the inner "cylinder" appears to be in contact with the distal margin of the hood and closes the gap of the cleft. The inner cylinder is in contact with the hook

more proximally on the dentate side than the other.

The pygidium is a rather thick, rounded structure, subcordate in shape.

It is with great pleasure that I name this spionid in honor of Dr. Ivan M. Goodbody, University College of the West Indies, who, through care and patience in the relaxation and preservation of the present collection, has made their study all the more enjoyable.

TYPE DISPOSITION: The holotype (A.M.-N.H. No. 3609) and paratypes (A.M.N.H. No. 3610) of *Nerinides goodbodyi* are deposited in the collections of the American Museum of Natural History.

DISCUSSION: Of the several species of *Nerinides*, four are readily separable from *Nerinides goodbodyi* on the basis of the presence of an occipital prostomial tentacle (*N. tridentata* Southern, 1914; *N. cantabra* Rioja, 1918; *N. papillosus* Okuda, 1937; and *N. yamaguchii* Imajima, 1959). In addition, two recently described species, *N. pigmentata* (Reish), 1959, and *N. maculata* Hartman, 1961, have blunt and subcircular prostomia, respectively, and both exhibit distinctive pigmentation patterns.

The remaining species of *Nerinides* are sufficiently close to *N. goodbodyi* to require the listing of more subtle differences. The original description of *N. acuta* (Treadwell), 1914, although unclear on certain points, e.g., details of the teeth of hooded hooks ("... obscure terminal teeth . . ."), does show that there is a single ventral lamella on the an-

TABLE 1

DISTRIBUTION OF BIDENTATE (B) AND TRIDENTATE HOODED HOOKS (T) ON VARIOUS SETIGERS, LISTED FROM DORSAL TO VENTRAL IN A GIVEN FASCICLE

	Setiger 30		Setiger 35		Setiger 40		Setiger 45		Setiger 50	
	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left
	B	B	B	T	B	B	T	T	B	T
	B	T	B	T	T	T	T	T	T	T
	T	B	T	B	T	B	T	T	T	T
		B	B	T	T	T	B	T	T	B
			T	T	T	T	T	B	B	B
				T	B	B	T	B	B	B
					T	T	B	T	B	B
							B	B	B	B
No. of hooks per fascicle	3	4	5	6	7	7	7	8	8	7

terior parapodia and that the dorsal lamellae in this region are shaped quite differently from those of *N. goodbodyi* (cf. fig. 69). Subsequent observations by Berkeley and Berkeley (1941) have shown that *N. acuta* possesses bidentate hooded hooks which are not apically recurved, as well as a basal sheath on the palpi. Neither of these features agrees with the present findings in the case of *N. goodbodyi*. In addition, the posterior parapodia of *N. acuta* have more reduced ventral lamellae than the present species (cf. figs. 70–72).

Nerinides agilis (Verrill), 1873, is quite similar to *N. goodbodyi* with respect to the shape of the prostomium, the distribution of eye spots, and distribution of hooded hooks (Verrill, 1873), as well as the structure of the hooks (Hartman, 1942a). However, Verrill (p. 600) mentions the presence of a "... small papilliform ventral cirrus ..." which, in the posterior region, "... becomes more prominent and separate from the setigerous lobe." The so-called ventral cirri of *N. goodbodyi* are not traceable to small papilliform structures but are homologues of the lower portion of the ventral lamellae present on all anterior setigers. The illustrations presented by Hartman (1942a, figs. 126, 127) are comparable to figures 70 and 72 of the present paper. Her figures show that the branchiae of the median parapodia of *N. agilis* are somewhat longer than those of *N. goodbodyi*, and the ventral cirri are triangular, not strap-like. In more posterior setigers (Hartman's fig. 127, twelfth last parapodium of *N. agilis*, and fig. 72 of the present paper, fiftieth right parapodium of *N. goodbodyi*, are comparable), it is seen that there is no "ventral cirrus" in *N. goodbodyi*, that the dorsal portion of the ventral lamella is truncated, and that the branchia is approximately twice as long as the dorsal lamella to which it is fused. *Nerinides agilis* differs in that there is a triangular "ventral cirrus," the dorsal portion of the ventral lamella is narrow and rounded, and the branchiae are not fused to the dorsal lamellae and are only half again as long as the lamellae.

There now remain only some comments concerning the last two species which have been designated as belonging to *Nerinides* (Hartman 1959, p. 381). The description of *N. longirostris* (Quatrefages), 1843, is not

sufficient to place it in this genus, as both Mesnil (1896, p. 152) and Southern (1914, p. 97) have pointed out. Quatrefages (1843, pp. 12–14) makes no mention of hooks, dorsal or ventral, in the first 50 setigers (in other species of *Nerinides*, hooded hooks first appear on from the eleventh to the thirtieth setiger). The same point has been made in the case of *N. lamellata* McIntosh, 1909 (Southern, 1914, p. 97), for no mention is made of hooded hooks in McIntosh's description (1909, pp. 175–176), and his illustration of the fiftieth parapodium of *N. lamellata* (pl. 6, fig. 5) shows no hooks. In addition, *N. lamellata* has frontal prostomial horns (McIntosh, 1909, pl. 5, fig. 7), which is in conflict with Mesnil's (1896, p. 119) diagnosis for *Nerinides*. Mesnil stated (p. 152) that he erected the new genus, *Nerinides*, for the species described by St. Joseph (1894, p. 74) as *Nerine longirostris* Quatrefages and suggested that *Malacoceros longirostris* Quatrefages was perhaps synonymous with *Nerine cirratulus* delle Chiaje. As a point of information, Mesnil (1896, pp. 164–165) also suggested that *Nerinides agilis* (Verrill) was also identical with *Nerine cirratulus*.

Before we leave the present discussion of *Nerinides*, one last item must be considered. Hartman (1959, p. 381) listed "*Nerinides longirostris* (Quatrefages, 1843)" as "genotype" of *Nerinides* Mesnil, 1896. However, a personal examination of pertinent literature and a consideration of current nomenclatural procedure indicate that such cannot be the case.

As mentioned above, the description of *Nerinides longirostris* (Quatrefages), 1843, is inadequate, insofar as its being placed in the genus *Nerinides*; thus, the taxon is unrecognizable on the basis of present information. In erecting the genus *Nerinides*, Mesnil (1896, p. 152) stated that "*Je crée ce nouveau genre pour l'espèce que de St. Joseph . . . décrit sous le nom de Nerine longirostris Qfg.*" ("I create this new genus for the species which de St. Joseph . . . described under the name of *Nerine longirostris* Quatrefages"), and, later, "*L'espèce de de St. Joseph serait nouvelle*" ("The species of de St. Joseph is new"). If *N. longirostris* (Quatrefages) is assumed to be a *nomen dubium*, and St. Joseph's taxon represents a new species, then a new name must be

assigned to the latter. Therefore, I propose a new name, *Nerinides st. josephi* for the species described by St. Joseph (1894, pp. 74-77) as *Nerine longirostris* Quatrefages. Further, I point out that this species is, *ipso facto*, the type species of the genus *Nerinides*, by Mesnil's original designation (Mesnil, 1896, p. 152).

FAMILY OPHELIIDAE MALMGREN, 1867

GENUS ARMANDIA FILIPPI, 1861

Armandia nonpapillata, new species

Figures 83-90

DIFFERENTIAL DIAGNOSIS: *Armandia* with 29 setigers; with 11 pairs of lateral eye spots; and with neither papillae on the margin of the anal funnel nor anal cirri.

U.C.W.I. COLLECTION: A single specimen of *Armandia nonpapillata* comes from Kingston Harbor, Jamaica. It was collected on January 29, 1960, and is comprised of 29 setigerous segments (length, 19 mm.). It is approximately 1 to 1.5 mm. in diameter.

DESCRIPTION: The prostomium is somewhat abruptly tapered, and its tip is swollen (figs. 83 and 84). The paired nuchal organs are everted and form irregularly shaped structures, the bases of which are generally circular, anterior to, and slightly medial to the first parapodia. No prostomial eye spots are present.

The first parapodium bears two fan-shaped fascicles of capillary setae and a ventral cirrus; there are neither branchiae nor dorsal cirri. The ventral cirri of the first and second parapodia are inserted on the posterior face of the parapod. On the third setiger, and all following, it is more ventrally placed and is visible from the front (figs. 85-87). The ventral cirri in all cases are rounded subtriangular processes, while the dorsal cirri (figs. 85-87), where they occur, are small globular structures which are inserted just above the notopodial setal fascicle on the posterior surface of the parapod. Dorsal cirri are found on all parapodia from the second to the next to last. Branchiae are also found, beginning on the second parapodium. These are ciliated and are relatively long and gently tapered distally to their rounded tips. Many of the branchiae have been lost from the specimen, but they are present to at least the twenty-

third parapodium. They are all of about the same length, although those more posterior tend to be somewhat shorter.

The setae are all unornamented capillaries, the shafts of which are quite heavy. In the first seven parapodia, these setae are disposed in rather widespread, fan-shaped fascicles transversely oriented; from the eighth parapodium on, they are in tighter bundles which are nearly in a frontal plane.

Eleven pairs of lateral eye spots are found beginning between the sixth and seventh parapodia (fig. 88) and extending to between the sixteenth and seventeenth. The first pair are smaller than the rest and are circular; the remaining eye spots are elliptical.

The anal funnel of *A. nonpapillata* is probably approximately as long as the last three to four setigers (figs. 89 and 90). In the specimen the posterior margin of the anal funnel is rolled inward, which probably represents a fixation artifact. There are approximately 12 to 13 narrow vertical bands on the funnel, and its posterior margin is entire; there are no anal papillae and no indications that they might have been present and lost in fixation or handling. Ventrally, it is seen that the anal funnel is cleft (fig. 90) and that there is no anal cirrus.

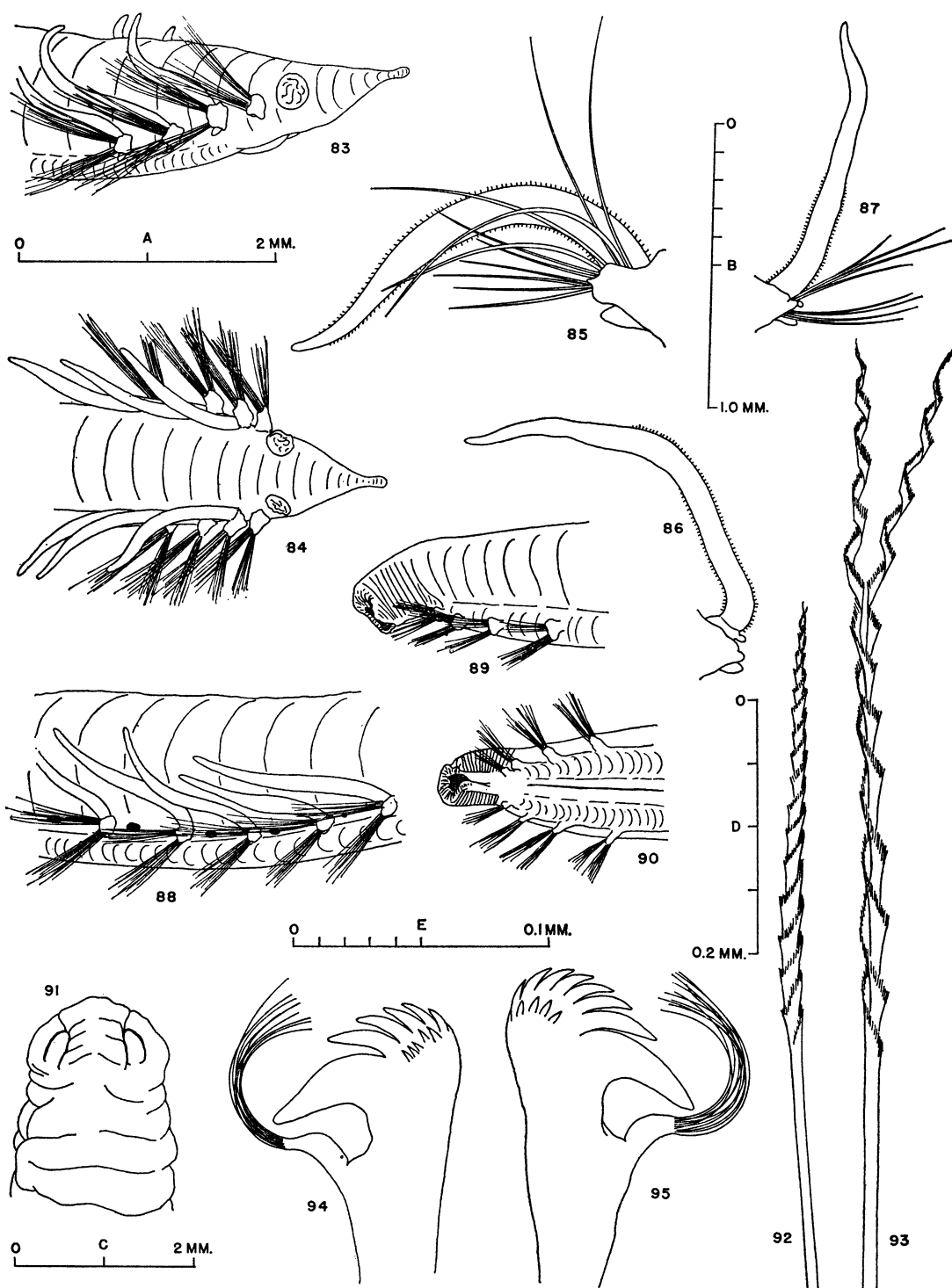
The trivial name, *nonpapillata*, refers to the lack of marginal papillae around the opening of the anal funnel of this species.

TYPE DISPOSITION: The holotype (A.M.-N.H. No. 3611) is deposited in the collections of the American Museum of Natural History.

DISCUSSION: It has been established that *Armandia nonpapillata* possesses an anal funnel which is devoid of anal cirri and anal papillae. While most other species of *Armandia* have both anal cirri and papillae, this condition is not without precedent in the genus, for *A. exigua* Kükenthal, 1887, exhibits a pygidial region similar to that of *A. nonpapillata*.

Armandia nonpapillata can be differentiated from *Armandia exigua* by its 29 setigerous parapodia, its plainly visible lateral eyes, and its truncated anal funnel (*A. exigua* has 38 setigerous parapodia, its lateral eyes are deeply embedded, and its anal funnel is attenuated).

Although Moore (1906) and Hartman (1938) have stated that *A. brevis* possesses an



FIGS. 83-90. *Armandia nonpapillata*, new species. 83. Lateral view of anterior region. 84. Dorsal view of anterior region. 85. Anterior view of right fifth setiger. 86. Anterior view of left twelfth setiger, setae missing. 87. Anterior view of left twenty-third setiger. 88. Lateral view of body, from sixth to tenth setigers (anterior to right). 89. Lateral view of posterior region. 90. Ventral view of posterior region.

FIGS. 91-95. *Nicomache antillensis* Augener. 91. Dorsal view of anterior region. 92. Notoseta from fifth setiger. 93. Notoseta from seventeenth setiger. 94. Neuropodial hook from second setiger. 95. Neuropodial hook from seventeenth setiger.

83, 84, 88-90, scale A; 85-87, scale B; 91, scale C; 92, 93, scale D; 94, 95, scale E.

anal funnel which lacks anal papillae, Treadwell (1922) and Berkeley and Berkeley (1941) believe that the type of *A. brevis* was an imperfect specimen, and they have reported specimens which do bear an anal cirrus and papillae.

FAMILY CAPITELLIDAE GRUBE, 1862

GENUS DASYBRANCHUS GRUBE, 1850

Dasybranchus sp.

U.C.W.I. COLLECTION: Three specimens of *Dasybranchus* sp. were taken from a mud substrate at Ocho Rios, Jamaica, on August 11, 1954. All are represented by anterior fragments, the longest of which is comprised of 176 setigerous segments (length, 61 mm.; maximum width in the thoracic region, 1.0 mm.). The remaining specimens have 119 setigers (length, 32 mm.; maximum width at the twenty-fifth setiger, 1.5 mm.) and 86 setigers (length, 30 mm.; width, 1.5 mm.).

DISCUSSION: These specimens caused some confusion at the outset of their identification on two accounts. First, the two largest carried capillary setae on the first 13 setigers, but the smallest had capillary setae on only the first 12. Second, the apparent demarcation between the thorax and abdomen was between the eleventh and twelfth setigers in the two largest, and between the tenth and eleventh in the smallest. It was finally decided that the smallest specimen represented a variant and that the three specimens were, indeed, *Dasybranchus* sp. Further identification was not possible because no dorsal gills were visible. Indeed, under the closest scrutiny, not even slit-like passages for the extrusion of retractable gills were to be seen. Thus a more definitive identification of these specimens must await further collections to show the shape of gills, if, indeed, they prove to be present. If this species of *Dasybranchus* actually has no gills, it may well be new.

The observation of abdominal hooded hooks added to the confusion concerning the identity of these specimens, for, under oil immersion, there appear to be at least four smaller teeth immediately above the large fang rather than the row of three small teeth reported by Hartman (1947, pp. 430-437, pls. 55-57).

FAMILY MALDANIDAE MALMGREN, 1867

GENUS NICOMACHE MALMGREN, 1865

Nicomache antillensis Augener, 1922

Figures 91-95

Nicomache antillensis AUGENER, 1922a, p. 46; Barbados.

Nicomache antiguensis TREADWELL, 1924b, pp. 16-17; Pelican Island, Antigua.

Nicomache antillensis, AUGENER, 1927b, p. 70; Curaçao.

U.C.W.I. COLLECTION: This species is represented by two posteriorly incomplete specimens. The first, comprised of the anterior 10 setigerous segments, has a length of 50 mm. and a maximum width of 4 mm. at parapodia and 3 mm. between parapods. The second, the anterior 17 setigers, is 155 mm. long and 5 mm. wide at parapodia and 4 mm. wide between parapods. The former was collected at Drunkenman Cay, Port Royal, Jamaica, in January, 1959; the latter was collected from sand, "Port Royal Cays," in November, 1959.

DISCUSSION: Although the anal funnel of this specimen, which would give an unequivocal determination of the genus (*Nicomache* or *Petaloproctus*) is missing, the number and distribution of anterior neuropodial acicular setae, the morphology of the head region, and the shape of the nuchal organs all confirm this identification.

In one specimen the neuropodia of the first setiger bear five acicular setae on one side and three on the other; the second bears four on each side; and the third has five on each side. None of the described species of *Petaloproctus* bears more than one acicular seta on either side of the most anterior neuropodia, and this number and distribution agree with descriptions presented by both Augener (1922a) and Treadwell (1924b).

The nuchal organs of this specimen from Jamaica are a pair of semicircular structures, on each side of a low median ridge (fig. 91). These are also a confirmatory feature.

During the course of observations, other items of interest were noted, namely, the fine structure and distribution of setae.

The notosetae of the most anterior setigers are of two types. The first are smooth, unornamented, pointed capillaries. Those of the second type, also pointed, at first glance ap-

pear to be bilimbate, but under oil immersion the "limbations" prove to be longitudinal splits on each side of the axis of the seta. These latter setae are found along the length of *N. antillensis*.

By the fifth setiger unornamented notopodial capillaries are replaced by a setal type, which in the past has been called "... *soies* ... *garnies d'épines tres délicates*" (Fauvel, 1927, p. 168), setae with "*deutliche Seitenzähnen*" (Arwidsson, 1906, pp. 103, 107, *et al.*), "spined" (Chamberlin, 1919b, p. 407), or setae "with paired lateral plates whose free margins are toothed" (Treadwell, 1924, p. 17). After their first appearance these (fig. 92) are to be found on all remaining notopodial fascicles (at least to the seventeenth setiger). In the more anterior setigers these setae tend to be much shorter than those more posterior. In some of the larger setae of this type the true setal structure becomes apparent, for their tips may become unraveled (fig. 93), revealing that the so-called "spines," "teeth," and "lateral plates" are double spirals, the distal edges of which are minutely serrate.

The long-handled hooks, which are present in all neuropodia posterior to the third (at least to the seventeenth), are of the usual maldanid type. Each bears a subrostral tuft of from five to six distally curled filaments. Those of the anterior region (fig. 94) bear, in addition to a large primary tooth, a single series of five somewhat smaller teeth surmounted by a sixth much smaller tooth. These more obvious features have been noted previously by Treadwell (1924, figs. 27 and 29). However, present observations, under rigorous optical and illumination conditions, reveal a row of about five very fine teeth on each side of the larger medial row of teeth. Hooks from more posterior setigers are similar (fig. 95), but their large tooth is surmounted by a single row of seven progressively smaller teeth and an eighth still smaller tooth. These, too, are flanked by a series of very fine teeth on each side. A further difference, which may be of little importance, is that there is much less space between the large tooth and the next one above it, in those hooks of the posterior region.

DISTRIBUTION: Tropical: Jamaica; Curaçao; Lesser Antilles.

FAMILY SABELLIDAE MALMGREN, 1867

GENUS SABELLA LINNAEUS, 1767

Sabella melanostigma Schmarda, 1861

Sabella melanostigma SCHMARDA, 1861, p. 36; Jamaica.

Sabella bipunctata BAIRD, 1865, pp. 158-159; St. Thomas.

Sabella melanostigma, WEBSTER, 1884, p. 327; Bermuda.

Sabella bipunctata, MCINTOSH, 1885, pp. 489-490; St. Thomas.

Sabella melanostigma (Schmarda) [sic], EHLERS, 1887, pp. 263-266; [Dry] Tortugas, Florida.

Sabella melanostigma, TREADWELL, 1901, p. 208; Puerto Rico.

Sabella melanostigma var., HOAGLAND, 1919, p. 577; Puerto Rico.

Sabella melanostigma, AUGENER, 1922a, p. 52; "West Indies."

Sabella melanostigma, MULLIN, 1923, pp. 49-50; Barbados.

Sabella melanostigma, TREADWELL, 1924, p. 20; Barbados and Antigua.

Sabella melanostigma, AUGENER, 1927b, pp. 73-74; Curaçao.

Sabella melanostigma, TREADWELL, 1928, p. 482; near Saba Island.

Sabella bipunctata, MONRO, 1933b, p. 1078; Trinidad.

Sabella melanostigma, MONRO, 1933c, p. 267; Dry Tortugas.

Sabella melanostigma, TREADWELL, 1939, p. 295; "Barbados; Antigua; Puerto Rico; and near Saba Island."

Sabella melanostigma, HARTMAN, 1951b, pp. 116-117; Franklin and Sarasota counties, Florida.

Sabella melanostigma, CARPENTER, 1956, p. 107; Franklin County, Florida.

Sabella melanostigma, RENAUD, 1956, p. 34; Bimini, Bahamas.

Sabella melanostigma, MARSDEN, 1960, p. 1014; Barbados and Jamaica.

U.C.W.I. COLLECTION: Two specimens were collected at Port Royal, Jamaica, in November, 1959. The larger (124 setigerous segments) has an over-all length of 62 mm. and a crown length of approximately 15 mm. The smaller (103 setigers) has an over-all length of 40 mm. and a crown length of approximately 12 mm.

DISTRIBUTION: Temperate, subtropical, tropical: northwest Florida; Bermuda; Bahamas; Florida Keys; Jamaica; Lesser Antilles; and the northern coast of South America.

GENUS *BRANCHIOMMA* KÖLLICKER, 1858

Branchiomma arenosa (Treadwell), 1924

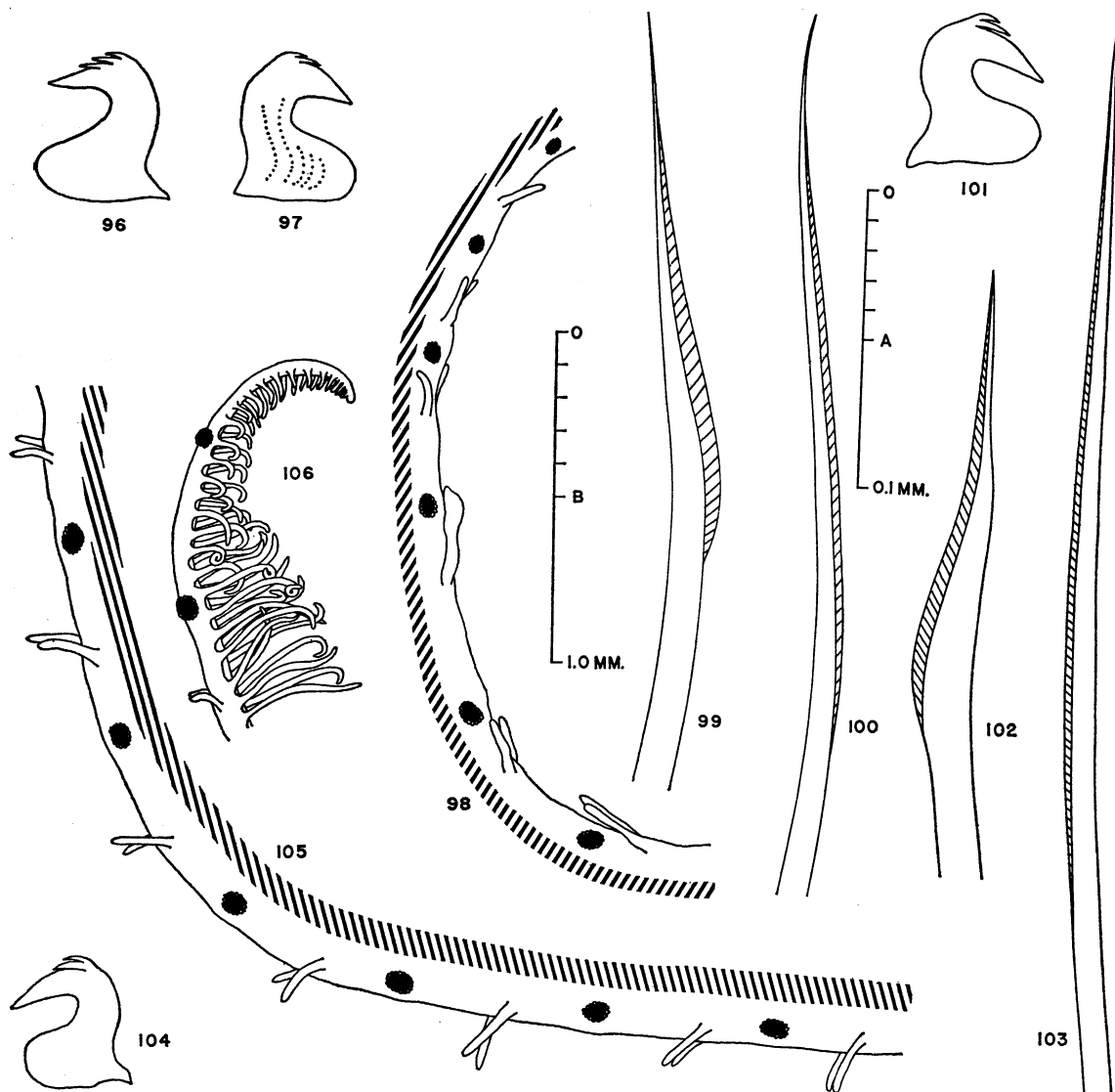
Figures 96–106

Dasychone nigro-maculata ("Baird"), McINTOSH, 1885 [not *Branchiomma nigromaculata* (Baird) 1865], pp. 503–504; St. Thomas.

Dasychone ponce TREADWELL, 1901 [in part], p. 209; Puerto Rico.

Dasychone nigro-maculata, AUGENER, 1922a, p. 52; "West Indies."

Dasychonopsis arenosa TREADWELL, 1924a, pp. 1–2; Puerto Rico.



FIGS. 96–106. *Branchiomma arenosa* (Treadwell). 96. Hook from right fourth thoracic setiger of holotype (A.M.N.H. No. 1616). 97. Hook from right fifteenth abdominal setiger of holotype. 98. External appendages of a radiole of holotype. 99. Shorter limbate seta from left fourth thoracic setiger of specimen from Jamaica. 100. Longer limbate seta from left fourth thoracic setiger (Jamaica). 101. Hook from left fourth thoracic setiger (Jamaica). 102. Shorter limbate seta from left fifteenth abdominal setiger (Jamaica). 103. Longer limbate seta from left fifteenth abdominal setiger (Jamaica). 104. Hook from left fifteenth abdominal setiger. 105. External appendages of a radiole (Jamaica). 106. Distal tip of a radiole (Jamaica). 96, 97, 99–104, scale A; 98, 105, 106, scale B.

Dasychone nigromaculata, AUGENER, 1927b [in part], p. 76; Curaçao.

[?] *Dasychone nigromaculata*, AUGENER, 1934, p. 113; Isla de Margareta, Venezuela.

Dasychonopsis arenosa, TREADWELL, 1939, pp. 296–297; "Puerto Rico."

Branchiomma nigromaculata, HARTMAN, 1951b, pp. 114–115; St. Lucie County, Florida (Atlantic); Sarasota County, Florida (Gulf of Mexico).

Branchiomma nigromaculata, CARPENTER, 1956, p. 107; Wakulla County, Florida (northern Gulf of Mexico).

Brianchiomma [sic] *nigromaculata*, RENAUD, 1956, p. 34; Key West.

Branchiomma nigromaculata, MARSDEN, 1960, pp. 1014–1015; Jamaica.

U.C.W.I. COLLECTION: Two specimens, both of 62 setigers, were collected at Port Royal, Jamaica, in November, 1959. The over-all length of one was 30 mm. (the branchial plume was 11 mm. long, and the specimen was 1.5 mm. at its widest); of the other, 38 mm. (the branchial plume was 9 mm. long, and the specimen was 2.0 mm. at its widest).

DISCUSSION: As a result of critical comparisons of the texts and figures presented by Baird (1865) for his *Sabella nigro-maculata* and by McIntosh (1885) for his *Dasychone bairdi* and *D. nigro-maculata*, it was concluded that *Branchiomma bairdi* is a junior synonym of *B. nigromaculata* (see discussion of *B. nigromaculata* below).

In the establishing of the valid name for the species referred by McIntosh to the taxon that has heretofore been accepted as *Branchiomma nigromaculata*, it is seen that the next available name, *B. ponce*, is actually unavailable, since there are ambiguities in the description, as mentioned below.

Comparative observations have been made on the holotype of *Dasychonopsis arenosa* Treadwell (A.M.N.H. No. 1616), and, on the basis of the structure of thoracic (fig. 96) and abdominal (fig. 97) hooks and the form of the external appendages of the radioles (fig. 98), *Dasychonopsis arenosa* is considered a synonym of *B. nigromaculata* (*sensu* McIntosh, 1885).

It is, then, Treadwell's (1924a) taxon, *Dasychonopsis arenosa*, which is the earliest valid name available for this species.

For the most part, McIntosh's descriptive account (1885, pp. 503–504, pl. 31A, figs. 4–6, pl. 39A, fig. 6, pl. 53, fig. 5), as well as Tread-

well's (1924a) original description, is acceptable for *Branchiomma arenosa*. In addition, figures of critical points of comparison are herein included (figs. 99–106), as well as figures of comparable structures in *Branchiomma nigromaculata* (figs. 107–114). It is seen that there are but slight differences in the limbate setae of the two species; however, there are somewhat more substantial differences in the structure of the thoracic hooks (figs. 101 and 109) as well as those of the abdomen (figs. 104 and 112). The main morphological differentiation of *B. arenosa* from *B. nigromaculata* lies in the structure of the radioles of the branchial plume, especially those of the dorsal and lateral areas. The external appendages of the radioles of *B. arenosa* are all of approximately the same length (fig. 105), while at least two pairs of those of *B. nigromaculata* are twice the length of the remaining appendages (fig. 113). There also appears to be a difference in the structure of the tips of the radioles, for in *B. arenosa* the tips bear filaments to their apices (fig. 106), while those of *B. nigromaculata* are bare (fig. 114).

DISTRIBUTION: Subtropical to tropical: from the northern Gulf coast of Florida through the Greater and Lesser Antilles to the Venezuelan coast.

***Branchiomma nigromaculata* (Baird), 1865**

Figures 107–114

Sabella nigro-maculata BAIRD, 1865, p. 159; St. Vincent.

Dasychone bairdi MCINTOSH, 1885, pp. 495–497; Bermuda.

Dasychone conspersa EHLERS, 1887, pp. 266–270; Key West, Florida.

Dasychone ponce TREADWELL, 1901 [in part], p. 209; Puerto Rico.

Dasychone conspersa, HOAGLAND, 1919, p. 577; Puerto Rico.

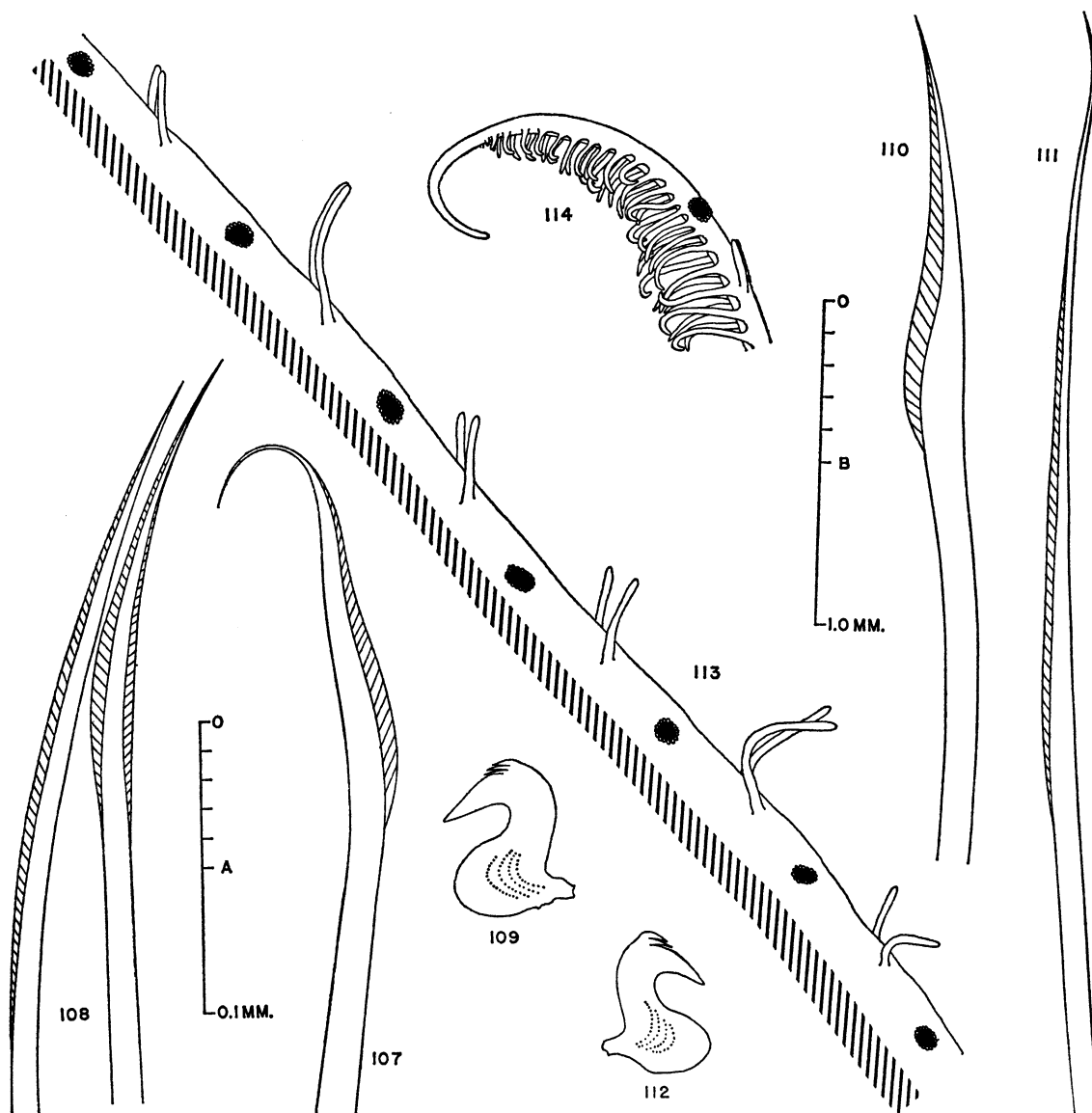
Dasychone bairdi, AUGENER, 1922a, p. 49; Dry Tortugas; St. Thomas; Jamaica; Haiti; Veracruz, Mexico.

Dasychone conspersa, MULLIN, 1923, pp. 50–51; Antigua.

Dasychonopsis conspersa, TREADWELL, 1924b, p. 18; Barbados and Antigua.

Dasychone nigromaculata, AUGENER, 1927b [in part], p. 76; Curaçao.

Branchiomma nigromaculata [sic], JOHANSSON, 1927, pp. 162–164; Curaçao; Barthelmy (St. Bartholomew); and Bermuda.



FIGS. 107-114. *Branchiomma nigromaculata* (Baird). 107. Shorter limbate seta from right fourth thoracic setiger. 108. Adjacent longer (left) and shorter limbate setae from right fourth thoracic setiger. 109. Hook from right fourth thoracic setiger. 110. Shorter limbate seta from right fifteenth abdominal setiger. 111. Longer limbate seta from right fifteenth abdominal setiger. 112. Hook from right fifteenth abdominal setiger. 113. External appendages of a radiole. 114. Distal tip of a radiole. 107-112, scale A; 113, 114, scale B.

Dasychone bairdi, MONRO, 1933c, p. 267; Dry Tortugas.

[?] *Dasychone nigromaculata*, AUGENER, 1934, p. 113; Isla de Margareta, Venezuela.

Dasychonopsis ponce, TREADWELL, 1939, p. 298; "Puerto Rico."

Dasychonopsis conspersa, TREADWELL, 1939, p.

299; "Key West and Puerto Rico."

Branchiomma bairdi, HARTMAN, 1951b, p. 115; "Dry Tortugas."

Dasychone bairdi, RIOJA, 1952, pp. 513-516; Veracruz, Mexico.

Branchiomma bairdi, MARSDEN, 1960, p. 1015; Barbados and Jamaica.

U.C.W.I. COLLECTION: Four specimens were collected at Port Royal, Jamaica, three in November, 1959 (one of which was ovigerous), and one on August 8, 1961. The overall lengths of the three specimens collected in November ranged from 30 to 34 mm. (the length of the branchial plumes, from 11 to 12 mm.), and they were all 2.0 mm. wide at the thoracic region. The number of setigerous segments varied from 58 to 70. The single complete individual taken in August was 33 mm. in length, for 70 setigers (branchial plume, 12 mm.), and was 3.0 mm. wide.

DISCUSSION: In the original description of *Branchiomma nigromaculata* (Baird, 1865, p. 159), it is stated that on the outer margin of the "rachis" of the branchial radioles, there are "... very short filaments, set in pairs. Near the base of the filament [radiole] spring a pair longer and broader, and near the middle of its length another pair of the same kind." In addition, Baird's figure 6 confirms this statement.

Later, McIntosh (1885, pp. 503-504, pl. 31A, figs. 4-6, pl. 39A, fig. 6, pl. 53, fig. 5) presented figures and the description of specimens which he identified as Baird's species. However, McIntosh (p. 503) observed that on the external surface of the radioles "... a series of rather short appendages occur in pairs ... which are numerous and slender." An accompanying figure (McIntosh, 1885, pl. 39A, fig. 6) shows that the appendages in question are all of approximately the same size. Strangely, in the same Challenger report, and some pages earlier (pp. 495-497), McIntosh described *Dasychone bairdi* as a "new" species of this genus. Of the branchial radioles, McIntosh writes (1885, p. 496), "Each has externally, at intervals, a pair of ligulate hypodermic processes ... a shorter pair often alternating with a longer pair." This observation is also confirmed by a figure (pl. 39A, fig. 2).

It should be pointed out that Day (1955, p. 445) has also suggested that these two species are synonymous.

Ehler's species, *Dasychone conspersa* Ehlers, 1887, also exhibits both long and short external radiolar appendages.

The status of *Dasychone ponce* Treadwell, 1901, is somewhat obscure, for Treadwell mentions (p. 209) that although "some indi-

viduals have two pairs of these dorsal appendices much larger than the rest ... this does not appear in all specimens." This would indicate to me that Treadwell was probably dealing with the two West Indian species of *Branchiomma* recognized by McIntosh as *Dasychone nigromaculata* Baird and *D. bairdi* McIntosh.

Similarly, Augener (1927b, p. 76) apparently found these two species in the collections from Curaçao. He noted the differences in length of the appendages of the radioles, but minimized these and was moved to synonymize *Dasychone nigromaculata* and *D. bairdi*, retaining the former name as the senior synonym.

It remained for Johansson (1927, pp. 162-164) to assign *Dasychone* and *Dasychonopsis* to Köllicker's genus *Branchiomma* and to synonymize *Dasychone conspersa* Ehlers, *D. ponce* Treadwell, and *D. arenosa* Treadwell with *B. nigromaculata* (Baird). It should be noted, in passing, that Johansson's identification of this species (*B. nigromaculata*) was based on McIntosh's (1885) description, in spite of his (Johansson) observing that some of the external appendages of the branchial radioles were longer than others. Further, Johansson indicated (p. 167) that, although it was not present in his collections, he recognized *B. bairdi* as a valid species.

The final item in the synonymy that requires comment is Augener's (1934) record of *B. nigromaculata* from the Venezuelan coast. Unfortunately, he makes no mention of the morphology of the branchial plume, so it only can be assumed that he was dealing with the present species.

DISTRIBUTION: Subtropical to tropical: from the Florida Keys through the Greater and Lesser Antilles to the Venezuelan coast; Bermuda; and Veracruz, Mexico.

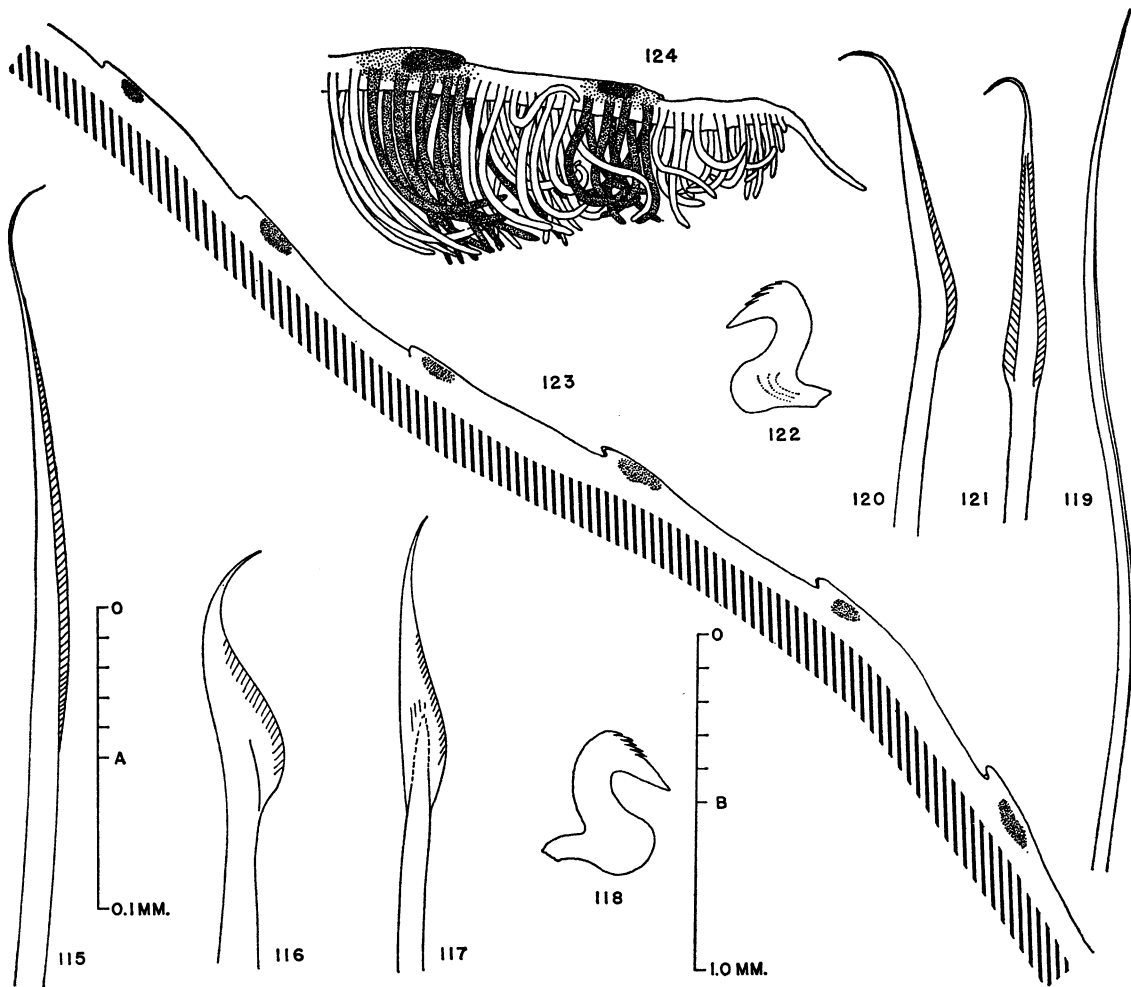
GENUS *PSEUDOBANCHIOMMA*, NEW GENUS

TYPE: *Pseudobranchiomma emersoni*, new species.

Pseudobranchiomma emersoni, new species

Figures 115-124

DIFFERENTIAL DIAGNOSIS: Sabellid with four thoracic setigers in the adult; with reduced external appendages on the branchial radioles; with no eye spots on the radioles;



FIGS. 115-124. *Pseudobranchiomma emersoni*, new genus, new species. 115. Longest limbate seta from right second thoracic setiger. 116. Medium limbate seta from right second thoracic setiger. 117. Shortest limbate seta from right second thoracic setiger. 118. Hook from right second thoracic setiger. 119. Longer limbate seta from right fifteenth abdominal setiger. 120. Shorter limbate seta from right fifteenth abdominal setiger. 121. Different view of shorter limbate seta from right fifteenth abdominal setiger. 122. Hook from right fifteenth abdominal setiger. 123. External appendages of a radiole. 124. Distal tip of radiole. 115-122, scale A; 123, 124, scale B.

and with the tips of the branchial radioles devoid of pinnules.

U.C.W.I. COLLECTION: Many specimens were collected on July 1, 1961, from settling panels in shallow water (4 feet) at Port Royal, Jamaica. Various sizes, from very small individuals to adults, are represented, and the larger ovigerous specimens are approximately 25 to 30 mm. in length for about 90 setigers (branchial plumes comprise 6 to 9 mm.); they are from 1.0 to 1.5 mm. wide in the thoracic region. All specimens collected were associ-

ated with an unidentified colonial ascidian.

DESCRIPTION: The general body color is a brownish to pinkish white, and the branchial plumes bear purple splotches which give the impression of narrow irregular bands. The pigmentation of the branchial radioles is confined to their sides and is carried onto those internal pinnules that are immediately adjacent (fig. 124). The base of the branchial plume bears a series of longitudinal purple streaks. The anterior region of *Pseudobranchiomma emersoni* is provided with ir-

regular purple splotches, especially on the collar and the ventral body surface. In each segment there are rather large, circular, purple spots (not eyes) between the neurosetae and the notosetae, and, dorsal to the notosetae, there is a much lighter, more irregular spot. There is a large purple spot at each of the dorsal ends of the collar and a distinct spot on either side of the ventral notch.

There are no eyes on the radioles, only irregular patches of purple. The external appendages of the radioles, which are so prominent in the genus *Branchiomma*, are here reduced to stubby processes, where they are best developed (figs. 123 and 124). Approximately 10 pairs of such reduced appendages are to be found on the external margin of the branchial radioles, and the members of each pair are separated by a rather pronounced longitudinal groove which runs the length of the radiole. The tips of the radioles are filiform and lack pinnules (fig. 124). The radioles are fused basally for approximately one-eighth of their total length.

Dorsally, the collar is separated, and it extends only to the notosetal fascicles on each side. Ventrally, the collar is deeply incised, and the lobes so formed do not overlap. Anterior to the ventral notch of the collar there is a pair of foliaceous flaps which appear to form a connection between the collar and the base of the branchial plume. The pair of oral tentacles are approximately one-fourth of the length of the plume. Dorsally, between the base of the branchial plume and the dorsal ends of the collar, there is a longitudinal ridge on each side of the mid-line.

In ovigerous specimens, the thoracic region is comprised of four segments which are represented by four notopodial fascicles of limbate setae and three neuropodial tori of avicular hooks. In the case of smaller individuals, the thorax may consist of five or of six segments; one other smaller specimen was noted which bore four notopodial fascicles of setae on one side and five on the other.

Thoracic notosetae are of two basic types: a long, rather straight, unilimbate capillary (fig. 115), and shorter capillaries, the limbations of which are restricted to their subapical region (figs. 116 and 117). The shorter of the latter setae (fig. 116) are slightly geniculate and are provided with a broad limbation and

a recurved tip; the longer are straighter and have a somewhat more narrow limbation (fig. 117).

Thoracic hooks (fig. 118) have approximately five teeth (or rows of teeth) above the main fang, which is sharply bent back on the rounded basal portion. There is a distinct broad extension of the basal region which may represent a short manubrium. These are not accompanied by so-called "pickax" setae.

Neurosetae of the abdomen are also of two types: thin, attenuated, unilimbate capillaries (fig. 119), and shorter, heavier, geniculate unilimbate capillaries (fig. 120). Some of the latter, which are properly oriented (fig. 121), show that these are actually bilimbate setae which appear unilimbate owing to their orientation. This condition probably holds for the apparently unilimbate setae of the thorax.

Abdominal hooks (fig. 122) are similar to those of the thorax.

Tubes are flexible and are covered with a fine gray sediment.

The generic name refers to the superficial resemblance of this genus to the genus *Branchiomma*. The trivial name was chosen to honor Dr. William K. Emerson, the American Museum of Natural History, without whose encouragement and criticism the present paper might not have been written.

TYPE DISPOSITION: The holotype (A.M.-N.H. No. 3612) and paratypes (A.M.-N.H. No. 3613) of *Pseudobranchiomma emersoni* are deposited in the collections of the American Museum of Natural History.

DISCUSSION: The separation of *Pseudobranchiomma* from *Branchiomma*, the most closely related genus of the Sabellidae, is based mainly on the number of thoracic setigers. A comparison of the 22 established species of *Branchiomma* shows that all but *B. bombyx*, *B. curta*, and *B. natalensis* have eight thoracic setigers. According to Fauvel (1927, p. 319), *B. bombyx* may have from five to eight setigerous segments in the thoracic region. Ehlers (1901), in his original description of *B. curta*, reports from four to six setigers in the thorax of this species (which may, according to Augener [1922b, pp. 211-217], represent regenerative stages), and Kinberg (1910) indicates that *B. natalensis* possesses seven thoracic setigers. In addition, Mc-

Intosh (1885, p. 497) states that the number of "anterior segments" (= thoracic setigers) of *B. picta* could not be determined, and later (1885, p. 499), that the number of thoracic setigers of *B. orientalis* "appears to be eight, but . . . a clear view of these is not attainable." In ovigerous *Pseudobranchiomma emersoni*, the number of thoracic setigers is always four.

On the basis of the structure of the external appendages of the radioles, a closer relationship may be postulated between *Pseudobranchiomma* and *Branchiomma picta* (McIntosh), 1885, *B. orientalis* (McIntosh), 1885, and *B. kumari* (Aziz), 1938. All of these have external appendages which are poorly developed, and, further, none bears eyes on the radioles—only patches of pigment. Yet another sabellid has the reduced dorsal appendages that these species possess. Recently, Hartman (1959, p. 541) has indicated that Fauvel's (1921) *Dasychone odhneri* is a synonym of *Sabellastarte longa* (Kinberg). Earlier, Augener (1926, pp. 257–258) considered it to be a synonym of *Branchiomma serratibranchis* (Ehlers), 1907, and Day (1934, p. 75) suggested the possibility of its being a synonym of *Sabellastarte indica* (Savigny). On the basis of the reduced external appendages that it possesses ("*Appendices branchiaux réduits à de simple crêtes lateral*," Fauvel, 1921, p. 24), I suggest that it is a *Branchiomma* and that it has affinities with *B. picta*, *orientalis*, and *B. kumari*, insofar as external appendages are concerned, and with *B. natalensis*, with reference to its spirally arranged branchial plumes.

Finally, I would suggest that if *Branchiomma picta* and *B. orientalis* prove to have four thoracic setigers, then it will become necessary to transfer them to the genus *Pseudobranchiomma*.

GENUS SABELLASTARTE SAVIGNY, 1818

Sabellastarte magnifica (Shaw), 1800

Tubularia magnifica SHAW, 1800, pp. 227–229; Jamaica.

Sabella lingua KRØYER, 1856, p. 27; West Indian seas.

Sabella melania SCHMARDA, 1861, p. 35; Jamaica.

Sabella splendida KINBERG, 1867, p. 353; Guadeloupe.

Sabellastarte magnifica, AUGENER, 1922a, p. 48; St. Thomas; Jamaica; Haiti; Barbados; West

Indies; Veracruz, Mexico; Puerto Cabello, Venezuela; St. Croix; Surinam.

? [Sic] *Bispira melania*, MULLIN, 1923, pp. 52–56; Antigua.

Bispira melania, TREADWELL, 1924b, pp. 18–19; Antigua.

Sabellastarte magnifica, AUGENER, 1925, pp. 10–11; St. Thomas and St. Croix.

Sabellastarte magnifica, AUGENER, 1927b, p. 73; Curaçao.

? *Sabellastarte indica*, MONRO, 1933b, p. 1079; Margarita Island; Colón, Panama (Caribbean end of the Panama Canal).

? *Sabellastarte indica*, RIOJA, 1946, pp. 198–199; Veracruz, Mexico.

Sabellastarte magnifica, HARTMAN, 1951b, p. 116; "West Indies and Veracruz, Mexico."

Sabellastarte magnifica, ANDREWS AND ANDREWS, 1953, pp. 12–13; Bimini, Bahamas.

Sabellastarte magnifica, MARSDEN, 1960, p. 1012; Barbados and Jamaica.

U.C.W.I. COLLECTION: Two complete specimens and the branchial crown of a third were collected on piers at Port Royal, Jamaica, in October, 1959. The larger complete specimen (155 mm. long, 12 mm. wide) has a branchial crown 65 mm. in length; the smaller (143 mm. long, 10 mm. wide), a crown 60 mm. in length. The unattached crown is 55 mm. long.

DISCUSSION: Comparison of these specimens with the holotype of *Laonome sanjuanensis* (A.M.N.H. No. 2892) and its description (Treadwell, 1941) indicates that *L. sanjuanensis* should not be synonymized with *Sabellastarte magnifica* (cf. Hartman, 1956, p. 299). Generally, my observations on the holotype of *Laonome sanjuanensis* agree with Treadwell's description; however, there are several features, one of which is of prime importance, which were overlooked both by Treadwell (1941), and by Hartman (1956) in her inspection of this specimen.

Treadwell states (p. 3) that "the thorax is composed of six somites . . .," and (p. 4) that "uncinigerous tori begin on somite 2, each carrying a single row of uncini." The first statement has been borne out by the present observations, but it is uncertain whether or not the second is wholly true. The uncertainty arises from the fact that the first two left thoracic setigers have been removed, *in toto*, and the first two right thoracic setigers bear only notopodial setal fascicles; there are

no corresponding rows of neuropodial uncini associated with either. The remaining four thoracic setigers have both neuropodial and notopodial fascicles. This condition may well represent a morphological abnormality, for there is further evidence that the orderly arrangement of abdominal setigers has been upset; the right and left twenty-sixth and the right twenty-seventh setigers of the abdomen are inverted, i.e., there are *notopodial* capillary setae and *neuropodial* uncini.

The two types of limbate capillary setae described by Treadwell have been noted, rather than the one type reported by Hartman (1956, p. 299).

The last, and most important, point at variance with Treadwell's description is the fact that there are pairs of so-called dorsal appendages on the outer surfaces of the branchial filaments. To be sure, these are rather delicate and nearly transparent, but they are present all along the length of the filament. Further, they are of varying lengths, similar to those of *Branchiomma nigromaculata* (Baird) [= *B. bairdi* McIntosh], and longer appendages are followed by two pairs of shorter appendages (cf. McIntosh, 1885, pl. 39A, fig. 2). Distally, all dorsal appendages are short. I concur with Treadwell in his observation that there are no eye spots on the gill filaments. In addition, there are no pigmented spots between the neuropodial and notopodial areas.

In my opinion *Laonome sanjuanensis* Treadwell is not *Sabellastarte magnifica* (Shaw), but, rather, is a member of the genus *Branchiomma* K  lliker (*non* Clapar  de), and is herein designated *Branchiomma sanjuanensis* (Treadwell).

In addition, a comparison of the holotype (A.M.N.H. No. 982) and paratypes (A.M.N.H. No. 981) of *Metalaonome brunnea* and its description (Treadwell, 1917) with these specimens suggest that this, too, should not be synonymized with *Sabellastarte magnifica* (cf. Augener, 1927b, p. 40; Hartman, 1956, p. 299). In general, my observations of the holotype and paratypes confirm Treadwell's description of *Metalaonome brunnea* and Hartman's comments on this species. Treadwell states (p. 268) that he "... was unable to discover any pennoned setae in the thorax of these forms," and Hartman (p. 299)

reports that "thoracic neurosetae are entirely avicular." However, close inspection of the sixth left thoracic neurosetae shows that, in addition to uncini, there are small, nearly transparent, "pennoned setae" (cf. Fauvel, 1927, fig. 103, k and l ["*soies en pelle*"]; and Fauvel, 1953, fig. 232, k and l ["shovel pick-axe setae"]). On this basis alone, this species can be neither a *Metalaonome* nor a *Sabellastarte*. In my opinion this is a species of *Sabella*. Proper specific designation must await a thorough study of the literature and further observations.

DISTRIBUTION: Tropical: Bahamas; Greater and Lesser Antilles; northern coast of South America; and perhaps the Caribbean coast of Panama and western Mexico.

FAMILY SERPULIDAE SAVIGNY, 1818

GENUS OLGA, NEW GENUS

TYPE: *Olga elegantissima*, new species.

Olga elegantissima, new species

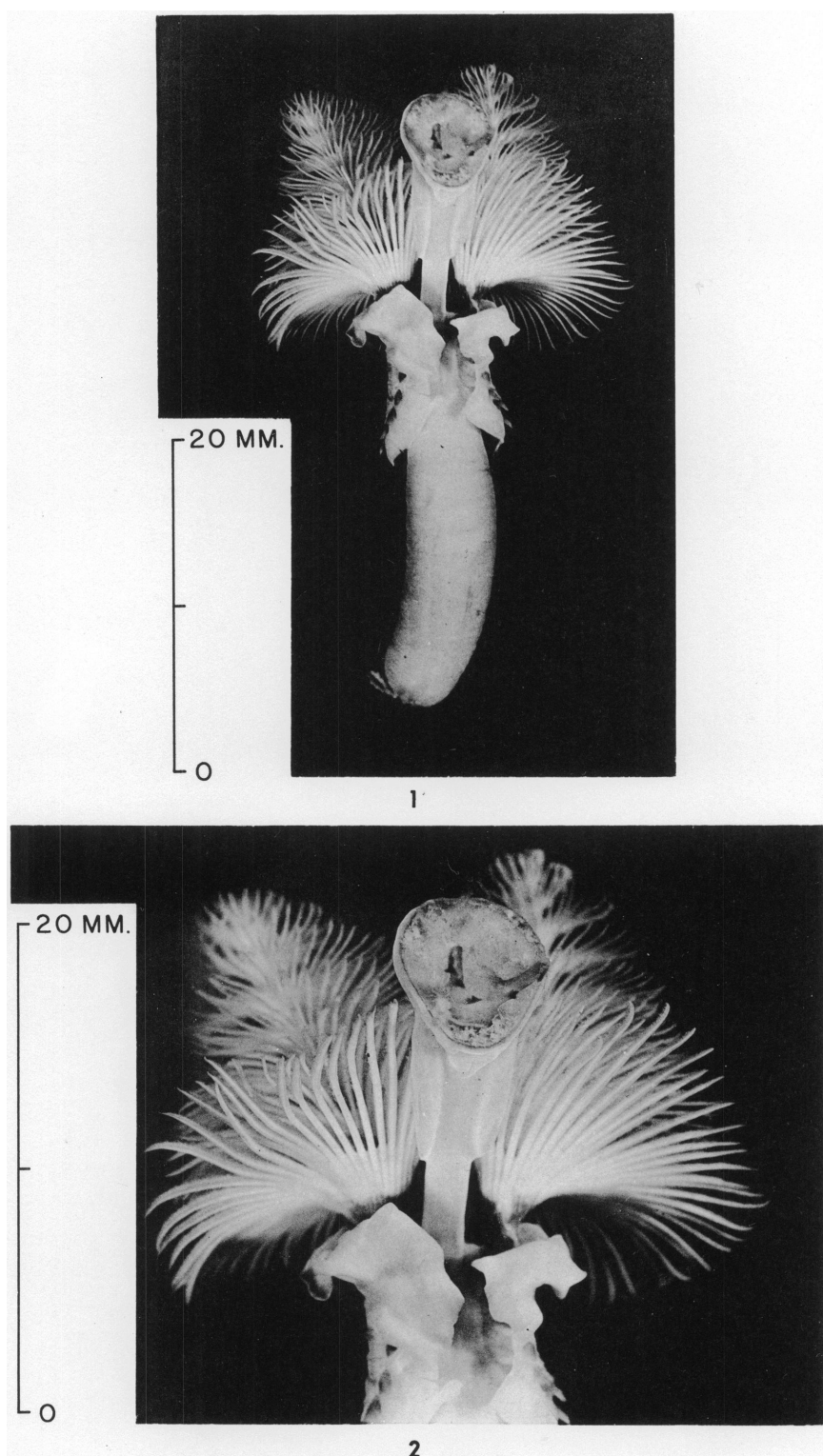
Plate 52, figures 1 and 2; text figures 125-128

DIFFERENTIAL DIAGNOSIS: Serpulid with six thoracic setigers; with an operculum which possesses horns on its surface and wing-like processes on its peduncle; without collar setae; and with spirally arranged branchial plumes.

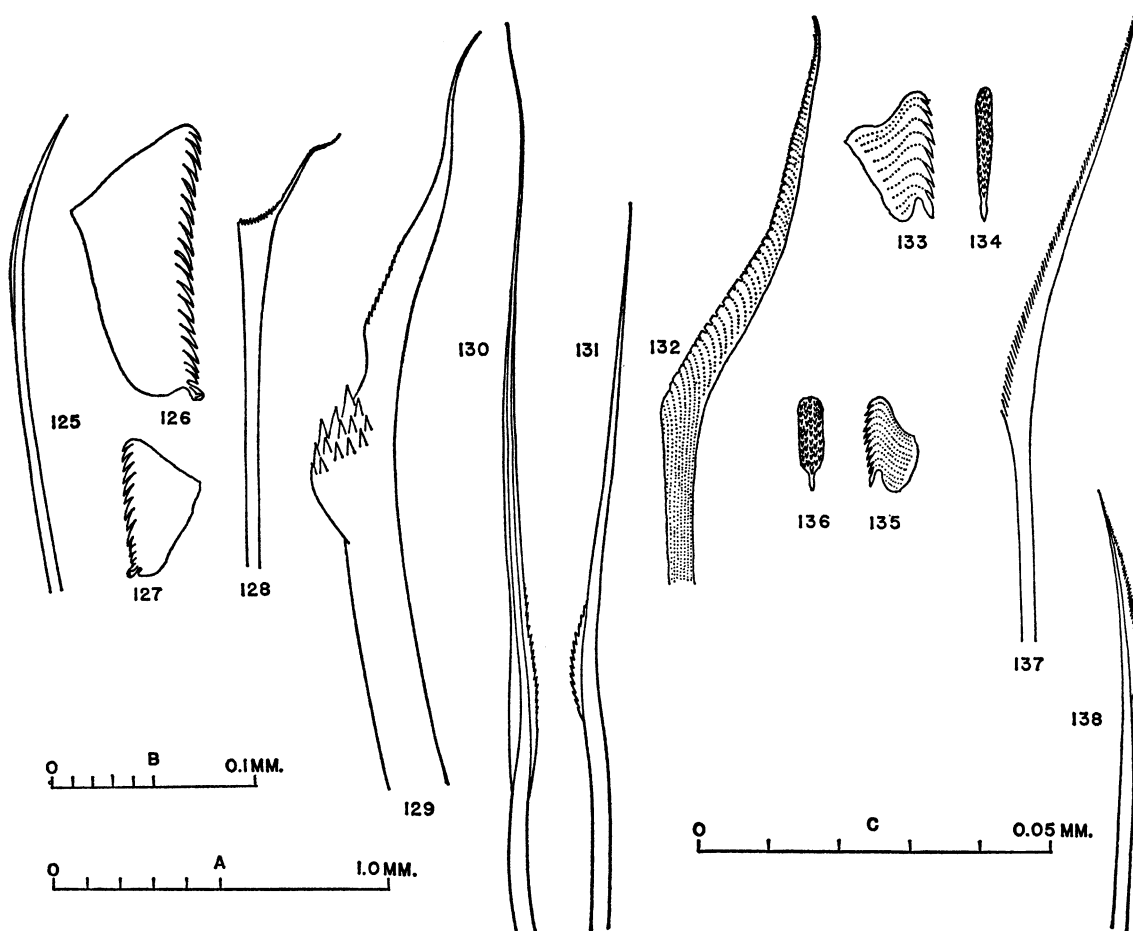
U.C.W.I. COLLECTION: A single specimen was collected from "Port Royal Cays," Jamaica, in 1957. It is approximately 44 mm. in length (crown length is 17 mm.) and represents an anterior fragment (to the seventeenth abdominal setiger); it is about 7 mm. in diameter in the abdominal region.

DESCRIPTION: The branchial crown of *Olga elegantissima* (pl. 52, fig. 1) consists of a pair of whorls of branchial filaments which are disposed in decreasing spirals. There are eight whorls in each part which decrease from a basal diameter of approximately 1 cm. to the apical tip. The bases of the branchial filaments are united for one-third of their length. Dorsally, an operculum arises from between the two parts of the branchial crown; the tip of the operculum is a subcircular plate which bears a central, low tooth and a pair of hooked horns. Just below the opercular plate there are paired wings on each side of the opercular peduncle (pl. 52, fig. 2).

The thorax is comprised of six setigers, the



Olga elegantissima, new genus, new species. 1. Over-all view of the dorsal surface of the holotype. 2. Detailed view of the dorsal surface of the anterior region



FIGS. 125-128. *Olga elegantissima*, new genus, new species. 125, 126. Left second thoracic setiger. 125 Limbate seta. 126. Uncinus. 127, 128. Left twenty-fifth abdominal setiger. 127. Uncinus. 128. Seta.

FIGS. 129-138. *Salmacina amphidentata*, new species. 129-131. Collar setae. 129. Largest type. 130. Second type. 131. Third type. 132. "Salmacina type" of seta from thoracic notopodium. 133. Thoracic uncus. 134. Face view of thoracic uncus. 135. Abdominal uncus. 136. Face view of abdominal uncus. 137. Larger abdominal seta. 138. Smaller abdominal seta.

125, scale A; 126-128; scale B; 129-138, scale C.

setae and uncini of which are embedded in the thoracic collar. There are no notopodial collar fascicles. Thoracic notopodial setae are unilimbate pointed capillaries (fig. 125), and notopodia are provided with elongate uncini which bear approximately 20 teeth and a basal "gouge-shaped" tooth (fig. 126).

The thoracic region of *O. elegantissima* is separated from the first abdominal setae by about the length of the collar. The abdominal uncini (fig. 127) are smaller than those of the thorax. They are subtriangular in shape and bear approximately 12 curved teeth and a

basal "gouge-shaped" tooth. The neuropodial setae of the abdomen (fig. 128) are expanded at their tips and are asymmetrically attenuated. Their distal margin is finely denticulate.

Even after four years in preservative (formalin), this specimen still retains its color. The general body, the opercular peduncle, and the branchial filaments are white; the anterior portion of the thoracic collar and the central axis of the branchial plumes are a deep blue; and the rim of the operculum and its horns are red. This is truly a beautiful animal.

The generic name was chosen to honor Dr. Olga Hartman, Allan Hancock Foundation, University of Southern California, whose bibliography (Hartman, 1951a) and catalogue (Hartman, 1959), as well as her many monographic works, have contributed so much to the study of the Polychaeta and have made the way easier for those of us who follow her. The trivial name refers to the esthetic appearance of the animal.

TYPE DISPOSITION: The holotype (A.M.-N.H. No. 3614) of *Olga elegantissima* is deposited in the collections of the American Museum of Natural History.

DISCUSSION: According to Bush (1904, pp. 221-227), Chamberlin (1919b, pp. 473-476), and Fauvel (1927, pp. 348-350; 1953, pp. 453-454), of the five serpulid genera that lack collar setae (*Placostegus* Philippi, *Bonhourella* Gravier, *Pomatoleios* Pixell, *Rhodopsis* Bush, and *Ditrupa* M. Berkeley), three are characterized by flat opercula (*Placostegus*, *Bonhourella*, and *Pomatoleios*), one by a chitinous operculum with a rosette of chitinous spines (*Rhodopsis*), and the last by an operculum bearing an inverted cone (*Ditrupa*). Further, the gill filaments of four of these genera are disposed not in spirals, but as semicircles; the disposition of gill filaments of *Rhodopsis* is not given by Bush (1904, pp. 298-290).

On the basis of these criteria (lack of collar setae, opercular ornamentation, and the disposition of gill filaments), *Olga* is proposed as a new genus of the Serpulidae.

The lack of collar setae would indicate an affinity to the five genera listed above. However, it should be noted that *Olga* must also be closely related to *Spirobranchus* Blainville. Such a relationship is indicated by the horn-shaped processes of the operculum, the wing-like structures on the peduncle of the operculum, the general shape of the uncini, and the spirally arranged branchiae.

GENUS **SALMACINA** CLAPARÈDE, 1870

Salmacina amphidentata, new species

Figures 129-138

DIFFERENTIAL DIAGNOSIS: *Salmacina* with collar setae, the basal toothed area of which bears spines of various sizes and is separated from the apical blade by a wide shallow notch.

U.C.W.I. COLLECTION: An aggregation of from 35 to 40 individuals, many of which are ovigerous, were collected at Port Royal,

Jamaica, on December 8, 1959. Ovigerous individuals are from 2.5 to 3.5 mm. in length for 23 to 25 setigers, and are approximately 0.25 mm. wide, in the thoracic region.

DESCRIPTION: The branchial crown of *Salmacina amphidentata* is comprised of eight pinnate branchiae, the tips of which are but slightly inflated. The dorsal collar extends from the base of the crown to the posterior end of the thorax, which is composed of seven (rarely, six) setigerous segments. The first setiger is represented only by a pair of notopodial setal fascicles, the so-called collar setae, and subsequent thoracic segments have both notopodial capillaries and neuropodial uncini. The abdomen is comprised of 16 to 17 segments, which are provided with notopodial uncini and neuropodial capillaries.

The setae of the collar fascicle are of three types. The first, and largest (fig. 129), have a distal wing which is finely denticulate on one margin. This portion is separated by a wide, shallow notch from a toothed protuberance, the distal teeth of which are larger than those that are more proximal. The teeth of this region are not confined to the profile edge, but are distributed over the surface of this enlarged structure. The second type of collar seta (fig. 130) is long and narrow and is provided with a pair of narrow limbations, one of which is finely denticulate, basally. The third type (fig. 131) is also narrow but is non-limbate; rather, it is provided with a basal denticulate wing.

The remaining thoracic notopodial setae are of two types: one is similar to the seta last described (fig. 131), and the other, which usually occurs singly in a given fascicle, is the so-called "*Salmacina* type" of seta (fig. 132). These are pointed and are gently double-curved. The inner margin of the distal curve bears blunt teeth, and the blade bears fine arcuate striations. The thoracic uncini (fig. 133) are provided with what appear to be eight curved teeth and a large basal tooth. Actually the "eight" teeth represent approximately four rows of teeth (fig. 134); the large basal tooth is but a single tooth.

Abdominal uncini (fig. 135) are smaller than those of the thorax but appear to bear 10 curved teeth (approximately five rows in "frontal" view; fig. 136), with a longer, stouter, single basal tooth. Abdominal neuropodial pointed capillaries are of two types:

larger gently curved setae (fig. 137) which are dentate on the outer margin of the curve, and smaller setae (fig. 138) which are provided with a single denticulate limbation.

The trivial name refers to the gradation of the size of the spines on the basal toothed prominence of the collar setae.

TYPE DISPOSITION: The holotype (A.M.-N.H. No. 3615) and paratypes (A.M.N.H. No. 3616) of *Salmacina amphidentata* are deposited in the collections of the American Museum of Natural History.

DISCUSSION: *Salmacina amphidentata* can be differentiated most readily from other species of *Salmacina* by the structure of the largest of the collar setae. It is pointed out above that the large collar setae of *S. amphidentata* are characterized by a denticulate prominence which is set apart from the finely toothed apical wing by a wide notch, and by the gradation in size of the teeth of the basal prominence, the more proximal teeth being finer than the more distal. In *S. australis* Haswell, 1884, the basal prominence is closely associated with the distal blade, and there is no notch separating the two regions. The collar setae of *S. setosa* Langerhans, 1884, are provided with a V-shaped notch between the proximal area and the distal wing. *Salmacina dysteri* (Huxley), 1855, and *S. incrustans* Claparède, 1870, show a wide shallow notch (similar to that of *S. amphidentata*), but the basal area of *S. incrustans* is provided with four to six large teeth, while that of *S. dysteri* has numerous fine teeth.

Although Hartman (1959, p. 591) includes an operculate serpulid, *Salmacina tribranchiata* (Moore), 1923, in this genus, I feel that this species cannot belong to *Salmacina*, for by definition (Claparède, 1869, p. 176; 1870, pp. 518-519), the genus includes only non-operculate forms. Therefore, I suggest that *Salmacina tribranchiata* be returned to the genus *Filograna*.

GENUS EUPOMATUS PHILIPPI, 1844

Eupomatus alatalateralis, new species

Figures 139-146

DIFFERENTIAL DIAGNOSIS: *Eupomatus* with an operculum that is provided with a distal calyx, the spines of which point inward; and with distal opercular spines provided with lateral limbations and a basal

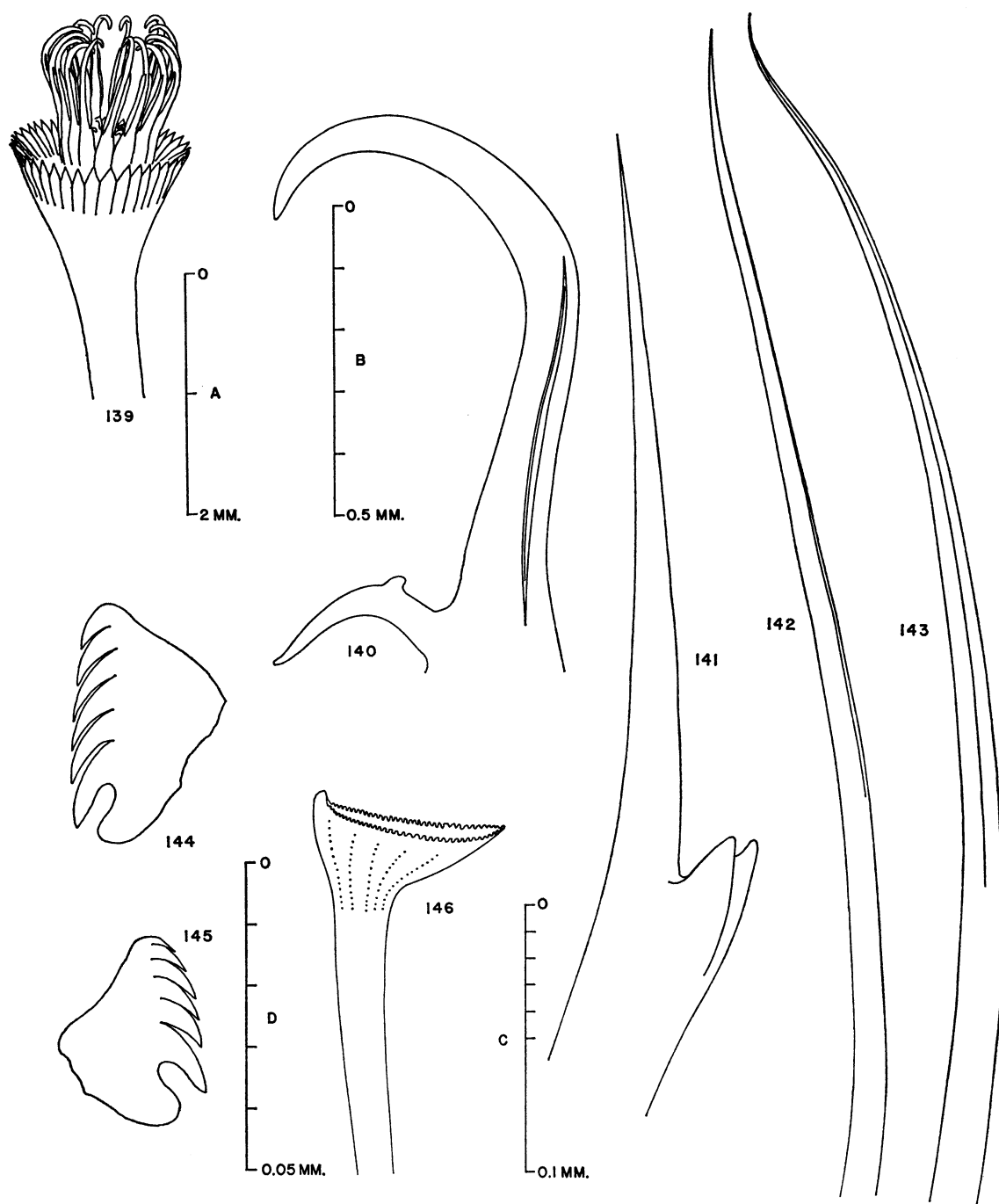
spine which bears a small knob at the summit of its curve.

U.C.W.I. COLLECTION: Four specimens of *Eupomatus alatalateralis* were collected at Port Royal, Jamaica, in May, 1960. All specimens are approximately 30-35 mm. in total length, of which the branchial plumes comprise approximately 4 mm. Diameters are about 2 mm.

DESCRIPTION: The branchial plume is made up of about 22 pinnate filaments. The opercula (and pseudo-opercula, where they occur) arise from the base of the plume on the dorsal side. The opercular peduncle is smooth and terminates apically in a crown composed of a proximal circlet of short teeth and a distal circlet of spines (fig. 139). There are from 36 to 43 teeth in the proximal circlet, and these are centrifugally oriented. The 15 or 16 spines of the distal circlet each have a recurved tip which is centripetally oriented. There are limbations on each side of the upright portion of each spine (figs. 139, 140). At the base of each spine (fig. 140) there is a shorter, inwardly directed spine which curves downward. At the summit of the curve of these basal spines, there is a small protuberance. Except for the lateral limbations, there are no spines or any other ornamentation on these spines of the distal circlet.

The thoracic membrane of *Eupomatus alatalateralis* extends to the second or third abdominal setiger. In the anterior region of the thoracic membrane, there is a notopodial collar fascicle of setae which is unaccompanied by a neuropodial torus of uncini. There are two types of setae in the collar fascicle. The first is a heavy, pointed seta which bears two short, heavy teeth in the mid-region (fig. 141). The other collar seta (fig. 142) is a longer, more slender, pointed seta which may be finely limbate. The remaining notosetae of the thorax are unilimbate and pointed (fig. 143); their margins are smooth and unornamented. Thoracic uncini are provided with a single row of from six to seven heavy, curved teeth (fig. 144).

The abdominal region of *Eupomatus alatalateralis* is provided with notopodial uncini which are somewhat smaller than those of the thorax and which have a single row of six curved teeth (fig. 145). Uncinigerous tori of the abdominal region nearly meet at the dorsal mid-line. Abdominal neurosetae (fig.



FIGS. 139-146. *Eupomatus alatalateralis*, new species. 139. Operculum. 140. Spine from distal circlet of operculum. 141, 142. Collar setae. 141. Larger type. 142. Second type. 143. Thoracic notoseta. 144. Thoracic uncinus. 145. Abdominal uncinus. 146. Abdominal neuroseta. 139, scale A; 140, scale B; 141, scale C; 142-146, scale D.

146) have slender shafts which are apically expanded. These are asymmetrical and appear to be slightly flared like a trumpet. The margin of the elongate oval opening of these setae is provided with fine teeth of varying sizes.

Eupomatus alatalateralis was collected in smooth, white, calcareous tubes, the only ornamentation of which was fine, transverse, growth lines.

DISCUSSION: The various species of *Eupomatus* are separable into general groups on the basis of the structure of the operculum. The groups, based for the most part on original descriptions or figures presented by subsequent reputable workers, are as follows:

1. Species with opercula that are provided with a distal calyx, the spines of which are not all the same size, as regards their thickness or length, or both: *E. albiceps* (Grube), 1870 [also Pixell, 1913]; *E. dianthus* (Verrill), 1873 [also Hartman, 1945]; *E. exaltatus* Marenzeller, 1884 [also Pixell, 1913]; *E. helmetus* Iroso, 1921 [also Fauvel, 1927, and Rioja, 1947]; *E. inermis* (Monro), 1933; and *E. ralumianus* (Augener), 1927.

2. Species with opercula that are provided with a distal calyx, the spines of which spread centrifugally or are erect, not incurving: *E. elegantulus* Bush, 1910; *E. fusicola* (Mörch), 1863; *E. gracilis* Bush, 1904; *E. humilis* Bush, 1904; *E. lunulifer* Claparède, 1870; *E. novae-pommeraniae* (Augener), 1923; *E. protulicola* (Benedict), 1887; and *E. uncinatus* Philippi, 1844.

3. Species with opercula that are provided with a distal calyx, the spines of which are asymmetrically arranged: *E. dipoma* Schmarda, 1861; and *E. similis* Treadwell, 1929.

4. Species with opercula that are provided with a proximal calyx, the spines of which have T-shaped apices: *E. dirampha* (Mörch), 1863; and *E. gairacensis* (Augener), 1934.

The remaining species require some comment and discussion. The descriptions of *E. blumenbachii* (Mörch) (1863, p. 373), *E. plateni* Kinberg (1867, pp. 351–352), and, as given by Mörch (1863, p. 372), *E. euplaeana* (delle Chiaje), 1828, are not sufficiently detailed to be determined.

Some confusion has arisen concerning the spines of the distal calyx of *E. sanctae crucis* (Krøyer) in Mörch, 1863. According to Hart-

man (1951b, p. 119), "The shorter [spines of the distal calyx] . . . have a short boss or spine, about half way down, on the side facing the center and the outer side is geniculate near the same place, on its outer side." However, Mörch (1863, p. 378) has stated, concerning the spines of the distal calyx, that, on these spines, there is a ". . . *spina parva in latere externo paululum infra medium sita*." Further, Fauvel (1919a, pp. 478–479) observes that the distal spines of *E. sanctae crucis* may be curved in or out, or both, but, regardless of the direction of curvature, each is geniculate and there is an outer spine. Fauvel also presents illustrations of both types of distal spine (Fauvel, 1919a, fig. 2f–h).

Previous to the present description, only two species of *Eupomatus* [*E. intereans* Chamberlin, 1919, and *E. spongicola* (Benedict), 1887] had been described as possessing a distal calyx comprised of thin attenuated spines which are inwardly curved and symmetrically arranged (as in the case of *E. alatalateralis*). The separation of *Eupomatus alatalateralis* from *E. intereans* is based on Chamberlin's comment that the incurving distal spines of the operculum of *E. intereans* are not provided with basal teeth (Chamberlin, 1919a, p. 23). *Eupomatus alatalateralis* is so provided with internally oriented basal teeth (figs. 139, 140). The separation of *E. alatalateralis* from *E. spongicola* can be made on the basis of several structural differences. The distal opercular spines of *E. alatalateralis* have a more sharply recurved basal spine which bears a boss at its summit (fig. 140), and the main spine is provided with lateral limbations (figs. 139, 140). There is no boss on the basal spine of *E. spongicola*, nor are limbations present on the main spine (Benedict, 1887, pl. 20, fig. 12). Moreover, *E. alatalateralis* has approximately 22 branchial filaments and 36 to 43 teeth in the basal opercular calyx, while *E. spongicola* has 30 branchial filaments and about 65 teeth in the basal opercular calyx.

The trivial name refers to the limbations that are to be found on the sides of the spines of the distal opercular circlet.

TYPE DISPOSITION: The holotype (A.M.-N.H. No. 3617) and paratypes (A.M.-N.H. No. 3618) of *Eupomatus alatalateralis* have been deposited in the collection of the American Museum of Natural History.

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