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Fishes

Division of Fishes,
U. S. National Museum

UNITED STATES COMMISSION OF FISH AND FISHERIES.

PART XIII.

REPORT

OF

THE COMMISSIONER

FOR

1885.

- A.--INQUIRY INTO THE DECREASE OF FOOD-FISHES.
B.--THE PROPAGATION OF FOOD-FISHES IN THE
WATERS OF THE UNITED STATES.



WASHINGTON:
GOVERNMENT PRINTING OFFICE
1887.

SMITHSONIAN INSTITUTION
WASHINGTON 25, D.C.

Resolved by the Senate (the House of Representatives concurring), That the report of the Commissioner of Fish and Fisheries for the year 1885 be printed, and that there be printed 11,000 extra copies, of which 3,000 shall be for the use of the Senate, 6,000 for the use of the House of Representatives, 1,500 for the use of the Commissioner of Fish and Fisheries, and 500 for sale by the Public Printer, under such regulations as the Joint Committee on Printing may prescribe, at a price equal to the additional cost of publication and 10 per cent thereto thereon added, the illustrations to be obtained by the Public Printer, under the direction of the Joint Committee on Printing.

Agreed to by the Senate February 24, 1885.

Agreed to by the House March 2, 1885.

XXII.—THE ANNELIDA CHÆTOPODA, FROM EASTPORT, MAINE.

By PROF. H. E. WEBSTER AND JAMES E. BENEDICT.

The following paper contains a list of the Chætopod Annelids, with descriptions of the new species collected in 1880 by the Union College zoological expedition at Eastport, Me. This paper constitutes the fourth in a series descriptive of the Annelids of the eastern coast.

The first in the series, the *Annelida Chætopoda* of the Virginian Coast, by Prof. H. E. Webster, was published in Vol. IX of the Transactions of the Albany Institute. The number of families represented is 23; number of genera, 49; number of species, 59; of which 4 genera and 27 species were new.

The second paper, the *Annelida Chætopoda* of New Jersey, by Prof. H. E. Webster, was published in the Thirty-second Annual Report of the New York State Museum of Natural History.

Number of families represented, 23; number of genera, 50; number of species, 57; of which 2 genera and 14 species were new.

The third paper, on the *Annelida chætopoda* of Provincetown and Wellfleet, Mass., by Prof. H. E. Webster and James E. Benedict, was published in the Fish Commission Report for 1881.

Number of families represented, 25; genera, 70; species, 90; of which 3 genera and 16 species were new.

In the present paper 29 families are represented, 89 genera, and 111 species; of which 7 genera and 26 species are new.

The Fish Commission is in possession of a set of types from these several investigations, through the courtesy of Union College.

Family EUPHROSYNIDÆ.

SPINTHER *Johnston*.

SPINTHER CITRINUS (*Stimpson*) *Verrill*.

Cryptonota citrina STIMPSON. Marine Invertebrata of Grand Manan, p. 36, in Smithsonian, Contrib. 1854.

Spinther citrinus VERRILL. Check List. 1879.

Not common. Ten to thirty fathoms, on sponges; bottom with coarse gravel or rocks.

EUPHROSYNE *Sav.*EUPHROSYNE BOREALIS *Ørsted.*

ØRSTED. Grönlands Annulata Dorsibranchiata, p. 18. 1843.

STIMPSON. Invert. Fauna of Grand Manan, &c., p. 36. 1854.

Not common. Our specimens were taken in about 20 fathoms; bottom rocky.

Family APHRODITIDÆ.

APHRODITA *Linn. sens. str.*APHRODITA ACULEATA *Linn.*

LINNÆUS. Systema Naturæ, ed. xii, vol. i, p. 1084. 1767.

STIMPSON. Loc. cit., p. 36. 1854.

VERRILL. Invertebrate Animals of Vineyard Sound, &c., in Report of U. S. Commissioner of Fish and Fisheries, Part I, p. 581. 1874.

Small specimens were common on muddy bottoms.

LÆTMATONICE *Kinberg.*LÆTMATONICE ARMATA *Verrill.*

Only one specimen, and that immature, was found. Station not noted.

Family POLYNOIDÆ.

LEPIDONOTUS (*Leach*) *Kinberg.*LEPIDONOTUS SQUAMATUS *Kinberg.*

Very common, both at low-water and in nearly all dredgings.

NYCHIA *Malmgren.*NYCHIA CIRROSA *Malmgren.*

MALMGREN. Nord. Hafs-Ann. p. 58, pl. viii, fig. 1. 1865. Annulata Polych., p. 5. 1867.

A few specimens of this species were dredged in sandy mud, 6-12 fathoms, but by far the greater number were taken on mud flats, at low-water, living in the tubes of *Amphitrite brunnea* STIMPSON.

EUNOA *Malmgren.*EUNOA NODOSA *Malmgren.*

MALMGREN. Nord. Hafs-Ann., p. 64, pl. viii, fig. 4. 1865. Annulata Polych., p. 6. 1867.

Very fine specimens were dredged among rocks, shells, hydroids, &c. Common.

LAGISCA *Malmgren.*LAGISCA RARISPINA *Malmgren.*

Not very common; at least, we did not obtain many specimens.
Station not noted.

HARMOTHOË (*Knbg.*) *Malmgren.*HARMOTHOË IMBRICATA *Malmgren.*

Aphrodita imbricata LINN. Syst. Nat., vol. xii, p. 1804. 1767.

Lepidonote cirrata ÆRSTED. Grönlands Annul. Dorsibr., p. 14, figs. 1, 5, 6, 11, 14, 15.
1843.

Harmothoë imbricata MGRN. Nord. Hafs.-Ann., p. 67, pl. ix, fig. 8. 1865.

Very common, both at low water and in nearly all dredgings.

Family SIGALIONIDÆ.

PHOLOË *Johnston.*PHOLOË MINUTA *Ærsted.*

Pholoë minuta ÆRSTED. Grönl. Annu. Dorsibr., p. 17, figs. 3, 4, 8, 9, 16. 1843.

Pholoë tecta STIMPSON. Marine Invert. Grand Manan, p. 36. (Young of *P. minuta*.)

Very common. Low-water and shallow dredgings, sand and shells,
and sandy mud.

Family NEPHTHYDIDÆ.

NEPHTHYS *Cuvier.*NEPHTHYS CILIATA *Rathke.*

Nephtys ciliata RATHKE. Beiträge zur Fauna Norwegens, p. 170. 1840.

Nephtys borealis ÆRSTED. Ann. Dan. Consp., p. 43. 1843.

Common. Low-water and shallow dredgings; sand and sandy mud.

NEPHTHYS CÆCA *Ærsted.*

Nephtys cæca JOHNSTON. Cat. British Mus., p. 167. 1865.

Nephtys cæca ÆRSTED. Grönl. Ann. Dorsibr., p. 41, figs. 73, 74, 77, 79-86. 1843.

Nephtys cæca MALMGREN. Nord. Hafs.-Ann., p. 104, pl. xii, fig. 18.

Found in the same stations as the last, but more common.

NEPHTHYS INCISA *Mgrn.*

MALMGREN. Nord. Hafs.-Ann., p. 105. 1865.

Common on muddy bottoms.

NEPHTHYS DISCORS *Ehlers.*

EHLERS. Die Borstenwürmer, p. 626, pl. xxiii, figs. 39, 40. 1868.

Common on muddy bottoms.

Family PHYLLODOCIDÆ.

ANAITIS *Malmgren.*ANAITIS SPECIOSA *Webster.*

WEBSTER. Annelida Chæt. of New Jersey, p. 4, pl. i, figs. 8, 9. 1879.

WEBSTER & BENEDICT. Annel. Chæt. from Provincetown and Wellfleet, Mass. U. S. Fish Commission Report for 1881. 1884.

Only three specimens were found at Eastport. They were larger than those collected at Great Egg Harbor, N. J., but did not differ from them in other respects.

PHYLLODOCE (*Sav.*) *Malmgren.*PHYLLODOCE GRÖNLANDICA *Ersted.*

ERSTED. Grönl. Annul. Dorsibr, p. 40, figs. 19, 21, 22, 29-32. 1843.

MALMGREN. Nord. Hafs.-Ann., p. 96. 1865. Annulata Polych., p. 143, pl. iii, fig. 9. 1867.

Not common. Various depths, on shells, rocks, &c.

PHYLLODOCE BADIA *Malmgren.*

MALMGREN. Annulata Polych., p. 144, pl. iii, fig. 6. 1867.

Common. Found with the last species; also at low water, under rocks.

PHYLLODOCE MUCOSA *Ersted.*

ERSTED. Ann. Dan. Consp., p. 31, figs. 25, 79, 83, 89. 1843.

MALMGREN. Ann. Polych., p. 21, pl. ii, fig. 7. 1867.

Quite common. Found with the last two species.

EULALIA *Savigny.*EULALIA BILINEATA *n. sp.*

(PL. I, FIGS. 1-3; PL. II, FIG. 4.)

Eulalia gracilis VERRILL. WEBSTER & BENEDICT: Annel. Chæt. from Provincetown and Wellfleet, Mass., in U. S. Fish Commission Report for 1881, p. 703. 1884.

Head strongly convex, constricted at anterior fifth (fig. 1); anterior margin with a shallow median emargination; length and breadth, in preserved specimens, about equal.

Paired antennæ about one-half as long as the head; median antenna a little shorter, arising just in front of the eyes.

Eyes large, black, circular, posterior, widely separated.

Tentacular cirri tapering slightly; posterior pair and the superior pair of the second segment about as long as the first four segments; remaining pairs one-half to two-thirds as long.

The dorsal cirri on the anterior segments (fig. 2) arise near the foot from stout basal articles; further back (fig. 3) they are much elongated, a little wider, and more remote from the foot. This form and position they retain on the posterior segments, falling off a little in size. The ventral cirri are at first nearly as large as the dorsal and much like them in every respect. They retain nearly the same form and size throughout.

The setæ (fig. 4) are quite long; the stem terminates in two long, sharp, curved points, and the edge of the shorter one is furnished with a series of small, sharp teeth. The appendix is much shorter than the stem; it tapers rapidly from a wide base.

The general color is gray with two lateral dorsal brown bands, and with brown specks at the base of the feet, both above and below.

The body is strongly convex above, flat or slightly convex below; width nearly uniform throughout.

Length, 75^{mm} to 100^{mm}.

Width, about 1^{mm}.

This is the species which in the paper on the Annelids of Provincetown, Mass., we regarded as *Eulalia gracilis* VERRILL. It quite certainly is not that species. For notes on sexual form see the Provincetown paper.

Found on dredged shells. Not common.

EULALIA DUBIA Webster and Benedict.*

Common at low water and in shallow dredgings, on stones, shells, &c.

ETEONE (Sav.) Ersted.

ETEONE SARSI Ersted.

ERSTED. Ann. Dan. Consp., p. 29, fig. 77. 1843.

MALMGREN. Ann. Polych., p. 28, pl. ii, fig. 14. 1867.

This species, judging by the description and figures given by Malmgren, would seem to be closely related to *Eteone depressa* MALMGREN.

Some of our specimens seem more like the one; others, more like the other; while they do not exactly agree with either. In living specimens the length of the head exceeds the width; in preserved specimens the reverse is the case. The form of the dorsal cirri is the same as in *Eteone Sarsi*, but they do not arise so near the foot; but in this respect there is a marked difference in different specimens.

Malmgren figures both dorsal and ventral cirri without basal articles. Our specimens have basal articles with both, but with only a very shallow constriction, which, in alcoholic forms, might easily escape detec-

* This species has been described and figured in a paper on the Provincetown Annelids, and it does not seem necessary to repeat the description, although the paper is not published at the time of this writing. (To be published by the U. S. Fish Commission.)

tion. The basal article of the ventral cirri forms at least one-half the entire length of the ventral cirri. The eyes are small, red, posterior. The general color is grayish-green, or greenish-gray. Low water and shallow dredging; sand and mud.

ETEONE TRILINEATA n. sp.

(PL. I, FIGS. 5-8; PL. II, FIG. 9.)

The length of the head is about equal to its greatest width (fig. 5); antennæ stout, tapering, equal, their length a little more than half the length of the head; eyes large, posterior, circular, black.

First segment longer and wider than the second; tentacular cirri very long for the genus; upper pair reaching back to the middle or to the posterior margin of the fourth setigerous segment, quite large at origin, tapering at first rapidly, then more gradually, the outer third quite delicate; the lower pair are about one-half as long as the upper and relatively stouter.

The dorsal cirri on the anterior segments (fig. 7) are in contact with the feet, are very wide, outer and lateral margins regularly rounded, attached margin concave, basal article short and stout; the feet are wide and stout, of the usual form; the ventral cirri project beyond the feet, are bluntly rounded at apex, and have cylindrical or slightly flattened basal articles as long as themselves; on the middle segments the dorsal cirri are relatively a little longer; the ventral cirri wider at apex; no change on the posterior segments, save a slight decrease in size. The anal cirri (fig. 6) are long, stout, usually closely applied to each other, outer margin convex, inner margin straight, or nearly so; on some specimens they are cylindrical to near the apex and then taper rapidly.

There is a gradual diminution in width along the posterior half; also along a few of the anterior segments. The body is convex above, with a narrow depressed area along the sides of each segment; flattened below, or very slightly convex.

The general color is yellowish-white, with a narrow median and wide lateral bands of dark brown.

This species is readily distinguished from any previously described from our coast by its long tentacular cirri and brown bands. Low-water and shallow dredgings; sandy mud and shells. Not uncommon.

*MYSTIDES Théel.**

MYSTIDES VIRIDIS n. sp.

(PL. I, FIGS. 10, 11, 13; PL. II, FIG. 12.)

In living specimens, in extension, the head is longer than shown in the figure (fig. 10) and the sides lose their curvatures in great part; at

* Langerhans gives the following diagnosis of this genus: *Phyllodocidæ with four antennæ; three pairs of tentacular cirri; one bundle of setæ.* (Zeitschrift für wissenschaftliche Zoologie, Vol. iii, p. 310, 1879.) We have not seen Théel's paper.

rest, or in preserved specimens, the form and relative dimensions are those shown in the figure. The apex of the head is bluntly rounded and with a slight median emargination.

The antennæ are delicate; the superior as long, or even a little longer, than the head; the inferior about two-thirds as long as the superior and a trifle stouter.

The eyes are large, oval, black, situated just back of the origin of the superior antennæ.

The tentacular cirri are swollen at base, fusiform; outer two-thirds tapering rapidly; outer third very delicate, filiform; they arise from stout, elongated basal articles, which increase somewhat in diameter from their origin outward. The superior cirri of the second segment are the longest, reaching back to the anterior margin of the fifth setigerous segment; the inferior cirri of the same segment are from one-half to two-thirds as long; the cirri of the first segment about three-fourths as long.

The dorsal cirri are broad, heart-shaped (fig. 11), swollen, sessile, remote from the foot. The ventral cirri are oval, arise from the lower surface of the foot near its base; the line of union with the foot is really short, but when seen from behind they appear to be attached along their entire upper margin, having only a short projecting free part at the apex; they are swollen like the dorsal cirri. The form and relative position of feet, dorsal and ventral rami, remain the same throughout, but they are slightly smaller on a few of the anterior and posterior segments. The anal cirri (fig. 13) are every way similar to the ventral cirri.

The setæ are not numerous; all have the form shown in the figure (fig. 12). The first segment is a little longer than the second; second and third equal; fourth, double the second; remaining segments about the length of the fourth, except that a few of the posterior segments become progressively a little shorter.

Some specimens were colorless, others light green. Length of largest specimen, 7^{mm}. Width, 0.6^{mm} to 0.8^{mm}.

Six to twelve fathoms; mud, sand, and shells.

Family HESIONIDÆ.

PODARKE *Ehlers*.

PODARKE ABERRANS *n. sp.*

(PL. I, FIGS. 14-18; PL. II, FIGS. 19, 20.)

It is with some hesitation that we refer this form to PODARKE. It differs from that genus in the position of the median antenna, in the absence of eyes (in the adult), but especially in the peculiar fan-shaped appendage attached to the anal segment. We found the same form at Provincetown, Mass., in 1879, but the specimens were too much in-

jured for description. At Eastport we found but one adult specimen, and before figures were made the anterior part was accidentally lost; but a number of half-grown specimens, evidently of the same species, were taken.

In the adult form the head is somewhat more quadrangular than in fig. 16 (young); the antennæ relatively a little longer, and there are no eyes. The unpaired antenna arises near the posterior margin of the head, and is a little shorter than the superior paired antennæ.

The first segment is shorter than the second and third and is hardly visible dorsally, except at the sides. The tentacular cirri have long basal articles, are from two to three times the width of the body in length, taper uniformly, becoming quite delicate near their outer end.

The dorsal cirri (fig. 14) are in all respects similar to the tentacular cirri and nearly as long. The dorsal ramus is a small but well defined papilla. The ventral ramus is large, its inner two-thirds (fig. 14) cylindrical, outer third bluntly conical. The ventral cirrus arises at the outer third of the ventral ramus, is stout, conical, and projects beyond its ramus.

The chief peculiarity of this species is in the structure of the anal segment. The anal opening is large, dorsal, surrounded by a thin membrane, with scalloped margin. Attached to the posterior ventral margin of this segment (fig. 15) is a membranous, horizontal plate, nearly double the width of its segment, and with its lateral margins rounded. The free margin has a series of lateral papillæ or digitations, bluntly rounded at apex, better defined at the sides than behind. In the young forms there are two anal cirri which arise at the outer posterior angles of the anal segment, run across the anal plate (fig. 17), and extend far beyond it. There were no anal cirri on our adult form, but it seems probable that they had fallen off.

The form of the ventral setæ is shown in fig. 20; their arrangement in fig. 18. The dorsal setæ (fig. 19) are short, stout, simple, six to eight in each bundle.

The anterior division of the alimentary canal extends back to the sixth or seventh segment, where it suddenly passes into a much wider tube, which nearly fills the cavity of the body. The proboscis ends in a circle of conical papillæ.

The body is convex above, nearly flat below; the segments increase in width and slightly in length to the middle of the body, after which they gradually become smaller, the posterior segments being very short.

Head and body, white; appendages, colorless; alimentary canal, white, the anterior, narrow part margined, with a wide, colorless band.

Length, 9^{mm}.

Width, 1^{mm}.

Most of our specimens appear to be about half-grown. In these the head is rounded (fig. 16); there are two minute, lateral, red eyes; the tentacular, dorsal, and ventral cirri are much shorter than in the adult;

the anal plate is a thin membrane, with simple margin, projecting only a short distance beyond the anal segment, and not wider than that segment, and the posterior segments are much longer than in the mature form.

Length, 3-6^{mm}.

Width, 0.2^{mm}, 0.6^{mm}.

Coarse sand and gravel and muddy sand; not uncommon.

GYPTIS Marion and Bobretzky.

GYPTIS VITTATA, n. sp.

(PL. I, FIGS. 21, 22; PL. II, FIG. 23.)

The head is somewhat quadrangular (fig. 21), the lateral and anterior margins being slightly convex, the posterior margin concave, all the angles widely rounded.

Superior paired antennæ cylindrical to near the end, then suddenly conical; median antennæ short, fusiform; inferior antennæ (palpi) composed of two articles, about equal in length; they arise well back on the inferior surface of the head, and are nearly as long as the superior antennæ, but the part visible in a dorsal view is only about one-half as long; both articles are cylindrical, the inner larger than the outer.

There are two pairs of eyes situated on the middle line; the outer pair crescentic, large, lateral; the inner pair almost in contact with the outer, oval, small.

The first segment seen dorsally is very short; it bears two pairs of tentacular cirri; the second segment a little longer than the first, shorter than the second. The tentacular cirri taper slightly from their origin; they are composed of numerous articles, of which those along the inner third are shorter and less distinctly separated from each other than the others. The upper cirri are from two to three times the width of the body in length; the lower from one-half to two-thirds as long as the upper.

The dorsal cirri are similar to the tentacular cirri, but a little shorter and not so stout. The feet begin on the fifth segment; they are composed of two distinct rami (fig. 22). The dorsal ramus arises from the inner part of the foot, just below (outside) the origin of the dorsal cirrus; it is small but well defined, somewhat compressed, more convex above than below, pointed; the lower ramus (fig. 22) is stout, elongated, inner three-fourths irregularly convex, outer fourth conical; the ventral cirrus arises from the under surface of the foot, near its base, is stout, conical, apex bluntly rounded, from one-half to two-thirds the length of the foot.

There are three anal cirri, two long, lateral similar in all respects to the dorsal cirri, and one short median style.

The body is convex above, nearly flat below, widest in the middle.

The dorsal setæ are simple, straight, as long as the stem of the ventral setæ, or even a little longer. The ventral setæ are quite long, numerous (figs. 22, 23), stem much longer than the appendix.

The proboscis when fully extended shows a circle of rather long, slender, acute papillæ, a little behind the anterior end.

Some specimens were without color, except that back of the eighth segment they had a yellowish tint due to the internal organs; others had the anterior segments crossed by a narrow band of light yellowish brown, with a patch of the same color at the base of each foot.

Length, 4-6^{mm}.

Width, 0.5-1^{mm}.

Low water, rocks; 25-30 fathoms, shells.

TAPHUS, *n. g.*

Hesionidæ with three antennæ, two palpi, no tentacular cirri. Dorsal setæ simple; ventral setæ compound. Two maxillary pieces in the form of stylets.

TAPHUS HEBES, *n. sp.*

(PL. VIII, FIGS. 113-118.)

The width of the head (fig. 113) is nearly double its length; anterior margin slightly convex; anterior angles bluntly rounded; posterior margin straight.

Eyes minute, anterior, just back of the origin of the lateral antennæ, not visible in alcoholic specimens.

The antennæ are stout, elliptical; the median, arising from the anterior margin of the head, is as long as the head; the lateral, arising from the lower surface, but very close to the anterior margin of the head, are a trifle shorter than the median. The palpi (fig. 114) are placed near the posterior margin of the head; they are short, stout, nearly spherical, sometimes in contact, sometimes remote from each other. Just back of the palpi, on the anterior margin of the first segment, is a pair of conical cirri; their function or homology we do not understand.

The first segment encroaches on the sides of the head, but otherwise is not visible dorsally; it bears setæ only.

The dorsal setæ (figs. 113-117) arise directly from the dorsal surface, near the lateral margin; they are numerous, stout, long (fig. 117), and with a few stout spines or teeth, remote from each other along one margin of their outer half; they stand erect, much crowded at origin, but diverging at summit, owing to their curved form. Below (outside) this bundle of setæ is a cirrus nearly as long as the setæ themselves, stout, swollen basal article; these cirri grow progressively longer, those on the last setigerous segment being a third longer than those on the anterior segments.

The ventral ramus (fig. 116) is stout, somewhat compressed; near its base arises a conical or somewhat fusiform ventral cirrus, which projects slightly beyond the ramus.

The ventral setæ (fig. 118) are a little longer than the dorsal setæ, compound, terminal article very delicate; they are arranged in a fan pointing outward and a little downward.

The body is widest in the middle, very slightly convex above, flattened below, its form closely resembling *Aphrodita aculeata*.

The anal segment is small and prolonged into a conical cirrus-like structure.

Number of setigerous segments, 13.

Length, 1.5^{mm}.

Width, 0.5^{mm}.

Sandy bottom; 6-12 fathoms. Rare.

SYLLIDÆ.

SYLLIS *Savigny*.

SYLLIS PALLIDA *Verrill*.

VERRILL. American Journal of Science and Arts, vol. x, p. 39, pl. iii, fig. 6, 1875.

Professor Verrill gives as the length of this species 15^{mm}; some of our specimens had a length 45^{mm}. The ventral cirri are longer than the feet; on the posterior segments twice as long. Anal cirri three, the lateral longer than any other of the appendages; median a short style.

Low water, mud and sand; on shells and stones to thirty fathoms, sand. Common.

SYLLIDES *Ersted*.

SYLLIDES CONVOLUTA *Webster & Benedict*.

WEBSTER & BENEDICT. Annel. Chaet. from Provincetown and Wellfleet, Mass. U. S. F. C. Report for 1881, p. 709, pl. ii, figs. 12-16. 1884.

The Eastport specimens are much larger than those found at Provincetown, but otherwise agree with them perfectly.

Length, 5-7^{mm}.

Width, with feet, 0.5-1^{mm}.

Sand; low water. Not uncommon.

SYLLIDES LONGOCIRRATA *Ersted*.

Syllides longocirrata ERSTED. Kroyer's Tidsskrift (*teste* Langerhaus). 1845.

Anopllosyllis fulva MARION AND BROBRETZKY. Annales des Sciences Natur., sér. vi, vol. ii, p. 28, pl. ii, fig. 8, pl. iii, fig. 8. 1875.

Syllis ochracea MARENZELLER. Zur Kenntniss der Adriatischen Anneleden, p. 27, pl. iii, fig. 1. 1875.

Syllides longocirrata LANGERHAUS. Zeitschrift für wissens. Zoologie, p. 548. 1879.

This form was met with more frequently than the last, though neither was common; yet in certain localities they could always be found.

The cirri and antennæ fall off very readily.

We found small projecting papillæ on the lower surface of the palpi,

at about the middle point, as in a *Syllides convoluta*; in preserved specimens they can be seen only with difficulty.

The contents of the intestines were dark brown to black.

The setæ of the anterior segments are very numerous, forming dense bundles; they decrease rapidly in number after the fifth segment. The simple seta of the first five segments is recurved at the end, flattened and denticulated along the recurved edge as figured by Marion and Bobretzky; but after the fifth segment this seta is replaced by a long capillary seta, as long as the longest compound setæ. We have already pointed out the differences in the setæ of this species as figured by Marion and Bobretzky and Marentzeller (see Provincetown paper). In fact if one were to follow these descriptions and figures carefully, it would be necessary to regard them as representing distinct species, and our specimens would then stand for still another species. This may well be the case, but if Langerhaus's identification is correct, it is probable that our form will fall in with the others.

Sand, gravel, mud; low water to 25 fathoms.

STREPTOSYLLIS *Webster & Benedict.*

STREPTOSYLLIS VARIANS, *n. sp.*

(PL. II, FIGS. 24-31; PL. III, FIGS. 32-34, *a b.*)

Head, quadrangular (fig. 24) width nearly double the length; the line of separation between the head and palpi very indistinct; posterior margin slightly concave. There are four eyes, dark red; posterior pair largest, a little behind the middle line, lateral, circular; this pair may be divided so as to give two or even three pairs, but one pair is the normal number; anterior pair minute, just outside the bases of the lateral antennæ.

The lateral antennæ are club-shaped; their length is about equal to the width of the head. Median antenna from two to three times as long as the lateral; they may be club-shaped or cylindrical.

The buccal segment is nearly as long as the second segment; it encroaches slightly on the head.

The tentacular cirri are like the lateral antennæ, but a little shorter, the inferior shorter than the superior.

The palpi are free in front of the head, otherwise coalesced; the free part long, outer half conical, almost pointed; often they are turned directly downward; from the middle of the lower surface a small, cylindrical or slightly clavate papilla projects (fig. 33).

The dorsal cirri on the anterior segments (fig. 24) are similar to the lateral antennæ. Further back they may be club-shaped, or cylindrical and irregularly wrinkled, or they may be moniliform with articles of varying length (fig. 34, *a b*). The ventral cirri are but little shorter than the dorsal (figs. 25-27), very stout at base, conical, acute, wrinkled; they arise near the base of the foot and project beyond it, or they may be turned backward. The setæ are compound, with one, or rarely two,

simple setæ in each bundle. The compound setæ of the anterior feet have very short terminal articles (figs. 25, 28). Both the stem and the appendix become somewhat longer, going backward, and retain their length on the posterior segments (figs. 26, 29, 30). The appendix is truncate, with two minute terminal teeth.

The simple setæ (fig. 31) are longer on the segments back of the first third than on the anterior segments, while the curvature is greater on the anterior than on the posterior segments, and on the posterior segments they are nearly straight. There is a single acicula in each foot (figs. 25, 27, 32), very stout, and with a large terminal button, which barely projects from the foot.

The appendix of the compound setæ in this species lacks the covering membrane found on the setæ of *Streptosyllis arena* W. & B.

The pharynx occupies six segments, and terminates in front in a circle of triangular papillæ. The stomach is narrow, occupies eight segments, narrows slightly behind and passes into the intestine without the intervention of any peculiar glands; but the intestine in the first segment back of the stomach is colorless. The body is convex above, flattened below; middle third of uniform width, tapering uniformly but gradually along the anterior and posterior thirds.

The body is colorless; the intestine dark brown to black; pharynx, light brown; stomach, white.

♂. The capillary (sexual) setæ begin on the male on the twenty-first setigerous segment; they are short (fig. 27), not reaching beyond the dorsal cirri, delicate; they fail only on two or three of the posterior segments. The body back of the stomach is much swollen, pure white, but retaining the median, intestinal, brown band.

♀. The sexual setæ of the female also begin on the twenty-first setigerous segment, but they are very long and delicate (fig. 26). The eggs are few, large, irregularly polygonal, pure white.

Dimensions of adult non-sexual forms: Length, 6-8^{mm}; width, 0.6-0.8^{mm}.

We found this species at West Quoddy in coarse sand and gravel, at low water. The area over which it occurred was small, and although diligently looked for, it was not found in any other locality.

EUSYLLIS *Malmgren.*

Quite a number of specimens of some species of this genus were taken. They did not seem to agree perfectly with any described species, but were not described while living and are not now in a condition to admit of accurate description.

PTEROSYLLIS *Claparède.*

Gattiola cincinnatta VERRILL. Proc. A. A. A. S., p. 394, pl. 2, fig. 1 (no description). 1874.

Pterosyllis cincinnatta VERRILL. Trans. Conn. Acad., p. 308.

Rare; 20-30 fathoms; rocks and shells,

SPHÆROSYLLIS *Claparède.*SPHÆROSYLLIS BREVIFRONS *Webster & Benedict.*

Only one specimen was found. Sand ; low water.

SPHÆROSYLLIS LONGICAUDA, *n. sp.*

(PL. III, FIGS. 35-39.)

The sides and front of the head are regularly rounded, posterior margin nearly straight ; the width almost double the length. The palpi project slightly beyond the head (fig. 35) ; there is a shallow anterior emargination, and an impressed line above and below.

The antennæ and tentacular cirri are short, stout, fusiform, suddenly acuminate near the end. The buccal segment is short, but perfectly well defined.

There are six eyes ; posterior pair largest, situated on the median line in advance of the median antenna, lateral, oval ; middle pair well within and just in front of the posterior pair, small, circular ; anterior pair on the front margin of the head, within the base of the lateral antennæ, minute, circular.

The dorsal cirri of a few of the anterior segments are shaped like the antennæ, but longer (fig. 35) ; further back the basal swelling becomes less (fig. 37) and the length greater, while on the extreme posterior segments they again become enlarged at base without falling off in length (fig. 36).

The anal segment is a little longer than the one preceding it, hexagonal (fig. 36) ; it bears three cirri, of which the lateral pair have the form of the median dorsal cirri, but are longer ; the median cirrus is short, cylindrical. In each bundle of setæ is a long, pointed, simple seta ; the compound setæ have long stems, and for the genus long terminal articles (figs. 38, 39).

Scattered over the body and feet (fig. 37) are numerous cylindrical papillæ. The body is convex above, flattened below, widest in the middle, tapering slightly in both directions, colorless or yellowish white.

The females were found carrying eggs during the entire time of our stay in Eastport (from the middle of June to September). The eggs were arranged in four series on the dorsum, one between the feet and the dorsal cirri, another just within the dorsal cirri, on each side, leaving a narrow, naked, median space ; they were spherical, white. The sexual setæ begin in both sexes on the sixth setigerous segment ; in the female, their length was four times the width of the body ; in the male, one-half this length.

Length, 2.5-4^{mm}.

Width, 0.25-0.35^{mm}.

Low water, sand ; 20-30 fathoms, shells and rocks.

PÆDOPHYLAX *Claparède.*PÆDOPHYLAX HEBES *Webster & Benedict.*

The bidentate simple setæ described for this species were not so well marked as in the Provincetown specimens. The statement that the pointed simple setæ are replaced by these must be corrected so as to read that there are two simple setæ, dorsal and ventral, on the posterior segments; the ventral shorter than the dorsal, somewhat curved near the apex, and sometimes bidentate.

In front of the stomach the body is colorless; behind it a golden yellow.

Rare; sand, low water. Found only at West Quoddy.

PÆDOPHYLAX BREVICORNIS, *n. sp.*

(PL. II, FIGS. 40, 41; PL. III, FIGS. 42-45.)

In this species the line of the division between the head and palpi is indistinct; the head is oval (fig. 40), the width far exceeding the length; the palpi are united, but have a well-marked terminal emargination; there are four or sometimes six eyes, dark reddish-brown; the antennæ are minute, equal, or nearly so, fusiform, situated between the posterior eyes.

Buccal segment about one-half as long as the second segment. Tentacular cirri minute. Dorsal cirri larger than the tentacular cirri, but very small (fig. 41), remote from the foot. Ventral cirri nearly as large as the dorsal. Anal cirri delicate, slightly enlarged along their middle third, three to four times as long as the anal segment, by far the longest appendages of the body.

The setæ are most numerous on the anterior segments; there are three kinds. In the upper part of each bundle a simple curved seta (figs. 44, 45); on the posterior segments two of these simple setæ, one dorsal, one ventral; also in the upper part of each bundle from one to three compound setæ with quite long and very delicate terminal articles (fig. 42); seen in certain positions these setæ appear to be simple, with suddenly diminished diameter at what is really the articulation; in the lower part of each bundle from two to six short, stout setæ, with short terminal articles (fig. 42).

The body is convex above and below (fig. 41); colorless; stomach, white.

The pharynx occupies seven segments; the stomach two to three.

Sexual setæ on the males begin on the eighteenth setigerous segment; they are very long and delicate.

Length, 1.5-2^{mm}.

Width, 0.25-0.3^{mm}.

Not uncommon. Sand, low water; 8-30 fathoms, sand and sandy mud.

S. Mis. 70—46

PÆDOPHYLAX LONGICIRRIS, *n. sp.*

(PL. III, FIGS. 46-50.)

In this form the head is oval, the width double the length. The palpi have a shallow anterior emargination, a deep triangular excavation below, the apex of which reaches nearly to the anterior margin of the palpi (fig. 46).

There are two pairs of dark-red eyes, large, oval, directed forward and inward; often not so regular as shown in the figure.

The antennæ are cylindrical, or sometimes a little enlarged along their middle third; the median antenna may extend to the end of the palpi; the lateral antennæ are about one-half as long as the head.

Buccal segment about one-half as long as the second segment; tentacular cirri shaped like the lateral antennæ, but a little shorter.

Dorsal cirri fusiform, a little longer and stouter than the lateral antennæ. Ventral cirri (fig. 47) similar to the dorsal, but more delicate. Anal cirri as long as the median antenna; one specimen has three of equal length; others, two only; others, three, with the middle cirrus quite short.

The setæ on the anterior segment are numerous, and of two kinds, both compound. In the upper part of each bundle usually three with long delicate appendix (fig. 48); in the lower part, five to seven, short, with short appendix (fig. 49); at about the middle third a new and very peculiar form of seta appears (fig. 50); one in each bundle, above the others. This seta seems to terminate in two teeth; one stout, curved, bluntly rounded at apex; the other a delicate spine, as long as the first, or even projecting beyond it.

The pharynx occupies five segments; the stomach, about two; it has twelve series of "glands."

Body convex above and below (fig. 47); white or yellowish white.

On the only male taken the sexual setæ begin on the thirteenth setigerous segment; on the only female, on the eighth; but these indications cannot be relied on.

No entire specimens were found, but the dimensions are about the same as for the last species.

Rare. Low water; sand, to 20 fathoms, sand, gravel, shells.

AUTOLYTUS (*Grube*) *Marentzeller.*AUTOLYTUS CORNUTUS *A. Ag.*

A. AGASSIZ. Journal Boston Society Natural History, vol. vii, p. 392, pl. 9, 11. 1863.

Rare. Low water; sand.

AUTOLYTUS SOLITARIUS *n. sp.*

(PL. II, FIGS. 51; PL. IV, FIGS. 52, 54.)

A single male specimen was taken, which does not seem to agree with any described form.

Head short, concave in front and behind; dorsal and ventral eyes with lenses; anterior antennæ bifurcated, roughened, and covered with numerous hairs; the antennæ back of these short, increasing in diameter from origin to apex; median antenna and superior tentacular cirri very long, regularly tapering.

The feet of the first three segments are conical, a trifle flattened; their dorsal cirri (fig. 54) arise near their base from stout rounded basal articles; on the fourth segment the feet become irregularly cylindrical; the dorsal cirri originate near the apex (figs. 52, 53) and are enlarged at base; capillary (sexual) setæ appear on this segment and persist on all save the last two segments. The feet elongate gradually to about the eighth segment, where they equal the width of the body; they shorten again along the posterior third.

The compound setæ are of the usual form, but quite long; a little longer on the first three segments than afterwards.

Color, brownish-red.

Length, 5^{mm}.

Width in the middle, without feet, 0.25^{mm}; with feet, 0.7^{mm}.

PROCERÆA *Ehlers*.

PROCERÆA GRACILIS *Verrill*.

VERRILL. American Journal of Science, vol. vii, p. 132, pl. v, fig. 1. 1874.

Our specimens, in all probability, belong to this species. The epaulets, however, are much wider than figured by Verrill; in fact, they nearly cover the buccal segment, leaving a narrow triangular space in the middle; they are yellowish-brown, with a yellowish-white margin. The body is white, or yellowish-white; there is a broad, median, brown band, which runs the whole length of the body; similar lateral brown bands extending to the middle of the body, or, if prolonged beyond the middle, becoming fainter. Antennæ and all cirri covered with stiff hairs and filled with gleaming granules. The pharynx is much convoluted; it occupies seven segments; the stomach, three segments. The palpi project beyond the head as a thin rounded rim, with a shallow, median, impressed line above and below.

No adult females were found. In two specimens, not yet separated from the stem form, the head originated just back of the fourteenth segment; sexual setæ on the eighth segment behind the head; and on those specimens were found only on 14 segments, followed by many segments with the ordinary setæ only. The length of the median antenna was about twice the width of the body; lateral antennæ two-thirds as long as the median; tentacular cirri formed, but still very short. The eggs were numerous, pink.

Only one adult male was taken. This is very much like *Ersted's Polybostrichus longosetosus*; indeed, it seems to us to be identical with it. We understand Professor Verrill not to concur in this view, and

shall leave it to him to determine, as he has probably better material for doing so than we have.

Common. Low water, sand; to 30 fathoms, sand, shells, hydroids, &c.

PROCERÆA (STEPHANOSYLLIS) ORNATA (*Verrill*).

Stephanosyllis ornata VERRILL. American Journal of Science, vol. vii, p. 132, 1874.
Proceedings American Association for the Advancement of Science, p. 378,
pl. 4, fig. 1, 1874.

Our specimens were not so highly colored as those found by Professor Verrill. For the most part they were some shade of orange along the anterior dorsal region, fading, and often becoming white, behind; sides and ventral surface yellowish-white.

Pharynx occupying from fourteen to eighteen segments; much convoluted along the last part of its course, sometimes passing by the stomach and returning; stomach, two segments. A minute anterior pair of eyes.

Common. Found with the last species.

Family NEREIDÆ.

NEREIS (L.) *Cuvier*.

NEREIS PELAGICA *Linn.*

Very common at low water under-stones, and at all depths on rocky and shelly bottoms.

NEREIS VIRENS *Sars*.

Very common. Low water; mud and sandy mud.

Family EUNICIDÆ.

NOTHRIA (*Johnston*) *Malmgren*.

NOTHRIA CONCHYLEGA *Malmgren*.

Ounphis conchylega SARS. Beskriwelsir og Iagttogelser, p. 61, pl. 10, fig. 28 (*teste* Malmgren). 1835.

Northia conchylega JOHNSTON. Catalogue of British Worms, p. 138, 1865.

Nothria conchylega MALMGREN. Annulata Polychæta, p. 66, 1867.

Nothria conchylega VERRILL. Trans. Conn. Acad., p. 41, 1874.

We obtained but two specimens.

Rocks; 20 fathoms.

NINOË *Kimberg*.

NINOË NIGRIPES *Verrill*.

VERRILL. Invert. Animals of Vin. Sound, p. 595, 1874. Proceedings American Association for the Advancement of Science, p. 382, pl. 3, fig. 5. 1874.

Not uncommon. Stations not noted.

LUMBRINEREIS (*Blv.*) *Ehlers.*LUMBRINEREIS FRAGILIS *Aud. & M. Ed.*

AUDOUIN AND M. EDWARDS. *Annélides. Littoral de la France*, p. 170. 1834.

MALMGREN. *Annulata Polychæta*, p. 177, pl. xv, fig. 83. 1867.

Common. Stations not noted.

LUMBRINEREIS HEBES *Verrill.*

Lumbrinereis obtusa VERRILL. *Proceedings A. A. A. S.*, p. 383. 1874.

Lumbrinereis hebes VERRILL. *Proceedings U. S. National Museum*, p. 174. 1879.

Only two specimens were taken.

Sand, low water.

LUMBRINEREIS ACICULARUM *n. sp.*

(PL. IV, FIGS. 55-59.)

Head and body of the usual form.

Anterior feet (fig. 57) stout, short; posterior lip a trifle longer than the anterior; further back the feet are longer, and the posterior lip elongated more than the anterior (fig. 58), the disparity in length becoming still better marked on the posterior third; on the extreme posterior segments the feet are obsolete; in each foot from two to five stout aciculæ.

The setæ form two bundles, dorsal and ventral; to about the fortieth segment the setæ are all capillary, those of the dorsal bundle longest.

After the fortieth segment uncinæ setæ appear, gradually displacing the others; at the seventieth segment only two or three capillary setæ remain in the dorsal bundle, none in the ventral; on the posterior third or fourth there are only uncinæ setæ.

Anal cirri (fig. 59) stout, rather long.

Length, 250^{mm}.

Diameter, 6^{mm}.

Sand, low water. Eastport, Provincetown, Mass., and Block Island, R. I.

This species has much the appearance of *Arabella opalina* VERRILL.

DRILONEREIS *Claparède.*DRILONEREIS MAGNA *n. sp.*

(PL. IV, FIGS. 60-63.)

The feet throughout are short and stout, somewhat longer behind than in front, the increase in length being due mainly to the elongation of the posterior lip.

The setæ are simple, bilimbate, margins minutely denticulate; a few appear to be without margin. In each foot a stout acicula (fig. 60) projecting far beyond the foot. The upper-jaw pieces (fig. 62) resemble those of *Drilonereis longa* Webster, but the posterior pieces (*träger*) are slightly enlarged at their anterior end. The second pair of jaw pieces have ten teeth along their inner margin. Of these the first (anterior) and third are quite large, the second and all behind the third small and of nearly uniform size. The lower jaws were present in all specimens examined; they are minute and have the form shown in fig. 63.

This species may be readily distinguished from *Drilonereis longa* Webster by the shortness of the posterior feet and by its greater diameter.

Length, 175^{mm}.

Diameter, 2^{mm}.

Sand, low water. Rare.

Family GLYCERIDÆ.

EUGLYCERA Verrill.

EUGLYCERA DIBRANCHIATA Verrill.

Glycera dibranchiata EHLERS. Die Borstenwürmer, p. 670, pl. xxiv, figs. 1, 10-28. 1868.

Rhynchobolus dibranchiatus VERRILL. Invert. An. Vin. Sound, &c., p. 596, pl. x, figs. 43, 44. 1874.

Euglycera dibranchiata VERRILL. Trans. Conn. Acad., p. 296, foot-note. 1881.

We found but one specimen; this one, however, was very large.

Sand, low water.

RHYNCHOBOLUS Claparède.

RHYNCHOBOLUS CAPITATUS Verrill.

Glycera capitata ERSTED. Gronl. Ann. Dorsibr., p. 44, pl. vii, figs. 87, 88, 90-94, 96, 99. 1843.

Rhynchobolus capitatus VERRILL. Trans. Conn. Acad., p. 43. 1874.

Not common. Low water; sand; to 30 fathoms, rocks and sand.

GONIADA Aud. and M. Ed.

GONIADA MACULATA Ersted.

ERSTED. Ann. Dan. Consp., p. 33, figs. 16, 23, 91, 95, 97, 98. 1843.

Not common. Low water to 30 fathoms, rocks and sand.

Family OPHELIIDÆ.

OPHELINA *Ersted.*OPHELINA AULOGASTRA *Grube.*

Ammotrypane aulogaster RATHKE. Beiträge zur Fauna Norwegens, p. 188, pl. x, figs. 1-3. 1840.

Ophelina acuminata ERSTED. Ann. Dan. Consp., p. 45. 1843.

Ammotrypane aulogastra MALMGREN. Annulata Polych., p. 73. 1867.

Ophelina aulogastra GRUBE. Annulata Sempriana, p. 193. 1877.

The descriptions of this species differ from each other in some points. Ersted assigns branchiæ to all the segments; Rathke and Grube say that they begin on the 4th setigerous segment; on our specimens they appear sometimes on the 4th, but usually on the 2d, setigerous segment. Grube gives 44 pairs of branchiæ; Rathke says 43, with one ante-anal segment without branchiæ; ours have 42 pairs, with 3 ante-anal setigerous segments without branchiæ. Grube finds 6 pairs of lateral papillæ, or cirri, on the anal segment; Rathke none; ours have, in adults, 8 pairs, and a terminal cirrus. The head is not correctly figured by Rathke; near the apex is a well-defined constriction, followed by a fusiform, sharp-pointed article.

Common. Low water to 10 fathoms; sand, gravel, and shells.

Family SCALIBREGMIDÆ.

SCALIBREGMA *Rathke.*SCALIBREGMA MINUTUM, *n. sp.*

Differs from *Scalibregma inflatum* Rathke in that the branchiæ begin on the second setigerous segment, and in having five anal cirri—two dorsal, two ventral, one medio-ventral. It is also much smaller than Rathke's species.

The notes made on the living specimens were not full, and the present condition of the alcoholic specimens does not admit of accurate description.

Length, 5-7^{mm}.

Diameter, 1.5-2^{mm}.

Common. Sand and mud, shallow dredgings.

Family THELETHUSIDÆ.

ARENICOLA *Lamarck.*ARENICOLA MARINA *L.*

Not generally distributed, but abundant at Welch Pool, in the sand, at low water.

Family SPHÆRODORIDÆ.

EPHESIA *Rathke*.EPHESIA GRACILIS *Rathke*.

Ephesia gracilis RATHKE. Beiträge zur Fauna Norwegens, p. 176, pl. vii, figs. 5-8. 1840.

Sphærodorum peripatus CLAPARÈDE. Beobachtungen, &c., p. 50, pl. xi, figs. 8-18. 1863.

Only two specimens of this species were taken. One had the body filled with rather large eggs, dark red, with a purple tinge, and with a darker nucleus. Our specimens agree perfectly with Claparède's description of *Sphærodorum peripatus*. The body is covered by a very delicate membrane, which is external to and completely covers all the appendages—rami, cirri, papillæ, &c.

Just within each dorsal cirrus is a second spherule, smaller than the cirrus, but larger than the other papillæ, and definite in position. On each segment there are three series of papillæ attached to the body by a slender cylindrical stalk. The papillæ have various forms—spherical, cylindrical, or even cup-shaped, in which case the margin of the cup is fringed (digitate).

Twenty-five to thirty fathoms, rocks, shells, hydroids, &c.

EPHESIA MINUTA, *n. sp.*

(PL. IV, FIGS. 64-66.)

In this species the head is rounded at the sides and above, truncated in front, nearly straight behind, its length a little less than its width. One pair of black circular eyes, lateral, median. From the outer angles, above and below, of the truncated front of the head arise antennæ. These are longer than the head, somewhat swollen along their inner third, then conical; their inner two-thirds bearing numerous long cylindrical papillæ, so long that the antennæ seem to be branched.

The head can be retracted so far as to conceal both itself and the antennæ. The head is also furnished with cylindrical papillæ, shorter than those on the antennæ. One of the papillæ, however, arising between the eyes is much elongated and seems almost like an unpaired antenna.

The first segment bears setæ, but has a pair of tentacular cirri, of about the same length as the median papilla of the head, and in all respects similar to it.

The dorsal cirri are globular (fig. 64), attached to the body by a narrow neck. There is a transverse series of these globular papillæ, 10-12 in number on each segment, with numerous smaller globular and cylindrical papillæ scattered over the general surface. The terminal papillæ at the summit of the large spheres, described by Claparède for *Sphærodorum peripatus*, do not exist in this species, but all the papillæ

show the vermiform contents described by him. All the papillæ are attached to the body in the same way as the dorsal cirri.

The anal segment is without rami or setæ, and is smooth above. It has, however, two large dorsal cirri, and a median, elongated, cylindrical ventral cirrus.

The feet are unramous, carry numerous papillæ, and often appear to be bifurcate at extremity, owing to one of these papillæ arising near the apex and pointing outward, reaching to the apex of the foot.

The setæ (fig. 66) are all compound, delicate; those on the anterior segments relatively short (figs. 64, 65).

The pharynx occupies four segments. The stomach is barrel-shaped, transversely striated, occupies four segments. The intestine in the first segment back of the stomach is very narrow; just back of this the intestine becomes quite large.

Some specimens had the body cavity filled with a granular fluid without corpuscles of any kind. In others there were numerous corpuscles, in form similar to those found in *Cirratulus*, reddish purple, with clear center, their diameter about one-fifth that of the body. They floated about freely, rolling over each other. They were all back of the stomach. In one large specimen there were 70 of these corpuscles. In other specimens the place of these corpuscles was taken by cells, which seemed to be simply membranous sacks with fluid contents. Some of these were quite large, others small. They were spherical, or somewhat elongated. In number and position they agreed with the purple disks mentioned above. When the purple disks existed the cirri and papillæ were filled with dark-brown, almost black, pigment. This was also sometimes the case, but always in a less degree, when the purple disks were absent.

The diameter was greatest at the middle of the body.

Dorsum, yellowish-white; sides and feet, white.

Length, 3-4^{mm}.

Diameter, 0.6-0.8^{mm}.

This form occurred in nearly all dredging, appearing to be very generally distributed.

Family CHLORÆMIDÆ.

TROPHONIA *M. Edwards.*

TROPHONIA PLUMOSA *Johnston.*

Amphitrite plumosa MÜLLER. Prodr. Z. D. n. 2621, p. 216 (*teste* Malmgren).

Trophonia plumosa JOHNSTON. Cat. Brit. Mus., p. 224, pl. 19, figs. 1-10. 1865.

We found but one specimen of this species. One other was brought to us by Dr. Nolan from Grand Manan.

Sand and shells, 8-12 fathoms.

TROPHONIA ASPERA (*Stimpson*) *Verrill*.

We refer two specimens—one entire, the other a fragment—to Stimpson's species, with, however, some doubt. Professor Verrill has referred some form to *Trophonia aspera*, but without description, and Stimpson's description is so defective as to make identification doubtful, if not impossible. On our specimens the dorsal setæ are more strongly curved, and the papillæ of the body longer and stouter than on *T. plumosa*. There are four or five dorsal setæ in each bundle. They decrease in length and increase in curvature from above downward.

Sandy mud, 6–10 fathoms.

ZORUS, *n. g.*

Tentacles and branchiæ arise from a protrusible cylindrical stalk. Setæ of anterior segments prolonged to form a cephalic cage. Setæ all capillary. Body covered with papillæ.

ZORUS SARSI, *n. sp.*

(PL. V, FIG. 67.)

The branchiæ of this species are dark green, flattened, of uniform width, reaching in full extension nearly to the end of the cephalic cage; four pairs.

The tentacles are white, shorter and stouter than the branchiæ, smooth above and at the sides, canaliculate below, with the sides of the canal scalloped.

The upper setæ of the first segment are about one-third longer than the width of the fifth segment; those of the second segment not quite so long; the lower setæ of these two segments are a little shorter than the last. These four bundles of setæ form the cephalic cage; for while the dorsal setæ of the next three segments are directed forwards, they do not reach beyond the head.

After the first two segments the length of the dorsal setæ is about equal to the width of the body, or even a little longer (fig. 67); they do not increase in length on the posterior segments, but seem to do so, owing to the decrease in the diameter of the body. On a few of the anterior segments the ventral setæ are a little shorter than the dorsal setæ, but soon become of the same length.

The setæ are all of one kind, delicate, transversely striate, capillary.

The diameter of the body is greatest from the fifth to about the tenth segment; before the fifth there is a rapid falling off in width; behind the tenth a gradual diminution, giving for the posterior segments about one-third the greatest diameter.

The middle third of the body is concave dorsally (fig. 67); rounded at the sides and below; anterior and posterior thirds regularly rounded.

The body is densely covered with elongated papillæ. There is one very long papilla at the base of each dorsal fan of setæ. These papillæ may be conical or cylindrical, and, like the setæ, retain their number and length on the posterior segments.

Body green, covered with dirt; setæ golden-yellow, gleaming.

Length, 10-15^{mm}.

Diameter, 2-3^{mm}.

Number of segments, 28-32.

Not common; 6-10 fathoms; sand and sandy mud.

SIPHONOSTOMUM *Otto*.

SIPHONOSTOMUM GRUBEI, *n. sp.*

(Pl. V, Figs. 68-71.)

In this species there are thirty rather stout branchiæ, a little shorter than the setæ of the cephalic cage; the tentacles are two-thirds as long as the branchiæ.

The body is covered with papillæ of two kinds (fig. 68), some long, slender, cylindrical to near the end, then fusiform, terminating in a little swelling; these occur for the most part on the feet, and are especially innumerable on the segments bearing the setæ which form the cephalic cage, but they are also found on the body both above and below; the others are much shorter, may be either conical or cylindrical, and exist both on the body and feet.

The superior ramus is flattened, bilabiate (fig. 68), sides concave; its setæ pass out between the two lips, 4-6 in each bundle, about as long as the width of the body, remotely and faintly striate (loculate). The lower ramus is as long as the upper, slightly tapering, apex bluntly rounded, constricted near the outer fourth. In each lower ramus are two stout setæ, compound, appendix a strong, variously-curved hook (Figs. 70, 71). One of these setæ is as long as the dorsal setæ, the other much shorter.

The body is colorless and transparent, but the color of the internal organs is for the anterior third white; middle third, red; posterior third, greenish white.

Length, 8-12^{mm}.

Sandy bottom, 6-10 fathoms.

FLABELLIGERA *Sars*.

FLABELLIGERA AFFINIS *Sars*.

SARS. Bidrag till Söedyrenes Naturalh., i, p. 31, pl. 3, fig. 16—. Beskr. og Iaktt., p. 47 (*teste* MALMGREN).

Common. Low water to 20 fathoms, under stones, &c.

BRADA *Stimpson*.BRADA SUBLEVIS *Stimpson*.

STIMPSON. Marine Invertebrata of Grand Manan, p. 32. 1854.

It seems very probable that this species will be found to be the same as *Brada granulata* MALMGREN, in which case it would be better to retain Malmgren's name, as Stimpson's notice of the species can hardly be called a description.

Common. Low water to 30 fathoms, sand and sandy mud.

BRADA GRANOSA *Stimpson*.

(PL. V, FIGS. 72-76.)

STIMPSON. Grand Manan, p. 32. 1854.

We found at Eastport two species of *Brada*, which, by comparison with each other, were referred to Stimpson's species. The form referred to *granosa* has the dorsum and sides densely covered with long, conical, or cylindrical papillæ (fig. 72), which, for their inner two-thirds, are covered with sand, closely adherent. In each dorsal ramus there are two setæ, delicate, distinctly, but distantly striate (fig. 73). In the ventral rami, 4-6 much stouter setæ (figs. 74, 75), which may be more or less curved at apex.

Common. Low water to 30 fathoms, sand and sandy mud.

Young forms of this species, taken in the first part of July, had a length of 2^{mm}, diameter, 0.5^{mm}. They had a distinct head (fig. 76), near the anterior margin of which was a pair of minute red eyes; from the under surface of the head, just beneath the eyes, arose a pair of flattened, oval plates, densely ciliated; these, as became evident afterwards, were the tentacles. From a membranous ring, back of the head, arose one or two pairs of similar plates, slightly swollen; their origin was usually concealed by the projection of the anterior margin of the first segment, so that they seemed to arise from the posterior lateral surface of the head. These are the first branchiæ; afterwards the ring, from which they originate, grows forward, completely covering the head and carrying the branchiæ, increasing in number, forward with it. The tentacles at first are simple, fleshy plates, not canaliculate.

Family STERNASPIDÆ.

STERNASPIS *Otto*.STERNASPIS FOSSOR *Stimpson*.

STIMPSON. Grand Manan, p. 29, fig. 19. 1854.

Common in mud at all depths.

Family CHÆTOPTERIDÆ.

ETHOCLES, *n. g.*

Head without appendages. Buccal segment without setæ, with two canaliculate tentacles. Dorsal rami (branchiæ) situated dorsally, each with concealed seta. Ventral rami of first seven setigerous segments, with superior lingula (cirrus) situated dorsally, and with several rows of simple setæ, which arise in front of a lateral plate, which varies in form from segment to segment.

Middle region composed of few segments. The ventral rami of this region are elongate, cylindrical, furnished with an external, lateral membrane. The posterior region is composed of numerous segments, and differs from the middle region only in the absence of the lateral membrane from the ventral rami. Anal cirri, two.

It is with much hesitation that this genus is referred to the Chætopteridæ, from all previously described genera of which it differs in many respects: the branchiæ begin on the first setigerous segment; there is no peculiar seta developed in any of the anterior segments; the ventral rami are not bifurcate. On the other hand, the structure of the tentacles would refer it either to this family or to the Spionidæ; the branchiæ both by their position, structure, and from the fact that they have concealed setæ, recall Spiochætopterus; and the division of the body into three regions, though not very well defined, would seem to bring this form nearer to Chætopterus than to Spio. The absence of the peculiar seta from the anterior segments has a parallel among the Spionidæ.

ETHOCLES TYPICUS, *n. sp.*

(PL. VI, FIGS. 77-85.)

The head is convex above and at the sides; apex bluntly rounded; length is little more than the width; no appendages; no eyes.

The buccal segment is a little shorter than the second segment; it carries a pair of long, canaliculated, spio-like tentacles; these are probably very long, but on all four specimens were broken. This segment is plainly set off from the head below by a deeply impressed line. The mouth is longitudinal, sides rounded, fleshy, united behind, free in front. When the mouth is closed it appears simply as a longitudinal white line, running to meet a similar transverse white line. This last is the line of division between the head and the buccal segment.

The second and all following segments have elongated, densely ciliated, dorsal branchiæ, or dorsal rami (figs. 77-83), each containing a delicate seta, which falls short of the apex. On the first seven setigerous segments, between the branchiæ and the ventral setigerous lobe, is a cirrus, or lingula, about one-half as long as the branchiæ. On the

first three segments this cirrus is close to the ventral ramus (fig. 77), but recedes gradually till on the segments 4-7 it is about half-way between this ramus and the branchia (fig. 80).

The ventral ramus on segments 1-3 is a fleshy, lateral plate, somewhat quadrangular, and with a small conical lobe projecting from its lower margin (fig. 77). On the fourth segment (fig. 78), in place of this single lobe, there is a second plate not so thick as the setigerous plate, but not membranous, with its outer margin divided into 4-6 stout conical processes. Segments 5 and 6 have the setigerous lobe much smaller (fig. 79), while a membranous, elevated plate, starting from about the middle of this lobe, runs downward, encroaching on the ventral surface. This membrane has its outer margin convex and minutely digitate, or beset with numerous minute cylindrical papillæ. On the seventh segment this membrane is longer, entirely replaces the setigerous lobe, and its margin (fig. 80) is divided into conical lobes similar to those on the fourth segment, but larger and irregular. On these seven segments the setæ are practically all of one kind (fig. 84), wide at base, regularly and rapidly tapering, flattened. They are very numerous and in several series on segments 1-4; less numerous on segments 5-7.

Segments 8-12, forming the middle region of the body, have their ventral rami elongated, conical (figs. 81, 82), carrying a few very long, delicate setæ (fig. 85). On the eighth segment a membrane starting from the middle of the ramus runs down the side of the body (fig. 81); the outer margin of this membrane is finely denticulated. A similar membrane exists on segments 9-12, but it is longer, arising nearer the apex of the ramus, and encroaching on the ventral surface (fig. 82). On the eleventh segment the denticulations are larger than on the others, approaching in form and size those found on the fourth and seventh segments.

The segments of the posterior third of the body are numerous. The ventral rami on these segments are rather cylindrical than conical (fig. 83), and they lack the lateral membrane, but are furnished with a variable number of conical papillæ. The setæ are like those of the middle region.

Back of the seventh segment the branchiæ become somewhat elongated and delicate; they are found on all except a few of the posterior segments, where, however, all the appendages become much smaller, or even disappear.

Only two of our specimens had the extreme posterior segments; only one the anal cirri. Anal segment obliquely truncated, at a small angle; anal opening situated dorsally, on the truncated surface. Anal cirri two, delicate, filiform, latero-ventral, as long as the last six segments.

Our specimens were for the most part badly broken, and have not kept well in alcohol. It seems probable that they live in tubes, but we always found them free.

The body is flattened both above and below in front, slightly convex farther back, tapering slightly along the posterior half. General color white or yellowish-white; tenacles white; setæ yellow, or yellowish-brown.

Length probably about 8-12^{mm}.

Width, 1.5-2^{mm}.

Common, 8-10 fathoms, mud.

Family SPIONIDÆ.

SCOLECOLEPIS *Blainville*.

SCOLECOLEPIS CIRRATA *Malmgren*.

Nerine cirrata SARS. Bidrag til Kundskaben om Norges Annelider, p. 15. 1861.

Scolecopsis cirrata MALMGREN. Annulata Polychæta, p. 91, pl. 9, fig. 54. 1867.

Only one specimen was obtained, an anterior, badly mutilated part.

SPIONIDES, *n. g.*

Much like *Scolecopsis*, but distinguished from it by the possession of lateral pouches between the ventral rami, beginning near the anterior end, and continued to the posterior third.

This form is very closely related to *Scolecopsis cirrata* MALMGREN. We have no good specimens of that species for comparison. It seems certain, however, that the peculiarity mentioned above could not have escaped observation.

The material for description is not very good, as we only found three specimens, all more or less injured.

SPIONIDES CIRRATUS, *n. sp.*

(PL. VI, FIGS. 86-89.)

Head wide in front, narrow behind, continued backward as a carina on three segments. Two pairs of eyes, minute, lateral, pink; one pair on the middle line of the head; the second pair, posterior. A minute antenna or occipital tentacle, posterior. Buccal segment visible from above only at the sides of the head; tentacles white, not very long, deeply canaliculated, margins of the canal scalloped.

The branchiæ begin on the third setigerous segment, 13 pairs.

The anterior feet have the form shown in fig. 86, behind the branchiæ, as in fig. 87.

After the first few segments the membranous pouches appear between the ventral rami. They are formed by a delicate membrane with free upper margin, which curves outward between the ventral rami, and is prolonged down the sides of the body below the rami, forming a series of deep pouches with crescentic opening above. The membrane is continuous, but is attached to the body above each ventral ramus,

and seems to be prolonged inward, as a low ridge, to the outer base of the dorsal rami.

There are four pairs of anal cirri, of which three pairs are lateral, delicate, as long as five or six of the last segments; one pair latero-ventral, stout, one-half as long as the lateral cirri.

Body widest in front, tapering gradually but uniformly.

Body white or colorless, lateral membrane white, branchiæ with red center.

Length of largest specimen, 25^{mm}; width of largest specimen, 0.8^{mm}. Rare; sandy bottom, 6-8 fathoms.

SPIO (*Fabricius*) *Ersted*.

SPIO FILICORNIS *Fabricius*.

Nereis filicornis FABRICIUS. Fauna Grönl., p. 307. 1780.

Spio filicornis FABRICIUS. Schr. Naturf. Freunde Berlin, vi, p. 264, pl. v, figs. 8-12 (teste MALMGREN).

Spio filicornis MALMGREN. Annulata Polych., p. 91, pl. i, fig. 1. 1867.

A form common at Eastport seems certainly to agree with the species regarded by Malmgren as identical with the *S. filicornis* of Fabricius. The specimens show considerable diversity of coloring. Young forms have the body colorless, with two brown spots on each segment, and numerous flake-white markings, also two brown spots, anterior and posterior, at the base of each dorsal ramus; tentacular cirri colorless, with a few brown rings, and numerous specks and irregular lines of flake-white. Other young forms had these cirri very dark brown, almost black throughout; or, again, the cirri may be brown above, colorless below, without transverse bands.

Some larger specimens, not full-grown, were entirely without markings. Adult forms were light green; tentacular cirri green, with bands of white and chestnut; or, tentacular cirri colorless above, green below, with brown bands. Others had umber-brown tentacular cirri, and on each segment two brown spots, one in front of, the other above (within) each dorsal ramus.

Branchiæ green or brown with red center; sometimes with flake-white spots. Common; sand and gravel; low water to 10 fathoms.

SPIO RATHBUNI *Webster & Benedict*.

Annelida Chætopoda of Provincetown.

Common in sand and sandy mud, at low water.

STREBLOSPIO *Webster*.

STREBLOSPIO BENEDICTI *Webster*.

Annelida Chætopoda of New Jersey, p. 20, pl. v, figs. 48-50. Also, Annelida Chætopoda of Provincetown. (Webster and Benedict.)

One specimen was found with eggs. They are dorsal, lateral, two to each segment. They are covered by a membrane, which is continued

across the dorsum, forming a low ridge between the eggs on opposite sides of the same segment. On this specimen they appeared first at about the middle of the body.

Half-tide, soft mud. Found only at "Clam Cove," in Saint Andrew's Bay.

PRIONOSPPIO *Malmgren.*

PRIONOSPPIO STEENSTRUPI *Malmgren.*

MALMGREN. *Annulat. Polych.*, p. 93, pl. ix, fig. 55. 1867.

The tentacles are long, delicate, similar to those described for *Priospio plumosa* by Sars.

The head rests on the buccal segment; the sides of this segment, back of its rami, curve inward, so as almost to cut it off from the second segment. The buccal segment has both dorsal and ventral rami. Eyes, four, black, circular; anterior pair farther apart than the posterior. The branchiæ do not arise from the first segment, but are found on segments 2-5.

General color, greenish; branchiæ, red. Not common; sand and shells, 10-15 fathoms.

POLYDORA *Bosc.*

POLYDORA CILIATA *A. Agassiz.*

Annals Lyc. Nat. Hist., vol. viii, p. 323, figs. 26-38. 1866.

It does not seem probable that the species described by Agassiz is identical with *Leucodore ciliatus* JOHNSTON, which species again is not the same as *Leucodora ciliata* KEFERSTEIN. We understand Professor Verrill to concur in this view, and as our material is not in good condition, prefer to leave the whole subject with him.

POLYDORA GRACILIS *Verrill.*

Proceedings U. S. National Museum, p. 174. 1879.

Our specimens were found under the same conditions as those indicated by Professor Verrill, and, for the most part, agree with his description. He states, however, that on the sixth and following segments there are, with the capillary setæ, three or four uncini in the dorsal fascicles. This is not the case with our specimens. Sometimes the head is slightly bilobed in front, but this is not always the case. An elevated carina extends back to the fourth segment. The number of eyes is variable; there may be none, or one, two, three, or four.

On shells of *Pecten tenuicostatus*, 10-35 fathoms.

DIPOLYDORA *Verrill.*

DIPOLYDORA CONCHARUM *Verrill.*

Polydora concharum VERRILL. *Proc. U. S. National Museum*, p. 174. 1879.

Dipolydora concharum VERRILL. *Trans. Conn. Acad.*, p. 320, foot-note. 1881.

Not common; 20-30 fathoms, on shells.

Family ARICIIDÆ.

SCOLOPLOS (*Blnv.*) *Ærsted.*SCOLOPLOS ARMIGER (*Blnv.*) *Ærsted.*

Scoloplos armiger BLAINVILLE. Dict. Sc. Nat., Tom. 57 (*teste* Malmgren).

Aricia Mülleri RATHKE. Beiträge zur Fauna Norwegens, p. 176, pl. viii, figs. 9-15. 1840.

Scoloplos armiger *ÆRSTED.* Ann. Dan. Comp., p. 37, figs. 8, 106, 107, 109. 1843.

Scoloplos armiger MALMGREN. Ann. Polych., p. 72. 1867.

Anthostoma acutum VERRILL. Invert. An. of Vin. Sound, p. 599. 1874.

There seems to be no doubt as to the identity of the forms referred to above. No one except Professor Verrill has seen the divided or lobed proboscis, which led him to refer this species to *Anthostoma*. But this is not strange, as the proboscis is rarely extended, and one may examine many individuals without once seeing one in that condition. *Ærsted* makes the branchiæ begin on the fifteenth segment, but the anterior branchiæ are very small, and readily escape observation. *Malmgren* identifies this species with *Aricia Mülleri* RATHKE. The figures of Rathke show the small anterior branchiæ. *Ærsted* also says there are no anal cirri; these, however, fall off readily.

Common in sand at low water.

NAIDONEREIS *Blainville* (*teste* *Malmgren*).NAIDONEREIS QUADRICUSPIDA *Malmgren.*

(PL. VI, FIGS. 90-92.)

Nais quadricuspida FABRICIUS. Fauna Grönl., p. 315. 1780.

Nainereis quadricuspida BLAINVILLE. Dict. Sc. Nat., Tom. 57, p. 440 (*teste* *Malmgren*).

Scoloplos quadricuspida *ÆRSTED.* Grönl. Ann. Dors., p. 48, figs. 106-111. 1843.

Aricia quadricuspida LEUCKART. Arch. Naturg., vol. x, p. 198, pl. 3, fig. 11 (*teste* *Malmgren*).

Naidoneris quadricuspida MALMGREN. Annulata Polych., p. 73. 1867.

This species has a pair of minute black eyes, hard to find even on fresh specimens, and not to be found on alcoholic forms. The first two segments are without appendages of any kind. The branchiæ appear on the fifth setigerous segment, nearly full size from the first; on a few of the posterior segments they fall off a little in size.

The dorsal setæ are long, delicate, transversely striated; at the lower part of each dorsal bundle are one or two shorter and stouter setæ, with bifurcate extremity (fig. 90). The ventral setæ on the anterior segments are in three or four series, and of two kinds. The anterior are short, stout spines (fig. 91); those of the posterior series similar to the dorsal setæ. From about the eighth setigerous segment the spines decrease in number, and disappear at the fifteenth. Each ventral ramus has three aciculæ (fig. 92).

Back of each ventral bundle of setæ, on the first twelve segments, is

a stout fleshy plate, from the middle of the concave outer margin of which arises a stout conical cirrus. The dorsal and ventral rami are distinct and remote from each other on the first twelve segments, but behind this segment they both arise from a low, rounded, fleshy lip, having a shallow depression between the rami. This plate is continued to the base of the branchiæ, and crosses the dorsum as a low, rounded ridge. Below the ventral ramus it widens, and forms low, rounded lobes, so wide near the ramus that they are separated from each other only by the lines of segmentation; passing downward they become narrower.

Each segment is distinctly trianulate. The anal segment ends in four flattened lobes, bluntly rounded behind—one dorsal, one ventral, two lateral; from each of these lobes arises an anal cirrus, rather stout, slightly tapering, as long as the last five segments.

Common at half-tide, under stones; gregarious.

ARICIDEA *Webster.*

ARICIDEA QUADRILOBATA *n. sp.*

(PL. VII, FIGS. 93-96.)

In this species the head (fig. 93) is constricted a little behind the middle, broadly rounded in front; posterior part convex; anterior part sloping, so as to be much thinner in front than behind.

The antenna is delicate, almost filiform, reaching back to the sixth setigerous segment. A pair of minute red eyes, about half way between the origin of the antenna and the sides of the head.

The buccal segment is short, without rami; it carries four oval elevations, arranged in a series, about equally distant from each other.

The next three segments carry both dorsal and ventral cirri, conical and slightly fusiform, the ventral somewhat larger than the dorsal.

The branchiæ begin on the fourth setigerous segment; there are nine pairs. They are broad at base (fig. 94), do not taper much along their inner two-thirds, then suddenly become pointed. They are usually applied closely to the body, and would overlap, but the pointed ends turn suddenly backward.

The dorsal cirri, on the branchiated segments, are more delicate than on the anterior segments, and slightly swollen externally, near their origin; back of the branchiated segments these cirri become very delicate, filiform (figs. 95, 96), and, on the posterior segments, their length surpasses the width of the body.

The dorsal setæ are all simple, capillary; they increase in length with the dorsal cirri, so that even on the posterior segments some of these setæ project beyond the cirri. The ventral setæ are shorter than the dorsal; arranged in a close-set fan; on the posterior segments a few of these setæ have a sigmoid flexure near the end.

Along the branchiated segments the body is slightly convex dorsally and laterally; flat below; farther back somewhat convex both above and below, but never round.

The anal segment is obliquely truncated from above downward, and carries three delicate anal cirri—one medio-ventral, two latero-ventral.

The width of the anterior half of the body is nearly uniform; along the posterior half it tapers slightly, so that the posterior segments are about one-half as wide as the anterior.

Behind the branchiæ in many specimens the body was filled with large irregularly polygonal eggs, clear white, with distinct nucleus. General color some shade of green, usually light green; branchiæ green, with red center; setæ gleaming white.

Length, 5–6^{mm}.

Width, 0.4–0.5^{mm}.

Common in mud and sandy mud; 31–2 fathoms.

ARICIDEA NOLANI,* *n. sp.*

(PL. VIII, FIGS. 97, 98.)

With the last form we also found another species of this genus. The head (fig. 97) is a little longer than its greatest width, bluntly rounded in front, but with the apex not so wide as in the preceding species; antenna short, stout, conical or fusiform; eyes situated as in the last species, but larger.

Branchiæ begin on the fourth setigerous segment, 13–20 pairs, overlapping along the middle line (fig. 98). Dorsal cirri, on segments anterior to the branchiæ, short, conical; on branchiated segments, much longer, swollen near the base; behind the branchiæ, delicate, conical, increasing in length, and becoming filiform on the posterior segments.

There are no ventral cirri. The setæ are much as in the preceding species, but on a number of the posterior ventral rami the upper setæ are much elongated.

The body in front is somewhat quadrangular, being flat, or even slightly concave above, a trifle convex below; behind the branchiæ, pretty evenly rounded.

Anal segment and cirri as in last species. The head and body contained numerous oval, gleaming, green granules.

The only sexual form taken was a female, having four eggs in each segment back of the branchiæ, two on each side. These were large, spherical, completely occupying the lateral field, not in contact, white.

General color green, usually dark, with scattered spots of reddish-brown on the head and anterior segments.

Length, 7^{mm}.

Width, 3^{mm}.

*After Mr. Nolan, of New York City, a gentleman who was of great service to us in collecting.

Specimen of the length just given had but thirteen pairs of branchiæ; a single larger specimen had twenty pairs; its color was reddish-brown in front, passing into brown farther back, ventral surface white.

Common in mud and sandy mud; 6-12 fathoms.

Family CIRRATULIDÆ.

CIRRATULUS *Lanarck.*

CIRRATULUS CIRRATUS *Malmgren.*

MALMGREN. *Annulata Polych.*, p. 95. 1867.

Rare; low water; sand.

DODECACERIA *Ærsted.*

DODECACERIA CONCHARUM *Ærsted.*

ÆRSTED. *Ann. Dan. Consp.*, p. 44, fig. 99. 1843.

VERRILL. *Proc. U. S. National Museum*, p. 178. 1879.

The arrangement of setæ was not exactly the same, on our specimens, as that given by Professor Verrill.

Rare; 25-30 fathoms.

CHÆTOZONE *Malmgren.*

We found many specimens of a form which seems certainly to be *Chætozone setosa* MALMGREN, but which differ from his specimens in having a pair of tentacular cirri, and also in having, normally, dorsal cirri on all segments, or at least scattered along the entire length of the body.

CHÆTOZONE SETOSA *Malmgren.*

The head is acute, conical; first three segments without appendages; fourth segment with a pair of long, stout, canaliculated, tentacular cirri.

The dorsal cirri are not limited to the anterior segments, but may exist on any segment, though they readily fall off, especially along the posterior two-thirds. The cirri of the fifth and sixth segments are often longer and larger than the others, but have the same structure. The anal segment terminates in a thin, horizontal, semicircular plate.

Anterior fourth of the body yellowish-white; posterior three-fourths dark purple; or the entire body may be colorless.

Common on sandy and shelly bottoms; 6-12 fathoms.

THARYX, *n. g.*

Head and first two segments without appendages. One pair of tentacular cirri; next segment with dorsal cirri, but without setæ; all other segments (normally) with dorsal cirri; setæ capillary.

This genus with the preceding one, to which it is closely related, seem to form a group by themselves in the family, distinguished by having a single pair of tentacular cirri, and by the existence of dorsal cirri along the entire body.

THARYX ACUTUS, *n. sp.*

(PL. VII, FIGS. 99-103.)

Head long, conical; no eyes; no appendages of any kind (fig. 99). First two (three?) segments without appendages. Tentacular cirri very large, very long, deeply and widely canaliculated, margins of the canal deeply scalloped. Next segment very short, with dorsal cirri, but without setæ.

On the anterior segments (fig. 100) the dorsal setæ are about one-half as long as the width of the body; on the middle third they are very much elongated (fig. 101), growing shorter again along the posterior third (figs. 102, 103). The ventral setæ have throughout about the length of the anterior dorsal setæ.

The anterior (20-30) segments are very short; farther back they gain gradually until the length of each segment is about equal to one-half its width.

The form of the body is shown in figs. 100-103.

Body brown, yellow, or yellowish white; numerous umber-brown specks on the body and cirri; tentacular cirri white, specked with umber-brown.

Length, 12-15^{mm}.

Diameter, 0.5-0.7^{mm}.

Common; sand and sandy mud; 6-12 fathoms.

THARYX SIMILIS, *n. sp.*

(PL. VII, FIG. 104.)

We found a few specimens of a second species of this genus similar to the first, but differing from it in some particulars. Head and first four segments as in the last species, except that the head is a little shorter and larger at base; tentacular cirri also shorter and stouter. Dorsal setæ longest and most numerous on the anterior segments. Ventral setæ on anterior segments (6-8) similar to the dorsal; then from 2-4 setæ shorter, stouter, slightly curved at the end, are introduced, alternating with the straight capillary setæ.

These setæ are arranged, not very close to each other, so as to form a single series running down the side of the body. Anterior segments short; posterior segment longer, and with the lines of segmentation so deep and well defined as to give to the posterior two-thirds of the body a moniliform appearance.

Body and tentacular cirri green, with numerous dark-brown spots; dorsal cirri, colorless.

Length, 7–10^{mm}.

Diameter in front, 0.6–0.7^{mm}.

Diameter posterior end, 0.2–0.24^{mm}.

Not common; 20 fathoms; rocks and shells.

COSSURA, *n. g.*

Head and first two segments without appendages (fig. 105). Fourth segment with single median cirrus; no lateral cirri (branchiæ). Capillary setæ, dorsal and ventral from the third segment. Anal segment, with three anal cirri.

COSSURA LONGOCIRRATA, *n. sp.*

(PL. VIII, FIGS. 105–107.)

Head conical (fig. 105); first segment a little shorter than the second; second as long as the third. The median cirrus of the fourth segment is very long, reaching back to the twenty-fifth segment. It increases regularly in diameter along the first fourth of its length, then tapers very gradually to the end. Along the anterior part of this cirrus well-defined and regular constrictions exist; these also occur along the entire cirrus, but irregularly.

The bundles of dorsal and ventral setæ are close to each other, forming a nearly continuous series; the setæ are short in front (fig. 105), on the middle segments nearly as long as the width of the body, while on the posterior segments they again shorten somewhat.

In living specimens the lines of segmentation are very faint along the anterior third; farther back very deep, giving to the body a moniliform appearance; on the extreme posterior segments not so well defined.

Only one specimen with anal segment and cirri was taken, and in this the anal segment was somewhat injured. It appeared to be truncated from above downward; it bears three delicate anal cirri, as long as the last 8–10 segments.

Length, 6^{mm}.

Diameter, 0.6–0.8^{mm}.

Number of segments, 50–70.

Mud and sandy mud; 6–12 fathoms.

LEDON, *n. g.*

We found two specimens, both somewhat injured, which seemed to represent a new genus, allied to *Acrocirrus* and *Macrochæta*, but not agreeing perfectly with either. It differs from *Macrochæta* GRUBE, as described and figured by Langerhans, in having cirri (? branchiæ) on the buccal segment; and from *Acrocirrus* in having (apparently) but one pair of appendages on the buccal segment, instead of two; and (cer-

tainly) in having two pairs of appendages on the second segment. For the present the generic diagnosis will stand as follows:

Head with antennæ projecting from the anterior margin; branchiæ beginning on the buccal segment, limited to the anterior segments; second segment with a pair of short cirri in addition to the branchiæ; ventral setæ compound, found first on the third segment; dorsal setæ capillary, appearing first on the fourth segment.

LEDON SEXOCULATA, *n. sp.*

(Pl. VIII, Figs. 108, 109.)

Head pentagonal, posterior margin straight, width slightly greater than the length; antennæ flattened, fusiform, wide, as long as the head, distant from each other at origin by about their own width.

Eyes six, circular, lateral, situated at the angles of a hexagon, middle pair largest.

Segments 1 to 5 or 6 each, with a pair of branchiæ three to four times as long as the width of the body, club-shaped, stout.

Second segment with a pair of cylindrical cirri, about one-eighth as long as the branchiæ and placed beneath them.

The ventral setæ appear on the third segment. They are compound (fig. 108), hooked near the end, and with a straight delicate spine originating a little below the terminal hook and projecting beyond it. On a few of the anterior segments there are two of these setæ in each ventral ramus; farther back, only one.

Beginning with the fourth segment, there is a single, long, capillary seta in each dorsal ramus (fig. 109).

The anterior part of the body is densely covered with minute cylindrical papillæ. Body cylindrical; anterior segments short, gaining in length until their length and width are about equal.

Anal segment truncated, margin thickened; on the ventral surface two small rounded projections.

Body covered with dirt; general color light green.

Length, 6-8^{mm}.

Width, 0.4-0.5^{mm}.

Rare; sand and shells; 8-12 fathoms.

Family CAPITELLIDÆ

CAPITELLA *Blainville.*

CAPITELLA CAPITATA *van Beneden.*

Lumbricus capitatus FABRICIUS. Fauna Grönl., p. 279. 1780.

Capitella capitata VAN BENEDEN. Bull. Acad. de Belg., 2d series, vol. 3, p. 137, with 2 plates (*teste* Quatrefga.).

While the specimens taken at Eastport seem certainly to belong to this species, both the young and the adults have two minute black eyes.

As observed by Claparède the uncini exist on young forms in advance of their position on the adult. On one specimen the capillary setæ changed to uncini on the fourth setigerous segment.

Not common. Mud, any depth to 40 fathoms.

We obtained sufficient material to indicate the existence of another species of *Capitella* at Eastport, but not sufficient to admit of description

NOTOMASTUS *Sars.*

NOTOMASTUS CAPILLARIS *Verrill.*

Ancistria capillaris VERRILL. Proc. American Association for the Advancement of Science, p. 385. 1874.

Notomastus capillaris VERRILL. Proc. U. S. National Museum, p. 181. 1879.

Single specimen. Station not noted.

Family MALDANIDÆ.

RHODINE *Malmgren.*

RHODINE LOVENI *Malmgren.*

MALMGREN. Nord. Hafs-Ann., p. 189. 1865. Ann. Polych., p. 99., pl. x, fig. 61. 1867.

We found no entire specimen. One specimen had twenty-four segments; from the seventeenth each had the peculiar membranous margin described by Malmgren; it is irregularly denticulated.

Body colorless to brownish red.

Sand and sandy mud; 8 to 12 fathoms.

NICOMACHE *Malmgren.*

NICOMACHE LUMBRICALIS *Mgrn.*

Sabella lumbricalis O. FABRICIUS. Fauna Grönl, p. 374. 1780.

Nicomache lumbricalis MALMGREN. Nordiska Hafs-Ann., p. 190. 1865. Ann. Polych., p. 99, pl. x, fig. 60. 1867.

Only one specimen taken. Rocks; 20 fathoms.

PRAXILLELLA *Verrill.*

PRAXILLELLA ZONALIS *Verrill.*

Praxilla zonalis VERRILL. American Journal of Science, vol. vii, p. 505, pl. vi, fig. 2. 1874. Proc. A. A. A. S., p. 384, pl. 5, fig. 4. 1874.

Praxillella zonalis VERRILL. Trans. Connecticut Acad., vol. iv, part 2, p. 298. 1881.

Our specimens agree well with Professor Verrill's description. Add, that the anterior margin of the fourth sitigerous segment is thickened, rounded, forming a collar which receives the preceding segment; also, that the diameter falls off rapidly to the fourth setigerous segment, so

that the posterior end of the third setigerous segment is not more than half as wide as the fourth.

Not common. Station not noted.

PRAXILLELLA PRÆTERMISSA *Verrill*.

Praxilla prætermissa MALMGREN. Nord. Hafs.-Ann., p. 191. 1865. Ann. Polych., p. 100, pl. xi, fig. 62. 1867.

Praxillella prætermissa VERRILL. Loc. cit., p. 298. 1881.

Many of our specimens are young and do not have as many uncini on the anterior segments as indicated by Malmgren for this species. The adults are banded very much as in *Praxillella zonalis* VERRILL, and the anal segment has the same structure as in that species.

Common. Mud; 8 to 40 fathoms.

CLYMENELLA *Verrill*.

CLYMENELLA TORQUATA *Verrill*.

VERRILL. Invert. Animals of Vin. Sound, p. 608, pl. xiv, figs. 71-73. 1874.

Very common at low water; sand and sandy mud.

Family AMMOCHARIDÆ.

OWENIA *Delle Chiaje*.

OWENIA ASSIMILIS (*Sars*).

Ammochares assimilis SARS. Nyt. Mag. vi, p. 201 (*teste* Malmgren).

Ammochares assimilis MALMGREN. Ann. Polych., p. 101, pl. xi, fig. 65. 1867.

Not common; 25-30 fathoms; sandy mud.

Specimens indicating a second species of this genus were obtained; but their condition does not admit of description.

MYRIOCHELE *Malmgren*.

In the same year (1867) Malmgren described a new genus of this family under the name *Myriochele* and Grube (*Novara-Expedition, Anneleden*), the same genus, and probably the same species, giving to it the name *Psammocollus (australis)*. We do not know which name is entitled to priority.

MYRIOCHELE HEERI *Malmgren*.

MALMGREN. Ann. Polych., p. 211, pl. viii, fig. 37. 1867.

Near the posterior lateral margin on either side of the head a circular collection of reddish-brown pigment specks, which seem to be eyespots. Head and body with numerous minute reddish-brown specks; otherwise colorless. Intestine showing through; brown or yellowish brown.

Not uncommon; 6-12 fathoms; sand and sandy mud.

Family AMPHICTENIDÆ.

CISTENIDES *Malmgren.*CISTENIDES GRANULATA *Malmgren.*

Sabella granulata LINN. Syst. Nat., xii, p. 1268 (*teste* Malmgren).

Pectinaria Grönlandica GRUBE. Familien der Anneleden, pp. 82, 138. 1851.

Pectinaria Grönlandica STIMPSON. Grand Manan, p. 30. 1854.

Cistenides granulata MALMGREN. Nord. Hafs-Ann., p. 359. 1865.

Not uncommon; 15–30 fathoms; rocks and shells.

Family AMPHARETIDÆ.

AMPHARETE *Malmgren.*AMPHARETE CIRRATA, *n. sp.*

(PL. VIII, FIGS. 110–112.)

Very similar to *Ampharete Grubei* Malmgren.

Branchiæ as long as the width of the body, or a little longer.

From the 9th setigerous segment each uncigerous lobe bears a conical cirrus. This cirrus, small at first, and arising from the superior margin of the lobe, rapidly elongates, and recedes to the base of the lobe (figs. 110–112).

Uncigerous lobes quite large on the posterior half of the body.

Anal segment about as long as the two preceding segments taken together. Number of anal cirri, fourteen; conical, as long as the anal segment.

General color, light green. Branchiæ light green, lower surface banded with white, center dark green.

Length of largest specimen, 24^{mm}.

Width in front, with feet, 4^{mm}.

Length of branchiæ, 4^{mm}.

Sand; 6–12 fathoms.

AMPHARETE TRILOBATA, *n. sp.*

Anterior margin of head divided into three lobes, of which the median projects slightly beyond the lateral. Two minute black eyes, lateral, on the middle line.

Branchiæ delicate, wrinkled, tapering very gradually, pointed, in length two or three times the width of the body.

Cirri short, stout, flat, not tapering.

Uncigerous lobes large, quadrangular, projecting.

Posterior part of body composed of twelve uncigerous segments and the anal segment.

The anal segment very short; the last uncigerous lobe, when flattened down, projecting beyond it.

Anal cirri 10; of these 8 are conical, as long as the last two segments; 2 lateral, cylindrical, half as long as the others, much stouter, arising from stout swollen bases.

The posterior half of the body tapers rapidly.

Body colorless; internal organs showing through, giving a green tinge, especially along the anterior half. Branchiæ colorless, with green center.

Length of largest specimen, 10^{mm}.

Width in front, with feet, 2^{mm}.

Sand and shells; 6-12 fathoms.

SABELLIDES (*M. Edw.*) *Malmgren.*

SABELLIDES OCTOCIRRATA *Sars.*

SARS. Fauna Littoralis Norvegiæ, vol. ii, pp. 21, 23. 1856.

MALMGREN. Nord. Hafs-Ann., p. 369, pl. xxv, fig. 74. 1865.

Not uncommon; sand and sandy mud; 6-35 fathoms.

MELINNA *Malmgren.*

MELINNA CRISTATA *Malmgren.*

Sabellides cristata SARS. Fauna Littor. Norvg., vol. ii, pp. 19, 24, pl. 2, fig. 1-7. 1856.

Melinna cristata MALMGREN. Nord. Hafs-Ann., p. 371, pl. xx, fig. 50. 1865.

Rare; sandy mud; 5-12 fathoms.

Family TEREPELLIDÆ.

AMPHITRITE *Müller.*

AMPHITRITE BRUNNEA *Verrill.*

Terebella brunnea STIMPSON. Grand Manan, p. 31, 1854.

Amphitrite Johnstoni MALMGREN. Nord. Hafs-Ann., p. 377, pl. xxi, fig. 51. 1865.

Amphitrite brunnea VERRILL. Check List. 1879.

There may be 24 or 25 segments, with capillary setæ. The color is usually dark brownish-red, but a few were dark brown, without any tinge of red.

Common on mud-flats, at low water.

AMPHITRITE CIRRATA *Müller.*

Amphitrite cirrata MÜLLER. Prodr. Zool. Dan. n, 2617 (*teste* Malmgren).

Amphitrite cirrata MALMGREN. Nord. Hafs-Ann., p. 375, pl. xxi, fig. 53. 1865.

The tube of this species is made of fine dirt, curved, open at both ends, which project from the surface.

Not common; sandy mud; low water.

NICOLEA *Malmgren.*NICOLEA ZOSTERICOLA *Malmgren.*

MALMGREN. Nord. Hafs-Ann., p. 381, pl. xxvi, fig. 76. 1865.

Only two specimens were taken. Sandy bottom.

SCIONE *Malmgren.*SCIONE LOBATA *Malmgren.*

MALMGREN. Nord. Hafs-Ann., p. 383, pl. xxiii, fig. 62. 1865.

Body dark red. Branchiæ greenish-yellow. Buccal segment dirty white, with narrow dorsal dark green band. Tentacles white, margins of canal of tentacles light brown.

Two specimens; 20 fathoms; rocks and shells.

THELEPUS (*Leuckart*) *Malmgren.*THELEPUS CINCINNATUS *Malmgren.*

Lumora flava STIMPSON. Grand Manan, p. 30. 1854.

Thelepus cincinnatus MALMGREN. Nord. Hafs-Ann., p. 387, pl. xxii, fig. 58. 1865.

Thelepus cincinnatus VERRILL. Check List. 1879.

Very common from half tide to any depth; wherever there are stones, shells, &c., to which its tubes can be attached.

EREUTHO *Malmgren.*EREUTHO SMITTI *Malmgren.*

MALMGREN. Nord. Hafs-Ann., p. 391, pl. xxiii, fig. 63. 1865.

Rare; sand and mud; 6 to 12 fathoms.

POLYCIRRUS *Grube.*POLYCIRRUS ? PHOSPHOREUS *Verrill.*

VERRILL. Proc. U. S. National Museum, p. 181. 1879.

We found only one species of Polycirrus. It seems probable that it ought to be included in Verrill's species. However, it was not especially phosphorescent, and the number of segments bearing capillary setæ varied from 21-34.

Very common from low water to 30 fathoms; mud and sandy mud.

ARTACAMA *Malmgren.*ARTACAMA PROBOSCIDEA *Malmgren.*

MALMGREN. Nord. Hafs-Ann., p. 394, pl. xxiii, fig. 60. 1865.

In looking over a collection of Annelids made at Eastport in 1869, we found a single specimen of this species. None were taken in 1880.

TRICHOBRANCHUS *Malmgren.*TRICHOBRANCHUS GLACIALIS *Malmgren.*

Our specimens probably belong to Malmgren's species; still they did not have the ocular spots described by him.

Branchiæ, in length, three times the width of the body. Anterior segments dark red; the rest of the body yellowish-white.

Rare; sandy mud, 6-12 fathoms.

TEREBELLIDES *Sars.*TEREBELLIDES STROEMI *Sars.*

SARS. Beskriv. og Jakttag., p. 48, pl. 13, f. 31 a-d. (*teste* Malmgren).

MALMGREN. Nord. Hafs-Ann., p. 396, pl. xx, fig. 48. 1865.

Very common; sand and mud, 10-30 fathoms.

Family SABELLIDÆ

SABELLA (*L.*) *Malmgren.*SABELLA SPITZBERGENSIS *Malmgren.*

MALMGREN. Nord. Hafs-Ann., p. 399, pl. xxix, fig. 93. 1865.

Not common; low water to 30 fathoms.

POTAMILLA *Malmgren.*POTAMILLA RENIFORMIS *Malmgren.*

Potamilla reniformis MALMGREN. Ann. Polych., p. 114, pl. xiii, fig. 77. 1867.

Common on rocky and shelly bottoms.

OTHONIA *Johnston.*OTHONIA FABRICII *Johnston.*

Fabricia stellaris BLAINVILLE. Dict. Sc. Natur., t. 57, p. 439 (*teste* Malmgren).

Othonia Fabricii JOHNSTON. Catal. British Museum, p. 274. 1865.

Amphicora Fabrica MALMGREN. Ann. Polych., p. 117. 1867.

Common; low water to 30 fathoms, mud.

MYXICOLA (*Koch*) *Malmgren.*MYXICOLA STEENSTRUPI *Kröyer.*

KRÖYER. Om Sabellerne, p. 35. 1856.

MALMGREN. Nords. Hafs-Ann., p. 409, pl. xxix, f. 90. 1865.

Rocks, low water to 30 fathoms.

Family SERPULIDÆ.

FILIGRANA *Oken.*FILIGRANA IMPLEXA *Berkley.*

BERKLEY. Zool. Journ., v, p. 427. 1832-1834 (*teste* Mörch).

Common; rocks and shells, 18-30 fathoms.

Several species of *Spirorbis* were collected and partially studied, but in some way they have all disappeared from the collection. The same is the case with *Vermilia serrula* Stimpson.

EXPLANATION OF PLATES.

PLATE I.

EULALIA BILINEATA n. sp.

- FIG. 1.—Head and anterior segments, $\times 35$.
2.—Transverse section; anterior view, $\times 35$.
3.—Middle foot, $\times 35$.

ETEONE TRILINEATA n. sp.

- FIG. 5.—Head and anterior segments, $\times 60$.
6.—Posterior segments, $\times 60$.
7.—Anterior feet, $\times 60$.
8.—Posterior foot, $\times 60$.

MYSTIDES VIRIDIS n. sp.

- FIG. 10.—Head and anterior segments (without setæ), $\times 115$.
11.—Transverse section, $\times 60$.
13.—Posterior segments, $\times 115$.

PODARKE ABERRANS n. sp.

- FIG. 14.—Foot of adult from below, $\times 125$.
15.—Posterior segments; adult, $\times 65$.
16.—Head and anterior segments; young, $\times 65$.
17.—Posterior segments; young, $\times 65$.
18.—Transverse section middle; young, $\times 65$.

GYPTIS VITTATA n. sp.

- FIG. 21.—Head and anterior segments, $\times 65$.
22.—Transverse section from behind, $\times 65$.

PLATE II.

EULALIA BILINEATA n. sp.

- FIG. 4.—Seta, $\times 500$.

ETEONE TRILINEATA n. sp.

- FIG. 9.—Seta, $\times 850$.

MYSTIDES VIRIDIS n. sp.

- FIG. 12.—Seta, $\times 850$.

PODARKE ABERRANS n. sp.

- FIG. 19.—Dorsal seta; young, $\times 850$.
20.—Ventral seta; young, $\times 850$.

GYPTIS VITTATA n. sp.

FIG. 23.—Ventral seta, $\times 850$.

STREPTOSYLLIS VARIANS n. sp.

FIG. 24.—Head and anterior segments, $\times 65$.

25.—Anterior foot, $\times 115$.

26.—Middle foot; female, $\times 115$.

27.—Middle foot; male, $\times 115$.

28.—Seta of anterior segments, $\times 850$.

29.—Seta showing the four terminal points of stem, $\times 850$.

30.—Seta showing ordinary length of appendix, $\times 850$.

31.—Simple seta, $\times 850$.

PÆDOPHYLAX BREVICORNIS n. sp.

FIG. 40.—Head and anterior segments, $\times 65$.

41.—Transverse section; middle segment, $\times 65$.

AUTOLYTUS SOLITARIUS n. sp.

FIG. 51.—Head and tentacular cirri δ , $\times 20$.

PLATE III.

STREPTOSYLLIS VARIANS n. sp.

FIG. 32.—Acicula, $\times 500$.

33.—Palpus, from below, $\times 130$.

34 *a-h*.—Moniliform dorsal cirri, $\times 130$.

SPHÆROSYLLIS LONGICAUDA n. sp.

FIG. 35.—Head and first two segments, $\times 130$.

36.—Posterior segments, $\times 130$.

37.—Middle segment, transverse section, $\times 130$.

38.—Upper compound seta, $\times 850$.

39.—Lower compound seta, $\times 850$.

PÆDOPHYLAX BREVICORNIS n. sp.

FIG. 42.—Lower compound seta, $\times 850$.

43.—Upper compound seta, $\times 850$.

44 and 45.—Simple setæ, $\times 850$.

PÆDOPHYLAX LONGICIRRIS n. sp.

FIG. 46.—Head and anterior segments, $\times 75$.

47.—Transverse section, middle of body, $\times 75$.

48.—Long compound seta, $\times 850$.

49.—Short compound seta, $\times 850$.

50.—Simple seta with terminal hook and spine, $\times 850$.

PLATE IV.

AUTOLYTUS SOLITARIUS n. sp.

FIG. 52.—Eighth foot dorsal view δ , $\times 75$.

53.—Eighth foot ventral view, δ , $\times 75$.

54.—Third foot dorsal view, δ , $\times 75$.

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LUMBRINEREIS ACICULARUM *n. sp.*

- FIG. 55.—Upper jaw pieces, magnified.
 56.—Lower jaw pieces, magnified.
 57.—Twelfth foot, $\times 20$.
 58.—Middle foot, $\times 20$.
 59.—Posterior segments, $\times 20$.

DRILONEREIS MAGNA *n. sp.*

- FIG. 60.—Foot, magnified.
 61.—Seta, magnified.
 62.—Upper jaw pieces, magnified.
 63.—Lower jaw pieces, magnified.

EPHESIA MINUTA *n. sp.*

- FIG. 64.—Anterior foot; dorsal view, $\times 150$.
 65.—Middle foot; ventral view, $\times 150$.
 66.—Anterior setæ, $\times 500$.

PLATE V.

ZORUS SARSI *n. g., n. sp.*

- FIG. 67.—Middle segment; transverse section, $\times 30$.

SIPHONOSTOMUM GRUBEI *n. sp.*

- FIG. 68.—Segment; transverse section, $\times 30$.
 69.—Short capillary seta, $\times 500$.
 70 and 71.—Compound uncinata setæ, $\times 500$.

BRADA GRANOSA *Stimpson.*

- FIG. 72.—Portion of transverse section showing rami and dorsal papillæ, $\times 30$.
 73.—Dorsal seta; outer half, $\times 150$.
 74 and 75.—Ventral setæ; outer half, $\times 150$.
 76.—Head of young specimen, enlarged.

PLATE VI.

ETHOCLES TYPICUS, *n. g., n. sp.*

- FIG. 77.—Transverse section one-half, second setigerous segment, $\times 40$.
 78.—Transverse section one-half, fourth setigerous segment, $\times 40$.
 79.—Transverse section one-half, fifth setigerous segment, $\times 40$.
 80.—Transverse section one-half, seventh setigerous segment, $\times 40$.
 81.—Transverse section one-half, eighth setigerous segment, $\times 40$.
 82.—Transverse section one-half, ninth setigerous segment, $\times 40$.
 83.—Foot and branchia, middle segment, $\times 40$.
 84.—Setæ, anterior, $\times 250$.
 85.—Setæ, after seventh segment, $\times 250$.

SPIONIDES CIRRATUS *n. g., n. sp.*

- FIG. 86.—Branchiated segment, $\times 30$.
 87.—Segment just back of the branchiated segment from above, $\times 30$.
 88.—Posterior segment (smaller specimen), $\times 120$.
 89.—Uncini, $\times 850$.

NAIDONEREIS QUADRICUSPIDA *Blainv*

- FIG. 90.—Forked seta from lower part of dorsal ramus, $\times 400$
 91.—Seta from anterior segment, lower ramus, $\times 400$.
 92.—Aciculæ, ventral ramus, $\times 400$.

PLATE VII.

ARICIDEA QUADRILOBATA *n. sp.*

- FIG. 93.—Head and anterior segments, $\times 40$.
 94.—Branchiated segments, $\times 40$.
 95.—Segment just back of branchiated segment, $\times 40$.
 96.—Segment from posterior third, $\times 40$.

ARICIDEA NOLANI *n. sp.*

- FIG. 97.—Head and anterior segments, $\times 70$.
 98.—Branchiated segment, $\times 70$.

THARYX ACUTUS *n. g., n. sp.*

- FIG. 99.—Head and anterior segments, $\times 70$.
 100.—Anterior segment, transverse section, $\times 40$.
 101.—Middle segment, transverse section, $\times 40$.
 102.—Segment from posterior third, $\times 40$.
 103.—Segment near posterior end, $\times 40$.

THARYX SIMILIS *n. sp.*

- FIG. 104.—Anterior segment, transverse section, $\times 40$.

PLATE VIII.

COSSURA LONGOCIRRATA *n. g., n. sp.*

- FIG. 105.—Head and anterior segments, with cirrus, $\times 70$.
 106.—Segment from anterior third, transverse section, $\times 70$.
 107.—Segment from posterior half, $\times 70$.

LEDON SEXOCULATA *n. g., n. sp.*

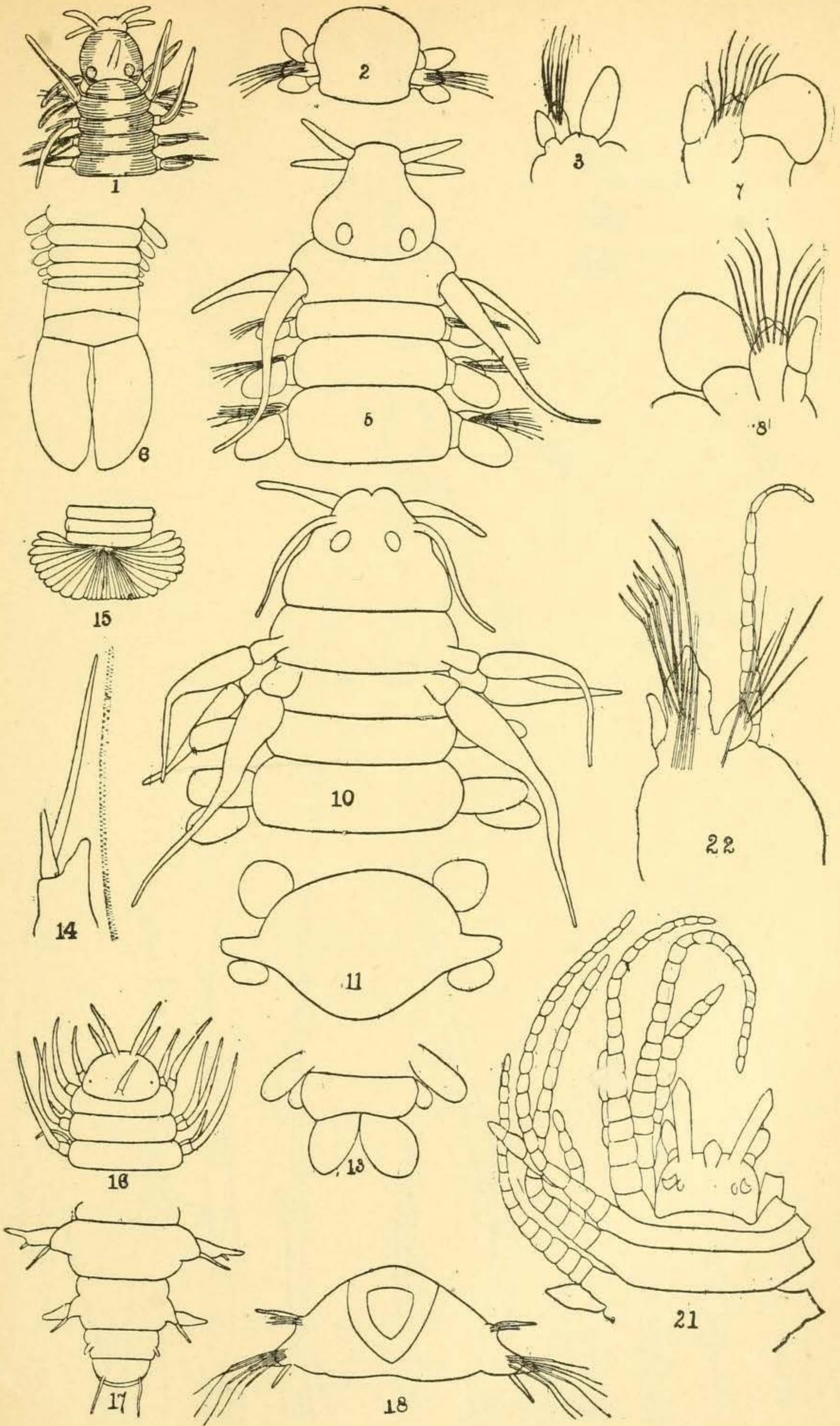
- FIG. 108.—Ventral setæ, $\times 150$.
 109.—Dorsal seta, $\times 150$.

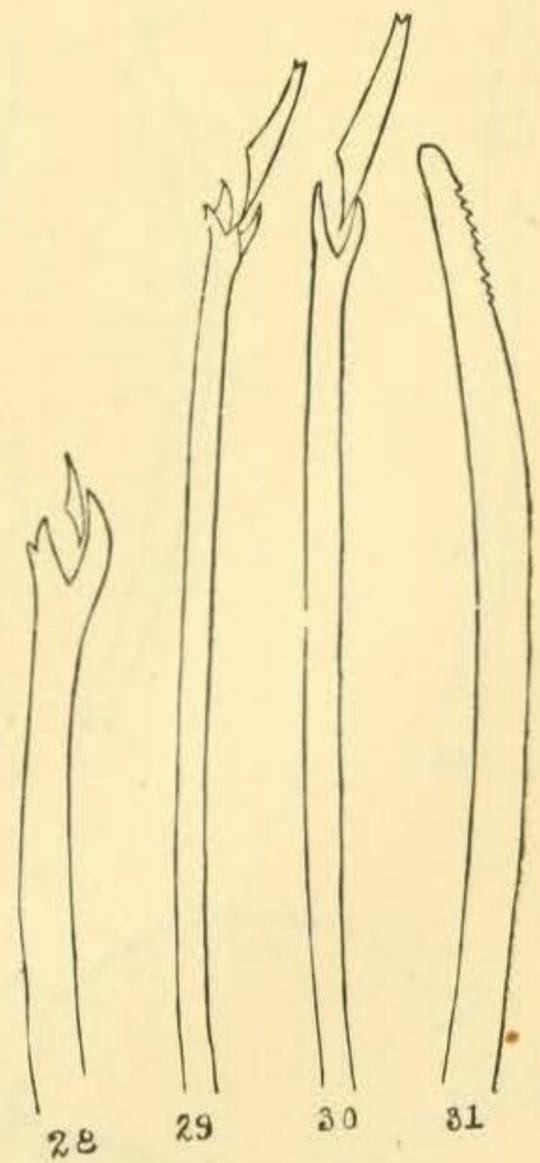
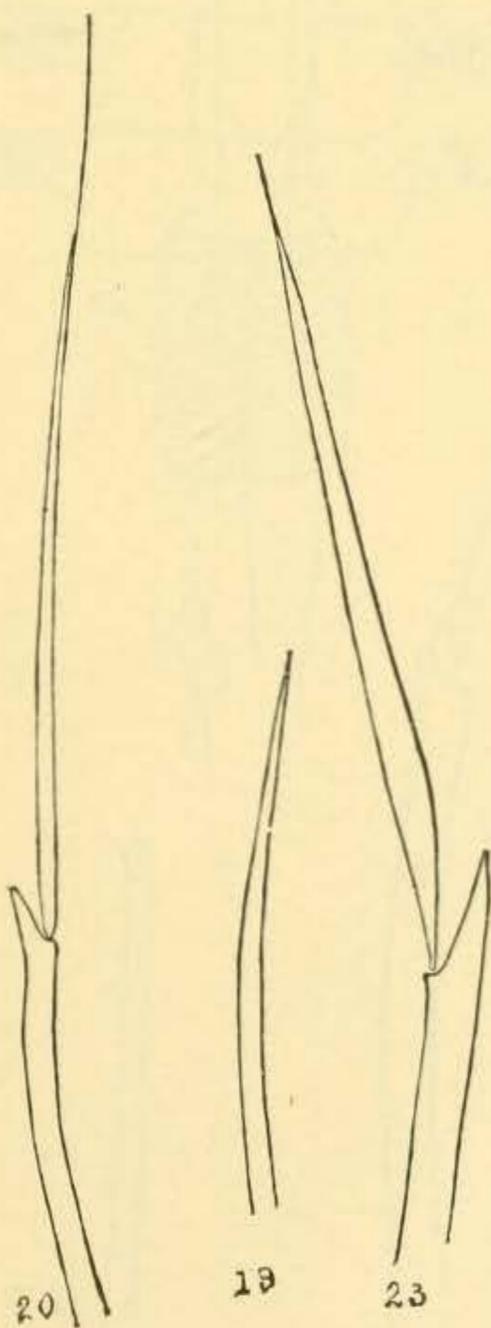
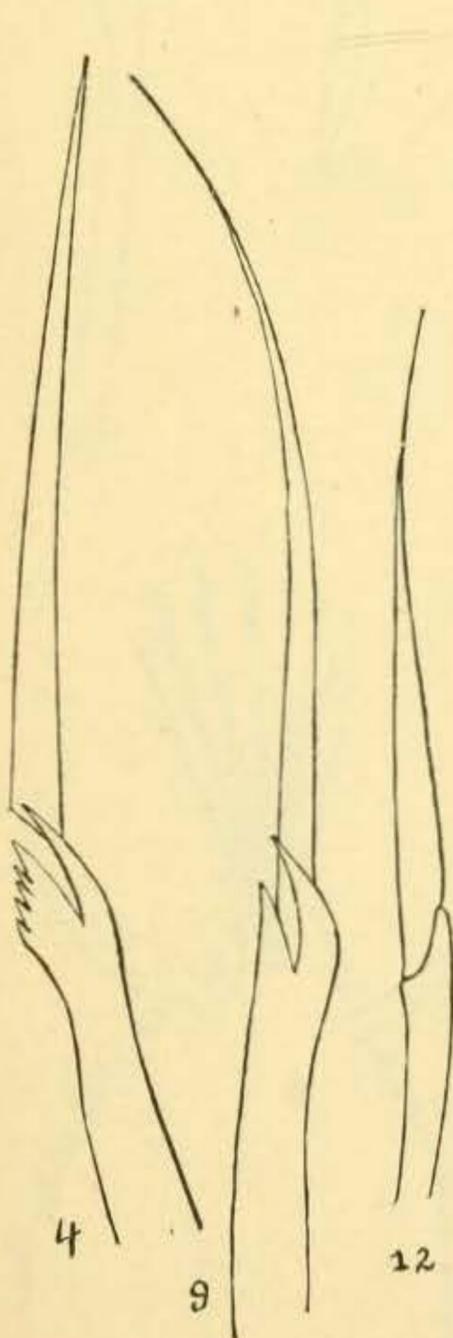
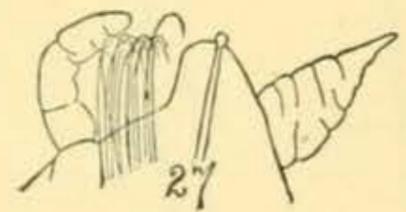
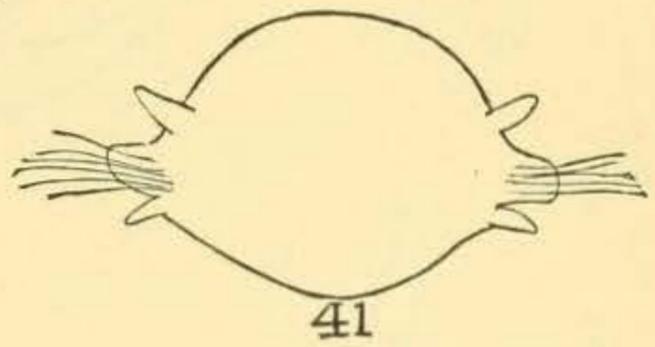
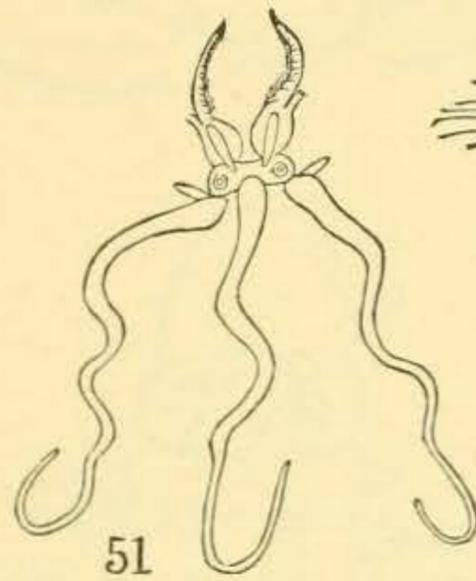
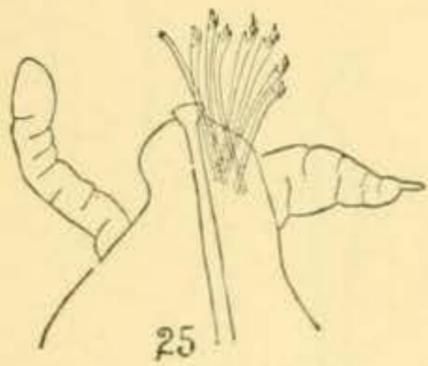
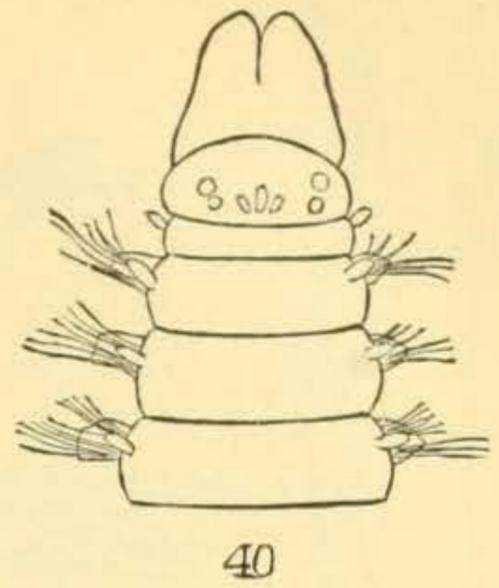
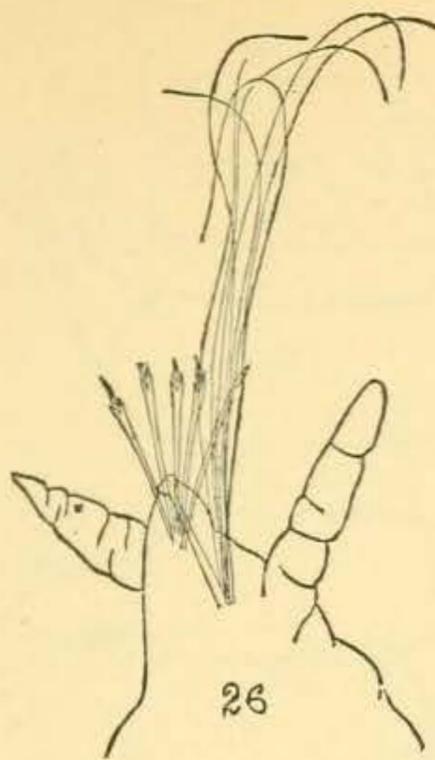
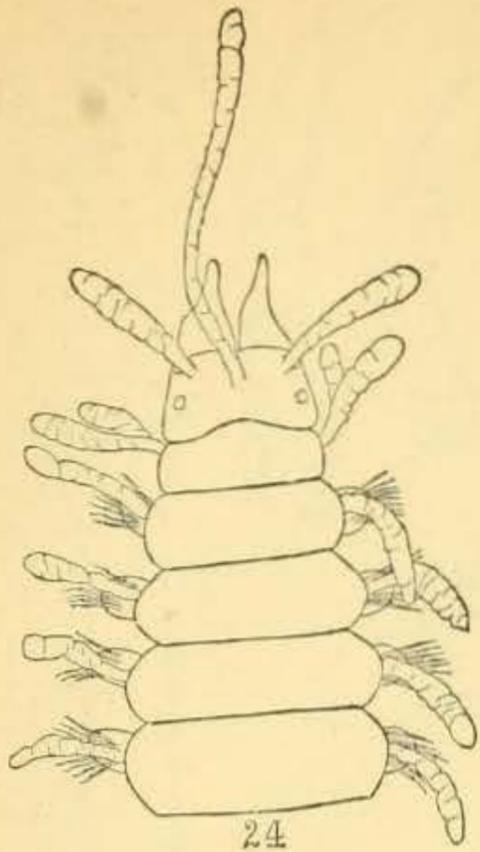
AMPHARETE CIRRATA *n. sp.*

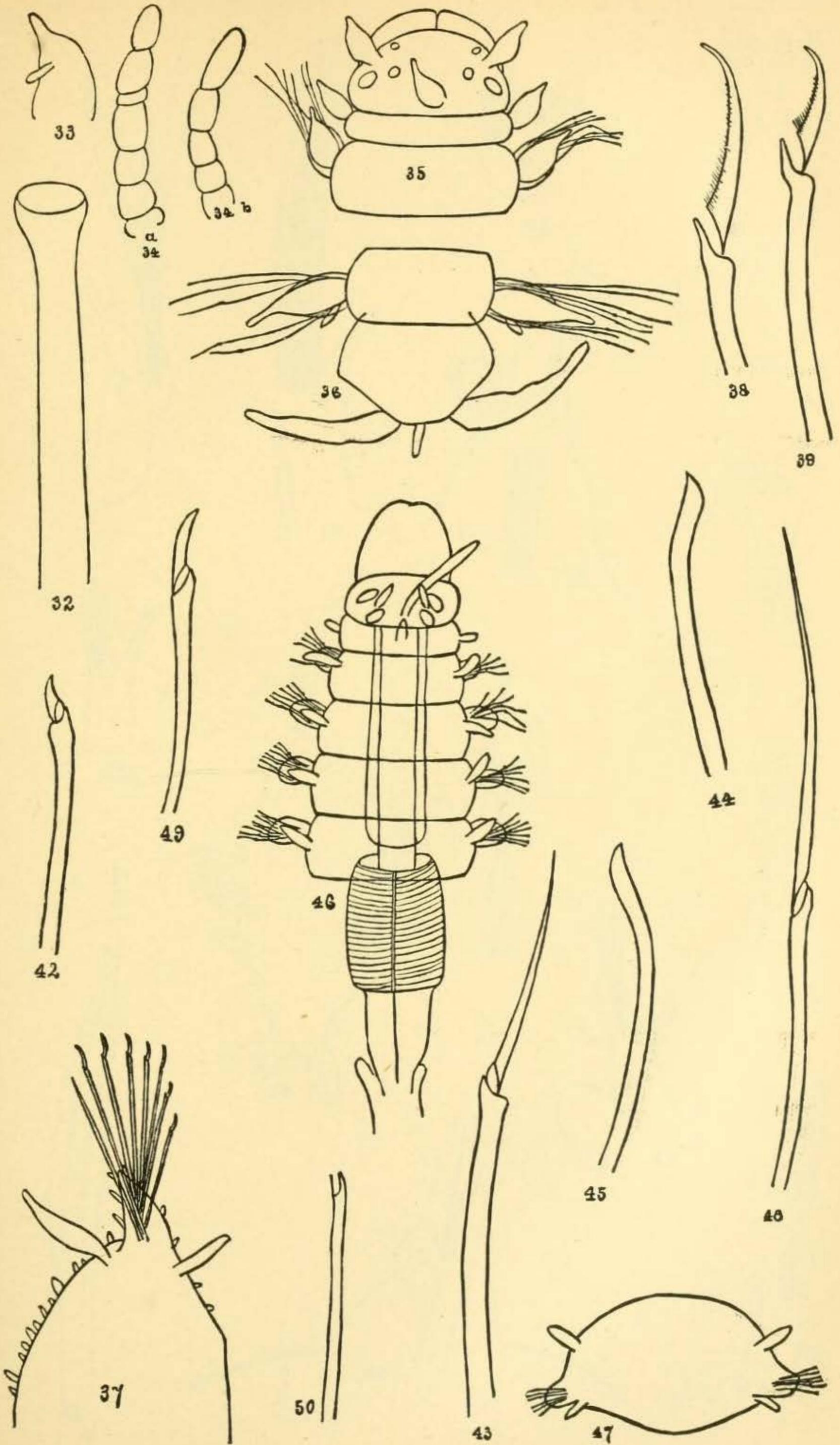
- FIG. 110.—Torus from 10th setigerous segment, seen obliquely from above, $\times 30$.
 111.—Torus from 16th setigerous segment, $\times 30$.
 112.—Torus from 20th setigerous segment, $\times 30$.

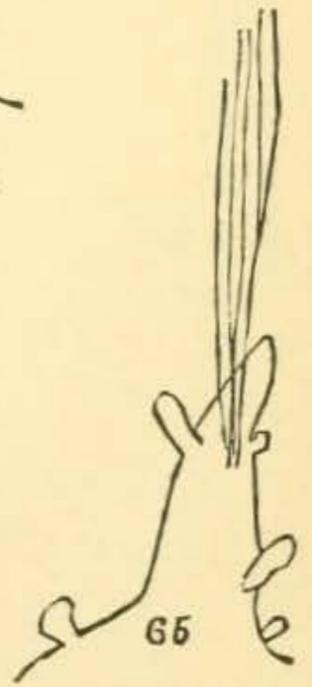
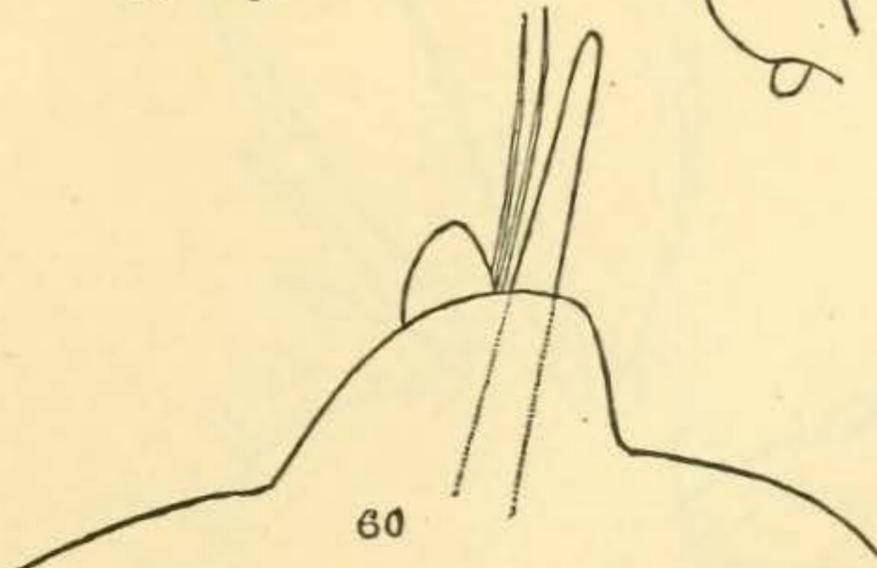
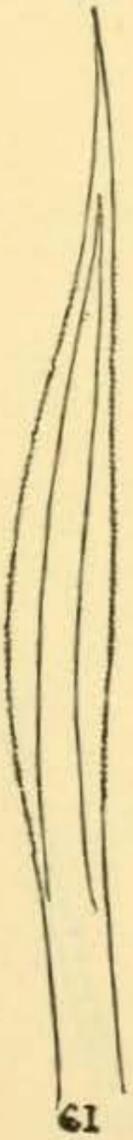
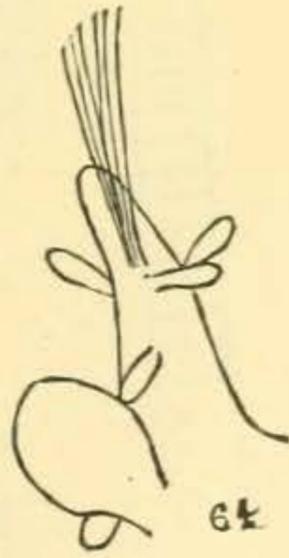
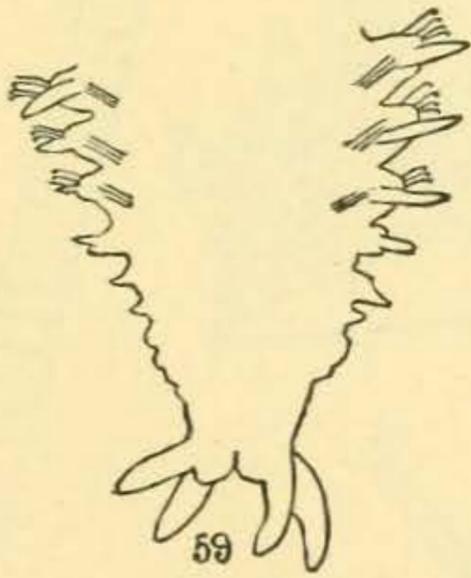
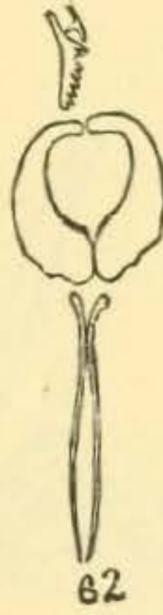
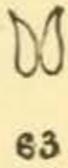
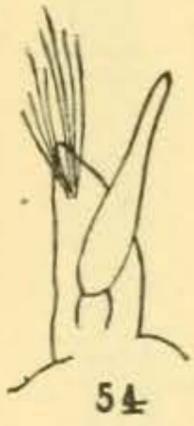
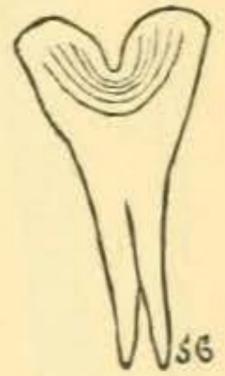
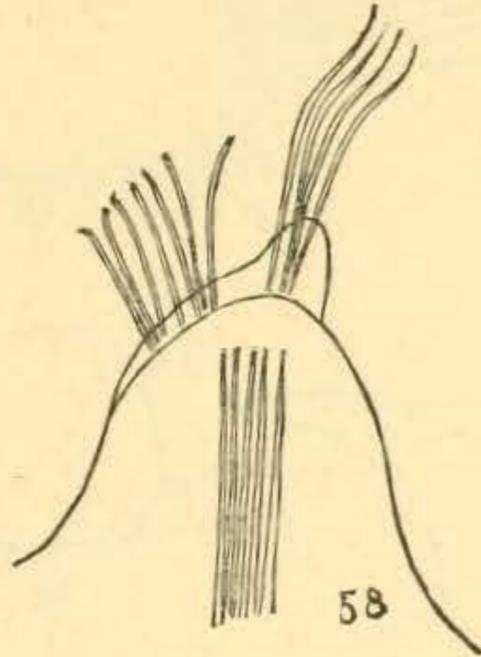
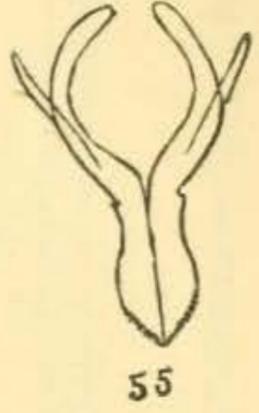
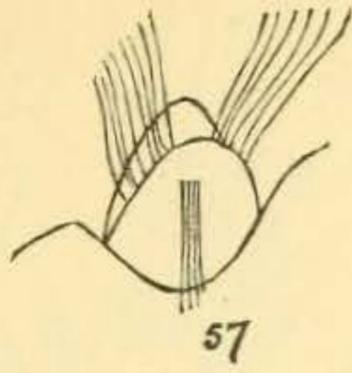
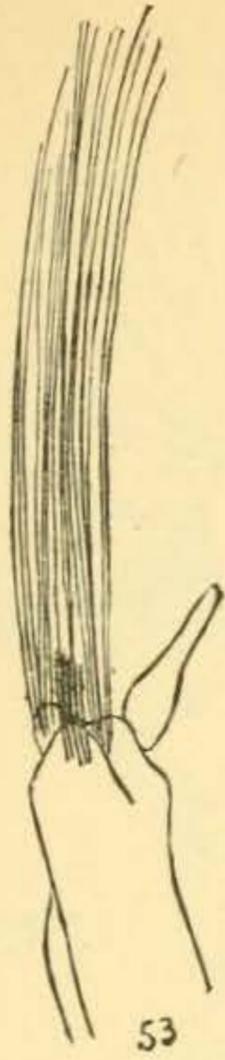
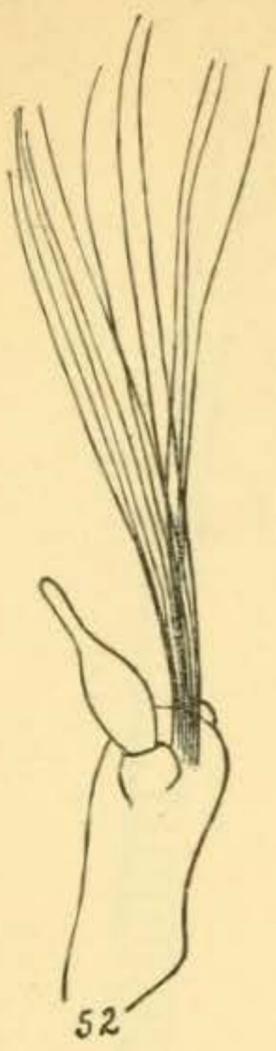
TAPHUS HEBES *n. g., n. sp.*

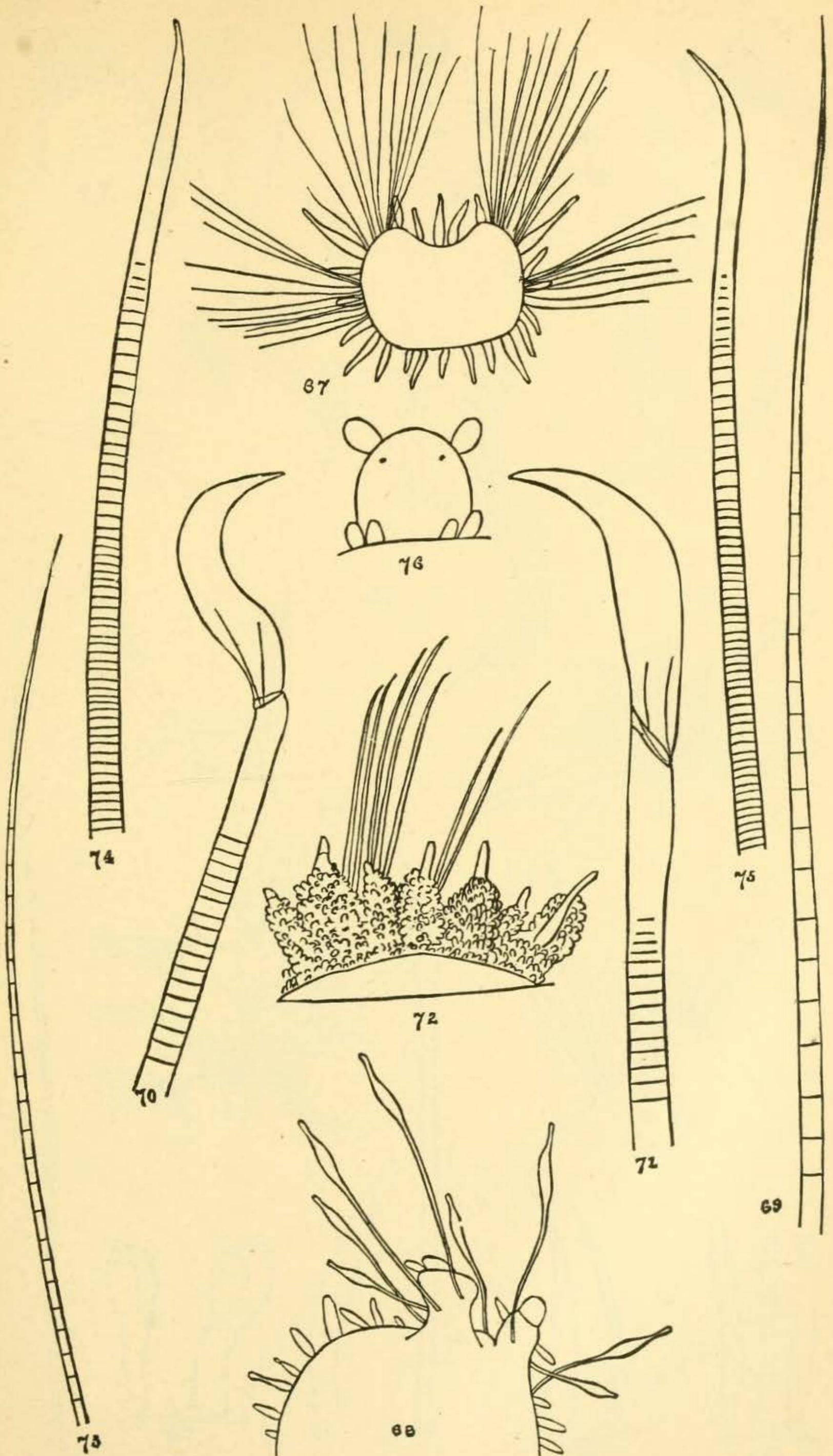
- FIG. 113.—Head and anterior segments, $\times 120$.
 114.—Head, lower surface showing palpi and peculiar lobes on anterior margin of first segment, $\times 120$.
 115.—Œsophagus and stomach with jaws, $\times 130$.
 116.—Ventral ramus, $\times 75$.
 117.—Dorsal seta, $\times 500$.
 118.—Ventral seta outer end, $\times 500$.

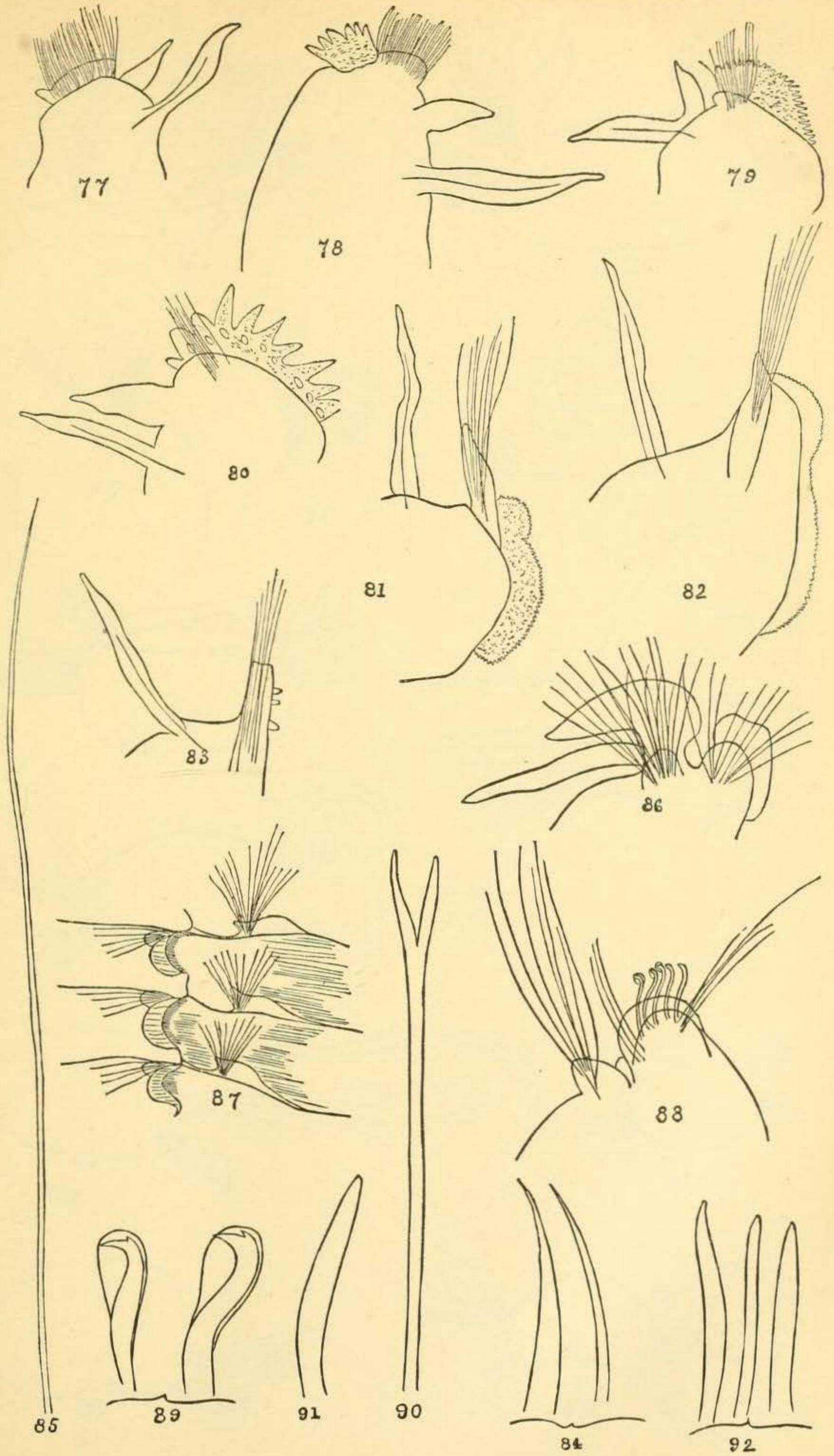


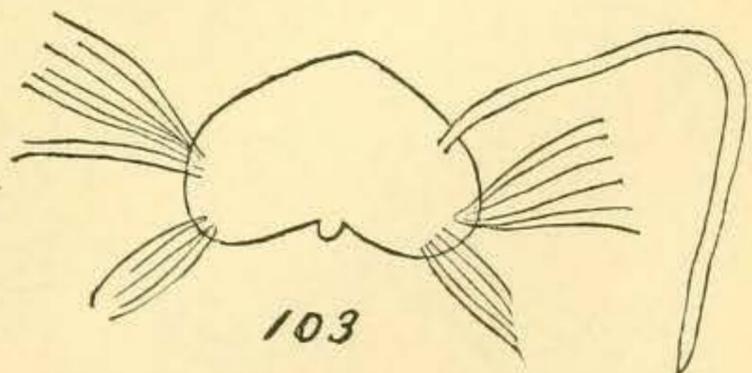
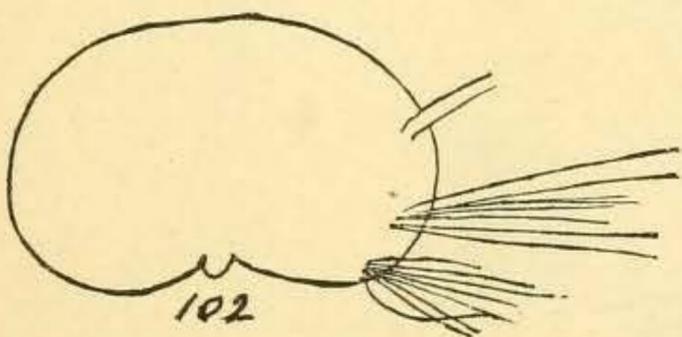
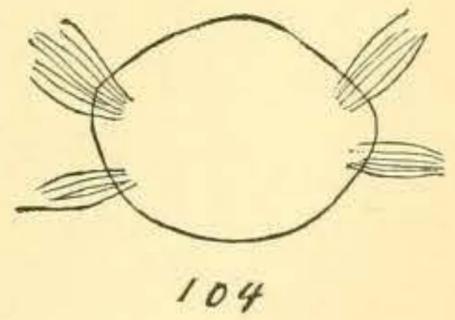
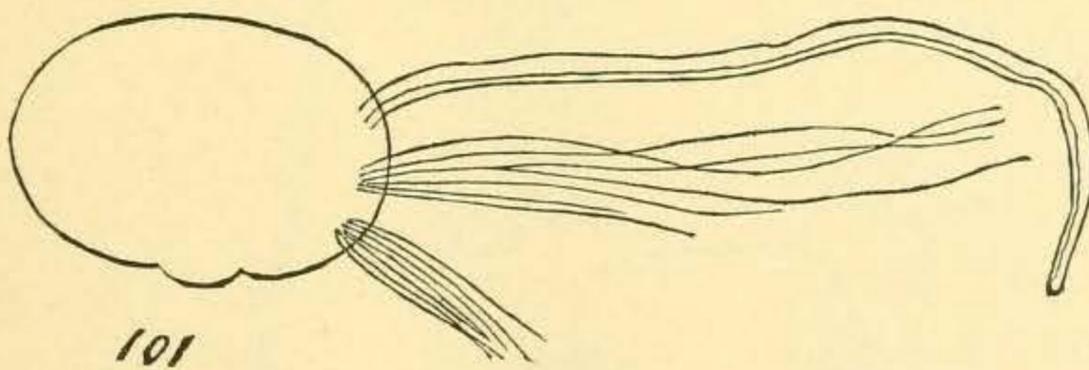
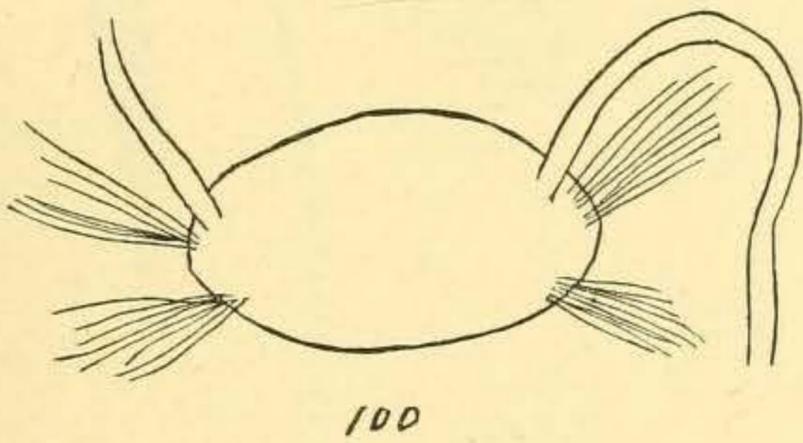
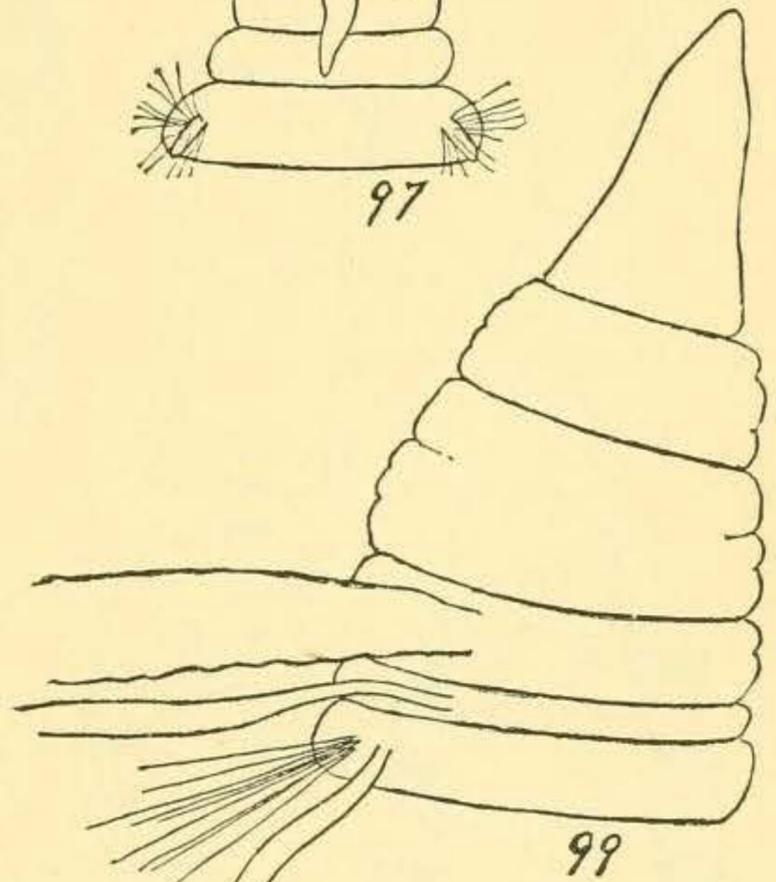
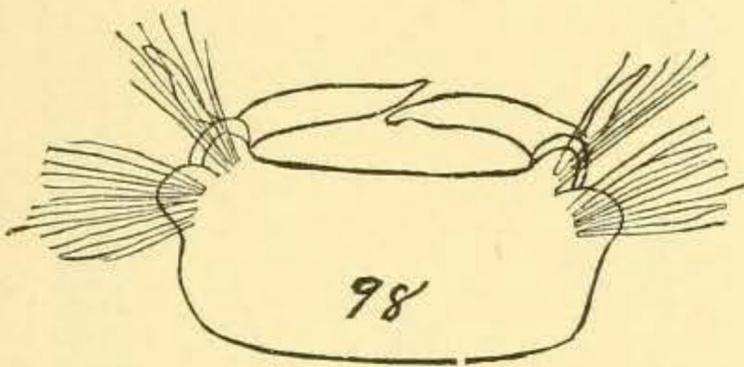
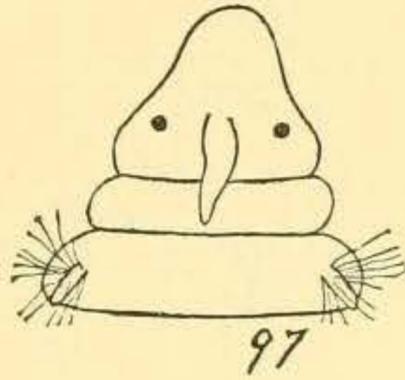
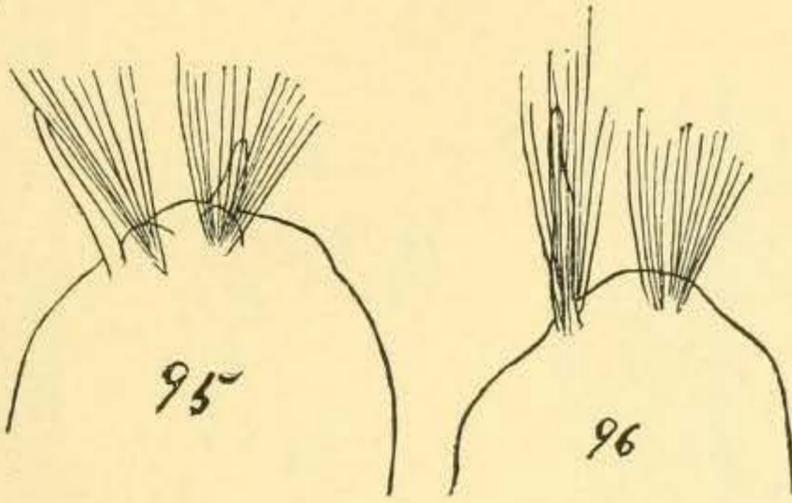
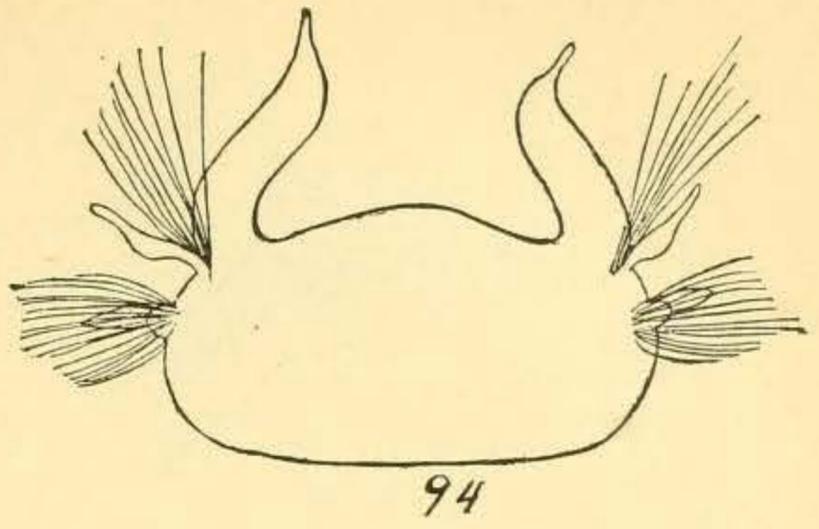
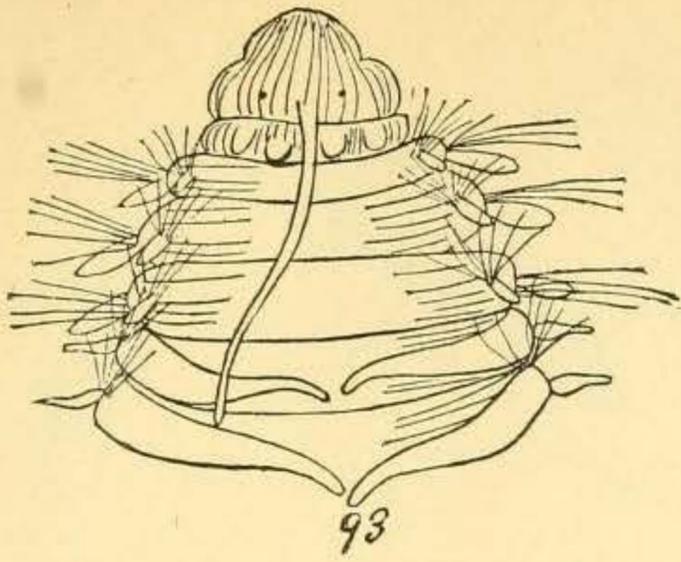


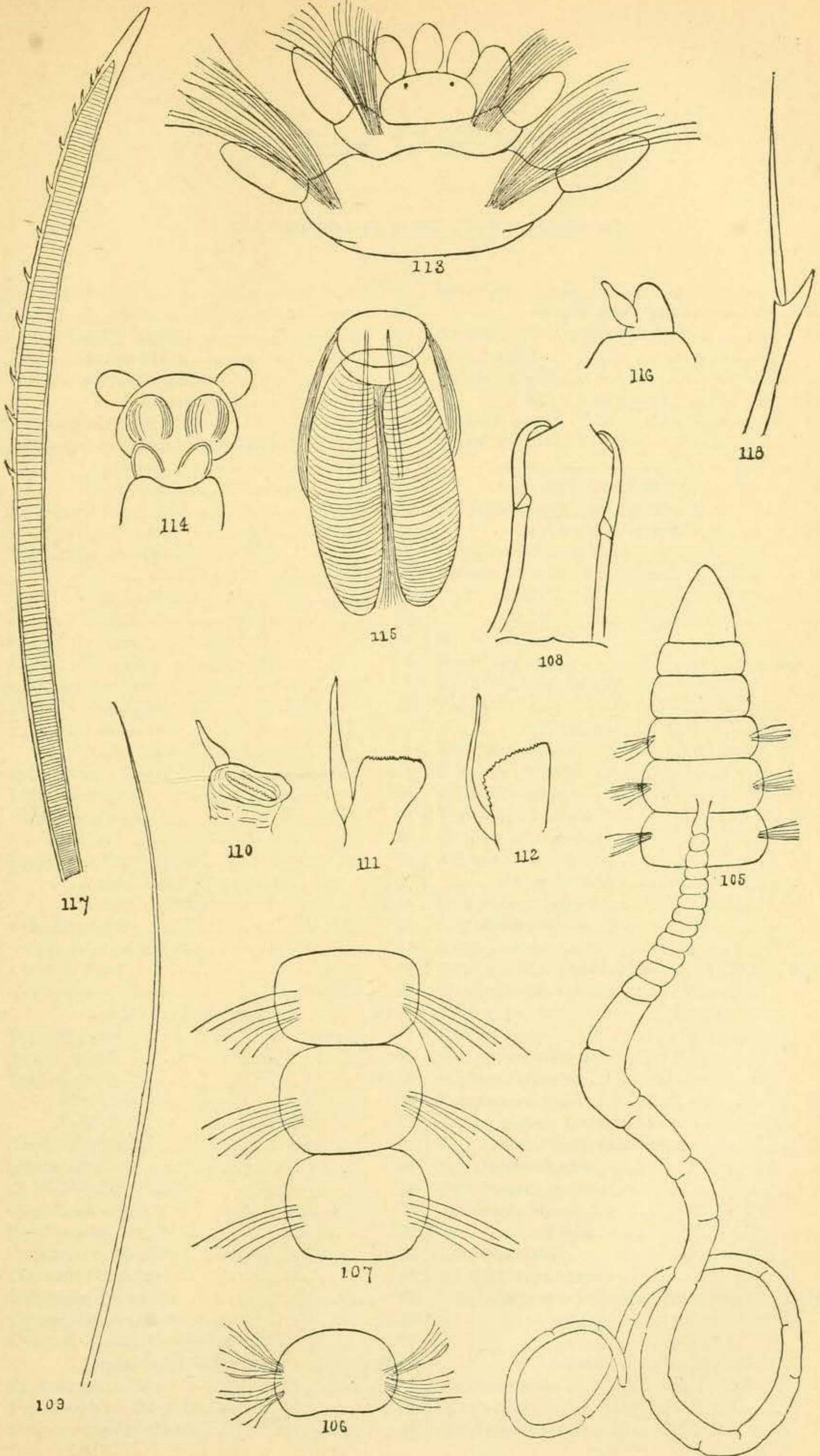












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