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A REVIEW OF THE TYPES OF POLYCHAETOUS ANNELIDS AT THE PEABODY MUSEUM OF NATURAL HISTORY, YALE UNIVERSITY

By Olga Hartman

Allan Hancock Foundation
University of Southern California

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A REVIEW OF THE TYPES OF POLYCHAETOUS ANNELIDS AT THE PEABODY MUSEUM OF NATURAL HISTORY, YALE UNIVERSITY

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The polychaetous annelids of the east coast of North America remain largely unknown except through many early original descriptions. Verrill's checklist (1879) enumerated almost 200 species; the same list later annotated by R. Rathbun [unpublished] at the U. S. National Museum, lists a total of 263 species from this area; other names have been added between the years 1880 and 1910. Valuable contributions to the annelid literature of eastern America were made largely by Verrill (1873 to 1901), Webster (1879 to 1887), Webster and Benedict (1884 to 1887), Andrews (1891 to 1894), Moore (1894 to 1909), Bush (1904 to 1910), and others. Much of the older literature has been brought together in Verrill's "New England Annelida" (1882) and Sumner's "Biological Survey of the Woods Hole Area" (1913). Through these various studies, about 300 species have been described, or reported, from eastern North America; many, however, remain poorly known. Also, since 1900 the bulk of scientific literature on the polychaetous annelids has increased many fold; generic and specific refinements have been necessitated; many new species have been described from all parts of the world, and the affinities of faunas of widely scattered areas have been made the subject of intensive research. It has been greatly desired, therefore, to reidentify as many as possible of these older species, and to establish their affinities with those of other areas. In many instances this is now difficult without access to type specimens or authentically labelled materials. Most of such collections, if still extant, are believed to be stored in depositories in eastern America, largely in the National collections at Washington, D. C., the Peabody Museum of Natural History at New Haven, and the Academy of Natural Sciences at Philadelphia.

One-hundred-eighty-five species of polychaetous annelids were originally described or named by Professor A. E. Verrill, during his
active zoological career, chiefly through his studies of New England faunas. The magnitude of his contributions will perhaps never be fully realized, for he covered not only a vast field of scientific research, including investigations on many phyla of animals, but labored at a time when monographs and manuals were not yet available. It is to his great credit that much of what he did shows a high regard for accurate discrimination and delineation of characters, a keen sense of perception of speciation, and a remarkable insight in the importance of significant parts. It is to be expected, however, because of the enormous increment of scientific literature during the past half century, and the increase of our knowledge on the distribution and affinities of faunas, that a reexamination of much of the earlier work would be necessitated. Many of the polychaetous annelids from the deeper waters of eastern America have been found to be conspecific with those of western and southern Europe, and have already been so reported. Conversely, it has been found that European species, sometimes reported from eastern America, have turned out to be quite distinct; this is especially true of forms that are more or less restricted to intertidal zones. In some instances, also, the real identity may not yet have been recognized. After a preliminary examination of many labelled collections (not types) from eastern America, it seems not unlikely that a considerable number of unnamed or undescribed species are yet to be expected. This report does not concern itself with such records, but the student of distribution might easily be led astray if some published accounts of occurrence are indiscriminately used. It would be both profitable and desirable to study the great collections that are to be found in our eastern museums; these materials greatly exceed those that have been studied and identified.

The Peabody Museum of Natural History at New Haven has the largest collection of species erected by Verrill known to exist, and almost all of the materials on which Bush's studies (1904 to 1910) were based. Many of these collections are stored in alcohol, in favorable condition for examination. Some, however, have been mounted on slides and are now more or less unsatisfactory. Such are most of the SYLLIDAE, from Bermuda, described by Verrill (1900), and the SERPULIDAE, by Bush (1904 to 1910). Many of the former, usually unstained, whole mounts, in balsam, are now dried out and disintegrated; in some only a few setal characters are to be distinguished. The serpulids, which had been mounted unstained in glycerin
jelly, are now almost worthless and in some instances totally disintegrated. It has been deemed preferable to await additional materials from the type localities rather than attempt to recondition these fragmentary mounts. No attempt was made, during the course of this investigation, to remount these slides.

It was anticipated that approximately 150 types of polychaetous annelids might have been deposited in the Peabody Museum. Many have been located, but some are in very unsatisfactory condition. Only a few are designated types, hence it is not known that some specimens now selected have actually been used in making the original descriptions. Some of Verrill’s species were described from living specimens, and from field notes; it is not known that such individuals were always preserved. Most of the earlier studies (1873 to 1885) were based on collections from New England, from the Gulf of Maine to Long Island Sound and south to New Jersey. These appeared often in short contributions or footnotes, frequently without illustrations, or with additional descriptions and figures appearing in subsequent publications. A compilation of papers dealing with New England Annelida was begun by Verrill, in 1882, when part I was issued; part II was never finished or issued, although reference to plates that were to have appeared (Trans. Conn. Acad. Arts Sci., 1882, vol. 4, pls. 13 to 27) are actually cited in some earlier (Amer. J. Sci., 1882, ser. 3, vol. 24, and others) publications. Later (1900 and 1901) the results of the Bermudan expeditions were published. A more recent compilation of some of Verrill’s species is given in Sumner’s Report (1913), but it has still remained difficult to trace and reidentify the great numbers of species described and reported. A thorough search in the collections of the museum has brought to light many collections which probably formed the bases of many of these reports. The more recent collections are well labelled, with printed name cards and clearly discernible locality data; the earlier collections, however, on which many of the descriptions were probably based, are frequently poorly labelled, with fragmentary notes and only partial collecting data. Wherever possible, only specimens labelled in Verrill’s handwriting have been used for this report, and only those predating the original account.

An attempt has been made to include all of the names of polychaetous annelids erected by Verrill and Bush. Although this list is considerable, the references are so widely scattered that it has been con-
sidered worth while to give them here, even though some of the names may ultimately need to be dropped from the literature. Verrill erected comparatively few genera and subgenera; 31 bear his name, of which 16 have been referred to other designations, either because they were found to be preoccupied or identical with others. A list of these, with the date of their erection, and synonymy, if any, is given on pages 18-19. The number of species newly described or named by Verrill totals 184 (see pages 5-15). One-hundred-eleven have labelled specimens at the Peabody Museum, 40 have their type specimens deposited in the National collections at Washington, D. C., and 34 have not been accounted for; the data for these results are summarized on pages 5-15.

Except for two species, Chrysopetalum elegans and Sthenelais setosa, the studies by Bush (1904 to 1910) were limited to the families SABELLIDAE and SERPULIDAE. In these groups, 59 new species or new names and 19 new genera were erected. The validity of a considerable number of both has been questioned (Johansson, 1925, 1927; Fauvel, 1927, and others), and the status of some others remains doubtful. Of the 19 genera, only five (or perhaps seven) are retainable; details are given on pages 76-87. The species that had been newly described originated largely from areas of the northeast Pacific, others from eastern North America, and a few are extra-American. All save four have been accounted for in the collections of the Peabody Museum. Those remaining may be in the Philadelphia Academy. Only 18 species appear to be definitely valid; 14 are questionable (including ten species in the genus Spirorbis for which the collections are far too meagre to allow satisfactory conclusions), and 26 are believed to be identical with other species. The details of these conclusions are given on pages 91-93.

The author is deeply indebted to Dr. Stanley C. Ball, of the Peabody Museum of Natural History at New Haven, for having made available all of the collections of polychaetous annelids in the Museum, for having arranged excellent research facilities with laboratory space, for having provided the aid of a capable assistant in cataloging the collections, and other fine facilities; to Professor Wesley R. Coe for many helpful suggestions in the interpretation and solution of difficulties that arose during the course of the study, and for the gift of much useful literature; to the American Association of University Women for a financial grant which has made these studies possible.

The following lists, alphabetically, the species or new names erected
by Verrill. Those for which types or labelled specimens are deposited in the Peabody Museum of Natural History are given Museum catalog numbers (preceded by PMNH); arabic numerals refer to jar numbers of alcoholic collections, letters refer to slide collections. Those species for which types are known to be deposited in the National collections at Washington, D. C., are followed by the letters USNM; those for which no authentically labelled specimens have been found are listed as "type not found." For those discussed in this report, the herein accepted name is given in the middle column, and page citation in the last. Only reference to the literature is given if the type has not been found, or if there has been a revision. The order of listing is according to the name as it appeared in the original description.

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<td>Antinoë angusta.</td>
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Arabella opalina. USNM.
Arniella filiformis. Type not found.  

Aricia ornata. PMNH 24–3.  
Aricia setosa. PMNH 24–4.  

Autolytus emertoni.  
Autolytus longigula. Type not found. 
Verrill, 1881, Trans. Conn. Acad. Arts Sci., vol. 4, pl. 12, figs. 3–3b. Newport, Rhode Island. [Figures only.]

Autolytus mirabilis. PMNH 120–8, 9.  
Autolytus ornatus. PMNH 120–7.  

Autolytus (Procercæa) simplex. PMNH P–17.  
Verrill, 1900, Trans. Conn. Acad. Arts Sci., vol. 10, pp. 630–631. Bermuda. [The only specimen found is on a slide labelled: “Haplosyllis cephalata. Procercæa simplex TYPE. Bermuda.” There are about twelve small mounted specimens; all but one are of Haplosyllis; they are in a very poor state of preservation. Augener (1922, Sitzber. Ges. nat. Freunde, Berlin, p. 44) pointed out that Verrill’s name was preoccupied by Ehlers and renamed the former A. pseudosimplex.]  

Autolytus varians.  

Brada setosa. USNM.  
Branchiosyllis lamellifera. PMNH 0–5, 6.  
Castalia cincinnata. Type not found.

Ceratocephale websteri. PMNH 124–9.  
Chaetobranchus sanguineus. PMNH 126–6 to 8.  
Cirratulus tenuis. USNM.  
Cirratulus (Audouinia) websteri.  
Cirratulus grandis.  
Cirrhinereis phosphorea. PMNH 24–11.  
Cistenides gouldii. PMNH 127–8.  

Verrill, 1900, Trans. Conn. Acad. Arts Sci., vol. 10, pp. 658–659. [The single collection lacks an anterior end. Uncini have a stout fang and five series of teeth at the distal end. Verrill described two preanal, achaetous segments, and a narrow collar on both fourth and fifth segments.]  

Desmosyllis longisetosa. PMNH M–12.  
Hartman: Polychaetous Annelids

Dinophilus pygmaeus. Type not found. Species inquir.

Dinophilus simplex. Type not found. [Referred to Turbellaria.]

Enipo gracilis. PMNH 3-6. Polymoe gracilis. p. 26
Eunea gracilis. USNM.
Euclymene coronata. PMNH 127-4. Euclymene coronata. p. 70
Eulalia annulata. Type not found.

Euchone elegans. USNM.
Euclymene coronata. PMNH 127-4. Euclymene coronata. p. 70
Eulalia annulata. Type not found.

Eulalia gracilis. PMNH F-2 and 3. Hypoeulalia bilineata. p. 35
Eulalia granulosa. PMNH 120-3. Eumida, sp. inquir. p. 37
Eulalia megalops. Type not found.

Eulalia pistacia. PMNH 120-4. Eumida sanguinea. p. 36
Eumidia americana. p. 36
Eumidia papillosa. PMNH 120-16. Eulalia viridis. p. 37
Eumidia virida. USNM.

Eunoa spinulosa. USNM. (a specimen at PMNH).

Eupolymnia (Polymniella) aurantiaca. PMNH 126-12. Polymniella aurantiaca. p. 74
Eusyllis (Synsyllis) longicularis. PMNH M-10. Synsyllis longicularis. p. 48

[The single specimen on the slide, PMNH M-15, is in very poor condition.]

Eusyllis phosphorea. PMNH E-17.


*Pterosyllis cincinnata* Webster & Benedict, 1887, Rep. USFC, Washington, vol. for 1885, p. 719. Eastport, Maine, in 20-30 fms. *Amblyosyllis cincinnata* Verrill, 1900, Trans. Conn. Acad. Arts Sci., vol. 10, p. 633. [This is known only through an original figure, in which the prostomium is shown without nuchal flaps, and with three pairs of minute eye spots anterior to a larger posterior pair and with smooth cirri; later (1900, p. 633) it was said to have six eyes and very long moniliform cirri. The specimens on the slides PMNH M-1 and 2 are too poor for comment.]

*Grubea websteri*. Type not found.


*Grubeosyllis nitidula*. PMNN O-1. Verrill, 1900, Trans. Conn. Acad. Arts Sci., vol. 10, pp. 628-629. Bermuda. [The slide, PMNH O-1, is in very poor condition; the composite setae have a falcigerous, bifid tip.]


*Grymacea spiralis*. PMNH 126-5; also at USNM. *Streblosoma spiralis.*

*Haplosyllis cephalata*. PMNH F-12 and 13. *Haplosyllis spongicola.* p. 45

*Haplosyllis palpata*. Type not found.


Verrill, 1900, Trans. Conn. Acad. Arts Sci., vol. 10, pp. 637-638. Flatts Inlet, Bermuda, at low tide. [The single mounted specimen, PMNH C-7, is dried out, worthless for study.]

*Hyalinoecia artifex*. USNM.

*Laetmatonice armata*. USNM.

*Leanira robusta*. USNM.


*Leodice concinna*. Type not found.

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Leodice elegans. PMNH 60-1.  


Leodice margaritacea. PMNH C-17.  


Leodice polybranchia. PMNH 60-7.  


Leodice tenuicirrata. Type not found.


Leodice unifrons. PMNH 60-4.  


[The type specimen, PMNH 60-4, is dried; it was probably an immature individual.]

Lepidonotus sublevis. PMNH 3-5.  

Lepraea abyssicola. Type not found.


[The citation, Trans. Conn. Acad. Arts Sci., vol. 4, pl. 20, fig. 3, and pl. 27, fig. 2, here mentioned, was never published.]

Lepraea rubra. USNM.

Loimia bermudensis. PMNH 126-11.  


Lumbriconereis obtusa. see Lumbrineris hebes.


Lumbrineris nasuta. PMNH C-8.  


[The slide, PMNH C-8, labelled type, has cross sections of a median region; little can be said of them save that they are provided with simple hooded hooks.]
Lysidice americana. Type not found.

Lysidice bilobata. PMNH 60-8.

Maldane filifera. PMNH D-23.


[The slide, PMNH D-23, bears the label: "Maldane filifera V. Spiophanes. Cape Cod Bay. 16–20 f. USFC 1879." The cephalic plaque is greatly depressed under the cover slip; some of the setae in a median region are greatly elongated, as typical of Petaloproctus spp.]

Marphysa regalis. PMNH 60-9 and 10. Marphysa regalis. p. 52
Nematomereis hebes. PMNH 60-13.
[The specimen, PMNH 60-13, labelled type, bears the label: "Nematonereis hebes. Verr. No. 1095. TYPE." In the records of the Museum, no. 1095 is Fort Macon, North Carolina, not Bermuda. It is believed to be identical with N. unicornis (Grube).]

Neottia spectabilis. USNM.
Nephthys cirrata. USNM.

Nereis alacris. Type not found; perhaps Platynereis dumerilii Audouin & Edwards.

[The single slide, PMNH D-13, is of a parapodium that agrees well with that of Platynereis magalhaensis (Kinberg).]

Nereis megalops. USNM.

Nerine agilis. PMNH 24-5. Nerine agilis. p. 62
Nicolea modesta. Type not found.
[A slide, PMNH 126-9, bears the label: "No. 1074. The Reach. May 1, 1901, A. E. Verrill. Bermudas." There is only a tiny, probably immature specimen; this label postdates that of the first description.]

Nicolea simplex. Type not found. [Nicolea zostericola] p. 76

Nicomachus diapar. USNM.
Nothria opalina. USNM.
Notomastus filiformis. [Questionable.] p. 70
Notomastus gracilis. Type not found.

Notomastus luridus. PMNH 24-14. Notomastus luridus. p. 68

Notophyllum americanum. Type not found.

Odontosyllis brachydonta. PMNH M-13.
[The mounted specimen, PMNH M-13, is unsatisfactory for reexamination.]

Odontosyllis enopla PMNH M-11.

Ophelia denticulata. USNM.

Ophioglycera gigantea. USNM.

Opisthosyllis nuchalis. PMNH P-18 and 20.


Pectinaria regalis. PMNH 127-6. Cistenides regalis p. 71

Pedophylax longiceps. Type not found.

Phyllodoce bermudae. PMNH F-8. Genetilis bermudae. p. 38

Phyllodoce catenula. USNM.

Phyllodoce gracilis. PMNH 120-6. Anaitides gracilis. p. 38

Podarka obscura. USNM.

Polycirrus corallicolus. Type not found.

Polycirrus luminosus. PMNH 126-4. Polycirrus purpureus.
P. purpureus, Augener, 1925, Publ. Copenhagen Mus., no. 39, p. 37. (With synonymy.)

Polycirrus pennulifera. Type not found.

Polycirrus phosphoreus. USNM.

Polydora concharum. PMNH 24-8. Polydora concharum. p. 64

Polydora gracilis. Type not found.

*Polydora littorea.* Type not found.
Verrill, 1881, Trans. Conn. Acad. Arts Sci., vol. 4, p. 301. [This was a new name for *P. ciliatum*? Verrill, for which no specimens have been found; also, the illustration quoted, pl. 18, fig. 10, was never published. Mesnil (1896, Bull. Sci. Fr. Belgique, vol. 29, p. 220) questionably refers this to *P. ciliata* (Johnston).]

*Polydora tubifex.* Type not found.

*Polynoe acanellae.* PMNH 3-2 and 3. *Polynoe aurantiaca.* PMNH 3-1.

*Praxilla zonalis* Verrill. PMNH 127-1 and 2. *Euclymene zonalis.*

*Praxillura ornata.* USNM.

*Procerea gracilis.* PMNH M-5 and 6. *Autolytus gracilis.*
[The collections include two slides, PMNH M-5 and 6, both dried out and disintegrated; M-5 is labelled: “female. Eastport, 1872”; M-6: “Off Race Pt. July 1874”]

*Procerea ornata.* PMNH B-13. *Autolytus ornatus.* p. 43


*Rhodine attenuata.* USNM.

*Sabella microphthalmia.* USNM (but see p. 80).

*Sabella picta.* USNM.

*Sabella vulgaris.* PMNH 127-5; USNM.
Verrill, 1873, Rep. USFC, Washington, vol. for 1871/72, p. 611, pl. 17, figs. 88, 88a. New Jersey and Connecticut. [This species is better represented in the National collections at Washington. It is discussed in another report.]

*Samythella elongata.* USNM.


**Scionopsis palmata.** PMNH 126-2 and 3. *Pista palmata.*


**Scolecolepis tenus.** Type not found.


**Scolecolepis viridis.** PMNH 24-7. *Scolelepides viridis.*


Sumner, 1913, Bull. USFC, Washington, vol. 31, p. 624. Mass. [This appears to be a *Scolecolepid*es Ehlers, since branchiae are absent from a long posterior portion.]

**Serpula dianthus.** PMNH 128-1 and 2. *Eupomatus dianthus.*


**Sigalion arenicola.** PMNH 3-8. *Sigalion arenicola.* p. 34

**Spinther citrinus** (labelled by Verrill).

**Spio tenuicauda.** PMNH 24-16. *Spio setosa.* p. 63

**Spio robusta.** USNM.

**Spio setosa.** USNM.

**Spiophaenes tenuis.** USNM.

**Spirobranchus stimpsonii.** PMNH 125-14 to 16. ? *S. borealis.* p. 92

**Spirobis validis.** PMNH 125-18 and 19. *Spirobis validis.*


Bush, 1904, Harriman Alaska Exped., vol. 12, p. 249, pl. 27, figs. 5–8, 10, 32, pl. 44, figs. 11–14.

**Staurocephalus pallidus.** PMNH 124-7 and 8 *Dorvillea rudolphii.* p. 56

**Stauromesoneis erythrosp.** PMNH 0-20. *Dorvillea melanops.* p. 57

**Stauromesoneis melanoops.** PMNH 0-20 and 22. *Dorvillea melanops.* p. 57

**Stauromesoneis polydonta.** PMNH 0-21. *Dorvillea polydonta.* p. 57

**Stephanosyllis picta.** Type not found. *Aulolytus alexandri.*

Verrill, 1874, Proc. Amer. Ass. Adv. Sci., vol. 22, p. 361, pl. 4, fig. 1. Casco Bay, Maine. [Fig. only, no text.]

**Stephanosyllis ornata** Verrill, 1874, Amer. J. Sci. New Haven, ser. 3, vol. 7, p. 132. (Name proposed to replace *S. picta* Verrill, preoccupied.)


Sthenelais emertoni. PMNH 3-11.

Sthenelais gracilis. Type not found (but see p. 28).


Sthenelais picta. PMNH 3-13.

Sthenelais gracilis. p. 28

Type not found (but see p. 28).


Sthenelais leidyi. p. 30

Streblosoma (Eugrymaea) polybranchia. PMNH H-7 and 8.

Verrill, 1900, Trans. Conn. Acad. Arts Sci., vol. 10, p. 662. Castle Harbor, Bermuda, in dead corals. [Eugrymaea is characterized by its high branchial count; at least 5 pairs are present.]


Syllides setosa. Type not found.


Syllis (Typosyllis) annularis. PMNH M-3 (?).

Verrill, 1900, Trans. Conn. Acad. Arts Sci., vol. 10, pp. 608–609. Bermuda. [The slide, PMNH M-3, has the label: “Syllis. S. annulicirrata V. TYPES. Proboscis and setae. largest.” This may be the type of S. annularis, but its condition is too poor to discern any details.]

Syllis (Typosyllis) catenula. PMNH 120-12. Typosyllis coralicola. p. 47

Syllis (Typosyllis) cincinnata. PMNH 120-13. Typosyllis cincinnata.


Syllis (Typosyllis) coralicola. PMNH 120–10. Typosyllis coralicola. p. 47

(Syllis (Typosyllis) diplormorph. PMNH 0-13.

Verrill, 1900, Trans. Conn. Acad. Arts Sci., vol. 10, pp. 606–607. Bermuda. [The single specimen, slide PMNH 0-13, is dried out; nothing can be made of it.]

Syllis (Ehlersia) exiqua. PMNH 0-3.

Verrill, 1900, Ibid., vol. 10, pp. 611–612. Bermuda. [The label of slide PMNH 0-3 reads: “Grubea. Syllis rugulosus V. TYPE Ehlersia exiguia. Branchiosyllis lamellifera. Eusyllis undescribed.” The condition of all of the specimens is very poor; they are now almost colorless and dessicated.]

Syllis grandigularis. PMNH P-11. Typosyllis grandigularis. p. 46

Syllis jugularis. PMNH P-21. Typosyllis coralicola. p. 47

Syllis (Ehlersia) nitida. PMNH P-6. Typosyllis grandigularis. p. 46

Syllis pallida. PMNH M-4. Typosyllis pallida.

Verrill, 1875, Amer. J. Sci. New Haven, ser. 3, vol. 10, p. 39, pl. 3, fig. 6. Noank Harbor, Conn. [The slide, PMNH M-4, is labelled: “Syllis pallida. Type figd. L. Is. Sound. 1874.” It is dried out, unsatisfactory, with only the setae still discernible, these are seemingly all composite, for which reason it is referred to Typosyllis.]

Syllis spongiphila. USNM.

Tetraglene agilis. Type not found.

The following lists, alphabetically, the species or new names erected by Bush. The notations are the same as those for the preceding list.

<table>
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<th>Original name and Museum catalog</th>
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<tr>
<td>Aspeira modesta. PMNH 5-10.</td>
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<td>Bush, 1904, Harriman Alaska Exped., vol. 12, p. 234, pl. 25, fig. 5, pl. 29, fig. 4, pl. 33, fig. 13, pl. 39, figs. 1–5. Juneau, Alaska.</td>
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<td>Dasychonopsis pallidus. PMNH 5-1.</td>
<td>Dasychonopsis pallidus.</td>
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<td>Bush, 1904, Ibid., vol. 12, pp. 199–200. Honolulu.</td>
<td>(Only a single small specimen remains; it has been dried at some time.)</td>
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<td>Eucarphus serratus. PMNH 128-3.</td>
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Hyalopomatopsis occidentalis. PMNH 128-20. Hyalopomatopsis occidentalis. p. 89

Hydroides bispinosa. PMNH 128-8 and 9. Hydroides bispinosa. p. 88

Membranopsis inconspicua. Type not found.


Metachone mollis. PMNH 5-6. Chone mollis. p. 87

Myxicola affinis. PMNH 5-4. Myricola infundibulum. p. 86

Myxicola conjuncta. PMNH 5-3. Myricola infundibulum. p. 86

Myxicola glacialis. PMNH 5-5. Myricola aesthetica. p. 86

Parasabella maculata. PMNH 5-11. Parasabella media. p. 79

Parasabella media. PMNH 5-12. Parasabella media. p. 79

Paravermilia ambia. PMNH 128-10. Vermiliopsis amblia. p. 91

Paravermilia bermudensis. PMNH 128-12. Vermiliopsis bermudensis. p. 90

Paravermilia intermedia. PMNH 128-12. Vermiliopsis amblia. p. 91


Bush, 1904, Harriman Alaska Exped., vol. 12, pp. 228-229, pl. 37, figs. 1, 2, 4.

Pacific Grove, California.

Pseudopotamilla debilis. PMNH 117-3. Pseudopotamilla debilis. p. 81

Pseudovermilia pileum. PMNH 128-16. Vermiliopsis bermudensis. p. 90

Rhodopsis pusillus. Type missing.


[There is a slide, PMNH L-13, labelled TYPE, with neither cover slip nor specimen on it.]

Sabella elegans. PMNH 5-9. Sabella crassicornis. p. 78

Sabella formosa. PMNH 15-1. Sabella crassicornis. p. 78

Sabella humilis. PMNH 5-15. Sabella crassicornis. p. 78

Sabella leptalea. PMNH 5-7 and 8. Sabella crassicornis. p. 78

Salmacinopsis setosa. Salmacinopsis setosa. p. 78


[The type material may be stored at Philadelphia.]

Schizobranchia affinis. PMNH 117-2. Questionable. p. 84

Schizobranchia concinna. PMNH 7-1. Schizobranchia insignis. p. 82

Schizobranchia dubia. PMNH 117-4. Schizobranchia dubia. p. 83

Schizobranchia insignis. PMNH 117-5. Schizobranchia insignis. p. 82

Schizobranchia nobilis. PMNH 10-1 and 2. Schizobranchia insignis. p. 82

Serpula splendens. PMNH 128-23. Serpula vermicularis. p. 82

Bush, 1904, Harriman Alaska Exped., vol. 12, pp. 230-232, pl. 24, fig. 3, pl. 29, fig. 2, pl. 30, figs. 2, 3, pl. 33, fig. 31, pl. 35, fig. 18, pl. 37, fig. 31, pl. 39, fig. 33. Prince William Sound, Alaska.


Spirorbis abnormis. PMNH 125-1.

Bush, 1904, Ibid., vol. 12, pp. 245-246, pl. 39, fig. 35, pl. 40, figs. 1, 2, pl. 43, figs. 24, 28, 29. Sitka, Alaska.

[The single specimen, PMNH 125-1, is unfavorable for examination.]

Spirorbis asperatus. PMNH 125-2 and 3. Spirorbis borealis. p. 92

Spirorbis comptus. PMNH 125-4. ?Spirorbis spirillum. p. 91
*Spirorbis evolutus.* PMNH A-2 to 5
[The slides, PMNH A-2 to 5, are dried out and disintegrated.]

*Spirorbis eximius.* No specimens found.
Bush, 1904, Ibid., vol. 12, p. 239, pl. 39, fig. 9, pl. 41, figs. 7, 18, 20, pl. 43, figs. 6, 11, 17. Pacific Grove, California.

*Spirorbis fevkesii.* PMNH 125-5. *Spirorbis spirillum.* p. 91
Bush, 1904, Ibid., vol. 12, pp. 251–252, pl. 39, figs. 18, 19, pl. 41, fig. 22, pl. 32, figs. 18, 23, 25, 30. Gulf Stream and Bermuda, common on Sargassum.
[The only collection, PMNH 125-5, is very meagre, without entire or satisfactory tube or specimen.]

*Spirorbis incongruus.* PMNH 125-7.
[There is only a single, small, dried fragment.]

*Spirorbis inversus.* PMNH 125-8.
[The collection includes a few tiny, erect tubes, on a small piece of kelp, resembling the lucidus stage of *S. spirillum.*]

*Spirorbis lineatus.* Type not found.

*Spirorbis mutabilis.* Type not found.

*Spirorbis nudus.*
[The type material may be stored at Philadelphia.]

*Spirorbis rugatus.* PMNH 125-9.
[The single collection, PMNH 125-9, contains only a minute fragment of decalcified tube; it is dextral, but its surface ornamentation is no more discernible.]

*Spirorbis semidentatus.* PMNH 125-10 and 11. *Spirorbis semidentatus.* p. 93
[The type material may be stored at Philadelphia.]

*Spirorbis similis.* PMNH 125-12 and 13.
Bush, 1904, Harriman Alaska Exped., vol. 12, p. 42, pl. 29, fig. 3, pl. 39, figs. 16, 31, pl. 40, figs. 9, 17, 18, pl. 43, figs. 27, 31. Alaska.
[One collection, PMNH 125-12, contains no specimen; the other, PMNH 125-13, is a tiny, smooth, white, coiled tube, without operculum.]

*Spirorbis tridentatus.* No specimens found.
[The specific name is preoccupied by Levinsen, 1882.]

*Spirorbis tubiformis.* PMNH 125-17. *Spirorbis spirillum.* p. 92
The following alphabetically lists the genera erected by Verrill, with date of erection, type species, and identity or synonymy as herein considered.

*Spirorbis variabilis.* PMNH 125-20.
Bush, 1904, Ibid., vol. 12, p. 238, pl. 29, fig. 3a, pl. 39, figs. 24, 25, pl. 40, fig. 4, pl. 43, fig. 16, pl. 44, fig. 17. Sitka Harbor, Alaska.


[The collection contains a single tube. It resembles *S. semidentatus* in being thick, about as high as its greatest diameter, the coils obscure, but the upper surface much more deeply ridged, and the aperture sinistral.]

*Sthenelais setosa.* PMNH 3-9.

Subprotula longisetosa. PMNH 1-8 and 9.

[The two slides in the Museum are dried out, unsatisfactory.]

The following alphabetically lists the genera erected by Verrill, with date of erection, type species, and identity or synonymy as herein considered.

*Areniella,* 1874, type *A. filiformis,* a questionable capitellid (p. 70).

*Aziotothella,* 1900, type *Aziototha catenata* Malmgren.

*Chaetobranchus,* 1873, preoccupied, later replaced by *Enoplobranchus* Verrill.

*Clymenella,* 1873, type *Clymene torquata* Leidy.

*Clymenoposis,* 1900, type *Clymene cingulata* Ehlers.

*Clymenura,* 1900, type *C. cirrata* Ehlers, identical with *Leiochone* Grube.

*Desmosyllis,* 1900, type *Eusyllis tenera* Verrill, herein referred to *Eusyllis*.

*Dipolydora,* 1881, type *Polydora concharum* Verrill, referred to *Polydora* Bosc.

*Enoplobranchus,* 1879, new name to replace *Chaetobranchus* Verrill, preoccupied.

*Euclymene,* 1900, new name to replace *Clymene* Savigny, not Oken.

*Euglycera,* 1881, type *Glycera dibranchiatus* Ehlers, referred to *Glycera* Savigny.

*Eugrymacea,* 1900, type *Stroblosoma (Eugrymacea)* polybranchia Verrill.

*Eupolyynnia,* 1900, new name to replace *Polymnia* Malmgren, preoccupied.

*Grubeosyllis,* 1900, new name to replace *Grubea* Quatrefages, preoccupied, identical with *Brania* Quatrefages.

*Hemisyllis,* 1900, type *H. dispar,* herein referred to *Haplosyllis* Langerhans.

*Heteromarphyso,* 1900, type *H. tenuis* Verrill.

*Macroclymene,* 1900, type *Clymene producta* Lewis.

*Maldaneoposis,* 1900, type *Maldane elongata* Verrill, referred to *Asychis* Kinberg.

*Mayeria,* 1900, type *Stauroccephalus gregaricus* Mayer, referred to *Eunice* Savigny.

*Neptonaeris,* 1873, type *N. megalops* Verrill, referred to *PlatyneTeis* Kinberg.

*Ophioglycera,* 1885, type *O. gigantea* Verrill, referred to *Goniada* Andouin & M. Edwards.

*Pollymnella,* 1900, type *Eupollymnia (Pollymnella)* aurantiaca Verrill.

*Prazillera,* 1882, to replace *Prazilla* Malmgren, preoccupied, type *P. gracilis* Malmgren.

*Prazillura,* 1880, type *P. ornata* Verrill.

*Prototelopos,* 1900, type *P. tenuis* Verrill, referred to *Euthelepus* McIntosh.

*Samythella,* 1873, type *S. elongata* Verrill.
Family POLYNOIDAE

Genus **Antitana**, new genus

The prostomium is lepidonotoid, with four eyes disposed as in *Halosydna* Kinberg; elytra number 18 (or more?) pairs, are inserted as in *Halosydna*, and more or less completely cover the body. Notopodia are reduced to an elongate, acicular lobe, lacking setae. Neuropodia are stout, well developed, with two
kinds of setae: (1) a supraacicular fascicle of finer, weakly serrated setae, and
(2) a subacicular fascicle with a single (or few), heavy spine-like seta. This re­sembles Halosydna and Alentia Malmgren in general aspect, but differs from both in lacking notopodial setae and having neuropodial setae of two kinds.

The type of the genus is Polynoe aurantiaca Verrill.

Alentiana aurantiaca, new combination


Figures 1–6

There are numerous specimens, collected in 1881 and 1882, by the U. S. Fish Commission, at stations 924, 1096, 1153, in the vicinity of Marthas Vineyard and Vineyard Sound, Mass.

The prostomium is clearly lepidonotoid, wider than long, with four large eyes; the paired antennae are inserted on prolongations (fig. 1); there is no nuchal hood. Elytra number 18 (or more ?) pairs, inserted on segments 2, 4, 5, 7, 9 ... 21, 23, 26, 29, 32, 34, 36 and 37. There appear to be but 39 setigerous segments. Elytra are pale, thick, smooth, with entire margins or only slightly ruffled at their outer margins, subciricular to ovate in outline, those of a side deeply over­lapping one another, but leaving the median dorsum broadly exposed; they

Figures 7–12. Lepidonotus sublevis.

Fig. 7. A median parapodium in anterior view, setae indicated, × 15.
Fig. 8. Same parapodium, in posterior view, setae omitted, × 15.
Fig. 9. Third elytron from right side, in dorsal view, × 7.
Fig. 10. A superior neuroseta from a median segment, × 70.
Fig. 11. An inferior neuroseta from a median segment, × 70.
Fig. 12. Portion of a notoseta from a median segment, × 330.


Fig. 13. Prostomial lobe, median cirrus not shown, × 26.
Fig. 14. About twelfth parapodium in posterior view, only base of ventral cirrus shown, setae indicated, × 15.
Fig. 15. One of shorter notosetae from same parapodium, × 39.
Fig. 16. Tip of same seta, enlarged, × 70.
Fig. 17. Tip of neuroseta from middle part of fascicle, × 39.
Fig. 18. Tip of neuroseta from inferior part of fascicle, × 70.
extend laterally to cover much of the neurosetal length; the elytral scar is proportionately tiny (fig. 2).

The first parapodia are without setae. Notopodial setae are absent throughout, but the acutely pointed notopodial lobe has a slender, yellow, embedded, rod-like aciculum (fig. 3). Neuropodia are deep, compressed, with triangular setal lobes, the presetal lobe slightly exceeds the postsetal lobe in length. Its setae are of two kinds, including 6 to 8 supraacicular setae that are toothed on one side (figs. 5, 6), and a heavy, smooth, subacicular seta (rarely two in a parapodium), with slightly falcate tip and smooth sides (fig. 4). All setae and acicula are pale yellow. Ventral cirri are present throughout, those of the first two or three parapodia longest, the others short. Dorsal cirri are long, tapering (fig. 3).

**Genus Lepidonotus Leach**

*Lepidonotus sublevis* Verrill

Verrill, 1873, Rep. USFC, Washington, vol. for 1871/72, p. 581, pl. 10, fig. 42. Savin Rock, New Haven; Vineyard Sound, Mass. 1881, Trans. Conn. Acad. Arts Sci., vol. 4, pl. 4, fig. 2, pl. 6, figs. 3a to d [figures only].


**Figures 7–12**

There are several specimens in the collections of the Museum. The form is depressed, flat, trim; general color (preserved) is dark gray; neurosetae are dark amber in color. Total length is about 22 mm., width 6.5 mm. The prostomium is longer than wide, as typical of the genus. Elytra number twelve pairs; along their external margin they are provided with short fringes; their surface, where not overlapped by the preceding elytra, is more or less uniformly covered with tiny, low, flat, widely spaced, tubercles; there are no macrotubercles. The second elytra are slightly excavate at the anterior margin; the third (fig. 9) are more so but by the fourth pair the anterior margin is nearly straight.

Parapodia are thick, robust; notopodia are reduced, papillar, with numerous slender, pointed setae, all resembling one another, crossed by many fine, transverse sharp serrations (fig. 12). Neuropodia are thick, compressed, distally triangular, the presetal lobe somewhat the longer (figs. 7, 8). Both supra and subacicular fascicles are well developed. Neurosetae are much thicker than notosetae, consist of one kind with simple tip, the inferiormost (fig. 11) resemble the superiormost (fig. 10) except for a shorter smooth tip. Dorsal cirrophores are thick; dorsal cirri slender, tapering, with a subapical thickening (fig. 7); ventral cirri are short, surpassed distally by the neuropodium. Nephridial
Hartman: Polychaetous Annelids

papillae, on the ventral face of neuropodia are almost completely concealed in ventral view since they are turned up to a position between successive parapodia.

Two other species of Lepidonotus have been reported from the east coast of U. S. A.,—L. squamatus (L.) with variety angustus Verrill, and L. variabilis Webster. From these, L. sublevis differs in lacking macrotubercles on the elytra and in having neurosetae with simple tips.

Genus Antinoë Kinberg

Antinoë angusta Verrill


Figures 13–18

The Museum has no specimen specifically marked with the type locality; there are several specimens, however, from the coast of New England, marked as follows: one specimen from USFC Sta. 1878, Loc. 199, one specimen from Jeffrey’s Ledge, Gulf of Maine, in 102 fms. (USFC Sta. 1874, Loc. 73), and one from USFC Sta. 1873, 72 fm. All of these are identified as Antinoë angusta in Verrill’s handwriting, and agree reasonably well with the original description in so far as it is given.

The prostomium is harmothoid, approximately hexagonal in outline (fig. 13) [disagreeing therein from the original account]; the paired antennae are inserted ventrally, with small appendages as first described. Eyes four, small, subequal, the anterior pair at the middle of the prostomial length, near its widest part, the posterior pair nearer together, near the posterior margin of the prostomium. There is a shallow, median groove throughout its length. The median ceratophore is stout, the appendage now lost.

The first setigerous segment is provided dorsally with 6 to 8 (more or less) coarse blunt spines, in approximately transverse series. Parapodial lobes are produced, attenuate distally, the neuropodial far exceeding the notopodial lobes (fig. 14). Notosetae are thick, of very unequal lengths, bluntly tapering, with transverse rows of serrations extending partly around the spine (figs. 15, 16). Neurosetae are far more numerous and much finer, distally prolonged in slender tips. The superiormost are the longest, with coarsely serrated, spinous, edge; inferiorly they become gradually somewhat shorter and thicker, but resemble the superiormost (fig. 17, 18). Elytra are now missing, as also cirri.

Antinoë angusta differs from other species of this genus in having different proportions in prostomial and parapodial parts. It has not been reported since its original description.
Figures 19-22. *Eunoe* *spinulosa*.

Fig. 19. Prostomial lobe in dorsal view, cirri not shown, X 15.
Fig. 20. One of shorter notosetae, X 75.
Fig. 21. One of longer notosetae, from same parapodium, X 75.
Fig. 22. An inferior neuroseta from same parapodium, X 75.

Although the type specimen is deposited in the National collections, the Peabody Museum has several fine specimens that are labelled in Verrill’s own handwriting. One individual, with about 28 segments (the posterior end is missing) measures 27 mm. long and 11 mm. wide, including the setae. The prostomium is broader than long, depressed, the two lobes separated by a wide, though shallow, median groove in its anterior half; they terminate distally in small subglobular papillae (fig. 19). Eyes four, large, subequal, the anterior pair at the widest part of the prostomium, the posterior pair nearer together. Median and paired prostomial ceratophores are stout; the appendages have been lost.

The first setigerous segment has a few thick, slightly curved spinulose setae. From the second segment, the notosetae and neurosetae are arranged in coarse fascicles, the former somewhat spreading, the latter held laterally. Some notosetae are a little heavier, and longer, than the largest neurosetae (fig. 22); all terminate in simple tips, most are slightly falcate (figs. 20, 21); but the longest

Figures 23-26. *Polynoe* *gracilis*.

Fig. 23. Prostomial lobe in dorsal view, all cirri missing save left paired, X 26.
Fig. 24. Tip of a short notoseta, X 330.
Fig. 25. Tip of a long notoseta, X 330.
Fig. 26. Tip of a superior neuroseta, X 330.

Figures 27-31. *Solenelais* *gracilis* (all figures made from type of *S. emertonii*).

Fig. 27. Second elytrum in ventral view, X 15.
Fig. 28. Prostomial lobe in dorsal view, all cirri missing save right paired one, X 15.
Fig. 29. Eighteenth parapodium in posterior view, setae indicated, X 15.
Fig. 30. Tip of a notoseta from eighteenth parapodium, X 75.
Fig. 31. Tip of a neuroseta from same parapodium, X 75.

Figures 32-35. *Solenelais* *gracilis* (all figures made from type of *S. emertonii*).

Fig. 32. Prostomial lobe in dorsal view, X 26.
Fig. 33. A median parapodium in anterior view, with simple, spinose setae and inferiormost composite setae indicated, X 65.
Fig. 34. An anterior elytrum in ventral view, enlarged.
Fig. 35. Tip of a long multiarticulated (10-articled) composite seta, X 330.
notosetae are nearly straight. Notoacicular and neuroacicular lobes are each produced in a long, slender lobe.

Elytra are broadly oval, the surface smooth on the median half, the outer half finely pilose; the upper surface has a few, sharp, slender spines; the outer lateral edge is slightly overhung by a fine, slender fringe, but the edge itself is smooth. The elytral scar is comparatively small, nearest the posterior margin.

The genus *Eunoë* is known from the east coast through three other species,— *E. nodosa* Malmgren, *E. oerstedi* Malmgren (considered identical with the first by some authors), and *E. purpurea* Treadwell. From these, *E. spinulosa* differs in lacking nodular elytral spines and marginal fringe.

**Genus Polynoe Lamarck**

*Polynoe gracilis* (Verrill)


Figures 23–26

There are no specimens with collecting data exactly as first described, but there are others, dredged from New England, labelled in Verrill’s hand. These agree with the original description in so far as this is given. The general form is elongate, depressed, slender; length about 30 mm. There are 15 pairs of elytra, limited to an anterior and median region; the posterior portion lacks elytra; the prostomium is harmothoid; this is therefore referred to *Polynoe*. The prostomial lobe is a little longer than broad (fig. 23) in some individuals, or broader than long in others. The median ceratophore is stout, tapering; paired antennae are small, largely concealed from dorsal view. About half of the prostomial length is divided by a broad fissure in which the median ceratophore is inserted. Eyes four, dark, the anterior pair immediately in front of the widest part of the prostomium. The posterior margin of the prostomium is straight, not overlapped by a peristomial membrane (fig. 23).

Some individuals retain elytra; these are rounded or oval, with entire margin; they are somewhat translucent, with smooth surface; they are disposed so as to leave a middle dorsal stripe exposed, but those of a side overlap.

Neurosetae are much heavier than notosetae, the superiormost resemble the inferiormost, the serrated region is about the same in both; all have simple, entire, slightly falcate tip and about four short transverse rows of serrations (fig. 26). Notosetae are of one kind; some are shorter, thicker, others longer, slenderer; their tips are entire, blunt, with lateral denticulations and short, obscure rows of serrations (figs. 24, 25).

Another species of *Polynoe* from eastern America,—*P. acanellae* Verrill,—is discussed on page 27.
Polynoe acanellae Verrill


Family SIGALIONIDAE

Genus Sthenelais Kinberg

The sigalionidae are provided with several kinds of setae, disposed in the fascicles in characteristic arrangement. Figure 35a, indicates the arrangement of setae in notopodia and neuropodia of Sthenelais; the terminology used in the descriptions below is based on the term as labelled. The notopodium is usually a simple, elongate lobe, with simple aciculum (shown by a small circle near the center) often with parapodial fringe at its anterior edge, and with transverse or
slightly crescentic rows of simple, slender setae, the edge more or less serrulated
or quite smooth. The neuropodium is usually a larger, shorter lobe, with (or
without) fringe at its anterior edge, or sometimes extending also around the
upper and lower edges, with a simple aciculum emerging near its middle (repre-
seated by a larger circle near the center) and with certain kinds of setae in
characteristic arrangement. If present, the simple spinose setae occupy a posi-
tion indicated by the small crosses at the anterodorsal edge. Slightly above
them, or sometimes proximal to them, are the long, slender, superior composite
setae. The more conspicuous series, that nearly form a circle around the aci­
culum, here designated the circumacicular series, include the larger composite,
falcigerous setae. Similar, though slenderer, setae form nearly a linear series
just within the parapodial fringe; these are here designated the anterior linear
series.

Sthenelais gracilis Verrill

619. Massachusetts. (refers S. emertoni to S. gracilis).

S. emertoni Verrill, 1879, Checklist Mar. Inver., p. 11. New England [un-
accompanied with figures or description]; 1881, Trans. Conn. Acad. Arts
Sci., vol. 4, pl. 7, figs. 1–1s. Narragansett Bay, Mass. [figs. only].

Figures 32–35

No authentically labelled specimens of S. gracilis have been found. As S.
emertoni, it is represented in the collections by many individuals, from Rhode
Island and Connecticut, dredged by the U. S. Fish Commission during the years
1874 to 1880. One, labelled “Type. Salem Neck. Aug. 26,” includes several
pieces of a small species; 34 anterior segments measure only 11 mm long.
The prostomium is broader than long, with a stout median ceratophore and
no distinct median furrow in its posterior half. The four dark eyes are large,
subequal in size. The median ceratophore has a pair of broadly rounded ctenidia
that extend distally about as far as the distal end of the ceratophore (fig. 32).
The antennal style is long, slender, about as large as the dorsal cirrus of the first
segment. The paired prostomial antennae are inserted at the inner base of the
first notopodial fascicles. There is also a similar appendage with a circular ex-
panded tip, attached on the dorsal face of the first notopodium, near its fusion
with the prostomial lobe. Palpi are long, smooth, tapering, extending pos-
teriorly through about ten segments when held back.
The first parapodium is large, thicker, though shorter, than the second, with
a well developed dorsal cirrus, about as large as the median antenna, a much
smaller ventral cirrus, and the two smaller papillar appendages, mentioned
above. Its setae are numerous, finely serrated, simple, tapering. The second
setigerous segment is longer, distally provided with many long, filamentous
papillae, both notopodium and neuropodium with three groups, totalling in all about 12 filaments. The ventral cirrus is long, inserted on a short stalk at the ventral parapodial base. Its neurosetae are slender, composite, with multi-articulate appendage. From the third segment, the terminal fringe is less conspicuous but continues through a long anterior region, diminishing in size and number of filaments posteriorly. From the third segment, an accessory ventral cirrus makes its appearance, about midway between the main cirrus and the parapodial base; this is largest between segments 3 to 7, thereafter diminishing in size and finally disappearing.

Neuropodia have large, sheathing lobes, surrounding the setal fascicles on the posterior face. There is one large lobe, on the dorsoposterior side, meeting a similar, though smaller, lobe around the lower part of the setal fascicle; from the distal ends of these sheaths small cirri arise, most numerous in anterior parapodia, numbering 3 to 5 on each sheath, and only 1 or 2 on those of median parapodia (fig. 33). In addition, there is a slender, cirriform papilla ventral and median to the inferiormost neurosetae. The ventral cirrus is simple, inserted on the proximal half of the ventral face of the parapodium. Neurosetae consist of (1) simple spinose setae in the superior part of the fascicle, already present

Figure 35a. *Sthenelais*. Diagnostic sketch of arrangement of setae in notopodium (above) and neuropodium (below). *d* represents dorsal side, *u* anterior portion. The notopodium contains only an aciculum and transverse rows of simple setae. The neuropodium contains an aciculum, an anterodorsal fascicle of long, composite setae, a fascicle of simple, spinose setae immediately below, and a circumacicular series of composite setae bounded partly on its anterior side by the anterior linear series.
from the third setigerus segment, numbering 4 to 8 in most parapodia, and (2) numerous multiarticulate composite setae, with nearly smooth shaft and long, tapering appendage, terminating distally in a fine, but distinctly bifid, falciger (fig. 35). In the superiormost part of the fascicle there are about 16 articles in the appendage, with tip more delicately bifid than on those more inferiorly, but the number of articles in median and inferior neurosetae is about 8 to 10. All composite neurosetae are essentially like this; none are short, stout falcigerous, such as shown by Verrill (1881, Trans. Conn. Acad. Arts Sci., vol. 4, pl. 7, fig. 2b). In the original descriptions of both *S. gracilis* and *S. emertoni*, the slender, articulate nature of neurosetae was noted, but the true nature of the bifid falcigerous tip was not observed.

*S. gracilis* (including *S. emertoni*) is characterized (1) in its conspicuous, sheathing, auricular neuropodial lobes, (2) in its distinctly multiarticulate neurosetae with fine, bifid, falcigerous tip, (3) in its conspicuous parapodial fringe on anterior parapodia, (4) in having elytra that are quite smooth and weakly fringed on their outer margin, and (5) in having an accessory ventral cirrus on a few anterior segments. Sumner (1913, Bull. USFC, Washington, vol. 31, p. 619) has referred *S. emertoni* to *S. gracilis*, a conclusion that seems justifiable.

*Sthenelais leidyi* Quatrefages


Figures 36–39

There are no specimens of *Sthenelais picta* in which the locality agrees with that first given, but there are several collections from nearby localities. These include Savin Rock, New Haven, at low water; Vineyard Sound at low water; Newport, Rhode Island, at low water; Cape Cod, Massachusetts, at low water, and others.

The total length approaches 80 to 100 mm.; the general appearance is trim,
elytra neatly imbricated and more or less firmly attached. The prostomium is wider than long, without median groove, the 4 dark eyes visible in dorsal view, but the anterior pair in front of, and at the sides of, the basal ctenidial wings. The median ceratophore is stout, about as long as the prostomium, its paired ctenidia broad, flaring distally, extending over an elongate ctenidial ridge on the first parapodial base. Its appendage extends distally about as far as the dorsal cirrus of the first segment.

Elytra are smooth, except the first few pairs which are more or less completely and uniformly covered with tiny, flat-headed papillations. The first are sub-oval in shape, the anterior margin somewhat truncate, the outer lateral margin with a few short, marginal papillae in a single row. The second are deeply excavate at the anterior margin, but those more posterior are decreasingly so. The anterior margin is concave (fig. 39), never incised as in *S. boa* Johnston. From about the twenty-eight segment, elytra occur on all segments.

The first parapodial base is stout, long, with a ctenidial ridge on its upper face, a short clavate cirrus [the paired prostomial antenna], and a ventral cirrus about half as large as the dorsal cirrus. There are only simple, serrated setae. The second parapodium has a base somewhat longer than that of the first, but slenderer. The neuropodium is provided with numerous composite setae, some with a coarsely spinous shaft, and long, slender, multiarticulate appendage. There are a few heavier, falcigerous setae. From the third segment, simple spinose setae replace the spinous composite setae. Where best developed, in median parapodia, they form a conspicuous superior fascicle of 8 to 12. Parapodial fringe is present on the anterior faces of notopodia and neuropodia throughout the length; on neuropodia it forms a flange extending the depth of the ramus, immediately bounding the linear series of composite setae.

The superior acicular series has 8 to 12 simple spinose setae and 2 or 3 slender, composite setae; the shaft of the latter has a few, coarse spines, its appendage long, with bifid tip. Typically the circumacicular series has 8 to 10 stout, short-appendaged, falcigerous setae with smooth (or nearly so) shaft, and an appendage that is about as long as wide (fig. 38) or longer. There are 6 to 8 similar setae with longer, slenderer appendage (fig. 36). The anterior linear series includes finer, slenderer, though similar, setae with bifid tip. The ventral cirrus has two elevations on the dorsal, proximal margin.

*S. leidyi* approaches *S. boa* Johnston in many respects; in *S. leidyi*, however, the anterior elytral margin is not incised but only shallowly excavate or nearly straight.

*Sthenelais setosa* Bush

Only two imperfect specimens of this are available. The type (no. 1019) is a small anterior fragment of only 22 setigerous segments, with most appendages lost, lacking elytra, prostomial antennae and dorsal cirri. Another (no. 1304) has two pieces of what might have been a single specimen; there is an anterior piece of 45 segments measuring 21 mm. and another piece of 60 segments measuring 35 mm. long. These pieces are egg-bearing, perhaps adult.

In the type, the prostomium is broader than long, with a thick median cirrophore and ctenidia that together are nearly as broad as the prostomium, and about as long. The ctenidial lobes are triangular, smooth, extending obliquely forward. There are four eyes; the anterior may be seen only by laying the median cirrophore to one side; they are large, circular, black, as large as, or perhaps exceeding in size, the posterior pair. [This differs from the original description where the anterior pair were described as very small.]

Elytra, present on all segments from the twenty-seventh segment, have a single sparse row of fringe at the outer ectal margin, and tiny, widely spaced microtubercules (with flat or depressed tops) on the surface anterior to the elytral scar. An elytrum from about the twenty-fifth segment has the proportions as shown in figure 42. The parapodial fringe is negligible save for a small flange at
the ventral side of the ventralmost series of setae, and a small tuft on the distal end of the notopodium (fig. 43). Notopodial setae are simple, slender, tapering, finely spinulose along the cutting edge. In neuropodia the superior acicular fascicle has 5 or 6 simple spinose setae, already present from the third setigerous segment, and 3 or 4 multiarticled spiny shafted, slender composite setae. The circumacicular series has heavier, smooth-shafted setae, with appendage longer than wide, gently curved, distally bifid (figs. 40, 41). The anterior linear series bears slender, 1 to 4 articulated, smooth, or slightly spinous shafted, composite setae.

*Sigalion arenicola* is characterized by its large ctenidial base and triangular wings on the prostomium; its curved falcigerous composite setae in which the appendage is longer than wide, and in having smooth parapodial flanges. It is not known except through its original collection.

**Genus Sigalion** Cuvier

*Sigalion arenicola* Verrill


**Figure 44**

There is a single specimen in the Museum, labelled “Gardiner’s Bay [outer end of Long Island] USFC 1873, Aug. 4. No. 6365” on which the original description might have been made, and many others from New England, made by the U. S. Fish Commission during the years, 1879 to 1885.

The prostomium is trapezoidal in outline, lacks median antenna, but has paired antennae at the anterior margin. There are four black eye spots near the anterior middle of the lobe. Elytra are present on all segments from about the twenty-sixth segment; they are pale, smooth, their lateral margins provided with pinnately branched lobes, as shown by Verrill (1881, pl. 7, figs. 5a, 5b), but there is also a simple short filament at the base of each major marginal fringe. The separate pinnae are clavate, disposed 5 to 8 on a side.

Notopodia have a slender digitate process on their dorsoanterior edge that extends distally somewhat beyond the stouter acicular lobe (fig. 44). Neuropodia have a bluntly triangular, acicular lobe; posterior to, and somewhat above it, emerges a suprasetal auricular lobe; there is also a much smaller crescentic lobe near the middle posterior face of the ventral ramus (fig. 44). Noto setae are slender, simple, finely toothed. Neurosetae include 3 or 4 simple, spinose setae, and about as many composite setae with spinose shaft and multi-
Family PHYLLODOCIDAE

Genus Hypoeulalia Bergström

*Hypoeulalia bilineata* (Johnston)


Verrill noted the affinities of *S. arenicola* with *S. buskii* McIntosh (identical with *S. squamatum* (delle Chiaje), but considered them distinct because of some differences in the pinnate processes of the elytra; to me these processes seem essentially the same. There is here, however, a small inferior lobe on the posterior face of the neuropodium (fig. 44), and neuropodial falcigerous appendages are longer, more curved in the specimens from New England. For these reasons, *S. arenicola* is here considered distinct from *S. squamatum*.

Family SPINTHERIDAE

Genus Spinther Johnston

*Spinther oniscoides* Johnston

*S. citrinus* (Stimpson), Verrill, 1879, Checklist Mar. Inver., p. 7.

Figures 45, 46

The collections contain several individuals, from the Gulf of Maine, collected by the U. S. Fish Commission in 18 fms. The length is about 10 mm., width 7 mm., but the body is curled under at the sides so as to appear narrower than it actually is. The prostomial lobe lacks caruncle. The proboscis, partly everted, resembles a broad, crenulated, or flat, rosette-like surface, on the ventral side of the anterior end. Neuropodia are tiny, elongate, papillar, with a smaller swelling at the posterodorsal edge. A single, heavy, sickle-shaped composite seta (fig. 46) projects from the neuropodium; there is no ventral cirrus. Noto-podia are provided with setae in transverse series; most of these are simple, tapering spines with blunt point; some, however, have a bifid tip (fig. 45). These structures are in close agreement with those of *S. oniscoides*, from northwestern Europe.

This family is not known to be represented in the western hemisphere except through several records of this species from New England, north to the Bay of Fundy.

Family PHYLLODOCIDAE

Genus Hypoeulalia Bergström

*Hypoeulalia bilineata* (Johnston)

There are many specimens, so labelled, from Vineyard Sound and vicinity, some labelled in Verrill's handwriting, but all postdate the original account. Slides PMNH F-2 and 3 are whole mounts, labelled "Noank, Jl. 74" and "Fishers Id., July 1874." Another lot, from Vineyard Sound, 8 to 15 fms., labelled "Eulalia pistacia," is largely this species.

The general form is elongate, linear. The prostomium is longer than wide, bluntly oval, the posterior margin straight; the median antenna is short, filiform, inserted a short distance anterior to the eyes. The two eyes are black, lozenge-shaped, contingent with, or slightly overlapped by, the first cirriferous ring. The first 3 cirriferous segments are complete rings, but the first is confluent with the prostomium and somewhat swollen dorsally, above the prostomial height, and more or less closely fused with it; this is therefore referred to *Hypoeadalia* Bergström.

Dorsal cirri are somewhat longer than broad, oval in outline, the more pointed end distally. These structures, as also the setae and body proportions, agree well with the conditions in *H. bilineata* (Johnston). Sumner (1913, Bull. USFC, Washington, vol. 31, p. 617) has reported *Eulalia gracilis* from Vineyard Sound, in 3 to 12 fms. The numerous collections in the Museum, from intertidal zones of New England, indicate abundance at least in these areas.

Genus **Eumida** Malmgren

*Eumida sanguinea* (Oersted)


One collection is labelled "Eulalia pistacia. Off South End [New Haven] in 4-5 fms. 200." Numerous others are from Halifax, Casco Bay, and Newport, Rhode Island. The first, from which the original description was probably made, contains six specimens, the longest about 13.5 mm. As was originally stated, the proboscis is smooth, hence this is a *Eumida*. The prostomial parts, dorsal and tentacular cirri and setae agree well with those of *E. sanguinea*, to which this is referred.

There are two specimens, labelled "Eumidia americana? Savin Rock." The largest, complete, measures 10 mm long, the proboscis partly everted. The other, posteriorly incomplete, has the proboscis entirely everted. The body is short, plump, the dorsal cirri broad, closely appressed to the sides of the body. The prostomium is convex-triangular in shape, the posterior margin slightly
emarginate, its median antenna moderately long. The first segment is dorsally reduced, the second segment is somewhat longer than that following, on its dorsal side. The proboscis is smooth, terminating in 20 short, crenulate papillae. Dorsal cirri are thin, broad, slightly cordate to equiangular, somewhat imbricated. These specimens compare favorably with those of *Eulalia pistacia*, and are likewise referred to *Eumida sanguinea*.

Whether these are to be referred to Verrill's species is not certain, but not unlikely. The original description might have been made from living material. The body was described as long and slender [here it is short, plump], the proboscis was said to terminate in “about 14 triangular papillae,” the “basal two-thirds covered with small, slender prominent papillae, which are not crowded but arranged in longitudinal rows.” Also, “this part of the proboscis is, in the preserved specimens longitudinally ridged and transversely wrinkled.” The larger of the two specimens in the collection gives the impression of being coarsely papillated, but there are only wrinkles of contraction.

*Eumida*, sp. inquir.


There is a single fragment, labelled “Off South End [New Haven] in 4–5 fms. No. 201.” It consists of 35 segments with everted proboscis; a posterior end is lacking; the length, over all, is about 10 mm. Some of the segments have large eggs. The proboscis was originally described as “long, clavate, thickly covered throughout with round, scarcely prominent, crowded, rather large granules, each of which has a dark central spot.” This specimen still retains this appearance, but the so-called large granules are really eggs that were forced forward in the space between the epithelial covering and the muscular layers of the proboscis, the dark spots are the germinal vesicles of the eggs; these are visible through the proboscideal wall. The surface of the proboscis is really smooth, shining, except for a few transverse wrinkles of contraction. This is thus a *Eumida*. The distal end of the proboscis is bounded by 17 soft, low, rounded papillae. This specimen has lost all of its dorsal and tentacular cirri, and the setal tips have been broken off. It is not possible to identify it beyond genus.

**Genus Eulalia** Oersted

*Eulalia viridis* (O. F. Müller)


The Museum has only one specimen so labelled, from “Watch Hill, in 4–5 fms., Apr. 13, 1873.” It is minute, only 13 mm. long, with proboscis completely everted, closely and entirely covered with elongate papillae, hence a *Eulalia*.  

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The prostomium is bluntly triangular, the posterior margin straight; it is about as long as wide. The median antenna is inserted on the posterior half, near the middle of the eyes. Peristomial cirri are tapering, cirriform, the longest reaches back to about the eighth setigerous segment. Dorsal cirri are elongate triangular, about twice as long as wide, nearly isolateral. In all of these respects this compares favorably with *Eulalia viridis*. It is doubtful, however, that this specimen is the same as what was first used by the describer since the length [in life] was given as 40 mm., and the prostomium said to be emarginate posteriorly.

Genus *Genetyllis* Malmgren

*Genetyllis bermudae* (Verrill)


**Figures 47-49**

There is a single, whole mount, specimen, depressed under cover slip, stained red, mounted in balsam, now considerably dried out. Only a few characters can be distinguished. The prostomium lacks median antenna and nuchal papilla; its posterior margin is straight. There are two large, lenticulated eyes; the anterior antennae are inserted wide apart [probably exaggerated because of the crushed condition of the specimen]. The proportions of these parts are shown in figure 47. The nature of the first three segments is not clearly discernible. Segment I is dorsally reduced, lacks setae, and its tentacular cirri are missing; segment II is longer than segment III; all tentacular cirri are lost except a pair on segment II, these are short, cirriform. In these respects, this is a *Genetyllis*.

The large anal cirri are still attached, but mounted somewhat obliquely to middorsum (fig. 48). They greatly exceed the prostomium in length (the two figures are drawn to the same scale). Dorsal cirri are asymmetrical, longer than broad (fig. 49). Setae number about 10 in a parapodium; the shaft is long, slender, terminating in finely spinous knob with a crotch in which the appendage is inserted; there are no tooth like structures; the appendage is long, slender, tapering, slightly curved, probably delicate. The nature of the proboscis cannot be determined.

Genus *Anaitides* Czerniawsky

*Anaitides gracilis* (Verrill)


**Figures 50, 51**

There are three specimens, labelled “Watch Hill, R. I., 4–5 fms.” The proboscideal papillae are in rows, hence this is *Anaitides*. The prostomium is
Genus *Eteone* Savigny

*Eteone robusta* Verrill


Figures 52–56

There is one specimen, labelled “Watch Hill, R. I. Apr. 13, 1873. low water.” Its length is 55 mm. (preserved); Verrill gave 125 mm., which was perhaps the length in life. Number of segments is about 107. The general form is robust, thick, tapering from about the anterior third in both directions; it is now dark reddish brown. The parapodial walls are distended with egg products, making the parapodial bases appear stout, thick.

The prostomium is thick, trapezoidal in outline (fig. 52); eyes cannot now be discerned. The proboscis (dissected) appears smooth. Tentacular cirri of the first segment are short, cirriform (fig. 52). The dorsal cirri more posteriorly are short, closely appressed to the body wall, decreasing somewhat in length posteriorly. Anterior dorsal cirri are broadly rounded, farther back they are approximately equitriangular with broad, squat base. Ventral cirri are largest on the first 20 or so segments (fig. 54); beyond that they decrease in size rapidly and by the last third are weakly developed (fig. 53). Setal lobes are deep, distally truncate, the presetal lobe slightly the longer. Setae have a long shaft, ending in a deep crotchet where the appendage articulates (figs. 55, 56) but...
Fig. 52. Anterior end, in dorsal view (eye spots could not be distinguished), × 26.
Fig. 53. Parapodium from posterior third of body, in posterior view, × 26.
Fig. 54. Eleventh parapodium in posterior view, × 26.
Fig. 55. Articulation of composite setae, seen from side, × 710.
Fig. 56. Same, seen from front, × 710.

Figures 57, 58. *Autolytus varians* (from type of *A. mirabilis*).
Fig. 57. One of slender, tapering composite setae from a median segment, × 710.
Fig. 58. One of falcate, bifid composite setae from same segment, × 710.

Figure 59. *Autolytus emertoni*. A typical neuroseta, showing bulbous shaft and minute appendage, × 710.

Figures 60, 61. *[Autolytus longisetosus]*.
Fig. 60. One of tapering, composite setae from a median segment, × 710.
Fig. 61. One of falcate, bifid, composite setae from same segment, × 710.

Figures 62, 63. *Branchiosyllis oculata* (based on type of *B. lamellifera*).
Fig. 62. Tip of an aciculum, × 710.
Fig. 63. One of five or six of the larger, composite hooks, showing the typical recurved position of the appendage, × 710.

Figures 64, 65. *Haplosyllis spongcola* (based on type of *H. cephalate*).
Fig. 64. Tip of simple hook, × 710.
Fig. 65. Tip of aciculum from same parapodium, × 710.

Figures 66, 67. *Typosyllis grandigularis*.
Fig. 66. Tip of an inferior, falcate neuroseta, × 710.
Fig. 67. Tip of a superior, serrated neuroseta, × 710.

Figures 68–75. *Typosyllis corallicola*.
Figs. 68–70. (based on type of *T. corallicola*).
Fig. 68. Tip of aciculum from a median region, × 710.
Fig. 69. Tip of a superior neuroseta from same parapodium, × 710.
Fig. 70. Two acicula from an anterior parapodium, × 710.
Figs. 71, 72. (based on type of *T. catenula*).
Fig. 71. Tip of a superior neuroseta, × 710.
Fig. 72. Tip of an aciculum from a median region, × 710.
Figs. 73–75. (based on type of *T. fertilis*).
Fig. 73. Two acicula from an anteromedian segment, × 710.
Fig. 74. Tip of an inferior neuroseta, × 710.
Fig. 75. Anterior end of oesophagus, mounted in balsam, compressed under cover slip, × 75.

Figures 76–83. *Synsyllis longigularis*.
Figs. 76–80. (based on type of *S. longigularis*).
Fig. 76. Tip of a worn, short-appendaged, composite seta, a little posterior to the region of the gizzard, × 710.
Fig. 77. Tip of a bifurcated spine, × 710.
Fig. 78. One of three blunt acicula, × 710.
Fig. 79. A short-appendaged, bifid, composite seta, tip unworn, × 710.
Fig. 80. A long-appendaged, bifid composite seta, present in about the first 17 setigers, × 710.
Figs. 81, 82. (based on type of *Eusyllis viridula*).
Fig. 81. A short-appendaged, bifid, composite seta, × 710.
Fig. 82. A bifurcated spine, × 710.

Figures 83, 84. *Chaunorrhynchus loveni* (based on type of *Ceratocephale websterti*).
Fig. 83. Anterior end in dorsal view, showing the paired prostomial antennae and palpi, × 26.
Fig. 84. Tenth parapodium in anterior view, showing accessory ventral cirrus, × 26.
Hartman: Polychaetous Annelids
without accessory spines or teeth, merely pubescent. The appendage is long, tapering, delicately toothed on the cutting edge.

_Eteone robusta_ differs from nearly related species most conspicuously in the proportions of its dorsal and ventral cirri in median and posterior segments. It was included in Sumner's list (1913, p. 616) as abundant at Woods Hole, Mass.

_Eteone limicola_ Verrill


There is one specimen, labelled “G. Egg Harbor. l. w. sp. 1871.” Its proportions agree with the original description. Unfortunately, it has been dried at some time so that the nature of the soft parts cannot be made out. Setal shafts have a major, slightly curved spine distally, but no accessory teeth. Nothing can be added to the description.

**Family SYLLIDAE**

Forty-three species in 17 genera were described in this family, and four genera (or subgenera) newly erected or named. Many still remain very incompletely known. Some descriptions were based on single, incomplete specimens, mounted whole, sometimes with several others on a slide; for the most part these are now very unsatisfactory, either dried out or disintegrated. This is especially the case for the Bermudan Syllidae. In many instances only a few setal characters are still to be distinguished.

**Genus Autolytus** Grube

Various phenomena, well known in the Syllidae, such as alternation of generations, conspicuous sexual dimorphism and epitoky, have attained a high degree of development in _Autolytus_, making this an unusually difficult group. Thus, the genera _Proceraea_ and _Stephanosyllis_ have been at least partly based on modified stages of _Autolytus_.

Eight species or new names were erected in this genus. (1) _A. emertoni_, (2) _A. ornatus_, (3) _A. varians_, (4) _Proceraea ornata_ and (5) _A. mirabilis_ are discussed below. (6) _A. longigula_, from Newport, R. I., is known only through figures (Trans. Conn. Acad. Arts Sci., 1882, vol. 4, pl. 12, figs. 3–3b); I am unaware that a description has been published. (7) _A. (Proceraea) simplex_ [changed to _A. pseudosimplex_ by Augener] from Bermuda, is incompletely known and its type (slide PMNH P-17) is unsatisfactory. (8) _Proceraea gracilis_, from Casco Bay, Maine, may be identical with _A. longisetosus_ (Webster & Benedict, 1887, p. 723).

The species discussed below are separable as follows:
1. Composite neurosetae with greatly reduced appendage, shaft terminates in a stout bulbous end (fig. 59); epitokous males have 6 prenatatory segments followed by 26-30 natatory and about 15 postnatatory segments.............. A. emertoni, p. 43
1. Composite neurosetae with no such reduced appendage...................... 2
2. Dorsum crossed by striking broad red bands irregularly spaced; stolons produced singly, from thirteenth segment............................ A. ornatus
2. Dorsum without banded pattern; stolons chain-like, 3-6 in linear series; epitokous individuals with 3 prenatatory segments................... A. varians

(includes A. mirabilis)

**Autolytus emertoni** Verrill


Figure 59

There are three slides, PMNH E-6 to 8, labelled as follows: E-6 “Male Autolytus emertoni—Salem n. sp. J. H. Emerton, Jl. 18, 1878.” E-7 “Autolytus emertoni female. Middle tentacle broken off. Essex Bridge. Salem. March 1899. JHE.” E-8 “Male Autolytus emertoni. Salem. Jl. 18. Eve. J. H. Emerton.” All are presumably this species. In the male epitokous stage there are six prenatatory, setigerous segments, 26 and 30 natatory segments followed by a posterior portion of 15 segments, or a total of 47 to 51 segments. The prostomial lobe is triangular, narrowest anteriorly, about as shown by Verrill (1882, pl. 12, fig. 9) or subtruncate (as on slide PMNH E-6). Parapodia throughout are provided ventrally with setae in which the shaft terminates in a thickened, bulbous, hirsute end and a minute appendage (fig. 59); if this tip is falcate or bifid it could not be determined. Verrill showed it originally as a simple seta with minute mucron; it appears, however, to have an articulating surface between the distal end and the bulbous shaft.

Slide PMNH E-7 is of a female epitokous individual, also with six prenatatory setigerous segments. Neurosetae have the same form as those in the male. *A. emertoni* is known only through records from New England.

**Autolytus ornatus** (Verrill)


*Proceraeoa ornata* Verrill, 1873, Ibid., p. 746. Long Island Sound and Thimble Islands, in 1-5 fms., among hydroids and bryozoa.
There is a single specimen, labelled "Procerara ornata. Type. Thimble Island, Oct. 2, 1873." It is dried out, unsatisfactory. The species is well established, however, through its several descriptions. It possesses a striking coloration as Verrill described. It was later described as Proceraea tardigrada Webster (1879, Trans. Albany Inst., vol. 9, pp. 227–230), Andrews (1891, J. Morph., vol. 7, pp. 20202–5) and Mensch (1900, Biol. Bull., vol. 1, pp. 89–93). The long prostomial antennae, broad red bands crossing the segments at irregular intervals, and the position of sexual stolons on the thirteenth segment, characterize this species. It is commonly encountered among intertidal hydroids and bryozoan clusters, south at least to Beaufort, North Carolina.

**Autolytus varians** Verrill


Figures 57, 58

There are numerous slides, labelled "Autolytus ornatus", including PMNH B-14 "Woods Hole. piles. Jl. 1880," PMNH B-15 "Woods Hole. Surface. Jl. 1881," PMNH B-16 "Essex Bridge. Salem. 1879." Also, as *A. varians* there are PMNH E-1 "Bright green. Fischer Is.," PMNH E-2 "Newport. 1880. Fgd. Type?"

As *Autolytus mirabilis* this is represented in the collections by slide PMNH 120-8, labelled "Vineyd. Sd. USFC. 1882. W. Hole. Surface. Eve." containing several minute epitokous sexual stolons. There are 3 prenatatory segments. The normal setae in a typical parapodium include one long, slender-appendaged seta (fig. 57) and numerous, falcigerous setae with bifid tip (fig. 58). Compared with the condition in *A. longisetosus* (figs. 60, 61) the pointed seta is more slender and the falcigerous seta has a more deeply bifid appendage.

Originally described by Verrill as *A. ornatus*, it was later (1882) changed to *A. varians* since *Stephanosyllis ornata* Verrill (1873) was found to be congeneric. The description of *A. mirabilis* was based on pelagic, sexual stages. Sumner (1913) and Mensch (1900) have contributed to the identity and synonymy of this species, and rightly referred *A. mirabilis* to *A. varians*.

**Genus Branchiosyllis** Ehlers

*Branchiosyllis oculata* Ehlers

Genus *Haplosyllis* Langerhans

?*Haplosyllis spongicola* (Grube)


Figures 64, 65

There is only a slide, PMNH O-5, labelled "Branchiosyllis lamellosa. Type. Photo. of head. Bermuda." It is in poor condition, permitting only an examination of the setae. These are all of one kind, composite with short, falcerous smooth appendage, most turned backward (fig. 63). One in a parapodium is shorter but stouter than the others, accompanied by 5 or 6 similar setae about half as thick. There is a single aciculum in each parapodium, it is tapering, slightly turned distally (fig. 62). The proboscis lacks teeth. The oesophagus extends through 7 setigers, the gizzard from the seventh to thirteenth setigers. Verrill reported branchiae on all segments; these are not now distinguishable.

The visible structures agree well with what Ehlers has shown and described for *B. oculata*, from Bermuda. Verrill separated them only for differences in the shape of head and comparative lengths of the cirri. These characters are believed to have no specific value, since they are based on soft, retractile parts. The identity of the two is herein suggested.

This is represented in the collections by an unstained, whole mount, with 3 specimens, PMNH P-12, labelled "Haplosyllis cephalata V. Type. Bermuda," and another slide PMNH O-4, labelled "Hemisyllis dispar V., Bermuda." The first is badly dried out, but the setae are still distinguishable. The cylindrical gizzard extends through 5 setigers. Setae are entirely simple, with only 2 or 3 in a parapodium. They are distally bifid, the distal fang sometimes with two fine teeth (fig. 64). The acicula are simple, distally curved but blunt (fig. 65). In addition, there is a fine capillary seta in each parapodium. These structures compare favorably with those of *H. spongicola* (Grube) except that the latter is said to have up to 3 or 4 setae in a parapodium whereas *H. cephalata* has only 2 or 3. In other respects their descriptions agree.

The single collection of *Hemisyllis dispar* has only a short anterior fragment. Its setal structures agree with those described above. *Hemisyllis* Verrill was
separated from *Haplosyllis* in that the palpi were believed to be united for about half their length in *Hemisyllis*; if actual, *Hemisyllis* may represent a distinct group, but there are no differences in their chitinous parts. The bases of the palpi are sometimes so closely appressed that it is not always clear whether or not they are really united. The synonymy is therefore doubtful.

**Genus *Typosyllis* Langerhans**

*Typosyllis grandigularis* Verrill


*Syllis (Ehlersia) nitida* Verrill, 1900, Ibid., vol. 10, p. 612. Bermuda.

Figures 66, 67

There is a single slide, PMNH P-11, labelled “*Syllis (Typosyllis) grandigularis*. Type. Bermuda.” The pharynx has a large conical tooth at its anterior end. Acicula number two or three in a parapodium. Anterior segments, through the region of the gizzard, have slenderer acicula than those more posterior; they increase gradually in thickness from anterior to posterior regions. In the first few segments acicula are slightly bent or S-shaped, with an obscure bifid tip. Farther back they become thicker, are straighter and terminate in a bluntly conical tip. Falcigerous setae are composite, of two kinds. Those in the superior part of the fascicle have an appendage distally entire (some more or less bifid) with delicate serrulations along the cutting edge (fig. 67); those in the inferior part of the fascicle have a shorter appendage, the tip simply falcate (fig. 66) with smooth cutting edge. The distal end of the shaft of all composite setae is broader than the stem and faintly toothed at the outer side. The differences between these two kinds of setae are more marked in the posterior than in the anterior half of the body.

These conditions are in close agreement with those of *Typosyllis krohni* Ehlers; the two species are obviously close, if not identical.

Another slide, PMNH P-6, is labelled “1. *Trypanosyllis nitida*. Type. 1. S. coralicola largest. 1. Haplosyllis n. sp. smallest. 1. Eusyllis n. sp.” Four specimens are mounted on it of which the largest is presumably the type of “*Trypanosyllis nitida*” or what was published as *S. (Ehlersia) nitida*. The setae consist entirely of composite falcigerous and agree exactly in their form and distribution with those of the type of *Syllis (Typosyllis) grandigularis*. Also, in their general form, size and proportions they agree remarkably well. Both are perhaps to be referred to *Typosyllis krohni* Ehlers.
Typosyllis coralicola (Verrill)


Figures 68–75

There are four slides (PMNH P-1 to 4) labelled *Syllis corallicola*, all taken from Bermuda. Setae are all of one kind, composite falcigers, with bifid tips; the superiormost (fig. 69) have a comparatively longer appendage than the inferiormost but closely resemble one another. Acicula are notably stouter than the setal shafts behind the region of the gizzard. They are pale, bluntly conical (fig. 68) and occur usually two in a parapodium. In the anterior third of the body they are slenderer than farther back and one of the two is usually somewhat truncate distally (fig. 70); in the median and posterior regions there are two thicker, similar acicula, both bluntly conical.

There is also an alcoholic collection (PMNH 120-10) from Bermuda. The dorsal cirri alternate long and short; the setal and acicular structures agree with those of the mounted specimens. The distal end of the proboscis is provided with ten soft papillae; the pharyngeal tooth is large, conical. The paired antennae of the prostomium are inserted far forward, at the anterior edge of the lobe. The longer, dorsal cirri have about 40 articles, the shorter 20 to 30 articles.

This is a *Typosyllis* since its setae include only composite. It is believed to include *S. (Typosyllis) catenula*, *S. jugularis*, and perhaps *Trypanosyllis fertilis*, all originating from Bermuda.

*Syllis (Typosyllis) catenula* is represented by slides PMNH P-23 and 24, and an alcoholic collection, PMNH 120–12, with four specimens. Dorsal cirri are alternating long and short, just as in *S. coralicola*; the paired prostomial antennae are inserted at the anterior margin. Setal structures agree; the composite setae have similar shafts and appendages (fig. 71) and the acicular structures are the same (fig. 72). The pharyngeal tooth is large, conical; the gizzard long, coarsely reticulated. These specimens are slightly smaller than those labelled *S. coralicola*, but in other respects there is marked agreement.

*Syllis jugularis* is known for only one specimen, mounted whole on slide PMNH P-21. The setae, acicula, texture of the gizzard, the proboscis with its large conical tooth at the anterior end (retracted) agree well with similar parts in *T. coralicola*. It is herewith referred to the latter.

There is a single slide, PMNH P-22, with one specimen, labelled “*Trypanosyllis fertilis V. female with eggs.*” from Bermuda. The anterior end of the oesophagus has a circlet of about ten soft papillae and a large conical tooth.
(fig. 75). The oesophagus has been partly everted so that the circlot of papillae is nearly pushed between the palpal bases, otherwise the anterior edge of the oesophagus might appear straight, as in the mounted specimens of S. (Typosyllis) corallicola; this might also account for the apparently broader head of “Trypanosyllis fertilis.” Anterior segments have three or four slender acicula, of which one or two are somewhat bent distally, the others are nearly straight, bluntly conical (fig. 73). Acicula are proportionately thicker farther back. Setae include only composite falcigerous with bifid tip and fine, denticulated edge along the cutting portion (fig. 74); this is thus a Typosyllis. The setae and acicula agree perfectly with those of T. corallicola except that in T. fertilis there are more (3 or 4) acicula in a parapodium. Their identity is therefore questioned.

Genus Synsyllis Verrill

Synsyllis was separated from Eusyllis Malmgren as follows: Eusyllis with setae all, or in part, compound. Synsyllis with anterior setae compound, those of middle region mostly two-pronged crotchets.

Synsyllis longigularis Verrill


Figures 76–82

A slide, PMNH M-10, bears the label “Eusyllis longigularis. Type. (longest) (several other sp.).” Only the setal structures are still to be made out. The first 17 setigers, that is, through the region including the gizzard, have setae that are slender, composite (fig. 80). From the eighteenth setiger a single stout bifid hook and a knobbled aciculum (fig. 78) are present, the long bifid composite setae are replaced by short appendaged setae (figs. 76, 79). The arrangement after that is monotonous. Verrill described setae on the last ten segments as all compound. The specimen does not permit verification on this point.

The arrangement of setal structures in parapodia throughout, after the region of the gizzard is about as follows: three acicula, one stout bifurcated spine (fig. 77) extending beyond the others, one short appendaged falciger (fig. 76).

One slide, PMNH M-9, labelled “Eusyllis viridula V. Type. Bermuda” has a specimen agreeing closely with Synsyllis longigularis. Anterior segments have composite setae, the appendage more than twice as long as broad; posteriorly they are shorter (fig. 81). Acicula and spines (fig. 82) are identical with those in S. longigularis. The dorsal cirri are more or less closely annulated or moniliform. This is herewith referred to S. longigularis. Syllis gracilis Grube is nearly related.
Family NEREIDAE

Genus Chaunorhynchus Chamberlin

Chaunorhynchus loveni (Malmgren)

East of Cape Cod, Mass., in 122 fms.

Figures 83, 84

There are several collections: “No. 7438, off Cape Cod., USFC 1879, Loc. 30.5. Type.” with one anterior end, the proboscis cut open; “No. 7436. Gulf of Maine. USFC, 1878. Loc. 186” with two anterior ends, and “No. 7437. Off Cape Cod. USFC 1878, Sta. 186” with three small pieces.

In the original description the formula of the proboscideal papillae was not made known. Based on specimens from the Gulf of Maine, this is as follows: Area V has a single elongate papilla, area VI a similar one on either side, areas VII and VIII together have a single row of 7 similar papillae, disposed on the ventral and ventrolateral side. This compares with that of C. loveni (Malmgren) except that the proboscis has only a single row of papillae on areas VII and VIII. The prostomium lacks eye spots; its proportions are shown in figure 83.

The ventral cirrus was originally described as small, slender, tapered, single on the first 16 segments. On these individuals, however, there is a small accessory inferior cirrus already present from the third parapodium, increasing in size more posteriorly and by the tenth is equally as large as the superior branch (fig. 84), thus agreeing with that of C. loveni. A tenth parapodium is as shown in figure 84. The dorsal cirrophore is broad, somewhat compressed, increasing in size gradually toward a median region. Setae are pale yellow, occur in thick fascicles; acicula are dark to black.

Verrill recognized the affinities of this with C. loveni but thought that they differed in the structure of the dorsal cirrophores, and the absence of a double ventral cirrus on the tenth segment. The dorsal cirrophores were not correctly shown for C. loveni until after Verrill’s description has appeared, when they were shown to be broader and articulating with the dorsal cirrus, just as in C. websteri. The double ventral cirrus is present from the third segment in both. McIntosh (1902, vol. 10, p. 258) reported a species, “near loveni” from the vicinity of the Gulf of St. Lawrence, which may be close to this.

Family EUNICIDAE

Genus Eunice Savigny

Eunice floridana (Pourtales)

Albatross Station 865-867, northeast North America; 1882, Trans. Conn.

Figures 85–87

There are many collections dredged from New England by the U. S. Fish Commission, during 1880–1883; localities include Martha’s Vineyard, Mass., to Newport, Rhode Island. The length of 41 anterior segments is about 35 mm. The prostomium is marked anteriorly with a deep, median groove; its 5 antennae are nearly smooth, cirriform, with a few irregular rings especially in the distal two-thirds of their length. The peristomial cirri are smooth, their length about that of the peristomial ring.

Branchiae are first present from the seventh or eighth parapodia, with single filaments; there are 2 filaments on the tenth, 3 on the eleventh, increasing gradually to 6 or 7 filaments; throughout, they are shorter and slenderer than single filaments.
Hartman: Polychaetous Annelids
the dorsal cirri. Though diminishing in number after the thirty-second segment, they are present as pectinate structures throughout, to the second or third last body segment. Acicula setae and acicula are dark or black; the former are first present from about the thirtieth parapodium, their tips bifid (fig. 85). Composite setae have a falcate, distally bifid, appendage (fig. 87); pectinate setae are as shown in figure 86. These specimens agree in all essential details with *Eunice floridana*, already widely reported from the western side of the north Atlantic.

*Eunice benedicti* (Verrill)


Figures 88–90

There are several specimens, labelled "Vineyard Sd., Mass. USFC 1881. Loc. 922, 14361," and "USFC Sta. 1032. 14362." The prostomial antennae are weakly ringed, but essentially cirriform. The peristomial tentacles have a long basal joint and several shorter, slenderer, distal joints. The anterior margin of the prostomium is distinctly emarginate. Branchiae are present from the third parapodium, on 39 segments; a long posterior portion is abranchiate. The arrangement of the filaments is pectinate, with up to 11 filaments. On the sixth parapodium there are 3 short filaments, on the eighth there are 6, on the 17th there are 11; after the thirty-fourth parapodim their number decreases rapidly.

Acicula and acicular setae are yellow; the latter are first present from about the twenty-first parapodium; they are coarse, distally bifid, occur usually singly (rarely 2) in a parapodium (fig. 90). Composite setae are falcigerous, distally bifid (fig. 89). Acicula taper distally and are slightly curved (fig. 88). The maxillary formula is as follows: maxilla I has 1 tooth right and 1 left, max. II has 6 (and also a smaller) right and 6 left, max. III has 9 right, none left, max. IV has 5 right, and 11 left.

*Eunice benedicti* comes close to *E. pennata* (O. F. Müller); it has remained unknown except through its original account.

Genus *Marphysa* Quatrefages

*Marphysa regalis* Verrill


Figures 91–93

The collections contain 2 larger anterior ends and a smaller, complete individual. The length in life was given as over a foot. Verrill's description is adequate save in a few respects. The antennae are short, not greatly sur-
passing the prostomium, smooth or only faintly ringed though not articulated. Branchiae are present from about the fifteenth or twentieth segments, with at most to about 4 filaments, the arrangement weakly pectinate; dorsal cirri are tiny by comparison. Acicular setae are dark brown, occur singly in parapodia and resemble the acicula except that they are slightly curved distally and some show a constricted region (fig. 91). Composite setae have a bifid falcigerous appendage (fig. 92), originally described as "strongly bidentate." Pectinate setae are as shown in figure 93.

The maxillary formula is as follows: Plate I has 1 fang on either side, plate II has 5 and 4 teeth, plate III has 6 on each side, plate IV has 3 or 4 teeth, present on the left side only. In two specimens examined, the formulae were identical except for slight differences on plate IV. This species has been redescribed by Treadwell (1921, Pap. Dept. Mar. Biol., vol. 15, pp. 66–69) based on collections from the West Indies.

**Family LUMBRINERIDAE**

**Genus *Ninoë* Kinberg**

*Ninoë nigripes* Verrill


**Figures 94–97**

The Museum has many collections from the vicinity of New England; only one predates the first description. Its label reads: "USFC. Vineyard Sound. 25 fms. 1871." The body is broadest between segments 4 to 27 where the branchial lobes are developed. The prostomium is slightly depressed (more so in cases where the proboscis is everted), conical, longer than broad, without eye spots. Its ventral side is smooth (fig. 94) or has a median longitudinal groove. The first apodous segment is about one and one-half times as long as the second; the latter (also apodous) is about as long as the next ring.

Serrated parapodial lobes are first present from the third setigerous segment, at first with only one lobe (in addition to the parapodial postsetal lobe); by the fifth there are 2 extra lobes, and 3 or 4 lobes on the next, this arrangement continued through most of the branchial region. The dorsalmost lobe (corresponding to the postsetal parapodial lobe) is always the largest, and is present throughout the length, though greatly diminishes in size and length in the postbranchial region. The notopodium is represented merely by a small papilla, with, however, a slender fascicle of pale, embedded acicula (fig. 95). The neuropodium is
robust, short, with 3 or 4 dark embedded acicula and numerous simple setae in a spreading fascicle; the latter have dark stems but are colorless in the limbate or flaring ends. In a typical parapodium (eleventh) there are 5 superior, pointed limbate setae, 6 median, simple hooded hooks (fig. 97) and 1 ventral, pointed, limbate seta resembling the superiormost.

The proboscideal armature consists of a delicate, white, calcareous mandible, with flaring distal end, and long, slender basal pieces; the whole is much shorter than the total length of the maxillary pieces. The latter consist of a carrier that is longer than broad, a slender falciger; maxilla II has 6 denticles on a plate, the subdistal tooth the smallest; maxillae III and IV have 1 slender tooth each (fig. 96).

*Nioë nigripes* is unique in having its branchial region limited to setigerous segments 3 to 27, and in its maxillary formula. It remains unknown except through the New England records. McIntosh (1903, Ann. Mag. Nat. Hist., ser. 7, vol. 12, p. 159) reported *N. kinbergi* Ehlers from the Gulf of St. Lawrence; this differs from *N. nigripes* in that the branchiae are still conspicuous at the fiftieth segment.

**Genus Lumbrineris** Blainville

*Lumbrineris tenuis* (Verrill)


The material examined is labelled "Type, Stony Creek [Conn.] May, 1872." This includes several small fragments of what might have been more than one specimen, but there is now only one anterior end. The largest piece lacks head and tail and measures about 60 mm. long; it is slender, terete. The single head end measures about 8 mm. including 24 setigerous segments and prostomium. This is thus a long, slender, though small, species. The prostomium is depressed, bluntly conical, without eye spots. Parapodial lobes are short throughout, inconspicuous. The first 16 segments are provided with only simple, limbate setae, disposed in spreading fascicles. There are about 12 setae where best developed, between segments 8 to 12 [the fragmentary condition of the material may be misleading in this respect]. From about the seventeenth segment simple hooded hooks are present. Limbate pointed setae are more or less gradually and completely absent after hooded setae make their appearance, but a single limbate seta may be present in parapodia almost throughout. Setae and acicula are pale.

The proboscideal armature could be examined only by cutting open the anterior end. The mandibles are now translucent, thin, eroded, only the delicate
chitinous parts remain. Maxilla I is falcigerous, max. II has 6 teeth right, 5 left, max. III and IV have 1 tooth on either side [if max. III has a smaller accessory denticle it was not detected].

*Lumbrineris tenuis* is characterized in having a slender, terete form, the anterior 16 or so segments provided with only pointed limbate setae; more posterior segments have simple hooded hooks; parapodial lobes are small throughout; maxillae IV have 6 and 5 denticles.

**Genus Arabella Grube**

*Arabella iricolor* (Montagu)


The type, PMNH 124-1, is a complete specimen, about 95 mm. long; there are others of varying lengths, all from Bermuda. The prostomium is slightly depressed, bluntly conical, somewhat longer than wide, with four eye spots at its posterior margin. The parapodial lobes are simply short, digitate throughout, surpassed in length by the setal tips, about as long as, or somewhat shorter than, the parapodial lobes. These parts, as also those of the proboscidial armature and setae, agree closely with similar conditions in *A. iricolor* (Montagu), to which *A. maculosa* is herewith referred.

As *A. maculosa*, this has been further described from Bermuda by Treadwell (1921, *Pub. Carnegie Inst. Washington*, no. 293, pp. 114-115, pl. 9, figs. 12-13).

**Family DORVILLEIDAE**

**Genus Dorvillea Parfitt**

Many species in this genus have been described, or reported, from eastern America. These include: *D. bioculata*, *D. vittata* and *D. rubra*, by Grube (1856) from Costa Rica, *D. grubei* (Kinberg) (1865) from Brazil, *D. sociabilis* (Webster) (1879) from Virginia, *D. caecus* (Webster & Benedict) (1884) from Massachusetts, *D. pallidus* (Verrill) (1873) from Connecticut, and *D. melanops*, *D. erythrops* and *D. polydonta* by Verrill (1900) from Bermuda. In many instances reidentification is difficult or impossible, since sufficient characters of specific value have not been expressed. In a treatise on West Indian forms Treadwell (1921, pp. 120-127) discussed *D. polydonta*, *D. rubra*, *D. vittata* and *D. melanops*. Fauvel (1923, vol. 5, pp. 446-448) has referred *D. polydonta*, sensu Treadwell, to *D. rudolphii* (delle Chiaje) and Monro (1933, pt. 1, p. 92) has maintained this conclusion. The type of *D. polydonta* Verrill, however, differs as Treadwell has described (see below). Verrill considered *D. melanops* and *D. erythrops* closely related but separated them on the basis that the one had smaller jaw pieces and shorter cirri than the other, differences lacking specific significance. The status of many of the names mentioned above is questionable; only a reexami-
nation of the original materials or collections from type localities can establish
the status of some of them.

_Dorvillea rudolphii_ (delle Chiaje)

_Staurocephalus pallidus_ Verrill, 1873, USFC, Washington, vol. for 1871/72,

Figures 98 to 102

There is a slide, PMNH G-9, labelled “Newport, low water, figd.” This
consists of an anterior end only, with jaws visible through the body wall. The
other collections are from near New Haven, at low water, and from South End
[near New Haven] at low water, collected in 1883, hence postdating the original
description. All are labelled in Verrill’s handwriting, and supposedly represent
a single species. The mandibles are curved inward at their basal ends, the distal
free end is almost completely bordered with low denticles (fig. 98). The maxil­
lary plates number at least 35 in a series, the larger pieces have four teeth each
(fig. 99). The moniliform tentacles have about 11 articles each. Palpi are long,
stout, with a small terminal article. Parapodia have a long, cirriform dorsal
ramus with articulating dorsal cirri, and a broad, obliquely truncate setigerous
lobe. In anterior (fig. 100) and posterior (fig. 101) regions the dorsal cirrus ex­
tends far distally and the setigerous lobes are distally oblique, shorter at the
upper end.

Capillary setae are long, slender, toothed at one edge. Composite setae
include both long, and short appended, the latter with appendage three or
four times as long as wide, the other with much longer appendage. In all the
secondary tooth is present but very weakly developed. Bifurcated simple setae
have unequally long branches, diverging distally, toothed along one edge
(fig. 102).

_S. pallidus_ approaches _S. polydonta_ (below) in having a high maxillary count
and weakly bifid composite setae; it differs in having mandibles that are incurved
at their basal ends, but these characters have no specific significance.

vol. 15, pp. 120-121, pl. 9, figs. 14-16, text-figs. 435-441. Ely’s Harbor,
Bermuda.

Figure 103

This is represented in the collections by only a slide, PMNH 0-21, from which
little can be made out except some of the proboscidial parts. This may be
characterized in its high maxillary count, having at least 35 plates in a row;
also, the mandibular bases are straight, the distal spreading ends nearly at right
angles to them. In _S. rudolphii_ (delle Chiaje) with which this has been identified
(Fauvel, 1923; Monro, 1933) there may be only about 16 sets of maxillary pieces: Jaw pieces are so disposed as to lie over one another; the main plates appear to have four teeth each; the basal plate is long, linear, with nine or ten teeth, the largest distal. The mandibles have long, slightly curved, basal ends, the anterior cutting edge with a few poorly marked teeth [perhaps worn] and several detached denticles (fig. 103). The description by Treadwell (1921) supplements the original preliminary description. Both *S. pallida* and *S. polydonta* are probably conspecific with *D. rudolphii* (delle Chiaje).

*Dorvillea melanops* (Verrill)


Figures 104 to 109

*S. melanops* is represented by only a slide, PMNH 0–20 and *S. erythrops* by another, PMNH 0–22; both are unsatisfactory to determine other than a few setal and maxillary characters. Verrill recognized the similarity of the two species but separated them because one was observed to have smaller jaw pieces than the other and the cirri were of different lengths. Drawn to the same scale, the mandibles are found to differ notably in size, but they have similar proportions (figs. 104, 108, 109). The denticles at the distal ends are not clearly discernible and perhaps somewhat worn. The composite setae in both examples have appendage with clearly bifid tip, the secondary tooth nearly as large as the distal one (fig. 107). In *S. erythrops* the number of maxillary parts in a row is about 16, followed by the largest. In *S. melanops* there are 23 or 24 sets of maxillae in a row, the basal carriers, however, with the same number of teeth, of which the distalmost is tiny (fig. 106); the proportions in the two are similar.

*S. melanops* as redescribed by Treadwell (1921, pp. 125–127) may belong here but there are some differences. The composite setae have a longer appendage in Verrill’s type; the basal carrier of the maxilla has a different kind of denticulate edge, with a small tooth at the distal end; the mandibles are shaped somewhat differently. These differences, however, may not have specific significance.

Family ORBINIIDAE

[The name ORBINIIDAE is used in place of Ariciidae since the type genus of the family, *Aricia* Savigny, 1820, is preoccupied. The next available name is *Orbinia* Quatrefages, 1865.]
Genus *Scoloplos* Blainville

*Scoloplos bustorus* Eisig

*Anthostoma robustum* Verrill, 1873, Rep. USFC, Washington, vol. for 1871/72, pp. 597–598, pl. 14, fig. 76. New Jersey; Connecticut; Massachusetts. (not Kinberg, 1865).


Figures 110 to 112

The type selected, PMNH 24-2, is labelled “Anthostoma robustum V. G. E. [Great Egg] Harbor. I. w.” There are also collections from New Haven and other parts of New England. The species is at once distinguished from other representatives of this family from the east coast of North America in its much greater size. It is frequently found in the same, or neighboring, localities as its most closely related species, *S. fragilis* (below).

There are 25 prebranchial segments, but the first five or more pairs of branchiae are small, papillar, increasing gradually in size posteriorly. The anterior segments are smooth through the prebranchial region, the setae disposed in full, fan-shaped fascicles; if these are pushed forward the short, stout, parapodial lobes can be distinguished just posterior to the setal fascicles. Branchiae become gradually longer, strap-like; in abdominal segments they are conspicuously long, as are also the setigerous lobes.

An interramal cirrus is present through a considerable region. It makes its appearance with the other parapodial lobes in the anterior region. Already in the prebranchial region it is a stout lobe, resembling the neuropodial postsetal lobe but thicker (fig. 110). More posteriorly it becomes somewhat slenderer, but is present throughout most of the abdominal region as a slender, ligulate...
lotype (fig. 111). In a far posterior region it gradually disappears (fig. 112). The notopodial postsetal lobe is at first broad, triangular, gradually becoming longer, slenderer, its size and shape much like that of the branchia but lacking the marginal ciliated fringe of the latter. The neuropodium has a long, superior lobe and a much shorter, inferior one between which the setae emerge. In the anterior region the large ventral glandular area is distinctly bifid (fig. 110), but gradually as this area becomes longer, the median incision disappears, and the entire lobe is somewhat lamellar, flaring.

The similarity of this species with S. fragilis is indeed striking, when comparing structures of the parapodial parts and general appearance, save discrepancy in size. The most obvious differences appear to be the following. S. bustorus is very much larger (up to 375 mm. or more in length, according to Verrill); it has a much longer prebranchial region (about 25 segments); the interramal cirrus persists through a proportionately longer abdominal region, and the ventral glandular areas are much more conspicuous and extend through a greater portion of the body rings. Although its ecologic range somewhat overlaps that of S. fragilis, it is typically found at lower water.

Since Verrill's name is preoccupied by Alcandra robusta Kinberg (also a Scoloplos), Eisig (1914) proposed the name S. bustorus.

Scoloplos fragilis (Verrill)


Figures 113-115

The type selected, PMNH 24-1, is labelled "Anthostome fragile V. G. Egg Harbor. N. J. Cotypes. 39." There are numerous other collections from New Jersey and New England. From their general aspect, they might be mistaken for juveniles of S. bustorus (above), were it not that several are mature, egg-laden. However, there are morphological differences separating these two.

Branchiae are present from the fourteenth or fifteenth setiger, at first small, papillar, but rapidly increasing in size posteriorly. A twentieth parapodium is shown in figure 113. An interramal cirrus makes its appearance in the branchial region; it is elongate, triangular through a long region, present throughout the thoracic and part of the abdominal region, gradually it becomes more slender, is present up to about the forty-third segment, and thereafter is absent. The notopodial lobe is broad, triangular, more conspicuous than the branchia through the greater part of the thoracic region (fig. 114), but more posteriorly the branchial lobes increase in length considerably and soon surpass the dorsal lobe (fig. 115). Neuropodia have a much longer, superior ligule and a short, ventral lobe.

S. fragilis attains a length of about 125 mm. (hence much less than that of
S. bustorus); it occurs usually in a higher zone of the intertidal, but also in sandy beaches. It ranges at least from New England south to North Carolina.

Genus Naineris Blainville

Naineris setosa (Verrill)


Figures 116–118

The single type, PMNH 24-4, is labelled "Aricia setosa Verr. No. 1242. Flatt's Inlet, Bermuda." There are three other lots, also from Bermuda. The prostomium was originally described as "flattened, widest near the front end, which is truncate" just as it is in the specimens; this is thus a Naineris. Branchiae are first present from the sixth setiger, at first small, papillar, increasing somewhat in size, but never large, never meeting across the dorsum (preserved), at most standing erect and leaving a broad, dorsal space exposed, even in posteriormost segments. The thorax consists of about 38 setigerous segments, these are considerably broader and thicker than those of any other part of the body.

Parapodial lobes are poorly developed throughout (figs. 116–118), hence the setal structures are proportionately more conspicuous. In thoracic parapodia the dorsal postsetal lobe is elongate, somewhat thickened, surpassing the setigerous ridge, but exceeded in length by the branchia. The neuropodium is a deep, flange-like ridge with a papillar lobe at its dorsal ectal margin (fig. 116); more posteriorly, in the abdominal region, both notopodia and neuropodia have weakly developed lobes (figs. 117, 118).

Naineris setosa is known only from Bermuda.

Genus Orbinia Quatrefages

Orbinia ornata (Verrill)


The only collection, PMNH 24-3, predating the original description is labelled "Aricia ornata V. Savin Rock. 1872. AEV. Type." There are several other lots from New England. Dorsal branchiae are first present from the fifth parapodium on the right side and from the sixth on the left side. The branchiae are at first small, papilliform, but soon attain the typical, ligulate form. There are 26 or 27 segments in the thorax, that is, the region provided with transverse hooked rows. Segments 21 to 30 (but see below) have elongate fringe on their
ventral side; at segment 21 there are only two fringes on a side, near the para-
podial base, on the twenty-second there are two fringes farther ventrally, on the
next there are seven fringes in a long transverse row, and on the twenty-fourth
there are eight or nine in a similar, long, transverse row. On the twenty-fifth
there are eleven on a side, these nearly meeting medially. By the twenty-
inth there are only eight papillae on a side and they retreat from near the
midventral line; by the thirtieth there are only two or three small papillae.

Parapodia lack an interramal cirrus. In a typical, abdominal parapodium
from about the middle body region, the notopodial lobe is long, slender, the
postsetal lobe far surpassing the setigerous ridge; the neuropodium has a similar
postsetal lobe, directed somewhat ventrally, but its length does not greatly
exceed the setigerous lobe. The ventral cirrus is somewhat shorter.

This species was collected many times by the author at Beaufort, North
Carolina, during the summer of 1940. In these specimens the number and
position of the ventral thoracic papillae varied, ranging from the twelfth to
thirty-eighth setiger,—hence over a greater area than in the type (21 to 30).
This species has been reported only from New England, south to North Caro-
olina.

Family SPIONIDAE

Genus *Nerine* Johnston

*Nerine agilis* Verrill

Harbor, New Jersey, in sand.

*N. heteropoda* Webster, 1879, Trans. Albany Inst., vol. 9, pp. 249–250, pl. 8,
figs. 103–110. Virginia.

Figures 124–128

There are numerous specimens, from Newport, Rhode Island, south to New
Jersey. The type, PMNH 24-5, is labelled “Nerine agilis V. 41. N. Jersey outer
beach, Basler Pt.” The number of segments ranges from about 50 to 65. The
prostomial lobe is elongate, pointed anteriorly; there are four, conspicuous, dark
eyes on the prostomial ridge, nearly in a straight, transverse line, anterior to the
insertion of the palpi. The caruncle extends posteriorly only to the end of
the peristomium (fig. 124).

Branchiae are present from the second setigerous segment, more or less fused
with the dorsal lamellae, and continued posteriorly to the end. The parapodial
lobes of median (fig. 126) and posterior (fig. 127) parapodia have proportions
about as shown. The pygidium is surrounded by an entire, thick flange, border-
ing the ventral side of the anal aperture (fig. 125). Hooded uncini are first pres-
ent from about the thirtieth segment, at first only one or two in a neuropodium,
but gradually increase in number, whereas the pointed setae, present more
anteriorly, are more or less completely replaced. In a posterior parapodium, however, there are still a few slender, pointed setae in the superior part of the fascicle. The uncini are distally bifid (fig. 128). Notopodia are provided with only pointed setae throughout.

*Nerine heteropoda* Webster (1879) from Virginia, agrees with *N. agilis*; the latter has priority. These differ, however, from *N. cirratulus*, to which they have sometimes been referred (Mesnil, 1896, Söderström, 1920) in having the four prostomial eyes disposed in a straight line instead of a trapezoidal arrangement.

**Genus Spio** Fabricius

*Spio setosa* Verrill


**Figures 119, 120**

There is a small collection of several anterior ends of *S. limicola* bearing the same number, 14550, as the type in the National collections at Washington. The label reads: “Off Cape Cod. USFC. Sta. 317. 16–25 fms. No. 14550.” The body is broadest in the region of the seventh to fifteenth segments. The prostomial lobe is broad in front, somewhat spatulate, constricted slightly between this and the region of the eyes, and continued posteriorly as a short, broad caruncle, to the posterior margin of the first setiger. There are four black eye spots, disposed in trapezoidal arrangement, the anterior pair widest apart. There are also numerous, small, dark specks near the posterior end of the caruncle (fig. 119). A median antenna is believed to have been present, but is now missing. Branchiae are present from the first setiger, and continued on segments throughout the length.

Notopodia are provided with only pointed setae. Hooded hooks, first present from about the sixteenth neuropodium, are distally bifid (fig. 120). The pygidium was originally described as having four, moderately long, blunt cirri. *S. limicola* is undoubtedly the same as *S. setosa* Verrill, also described from New England. Both have the same depressed, truncate prostomium, a similar distribution of hooks, and the same kind of pygidal cirri. Mesnil (1896, p. 132) considered it perhaps identical with his *S. martinensis* (a synonym of *S. filicornis* (O. F. Müller), but this is unlikely since there are too many structural differences (vide Fauvel, 1927, p. 43).
There are numerous specimens, from “off Cape Cod, Mass., USFC., Loc. 207, 209 [Type] and 241.” The prostomium is anteriorly prolonged and distinctly bifid at its anterior margin. The caruncle extends posteriorly through the fourth setigerous segment or to the anterior border of the modified segment [Verrill, 1885, pl. 43, fig. 186, showed it only through the first setiger]; there is neither papilla nor elevation on it. The four dark eye spots are in trapezoidal arrangement, the anterior pair at the sides of the prostomial ridge, the posterior pair nearer together and embedded in the tissue of the prostomium (fig. 121). [Verrill showed numerous spots nearly in a transverse row.] The first setigerous segment has well developed dorsal and ventral postsetal lobes, these almost or quite as large as those of the second segment, and with spreading fascicles of

Figures 121-123. *Polydora concharum.*

Fig. 121. Anterior end in dorsal view, palpi omitted, setae indicated in first segment, X 26.

Fig. 122. A heavy spine from fifth segment (one of about six), with its companion pennoned seta, X 70.

Fig. 123. A hooded hook from about the tenth last segment, X 330.

Figures 124-128. *Nerine agilis.*

Fig. 124. Anterior end in dorsal view, base of right palpus and scar of left indicated, X 26.

Fig. 125. Pygidium in dorsoposterior view, X 26.

Fig. 126. A median parapodium in anterior view, X 26.

Fig. 127. Twelfth last parapodium in anterior view, X 26.

Fig. 128. Tip of a hooded hook from twelfth last parapodium, X 710.

Figures 129-140. *Cistenides regalis, C. gouldii, C. granulata.*

Fig. 129. Fascicle of three spines from one side of scaphe of C. regalis, X 75.

Fig. 130. Tip of scaphal spine from C. gouldii, X 330.

Fig. 131. Tip of scaphal spine from C. granulata, X 330.

Fig. 132. Tip of finest scaphal spine from C. regalis, X 330.

Fig. 133. Scaphal area of C. regalis, hooks indicated, X 16.

Fig. 134. Scaphal area of C. granulata (Bay of Fundy), hooks indicated, enlarged.

Fig. 135. Scaphal area of C. gouldit, hooks indicated, X 26.

Fig. 136. Denticulate edge of uncinus of C. regalis, X 710.

Fig. 137. Posterior end of C. regalis, including segments 21 to 28 and anal end, X 7.

Fig. 138. Outline of tube of C. gouldit, X 1 1/2.

Fig. 139. Same, of C. granulata, X 1 1/2.

Fig. 140. Same, of C. regalis, X 1 1/2.
notosetae and neurosetae. The fifth (modified) segment has three setal fascicles on either side (for which reason Verrill erected the genus Dipolydora), (1) an anterodorsal fascicle of fine bilimbate pointed setae (fig. 122), (2) a much larger, more conspicuous, slightly crescentic series of six or seven stout yellow spines (fig. 122), and (3) an inconspicuous ventral fascicle of fine pointed setae, resembling the dorsal, bilimbate setae. The stout spines are simple, without accessory tooth, terminating in a blunt, slightly falcate tip with a slight subterminal concavity. Hooded hooks (fig. 123) are present from the seventh setiger [Verrill reported them from the segment following the modified segment, hence presumably the sixth]. A tenth parapodium has about six or seven hooks in a single series, usually not accompanied with pointed setae.

P. concharum was reported as common in 10 to 100 fms., in tortuous, narrow galleries excavated in shells (Verrill, 1880).

Family CIRRATULIDAE

Genus *Acrocirrus* Grube

*? Acrocirrus leidyi* Verrill


There are two collections at the Museum, labelled merely *Acrocirrus*. One of these, “*Acrocirrus* (phosphorescent) Vineyard Sd., USFC 1882. Eve. Aug. 10. Surface” now contains only two pieces of a phyllodocid. Another collection, PMNH 24-10, labelled “*Acrocirrus* (spec. descr.) Vineyard Sd. USFC 1882. Surface. Aug. 21. Eve.” contains a very minute, coiled, incomplete fragment, a few mm. long, of what might have been this species. No addition to the original description is possible. This is recorded in the literature only through the original brief account. The figures cited in the references (synonymy above) were never published. It may be desirable to drop the name from the literature.

Genus *Cirriformia* Hartman

*Cirriformia capillaris* (Verrill)

*Cirratus temtis* Webster, 1884, Bull. U. S. Nat. Mus., no. 25, p. 323, pl. 11, figs. 56, 57. Bermuda (not Verrill, 1873).


*Cirratus (Audouinia) websteri* Verrill, 1900, Ibid., vol. 10, p. 654.

The single collection, PMNH 24-13, comes from Bermuda. The prostomial lobe is short, bluntly rounded; eyes are not visible. Branchiæ are inserted between the fourth and fifth setigers, forming a group of 12 to 20 on a side,
leaving medially a short space about equal to that of the width of one of the branchial bases. Neuropodial hooks appear far forward, at first several in a segment and slender, increasing in thickness posteriorly, and diminishing in number. In a postmedian segment there are only one or two pale spines in a neuropodium, they are about three times as heavy as the notopodial spines and are unaccompanied by capillary setae. Notopodia have capillary setae throughout, but in median and posterior regions they are accompanied by alternating yellow spines; typically, in posterior segments, there are about three or four of these spines, with a corresponding number of pointed setae surpassing the spines by two to three times their free lengths. The dorsal spines are much slenderer than the ventral spines throughout.

The lateral tentacles arise at first in close proximity to the dorsal edge of the notopodium but in median segments the attachment moves dorsally; at its greatest height it is nearly midway between the notopodium and the median line.

C. capillaris is close to C. filigera (delle Chiaje) in some respects; it is believed to differ in having a shorter, blunter prostomium and its posterior neuropodia are provided with only a single heavy spine instead of three or four.

The type of Cirratulus tenuis Webster, deposited in the National collections at Washington, has been examined and found to be conspecific with C. capillaris (Verrill). The body proportions are as given by Webster. The prostomium is short, anteriorly rounded, without eye spots, agreeing with the type of C. capillaris. Dorsal branchiae arise, in a pair of crowded clusters, between the fourth and fifth setigers, the scars number ten or more on a side and leave bare a short median space. Lateral tentacles arise from a point dorsal to the notopodial ridge; in median and posterior regions this point comes to be nearly midway between the notopodium and middorsum. Neuropodial and notopodial setae and hooks have the same distribution and appearance as in C. capillaris. Webster's name, C. tenuis, predates (1884) that of C. capillaris Verrill (1900, p. 653) but the first has been shown to be preoccupied by C. tenuis Verrill (1900, p. 654). C. websteri Verrill (1900, p. 654) was proposed to replace it, but since it is the same as C. capillaris, the additional name is unnecessary.

Genus Cirratulus Lamarck

Cirratulus grandis Verrill


There are numerous collections both at the Museum and in the National collections at Washington, labelled by Verrill. The species has been reported many times from parts of New England. Branchiae, inserted on the first setiger, number 10 to 20 pairs, leaving uncovered a median space that is about
as broad as the width of a branchial base. The prostomial lobe is elongated, triangular, without eye spots. A longitudinal, middle, dorsal groove extends through its length. Lateral tentacles arise immediately above (or slightly behind) the notopodium throughout the length of the body.

The type of *C. tenuis* Verrill (1873, Ibid., p. 607) also from New England, now deposited in Washington, D. C., has been examined and found to be conspecific with *C. grandis*. It is discussed in another report.

**Genus Incertae sedis**

*Cirrhinereis phosphorea* Verrill


There is a single collection, PMNH 24-11, labelled “Vineyard Sound, Mass. USFC 1881. Surface. Jl. 30.” containing a specimen that may be a representative of *Tharyx*, but there is much doubt that it is the same as Verrill had in mind when reporting the name. The first setigerous segment shows dorsally, just within the setal ridges, the bases of what might have been a single pair of stout, tentacular structures, as typical of *Tharyx*. The prostomium is acutely pointed at its anterior end and lacks eye spots. The setae consist of only slender, capillary, longest in an anterior region. The lateral tentacles arise immediately above the notopodial ridge throughout.

Two species of *Tharyx* have been described from New England, *T. acutus* and *T. similis*, both by Webster & Benedict and both from Eastport, Maine. In *T. acutus* the lateral tentacles come to be inserted some distance above the notopodial base; in *T. similis* the median and posterior segments have spines alternating with setae in some neuropodia. Since Verrill’s name has remained unaccompanied by description, figures or exact locality data, it may be desirable to drop it from the literature.

**Family CAPITELLIDAE**

**Genus Notomastus** Sars

*Notomastus luridus* Verrill


Figures 144–146

A collection, PMNH 24–14, labelled “Notomastus luridus V. Savin Rock. 795” containing two specimens, is selected as the type. There are other collections from Massachusetts and Rhode Island. The original length was given
as 150 mm. or more; the largest individual in the collection is over 100 mm. long but caudally incomplete; another entire specimen (smaller) has an everted proboscis. The thoracic epidermis is reticulated, the strongest grooves in a longitudinal direction (fig. 145); the abdominal epidermis is comparatively smooth except for transverse wrinkles of contraction. The everted proboscis is subglobular in shape, its surface appears smooth (fig. 145).

The first segment is achaetous, biannulate, as long as the first setiger. There are 11 thoracic setigers, as typical of the genus, all provided with only pointed setae, disposed in fan-shaped fascicles. The first setiger was perhaps originally overlooked since only 10 such segments were noted. Thoracic segments are closely biannulate, the first 4 or 5 segments shorter and thicker than those following, and their setal fascicles less clearly discernible. Parapodial ridges are nowhere conspicuous; even in the abdominal region the glandular neuropodia do not stand out. In an anterior abdominal segment notopodia approach one another dorsally, the neuropodial ridges are at the sides, between which are the nephridial pores (fig. 146). Uncini have a major fang (fig. 144), much larger than the series of fine teeth at the distal end, disposed in several rows.

_N. luridus_ is a typical *Notomastus*, differing from some other species of the genus in having a reticulated thoracic region, smooth proboscideal epithelium and weakly developed glandular ridges on abdominal segments. In a monograph of the family CAPITELLIDAE, Eisig (1887, vol. 16, p. 869) concluded that this could not be a *Notomastus* since it was said to have only 10 thoracic segments, but since there are actually 11 segments, its systematic position is certain.

**Genus Capitella** Blainville

_? Capitella capitata_ (Fabricius)


The only collection, PMNH 24-15, so labelled bears the information "Arenia (figd). Casco Bay. F. C. Jl. 28. 1873. Ancistria acuta Verrill." It contains a single specimen in two pieces. The prostomium is somewhat spatulate or broadly rounded anteriorly, about as long as broad. The first segment is achaetous. The next 6 segments have pointed setae dorsally and ventrally; the seventh has pointed setae and uncini, the eighth and ninth have uncini only. Between the eighth and ninth, on the dorsal side, are stout copulatory hooks. The abdominal segments are provided with uncini only. This is therefore to be referred to _Capitella_. In so far as its characters are still determinable, it agrees with _C. capitata_ (Fabricius) but the minute, imperfect condition of the specimen renders positive identity difficult. The prostomium is anteriorly more truncate.
than in typical *C. capitata*, but the surface epithelium has been dried out at some time so that this may not be significant.

Eisig (1887, vol. 16, p. 869) questionably identified this with *C. capitata* since no mention had been made of the copulatory hooks and because the prostomium had been described as pointed, conical. Since these hooks are actually present, its position in the genus seems indubitable. *C. capitata* has been reported from eastern America by Webster & Benedict and others.

**Iunctae sedis**

Genus Indeterminable


This was originally described with 11 setigerous segments in the thorax, with "small fascicles of slender setae in both rami, those in the first 5 longer and acutely pointed," the lower fascicles of setae largest and fan-shaped. However, later, in describing *N. gracilis* (Verrill, 1880, vol. 2, p. 180) *N. filiformis* was said to have 5 anterior segments bearing "large groups of long, capillary, acute setae; but on the fifth there are sometimes a few uncini mingled with the capillary ones in the lower fascicles." The exact nature of the disposition and kind of setae was not made clear. Eisig (1887, vol. 16, p. 869) concluded that this was not a *Notomastus*, but perhaps a *Heteromastus*.

One collection, labelled *Notomastus filiformis*, has been found with the following information: "*Notomastus filiformis*. Vineyard Sd. USFC 1881. No. 8169. Loc. 1003." In it there are numerous tiny specimens resembling a minute *Capitella*, but the thorax has 6 setigerous segments with only capillary setae, the seventh and eighth segments have only uncini and there are modified copulatory hooks on the eight and ninth segments; the abdomen is provided with only uncini. These are probably representatives of the genus *Capitellides*, and obviously do not fit the description originally given for *N. filiformis*. Verrill.

*N. filiformis* was later redescribed by Webster (1879, p. 123) based on specimens which had been checked by Verrill as belonging to his species.

*Areniella filiformis* Verrill (1874, vol. 22, pp. 386-387) from Casco Bay, Maine, in 20-40 fms., is another species. Its systematic position is too doubtful to assign even to family (Eisig, 1887, p. 846). Two lots of specimens, so labelled, in the National collections at Washington, include specimens of *Heteromastus filiformis* Claparède, a *Capitella* sp., and other non-capitellid chaetopods.

**Family MALDANIDAE**

Genus *Euclymene* Verrill

*Euclymene coronata* Verrill

Family PECTINARIIDAE

Genus *Cistenides* Malmgren

*Cistenides regalis* (Verrill)


Figures 129, 132, 133, 136, 137, 140

There are two anterior ends, PMNH 127-4, from Bermuda. One piece has 14 setigerous segments, the other 9; both lack anal plaque. The fourth segment has a deep collar at its anterior edge. The first 3 segments have each a single, heavy spine in the neuropodium, these increase in size from the first to the third segments. Notopodia are provided with spreading fascicles of capillary setae.

From the fourth setiger neuropodia have elongate rows of uncini, in single series, to 30 or 40 in a row. Notopodia continue to have slender, pointed setae, though in diminishing number, the fascicles less spreading, and more or less tufted. Uncini have a long, heavy fang with 4 rows of similar teeth along the top (fig. 147). *E. coronata* may be distinguished by its cephalic plaque that is weakly crenulated along its dorsal edge (fig. 148), and by the conspicuous collar on the fourth segment. It is known only from Bermuda.

Family PECTINARIIDAE

Genus *Cistenides* Malmgren

*Cistenides regalis* (Verrill)


Figures 129, 132, 133, 136, 137, 140

There are numerous specimens, all from Bermuda. The largest are about 48 mm. long. The anterior end is provided with 11 to 14 pairs of pale, brass colored paleae, the tips tapering to fine points and somewhat darker in color than the bases; they are broad, flattened basally and straight or only very slightly curved distally. The antennular membrane is pouched, with about 21 marginal fringes, these are rather long, tapering, subequal and well spaced from one another. The cephalic flange is a thin, entire membrane, completely encircling the plaque to the place where the paleae emerge. At the sides of the base of the antennular membrane is a pair of rosette-like organs, to be seen by laying the membrane to one side.

There are 16 setigerous, and 12 uncinigerous, segments. The arrangement is as follows: 3 setigers bearing a notopodial fascicle of pointed setae, followed by 12 segments provided with a notopodial fascicle of similar though larger, setae and a long abdominal torus with a series of uncini. This is followed by another setiger with a small fascicle of pointed notopodial setae. The last two prescaphal segments have parapodial elevations but no setae. The thoracic uncini have double rows of 9 or 10 teeth in a row. Setae are long, pointed, pale yellow.

The scaphe is preceded by a series of few setae, only 3 or 4 on a side, and
widely spaced from one another (fig. 133); they are somewhat tapering, straight, their tips blunt, the inner one the smallest (fig. 129). The scaphe (of 5 segments) is longer than broad, the cirri bordering it broad, terminating in a papillar lobe distally. The anal end is ventrally surrounded by great numbers of tiny papillae (fig. 137), disposed more or less in a row but so crowded as to appear in more than one row; dorsally there is a nearly straight, tongue-like membrane terminating in a small papilla.

The tube is somewhat arcuate (fig. 140), covered with nearly uniform, light colored sand grains. The following combination of features is unique: (1) there are few (3 or 4 pairs) of scaphal setae, these nearly straight, tapering rods, (2) setigers number 16, of which 12 are uncinigerous, (3) the antennular membrane has about 21 subequal, cirriform fringes, (4) the cephalic plaque has an entire margin, free from the antennular membrane, (5) the anal flange has many minute papillae ventrally, (6) the tube is somewhat arcuate, (7) the uncini have numerous (about 9 or 10 paired rows) teeth.

In its setal formula C. regalis approaches C. chilensis Nilsson, but the latter has about 15 scaphal setae on a side and the antennular membrane has about 60 fringes; also, the scaphal setae are curved, not straight.

The collections contain two other species of Cisternides from the eastern coast of America,—C. gouldii Verrill and C. granulata (Linnaeus). Both have been
given adequate treatment by Nilsson (1928). These three species are clearly separable in the structure of the scaphal hooks (cf. figs. 133–135); in *C. granulata* the tube is notably more curved than in *C. gouldii* (figs. 138, 139) and both are smaller than that of *C. regalis* (fig. 140). In *C. gouldii* there are 9 to 13 pairs of brassy yellow paleae, basally thin, tapering to slender, pointed ends. The antennular membrane terminates distally in 40 or more, closely spaced, smaller and larger, slender, cirrus-like fringe; the scaphal setae (fig. 130) number about 16 on a side and are disposed on a crescentic ridge, the two of a pair separated by a narrow space (fig. 135). In *C. granulata* there are about 6 pairs of scaphal setae (fig. 134), well separated from one another, and each of the hooks terminates in a blunt, strongly falcate end (fig. 131).

Family TERECELLIDAE

Genus *Polymniella* Verrill, char. emend.

The thoracic region consists of 22 segments or over. Branchiae, numbering 3 pairs, are inserted on setigers one, two and five; they have a main stalk and arborescent branches. Notosetae are long, distally tapering, with weak marginal denticulations along an expanded region (fig. 151). Uncini are present from the second setiger, in double alternating rows; they have a broad base, their free end has a heavy fang and numerous rows of minute denticulations (fig. 149). *Polymniella* has affinities with *Terebella* in having a large number of thoracic segments, denticate notosetae and arborescent branchiae. It is unique in having noto setae already present on the first branchiferous segment, and branchiae on setigers one, two and five.

*Polymniella aurantiaca* Verrill


Figures 149, 151

There is only a single fragment, PMNH 126–12, from Bermuda. It consists of only 22 setigers. The branchiae are inserted as has been demonstrated by Verrill. The distribution of branchiae (B), notopodial setae (n) and uncini (u) may be represented as follows:

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Branchiae increase in size from first to last, but all have a dendritically branched top, emanating from a main stalk. Thoracic setae and uncini are as shown in figures 151, 149.
Polymniella aurantiaca is known only through its original record from Bermuda.

Genus **Loimia** Malmgren

Loimia montagui (Grube)


Figure 150

One collection, supposed to be this, PMNH 126-11, is labelled “No. 1018. Loimia. Bermudas. Exp. 1898. Photographed.” It is a typical representative of *L. montagui*. There are large, lateral lappets on the first segment (it was originally described with lateral lappets on the first and second segments); 3 pairs of arborescent branchiae are inserted as typical of the genus. Notosetae are tapering, limbate, the edge finely toothed. Uncini have 6 (fig. 150) or 5 teeth in pectinate arrangement.

Some other specimens, also from Bermuda, labelled “Loimia bermudensis” are not of this genus but probably *Eupolymnia* Verrill. These have 17 thoracic setigers, 3 pairs of branched branchiae with distinct stalk. The thoracic notopodial setae have a smooth tip; uncini are avicular, arranged in alternate series; they have one large fang superimposed by two finer teeth side by side. There is a small ventrolateral lappet on the first branchial segment, a shorter flap on the second segment, and none on the third.

It thus seems not unlikely that both collections may have been consulted in composing the original description, since the typical setae of a *Loimia* are those mentioned in the first specimen, and the lateral, thoracic lappets are those of the second.

Genus **Enoplobranchus** Verrill

Enoplobranchus sanguineus (Verrill)


There are numerous specimens in the collections. This strikingly characterized terebellid is at one recognizable by the presence of branchial lobes in a long median region. Each lobe terminates in a rounded end bearing a delicate tuft of pointed, spinulose setae. One seta is usually longer than the others and extends a considerable distance beyond the lobe. The branchial lobes increase in size and number, gradually, from a single, digitate lobe, to one greatly branched, irregularly bifurcated. These lobes appear to be the greatly pro-
longed, fleshy parts of the setal ridges. It is obviously a devise for increasing the respiratory surface of the epithelium.

Setae have not been made out in segments beyond the branchial region, nor have uncini been found on any part. In the degeneracy of its setal structures, it resembles Lysilla Malmgren, also represented on the east coast.

Chaetobranchus Verrill (1873) was found to be preoccupied by Haeckel (1840), hence Verrill proposed the name Enoplobranchus (1879) to replace the former. Hessle (1917, p. 227) referred it to Polycirrus, but since E. sanguineus differs markedly from species of Polycirrus, it may be preferable to retain Verrill’s genus.

Genus Nicolea Malmgren

Nicolea zostericola (Ersted)


There is a single collection, labelled “Savin Rock. New Haven. l. w. no. 162. AEV” without collecting data; it contains only an adult male, its entire length not over 22 mm. There are 15 thoracic setigers. Branchiae number two pairs, are dendritically branched; the first pair only slightly exceeds the second in size; all are far surpassed in length by the tentacles. The third and fourth setigers have each a long, cylindrical, nephridial tube on either side.

The dorsal cephalic lobe is broadly rounded, its margin entire; it is conspicuously longer and broader than the ventral lobe. The parapodial structures are in agreement with those of N. zostericola, as are the parts mentioned above.

The Museum has many other specimens from stations in New England, the collecting data postdating that of the original description, but agreeing well with descriptions of N. zostericola Ersted.

Family SABELLIDAE

Twenty-four recorded species with their types are represented in the collections. These are recorded as follows:

Aspeira modesta Bush;
Eudistylia, with species abbreviata, gigantea, plumosa and tenella all by Bush;
Metachone, with species mollis and teres, by Bush;
Myxicola, with species affinis, conjuncta and glacialis, by Bush;
Parasabella, with species maculata and media, by Bush;
Pseudopotamilla debilis Bush;
Sabella, with species elegans, formosa, humilis and leptalea, by Bush and microphthalmalma Verrill;
This large genus has come to include a great many species whose affinities are now sometimes difficult to ascertain. On the Pacific coast of America, there are two well defined groups which can be included in the present acceptable definition of *Sabella*. There is (1) a group in which the branchial radioles have a membranous flange at either outer ectal margin and a double row of eye spots (fig. 157), usually paired, along the length of the radioles, and (2) a group in which the radioles in cross section are smoothly rounded at their outer sides (fig. 158), and there are no such paired eye spots. To the first group belongs *S. crassicornis* Sars (see below), to the second group the type of the genus, *S. pavonina* Savigny together with two species discussed below. The first of these groups might be designated the oculate group, since the radioles are provided with eye spots, the second might be called the anoculate group. These two may be separated as follows:

1) *Chone*, with species *mollis* (Bush);
2) *Chone teres* Bush;
3) *Eudistylia polymorpha* (Johnson), including *intermedia* Bush;
4) *Eudistylia vancouveri* (Kinberg), including *abbreviata, gigantea* and *plumosa*, by Bush;
5) *Eudistylia tenella* Bush;
6) *Myxicola infundibulum* (Montagu), including *affinis* and *conjuncta*, by Bush;
7) *Myxicola aesthetica* (Claparède), including *glacialis* Bush;
8) *Potamilla neglecta* (Sars), including *Aspeira modesta* Bush;
9) *Pseudopotamilla debilis* Bush;
10) *Sabella crassicornis* (Sars), including *elegans, formosa, humilis* and *leptalea*, by Bush;
11) *Sabella media* (Bush), including *Parasabella maculata* Bush;
12) *Sabella microphthalma* Verrill;
13) *Schizobranchia insignis* Bush, including *concinna, nobilis* and questionably *affinis*, by Bush;
14) *Schizobranchia dubia* Bush.

**Genus *Sabella* Linnaeus**

This large genus has come to include a great many species whose affinities are now sometimes difficult to ascertain. On the Pacific coast of America, there are two well defined groups which can be included in the present acceptable definition of *Sabella*. There is (1) a group in which the branchial radioles have a membranous flange at either outer ectal margin and a double row of eye spots (fig. 157), usually paired, along the length of the radioles, and (2) a group in which the radioles in cross section are smoothly rounded at their outer sides (fig. 158), and there are no such paired eye spots. To the first group belongs *S. crassicornis* Sars (see below), to the second group the type of the genus, *S. pavonina* Savigny together with two species discussed below. The first of these groups might be designated the oculate group, since the radioles are provided with eye spots, the second might be called the anoculate group. These two may be separated as follows:
Johansson, in a revision of the SABELLIDAE (1927, p. 116) separated *Sabella* from *Demonax* Kinberg as follows:

Notosetae of thorax include only pointed setae ................. *Sabella*
Notosetae include both pointed setae and paleae or subspatulate setae *Demonax*

This separation may not be sharp because the superiormost, pointed setae intergrade with subspatulate and paleal inferior notosetae, the only differences being in their comparative lengths and the width of the bilimbate portions. It appears, therefore, that both *Demonax* Kinberg and *Parasabella* Bush will have to be relegated to the older *Sabella* Linnaeus. If any separation is to be attempted, it seems that *S. crassicornis* Sars with its most nearly related species will need to be withdrawn.

*Sabella crassicornis* Sars

*S. elegans* Bush, 1904, Harriman Alaska Exped., vol. 12, pp. 194–195, pl. 26, fig. 2, pl. 27, fig. 6e, pl. 33, figs. 20, 21, pl. 34, figs. 1, 4, 5, 10, pl. 37, figs. 12, 33. Kadiak, Alaska.

*S. formosa* Bush, 1904, Ibid., vol. 12, pp. 196–197, pl. 27, fig. 6b, pl. 33, fig. 32, pl. 34, figs. 14, 21, pl. 35, figs. 7, 25, 30, pl. 36, figs. 25, 32. Berg or Glacier Bay, Alaska.

*S. humilis* Bush, 1904, Ibid., vol. 12, p. 195, pl. 27, fig. 2, pl. 36, figs. 4–11. Popof Island, Alaska.

*S. leptalea* Bush, 1904, Ibid., vol. 12, pp. 195–196, pl. 27, fig. 6a, pl. 33, figs. 5, 14, 27, 29, pl. 34, figs. 6–9, 22. Kadiak, Alaska.

The names indicated in the synonymy were originally separated largely for observable differences in body size, number of radioles, changes in amount of diffusion or concentration of pigment, and number of eye spots on the radioles. All of these characters vary from one individual to the next, not only with age but also fortuitous circumstances and can have no specific significance.
In *S. elegans* (PMNH 5-9) the tentacular crown is provided with 5 to 8 rows of eye spots on the radioles, the greater number on the dorsal side. Palpi are long, slender, acutely pointed, extending distally about one-third or one-fourth as far as the free part of the radioles. The bases of the radioles are united by a low web. The collar consists of well rounded, lateral lobes, these curve upward around the collar fascicle and thence extend ventrally; there is a small notch ventrolaterally, about in line with the lateral edge of the first ventral scute; it is continued ventrally as broadly rounded, though short, ventral lobes. The dorsal side of the thorax, at the anterior end, has a pair of conspicuous, longitudinal ridges, these extend from the base of the tentacular crown to the second setiger.

The collar fascicle of setae is about as large as that of the next notopodium, or only slightly smaller. There are 8 thoracic setigers. Thoracic tori resemble one another except for slight decrease in size posteriorly. At the dorsal end of every abdominal torus there is a minute black spot, or sometimes there are two very close to one another.

*S. leptalea* (PMNH 5-7 and 8) is represented by two specimens, both more robust than the type of *S. elegans* and both deep maroon rather than pale or salmon colored. They are over 80 mm. long. There is, however, the same distribution of tentacular eyes; the collar membranes are identical; palpi, parapodial structures and other details compare favorably with those of the former.

*S. formosa* (PMNH 15-1) is represented by a single specimen from which the tentacular crown has become detached. Total length is 90 + 22 mm. (length of crown). Like *S. leptalea*, this is deep red, with dark eye spots on the radioles, 5 or 6 pairs on a radiole ventrally, increasing slightly toward the dorsalmost radioles. The palpi are long, slender. The collar membrane has high lateral membranes, extending well about the collar setal fascicles; it is straight laterally except for a slight, ventrolateral notch, in line with the lateral edge of the first ventral scute, thence continues ventrally to the broad, short, ventral rounded lobes. There are 8 thoracic setigers.

*S. humilis* (PMNH 5-15 and 9) is represented by two specimens, agreeing well with those discussed above. All of these have been compared with one another. Except for the paler color of *S. elegans* [it is salmon colored, the others are deep red] there is nothing to separate them from one another. All are believed to be specimens of *S. crassicornis* Sars, known from the north Atlantic and Pacific oceans (Johansson, 1927, pp. 119–121).

*Sabella media* (Bush)

*Parasabella media* Bush, 1904, Harriman Alaska Exped., vol. 12, pp. 200–201, pl. 27, figs. 3–5, pl. 33, figs. 34–36, pl. 34, fig. 3, pl. 36, figs. 13, 14, pl. 37, fig. 30. Kadiak, Alaska.

*Parasabella maculata* Bush, 1904, Ibid., vol. 12, p. 201, pl. 28, figs. 8, 9, pl. 33, figs. 8, 12, 33, pl. 34, fig. 2, pl. 36, figs. 12, 15, 16, 21, 22. Kadiak, Alaska.
Parasabella media is represented by four specimens (PMNH 5-12) complete except that one lacks a tentacular crown. They are typical representatives of Sabella, lacking eye spots. The radioles are generously spotted with irregular patches of russet or yellow pigment. The setal formula is that of Sabella. A thoracic uncinus with its companion pennoned seta is shown in figures 159, 160. The type of Parasabella maculata (PMNH 5-11) agrees with P. media in all of its morphological details; the pigmentation of the tentacular crown is somewhat more intense, but its pattern is identical.

Johansson (1927, p. 136) has referred S. media to Demonax Kinberg, and suggested that it might be identical with D. leucaspis Kinberg, from Peru. The latter, however, is a much smaller species, without pigmentation pattern such as characterizes S. media, and is unique in that the discrepancy in size between thoracic uncini and companion pennoned setae is much greater, as I was able to confirm by an examination of Kinberg’s types.

S. media ranges south at least as far as central California, where it is encountered in low intertidal zones.

Sabella microphthalma Verrill


Although the type of this species is deposited in the National collections at Washington, D. C., there are numerous fine collections at the Museum. It is a small species, about 20 to 30 mm. long. The radioles (preserved) are completely pale, without eye spots or color bands. There are 8 thoracic setigers and about 53 abdominal segments, a total of over 60. The collar lacks dorsal lobes; the lateral lobes are high, straight, the dorsalmost ends are broadly rounded about the collar setal fascicles; it is continued ventrally to form the prolonged, triangular, ventral lobes.

The collar fascicle arises from a short, fleshy, notopodial lobe, shorter than the notopodia of more posterior segments, but its setae arise from a longer base. Collar setae resemble those of the next segment in size and shape. In a typical thoracic notopodium, the superiormost setae resemble the inferiormost except that the latter are progressively shorter and are more broadly bilimbate. Setae and uncini are as typical of the genus.

The tube is pale, horny, chitinous, covered with debris. S. microphthalma is known from New England, south to Beaufort, North Carolina (Andrews, 1891).
Genus *Pseudopotamilla* Bush

*Pseudopotamilla debilis* Bush


There is only a single, small (less than 30 mm. long), slender specimen, including a detached mutilated end. The tentacular crown is somewhat torn, but its basal membranes are intact. There are only 17 or 18 radioles on a side, arranged on a semicircular base (not spiralled). A few dark eye spots (about 2 or 3) are present on some radioles, most have only weak spots or none. The tentacular base is long, largely exposed because of the weakly developed collar.
lobes (fig. 161). The dorsal collar lobes are very short, oblique, largely leaving
the peristomium exposed. The lateral lobes are widely separated from the
dorsal lobes by a wide notch; they rise gradually, obliquely, toward the ventral,
triangular ends. The dorsal free ends of the tentacular base are produced as
two, narrow, straight flanges (fig. 161).

Ventral scutes number 9, they are not bisected by a median longitudinal
fissure; all, save the first (which is shield-shaped) are almost equally divided by
a transverse groove that extends completely across. The first scute is the widest;
the width gradually diminishes so that by the tenth scute the width is about as
much as that of the first abdominal scute. All after the first are approximately
rectangular or slightly trapezoidal.

Body segments are well marked (specimen fixed out of the tube). Thoracic
setigers number 8. The setal formula is as typical of the genus. Thoracic tori
differ little amongst themselves except that the last two are gradually, though
only slightly, shorter than the others. Their uncini are of about the same size
as those of more anterior tori.

P. debilis differs from nearly related species of *Pseudopotamilla* in that the
dorsal lobes of the collar are very low; the dorsal tentacular membrane is straight,
narrow, not notched; the radioles have few eye spots. It is known only through
its original record.

Genus *Schizobranchia* Bush

*Schizobranchia* has affinities with *Pseudopotamilla* Bush, from which it seems
to differ only in having split radioles, the bifurcations continued one or more
times. Five species (*S. affinis*, *S. concinna*, *S. dubia*, *S. insignis* and *S. nobilis*)
were originally ascribed to it. These are believed to be referable to two species,
*S. insignis* and *S. dubia*, with one (*S. affinis*) questionably assigned to the genus.
They may be separable as follows:

Radioles bifurcated about 4 or 5 times; tubes solitary .................. *S. insignis*
Radioles bifurcated only once; tubes clustered ......................... *S. dubia*

*Schizobranchia insignis* Bush

Bush, 1904, Harriman Alaska Exped., vol. 12, pp. 206-207, pl. 24, figs. 1, 2,
pl. 27, fig. 1, pl. 28, fig. 5, pl. 35, figs. 2, 12, 13, 15, 16, 26, 27. Yakutat,
Alaska; Vancouver Island, B. C.

*S. concinna* Bush, 1904, Ibid., vol. 12, p. 208, pl. 23, figs. 2, 3, pl. 28, fig. 2, pl.
34, figs. 15, 17, 18, pl. 35, figs. 17, 24. Prince William Sound, Alaska.

*S. nobilis* Bush, 1904, Ibid., vol. 12, p. 207, pl. 24, fig. 3, pl. 28, fig. 7, pl. 33,
fig. 22, pl. 35, figs. 1, 3-6, 8, 10, 11, 23. Prince William Sound, Alaska;
Unalaska Island.

The type (PMNH 117-5) is a large individual, about 165 mm. long. The
tentacular crown is deep maroon; tentacular filaments are divided to 4 or 5 times.
Eye spots are black, numerous, in a single row along the radioles, limited largely to the basal half of the filaments but some lack eye spots. The collar has high, dorsal lobes, concealing the peristomial segment. The dorsolateral clefts are deep, slit-like (specimen killed in the tube); the lateral lobes are more or less straight (not oblique); the ventral lobes are continuous with the lateral lobes, and terminally more or less broadly rounded. There are 8 thoracic setigers. The dorsal, tentacular base terminates in entire, slightly rounded flaps.

Another specimen so labelled, from Yakutat, is a *Pseudopotamilla occelata* Moore, with injured tentacular crown. The radioles are undivided, the tentacular base, on its dorsal free edge is distinctly cleft.

*S. concinna* (type PMNH 7-1) originates from Orca, Prince William Sound, Alaska. This is an anterior end of 16 segments, measuring 34 mm. long, and a crown about 32 mm. long. Thoracic setigers number 8. The tentacular eye spots are distributed as in *S. insignis*. The base of the tentacular membrane, on the dorsal side, terminates in a thin, free, broad flap, longest at its anterior end. The collar has dorsal lobes that are sharply triangular, leaving part of the peristomial base exposed, but the tips of the dorsal lobes extend beyond the anterior margin of the peristomium. Dorsolateral clefts are deep, notch-like because of the obliqueness of the dorsal lobes. The lateral lobes are high, turning somewhat obliquely and rising to pointed, ventral ends. This specimen differs from that of *S. insignis* in the following: the tentacular filaments are longer, slenderer, the dorsal collar lobes more oblique, the tentacular basal membrane broader. These differences are believed to lack specific significance.

There is another specimen, labelled *S. concinna*, also from Orca, which in size more nearly resembles the type of *S. insignis*. It is about 160 mm. long; the radioles are long, slender, bifurcated 4 or 5 times. The tentacular crown is deep maroon. The collection includes a tube that is long, straight, tough, chitinous, covered with a thin layer of fine sand particles.

*S. nobilis* (PMNH 10-1 and 2) also originates from Orca, Prince William Sound, Alaska, and from Dutch Harbor, Alaska. The length attains about 160 mm. The tentacular crown is deep maroon. The tube is tough, chitinous, nearly straight. These specimens agree well with those mentioned above. It was originally separated from *S. insignis* for having "longer, more flexible, and more numerous branchiae." These characters are believed to represent only individual differences.

*S. dubia* Bush

Bush, 1904, Harriman Alaska Exped., vol. 12, pp. 208–209, pl. 28, fig. 1, pl. 29, fig. 1, pl. 33, figs. 7, pl. 36, figs. 1, 2, 3, 17–20, pl. 37, fig. 28. Prince William Sound, Alaska; Unalaska Is.

There are two collections, both from Orca. PMNH 117-4 (A 480) is the type; another collection (A 502) contains many tubes and some specimens. The radioles are bifurcated, as typical of the genus, but the divisions occur on the
distal half of the radiole, and, as a rule, only once instead of several times, as in *S. insignis*. It is gregarious; there are many, more or less erect tubes, clustered together, but not connected at their bases. The thoracic collar membrane has dorsal lobes that more or less completely cover the peristomial segment; dorso-lateral incisions are deep, separating the dorsal from the higher lateral lobes. The free ends of the tentacular base, on the dorsal side, terminate in short, slightly rounded flaps, but cannot be said to be prolonged.

*S. dubia* differs from *S. insignis* chiefly in having radioles that are split only once, and the tubes are clustered, not solitary.

*Schizobranchia affinis* Bush, questionable

Bush, 1904, Ibid., vol. 12, p. 209, pl. 33, figs. 9, 11, 17, 23, pl. 35, fig. 9. Popof Island, Alaska.

This is represented by a single collection, PMNH 117-2, containing two dried specimens and a tube. I can add nothing to the original description, nor clarify the original statement: "They are probably the young of some shallow water form," followed in the next paragraph by the phrase "with well developed eggs showing along their tori." In addition, it was said that "only one has the longest dorsal branchiae forked," hence, it should perhaps be relegated to the genus *Pseudopotamilla*.

*Genus Eudistylia* Bush

*Eudistylia vancouveri* (Kinberg)

*E. abbreviata* Bush, 1904, Harriman Alaska Exped., vol. 12, pp. 212–213, pl. 24, fig. 5, pl. 33, figs. 1, 2, 10, 18, 25, pl. 34, figs. 13, 16. Yakutat and Sitka, Alaska.

*E. gigantea* Bush, 1904, Ibid., vol. 12, pp. 210–212, pl. 21, figs. 1, 2, pl. 22, figs. 4a–d, pl. 23, fig. 1, pl. 25, fig. 4, pl. 32, figs. 1–8, 10–14, 16, 17, 21, 23–26, pl. 34, fig. 23. Orca, Prince William Sound, Alaska.

*E. plumosa* Bush, 1904, Ibid., vol. 12, p. 212, pl. 21, figs. 3, 4, pl. 22, fig. 4b, pl. 32, figs. 9, 15, 18–20, 22. Sitka, Alaska.

The collections contain a large, robust specimen, PMNH 12-1, labelled *E. abbreviata*. It had been fixed out of its tube. The tentacular crown is plumose, crossed by 5 or 6 alternating bands of maroon and pale salmon colored pigments; the tips are largely pale but the longest radioles, on the dorsal side, have dark tips. The collar membrane is well developed, strongly oblique at the sides, terminating ventrally in two long, triangular ventral flaps. The dorsolateral clefts are deep, broad, immediately dorsal to the first setal fascicle. The dorsal lobes are rounded at the ends, about as high as the dorsalmost portions of the lateral membranes, and extend forward to cover the peristomium; the latter is visible only at the dorsolateral clefts.

The free edges of the tentacular bases, on the dorsal side, are short, entire
lobes without clefts. A few of the radioles are split once,—approaching the condition in *Schizobranchia*. Tentacular eye spots are in a few instances ranged in two rows on the rachis, but not exactly paired. The arrangement is for the most part in single rows, on the side of the rachis facing dorsally. The dorsalmost radioles have the greatest number of eye spots, 5 or 6 in a row; some of the ventral radioles are without them. The tentacular base is clearly spiralled, as typical of the genus. There are 8 thoracic setigers. Ventral scutes are broadly rectangular, the fourth to sixth have transverse grooves that partly extend across them, the others are smooth. This specimen agrees in all of its details with the type of *E. vancouveri* (Kinberg) from the northeast Pacific; I have not only examined the types of both of them, but seen numerous other individuals from near the type localities.

The type of *E. gigantea* (&MNH 14-1) comes from Orca, Prince William Sound, Alaska. The tentacular crown retains the transversely pigmented bars, originally described. It was fixed expanded, out of the tube. This specimen agrees very well with the type of *E. abbreviata* and is also to be referred to *E. vancouveri* (Kinberg).

*E. plumosa* (PMNH 13-1), from Sitka, Alaska, is paler than the individuals mentioned above, but it too retains on its tentacular crown the same, transversely banded pigment pattern, as typical of *E. vancouveri*. The proportions of radioles with filaments, thoracic collar, tentacular membranes, parapodial parts and other characteristics agree in all details with *E. vancouveri*. The tentacular eye spots are a little less developed. A few of the radioles are split once, just as in the type of *E. abbreviata*, but there is no such richly bifurcated condition as in *Schizobranchia*.

*E. vancouveri* (Kinberg) ranges in the northeast Pacific, from Alaska south to central California.

*Eudistylia polymorpha* (Johnson)


The collections contain a single large specimen (PMNH 117-6) labelled *E. intermedia* from Pacific Grove, California. The tentacular crown was originally described as having "a broad band of brown and pinkish purple on the lower portion of the branchiae, and a narrow, scarcely discernible pink one farther out." This pattern is the same as that of *E. polymorpha* (Johnson). The dorsal free ends of the tentacular base are deeply notched, as in *E. polymorpha* (Hartman, 1938, pl. 2, fig. 5). The other details also agree with Johnson’s type. Both were originally described from Pacific Grove, California.

There is another collection (PMNH 17) labelled *E. polymorpha* by Bush (1904, p. 214), also from Pacific Grove. It is only a few mm. long, but possesses all of the characteristics of larger individuals of this species. *E. intermedia* was
separated from *E. polymorpha* for having "more numerous branchiae, inconspicuous eyes, and form of the avicular uncini, which have much shorter, stouter necks, longer beaks, and are larger and less evenly rounded in front."

These differences may be correlated with differences in size and age, and those of the shapes of uncini might be accounted for by relative positions of these structures. The form of an uncinus varies within limits, depending on its position in the torus, or whether from an anterior or posterior segment.

**Eudistyliina tenella** Bush

Bush, 1904, Harriman Alaska Exped., vol. 12, pp. 213–214, pl. 22, figs. 2, 3, pl. 23, figs. 4, 5, pl. 33, figs. 16, 19, 24, pl. 34, fig. 12, pl. 35, fig. 22. Vancouver Island.

There are two collections, PMNH-7 and 1. The latter contains three specimens, one lacking tentacular crown, all have been dried at some time so that they are now dark, making comparison difficult. Collection PMNH-7 contains a single specimen, marked type, and a piece of a tube. The collar is deep at the sides, obliquely prolonged ventrally to form triangular ventral lobes, much as in *E. vancouveri* (above). The radioles, however, in comparison, are much slenderer, pale, and lack eye spots. There are a few transverse bars of pigment crossing the radioles, also as in *E. vancouveri*. The dorsal ends of the basal tentacular membrane are produced as broadly rounded, or shallow crescentic lobes, but not at all incised. In most respects, therefore, this approaches very near to *E. vancouveri*, but seems to differ in lacking tentacular eye spots and having much slenderer radioles. Intergradations between the two have not yet been described.

**Genus Myxicola** Koch

*Myxicola infundibulum* (Montagu)


*M. affinis* (PMNH 5-4) has already been referred to *M. pacifica* Johnson (Moore, 1923, p. 245) which is the same as *M. infundibulum* (Hartman, 1938, p. 19, pl. 1, figs. 5–11, pl. 2, fig. 1). The type of *M. conjuncta* (PMNH 5-3) from Prince William Sound, Alaska, is not to be distinguished from *M. affinis*. *M. infundibulum* has a widely reported distribution in north Atlantic and Pacific waters.

*Myxicola aesthetica* (Claparede)

*M. glacialis* Bush, 1904, Harriman Alaska Exped., vol. 12, pp. 218–219, pl. 22, fig. 1, pl. 25, figs. 1, 2, pl. 26, fig. 4b, pl. 38, fig. 12, 23, 25–32. Unalaska Island.
Hartman: Polychaetous Annelids

Family SERPULIDAE

Genus **Crucigera** Benedict

**Crucigera zygophora** Johnson


Genus **Chone** Kroyer

Includes **Metachone** Bush, 1904 (see Fauvel, 1927, p. 334).

**Metachone mollis** (Bush)


Figures 141–143

**Metachone** was distinguished from **Chone** Kroyer for having thoracic setae lacking a mucron. Since, however, the size and length of the mucron varies greatly between species and even within individuals of a species, it can hardly be accorded generic significance.

**C. mollis** is represented in the collections by a specimen, PMNH 5–5, over 30 mm. long, posteriorly incomplete. Originally the measurements of 8 thoracic and 10 abdominal segments were given as 27 mm., and 8 mm. for that of the crown; this is a stout, robust species. Thoracic spatulate setae lack mucron and are depressed, concave distally (fig. 143). The thoracic uncini are long stemmed, the main fang long and obliquely directed (fig. 142). Abdominal uncini are avicular, have a longer, slenderer fang and a more rounded shoulder (fig. 141) than that of the thoracic uncini.

**Chone teres** Bush


The collections have a specimen, PMNH 5-2, and parts of a tube. The proportions are about as first described; length is about 56 mm. It appears to be very close to, if not identical with, **C. infundibuliformis** Kroyer, but the tentacular filaments have distally a broadly rounded flange surrounding the rachis, instead of a tapering one. This character, however, has doubtful value.

Family SERPULIDAE

Genus **Crucigera** Benedict

**Crucigera zygophora** Johnson


The type of **M. glacialis** (PMNH 5-5) agrees well with descriptions of **M. aesthetica** (Claparède); the conclusion of Berkeley (1930) that they are synonymous, seems justifiable.
C. formosa Bush, 1904, Harriman Alaska Exped., vol. 12, pp. 233–234, pl. 28, figs. 3, 4, pl. 31, fig. 1, pl. 33, fig. 4, pl. 39, figs. 6, 7, 10, 11, 14. Unalaska Island.
Collection PMNH 128-19 contains specimens labelled C. formosa, from Dutch Harbor and Wrangell, Alaska. These agree favorably with C. zygophora. They were originally separated for a character having no specific value in this group—the comparative lengths of tentacular crown. Opercular structures, setae and other diagnostic parts agree. Moore (1908, p. 362) has already indicated the possibility of identity.

Genus Hydroides Gunnerus

Hydroides lunulifera Claparède

A slide of Eucarphus serratus, PMNH L-12, is of no value; another collection, PMNH 128-3, contains part of one specimen, with an operculum and part of the tentacular crown. The outer opercular disk has about 36 radiating points. There are 13 spines on the distal disk, each of which terminates in a broad, anchor-headed, flattened, chitinous piece. These are directed distally, not curved inward. There is a corresponding series of 13 inwardly directed, short spines on the inner surface of the disk, near its center. This specimen agrees in all essentials with Hydroides lunulifera (Claparède) as described by Fauvel (1927, p. 358, fig. 122) and as since reported by Monro (1933, p. 1082) from Colón, Panama.

Hydroides bispinosa Bush

A slide, PMNH L-6, is unsatisfactory. Collection PMNH 128-8 contains an operculum and a few radioles only; it is in very poor condition. Collection PMNH 128-9 has a specimen in a tube, the crown and operculum still attached. The basal disk of the operculum has about 16 broadly rounded, short crenulations, its base slopes gradually to the slender, cylindrical stalk, its upper side is flat. The distal cup is long, with a thick base, terminating in eight major, falcate spines, each of which is curved inward at its distal end, and provided near the middle of the length with a pair of lateral, sharply pointed spines. Within the cup, on its inner base, is a corresponding row of small spines, their number and arrangement like those of the major spines.

H. bispinosa bears resemblance to H. crucigera Mörc, as redescribed by Monro (1933, p. 1083) from Taboga Island, but in the former the lower opercu-
lar disk has a much smaller number of crenulations, only 16 as against about 40 reported for *H. crucigera*. *H. bispinosa* is known only through its original account.

**Genus Eupomatus** Philippi

*Eupomatus gracilis* Bush

Bush, 1904, *Harriman Alaska Exped.*, vol. 12, p. 234, pl. 27, fig. 9, pl. 34, fig. 25, pl. 37, figs. 26, 27. Pacific Grove, California.


Collection PMNH 126-18 contains two specimens and parts of tubes. Only one retains a complete operculum; this has 36 denticulations in the lower disk, the denticulations are flattened, triangular, each with a base nearly as great as the length of the tooth. The distal cup is deep, surrounded with 11 long, tapering spines, distally curved inward, without accessory spines or distal enlargements; the inside of the cup is smooth, without spinules. *E. gracilis* is common in the intertidal zones of southern California.

*Eupomatus elegantulus* Bush


One collection, PMNH 128-7, contains only a tube. Another, PMNH 128-6, contains a specimen in which only five of the 13 opercular spines that form the distal cup remain with their tips unbroken. These spines are long, tapering, gently curved first outward away from the center, and distally pointed inward. The basal disk is flat, circular, surrounded with about 36 sharply pointed, spine-like teeth, about three or four times longer than broad, directed mainly outward away from the disk. Near the center of the disk, on its inner surface, there are 13 smaller spines, corresponding with those forming the cup; these are recurved, directed inward over the inner base of the cup, the distal points tend to come toward a common center.

*E. elegantulus* resembles *E. uncinata* in the arrangement of its chitinous structures, but here the opercular spines are distally pointed, none seemingly flat or expanded. It is known only through its original record.

**Genus Hyalopomatopsis** Marenzeller

*Hyalopomatopsis occidentalis* Bush

Genus **Vermiliopsis** St. Joseph

*Vermiliopsis bermudensis* (Bush)


Figures 154, 155

As *Paravermilia bermudensis*, collection PMNH 128-12 includes four small specimens and parts of two tubes which may, however, not belong to the same species. The tubes have five longitudinal ridges on the upper (exposed) side of which two, on the upper-lateral surface, are heavier and three, between the two main ridges, are smaller. These ridges are smooth along their free edge, not toothed, hence differ from those in *V. annulata* (Schmarda). On the specimens the operculum is vesicular, terminates distally in a more or less pointed, slightly recurved cone (fig. 155), consisting in its distal part of a series of chitinous, saucer-like plates, transversely separable; these are translucent, horn colored. The opercular stalk appears annulated due to wrinkles of contraction. The specimens agree reasonably well with descriptions of *V. infundibulum* (Philippi) (Fauvel, 1927, pp. 362–363, fig. 124) but the tubes in the collection do not answer the description of the latter.

The collections contain a tiny specimen, PMNH 126-16, labelled *Pseudovermilia pileum*, also from Bermuda. This was made known only in a preliminary notice (Bush, 1907, p. 136) and said to be “very common along the shores of Bermuda”; there is only a single, minute specimen, so labelled, in the collections. Its tube was originally compared with that of *V. occidentalis* (McIntosh), but in the latter the operculum (fig. 156) is strikingly different (cf. fig. 154). It was said to be distinguishable from *V. bermudensis* for having a smooth stalk on the operculum, but the apparent annulated stalk of *V. bermudensis* is believed to be due to contraction wrinkles. I can find no character to separate these two. The operculum of *P. pileum* (fig. 154) agrees in structure with that of *V. bermudensis* (fig. 155); both may be found to be identical with *V. infundibulum*. 
Vermiliopsis amblia (Bush)


Figures 152, 153

P. amblia is represented by a single collection, PMNH 128-10, containing part of a white tube with two poorly marked ridges and a transverse ridge, together with a specimen that has a vesicular operculum, with annulated stalk and more or less flattened top (fig. 152). The annulations of the stem are believed to be merely wrinkles of contraction and to have no specific significance.

P. intermedia is represented in a single collection, PMNH 128-14, containing only an operculum (fig. 153). In its general form it agrees with that of P. amblia except that the distal horny cap has an additional line of separation. P. intermedia was originally said to have a tube with “five unequal, rather fine, rounded longitudinal threads.” The tube of P. amblia was not made known.

Genus Spirorbis Daudin

Twenty-four species in this group have been described, of which two, S. stimpsoni and S. validus, were described by Verrill, from northeastern America. Four, S. argutus, S. bellulus, S. dorsatus and S. foraminosus were described by Moore and Bush (1904) from Japan; the types of these may be deposited in the Academy at Philadelphia. The remaining 18 were described by Bush (1904 to 1910); they originated largely from eastern and western North America and included the following:—S. abnormal, S. incongruus, S. lineatus, S. rugatus, S. semidentatus, S. variabilis and S. asperatus from Alaska (the last named also from California); S. comptus, S. eximius and S. asperatus from California; S. formosus and S. mutabilis from Bermuda; S. fewkesii and S. tubaformis from New England; S. evolutis from Labrador; S. inversus and S. tridentatus from Australia; S. nudus and S. serratus from Syria.

For the most part the collections on which these descriptions are believed to have been based are very meagre, and now very unsatisfactory for reexamination. In some instances slides, mounted in glycerin jelly, were prepared with essential parts of the specimen; these have disintegrated or dried out so that they are now quite useless; in other cases the materials consist of only a single tube or part of the body. Only a few notes on some species can be added to the original brief accounts.

Spirorbis spirillum Lamarck


S. comptus is represented by a collection, PMNH 125-4, with label "Spirorbis spirillum and S. comptus. California. Dr. Anderson." It contains a small piece of kelp with a few tubes of S. spirillum, of larger and smaller sizes. The tubes are smooth, white, the aperture dextral, with a coil around a clear, central area. The tubes remaining are believed to belong to a single species, S. spirillum. It is not certain, however, that there were not also other tubes originally present.

A single collection, PMNH 125-5, of S. fewkesii, comes from Cape Cod, and contains pieces of kelp with white, calcareous tubes. These are smooth, white, fragile, coiled nearly in one plane, the aperture dextral; there is a clear central area just as in S. comptus (above).

S. tubaeformis is contained in a collection, PMNH 125-17, with label reading "S. tubaeformis and S. spirorbis, 15174. Noank, 1874." The tubes are attached to kelp, just as in the case of S. fewkesii (above). The spiral is circular, more or less in one plane, with a large, clear space in the center; the upper surface is smooth, fragile.

Because of the similarities of the tubes in these three collections, and their agreement with descriptions of S. spirillum, they are referred to this species, which has already been reported many times from both sides of North America.

*Spirorbis borealis* Daudin

*S. asperatus* Bush, 1904, Harriman Alaska Exped., vol. 12, p. 245, pl. 28, fig. 10, pl. 30, fig. 4, pl. 41, figs. 4–6, 8, 10, 11, 19, 31, 32, pl. 43, figs. 1–3, 7, 13, 26. Alaska and California.


The type of *S. asperatus*, PMNH 125-2, originates from Pacific Grove, California; it contains a tube coiled more or less in one plane, with surface quite smooth or with three weak longitudinal ridges, the median ridge not notably heavier than the laterals, and concentric rings practically absent. The aperture is sinistral, smooth or slightly roughened, depending on whether the tube is smooth or slightly ridged. The coil is closed centrally. The tubes, as also the description, agree with descriptions of *S. borealis* Daudin, already well known from northern oceans. This species has sometimes been designated *S. spirorbis* Linnaeus, but since the designation of the latter is in some doubt, Daudin's name is used.

*S. stimpsonii* is represented by collections, PMNH 14 to 16, originating from Massachusetts to Nova Scotia. The tubes are small, white, opaque, coiled more or less in one plane, the aperture sinistral. There is a small central clear area. The upper surface is smooth save for a poorly marked median longi-
tudinal ridge (absent in some), and with shallow, concentric growth lines. The operculum is a brood pouch, the calcareous disk shield shaped. It is believed to be identical with *S. borealis*, already reported many times from eastern North America.

*Spirobranchus semidentatus* Bush


There are two collections, PMNH 125-10 and 11, with locality data as indicated in the synonymy above. The tube is highly characteristic, as shown by Bush (pl. 27, fig. 7); it is high, thick, the coil obscure because of its great elevation; a central cavity is completely absent; the aperture is dextral. The operculum is a concave, plate-like disk. In general form the tube resembles that of *S. variabilis* Bush, but in the latter the tube is somewhat smaller, more strongly ridged and the aperture sinistral.

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