

PHYLUM ANNELIDA

The Annelida or segmented worms have, as a phylum, shown remarkable evolutionary success in adapting to the marine, fresh water, and terrestrial habitats. Among the classes of Annelida, the Polychaeta are the typical marine representatives, although members of the other classes are to be found as well.

Class Hirudinea (Leeches)

Leeches are far less common in the sea than in fresh water, except for one family, Ichthyobdellidae. In the Woods Hole region the following may be encountered attached to fishes; the group, however, needs restudy in this area:

Branchellion raveneli (Girard, 1851). On the sting ray, Myliobatis fremmviller.

Easily recognized by the leaflike gills along the sides of its body.

Ichthyobdella funduli Verrill, 1872. Reported on Fundulus heteroclitus. Body smooth, annulated, greenish; 2 large and 2 small eyes.

Ichthyobdella rapax (Verrill, 1873). On the summer flounder, Paralichthys dentatus. Body in extension long, slender, rounded, 3-4 cm, long, dark olive with row of rectangular white spots along each side.

Trachelobdella vividus (Verrill, 1872). Body with two distinct regions; narrow anteriorly and wide posteriorly; brown to purplish; about 2.5 cm long. On skates and rays; apparently not common.

Reference: Knight-Jones, E. W., 1962. The systematics of marine leeches. App. B. in "Leeches (Hirudinea) Their Structure, Physiology, etc.", K. H. Mann, Pergamon Press.

Class Oligochaeta

Oligochaete annelids are characteristically fresh water or terrestrial; however there are some 10 species reported from marine or brackish waters of the New England coast, and some are very commonly encountered in shore collecting in the region of Woods Hole. Identification requires study of the internal anatomy, and no key is at present available other than that given by Moore:

Moore, J. P., 1905. Some marine Oligochaeta of New England. Proc. Acad. Nat. Sci. Phila., 57: 373-399, pl. 32-33.

Class Archiannelida

Archiannelids have, as the name implies, been regarded as possibly primitive forms, although many zoologists now prefer to regard them as secondarily simplified and very small derivatives of various polychaete families. They are characteristically tiny marine worms, in sand, mud, or among algae, with few setae, parapodia reduced or lacking, and often with external ciliation persisting in the adult. Because of their very small size, archiannelids may be more common than is generally supposed; however, only one species of Dinophilus is collected regularly at Woods Hole. The morphology of Dinophilus (although not of a species reported from Woods Hole) is described by Nelson (1907).

The species of archiannelids reported from the Woods Hole region include:

Dinophilus gardineri A. Moore, 1899. Reddish in color; 6 segments; body with ciliated rings but with no setae; occurs in brackish water such as Lillie's Ditch and the Eel Pond at Woods Hole. Figure 49 (Plate 8) is probably of this species.

Dinophilus pygmaeus Verrill, 1892. Described as whitish, of 5 body segments, about 0.7 mm long, and occurring on pilings at Woods Hole.

Chaetogordius canaliculatus J. P. Moore, 1904. Slender, filiform, 30 mm long, with a pair of small tentacles; posterior 10-12 segments with setae.

REFERENCE

- Nelson, A. J., 1907. The morphology of Dinophilus conklini n. sp. Proc. Acad. Nat. Sci. Phila., 59: 82-143, Pl. 12-13.

Class Polychaeta

Polychaetes of the Woods Hole area are extremely numerous and diverse. Their treatment in a key is rendered difficult by the fact that, although the polychaetes can be divided into a large number of families, there is no real agreement as to how these families may be grouped into orders. The concept of a Family in the Polychaeta is important and practical for the student to grasp, for the reason that the basic structural features that determine a family also determine a way of life. With a little practice, most families may be readily recognized on sight, and many problems of keying are thus reduced to the level of genera and species, where even the specialist may have to make a close examination. The problem of identifying certain families is simplified by attention to the very characteristic tubes formed by some.

There is still no completed monograph of the polychaetes of the Woods Hole region, but this need will be met by the publication of Pettibone's "Marine Polychaete Worms of the New England Region", of which Part 2 is now in preparation. Until this appears, the most useful complete work is the two volumes by Fauvel; these deal with the polychaetes of France, but are exceedingly useful in identifying families and genera, as well as some of our local species. There also exist Dr. Pettibone's mimeographed preliminary check list and key to Polychaeta of New England; copies of this are available in the invertebrate class laboratory, and should be consulted for forms which do not clearly "fit" in the simpler key presented below for general use. This key is not intended to satisfy the specialist, but rather to bridge the gap between the general biologist and the polychaete systematist. It will probably satisfy neither group, and as a result of this irritation, it is hoped that improved versions will arise.

Much remains to be learned. Polychaete families are of convenient dimensions for individual student projects, and offer much of interest to the comparative physiologist and ecologist. The following key is frankly a preliminary attempt, and will need much revision in the future. We are grateful to Dr. Marian Pettibone for much help and advice in the preparation of the key and check list.

A Note on Polychaete Terminology

There is no generally accepted scheme for dividing the Polychaeta into orders. One method has been to recognize one order of more or less sedentary forms (Polychaeta Sedentaria) and another of free living types (Polychaeta Errantia). Actually, such a division is arbitrary, since the families of polychaetes present a spectrum of adaptations, ranging from free swimming types, through crawlers, burrowers and temporary tube builders, to those which construct fixed tubes which they never leave. In practice it is more useful to recognize the principal family types, such as nereid, polynoid, spionid, syllid, sabellid, serpulid, etc.

A typical free living polychaete such as Nereis (which will serve as an example, although members of other families differ greatly in detail) has paired locomotor appendages or parapodia (sing., parapodium) (Pl. 7, figs. 12-15), each composed of an upper lobe, the notopodium, and a lower, neuropodium. Each lobe typically contains a bundle of slender chitinous setae (sing. seta) which project from the parapodium, together with a larger dark spine known as the aciculum (pl. acicula). The shape, size, number, and position of the setae are of importance in classification. Arising from the base of the notopodium above and the neuropodium below, there are often slender flexible outgrowths, the dorsal cirrus (pl. cirri) and ventral cirrus, respectively. The notopodium consists of a dorsal lobe or ligule and a middle lobe, between which are the aciculum and the setae; the neuropodium consists of a neuroacicular lobe provided with setae and an aciculum, and a ventral lobe. In many polychaetes, gills or branch-

iae, made conspicuous by the red or green blood within, arise from or near the parapodia in certain parts of the body.

Setae vary widely in form, and furnish very precise characters for the determination of species. The use of such characters has been avoided where possible in the key but is necessary in some cases. Common types and their names should be recognized. Plate 6 gives some idea of the wide variety of types. First we may distinguish simple setae (figs. 1-20, 29-42) from composite or jointed setae (figs. 21-28). Long slender simple setae are spoken of as capillary setae (fig. 6). The tips of setae, whether simple or composite, may be entire, bifid (fig. 8), or trifid. If bent like a sickle they are termed falcate (fig. 11); if flattened like an oar blade, limbate (fig. 10). Some simple setae have stubby, bent, usually bifid ends. These are spoken of as hooks or crochets (figs. 29-32). These are usually relatively stout setae and grade into short, broadened types known as uncini (figs. 33-42), usually set in close rows, which are especially characteristic of the Sedentaria.

Composite setae may be multiarticulate, as in the long bristles of some flabelligerids (fig. 21), but are characteristically two-jointed, composed of a shaft and a blade (figs. 22-28). This blade in turn may have various shapes and may itself be a crochet (fig. 28). The blade rests in a notch in the end of the shaft. If the two sides of the notch are equal, it is spoken of as homogomph (fig. 27); if unequal, as heterogomph (fig. 26). Finally setae, either simple or compound, may be embedded at their tips in a clear matrix and are then spoken of as hooded. Thus, we may have simple hooded crochets (figs. 20, 29), or composite hooded crochets (fig. 28).

The heads of polychaetes are exceedingly diverse. As an example of the head of an errant polychaete we may take the head of Nereis (Plate 7, figs. 8-11). This consists of a preoral prostomium, provided at its anterior margin with a pair of small antennae, and at its sides with paired, fleshy, biarticulated palps (palpi). The segment just behind the prostomium is the peristomium (in Nereis it represents a fusion of two segments). It bears, in Nereis, four pairs of peristomial cirri (tentacular cirri) on short stalks at its anterior margin. The usage of the terms palp, antenna, and cirrus varies greatly. Antennae, unless otherwise specified, are usually dorsal or marginal on the prostomium (the term tentacle may also be used). Palpi are usually associated with the mouth and tend to be lateral or ventral to the prostomium and bordering the anterior margin of the mouth. However, certain dorsal structures, especially if these are large, elongated, grooved, or prehensile (as in the spionids) are frequently called palps. The term cirrus is usually applied to structures arising dorsally or ventrally on the parapodia, whereas comparable structures on the anterior part of the body, if elongated, may be designated tentacular cirri (or peristomial tentacles). Tentacle is a very general term and is used to signify any of a variety of elongated sensory or feeding structures, usually on the head.

The prostomium of Nereis bears two pairs of eyes; other polychaetes may have one pair or none, and in some there are numerous eyespots scattered on the peristomium or even on the tentacles or sides of the body.

The first parapodia of Nereis are borne on the segment behind the peristomium. The first two pairs of parapodia are uniramous, that is, each contains a single aciculum and setal fascicle (bundle). All succeeding parapodia are biramous. In other polychaetes the parapodia vary, some having only uniramous, others only biramous parapodia, some with both types, some with parapodia greatly reduced.

In most free living polychaetes the pharyngeal region may be everted (pushed forward and turned inside out) to form a proboscis, which often bears stout jaws and small horny teeth (paragnaths). A study of the arrangement of paragnaths is a necessary step in the identification of nereids; in other families the pattern is less complex, but may be referred to.

The sedentary polychaetes depart widely from the body form which characterizes free living types. Prostomium and eyes are often reduced, proboscis and jaws may be absent, and the anterior end, especially in types dwelling in fixed tubes, greatly

elaborated for feeding and respiration. In sabellids and serpulids the peristomial cirri (or tentacles) form a "branchial crown" of feather-like "gills", which serves both for feeding and respiration. Cilia pass water between the branches of the plumes and transport food, entangled in mucus, down to the mouth. In other forms such as terebellids, the peristomial tentacles are long, filamentous, and extensile, serving to bring in food by ciliary action in a groove running along each filament; just behind the head there arise blood-filled branchiae which serve in respiration. Parapodia in tubicolous (tube dwelling) polychaetes tend to be small and are provided with rows of hooklike setae (uncini) for gripping the sides of the tube. Uncini may be set on a low mound or uncinigerous torus. Special glands may secrete tube-forming material. One or more peristomial cirri may, in serpulids, which form a rigid calcareous tube, be modified to a pluglike operculum that can block the tube entrance. The body in tube dwelling forms is often divisible into a more anterior and specialized thorax and a less specialized posterior abdomen. The thorax may bear anteriorly a collar, and this may be extended rearward to the posterior end of the thorax as a pair of folds, the thoracic membranes. The preceding accounts are of extreme types, free living and tubicolous respectively, and can convey but a poor idea of the actual diversity of pattern that characterizes the numerous annelid families.

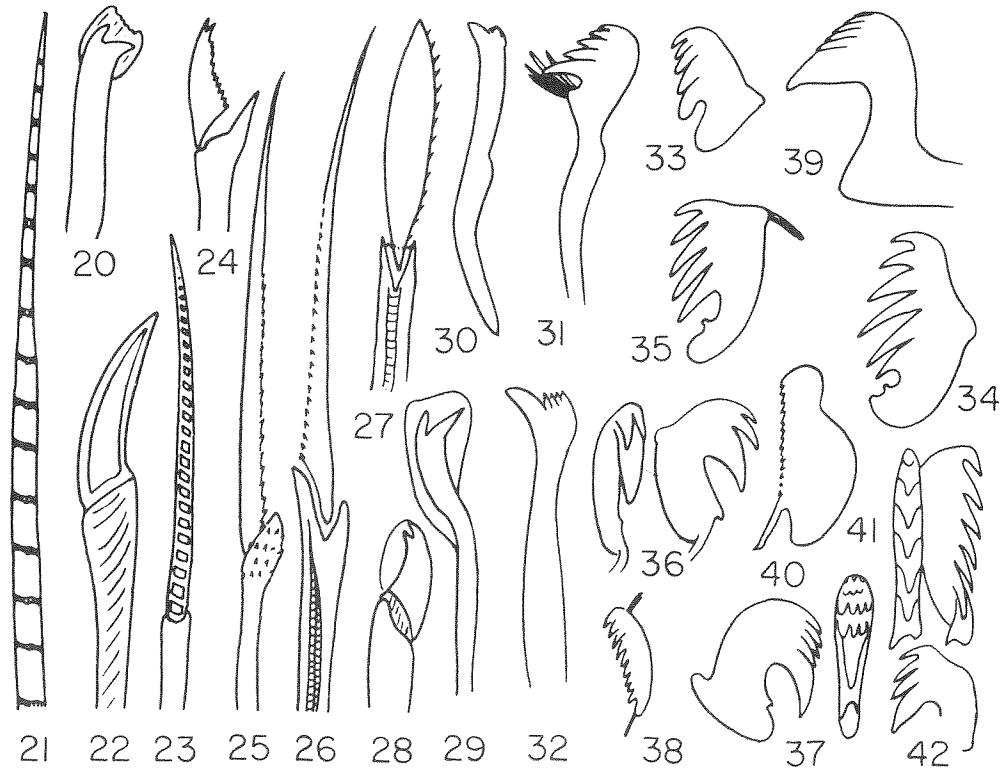
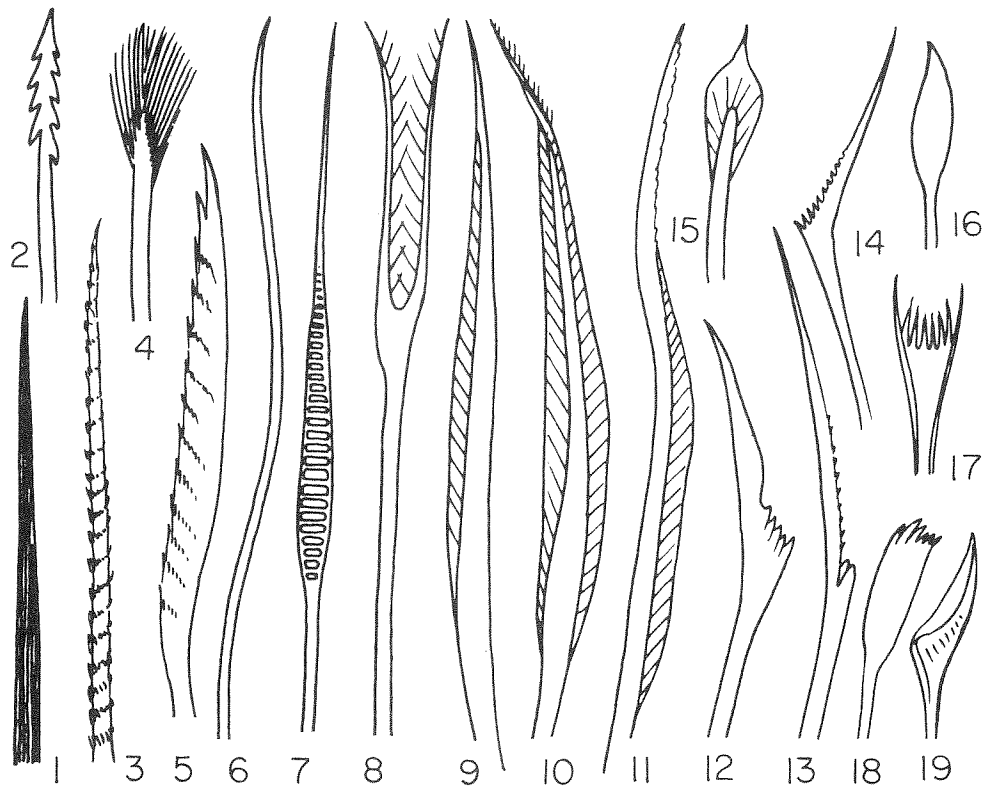
The key that follows begins as a key to separate families, and a study of it will give an impression of the characteristics of each family type. Since the ability to recognize families in the field is of great practical value to the zoologist, the student should early learn the family types commonly encountered. Generic and specific identification requires more careful study. (For setal types see Plate 6; other figure references are to Plates 7-10).

KEY TO COMMONER FAMILIES OF POLYCHAETES

- I. Instead of presenting only a pair of choices, this key presents several choices at certain steps. Figure references in Keys are to Plates 7-10.
 - II. Effective use of this key requires practice. We suggest that the beginner, with the advice of the instructor, run an assortment of well known species through the key step by step, in order to acquaint himself with the terminology. The tendency of beginners to skip steps when the worm at hand is known interferes with learning to use the key.
 - III. In most families only those species are keyed out which are commonly collected. The student is referred to the more detailed key of Dr. Pettibone for the rarer species, or those in which identification must be based upon more details than given here.
 - IV. The keys to members of families having more than one common or readily identifiable species will be found under the separate families, together with annotated lists of species reported from this region. No attempt has been made to key out all the rare or deeper water species.
 - V. Unidentifiable and otherwise "interesting" polychaetes may be sent to[†] Dr. Marian Pettibone, Division of Marine Invertebrates, U. S. National Museum, Washington 25, D. C.
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1. Dorsal surface with overlapping scales (elytra, fig. 1), flattened setae (paleae, fig. 22), or overlain by a thick felty layer 2
 1. Dorsal surface not with elytra, paleae, or felt 4

(Key continued on page 60)

Plate 6



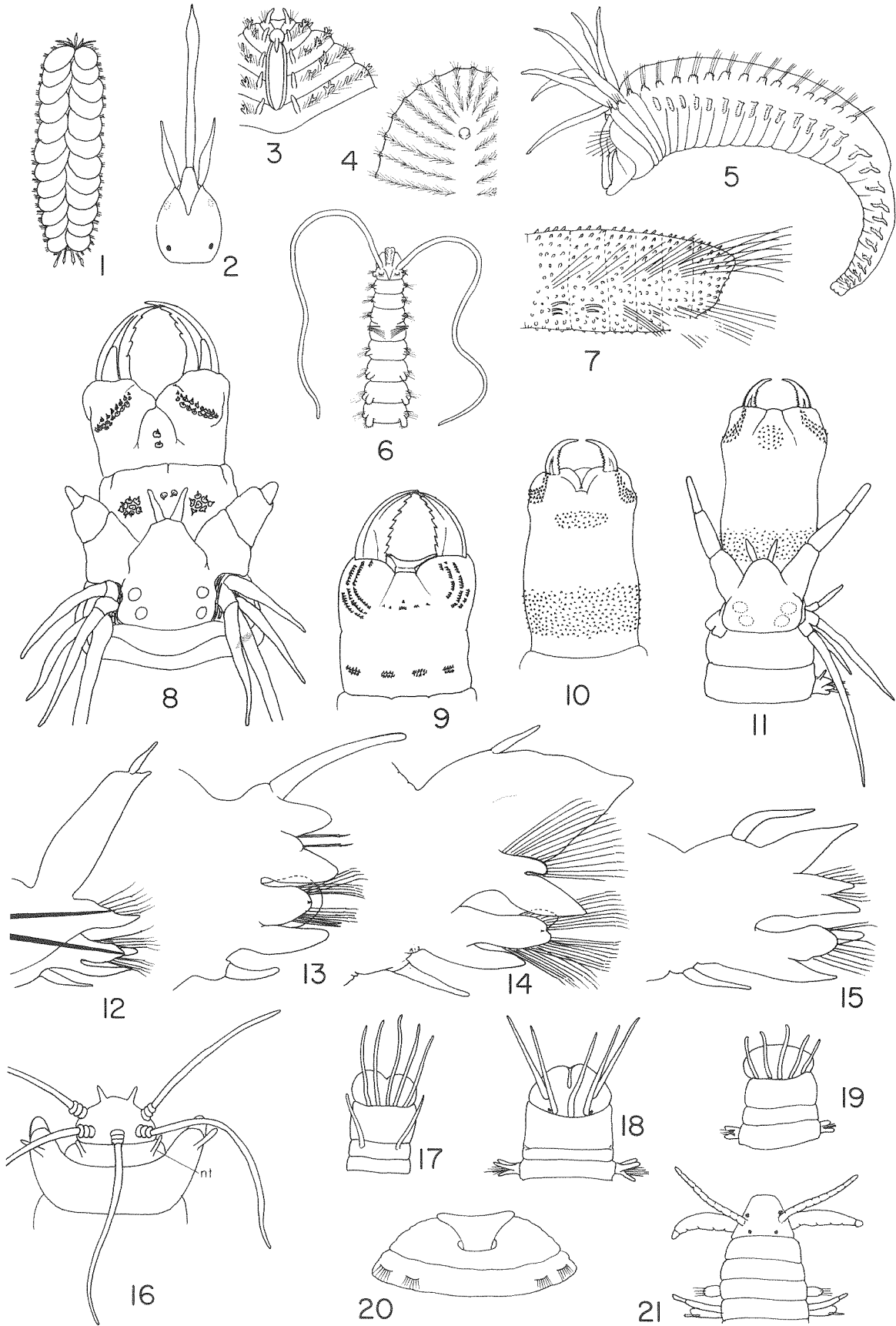
POLYCHAETA

Polynoidae, Euphrosinidae, Spintheridae, Ampharetidae, Flabelligeridae, Nereidae, Onuphidae, Eunicidae, Scalibregmidae, Dorvilleidae, Spionidae.

Note: In this and in Plates 8, 9, and 10, objects are not to any scale size. Figure sources are: (F) Fauvel, (B) Berkeley and Berkeley, (P) Pettibone, (S) from specimens.

- Fig. 1. Lepidonotus squamatus, Polynoidae, showing 12 pairs of elytra (singular is elytron) (S).
2. Head of Harmothoe imbricata (F).
 3. Euphrosine borealis, dorsal view of anterior end (P).
 4. Spinther citrinus, dorsal view of anterior end (P).
 5. Hypaniola grayi, Ampharetidae (S).
 6. Anterior end of Polydora sp. (Spionidae), showing modified fifth setiger (after Verrill).
 7. Pherusa affinis, Flabelligeridae, anterior end in lateral view (S).
 8. Nereis (Neanthes) succinea, head and everted proboscis in dorsal view (S).
 9. Platerynereis megalops, proboscis of male in ventral view (S).
 10. Nereis (Neanthes) arenaceodonta, proboscis, ventral view (S).
 11. Head and proboscis of same, dorsal view (S).
 12. Parapodium from posterior part of body of N. succinea (S). In this and figs. 13-15, parapodia are from left side, viewed from front. Acicula are shown in black; omitted in figs. 13-15.
 13. Parapodium from mid-body of Nereis (Nereis) pelagica, showing 2 ligules in notopodium (S).
 14. Same, from N. (Neanthes) virens, showing 3 ligules in notopodium (S).
 15. Same, from N. (Neanthes) arenaceodonta (S).
 16. Head of generalized onuphid, showing pair of nuchal tentacles on peristome (P).
 17. Eunice pennata, Eunicidae. diagram of head (P).
 18. Marphysa sanguinea, same (S).
 19. Marphysa belli, same (P).
 20. Scalibregma inflatum, Scalibregmidae, same (P).
 21. Stauronereis rudolphi, Dorvilleidae (F).

Plate 7



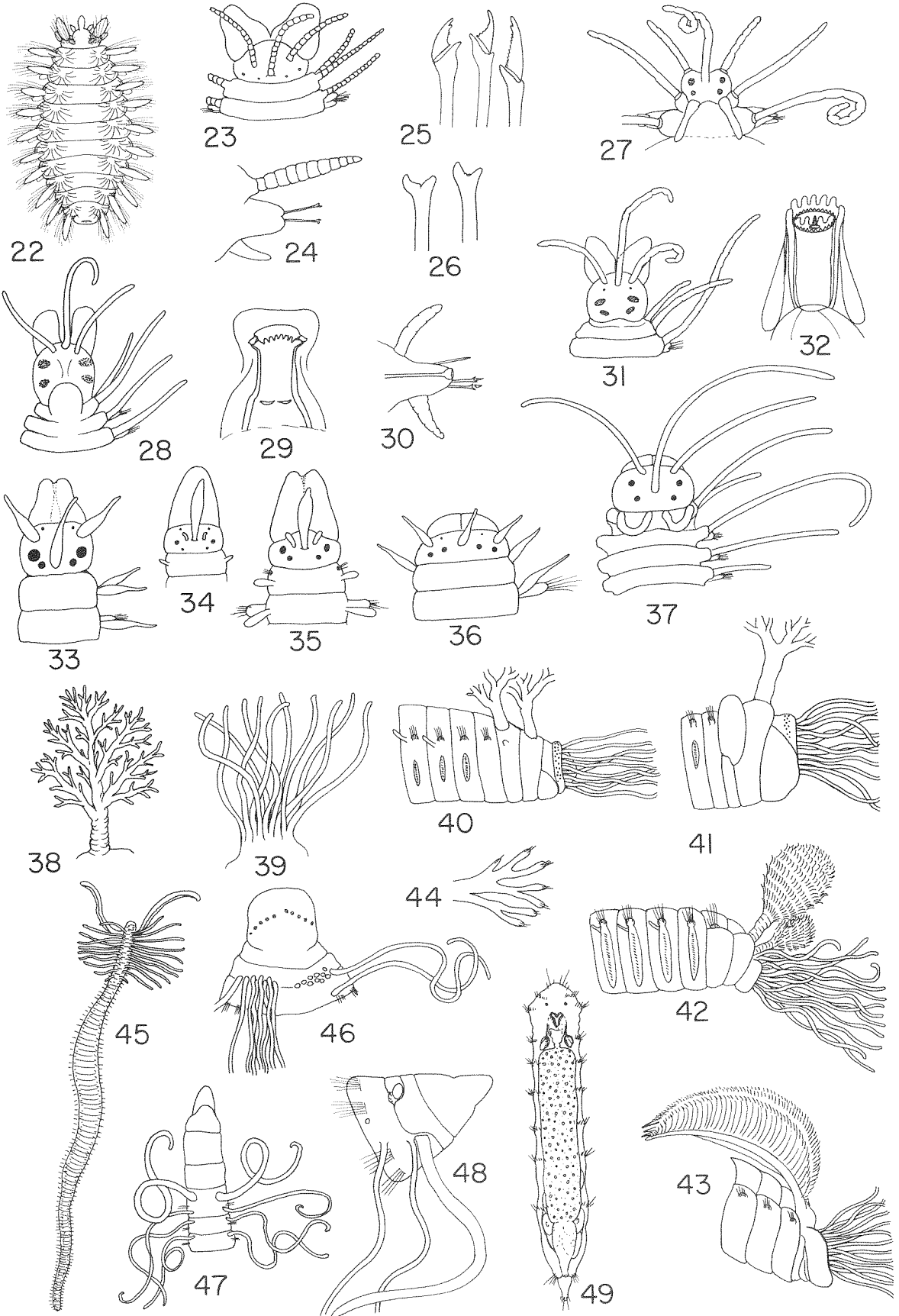
POLYCHAETA AND ARCHIANNELIDA

Chrysopetalidae, Syllidae, Terebellidae, Cirratulidae

Fig. 22. Dysponetus pygmaeus (Chrysopetalidae), dorsal view of whole animal showing dorsal fans of setae (P).

23. Syllis gracilis, head (P).
24. Same, parapodium (F).
25. Same, compound setae.
26. Same, heavy bifurcated simple setae (P).
27. Amblyosyllis formosa (European) to show nuchal epaulettes (F).
28. Odontosyllis fulgurans, head showing nuchal hood (F).
29. Same, armature of proboscis (F).
30. Streptosyllis, diagram of parapodium with knobbed aciculum (P).
31. Eusyllis lamelligera, head (F).
32. Same, armature of proboscis (F).
33. Brania clavata, head (P).
34. Exogone hebes, head (P).
35. Exogone dispar, head (P).
36. Sphaerosyllis erinaceus, head (P).
37. Autolytus prismaticus, head (P).
38. Arborescent (branching) gill of a terebellid (S).
39. A terebellid gill of unbranched filaments (B).
40. Head of adult Nicolea venustula, simplified (P).
41. Head of Pista maculata, simplified (P).
42. Head of Pista cristata, simplified (B).
43. Head of Terebellides stroemi, simplified (B).
44. Gill-like branching parapodium of Enoplobranchus sanguinea (note setae) (P).
45. Dodecaceria corallii, Cirratulidae, whole animal (S).
46. Cirratulus cirratus, anterior end (P).
47. Tharyx, sp., anterior end (F).
48. Chaetozona setosa, head (P).
49. Dinophilus sp., Archiannelida, drawn from life by Dr. Louise Bush.

Plate 8

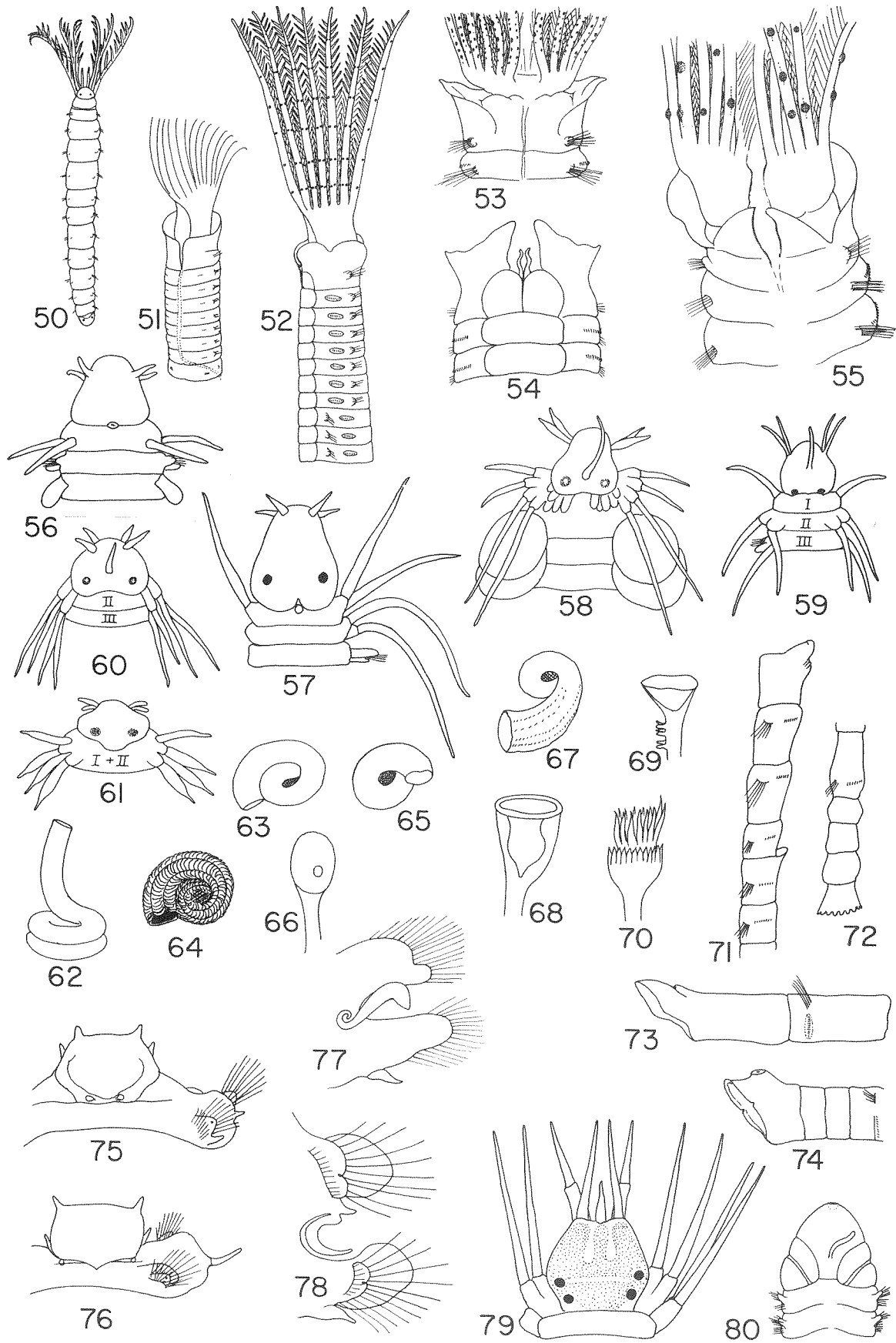


POLYCHAETA

Sabellidae, Phyllodoceidae, Serpulidae,
Maldanidae, Hesionidae, Paraonidae

- Fig. 50. Fabricia sabella, whole worm, dorsal view (F).
51. Chone infundibuliformis, simplified, anterior end, view of mid-dorsal slit in collar (F).
52. Sabella crassicornis, anterior end viewed from left; note 4-lobed collar (P).
53. Sabella microphthalma, collar region dorsal view; irregular rows of eyes (S).
54. Same, ventral view; note absence of lateral slits (S).
55. Potamilla reniformis, dorsal view of collar region, showing mid-dorsal and lateral notches; "compound eyes" on branchial filaments (S).
56. Eteone sp., anterior end (P). 57. Phyllodoce sp., anterior end (S).
58. Notophyllum americanum, anterior end (P). Note nuchal lappets at rear of prostomium, and large imbricated dorsal cirri.
59. Eulalia viridis, anterior end (P).
60. Eumida sanguinea, anterior end (P). 61. Paranaitis speciosa, anterior end (P).
62. Spirorbis (Dexiospira) spirillum, dextrally coiled tube with end elevated (F).
63. Same, dextral, flat coil (P).
64. Spirorbis (Paradexiospira) violaceus, dextral tube (F).
65. Spirorbis (Laeospira) borealis, sinistral tube (F).
66. Operculum of above (P). 67. Spirorbis (Laeospira) granulosus, sinistral tube (P).
68. Operculum of 67 (P). 69. Operculum of Filograna implexa (P).
70. Operculum of Hydroides (Eupomatus) uncinata (P).
71. Clymenella torquata, anterior end viewed from right, showing collarette on 4th setiger (P).
72. Posterior end of same, showing anal funnel (P).
73. Posterior end of Maldanopsis elongata (P).
74. Posterior end of Maldane sarsi (P).
75. Nephtys incisa, head end (P). 76. Nephtys bucera, head end (P).
77. Aqlophamus circinata, parapodium with branchia curved inwards (P).
78. Nephtys caeca, parapodium from middle region, posterior view, showing branchia curved outward (P).
79. Podarke obscura, head (S). 80. Aricidea jeffreysii, head (B).

Plate 9

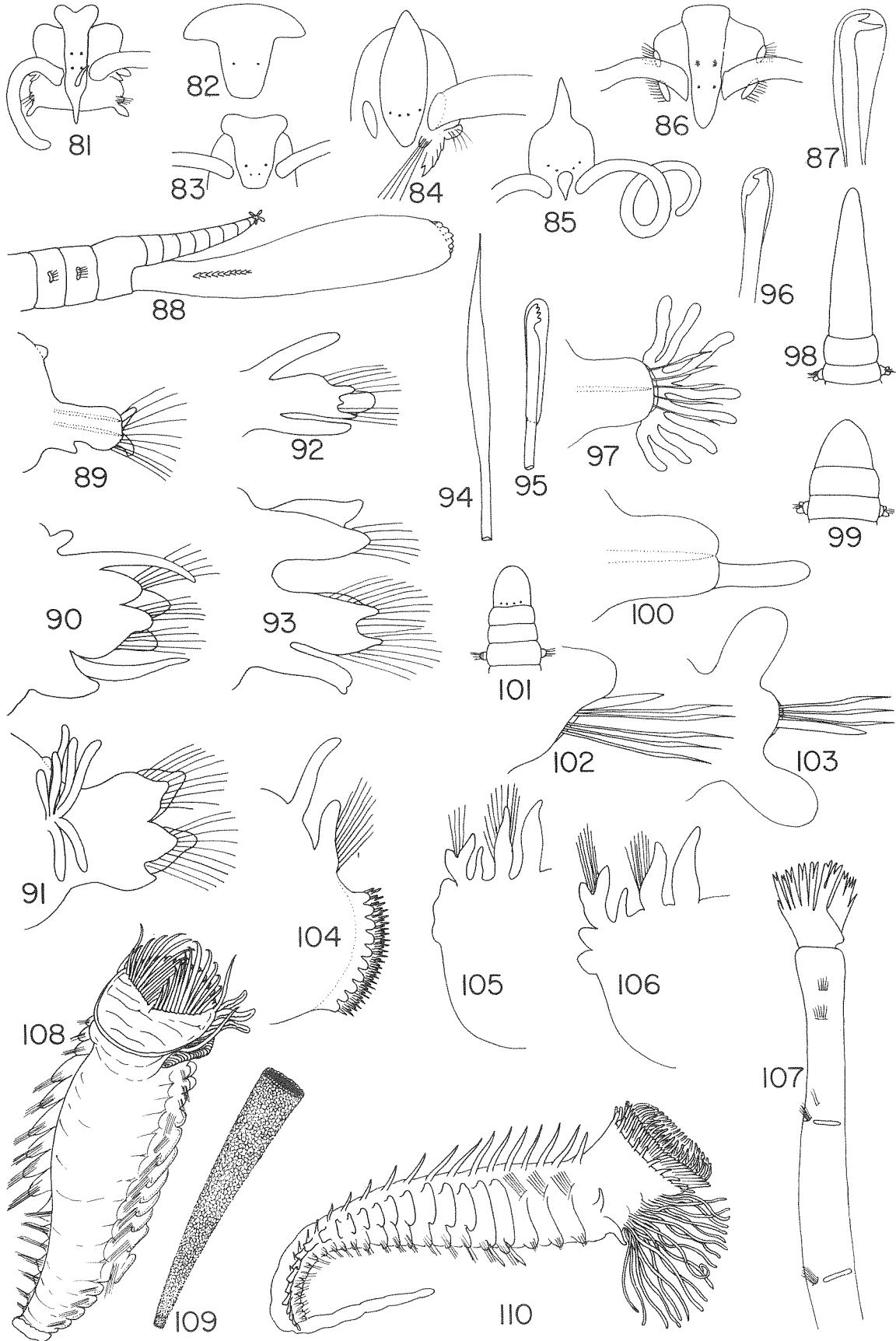


POLYCHAETA

Spionidae, Goniadidae, Glyceridae, Arabellidae,
Lumbrineridae, Orbiniidae, Oweniidae, Pectinariidae,
Sabellariidae.

- Fig. 81. Polydora ligni, head with occipital antenna (P).
82. Spiophanes bombyx, prostomium (P). 83. Scolecoclepidis viridis, head (P).
84. Dispio uncinata, head (P). 85. Scolecopsis squamata, head (P).
86. Spio filicornis, head (P). 87. Hooded neuropodial crochet of Spio filicornis (P).
88. Goniada maculata, head with extended proboscis, showing chevrons (McIntosh).
89. Glycera capitata, anterior parapodium seen from rear, showing single postsetal lobe (P).
90. Glycera dibranchiata, parapodium seen from rear, showing 2 postsetal lobes and 2 branchiae (P).
91. Glycera americana, parapodium from middle body, seen from rear, showing the branchiae extended (P).
92. Ophioglycera gigantea (Goniadidae), anterior uniramous parapodium seen from front, showing presetal lobe (P).
93. Same, posterior biramous parapodium, seen from front, also with bilobed presetal lobe (P).
94. Lumbrineris fragilis, capillary limbate setae (P). 95. Same, hooded seta (P).
96. Ninoe nigripes, hooded seta (S). 97. Same, branchia bearing parapodium seen from front (P).
98. Lumbrineris acuta, head (P). 99. Lumbrineris tenuis, head (P).
100. L. tenuis, posterior parapodium (P). 101. Arabella iricolor, head (P).
102. Driloneris longa, anterior parapodium (P). 103. Same, posterior parapodium (P).
104. Orbinia ornata, right hand parapodium in thoracic region, seen from rear, showing palisaded neurosetae and postsetal row of papillae (P).
105. Scoloplos robustus, abdominal parapodium, showing undulate subpodial flange (P).
106. Scoloplos fragilis, abdominal parapodium showing incised subpodial lobe (P).
107. Owenia fusiformis, anterior end seen from side, showing slashed branchial membrane (P).
108. Pectinaria gouldii, seen in dorsolateral aspect; note operculum of golden paleae (S).
109. Sand tube of Pectinaria, about natural size (S).
110. Sabellaria vulgaris, living specimen removed from tube (S).

Plate 10



2. Dorsal surface with a felty layer over elytra; "sea mice"
 APHRODITIDAE (p.64)
2. Dorsal surface with simple, exposed elytra; "scale worms". 3
2. Dorsal surface more or less concealed by notosetae in fan-shaped groups or transverse rows; minute worms CHRYSOPETALIDAE
 The only species reported locally is Dysponetus pygmaeus Levinsen, 1879; dredged; up to 3 mm long (fig. 22).
3. With filiform dorsal cirri on non-elytra bearing segments
 POLYNOIDAE (p.75)
3. Without filiform dorsal cirri on non-elytra bearing segments
 SIGALIONIDAE (p. 78)
 The only common species is Sthenelais boa, easily told from other common scale worms by its elongated body and 100 or more pairs of scales.
4. Dorsal surface convex, bristly; elongated setigerous dorsal lobes covering the dorsum 5
4. Dorsal surface otherwise 6
5. Notopodium a wide transverse ridge with 2 dorsal cirri and forked notosetae in transverse rows; with a dorsal crestlike "caruncle" on head (fig. 3) EUPHROSINIDAE (p.67)
 With 6-7 branchiae on each notopodium, each with 1-4 branches: Euprosine borealis.
5. Notopodia with transverse membranous ridges supported by numerous spinelike setae (fig. 4); small, flattened, ellipsoidal SPINTHERIDAE
 The only reported species is Spinther citrinus (Stimpson, 1854), a small dredged form, lemon yellow, resembling in color the sponges with which it is associated.
6. Anterior end bearing conspicuous filaments, or feathery tentacles, or conspicuous bristles, or golden setae (paleae), so that prostomium is usually more or less concealed 7
6. Anterior end with prostomium not concealed by such special outgrowths as may be present 12
7. Anterior tentacles (branchial crown) are pinnate (featherlike); worms almost always form tubes 8
7. Anterior end with flattened golden setae (paleae) forming an operculum (figs. 108, 110); tubes are of cemented sand grains, stiff and brittle 9
7. Anterior end bearing many long filamentous (threadlike) outgrowths; tubes of some are distinctive, but lacking in others 10
7. Anterior end somewhat concealed by a cage of long setae directed forward; body heavily papillated
 FLABELLIGERIDAE (p. 67)
8. Tubes calcareous; one of tentacles modified to a pluglike stalked operculum SERPULIDAE (p. 77)
8. Tubes flexible, leathery, parchment-like, sandy, or mucoid (except in the tiny Fabricia); no operculum SABELLIDAE (p. 76)
9. Tubes of sand, of regular conical form, open at both ends
 PECTINARIIDAE (p.74)
 The commonly taken species is Pectinaria gouldii (figs. 109, 110).
9. Tubes of sand, convoluted and solidly cemented onto stones, shells, or into masses; common SABELLARIIDAE (p. 76)

- 10. Filamentous outgrowths much concentrated on the head end; the body is divisible into two distinct regions ("thorax" and "abdomen"); branching gills may be present in addition to filaments 11
- 10. Filamentous outgrowths start back of the head (actual prostomium is bare) and are also borne on several to many segments of the body; never branching gills near anterior end; body not divisible into two distinct regions CIRRATULIDAE (p.66)
- 11. Anterior filaments not retractile into mouth, but tend to creep out radially if worms are undisturbed; prostomium seen only by lifting aside filaments; branchiae often present on dorsum behind filaments; well represented locally TEREBELLIDAE (p.81)
- 11. Anterior tentacles retractile into mouth, leaving pointed branchiae exposed and extending over anterior end; tapering at rear; not common in most collecting AMPHARETIDAE (p.63)
- 12. Anterior end with pair of long, coiling tentacular processes (often referred to as "palps") which may, however, be missing if specimen has been handled roughly 13
- 12. Prostomium with obvious antennae (not minute relative to size of prostomium); with or without fleshy oral palps 15
- 12. Prostomium with minute antennae; without fleshy oral palps 21
- 12. Prostomium without antennae, or with a single median antenna; without tentacular cirri; or prostomium is indistinct 23
- 13. Body segments similar in size and setae (except that the 5th may be much modified in Polydora); body, although showing gradual transition, is not sharply divisible into distinct regions SPIONIDAE (p.78)
- 13. Body divisible into 2 or 3 distinct regions with dissimilar segments 14
- 14. Small, slender worms with spatulate prostomium; coiling tentacles bear a fringe of papillae or short branches on one side; no tube MAGELONIDAE (p.69)
- 14. Larger worms in distinctive leathery or chitinous tubes; parapodia are complexly lobed CHAETOPTERIDAE (p.65)
- 15. Dorsal cirri flattened, leaflike, often overlapping; prostomium with 2 eyes and 4-5 antennae; lacking oral palps; smallish, elongate worms of delicate build PHYLLODOCIDAE (p.74)
- 15. Dorsal cirri of typical tentacular or slender tapered form 16
- 16. (With one rare exception) always with parapodial ligules (rounded, leaflike, or straplike dorsal lobes of parapodia) bearing dorsal cirri; prostomium with 4 eyes and 2 antennae; 2 biarticulated oral palps NEREIDAE (p.70)
- 16. Lacking parapodial ligules 17
- 17. With 1-8 lateral pairs of tentacular cirri on peristomial segment; small worms 18
- 17. Without such peristomial cirri, or with a pair of short dorsal tentacles on nuchal region (fig. 16); dark complex jaw apparatus 19

18. Prostomium with biarticulate oral palps; 2-3 antennae, 4 eyes, 2-8 pairs of peristomial cirri HESIONIDAE (p.68)
Several species present locally, some of which are commensal.
The most common species is the small, dark, short-bodied Podarke obscura (fig. 79).
18. Prostomium with 2 oral palps (sometimes reduced or fused), 3 antennae, and 4-6 eyes; 1-2 pairs of peristomial cirri; the dorsal parapodial cirri often long, moniliform (beaded), and conspicuous; a large and difficult family of small and beautiful worms SYLLIDAE (p.79)
19. Prostomium with 2 articulated antennae and 2 elongated palps; without branchiae DORVILLEIDAE (p.66)
19. Prostomium with 1-7 antennae, 2 low globular palps, best seen ventrally; branchiae simple, spiral, pectinate, or lacking 20
20. With 5 occipital antennae (seem to be borne at rear of prostomium, but without frontal antennae; sometimes a pair of short nuchal tentacles (figs. 17-19) EUNICIDAE (p.66)
20. With 5 occipital antennae plus 2 frontal antennae on prostomium; occipital antennae with distinctly ringed bases (fig. 16) ONUPHIDAE (p.71)
21. Prostomium subquadrate, 1 pair of small pointed antennae at front corners, a second concealed at sides; parapodia biramous with lamellae well developed; body flattened, with distinctive "shimmying" motion NEPHTYIDAE (p.70)
21. Prostomium conical, long and tapering, with 4 minute antennae set in a cross at tip; parapodia small and lack lamellae; bodies pink, cylindrical, and pointed at both ends, coiling 22
22. Segments bi- or triannulate; parapodia either uni- or biramous, but of one form for whole length of body; common GLYCERIDAE (p.67)
22. Segments uni-annulate; parapodia of front part of body uniramous, biramous in rear GONIADIDAE (p.68)
23. Some of body segments much longer than wide 24
23. Segments shorter than, or not much longer than, wide 25
24. Segments remarkably long; anal segment with a funnel, or a flattened plate, or spatulate (spoon-like); prostomium hood-like or with flattened plate; "bamboo worms" MALDANIDAE (p.69)
24. Anal segment otherwise; prostomium with or without a slashed branchial membrane (fig. 107) OWENIIDAE (p.73)
25. Body very long and with small parapodia, somewhat resembling elongated earthworms; proboscis has dark jaw-pieces (not visible unless everted); 2 superficially very similar families 26
25. Form various; proboscis without dark jaw-pieces 27
26. Setae consisting of (1) simple, pointed, "limbate" setae (flattened back of tips) and (2) "hooded" setae (hooked setae with tips encased in a transparent drop of material) LUMBRINERIDAE (p.68)
26. Setae limbate, with or without stout aciculum-like setae; without hooded setae ARABELLIDAE (p.64)

- 27. Parapodia of at least some segments bear typical uncinigerous tori (a torus is a simple raised area representing a low parapodial ramus; uncini are short embedded hooklike setae set in rows) 28
- 27. Parapodia with capillary (simple, pointed) setae; typical uncinigerous tori absent, but palisaded rows of crochets (elongate hooked setae) on low mounds may be present anteriorly 29
- 27. Parapodia with filiform postsetal notopodial lobes, with strap-like branchiae dorsal to notopodia on some segments; prostomium subconical, with or without a median antenna; small, threadlike worms, living in mucous tubes in mud or sand PARAONIDAE (p.73)
- 28. Without branchiae, or when present, only in posterior region; body extremely long, slender, and fragile; characteristically purplish-red, found in mud CAPITELLIDAE (p. 65)
- 28. With 11-13 pairs of dorsal branchiae in middle part of body; heavy-bodied; "lug worms" ARENICOLIDAE (p.64)
- 29. Prostomium bilobed or T-shaped; branchiae usually 4 pairs limited to anterior few segments, arborescent; integument checkered SCALIBREGMIDAE (p.77)
- 29. Prostomium pointed; branchiae are either numerous pairs or lacking altogether 30
- 30. More or less short bodied, pointed at both ends; parapodia reduced to bundles of setae, all simple, capillary; a ventral groove present in some; branchiae along sides of body or lacking OPHELIIDAE (p.72)
- 30. Elongate worms with pointed, actively inquiring heads; anterior thoracic part of body often with flattened dorsum with parapodia lateral; posterior abdominal segments with parapodia dorsal; with paired branchiae dorsal to parapodia, the parapodia and branchiae covering the back like a furry coat ORBINIIDAE (p.72)

KEYS TO SPECIES AND ANNOTATED CHECK LIST OF THE MORE COMMON POLYCHAETES,

ARRANGED BY FAMILIES

1. Family Ampharetidae
List of Species

- Amage auricula Malmgren, 1866. Dredged.
- Ampharete arctica Malmgren, 1866. Dredged.
- Ampharete acutifrons (Grube, 1860). Dredged.
- Amphicteis gunneri (Sars, 1835). Dredged.
- Asabellides oculata (Webster, 1879). Dredged.
- Hypaniola grayi Pettibone, 1953. In shallow ponds of low salinity. Figure 5.
- Melinna cristata (Sars, 1851). Dredged.
- Samytha sexcirrata (Sars, 1856). Dredged.
- Samythella elongata Verrill, 1873. Dredged.

2. Family Amphinomidae (not in key; rare)
List of Species

- Amphinome rostrata (Pallas, 1766). Gulf Stream fauna, on floating weed, etc.
- Hipponoe gaudichaudi Audouin and Milne Edwards, 1830. On floating objects, barnacles, etc.
- Paramphinome pulchella Sars, 1872. Dredged.
- Pareurythoe borealis (Sars, 1862). Dredged.

3. Family Aphroditidae

Key

1. Thick felty layer completely covers elytra; dredged in mud Aphrodita hastata Moore, 1905.
1. Loose felty layer, not completely concealing elytra; dredged in sand Laetmatonice filicornis Kinberg, 1855.

4. Family Arabellidae

Key

1. Parapodia without heavy projecting acicular setae; prostomium with four eyes in row on posterior margin (may be overlooked under fold of peristomium) (fig. 101) Arabella iricolor
1. Parapodia provided with stout projecting aciculum-like setae (fig. 102) 2
2. Prostomium conical, with four eyes in row on posterior margin Notocirrus spiniferus
2. Prostomium spatulate, flattened dorsoventrally, without eyes Drilonereis 3
3. Parapodia small, inconspicuous on anterior segments (fig. 102); in far posterior region, parapodia distinctly bilabiate (fig. 103) Drilonereis longa
3. Parapodia prominent from first setiger on, similar throughout length of body Drilonereis magna

List of Species

Arabella iricolor (Montagu, 1804). Formerly called A. opalina. Common in sandy mud.

Drilonereis longa Webster, 1879. Common in sandy mud.

Drilonereis magna Webster and Benedict, 1887. Rare, dredged.

Notocirrus spiniferus (Moore, 1906). Low water and dredged. Young stages are thought to live parasitically in body cavity of Diopatra cuprea (Pettibone, M., 1957. Endoparasitic polychaetous annelids of the family Arabellidae with descriptions of new species . Biol. Bull., 113: 170-187).

5. Family Arenicolidae

Key

1. 19 setigerous segments; 12-13 pairs of gills; found north of Cape Cod Arenicola marina
1. 17 setigerous segments; 11 pairs of gills 2
2. Firm, stout, dark blackish-green; commonly 15-30 cm long; castings formless; egg mass a gelatinous streamer up to a meter long Arenicola cristata
2. Soft and limp; color pale pinkish-tan; length rarely exceeds 15 cm; castings cylindrical, coiled; gelatinous egg mass firm and egg shaped Arenicola brasiliensis

List of Species

Arenicola brasiliensis Nonato, 1958 (= A. caroledna Wells, 1961). This species

prior to 1961 was not formally recognized as distinct from A. cristata, although the difference had been noted years previously by the MBL's distinguished former Collector, Mr. Milton "Sam" Gray. "Caroledna" is generally found in sand.

Arenicola cristata Stimpson, 1856. See above. This large Arenicola is the form traditionally used for dissection in the MBL Invertebrate Zoology Course. It prefers quieter waters and muddier sand than does A. brasiliensis, and is becoming increasingly scarce, in part because of dredging of harbors. Arenicola marina (Linnaeus, 1758). Occurs north of Cape Cod.

6. Family Capitellidae

Key

- 1. Capillary (slender, pointed) setae on first 5 setigers; body very slender Heteromastus filiformis
- 1. Capillary setae on first 7 setigers Capitella capitata
- 1. Capillary setae on first 11 setigers Notomastus 2

- 2. Capillary setae in both noto- and neuropodia of first setiger; body blood-red anteriorly, light yellowish posteriorly Notomastus latericeus
- 2. Setae only in notopodium of first setiger; body dark purplish-brown with bluish iridescence anteriorly Notomastus luridus

Note: Capitellids, because of their extreme length and thinness, are difficult to collect entire, and hence to identify.

List of Species

- Capitella capitata (Fabricius, 1780). Common, in sandy mud.
- Heteromastus filiformis (Claparède, 1864). Common, in mud.
- Notomastus latericus Sars, 1851. In muddy sand.
- Notomastus luridus Verrill, 1873. In muddy sand.

7. Family Chaetopteridae

Key

- 1. Tube U-shaped, parchment-like, with both ends open to surface; worm large, thick, well known Chaetopterus variopedatus
- 1. Tube long, slender, transparent, annulated; buried vertically in sand; worm long and slender Spiochaetopterus oculatus

List of Species

- Chaetopterus variopedatus (Renier, 1804). Formerly C. pergamentaceus. Is fairly common, but not entirely dependable for experimental work because it may become very scarce in certain years. The distinctive tube may have led to over-collecting.
- Spiochaetopterus oculatus Webster, 1879. Uncommon; dredged in mud in Buzzards Bay and has been found by Mr. Gray on certain flats both north and south of the Cape.

8. Family Cirratulidae

Key

1. With 2 elongate grooved tentacles ("palps") arising from forward of the first setiger, in addition to the other filamentous outgrowths 3
1. With numerous filaments, but without the differentiated grooved palps Cirratulus
2. Prostomium bluntly conical with 2-9 eyes on each side in a transverse row or united in an arc (fig. 46) Cirratulus cirratus
2. Prostomium conical, slightly acute; without eyes Cirratulus grandis
3. Only 4-6 pairs of rather short filaments in addition to palps (fig. 45); dark, almost black; forms a calcareous tube mass; in calcareous shell or coral matrix Dodecaceria coralii
3. With numerous filaments in addition to 2 tentacular palps (figs. 47, 48) 4
4. With capillary (simple, pointed) setae exclusively in both rami of parapodia (fig. 47) Tharyx acutus
4. With acicular setae or unidentate crochets in addition to capillary setae; crochets in rows almost encircling the body in posterior region (fig. 48) Chaetozone setosa

List of Species

- Chaetozone setosa Malmgren, 1867. Dredged.
Cirratulus cirratus (O. F. Müller, 1776). Dredged.
Cirratulus grandis Verrill, 1873. Common.
Dodecaceria coralii (Leidy, 1855). Dredged.
Tharyx acutus Webster and Benedict, 1887. Dredged.

9. Family Dorvilleidae

Key

1. Prostomium without eyes; in sand Stauronereis caecus (Webster and Benedict, 1884)
1. Prostomium with 4 eyes (fig. 21); in sandy mud and in "weed" in Lagoon Pond (Martha's Vineyard) Stauronereis rudolphi (Delle Chiaje, 1828)

10. Family Eunicidae

Key

1. With 2 short nuchal tentacles on the dorsal side of second segment (fig. 17) Eunice 3
1. Without such nuchal tentacles Marphysa 2
2. Prostomium bilobed (fig. 18); branchiae start on about segment 20 (19-40) and continue nearly to end of body with 1-8 filaments per branchia Marphysa sanguinea
2. Prostomium rounded (fig. 19); branchiae start on segments 12-15, relatively few in number (12-21 pairs) with 7-19 filaments per branchia Marphysa bellii

- 3. Acicula and subacicular hooks black; branchiae begin on setigers 7-9, and continue nearly to rear of body; tube papery Eunice norvegica
- 3. Acicula and subacicular hooks yellow; branchiae begin on third setiger, and continue on to setigers 40-50, leaving middle and rear of body without branchiae; tubes thin, rough with debris Eunice pennata

List of Species

Eunice norvegica (Linnaeus, 1767). Includes E. floridana Ehlers. Dredged.
Eunice pennata (O. F. Müller, 1776). Dredged.
Marphysa bellii (Audouin and M. Edwards, 1833). Rare, in muddy sand.
Marphysa sanguinea (Montagu, 1815). Common, in muddy sand.

11. Family Euphrosinidae
 List of Species

Euphrosine cirrata Sars, 1862. Dredged.
Euphrosine borealis Oersted, 1843. Dredged; fig. 3.
Euphrosine armadillo Sars, 1851. Dredged.

12. Family Flabelligeridae
 Key

- 1. Body covered with thick mucous mantle containing long, stalked papillae; neurosetae are compound hooks Flabelligera affinis
- 1. Body without mucous mantle, covered with simple (not stalked) papillae; neurosetae are simple 2
- 2. Both neuro- and notosetae are long, capillary; papillae numerous and remarkably long Diplocirrus hirsutus
- 2. Neurosetae are stout simple hooks 3
- 3. Hooked neurosetae begin on fourth setiger; body covered with elongate papillae, agglutinated with sand and mud Pherusa plumosa
- 3. Hooked neurosetae begin on fifth setiger; body covered with short papillae (fig. 7) Pherusa affinis

List of Species

Brada granosa Stimpson, 1854. Dredged.
Brada villosa (Rathke, 1843). Dredged.
Diplocirrus hirsutus (Hansen, 1879). Dredged.
Flabelligera affinis Sars, 1829. Dredged.
Pherusa affinis (Leidy, 1855). Formerly Trophonia affinis; in mud, shallow water, and has been taken at night light at WHOI dock.
Pherusa plumosa (Müller, 1776). Dredged.

13. Family Glyceridae
 Key

- 1. Without branchiae; parapodia with single postsetal lobe and two unequal presetal lobes (fig. 89) Glycera capitata
- 1. Branchiae present (but may be retracted); parapodia with two presetal and two postsetal lobes (figs. 90, 91) 2

2. Branchiae non-retractile at upper and lower edges of parapodia (fig. 90) Glycera dibranchiata
2. Branchiae completely retractile, many lobed (fig. 91), arising from grooves on posterior side of base of notopodia (opening visible when branchia is retracted) Glycera americana

List of Species

Glycera americana Leidy, 1855. Common in muddy sand.
Glycera capitata Oersted, 1843. Dredged, in muddy sand.
Glycera dibranchiata Ehlers, 1868. Common, in muddy sand.

14. Family Goniadidae

Key

1. Presetal lobes of neuropodia bilobed (may be simple on some 18 of anterior segments) (figs. 92, 93) 2
1. Presetal lobes of neuropodia simple, not bilobed; proboscis with about 28 chitinous, V-shaped, black chevrons Goniadella gracilis
2. Proboscis without chevrons Ophioglycera gigantea
2. Proboscis with 7-11 chevrons (fig. 88) Goniada maculata

List of Species

Goniada maculata Oersted, 1843. Dredged in mud.
Goniadella gracilis (Verrill, 1873). Small, usually escapes notice; in fine sand.
Ophioglycera gigantea Verrill, 1885. Rare, in mud flats.

15. Family Hesionidae

List of Species

Gyptis vittata Webster and Benedict, 1887. Rare; under rocks.
Microphthalmus aberrans (Webster and Benedict, 1887). In sand; associated with terebellids Lysilla alba and Enoplobranchus sanguineus.
Microphthalmus sczelkowi Mecznikow, 1865. In sand.
Nereimyra punctata (O. F. Müller, 1776). Dredged.
Parahesionia luteola (Webster, 1880). In sands, mud, commensal with Upogebia affinis.
Podarke obscura Verrill, 1873. Common in muddy sand and eel grass; may swarm at surface or to night light. Easily recognized by its very dark brown color.

16. Family Lumbrineridae

Key

1. With palmately branched branchiae on some parapodia (figs. 96, 97) Ninoe nigripes
1. Without branchiae Lumbrineris 2
2. Prostomium extremely elongated, 2 to 3 times as long as wide (fig. 98) Lumbrineris acuta
2. Prostomium short, conical (fig. 99) 3

- 3. Body long, slender, small; acicula yellow; posterior parapodia with elongated fingerlike process (Fig. 100) Lumbrineris tenuis
- 3. Body stouter; acicula black; parapodia without especially elongated process Lumbrineris fragilis

List of Species

Lumbrineris acuta (Verrill, 1875). Rare. In muddy sand.
Lumbrineris fragilis (O. F. Müller, 1776). Common in muddy sand.
Lumbrineris tenuis (Verrill, 1873). Common in muddy sand.
Ninoe nigripes Verrill, 1873. Common. Dredged in mud.

17. Family Magelonidae

Magelona rosea Moore, 1907. Common in muddy sand. The only polychaete genus reported to have haemerythrin as a blood pigment.

18. Family Maldanidae

Key

- 1. Anus within a funnel shaped structure (fig. 72) 2
- 1. Anus associated with (dorsal to) an oblique structure (figs. 73, 74) 3
- 2. With deep membranous collarette (fig. 71) on fourth setigerous segment; 18 setigerous segments; two color phases: pale with red nodes, or green (in mud) Clymenella torquata
- 2. Without collarette on fourth setiger; setigerous segments variable in number (19-42) Clymenella zonalis
- 3. Anus dorsal to anal disc; anal segment forms a spatulate lobe dorsally and funnel-like concavity ventrally (fig. 73); anterior end speckled with black or dark purple; mud tube Maldanopsis elongata
- 3. Pygidium an obliquely truncated flat oval plate (fig. 74) with short lateral marginal incisions Maldane sarsi

List of Species

Asychis biceps (Sars, 1861). Dredged.
Axiothella catenata (Malmgren, 1856). Dredged.
Clymenella torquata (Leidy, 1855). Very common in sand; forms sandy tubes.
Clymenella zonalis (Verrill, 1874).
Leiochone dispar (Verrill, 1873). Dredged.
Maldane sarsi Malmgren, 1865. Common in very muddy sand.
Maldanopsis elongata (Verrill, 1873). Common in mud.
Nicomache lumbricalis (Fabricius, 1780). Dredged.
Petaloproctus tenuis (Théel, 1879). Dredged.
Praxillella gracilis (Sars, 1861). Dredged. One sp of Praxillella reported common in mud below water at Hadley Harbor (Mr. Gray).
Praxillella praetermissa (Malmgren, 1866). Dredged.
Praxillella ornata Verrill, 1880. Dredged.
Rhodine loveni Malmgren, 1865.

19. Family Nephytidae

Key

1. Branchiae (in form of a sickle shaped cirrus between dorsal and ventral ramus of each parapodium) curved inwards (fig. 77); not common Aqlophamus circinata
1. Branchiae (see above) curved outwards (fig. 78); common Nephtys 2
2. Tentacular segment with enlarged neuropodial lobe lateral to the setigerous lobe; dorsal tentacular cirri lacking on notopodium (fig. 76) 3
2. Tentacular segment without enlarged neuropodial lobe; tiny dorsal tentacular cirri present on first notopodium (fig. 75) 4
3. Ventral tentacular cirri anterior to widest part of enlarged tentacular segment Nephtys picta
3. Ventral tentacular cirri lateral and continuous with widest part of enlarged tentacular segment (fig. 76) Nephtys bucera
4. Both anterior and posterior parapodial lamellae about equally well developed, enclosing the conical acicular lobes; setae dark Nephtys incisa
4. Anterior parapodial lamellae rudimentary; posterior lamellae large, foliaceous; setae light Nephtys caeca

List of Species

- Aqlophamus circinata (Verrill, 1874). Dredged in mud.
Nephtys bucera Ehlers, 1868. Common, in sand.
Nephtys caeca (Fabricius, 1780). Common, in muddy sand.
Nephtys incisa Malmgren, 1865. Dredged. Common in mud.
Nephtys picta Ehlers, 1868. Common, in muddy sand.
Nephtys ciliata (O. F. Müller, 1789). Dredged in mud.

20. Family Nereidae

Key

1. Parapodia essentially uniramous, without ligules Lycastopsis pontica
1. Parapodia biramous, with ligules (figs. 12-15) 2
2. Paragnaths (denticles) (fig. 9) of proboscis small and pectinate (in comblike rows); peristomial cirri very long, to segments 10 or 15; often seen in heteronereid form at night lights Platynereis dumerilii megalops
2. Paragnaths of proboscis larger, conical (figs. 8, 10, 11) 3
3. Notopodia of anterior parapodia with 2 ligules 4
3. Notopodia of anterior parapodia with 3 ligules, the upper ligule (bearing cirrus) flattened 5
4. Parapodial ligules sharply conical Nereis (Nereis) grayi
4. Parapodial ligules short, thick, evenly rounded (fig. 13); worm may occur as a heteronereid Nereis (Nereis) pelagica

- 5. Upper ligules of posterior parapodia elongated, strap-like, with cirrus near tip (fig. 12); often seen as the heteronereid at night light
 Nereis (Neanthes) succinea
- 5. Upper ligule large, broadly leaf-like, with cirrus inserted near base (fig. 14); the most common large local nereid Nereis (Neanthes) virens
- 5. Upper ligule triangular, with cirrus inserted near base (fig. 15); a small pale worm; very numerous tiny paragnaths in oral ring (figs. 10, 11)
 Nereis (Neanthes) arenaceodonta

List of Species

- Lycastopsis pontica (Bobretzky, 1872). Found in high intertidal. A primitive, aberrant nereid.
- Nereis (Neanthes) arenaceodonta Moore, 1903. Small; common in pilings and in algae; occasionally at night light. Includes N. caudata Delle Chiaje.
- N. (Neanthes) succinea (Frey and Leuckart, 1847). Well known to embryologists as Nereis limbata. Common in brackish waters and in the peaty banks of estuaries. Usually taken as heteronereids at night light.
- N. (Neanthes) virens Sars, 1835. Very common in muddy sand and in more saline conditions than N. succinea.
- N. (Nereis) grayi Pettibone, 1956. In mud, in tubes of Maldanopsis elongata.
- N. (Nereis) pelagica Linnaeus, 1758. Common. On algae.
- Platynereis dumerilii megalops (Verrill, 1874). This form exhibits a unique copulation and internal fertilization well known to Woods Hole embryologists. It is regarded by Pettibone as a subspecies of P. dumerilii, but its method of reproduction is such that it is reproductively isolated from the externally fertilizing typical P. dumerilii of Europe.

21. Family Onuphidae

Key

- 1. Peristomial segment without a pair of cirri; tube horny, transparent Hyalinoecia tubicola
- 1. Peristomial segment with a pair of short tentacular cirri (fig. 16) 2
- 2. Branchiae large and spiraled; worm large and wonderfully iridescent; forms long stout vertical tube in sand, the projecting end cluttered with attached debris and shells
 Diopatra cuprea
- 2. Branchiae not spiraled Onuphis 3
- 3. Branchiae pectiniform or with 2 or more filaments where best developed subgenus Onuphis 5
- 3. Branchiae simple, cirriform subgenus Nothria 4
- 4. Branchiae begin on segments 10-13; parapodia of first segment greatly enlarged; tube free, parchment-like, flattened, covered with pebbles and shells
 Onuphis (Nothria) conchylega
- 4. Branchia begin on first segment; parapodia of first segment not enlarged; muddy tube
 Onuphis (Nothria) opalina

5. Branchiae begin on segments 5-6, with a maximum of 4-5 pectiniform filaments Onuphis (Onuphis) quadricuspis
5. Branchiae begin on first segment, with a maximum of 5-7 pectiniform filaments Onuphis (Onuphis) eremita

List of Species

- Diopatra cuprea (Bosc, 1802). The prominent tubes, set in sand, are common and easily recognized.
- Hyalinoecia tubicola (O. F. Müller, 1776). Dredged in mud.
- Onuphis (Nothria) conchylega Sars, 1835. Dredged in mud; tube free, scabbard shaped.
- Onuphis (Nothria) opalina (Verrill, 1873). Dredged in mud; tube of mud.
- Onuphis (Onuphis) eremita Audouin and M. Edwards, 1833. Dredged in sand and mud; tube of sand or mud.
- Onuphis (Onuphis) quadricuspis Sars, 1872. Dredged; tube of mud.

22. Family Opheliidae

Key

1. Body stout, grub like; no ventral groove Travisia carnea
1. Body Amphioxus shaped, with ventral groove for whole length Ammotrypane aulogaster
1. Ventral groove only behind segments 10-12 Ophelia 2
2. Branchiae 18 pairs, crenulate on sides Ophelia denticulata
2. Branchiae 11-15 pairs, smooth Ophelia bicornis

List of Species

- Ammotrypane aulogaster Rathke, 1843. Dredged.
- Ophelia bicornis Savigny, 1818. Only north of Cape.
- Ophelia denticulata Verrill, 1875.
- Travisia carnea Verrill, 1873. On sand flats, Naushon Island (Mr. Gray).

23. Family Orbiniidae

Key

1. Thoracic neuropodia with numerous postsetal papillae in vertical rows (fig. 104); branchiae begin on fifth setiger; large and robust worms Orbinia ornata
1. Thoracic neuropodia without rows of papillae (1-3 postsetal papillae present in some); branchiae start on setigers 9-32 Scoloplos 2
2. With a cirrus between the dorsal and ventral parapodial rami of anterior abdominal parapodia (figs. 105, 106) 3
2. Without an interrhamal cirrus Scoloplos acutus

- 3. With ventral papillae on some anterior segments (up to 9 in a row on each side of segments 14-24) Scoloplos riseri
- 3. Without ventral papillae 4
- 4. With 2-3 subpodial papillae in transitional region between thoracic and abdominal regions, followed by an entire flattened subpodial flange (may be undulate but not incised; fig. 105) Scoloplos robustus
- 4. With 2 subpodial papillae in transitional region, continuing as 2 subpodial lobes (thus a notched or incised subpodial lobe; fig. 106) Scoloplos fragilis

List of Species

Naineris quadricuspida (Fabricius, 1780). Dredged in mud.
Orbinia ornata (Verrill, 1873). Formerly called Aricia ornata, common in sandy shoals.
Scoloplos acutus (Verrill, 1873). Dredged in soft mud.
Scoloplos fragilis (Verrill, 1873).
Scoloplos riseri Pettibone, 1957.
Scoloplos robustus (Verrill, 1873). Common. In vertical burrows in muddy sand; has been called Haploscoloplos robustus.

24. Family Oweniidae
 Key

- 1. Prostomium rounded, without appendages; dredged Myriochele heeri Malmgren, 1867.
- 1. Prostomium with a slashed branchial membrane (fig. 107); tube distinctive, with a dense coating of flattened sand grains and bits of shell set in overlapping fashion like shingles; dredged Owenia fusiformis Delle Chiaje, 1844.

25. Family Paraonidae
 Key

- 1. Without dorsal antenna Paraonis 2
- 1. With dorsal median antenna (fig. 80); branchiae begin on fourth segment Aricidea
- 2. Branchiae begin on segments 6-7, 9-14 pairs Paraonis gracilis
- 2. Branchiae begin on fourth segment, 16-25 pairs Paraonis fulgens
- 3. Median antenna long, filiform, extending to about segments 4-6; branchiae 9-10 pairs Aricidea quadrilobata
- 3. Median antenna short (fig. 80), extending to first segment; branchiae 11-18 pairs Aricidea jeffreysii

List of Species

- Aricidea jeffreysii (McIntosh, 1879). Dredged in mud.
Aricidea quadrilobata Webster and Benedict, 1887. Dredged in soft mud.
Paraonis fulgens (Levinsen, 1883). In sandy beaches.
Paraonis gracilis (Tauber, 1879). Dredged in soft mud.

26. Family Pectinariidae
List of Species

- Pectinaria (Cystenides) gouldii (Verrill, 1873) (fig. 108). Intertidal; common.
 This is often referred to as Cystenides gouldii; Cystenides is a subgenus of Pectinaria. Conical sand tube (fig. 109) is distinctive of family.
Pectinaria granulata (Linnaeus, 1767). Dredged.
Pectinaria hyperborea (Malmgren, 1866). Dredged.

27. Family Phyllodocidae
Key

1. Two pairs (one pair on each side) of peristomial cirri; prostomium triangular with 4 small antennae (fig. 56) Eteone 2
1. Four pairs (2 pairs on each side) of peristomial tentacular cirri (figs. 60, 61) 3
2. Elongate, slender; pale or yellow; dorsal cirri of middle region on body asymmetrical Eteone lactea
2. Robust, dark green with light green transverse bands between segments; dorsal cirri of middle region symmetrical, almost triangular Eteone longa
3. Four prostomial antennae (figs. 57, 61) 4
3. Five prostomial antennae (figs. 58, 59, 60) 6
4. Prostomium cordiform (heart shaped), with an occipital tubercle in the posterior notch (fig. 57) Phyllodoce (Anaitides) 5
4. Prostomium oval, without an occipital tubercle (fig. 61) Paranaitis speciosa
5. Ventral cirri oval, blunt, or only slightly pointed distally, with a pointed ventral projection; body heavily pigmented Phyllodoce groenlandica
5. Ventral cirri acutely pointed distally; green, banded with brown, with white marks on dorsum; dorsal cirri spotted Phyllodoce mucosa
6. With 4-5 paired nuchal lappets posterior to prostomium; parapodia biramous; dorsal cirri plate-like, imbricated, resembling elytra of scale worms (fig. 58) Notophyllum americanum
6. Without nuchal lappets; parapodia uniramous 7
7. Three tentacular segments distinct dorsally (fig. 59) Eulalia 8
7. First tentacular segment not distinct dorsally (fig. 60); dorsal cirri cordiform; body greenish and yellowish, banded with grayish-green, reddish-brown, or light brown Eumida sanguinea

- 8. Dorsal cirri elongate-lanceolate; greenish; body rather short Eulalia viridis
- 8. Dorsal cirri thick, oval-obtuse; greenish with darker longitudinal lateral bands; very slender, elongate Eulalia bilineata

List of Species

Eteone lactea Claparède, 1868. Common in sandy mud. Includes E. alba Webster.
Eteone longa (Fabricius, 1780). Includes E. robusta Verrill.
Eulalia bilineata (Johnston, 1840). In algae. May form epitokous sexual form.
Eulalia viridis (Linnaeus, 1767). Common, on pilings.
Eumida sanguinea (Oersted, 1843). Common, on pilings.
Notophyllum americanum Verrill, 1885. Rare. Dredged.
Paranaitis speciosa (Webster, 1880). Rare. In sand.
Phyllodoce (Anaitides) arenae Webster, 1879. In muddy sand. May swarm at surface of water.
Phyllodoce (Anaitides) groenlandica Oersted, 1842. Dredged.
Phyllodoce (Anaitides) maculata (Linnaeus, 1767). Common among rocks and algae.
Phyllodoce (Anaitides) mucosa Oersted, 1843. Common in muddy sand.

28. Family Polynoidae
 Key

- 1. Elytra 12 pairs (fig. 1) 2
- 1. Elytra, more than 12 pairs 3
- 2. Elytral tubercles small, widely spaced; commensal in shells occupied by Pagurus pollicaris Lepidonotus sublevis
- 2. Elytral tubercles larger, crowded; very common, free living Lepidonotus squamatus
- 3. 15 pairs of scales 4
- 3. 40-50 pairs of scales; commensal in tubes of Amphitrite ornata Lepidametria commensalis
- 4. Anterior pair of eyes antero-ventral on prostomium, not visible dorsally (fig. 2) Harmothoe imbricata
- 4. Anterior pair of eyes antero-dorsal on prostomium, visible dorsally Harmothoe extenuata

List of Species

Alentiana aurantiaca (Verrill, 1885). Dredged; commensal with anemone, Bolocera tuediae.
Antinoella angusta (Verrill, 1874). Dredged in mud.
Arcteobia anticostiensis (McIntosh, 1874). Dredged in mud.
Enipo gracilis Verrill, 1874. Dredged in mud; commensal with maldanid, Nicomache lumbricalis.
Gattyana amondseni (Malmgren, 1867). Dredged in mud.
Gattyana cirrosa (Pallas, 1766). Dredged in mud.
Harmothoe (Eunoe) nodosa (Sars, 1860). Dredged.
Harmothoe (Eunoe) oerstedii (Malmgren, 1865). Dredged.
Harmothoe (Eunoe) spinulosa (Verrill, 1870). Dredged.

Harmothoe (Lagisca) extenuata (Grube, 1840). Common; under stones, algae.
Harmothoe imbricata (Linnaeus, 1767) Very common. This is the species usually encountered; under stones, algae.
Harmothoe fragilis Moore, 1910. Dredged.
Lepidometria commensalis Webster, 1879. Commensal in tubes of Amphitrite ornata.
Lepidonotus squamatus (Linnaeus, 1758). Very common. Under stones.
Lepidonotus sublevis Verrill, 1873. Dredged. Commensal in snail shells occupied by hermit crab Pagurus pollicaris.

29. Family Sabellariidae

Sabellaria vulgaris Verrill, 1873. Common. Dredged; on shells or in bryozoan nodules (fig. 110).

30. Family Sabellidae
 Key

1. Tiny, of 10-12 setigerous segments; eyes on first segment and on rear of body (fig. 50); poorly defined muddy tubes, which worms may leave and move about, tail first
 Fabricia sabella
1. Larger, of more than 12 setigerous segments 2
2. Branchial filaments united by membrane for most of length; tube of mucus, transparent and thick
 Myxicola infundibulum
2. Branchial filaments united by membrane for at least half their length; tubes inconspicuous, usually buried in sand or mud 3
2. Branchial filaments often with eyes and united only at bases; tubes obvious, leathery, usually coated with sand 4
3. Large ventral groove with flared sides on about 9 posterior segments; collarette bilobed: notched mid-dorsally and with a small ventral slit
 Euchone rubrocincta
3. Without ventral groove; collarette entire ventrally, with only a small mid-dorsal slit (fig. 51)
 Chone infundibuliformis
4. Branchial filaments without eyes
 Potamilla neglecta
4. Branchial filaments with eyes 5
5. Eyes in pairs, 2-6 on each branchial filament, situated in the transverse color bands; collarette 4-lobed by a small lateral notch on each side in addition to the dorsal and ventral slits (fig. 52)
 Sabella crassicornis
5. Eyes not paired 6
6. Branchial filaments with 2 irregular rows of many eyespots; collarette bilobed by ventral and dorsal slits; body short and thick (figs. 53, 54)
 Sabella microphthalma
6. Branchial filaments with 1-8 large "compound eyes" in a single row; collarette 4-lobed; body long and thin (fig. 55) Potamilla reniformis

List of Species

- Chone infundibuliformis, Krøyer, 1856.
Euchone rubrocincta (Sars, 1861).
Fabricia sabella (Ehrenberg, 1837). This is the only one of our sabellids that can leave its tube and move about.
Myxicola infundibulum (Renier, 1804). Dredged; noted for its giant axon.
Potamilla neglecta (Sars, 1851). Dredged.
Potamilla reniformis (Linnaeus, 1788). Common; dredged on shells.
Sabella crassicornis Sars, 1851. Dredged.
Sabella microphthalma Verrill, 1873.

31. Family Scalibregmidae

Key

1. Prostomium T-shaped, with frontal horns (fig. 20); body inflated anteriorly. In mud; intertidal and dredged. Scalibregma inflatum Rathke, 1843.
 1. Prostomium bilobed; without frontal horns; body short and fusiform Polyphysia crassa (Oersted, 1843).

32. Family Serpulidae

Key

1. Minute, flat coiled tubes on stones, algae. Spirorbis 2
 1. Irregular tubes up to several inches long, on rocks and shells 5
 2. Tubes coiled "dextrally" (figs. 62, 63, 64) 3
 2. Tubes coiled "sinistrally" (figs. 65, 67) 4
 3. Tube white, opaque, shiny, smooth (figs. 62, 63)
 Spirorbis (Dexiospira) spirillum
 3. Tube white, opaque, thick and tough with 3 rounded longitudinal ridges produced into blunt teeth at opening (fig. 64); lined with dark layer Spirorbis (Paradexiospira) violaceus
 4. Tube without luster, chalky, without longitudinal ridges (fig. 65); eggs incubated in tube Spirorbis (Laeospira) borealis
 4. Tube with 2-3 longitudinal ridges to almost smooth (fig. 67); eggs incubated in a brood pouch in operculum (fig. 68)
 Spirorbis (Laeospira) granulatus
 5. Operculum a two-tiered structure on a smooth peduncle (fig. 70); common; tube usually attached for most of length
 Hydroides (Eupomatus) dianthus
 5. Without an operculum; tube large white, cylindrical; erect and almost straight in its unattached distal portion Protula tubularia
 5. Two opercula, each a thin shallow membraneous cup with barbules on peduncle (fig. 69); tubes very slender (ca. 1 mm) in an inter-twining mass Filoqrana implexa

List of Species

- Filoqrana implexa Berkeley, 1828. Dredged.
Hydroides (Eupomatus) dianthus (Verrill, 1873). This has been called Hydroides hexagonas, Serpula dianthus, Eupomatus dianthus, and Hydroides uncinata.
Protula tubularia (Montagu, 1803). Dredged.
Spirorbis (Dexiospira) spirillum (Linnaeus, 1758). Common.
Spirorbis (Laeospira) borealis Daudin, 1800. Common.
Spirorbis (Laeospira) granulata (Linnaeus, 1767). Dredged.
Spirorbis (Paradexiospira) violaceus Levinsen, 1883. Dredged.

33. Family Sigalionidae
List of Species

- Leanira hystericus Ehlers, 1875. Dredged in mud.
Leanira tetragona (Oersted, 1845). Dredged in mud.
Pholoe minuta (Fabricius, 1780). Dredged.
Sigalion arenicola Verrill, 1879. Rare, in sand.
Sthenelais boa (Johnston, 1873). Common, in Zostera root masses in certain areas,
 e.g., Lagoon Pond.
Sthenelais limicola (Ehlers, 1864). Dredged in sand and mud.

34. Family Spionidae
Key

1. Fifth setiger very modified, with large dorsal setae
 (fig. 6) Polydora 2
1. Fifth setiger like the rest, unmodified 4
2. Branchiae begin on setiger 6, continuing nearly to
 posterior end of body; color orange; pygidium with
 many papillae; bores in shells used by hermit crabs
 Polydora commensalis
2. Branchiae begin on setiger 7, continuing nearly to
 posterior end; pygidium with an anal cup notched
 dorsally 3
3. Prostomium clearly bifid anteriorly, and with a median
 occipital antenna (fig. 81) Polydora ligni
3. Prostomium indistinctly bifid anteriorly; without a
 median occipital antenna Polydora ciliata
4. Without branchiae; prostomium T-shaped (fig. 82)
 Spiophanes bombyx
4. With 1 pair of branchiae dorsal to the 2 coiling palps
 Streblospio benedicti
4. With 4-5 pairs of branchiae, some pinnate, others
 smooth Prionospio spp.
4. With numerous branchiae 5
5. Branchiae begin on or about 13th setiger (11-20);
 about 14 pairs (7-28) Pygospio elegans
5. Branchiae begin on first setiger, absent from last
 half or third of body; in brackish water (fig. 83)
 Scolecopides viridis
5. Branchiae begin on second setiger, continue to rear
 of body; in sandy beaches (fig. 85)
 Scolecopsis squamata
5. Branchiae begin on first setiger, continue to rear
 of body 6
6. Prostomium conical; eyes nearly in a transverse line
 (fig. 84) Dispio uncinata
6. Prostomium inflated anteriorly; eyes set in a square
 (fig. 86) Spio 7
7. Ventral lamellae greatly reduced; about 16 hooded cro-
 chets in each neuropodium; body dull green with red
 branchiae held erect over dorsum; common in thick fragile
 sand tubes on beaches Spio setosa
7. Ventral lamellae little reduced; about 6 hooded crochets
 in each neuropodium (fig. 87) Spio filicornis

List of Species

- Dispio uncinata Hartman, 1951. Burrows in sand.
Laonice cirrata (Sars, 1851). Dredged.
Polydora ciliata (Johnston, 1838). In shells.
Polydora commensalis Andrews, 1891. A bright orange-red worm, commensal with hermit crabs in snail shells; penetrates columnella of shell and not seen without breaking shell. Orange eggs attached in clusters in burrow.
Polydora ligni Webster, 1879. Makes vertical burrows in stiff mud or clay, often in estuaries. Eggs laid in capsules in burrows.
Prionospio heterobranchia Moore, 1907. At low water mark and dredged, in mud.
Prionospio steenstrupi Malmgren, 1867. Dredged in mud.
Scolecopides viridis (Verrill, 1873). Penetrates further up estuaries than any other local polychaete.
Scolelepis squamata (O. F. Müller, 1789). Includes Nerinides agilis (Verrill, 1873). Makes vertical tubes in sandy beaches.
Spio filicornis (O. F. Müller, 1776). Dredged.
Spio setosa Verrill, 1873. The fragile chimney-like sandy tubes are distinctive in beach areas. Common.
Spiophanes bombyx (Claparède, 1870). Slender, branched, sandy tube.
Streblospio benedicti Webster, 1879. Characteristically in estuaries.

35. Family Sternaspidae (not in key)

- Sternaspis scutata (Renier, 1807). Distinctive, gray, grub-like worms, with a pair of horny ventral plates. Dredged in soft bottoms.

36. Family Syllidae
Key

1. Without ventral cirri; palps reduced or lacking; often collected at night lights as sexually dimorphic males ("Polybostrichus") and females ("Sacconereis"), the latter bearing sacs of white or brilliantly colored eggs Subfamily AUTOLY TINAE 4
1. With ventral cirri; palps better developed 2
2. Antennae and cirri moniliform (beaded); oral palps free or fused at base only Subfamily SYLLINAE 5
2. Antenna and dorsal cirri smooth or indistinctly beaded 3
3. Palps not fused, or fused only at base Subfamily EUSYLLINAE 7
3. Palps fused for entire length; eggs and larvae attached along dorsal or ventral surfaces of the female Subfamily EXOGONINAE 11

Subfamily Autolytinae
Key

4. Without long capillary swimming setae: the "stem" or asexually reproducing form of Autolytus (fig. 37); see key in Pettibone (1963).
4. With long capillary swimming setae; in "heterosyllid" form with body in 2 or 3 distinct regions; sexually dimorphic; both males and the females, carrying 1-3 sacs of eggs, are often taken at night-lights. The specific identification of the tiny worms is difficult; consult the more complete treatment by Pettibone (1963).

Subfamily Syllinae

Key

5. Parapodia with simple setae only, few (2-5) in number, with bifid tips; dorsal cirri with \pm 60 articles Syllis spongiphila
5. At least some of parapodia have compound setae 6
6. Dorsal cirri alternately longer and shorter, with 20-40 articles; blades of upper compound setae fringed, appearing bifid Syllis cornuta
6. Dorsal cirri with 7-16 articles (figs. 23, 24); blades of compound setae do not appear bifid (fig. 25), but there may be heavy bifurcated simple setae (fig. 26) in some of the median segments Syllis gracilis

Subfamily Eusyllinae

Key

7. With occipital or nuchal epaulettes; body short, of few segments; proboscis long, sinuous, armed with a complete circle of bicuspid teeth Amblyosyllis finmarchica
7. Without occipital or nuchal epaulettes; proboscis straight 8
8. Occipital flap or nuchal hood covers rear of prostomium (fig. 28); proboscis armed with semicircle of 6-7 large recurved teeth (fig. 29) Odontosyllis fulgurans
8. Without nuchal hood 9
9. Proboscis armed with a large anterior tooth and with numerous denticles (fig. 32); prostomium with 6 eyes (fig. 31) Eusyllis lamelligera
9. Proboscis unarmed 10
10. Antennae and dorsal cirri cylindrical; acicula large, knobbed (fig. 30) Streptosyllis sp.
10. Antennae and dorsal cirri swollen, club shaped; without large knobbed acicula Syllides spp.

Subfamily Exogoninae

Key

11. Two pairs of tentacular (peristomial) cirri; 3 pairs of eyes; antennae and dorsal cirri fusiform (fig. 33) Brania clavata
11. One pair of tentacular cirri 12
12. Tentacular cirri 1 pair, similar to antennae; dorsal cirri swollen at base, tapering to narrow tip (fig. 36) Sphaerosyllis erinaceus
12. Tentacular cirri 1 pair, rudimentary; dorsal and ventral cirri cylindrical or club shaped, not swollen at base, median antenna fusiform, reaching nearly to end of palps (fig. 34) Exogone 13

13. Two pairs of eyes (fig. 35) Exogone dispar
 13. Three pairs of eyes (fig. 34) Exogone hebes

Subfamily Autolytinae
 List of Species

- Autolytus alexandri Malmgren, 1867. On algae.
Autolytus cornutus A. Agassiz, 1863. Common on algae.
Autolytus emertoni Verrill, 1881. Taken in plankton.
Autolytus fasciatus (Bosc, 1802). Includes A. ornatus Verrill. Common on pilings.
Autolytus prismaticus (Fabricius, 1780). Dredged; in sponges.
Autolytus prolifer (O. F. Müller, 1788). Common on pilings.

Subfamily Syllinae
 List of Species

- Syllis cornuta Rathke, 1843. Dredged; in sponges.
Syllis gracilis Grube, 1840. Common, under stones or algae.
Syllis spongiphila Verrill, 1885. Dredged; in muddy sand.

Subfamily Eusyllinae
 List of Species

- Amblyosyllis finmarchica (Malmgren, 1867). Includes Pterosyllis cincinnata Verrill)
Eusyllis blomstrandii Malmgren, 1867. Dredged.
Eusyllis lamelligera Marion and Bobretsky. Includes E. fragilis Webster. Common;
 dredged among shells, bryozoans.
Odontosyllis fulgurans Claparède, 1864. Common on pilings. Reproduces by lumin-
 escent swarms at surface.
Streptosyllis sp.
Syllides longocirrata Oersted, 1845. Includes S. convoluta Webster and Benedict.
 In sand.
Syllides setosa Verrill, 1882. In mussel beds.

Subfamily Exogoninae
 List of Species

- Brania clavata (Claparède, 1863). Common, in mud, mussel beds.
Brania wellfleetensis Pettibone, 1956.
Exogone dispar (Webster, 1879). Common, in mussel beds.
Exogone hebes (Webster and Benedict, 1884).
Exogone verugera (Claparède, 1868).
Parapionosyllis longicirrata (Webster and Benedict, 1884). Common in muddy sand.
Sphaerosyllis erinaceus Claparède, 1863. In sand or on pilings.

37. Family Terebellidae
 Key

1. With dorsally placed gills just behind tentacular fila-
 ments (usually contrasting with filaments in color);
 body usually with pronounced thickening of "thoracic"
 region 2
 1. Lacking dorsal gills (branchiae) on anterior part of body;
 bodies less stout, and departing more from the fully ex-
 pressed "typical" terebellid form than the above group 11

2. Gills arborescent or branching in tree-like fashion (fig. 38) 3
2. Gills consisting of one to many unbranched filaments (fig. 39) 8
3. Three pairs of branching branchiae (note: one member of a pair may be very small or lacking) 4
3. Two pairs of branching branchiae (note: as above) 6
3. One pair of branching branchiae; numerous eyespots (fig. 41); 16 thoracic setigerous segments Pista maculata
3. With a single large branchia formed of 4 branchiae fused into one large trunk bearing 4 pectinate lobes (fig. 43); 18 thoracic setigers Terebellides stroemi
4. Setae on 40-50 segments; a large and common worm Amphitrite ornata
4. Setae on 23-45 segments Amphitrite johnstoni
4. Setae extend to posterior end of body Terebella lapidaria
4. Setae on 17 segments 5
5. Buccal segment with large lateral lobes, joined ventrally; the first of the three pairs of branchiae with long main stems, much longer than the last two pairs Loimia medusa
5. Without enlarged lateral lobes on buccal segment; branchiae subequal Amphitrite affinis
6. Setae on 17 segments (note: first setigerous segment lacks the neuropodial uncini); with lateral lobes on anterior segments 7
6. Setae on 15 segments; numerous eyespots (fig. 40); without lateral lobes on anterior segments Nicolea venustula
- Note: The young of Nicolea are commonly seen as "hydra-worms" in washings of Fucus; they resemble creeping brown hydras with eyespots on cephalic ridge.
7. Branchiae spirally branched, making (when contracted) a compact oval red pompom on a stalk (fig. 42); one branchia usually much larger than rest Pista cristata
7. Branchiae arborescent, not spirally branched, with large main trunk, usually unequal in size Pista palmata
8. With 3 pairs of branchiae, each consisting of one simple long filament; numerous eyespots; 15 thoracic setigers Trichobranchus glacialis
8. With 2-3 pairs of branchiae, each made up of transverse rows of unbranched filaments (fig. 39) 9
9. Two pairs of branchiae; numerous eyespots; notosetae begin on second gill bearing segment and continue to posterior end Thelepus cincinnatus
9. Three pairs of branchiae; no eyespots 10
10. Notosetae begin on third branchial (gill bearing) segment, continue on 17 segments; uncini begin on second setiger; tube membranous, encrusted Amphitrite cirrata
10. Notosetae begin on first branchial segment and continue over a large part of body; uncini begin on fourth setiger; tube hard, coiled Streblosoma spiralis

- 11. Very soft and fragile; transparent to yellowish; no setae; somewhat resembles a damaged Leptosynapta when collected, but tentacles are terebellid-like Lysilla alba
- 11. Fragile, elongate, blood-red body; setae on all segments, but no uncini; branching red parapodia in mid body region: these look like gills, but note setae! (fig. 44) Enoplobranchus sanguineus
- 11. Small worms, enveloped in their tentacles, in which red corpuscles circulate, but lack actual branchiae; setae and uncini present in part of body Polycirrus 12

- 12. Red; setae on 18-25 segments; common Polycirrus eximius
- 12. Red; setae on 11-13 segments Polycirrus medusa
- 12. Lemon-yellow; setae on 24-32 segments Polycirrus phosphoreus

List of Species

Amphitrite affinis Malmgren, 1866. Dredged.
Amphitrite cirrata O. F. Müller, 1771. Dredged.
Amphitrite johnstoni Malmgren, 1866. Dredged.
Amphitrite ornata (Leidy, 1855). Common. Forms muddy mounds on intertidal flats.
Enoplobranchus sanguineus (Verrill, 1873). In mud; easily recognized by the brilliant color.
Loimia medusa (Savigny, 1818). Dredged.
Lysilla alba Webster, 1879. In quite muddy sand, where it makes a surface depression much like that of Leptosynapta.
Nicolea venustula (Montagu, 1818). Usually seen as the tiny (immature) "hydra worms" in washings from algae.
Pista cristata (O. F. Müller, 1776). Occurs in mud, but tube is very rough and encrusted with coarse pebbles. Common.
Pista maculata (Dalyell, 1853). Dredged.
Pista palmata (Verrill, 1873).
Polycirrus eximius (Leidy, 1855). The commonly taken form. Red cells circulate in tentacles.
Polycirrus medusa Grube, 1850. Dredged.
Polycirrus phosphoreus Verrill, 1880.
Streblosoma spiralis (Verrill, 1874). Dredged.
Terebella lapidaria (Linnaeus, 1767).
Terebellides stroemi Sars, 1835. Dredged.
Thelepus cincinnatus (Fabricius, 1780). Dredged.
Trichobranchnus glacialis Malmgren, 1866. Dredged.

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