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CANADIAN ATLANTIC FAUNA

9. ANNELIDA

9b. POLYCHAETA

BY

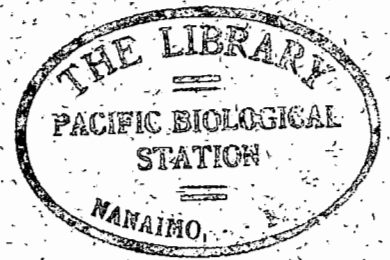
AARON L. TREADWELL

WITH FIGURES

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POLYCHAETA

Polychaeta make up that division of the seta-bearing annelids characterised by complexity of structure in external anatomy, and by a predominantly marine habitat. An older classification was into the sub-classes Errantia and Sedentaria but this proved unsatisfactory and various other groupings have been suggested. The latest of these is given in a pamphlet prepared for the American Association for the Advancement of Science by Dr. A. S. Pearse as editor (Zoological Names. A list of Phyla, Classes and Orders. Duke Univ. Press, 1936). For the purpose of this present publication all that seems essential is to describe genera and species under their family headings. The following key to families is based on that given by Chamberlin (8, pp. 19-23) but is intended to include only those families represented by species listed from the localities covered by this survey. Chamberlin's paper should be consulted for information on other families. Most of the species here recorded are listed in no. 15. Definitions of technical terms used are given in the glossary. It should be noted that since nearly all of the data used in the preparation of this key have of necessity been taken from the literature it has in most cases not been possible to correct errors in identification or in the original descriptions. Where no measurements are given it means that none appeared in the literature.

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GLOSSARY

- Caruncle.* A longitudinal ridge on dorsum of prostomium and extending to more or fewer of the following somites.
- Cilia.* Fine thread-like outgrowths from the surface of any part of the body.
See papillae.
- Cirrophore.* Basal joint of a cirrus or tentacle.
- Cirrus.* A slender elongated process attached to a parapodium or to the head region.
- Ctenidium.* A rounded scale-like structure attached to the base of a tentacle.
- Elytron.* A flattened plate attached to the dorsal surface of a parapodium and covering more or less of the dorsum.
- Gill.* Plate-like or feathery outgrowths of any part of body surface. Sometimes single filaments. Presumably respiratory.
- Head.* In literature generally used as synonymous with prostomium. Here refers to anterior end, including prostomium and peristomium and possibly some anterior somites.
- Neuropodium.* Ventral portion of a parapodium.
- Neurosetae.* Setae located on the neuropodium.
- Notopodium.* Dorsal portion of a parapodium.
- Notosetae.* Setae located on the notopodium.
- Nuchal cirrus.* A cirrus attached to dorsal surface of 1st or 2nd somite.
- Palea.* An especially enlarged dorsal seta either paddle-like or heavy hook.
- Palp.* A more or less cylindrical organ attached to ventral face of prostomium.
- Papilla.* Slender outgrowth from surface. In literature synonymous with cilium.
Here used when outgrowth is comparatively large.
- Paragnath.* Small teeth on pharynx in *Nereis*.
- Parapodium.* Outgrowth of lateral surface of somite, one on either side.
- Peristomium.* 1st body somite. Generally surrounds mouth.
- Proboscis.* Protrusible pharynx, sometimes armed with teeth.
- Prostomium.* Outgrowth from anterior dorsal face of peristomium. "Head" in literature.
- Setae.* Chitinous spines located in parapodia.
- Somite.* One of the segments of the annelid body.
- Style.* Terminal portion of a cirrus or tentacle, attached to a cirrophore.
- Tentacle.* Slender outgrowths from prostomium.
- Tentacular cirri.* Tentacle-like structures on sides of peristomium.
- Torus.* Ridge that bears uncini.
- Uncinus.* One of small hooks found on segments in some species.

KEY TO FAMILIES

1. (46) Prostomium fully exposed.
2. (6) Body with scale-like plates or "elytra" more or less covering the dorsum.
3. (4, 5) Anteriorly, elytra generally on alternate, posteriorly on all, somites.

- | | |
|--|-----------------------|
| 4. (3, 5) Elytra begin on somite 2 and occur in general on alternate somites behind this for more or less of body. Three tentacles. | POLYNOIDAE. (p. 13) |
| 5. (3, 4) Elytra as in Polynoidae. One tentacle. A felt of fine hairs covers elytra. | APHRODITIDAE (p. 10) |
| 6. (2) No elytra. | |
| 7. (8, 37) Prostomium and two anterior somites fused. Two pair of tentacular cirri, the posterior longer. No setae in parapodia. | TOMOPTERIDAE. (p. 28) |
| 8. (7, 37) Not so. Prostomium without palp or tentacles. | |
| 9. (17) Anterior somites with uncini on tori. | ARENICOLIDAE. |
| 10. (11, 12, 13) Gills only on middle of body. | |
| 11. (10, 12, 13) Gills project from margin of circumoral membrane. 1st three groups of notosetae without corresponding neurosetae. | AMMOCHARIDAE. |
| 12. (10, 11, 13) No gills. Body noticeably jointed. Usually a sloping cephalic plate. | MALDANIDAE. |
| 13. (10, 11, 12) Gills on anterior end of body. | |
| 14. (15, 16) Two pairs of tentacular cirri, 5 or 6 body somites smaller than the rest. | AMPHICTENIDAE. |
| 15. (14, 16) No tentacular cirri. Pro- and peristomium fused to form an upper lip which carries numerous tentacles. Paired gills on somites immediately behind this. | TEREBELLIDAE. |
| 16. (14, 15) No tentacular cirri. Pro- and peristomium not fused. Tentacles retractile within pharynx. Usually 4 pairs of simple pointed gills. Sometimes 2 rows of conspicuous paleae on third somite. | AMPHARETIDAE. |
| 17. (9) Uncini absent from first 9 somites or if present mingled with capillary setae. | |
| 18. (19) Complex arrangement of plates forming a jaw. (Fig. 19a). | LEODICIDAE. (p. 33) |
| 19. (18) Jaw apparatus simple or absent. | |
| 20. (21) Globular capsules at base of notopodium on both sides of dorsum. | SPHAERODORIDAE. |
| 21. (20) No globular capsules on dorsum. | |
| 22. (25) Prostomium long and annulated. Four short tentacles on end. | |
| 23. (24) Parapodia similar throughout body. Four similar jaws at end of proboscis. | GLYCERIDAE. |
| 24. (23) Anterior parapodia uniramous, posterior ones biramous. Jaws as small plates on sides of proboscis. | GONIADIDAE. |
| 25. (22) Prostomium not long and annulated. | |
| 26. (27) Body posteriorly with two large sternal plates from edges of which protrude long setae and gills. | STERNASPIDAE. |
| 27. (26) Body not so. | |
| 28. (29) Palps elongated, tentaculiform. | SPIONIDAE. |
| 29. (28) Not so. | |
| 30. (31) Body of three distinct regions. Anterior of 9 to 12 somites with uniramous parapodia, median region of 2 to 5 somites, posterior region of indefinite number, all with biramous parapodia. Peristomium funnel-shaped. | CHAETOPTERIDAE. |
| 31. (30) Body not so divided. | |

32. (36) Skin smooth. Gills numerous if present.
33. (34, 35) Gills and seta-tufts lateral in position. Body usually of few annulated somites. **OPHELIIDAE.**
34. (33, 35) Gills dorsal. Body elongated, composed of many short somites. Parapodia distinct. Setae cross-striated or annulated. **ARICIIDAE.**
35. (33, 34) Gills dorsal, long and filiform, present on large number of somites. No parapodia. **CIRRATULIDAE.**
36. (32) Skin rough. Somites annulated. **SCALIBREGMIDAE.**
37. (7, 8) As 8, but prostomium bearing palps or tentacles or both.
38. (39, 30) Conspicuous lamellae on both noto- and neuropodia. A gill on ventral face of notopodium. (Figs. 8-10). **NEPHTHYDIDAE. (p. 21)**
39. (38, 40) No conspicuous lamellae on parapodia. Mouth bounded by several somites. (Fig. 1). **EUPHROSYNIDAE. (p. 9)**
40. (38, 39) No conspicuous lamellae. Mouth not so bound.
41. (42) Skin roughened. Numerous gills on peristomium. Sometimes long setae extend in front of peristomium. **CHLORHAEMIDAE.**
42. (41) Skin not so roughened.
43. (44, 45) Dorsal and ventral cirri more or less leaf-like. 4 or 5 tentacles, 2 to 8 tentacular cirri. **PHYLLODOCIDAE. (p. 23)**
44. (43, 45) Cirri not leaf-like. Palps heavy, 2 jointed, terminal joint small. Protrusible pharynx with terminal jaws and usually with paragnaths. 2 tentacles and 4 pairs of tentacular cirri. **NEREIDAE. (p. 32)**
45. (43, 44) Cirri not leaf-like. Palps present or absent. If present may be fused at their bases. Tentacles and dorsal cirri usually long and frequently monili form. Body usually small and colourless. **SYLLIDAE. (p. 29)**
46. (1) Prostomium more or less hidden by peristomium. Body with thorax and abdomen. Palps prolonged to form feathery gills. Tentacles small.
47. (48) Having a thoracic membrane and operculum. Shell calcareous. **SERPULIDAE.**
48. (47) No thoracic membrane or operculum. Shell membranous. **SABELLIDAE.**

EUPHROSYNIDAE

Body elongate or short-oval. Usually a caruncle. 1, 3 or 5 tentacles. 2, 4 or no, eyes. Gills present or absent, if present either as tufts on the dorsum or as filaments among the setae in vertical rows on parapodia. Several somites bound the mouth opening (fig. 1d).

KEY TO GENERA

1. (2) Caruncle and gills present. (Fig. 1a). **EUPHROSYNE. (p. 9)**
2. (1) No caruncle or gills. (Fig. 1c, d). **SPINTHER. (p. 10)**

Genus **EUPHROSYNE** Savigny.

Body ovate. Setae and gills in each somite in a vertical band from ventrolateral border to near mid-dorsal line. 3 tentacles, 4 eyes.

KEY TO SPECIES

1. (2) Gills usually branched, sometimes simple filaments.
Clear space on dorsum relatively narrow. **borealis** Oersted.
2. (1) Gills single filaments, only rarely branched. Clear
space on dorsum relatively wide. **longisetis** Treadwell.

E. borealis Oersted. 20 44 52. (Fig. 1a).

Only a narrow portion of dorsum uncovered by seta bands. Gills 1- to 4-branched from a rather heavy stalk. Unpaired tentacle with relatively long basal and short terminal joints. Dorsal eyes covered by base of tentacle. Paired tentacles and anterior eyes on ventral face of prostomium. Length up to 10 mm., width to 6 mm.

Newfoundland to New England coast.

E. longisetis Treadwell. 44. (Fig 2b).

Relatively wide area on dorsum uncovered by seta bands. Gills generally single filaments. Basal portion of tentacle shorter and terminal portion longer than in *E. borealis*. Length 15 mm., width 5 mm.

Bay of Fundy to Greenland.

Genus **SPINTHER** Johnston. (*Cryptonota* Stimpson).

Body oval, flattened, densely covered with setae. Other characters as above.

S. oniscoides Johnston. (*S. citrina* Stimpson; McIntosh). 41, 52 (Fig. 1, c and d).

Body not acutely pointed at either end. No cirri or gills. 1 median tentacle. 4 somites bound mouth. Neuropodium cylindrical with 1 heavy seta. Length 27 mm., width 11.5 mm.

Nova Scotia and Grand Manan.

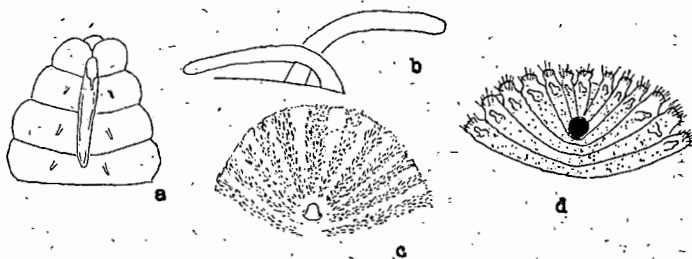


Fig. 1. a,—*Euphrosyne borealis* Oersted. Head $\times 5$. Original. b,—*E. longisetis* Treadwell. Gill $\times 15$. Original. c,—*Spintther oniscoides* Johnston. Dorsal view $\times 3$. Original. d,—*S. oniscoides* Johnston. Ventral view $\times 3$. Original.

APHRODITIDAE

Body ovate. Dorsum covered by 15 pairs of thin elytra, these more or less covered and obscured by a feltwork of fine threads. 1 tentacle and 1 pair of eyes

situated at the base of the tentacle or attached to it. Eyes sessile or pedunculate. Setae and 2 pairs of tentacular cirri on peristomium.

KEY TO GENERA

1. (2) Eyes on stalks or "peduncles". Dorsal felting sometimes loose and inconspicuous. Notopodial setae sometimes arrow-shaped with several barbs (fig. 2a). **LAETMONICE** Kinberg. (p. 11)
2. (1) Eyes sessile. Dorsal felting very dense. Neuropodial setae long and silky. Some very heavy brown setae protrude through the dorsal felt. **APHRODITA** Linnaeus. (p. 12)

Genus **LAETMONICE** Kinberg.

Characters as above.

KEY TO SPECIES

1. (2) Prostomium triangular. **producta** Grube.
2. (1) Prostomium rounded. **flicornis** McIntosh.

L. producta Grube, var. *assimilis* McIntosh. 20, 52 (Fig. 2a).

Prostomium triangular. Median tentacle elongate, apex bulbous. Eye peduncles large. Notosetae with marginal barbs (fig. 2a). Head not figured by McIntosh. Length about 35 mm., width 15 mm.

Nova Scotia and gulf of St. Lawrence.

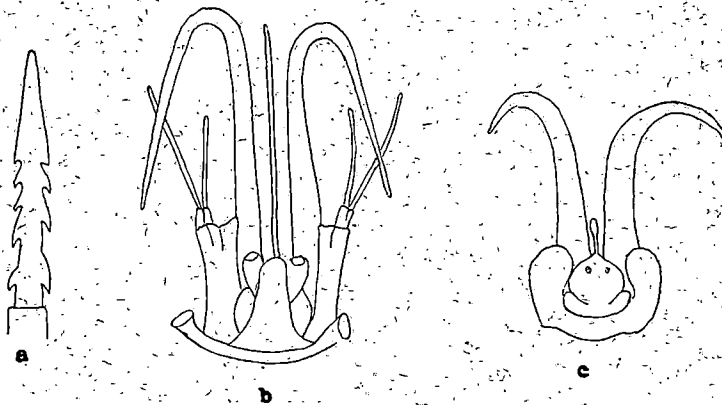


Fig. 2. a.—*Laetmonice producta* Grube var. *assimilis* McIntosh. Seta $\times 60$. After McIntosh. b.—*L. flicornis* McIntosh. Head. After McIntosh. c.—*Aphrodita aculeata* Linnaeus. Head. After McIntosh.

L. flicornis Kinberg (*L. armata* Verrill?). 22, 52 (Fig. 2b).

Prostomium rounded, divided by longitudinal lines into median and lateral portions. Ocular peduncle as large as lateral portions of prostomium. Median tentacle long. McIntosh describes tip as bulbous, but figures it as in figure 2b.

Gulf of St. Lawrence. Bay of Fundy.

Genus **APHRODITA** Linnaeus.

Characters as above.

A. aculeata Linnaeus. 22, 52 (Fig. 2c).

Prostomium dilated anteriorly. Style of tentacle dilated at apex. One eye on either side of tentacle base. Large brown setae extend beyond dorsal felt. Neuropodial setae in 3 rows. Length up to 100 mm.

Grand Manán to New England coast.

SIGALIONIDAE

Body usually long and narrow. Eyes 2, 4, or none. Tentacles 3, 2 or 1. Palps long and slender. Elytra on somites 2, 4, 5, 7 and behind this on alternate somites to the region of somites 23 to 27, behind this, elytra and cirri on all somites.

KEY TO GENERA

1. (2) A median and no lateral tentacles (fig. 3a). **PHOLOE** Johnston. (p. 12)
2. (1) A median and two lateral tentacles.
3. (4) Median tentacle with ctenidia on ceratophore (fig. 3b). Elytra cover dorsum. **STHENELAIS** Kinberg. (p. 13)
4. (3) No ctenidia on median tentacle (fig. 3c). Elytra do not cover dorsum. **LEANIRA** Kinberg. (p. 13)

Genus **PHOLOE** Johnston.

Characters as above.

P. minuta Fabricius. (*P. tecta* Stimpson). 22, 52 (Fig. 3a).

Body 8 mm. long, 45 to 70 somites. 4 eyes, those on the same side in contact. 8 tentacular cirri. Elytra ovate or reniform, ciliated on border.

Greenland to New England coast.



Fig. 3. a,—*Pholoe minuta* Fabricius. Head. After McIntosh. b,—*Sthenelais limicola* Ehlers. Head. After McIntosh. c,—*Leanira tetragona* Oersted. Head. After McIntosh. Left palp not drawn.

Genus **STHENELAIS** Kinberg.

Characters as above.

S. (Sigalion) limicola Ehlers. 22, 52 (Fig. 3b).

Prostomium ovoid with long diameter transverse. Anterior eyes hidden by ctenidia. Lateral tentacles between prostomium and first dorsal cirrus (not figured by McIntosh). Elytra elongate-reniform, posterior ones with fissure at one end whose lips overlap one another. Only first elytron ciliated.

Gulf of St. Lawrence.

Genus **LEANIRA** Kinberg.

Characters as above.

L. tetragona Oersted. (*L. yhleni* Malmgren ?). 17, 19, 52 (Fig. 3c).

Body tetragonal in cross-section. Median tentacle long and slender, a short cirrus on either side near its base. Lateral tentacles less than half length of median. Four pairs of tentacular cirri. Palps long and slender (only right one drawn). Numerous slender cirri on ends of parapodia. Elytra ovate-oval, one end ciliated.

Gulf of St. Lawrence.

POLYNOIDAE

In different genera the form of body varies from short-oval to long-vermiform. Elytra on some somites beginning with somite 2 and in general they occur on alternate somites behind this for a greater or less number of somites. Dorsal cirri on intermediate somites and on all behind last elytron. Prostomium with 1 median and 2 lateral tentacles and 2 pairs of eyes. Two pairs of tentacular cirri.

KEY TO GENERA

1. (5) Lateral tentacles inserted at margin of prostomium.
2. (3, 4) 12 or 13 pairs of elytra. **LEPIDONOTUS** Linnaeus. (p. 14)
3. (2, 4) 15 pairs of elytra. **MALMGRENIA** McIntosh. (p. 14)
4. (2, 3) 18 pairs of elytra. **HALOSYDNA** Kinberg (p. 15)
5. (1) Lateral tentacles inserted ventrally to prostomium under overhanging peaks.
6. (9) Body long and vermiform. 15 pairs of elytra.
7. (8) Neurosetae bifid at apices, notosetae with pectinate plates (fig. 4e). **POLYNOE** Savigny. (p. 15)
8. (7) Neurosetae entire at apices, notosetae serrate (fig. 5a). **NEMIDIA** Malmgren. (p. 15)
9. (6) Body short and more or less depressed.
10. (23) Body normally covered by elytra.
11. (22) Notoetae stouter than neurosetae.
12. (13) Body linear. Tips of neurosetae straight, bifid, incision very fine (fig. 5c). **EUCRANTA** Malmgren. (p. 16)
13. (12) Body elliptic or ovate-oblong.

14. (15) Anterior eyes small, more or less under peaks of prostomium. Peaks close to median tentacle (fig. 5d). **HARMOTHOE** Kinberg. (p. 16)
15. (14) Anterior eyes lateral or dorsal, peaks removed from median tentacle.
16. (21) 15 pairs of elytra. **LAENILLA** Malmgren. (p. 17)
17. (18) Elytra smooth.
18. (17) Elytra granular or scabrous. **ANTINOE** Kinberg. (p. 17)
19. (20) Tips of neurosetae long and fine. **EUNOE** Malmgren. (p. 18)
20. (19) Tips of neurosetae short, not hair-like. **ACANTHICOLEPIS** McIntosh. (p. 18)
21. (16) 18 pairs of elytra. **GATTYANA** McIntosh. (p. 19)
22. (11) Neurosetae stouter than notosetae. **LAGISCA** Malmgren. (p. 20)
23. (10) Body not normally covered by elytra.

Genus **LEPIDONOTUS** Linnaeus.

Characters as above.

L. squamatus Linnaeus. 20, 52 (Fig. 4a).

Elytra studded with rough tubercles and ciliated on outer margins. Median tentacle longer than laterals; this and all cirri with subterminal swelling. A dark band just proximal to subterminal swelling. Dark band under elytra along mid-dorsal line of body. Abundant and rather variable.

Gulf of St. Lawrence to New England coast.

Genus **MALMGRENIA** McIntosh.

Characters as above.

M. whiteavesii McIntosh. 19, 52 (Figs. 4b, c).

Prostomium not described. "Apparently eyeless". Tentacles and cirri smooth. Elytra not seen. Two kinds of neurosetae, one toothed and minutely bifid (fig.

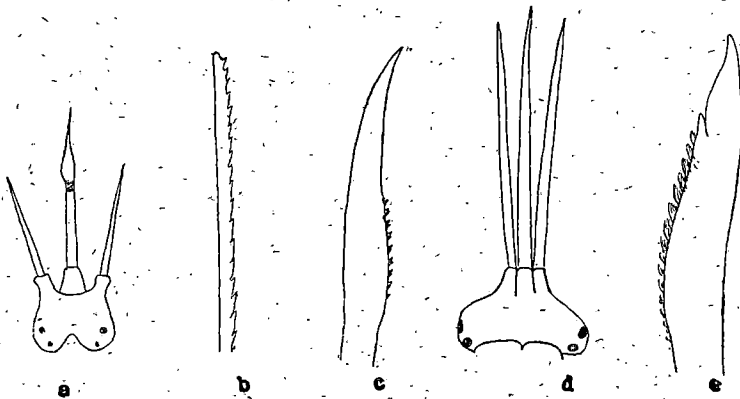


Fig. 4. a,—*Lepidonotus squamatus* Linnaeus. Head. After McIntosh. b,—*Malmgrenia whiteavesii* McIntosh. Neuroseta $\times 500$. After McIntosh. c,—*M. whiteavesii* McIntosh. Neuroseta $\times 500$. After McIntosh. d,—*Holoxydna gelatinosa* Sars. Head. After McIntosh. e,—*Polynoe gaspeensis* McIntosh. Seta $\times 200$. After McIntosh.

(4b), the other heavier, hooked, with rows of pectinate plates (fig. 4c). Length 6 mm.

Between Anticosti and Gaspé peninsula.

Genus **HALOSYDNA** Kinberg.

Characters as above.

H. gelatinosa Sars. 23, 17, 5 (Fig. 4d).

Body linear-oblong. Length 50 to 85 mm. Prostomium ovoid, wider than long. Eyes close together on extreme lateral portion of prostomium. Tentacles slender, smooth, sharp-pointed. Palps large. 18 pairs of elytra not quite covering dorsum. Elytra more or less translucent with minute papillae along inner and anterior borders.

Bay of Fundy.

Genus **POLYNOE** Savigny.

Notopodium small, setae apparently arising from body wall. Other characters as above.

P. gaspeensis McIntosh. 19, 52 (Fig. 4e).

1st pair of elytra in contact on dorsal mid-line, others leave part of dorsum uncovered. Median tentacle brownish, colour deepest just below colourless apex. Palps densely covered with clavate cilia. Lateral tentacles smaller, these and all cirri with smaller cilia. Neurosetae stout, unequally bifid at apices (fig. 4e). Head not figured.

Off Anticosti.

Genus **NEMIDIA** Malmgren.

Characters as above.

KEY TO SPECIES

- | | |
|---|-----------------------------|
| 1. (2) Palps smooth. Neurosetae hooked. | canadensis McIntosh. |
| 2. (1) Palps ciliated. | lawrencii McIntosh. |

N. canadensis McIntosh. 19, 52 (Fig. 5a).

Body of about 48 somites. 15 (?) pairs of elytra. Tentacles and cirri short, with a few small cilia. Palps smooth. Notosetae slender, short; finely serrated. Dorsal most of neurosetae sharp-pointed with prominent pectinate plates, ventralmost heavier, apices hooked. Head not figured.

Gulf of St. Lawrence.

N. lawrencii McIntosh. 19, 52.

Prostomium elongated, tentacles slender. Palps, tentacular and dorsal cirri with clavate cilia. About 38 somites and about 15 pairs of elytra. Setae similar to those of *N. canadensis* but in general they are heavier. Head not figured.

Gulf of St. Lawrence.

Genus **EUCRANTA** Malmgren.

Characters as above. (Chamberlin thinks this is *Harmothoe*).

KEY TO SPECIES

- | | |
|---|---------------------------------|
| 1. (2) Short cilia on cirri, some slender notosetae. | anticostiensis McIntosh. |
| 2. (1) Long cilia on first dorsal cirrus. Some neurosetae with tips entire. | occidentalis McIntosh. |

E. anticostiensis McIntosh (as *Eupolynoe*). 19, 52 (Fig. 5b).

Body elongated, elytra mottled with distinct spots and completely cover dorsum. Median tentacle with filiform tip, tentacular and all dorsal cirri with short cilia. Notosetae like those of *E. occidentalis* but some slender ones in addition. Neurosetae forked at tip, some slender, others heavy.

Gulf of St. Lawrence.

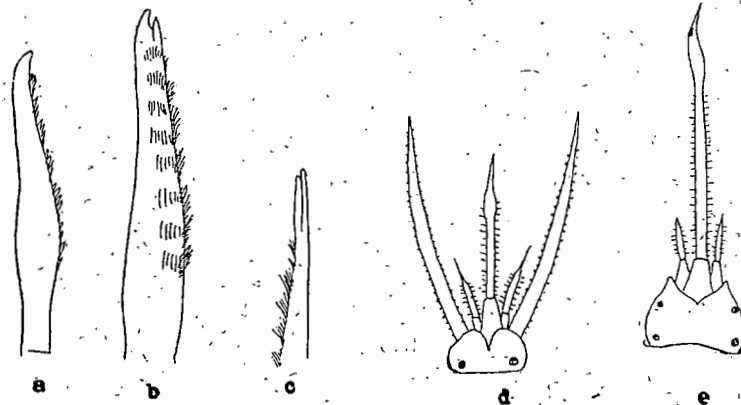


Fig 5. a,—*Nemidia canadensis* McIntosh. Neuroseta $\times 230$. After McIntosh. b,—*Eucrantia anticostiensis* McIntosh. Neuroseta $\times 170$. After McIntosh. c,—*E. occidentalis* McIntosh. Seta $\times 230$. After McIntosh. d,—*Harmothoe imbricata* Linnaeus. Head. After McIntosh. e,—*Laenilla glabra* Malmgren. Head. After Malmgren.

E. occidentalis McIntosh (as *Eupolynoe*). 19, 52 (Fig. 5c):

Median tentacle not seen, laterals slender, ciliated. Dorsal cirri filiform, with many long cilia on the bases. Notosetae stout, curved. Marginal plates nearly to apices. Neurosetae in 3 groups: dorsalmost slender with bifid apices (fig. 5c); median shorter, with bifid tips; ventralmost still shorter, tips entire. Elytra not seen. Verrill thought this synonymous with *E. villosa* Malmgren.

Between cape Rosier and cape Gaspé.

Genus **HARMOTHOE** Kinberg.

Characters as above.

H. imbricata Linnaeus. 22, 52 (Fig. 5d).

Body elongate-oval. Anterior eyes not visible from above. Median tentacle with subterminal swelling, dark-coloured to this point, colourless beyond. Tentacular and dorsal cirri similar to median tentacle, all with clavate cilia. Elytra with short cilia on outer margin. Notosetae large, pointed, with pectinate plates, neurosetae more slender. Length up to 50 mm. Verrill thought his synonymous with *Lepidonote cirrata* Oersted.

Eastern North American coast from Greenland to Cape Cod.

Genus **LAENILLA** Malmgren.

Characters as above.

L. glabra Malmgren. 17, 36 (Fig. 5e).

Body almost linear. 38 setigerous somites. Prostomium produced anteriorly into 2 cones well separated from the median tentacle. Eyes small. Palps smooth, tentacles and tentacular cirri ciliated. Cirrophore of median tentacle very heavy, style long, slightly swollen near end, finely pointed at apex. Lateral tentacles much smaller than median. 15 pairs of smooth elytra.

Egg Harbor, Labrador.

Genus **ANTINOE** Kinberg.

Characters as above.

A. sarsii (Kinberg) Malmgren. 22, 17, 36 (Fig. 6a).

Prostomial peaks acute. Cirrophore of median tentacle heavy, style slender (Malmgren). (McIntosh's figure is very different. He says apex of style is "filamentous" but figures it as stout.) Elytra soft and opaque with long papillae (Malmgren). Some have conical spines on outer and posterior borders. Notopodium smaller than neuropodium. Notosetae straight, conical, with pectinate plates, neurosetae slender and fine-pointed. Length up to 45 mm.

Gulf of St. Lawrence to Cape Cod.

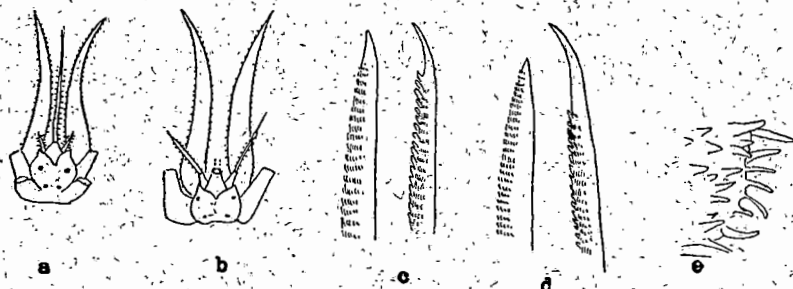


Fig. 6. a,—*Antinoe sarsii* Kinberg. Head. After Malmgren. b,—*Eunoe nodosa* Sars. Head. After Malmgren. c,—*E. nodosa* Sars. Seta $\times 299$. After Malmgren. d,—*E. oerstedii* Malmgren. Seta $\times 200$. After Malmgren. e,—*E. spinulosa* Verrill. Margin of elytron. After Verrill.

Genus **EUNOE** Malmgren.

Characters as above.

KEY TO SPECIES

1. (2) Prostomial peaks acute in young, blunt in adult.
Elytra with small tubercles. **nodosa** Sars.
2. (1) Prostomial peaks acute throughout life.
3. (4) Elytra with heavy tubercles, margins not ciliated in adult. **oerstedii** Malmgren.
4. (3) Elytra fringed with numerous long cilia and with spines on surface. **spinulosa** Verrill.

E. nodosa Sars. 22, 17, 39 (Figs. 6b, c).

Prostomium with deep anterior fissure and widely separated peaks. 36 somites, 15 pairs of elytra. Cirrophore of median tentacle stout. (Style is shown in McIntosh's fig. 9, pl. 27, but text says it was not seen). Elytra reniform with many cilia on outer margin. Small tubercles on surface and larger ones near posterior border. Dorsal cirri with long cilia. Notosetae larger than neurosetae both with toothed plates. Length 45 to 65 mm.

Greenland to cape Cod.

E. oerstedii Malmgren. 17, 36, 52 (Fig. 6d).

Body narrowed posteriorly, 37 or 38 somites. Prostomium similar to that of *E. nodosa* but peaks may disappear in adults. Median tentacle much longer than laterals, cirrophore heavy. Elytra except first, reniform or oval, margins not ciliated in adults, most with heavy spiny tubercles on surfaces. Setae similar to *E. nodosa*. Compare figure 6c with 6d for constant differences. Length 60 to 80 mm., width 24 to 30 mm. Verrill thought it synonymous with *Lepidonote scabra* Oersted. Malmgren distinguishes between these two species, but his figures of the two heads are practically identical and McIntosh's of *E. nodosa* is different from either. Possibly not distinct species.

Greenland to cape Cod.

E. spinulosa Verrill. 48, 49 (Fig. 6e).

Prostomium deeply bilobed, tips of lobes acute. Tentacles twice as long as prostomium, apex fine-pointed, laterals one-half as long as median. All cirri long, slender, with slender cilia. Elytra large, rounded-oblong, surface covered with minute grains. Tapering spines near margin and edge fringed with numerous slender papillae (fig. 6e). Length 35 mm., width 16 mm.

Nova Scotia and gulf of St. Lawrence.

Genus **ACANTHICOLEPIS** McIntosh.

Characters as above.

A. asperrima McIntosh. (*Polynoe asperrima* Sars.) 22 (Fig. 7a).

About 41 somites. Body thick, tapering rather more posteriorly than anteriorly. Prostomium longer than broad, dorsal incision deep and wide. Median

tentacle heavy, sharp pointed, lateral ones much smaller but of practically the same form. All tentacles and palps ciliated. Palps elongated conical in outline very heavy. (Only right one figured.) 18 pairs of elytra, surfaces rough with long and strong horny spines.

Bay of Fundy.

Genus **GATTYANA** McIntosh. (*Nychia* Malmgren, name preoc.).

Characters as above.

KEY TO SPECIES

- | | | |
|--------|---|----------------------------|
| 1. (2) | Tentacles and cirri densely ciliated. Spines on elytra sometimes with bifid spines. | <i>cirrosa</i> Pallas. |
| 2. (1) | Tentacles and cirri with small cilia. Spines on elytra 2 to 4 branched at apices. | <i>amondseni</i> Malmgren. |

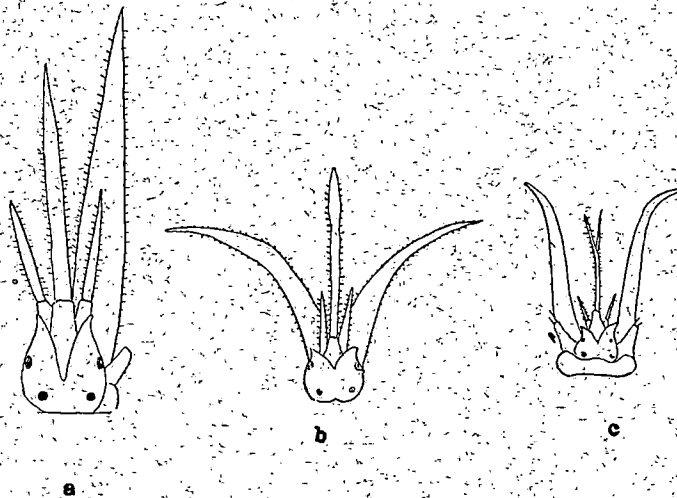


Fig. 7. a,—*Acanthicolepis asperrima* McIntosh. Head. Left palp not drawn. After McIntosh. b,—*Gattyana cirrosa* Pallas. Head. After McIntosh. c,—*G. amondseni* Malmgren. Head. After Malmgren.

G. cirrosa Pallas. 22, 17, 52 (Fig. 7b).

35 or 36 somites. Tentacles and cirri densely covered with cilia. Anterior eyes the larger and lie partly on ventral surface. First elytron almost circular and is ciliated around entire margin, others reniform, ciliated only on outer and posterior surfaces. Spines on their surfaces, some with bifid apices. Neurosetae heavy, tips slightly bent, with pectinate plates. Notosetae more slender, sharp-pointed, with rows of spines. Length 47 mm. McIntosh thought this synonymous with *Polynoe scabra* Audouin et Milne-Edwards and with *Lepidonote scabra* Oersted.

Cape Cod to Greenland and on European shores.

G. amondseni Malmgren. 18, 36 (Fig. 7c).

35 somites. First pair of elytra suborbicular, others reniform or ovaliform, posterior and outer margins densely bordered by small cilia. Spines on surface, these with apices 2- to 4-branched. Median tentacle with heavy cirrophore and slender style. Latter drawn as bifid by Malmgren, this evidently abnormal. Tentacles ciliated, palps smooth. Middle notosetae heavy, with numerous plates, outer notosetae more slender. Neurosetae swollen toward ends, then narrow to blunt points.

Labrador to Provincetown, Mass.

Genus **LAGISCA** Malmgren..

KEY TO SPECIES

- | | |
|---|---|
| 1. (2) Eyes dorsal. Elytral papillae globular. Neurosetae with tips entire. | floccosa Savigny. |
| 2. (1) Eyes lateral. Elytral papillae filiform. | |
| 3. (4) Neurosetae more or less bifid at apices. | rarispinga Sars. |
| 4. (3) Neurosetae with apices entire. | rarispinga var occidentalis McIntosh. |

L. floccosa Savigny. 22 (Fig. 8a).

Prostomial peaks prominent. Median tentacle long, heavy. Laterals much shorter, acutely pointed. 15 pairs of elytra, the first rounded, others reniform or ovate-reniform, most of their surfaces covered with small spines. Globular papillae on posterior regions.

Gulf of St. Lawrence.

L. rarispinga Sars. 17, 52 (Fig. 8b).

Prostomial peaks acute, anterior eyes ventro-lateral in position. Median tentacle nearly as long as palps, apex acute, laterals much shorter, all cirri and tentacles ciliated. All but the first elytron reniform, with ciliated margins and

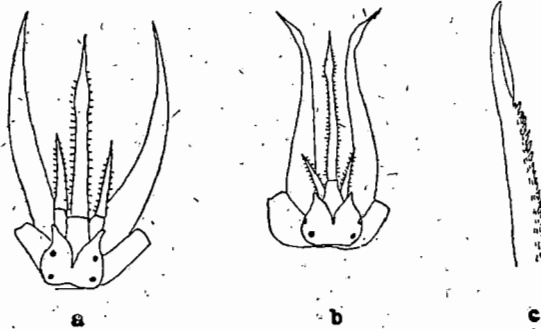


Fig. 8. a,—*Lagisca floccosa* Savigny. Head. After McIntosh. b,—*L. rarispinga* Sars. Head. After Malmgren. c,—*L. rarispinga* Sars, var. *occidentalis* McIntosh. Seta $\times 60$. After McIntosh.

conical spines on surface. Long, brown, soft papillae on surface toward posterior end. Neurosetae finely bifid at ends.

Gulf of St. Lawrence.

L. rarispina var. *occidentalis* McIntosh. 19, 52 (Fig. 8c).

Similar to *rarispina* but tips of neurosetae are not bifid.

Gulf of St. Lawrence.

NEPHTHYDIDAE

Prostomium flattened, more or less rhomboidal in outline. Eyes 2 or absent. Neuro- and notopodia widely separated, the space between them more or less filled by a crescentic gill attached to the ventral face of the notopodium.

Genus **NEPHTHYS** Cuvier.

Characters as above.

KEY TO SPECIES

- | | |
|---|------------------------------|
| 1. (10) Notopodial lobes prominent. | |
| 2. (3) Gills coiled. | <i>longisetosa</i> Oersted. |
| 3. (2) Gills sickle-shaped. | |
| 4. (7) Gills short, ends nearly in contact. | |
| 5. (6) Gills slender, neuropodial lobe broad-ovate. | <i>ciliata</i> O. F. Müller. |
| 6. (5) Gills stouter, neuropodial lobe elongate-oval. | <i>caeca</i> O. F. Müller. |
| 7. (4) Gills only slightly curved. | |
| 8. (9) Dorsal cirrus large, gill heavy. | <i>lawrencii</i> McIntosh. |
| 9. (8) Dorsal cirrus small, gill slender. | <i>picta</i> Ehlers. |
| 10. (1) Notopodial lobes inconspicuous. | |
| 11. (12) Gills very heavy. | <i>canadensis</i> McIntosh. |
| 12. (11) Gills small. | <i>incisa</i> Malmgren. |

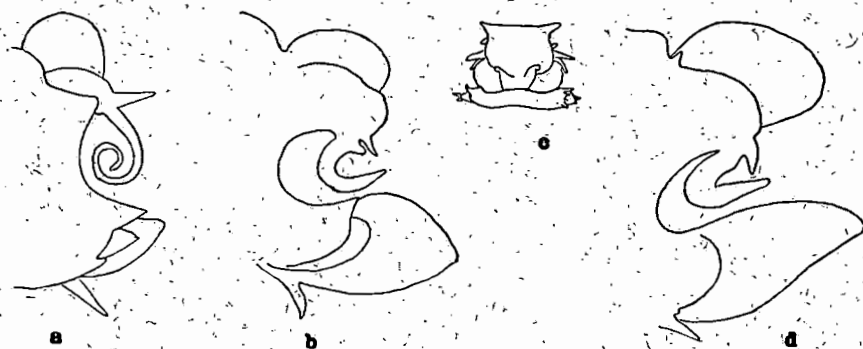


Fig. 9. a,—*Nephthys longisetosa* Oersted. Parapodium. After McIntosh. b,—*N. ciliata* Müller. Parapodium. After McIntosh. c,—*N. caeca* Müller. Head. After McIntosh. d,—*N. caeca* Müller. Parapodium. After McIntosh.

N. longisetosa Oersted. 25, 52 (Fig. 9a).

Prostomium broader than long, all tentacles elongated-conical. Neuro- and notopodia well separated, gill long, slender, coiled. Notopodial lobe semicircular, neuropodial lobe asymmetrically ovate. Ventral cirrus long and heavy.

European and American shores of north Atlantic.

N. ciliata O. F. Müller. 25, 52 (Fig. 9b).

Prostomium longer than broad, anterior border slightly convex. Tentacles slender, anterior ones lateral, posterior ones ventro-lateral. Noto- and neuropodial lobes small, gill heavy. Large conical lobe on neuropodium. Length to 205 mm., width 12 mm.

European and American shores of north Atlantic.

N. caeca O. F. Müller. 25, 52 (Figs. 9c, d).

Prostomium nearly rectangular, conical tentacles on anterior angles. Two other tentacles on ventral surface. Body to 200 mm. long, 11 mm. wide. Notopodium with broadly pointed lobe. Gill hook-shaped, a cirrus near its base. Lobe of neuropodium cordate, longer than notopodium.

Europe, and both coasts of North America in cooler waters.

N. lawrencii McIntosh. 21, 52 (Fig. 10a).

Prostomium longer than broad, all tentacles short, conical, posterior shorter than anterior. Notopodial lobe long and low, dorsal cirrus prominent, conical. Gill long, not much bent, its curve following curve of body wall. Ventral cirrus small.

Gulf of St. Lawrence.

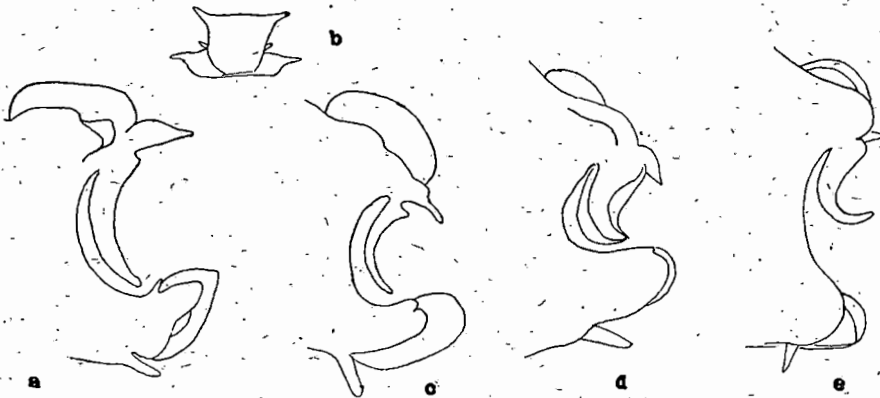


Fig. 10. a,—*Nephthys lawrencii* McIntosh. Parapodium. After McIntosh. b,—*N. picta* Ehlers. Head: After Ehlers. c,—*N. picta* Ehlers. Parapodium. After McIntosh. d,—*N. canadensis* McIntosh. Parapodium. After McIntosh. e,—*N. incisa* Malmgren. Parapodium. After McIntosh.

N. picta Ehlers. 9, 52 (Figs. 10b, c).

Body rather slender, dark transverse bands marking anterior end, sometimes on all of body. Prostomium broadest anteriorly, angles drawn out into anterior tentacles, posterior tentacles very small, behind mid-line of prostomium. Notopodial lobe long and low, neuropodial lobe large and oval. Dorsal cirrus with a heavy base abruptly narrowing to slender terminal part. Gill slender, only slightly curved. Ventral cirrus of moderate size.

Eastern coast of North America.

N. canadensis McIntosh. 21, 52 (Fig. 10d).

Prostomium elongated, anterior tentacles conical, posterior ones lanceolate. Gill short and broad, nearly filling space between neuro- and notopodium. Dorsal lobe and cirrus small, ventral cirrus of moderate size. Length up to 150 mm.

Gulf of St. Lawrence.

N. incisa Malmgren. 22, 52 (Fig. 10e).

Prostomium shield-shaped, widest in the middle. Tentacles small and conical. Neuro- and notopodia widely separated. Gill elongate-conical, only slightly bent. Length 40 mm., width 5 mm.

European and American shores of north Atlantic.

PHYLLODOCIDAE

Body elongated. Tentacles 4 or 5. No palps. Eyes 2 or 4. Tentacular cirri 1 to 4 pairs on somites 1 to 3. Parapodial cirri flattened, leaf-like, often prominent. Notopodium absent. Protrusible pharynx (proboscis) smooth or with papillae.

KEY TO GENERA

- | | |
|---|---|
| 1. (2) Notocirrus of 1st normal somite reduced. 2 pairs of tentacular cirri. 1st normal somite with setigerous parapodia. Proboscis smooth. | ETEONE Savigny. (p. 23) |
| 2. (1) Notocirrus of 1st normal somite fully developed. | |
| 3. (4) 3 pairs of tentacular cirri, 2 pairs on 2nd somite. | MYSTIDES Théel (p. 25) |
| 4. (3) 4 pairs of tentacular cirri | |
| 5. (8) An unpaired tentacle present. | |
| 6. (7) 1st somite bearing tentacular cirri dorsally reduced. | EUMIDA Malmgren. (p. 25) |
| 7. (6) All somites bearing tentacular cirri fully developed. | EULALIA Savigny. (p. 25) |
| 8. (5) No unpaired tentacles. (Formerly included in <i>Phyllodoce</i>). | ANAITIDES . Czerniawsky. (p. 27) |

Genus **ETEONE** Savigny.

Characters as above.

KEY TO SPECIES

1. (5) Prostomium prominent.
2. (3, 4) Prostomium rectangular, sides rounded (fig. 11a)

spetsbergensis Malmgren.

- | | |
|--|-----------------------------|
| 3. (2, 4) Prostomium trapezoidal (fig. 11b). | <i>pusilla</i> Oersted. |
| 4. 2, 3) Prostomium pear-shaped (fig. 11c). | <i>trilineata</i> W. and B. |
| 5. (1) Prostomium not prominent | |
| 6. (7, 8) Prostomium a low cone (fig. 11d). | <i>arctica</i> Malmgren. |
| 7. (6, 7) Prostomium rounded (fig. 11e). | <i>cylindrica</i> Oersted. |
| 8. (6, 7) Prostomium, short, constricted. | <i>sarsii</i> Oersted. |

***E. spetsbergensis* Malmgren. 25 (Fig. 11a).**

Prostomium nearly rectangular with rounded sides. Tentacles small. Eyes generally not visible in preserved material. Dorsal cirri obovate to circular. Ventral cirrus ovate, extending beyond setae lobe. Length 82 mm.

Gulf of St. Lawrence. Recorded from South Africa to Berings sea and the European coast (McIntosh).

***E. pusilla* Oersted. 25 (Fig. 11b).**

Prostomium trapezoidal, tentacles prominent. Tentacular cirri short. Eyes not visible in preserved material. Ventral cirrus rounded, dorsal cirrus ovate on a prominent base.

Coast of Europe. "Canadian and American coasts" (McIntosh).

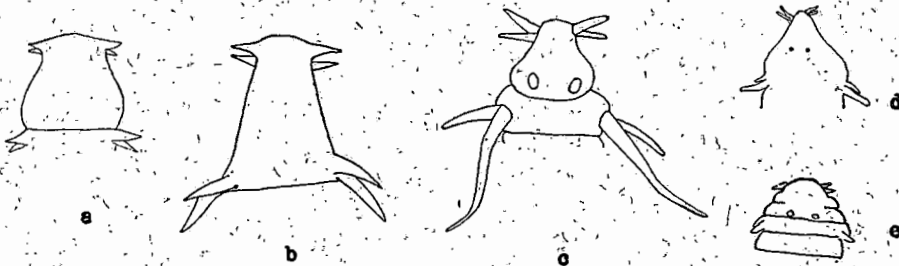


Fig. 11. a,—*Eteone spetsbergensis* Malmgren. Head. After Malmgren. b,—*E. pusilla* Oersted. Head. After McIntosh. c,—*E. trilineata* Webster and Benedict. Head. After W. and B. d,—*E. arctica* Malmgren. Head. After McIntosh. e,—*E. cylindrica* Oersted. Head. After Oersted.

***E. trilineata* Webster and Benedict. 51 (Fig. 11c).**

Prostomium pear-shaped, width at anterior margin about one half that of the greatest diameter. Eyes large, near posterior border. Tentacles stout, length rather more than half that of prostomium. 1st somite wider than 2nd or 3rd, 4th about as wide as 1st. One narrow median and two wider dorso-lateral bands extend along the dorsum.

Bay of Fundy.

***E. arctica* Malmgren. 25, 5 (Fig. 11d).**

Prostomium conical, basal transverse diameter about equal to median length. Tentacles and tentacular cirri short. Dorsal cirrus ovate, at some distance from seta lobe. (McIntosh's text says no eyes were visible, his figure is as in figure 11d.)

Bay of Fundy.

E. cylindrica Oersted. 37, 52 (Fig. 11e).

Body terete. Prostomium short, rounded. Dorsal cirrus suboval, a considerable space between it and the seta lobe.

Gulf of St. Lawrence.

E. sarsii Oersted. 39.

Prostomium short-conical, constricted anteriorly. Small eyes at base of prostomium. Dorsal cirri ovate. Caudal papillae subglobulate.

Bay of Fundy.

Genus **MYSTIDES** Théel.

Characters as above.

M. viridis Webster and Benedict. 51. (Fig. 12a).

Basal width of prostomium greater than its median length. Anterior margin about one-fourth as wide as posterior. A very small anterior marginal depression. Dorsal tentacles slender, extending to middle of 1st somite. Ventral ones shorter. 1 pair of tentacular cirri on somite 1; 2 pairs on somite 2. Styles all with swollen basal portions.

Bay of Fundy.

Genus **EUMIDA** Malmgren.

Characters as above.

E. sanguinea Oersted. 25, 5 (Fig. 12b).

Prostomium cordate, broader than long, eyes prominent. Unpaired tentacle longer than paired. In each of tentacular cirri the dorsal is larger than the ventral. Styles "all attenuate, those of posterior pairs finely attenuate" (McIntosh). His figure is copied in figure 12b. Dorsal cirri subvertical, broadly ovate. Colour pink, straw or greenish. Length 35 to 65 mm.

Bay of Fundy.

Genus **EULALIA** Savigny.

Characters as above.

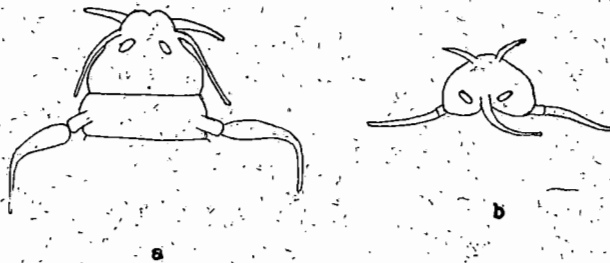


Fig. 12. a.—*Mystides viridis* Webster and Benedict. Head. After W. and B. b.—*Eumida sanguinea*. Oersted. Head. After McIntosh.

KEY TO SPECIES

- | | |
|---|--------------------------------|
| 1. (4) Prostomium smooth, rounded. | |
| 2. (3) Tentacular cirri and median tentacle slender. | <i>viridis</i> O. F. Müller. |
| 3. (2) Tentacular cirri and median tentacle short, heavy. | <i>dubia</i> Web. and Ben. |
| 4. (1) Marginal constriction near anterior end of prostomium. | |
| 5. (6) Prostomium short, constriction slight. | <i>problema</i> Malmgren. |
| 6. (5) Prostomium elongated, constriction deep. | <i>bilineata</i> Web. and Ben. |

E. viridis O. F. Müller. 25, 5 (Fig. 13a).

Prostomium rounded-conical. 2 black eyes. Tentacles slender. 1st pair of tentacular cirri lanceolate, 2nd and 3rd pairs longer. Body-colour a rich dark green with 2 dark belts on the dorsum in each somite. On ventral surface a median row of dark olive spots. Length 35 to 100 mm.

Bay of Fundy.

E. dubia Webster and Benedict. 51 (Fig. 13b):

Prostomium smoothly conical with very slight constriction where tentacles are attached. Tentacles rather heavy, ventral ones concealed by dorsal in figure given by Webster and Benedict. Unpaired tentacle smaller than paired. Tentacular cirri stout. Webster and Benedict note that apparent location of 1st tentacular cirri in figure is due to distortion where 1st somite is bent under prostomium.

Bay of Fundy.

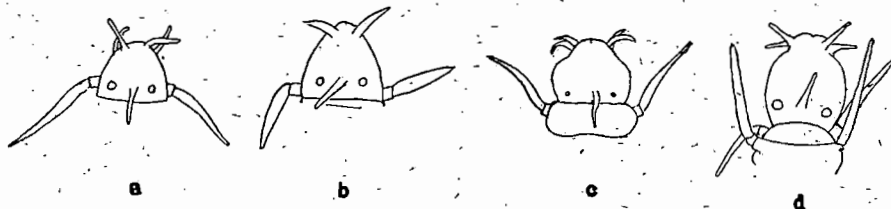


Fig. 13. a,—*Eulalia viridis* Müller. Head. After McIntosh. b,—*E. dubia* Webster and Benedict. Head. After W. and B. c,—*E. problema* Malmgren. After Malmgren. d,—*E. bilineata* Webster and Benedict. Head. After W. and B.

E. problema Malmgren. 17, 5 (Fig. 13c).

Lateral margins of prostomium rounded. Paired tentacles short, a little longer and heavier than unpaired. Eyes small. Tentacular cirri short, rather heavy. Length 35 mm., width (including parapodia) 2 mm.

Bay of Fundy.

E. bilineata Webster and Benedict. 51 (Fig. 13d).

Prostomium rounded, much constricted at its anterior fifth. A very shallow emargination on anterior border. Paired tentacles about half as long as prostomium, unpaired a little shorter. Eyes near posterior border. Tentacular cirri

rather heavy. Colour gray with two lateral dorsal bands. Brown spots at bases of parapodia.

Bay of Fundy. Coast of Maine.

Genus **ANAITIDES** Czerniawsky.

Characters as above.

KEY TO SPECIES

- | | |
|---|------------------------------|
| 1. (2) Prostomium much narrowed anteriorly, tentacles short (fig. 14a). | maculata Oersted. |
| 2. (1) Prostomium not much narrowed anteriorly. | |
| 3. (4) Dorsum not marked with dark spots. | groenlandica Oersted. |
| 4. (3) Dorsum marked with dark spots. | catenula Verrill. |

Descriptions in literature not clear enough to be certain that these two latter species really are distinct.

A. maculata Oersted. 25, 5 (Fig. 14a).

Body marked by 3 longitudinal rows of spots, one on dorsum, others on dorsal cirri. Dorsal cirri on heavy bases, anterior ones broad-lanceolate, posterior ones nearly oval. Ventral cirri elongate-conical.

Coast of Maine; Iceland; Scotland.

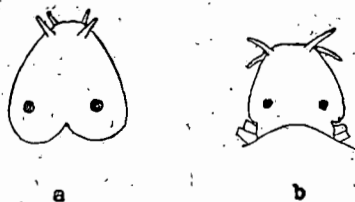


Fig. 14. a,—*Anaitides maculata* Oersted. Head. After McIntosh. b,—*A. groenlandica* Oersted. Head. After McIntosh.

A. groenlandica Oersted. 25 (Fig. 14b).

Prostomium longer than broad, cordate posteriorly. Tentacles and tentacular cirri long. Dorsal cirrus large, sub-oval. Two eyes. Length 100 mm.

Gulf of St. Lawrence. Coast of Scotland to Canadian shores.

A. catenula Verrill. 47, 52.

Prostomium longer than broad, somewhat cordate posteriorly. Eyes large. Tentacles slender. Tentacular cirri long, posterior ones the longest. Pale green in colour with median row of dark spots. No figures given by Verrill.

It seems probable that *groenlandica* and *catenula* are identical species.

Gulf of St. Lawrence.

TOMOPTERIDAE

Genus **TOMOPTERIS**.

Pelagic animals, body more or less translucent. One pair of long tentacular cirri (fig. 15a). Sometimes a smaller pair in front of these. "Tail" of small somites at posterior end of body generally present but this varies greatly in degree of development at different times. Glands and rosette organs on parapodia. (Fig. 15b.)

KEY TO SPECIES. (In part after Huntsman).

1. (6) Rosettes on parapodia.
2. (3) Rosettes on trunk of 1st two parapodia and on fins of remainder. **duccii** Rosa.
3. (2) Rosettes on ventral ramus of 1st two parapodia and on all fins.
4. (5) 1st cirrus absent. **catherina** Goose.
5. (4) 1st cirrus present. **helgolandica** Graeffe.
6. (1) No rosettes on parapodia. No 1st cirrus.
7. (8) 2nd cirrus half as long as body. 12 mm. long. Parapodia to 21 pairs. No tail. **septentrionalis** Quatrefages.
8. (7) 2nd cirrus three-quarters as long as body. Chromophile gland very large, on ventral surface near ventral insertion of fin. Hyaline gland apical. **planktonis** Apstein.

T. duccii Rosa. 2, 14.

Length 25 mm. 1st cirrus present, 2nd cirrus two-thirds as long as body. Ventral lobe of fin with an aculeate process on posterior margin. A small gland at its base.

Acadia station 75. "Gulf Stream."

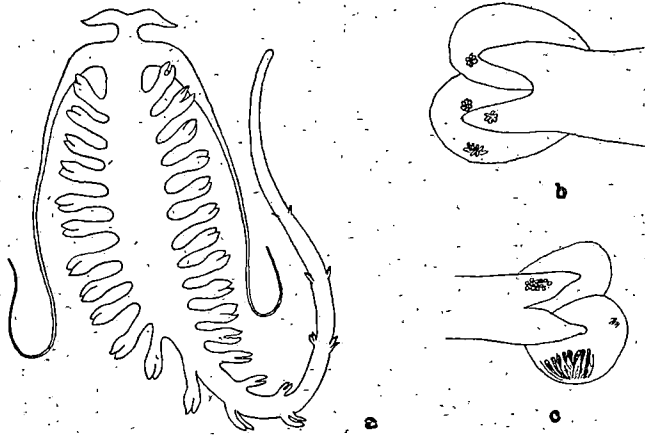


Fig. 15. a,—*Tomopteris catherina* Gosse. Entire animal after McIntosh. b,—*T. helgolandica* Graeffe. Parapodium. After Apstein. c,—*T. planktonis* Apstein. Parapodium. After Fauvel, from Malaquin et Carin.

T. catherina Gosse. 2, 14, 35 (Fig. 15a).

1st cirrus absent (McIntosh). Specimen figured was 38 mm. long. There may be more than 20 parapodia. Lamella of parapodia ovato-rotundate (McIntosh).

Grand Banks of Newfoundland. Widely distributed.

T. helgolandica Graeffe. 2, 6 (Fig. 15b).

1st cirrus present. 85 mm. long. 17 pairs of parapodia. 2nd cirrus nearly as long as body. Brain transverse; eyes black.

44° 8' N.

T. septentrionalis Quatrefages. 2, 14.

1st cirrus absent. 2nd cirrus two-thirds as long as body. Parapodia to 21 pairs. No tail. Body 12 mm. long. Gland at apex of ventral fin of all parapodia.

Outer Acadia stations.

T. planktonis Apstein. 2, 11, 14 (Fig. 15c).

Body ovo-lanceolate. No tail. 13 to 18 pairs of parapodia. No 1st cirrus. 2nd cirrus three-quarters length of body. Parapodial gland very large on ventral surface near ventral insertion of fin (on parapodia behind the 4th).

Outer Acadia stations. Oceanic.

SYLLIDAE

Body small, tentacles and cirri often articulated. Three tentacles, 2 palps, 4 eyes and 2 tentacular cirri. Pharynx prominent. Oesophagus with or without teeth. Notopodium absent. Neuropodium with dorsal and ventral cirri.

KEY TO GENERA

- | | | |
|--------|--|-----------------------------------|
| 1. (4) | Ventral cirri absent. Palps minute. Cirri not articulated. | |
| 2. (3) | 1st and 2 somites with elongated cirri. | AUTOLYTUS Grube. (p. 29) |
| 3. (2) | 1st three somites with elongated cirri. | PROCERAEA Ehlers. (p. 30) |
| | Chamberlin (p. 167) lists these genera as synonymous. | |
| 4. (1) | Ventral cirri present. | |
| 5. (6) | Palps fused only at base. | EUSYLLIS Malmgren. (p. 31) |
| 6. (5) | Palps fused nearly to ends. | EXOgone Oersted. (p. 31) |

Genus **AUTOLYTUS** Grube.

Characters as above.

KEY TO SPECIES

- | | | |
|--------|--|------------------------------|
| 1. (2) | Cirri on somites immediately behind head either short for 5 somites (male), or not noticeably different from later ones. | cornutus Agassiz. |
| 2. (1) | Cirri on 6 somites immediately following head very short. | longisetosus Agassiz. |

A. cornutus Agassiz. 1. (Figs. 16a, b, c).

This species has an alternation of generations and may appear in three forms. 1,—parent stock (fig. 16a). Three long slender tentacles, very small eyes. 1st somite with long dorsal and very short ventral cirrus. Later cirri short; 2,—mature female (fig. 16b). Eyes very large. 1st somite fused with peristomium. Three heavy tentacles. One ventral tentacular cirrus. Large dorsal cirrus on 2nd somite; 3,—mature male (fig. 16c). Paired tentacles very heavy, forceps-like, branched toward end. 1st somite fused with peristomium. Small dorsal and ventral tentacular cirri. Very large dorsal cirrus on 2nd somite.

Bay of Fundy. (Not on record which form was seen.)

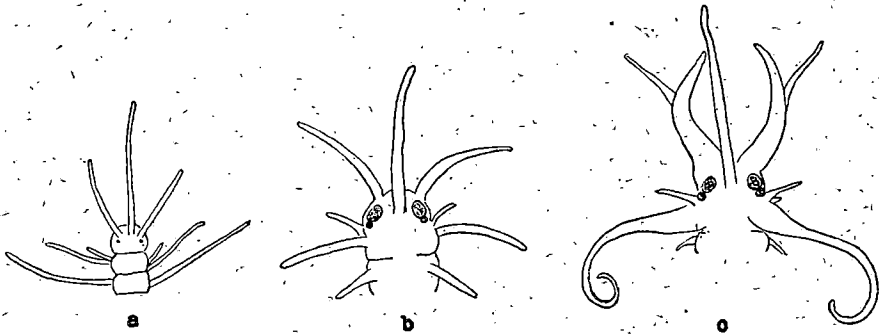


Fig. 16. a,—*Autolytus cornutus* Agassiz. Parent stock. After Agassiz. b,—*A. cornutus* Agassiz. Mature female. After Agassiz. c,—*A. cornutus* Agassiz. Mature male. After Agassiz.

A. longisetosus Agassiz. 49, 5 (Fig. 17).

Tentacles much more slender than in *A. cornutus*; head shorter and relatively wider. Six somites following the head have short dorsal cirri.

Bay of Fundy.

Baillie listed *A. longisetosus* which Verrill says = *A. longosetosus*. Latter is by Quatrefages given as = to *Polybostrochus longosetosus* Oersted, found on New England coast and in Greenland. McIntosh (25) thought latter = *Autolytus prolifer*, but does not record it from American shores. Identification as *A. longisetosus* here is on Verrill's authority.

Genus **PROCERAEA** Ehlers.

Characters as above.

P. gracilis Verrill. 45.

Body slender, elongated. Tentacles and dorsal cirri of 1st two somites very long and slender, faintly annulated. Median tentacle longer than laterals. Dorsal cirri of 3rd somite about twice as long as body diameter, later ones half as long as body width. Colour in life pale greenish with narrow dorsal median line of dark brown, and on either side a less distinct band of the same colour. Length 25 mm., width 1 mm. Not figured.

Bay of Fundy.

Genus **EUSYLLIS** Malmgren.

Tentacles and cirri often moniliform. Other characters as above.

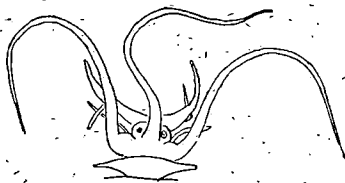


Fig. 17. *Autolytus longisetosus* Agassiz. Head. After Verrill.

KEY TO SPECIES

- | | |
|--|----------------------------|
| 1. (2) Tentacles and cirri moniliform. | tubifex Gosse. |
| 2. (1) Tentacles annulated but not moniliform. | phosphorea Verrill. |

E. tubifex Gosse. 20, 27, 52 (Fig. 18a).

Prostomium ovoid, eyes small, median tentacle longer than laterals. Tentacles and cirri moniliform. Cirri of 1st four somites longest of any.

Newfoundland and bay of Fundy.

E. phosphorea Verrill. 40 (Fig. 18b).

In preserved material prostomium broader than long; in life longer than broad. Tentacles and tentacular cirri long, annulated but not moniliform. Dorsal cirrus of 2nd somite as long as tentacles; those of 3rd, 4th and 5th shorter. Behind 5th dorsal cirri are alternately long and short. Colour deep salmon, or light yellowish orange. Length 25 mm., width 1.5 mm.

Bay of Fundy.

Genus **EXOgone** Oersted. (*Paedophylax* Claperède.)

Characters as above.

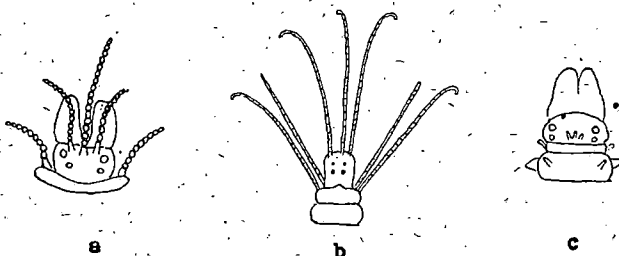


Fig. 18. a,—*Eusyllis tubifex* Gosse. Head. After McIntosh. b,—*E. phosphorea*-Verrill. Head. After Verrill. c,—*E. brevicornis* Webster and Benedict. Head. After W. and B.

E. brevicornis Webster and Benedict. 51 (Fig. 18c).

Prostomium oval with the long axis transverse. Tentacles very short, situated between the eyes. Palps large, fused nearly to their ends. 1st somite very

short and its dorsal cirrus small. Cirri of 2nd somite much larger. Length 1.5 to 2 mm.

Eastport, Me., and bay of Fundy.

NEREIDAE

One pair of tentacles, 2 pairs of eyes, 4 pairs of tentacular cirri. Pharynx when protruded shows a basal and a terminal joint on which may be paragnaths arranged in groups conventionally numbered as indicated in figs. 19c and d. Presence or absence of these paragnaths and their arrangement if present, important in taxonomy. At end of pharynx 1 pair of strong, more or less toothed, jaws. Parapodia generally prominent. At breeding season some undergo marked bodily changes, then called heteronereis.

Genus **NEREIS** Linnaeus.

Characters as above.

KEY TO SPECIES

- A. Notopodium expanded to form a broad gill (fig. 19b). **virens** Sars.
 AA. Notopodium not expanded to form a gill. Prostomium conical. **pelagica** Linnaeus.

N. virens Sars. (*N. grandia* Stimpson). 9, 25, 47, 52 (Figs. 19a, b).

Prostomium a blunt one. Tentacles slender, bases rather near one another. Largest tentacular cirrus $2\frac{1}{2}$ times as long as palp and very slender. Paragnath formula—I, bundle of 7 or 8; II, oblique, rather triangular band; III, long, oblique band; IV, irregular group; V, 3 in a longitudinal row; VI, 4 or 5 in an irregular mass; VII and VIII, continuous band of 3 or 4 rows. Gill a broad plate on notopodium. Dorsal cirrus short, inserted on gill. Length from 300 to 600 mm.

Common on eastern North American coast.

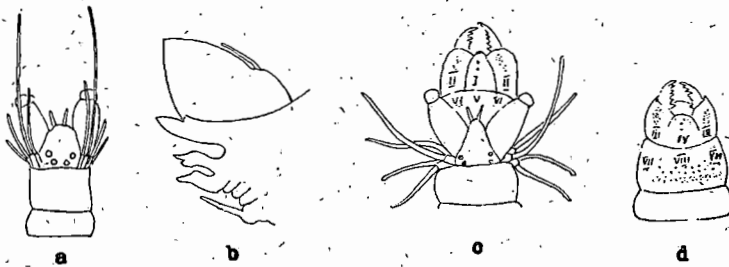


Fig. 19. a,—*Nereis virens* Sars. Head, dorsal view. After Verrill. b,—*N. virens* Sars. Parapodium. After Verrill. c,—*N. pelagica* Linnaeus. Head with pharynx, dorsal view. After Verrill. d,—*N. pelagica* Linnaeus. Ventral view of pharynx. After Verrill.

N. pelagica Linnaeus. (*N. denticulata* Stimpson). 9, 25, 52 (Figs. 19c and d).

Prostomium triangular at base, narrowed to a blunt point anteriorly. Tentacles slender, separate at base. Paragnath formula: I, 2 in row; II, oblique band;

III, similar to II; IV, transverse band; V, absent; VI, 4 or 5 large paragnaths; VII and VIII, continuous band of several rows, anterior ones the largest. Notopodium not extended into a gill. Length up to 100 mm.

East coast of North America.

Stimpson's *N. abyssicola* and *iris* are too uncertainly diagnosed to be accepted as valid species.

LEODICIDAE

Tentacles 1 to 7 or none. Gills if present, as single or branched filaments attached to dorsal cirri or parapodia. Jaw apparatus of maxilla and mandible, their structure important in classification.

KEY TO GENERA

- | | |
|--|--|
| 1. (6) Tentacles present. | |
| 2. (3) 5 tentacles. | LEODICE Savigny. (p. 33) |
| 3. (2) 7 tentacles, frontal ones short and stubby. | |
| 4. (5) Tentacular cirri present. | ONUPHIS (<i>Northia</i>) Audouin et
Milne-Edwards. (p. 34) |
| 5. (4) No tentacular cirri. | HYALINOECIA Malmgren. (p. 35) |
| 6. (1) Tentacles absent. | |
| 7. (8) Setae all simple, no crochets. | DRILONEREIS Claperède. (p. 35) |
| 8. (7) Compound setae or crochets present. | |
| 9. (10) Digitate gills on parapodia. | NINOE Kinberg. (p. 37) |
| 10. (9) No gills present. | |
| 11. (12) Dorsal cirrus present. | ENONELLA Stimpson. (p. 36) |
| 12. (11) No dorsal cirri. | LUMBRINEREIS de Blainville. (p. 36) |

Genus **LEODICE** Savigny. (*Eunice* preoc.).

KEY TO SPECIES

- | | |
|-----------------------------------|----------------------------|
| 1. (4) Tentacles not articulated. | |
| 2. (3) Nuchal cirrus short. | oerstedii Stimpson. |
| 3. (2) Nuchal cirrus long. | vida Stimpson |
| 4. (1) Tentacles not articulated. | norvegica Linnaeus. |

Maxilla (fig. 20b) of forceps connected at their bases; proximal paired plates toothed on margin; unpaired, a toothed plate; distal paired, also toothed. Mandible of two plates joined near anterior ends, their basal shafts separated. Other characters as above.

L. oerstedii Stimpson. 41, 20, 52.

Prostomium small, median tentacle long, lateral ones short. Nuchal cirrus short. Gills on somites 4 to 40, number of branches from 1 to 5. A black spot at base of each dorsal cirrus. Length 25 mm., width 2 mm. No figures given.

Bay of Fundy.

L. vida Stimpson. 41, 52 (Fig. 20a).

Large strong species. Median tentacle reaches to 6th somite, lateral ones

barely reach 1st. Nuchal cirri reach to eyes. Gills on somites 1 to 40, number of branches 1 to 20. Length 125 mm., width 3 mm.

Bay of Fundy:

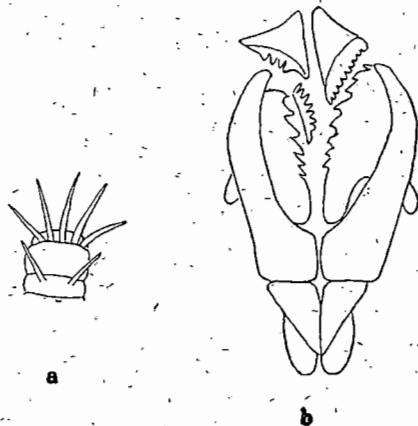


Fig. 20. a,—*Leodice vivida* Stimpson. Head. After Stimpson. b,—*L. norvegica* Linnaeus. Maxilla. After McIntosh.

***L. norvegica* Linnaeus. 27 (Fig. 20b).**

Tentacles long, median the longest, all more or less articulated toward ends. Nuchal cirri reach anterior border of peristomium. Gills from 4th or 5th somite to 43rd or 44th. Largest number of branches 5.

McIntosh records this as appearing in Whiteaves collection. Not given in 52. Precise locality not stated.

Genus. **ONUPHIS** Aud. et Milne-Ed.

Characters as above.

KEY TO SPECIES

- | | |
|---|---|
| 1. (4) Median tentacle shorter than inner laterals. | |
| 2. (3) Gills begin as single filaments on 9th somite. Later ones may have 5 branches. | quadricuspis Sars (fig. 21a). |
| 3. (2) Gills single filaments on all somites. | holobranchia Marenzeller (fig. 21b). |
| 4. (1) Median tentacle longer than inner laterals. | |
| 5. (6) Prostomium hemispherical. Anterior tentacles short, rounded. | conchylega Sars. |
| 6. (5) Prostomium rectangular, anterior tentacles heavy. | eschrichtii Oersted. |

***O. quadricuspis* Sars. 38, 23, 27 (Fig. 21a).**

Frontal tentacles ovate. (In Sars' figure they are covered by tentacles). Four long anal cirri. Length 60 mm., width 1.5 mm.

Canada (McIntosh).

***O. holobranchia* Marenzeller. 23, 52 (Fig. 21b).**

Outer lateral tentacles with cirrhopore nearly as long as style, style fila-

mentous. Prostomium and 1st three somites narrower and more rounded than are those posterior to them. Gills begin on 1st setigerous somite.

Between cape Rosier and cape de Gatte and off Anticosti, Que.

O. conchylega Sars. 23, 27 (Fig. 21c).

Prostomium short, sides merging into peristomium. 1st parapodium short. Gills from 11th or 12th somite to posterior end of body: Tube of shell fragments on an organic base.

Gulf of St. Lawrence. Ranges from European coast to Greenland and in deeper oceanic waters.

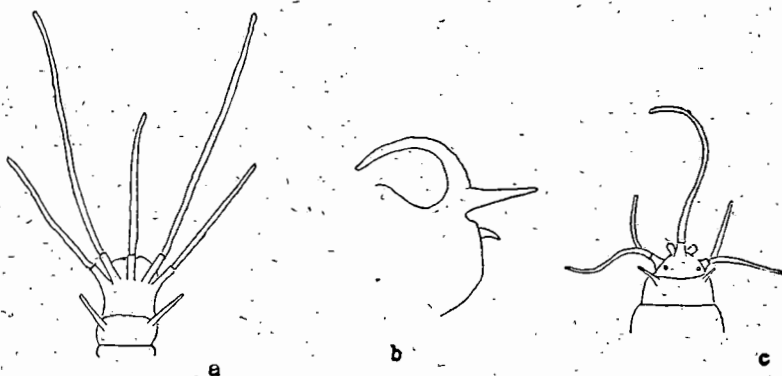


Fig. 21. a,—*Onuphis quadricuspis* Sars. Head. After McIntosh. b,—*O. holobranchia* Marenzeller. Parapodium with gill. After McIntosh. c,—*O. conchylega* Sars. Head. After McIntosh.

O. eschrichtii Oersted. 37, 41 (Fig. 22a).

Prostomium flat ventrally, convex dorsally. Somite number 50 to 60. Reddish transverse markings in each somite. Nuchal cirri as long as prostomium. Gills bifid. (No further details of gills given by Oersted.) McIntosh lists this as synonymous with previous species.

Grand Manan

Genus **HYALINOECIA** Malmgren.

Characters as above.

H. sicula Quatrefages. 27, 52 (Fig. 22b).

Frontal tentacles conical, short. Median and inner paired tentacles elongated, outer pair much shorter, all articulated. Ringing of cirriphore prominent. Gills begin on 6th somite and continue for at least 50 somites. Tube of sand grains and shell fragments attached to an organic base.

Gulf of St. Lawrence.

Genus **DRILONEREIS** Claparède.

Forceps of maxilla stout with long slender basal processes. Other characters as above.

D. canadensis McIntosh. 23 (Fig. 22c).

Prostomium rounded, flat when seen on lateral view. Teeth on inner border of basal portion of maxilla. Other dental plates each with 6 teeth. Smaller anterior plates each with 1 tooth. Mandibles triangular.

Gulf of St. Lawrence.

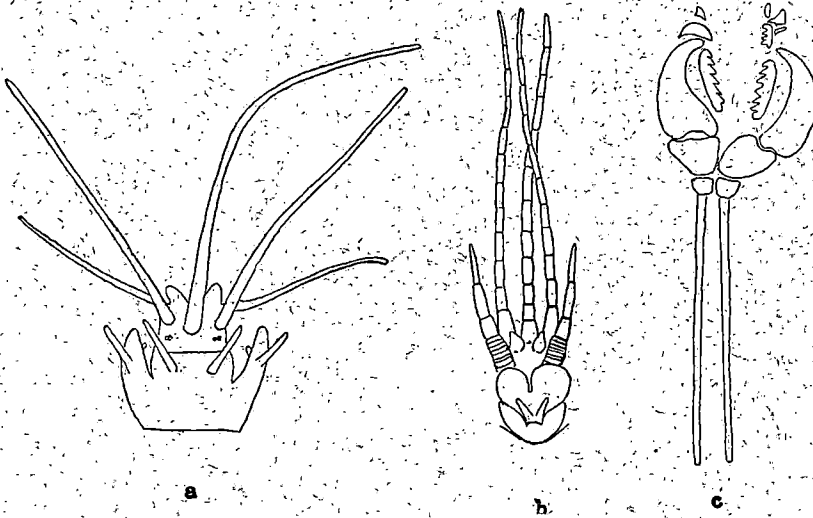


Fig. 22. a,—*Onuphis eschrichtii* Oersted. Head. After Oersted. b,—*Hyalinoecia sicula* Quatrefages. Head. After McIntosh. c,—*Drilonereis canadensis* McIntosh. Maxilla. After McIntosh.

Genus **ENONELLA** Stimpson.

Body elongated and much compressed, tapering posteriorly. Prostomium small, subovate with two short tentacles. Parapodium with a simple dorsal cirrus.

E. bicarinata Stimpson. 41 (Fig 23a).

On dorsal surface of each parapodium is a knob. These taken together form a keel on either side of dorsum. Length 40, mm. width 2 mm.

This species has been seen only by Stimpson whose description is too brief to show clearly its relation to the other leodicids. The tentacles would seem to ally it with *Dorvillea* (*Stauronereis*).

Genus **LUMBRINEREIS** (*Lumbriconereis*. The other is the correct usage).

Maxilla similar to *Leodice* (fig. 20b), but has no unpaired plate. Posterior border of mouth formed in part by a prolongation of the 2nd somit. Parapodia begin on 3rd somite.

KEY TO SPECIES

1. (2) Prostomium conical.
2. (1) Prostomium, broad, obtuse at end.

fragilis O. F. Müller.
bebes Verrill.

It is probable that a study of the maxillae of these two species would show more precise distinctions between them than appears in the diagnoses available.

L. fragilis O. F. Müller. 27, 52 (Figs. 23b, c).

Prostomium conical with 2 nuchal pits. Body 120 to 240 mm. long, 1st somite longer than 2nd. Four caudal cirri. Setae of two kinds, dorsal ones slender, winged on margins, ventral ones hooked, apex covered by a hood.

Shores of Great Britain. Gulf of St. Lawrence.

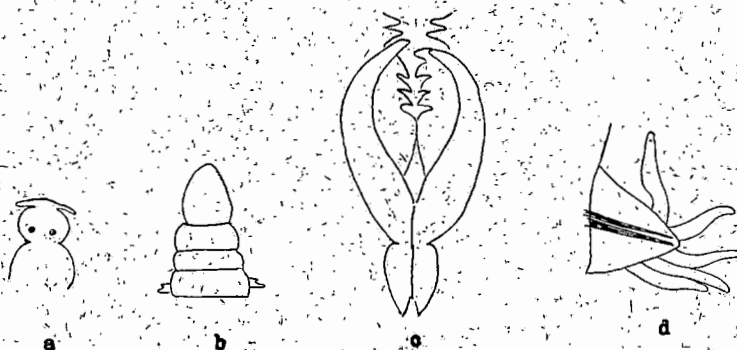


Fig. 23. a.—*Enonella bicarinata* Stimpson. Head. After Stimpson. b.—*Lumbrinereis fragilis* O. F. Muller. Head. After McIntosh. c.—*L. fragilis* O. F. Müller. Maxilla. After McIntosh. d.—*Ninoe kinbergii* Ehlers. Parapodium with gills. After Ehlers.

L. hebes Verrill. (*L. obtusa* Verrill). 46.

Prostomium nearly as broad as body, obtusely rounded at end. Parapodia prominent. Setae as in *L. fragilis*. Not figured.

Casco bay, Egg harbour.

Genus **NINOE** Kinberg.

Characters as above.

KEY TO SPECIES

- | | |
|--|--------------------------|
| 1. (2) Gills begin on 4th setigerous somite. | kinbergii Ehlers. |
| 2. (1) Gills begin on 1st setigerous somite. | nigripes Verrill. |

N. kinbergii Ehlers. 10, 23 (Fig. 23d).

Prostomium conical with a rather deep sulcus on either side of dorsal midline. Beginning with 4th setigerous somite body-width and size of parapodia increases up to about somite 16, then decreases to region of about the 30th. Gills begin on 4th setigerous somite and have as many as five branches at least as far as somite 50.

Bay of Fundy.

N. nigripes Verrill. 47.

Prostomium and body-form much like *kinbergii*. Gills as flattened lobes on 1st two setigerous somites, on the following two, gills have 2 or 3 branches. Number of branches increases to about somite 20 when it begins to diminish. Posterior to somite 28 only one branch. Not figured. From descriptions given by Verrill and Ehlers it is not easy to distinguish between this species and the last.

Listed by Baillie (unpub.) with (?) as from Bay of Fundy.

SPHAERODORIDAE

Body long and cylindrical or short and broad, its most noticeable character being the numerous globular papillae on its surface. Prostomium inconspicuous and may be retracted into peristomium. 4 tentacles, 2 or 4 eyes. Parapodia uniramous.

Genus **EPHESIELLA** Chamberlin. (*Ephesia* preoc.)

Prostomium bluntly rounded, numerous papillae on surface. Body elongated, narrowest at posterior end, anal somite with a globular papilla on either side. About 100 somites. Proboscis elongate, clavate, smooth.

KEY TO SPECIES

1. (2) Setae simple. Papillae on anterior prostomial margin large.
2. (1) Setae compound. Papillae on margin small.

gracilis Rathke.
peripatus Johnston.

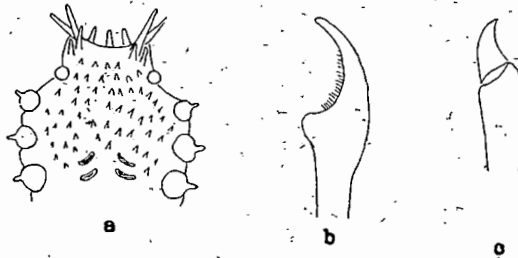


Fig. 24. a.—*Ephesiella gracilis* Rathke. Head after de St. Joseph. b.—Seta after M'Intosh. c.—*Ephesiella peripatus* Johnston. Seta after M'Intosh.

E. gracilis (Rathke). 15, 31, 52 (Figs. 24a and b).

Body 26 mm. long, 0.5 mm. wide. Somite boundaries very indistinct. 4 tentacles on anterior prostomial angles, 2 on either side. Between tentacles 3 elongated papillae on anterior margin. Reniform areas on dorsum near anterior end. Dorsal cirri in the form of spherical papillae. Setae simple, expanded at end.

Gulf of St. Lawrence.

E. (Pollicites) peripatus Johnston. 31, 52. (Fig. 24c).

Body about 50 mm. long, slender. Papillae between tentacles small. Setae compound, terminal joint small, triangular. Difference in setae is most obvious distinction between this and *gracilis*. Cf. figs. 24b and c.

Gulf of St. Lawrence.

GLYCERIDAE

Rather large animals with firm, rounded, bodies. Characterised with the Goniadidae by the long annulated prostomium (fig. 25c), and protrusible proboscis.

KEY TO GENERA

1. (2) Parapodium biramous.
2. (1) Parapodium uniramous.

GLYCERA Savigny. (p. 39)
HEMIPODIA Kinberg (p. 40)

Genus **GLYCERA** Savigny.
 Characters as above.

KEY TO SPECIES

1. (2) Parapodia with gills.
2. (1) Parapodia without gills.
3. (4) Prostomium short.
4. (3) Prostomium elongated.

dibranchiata Ehlers.

capitata Oersted.

siphonostomum Delle Chiaje:

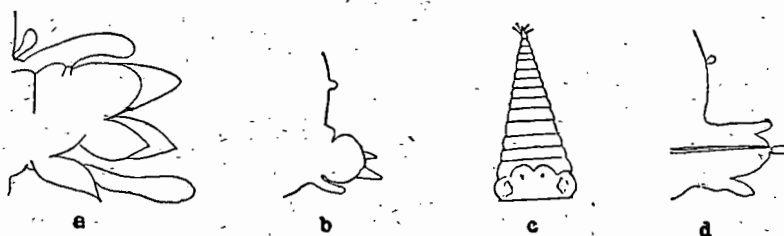


Fig. 25. a,—*Glycera dibranchiata* Ehlers. Parapodium after Ehlers. b,—*G. capitata* Oersted. Parapodium after Oersted. c,—*G. siphonostomum* Delle Chiaje. Head, after Ehlers. d,—*Hemipodia canadensis* Treadwell. Parapodium x 33, after Treadwell.

G. dibranchiata Ehlers. 15, 9, 24. (Fig. 25a).

Body of about 300 annulated somites. Prostomium similar to that of *G. siphonostomum* (fig. 25c). Parapodium with 4 lips, anterior ones longer than posterior. Dorsal cirrus small, attached to body wall near base of setal lobe. Beginning dorsally on 17th parapodium and ventrally on the 11th, large gills occur (fig. 25a), 1 above and 1 below the setal lobe.

Between Anticosti and Gaspé Peninsula. (M'Intosh).

G. capitata Oersted. (*Rhynchobolus c.*) 15, 37, 41, 52. (Fig. 25b).

Prostomium short, 4 short tentacles. Parapodium with 2 slender anterior and 1 rounded posterior, lobe. Dorsal cirrus on body wall at some distance from setal lobe. No gills. Length to 150 mm.

Gulf of St. Lawrence. Bay of Fundy.

G. siphonostomum Delle Chiaje. (*G. tessellata* Ehlers). 15, 27. (Fig. 25c).

Prostomium of 13 joints, 4 small tentacles at end. Large proboscis with 4 strong teeth. Parapodium with 2 slender anterior and 2 short, thick posterior lobes. Dorsal cirrus as in *G. capitata*. Somites biannulate. Length 300 mm., width 13 mm.

Gulf of St. Lawrence.

Genus **HEMIPODIA** Kinberg. (*Hemipodus* Quatrefages).

Characters as above.

H. canadensis Treadwell. 43. (Fig. 25d).

Parapodium with short rounded posterior lip. Anterior lip carries at apex a cirrus with much constricted base with a second lobe nearer the dorsal surface. Dorsal cirrus small, on body wall at some distance from parapodium.

From fish stomachs caught in Halifax harbour and bay of Fundy.

GONIADIDAE

Anterior parapodia uniramous, posterior parapodia biramous. V-shaped rows of chitinous teeth on sides of protruded pharynx, fig. 26a. Prostomium conical, annulation similar to Glyceridae.

Genus **GONIADA** Audouin et Milne-Edwards.

Characters as above.

KEY TO SPECIES

1. (2) Posterior parapodia without foliaceous expansions. **maculata** Oersted.
2. (1) Posterior parapodia with foliaceous expansions. **norvegica** Oersted.

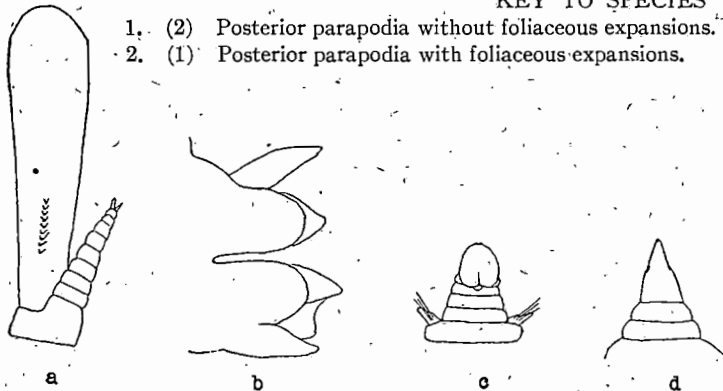


Fig. 26. a,—*Goniada maculata* Oersted. Head, after M'Intosh. b,—*Goniada norvegica* Oersted. Parapodium after M'Intosh. c,—*Nainereis quadricuspida* Fabricius. Head after M'Intosh. d,—*Scoloplos armiger* O. F. Müller. Head after M'Intosh.

G. maculata Oersted. (*Glycera viridescens* Stimpson). 15; 27, 37. (Fig. 26a).

8 joints in prostomium and 4 small tentacles at its ends. About 10 denticles in a row on either side of pharynx. Change from one form of parapodium to the other occurs on somite 41 or 42.

"Canada" (Whiteaves).

G. norvegica Oersted. 15, 24. (Fig. 26b).

Prostomium of 8 joints. On either side a dorsal and a ventral groove cuts off a lateral fillet. 18 denticles in row on proboscis. Change of parapodia occurs on somites 35 to 40. Posterior parapodia have foliaceous lateral expansions. M'Intosh thought this the chief distinction between this and *G. maculata*.

Between Griffin's cove and cape Rosier, Gaspé peninsula. Gulf of St. Lawrence.

ARICIIDAE

Body flattened dorsally, convex ventrally. Prostomium rounded or conical. Parapodia nearly dorsal in position. Gills dorsal, more prominent posteriorly than anteriorly.

KEY TO GENERA

1. (2). Prostomium rounded anteriorly. **NAINEREIS** de Blainville. (p. 41)
2. (1). Prostomium pointed anteriorly. **SCOLOPLOS** de Blainville. (p. 41)

Genus **NAINEREIS** de Blainville. (*Naidonereis*).

Characters as above.

N. quadricuspida Fabricius. 15, 18, 27. (Fig. 26c).

Body of 2 regions, anterior of 13 setigerous somites. Prostomium rounded and annulated. (M'Intosh's text says "2 ringed". Figure is as in fig. 26c). Parapodia different in form in front of and behind, 14th somite. Gill flattened and acutely lanceolate.

Gulf of St. Lawrence. Bay of Fundy.

Genus **SCOLOPLOS** de Blainville.

Characters as above.

S. armiger (Müller). (*S. canadensis* M'Intosh). 15, 24. (Fig. 26d).

Prostomium an acute cone. Body flattened and widened anteriorly, gradually flattened dorsally and rounded ventrally toward posterior region. Anterior region of about 18 somites. Gills begin as small papillae on about the 17th somite, reach considerable size on the 20th and continue to posterior end.

Gulf of St. Lawrence to Greenland.

CHAETOPTERIDAE

Three regions in body. Peristomium a collar enclosing prostomium. Anterior parapodia uniramous, notopodium absent. Uncini in tori on notopodium.

Genus **SPIOCHAETOPTERUS** Sars.

A single pair of tentacles. Median body region of 2 or 3 somites. Notopodium of median region bilobed and foliaceous.

S. typicus Sars. 15, 18, 34, 52. (Fig. 27a).

Tentacular cirri long and slender, grooved, only one shown in fig. 27a. 9 setigerous somites in anterior region, the 4th having a large tooth-like seta. Tube quill-like with regularly repeated surface rings.

Gulf of St. Lawrence.

SPIONIDAE

Usually small animals. Prostomium narrow and may extend posteriorly as far as 4th somite. Eyes present or absent. No setae on peristomium. Parapodia usually biramous, with lamella behind each setal lobe. Gills cirriform, of variable number, on dorsal part of parapodia.

KEY TO GENERA

- | | | | |
|-----|------|---|--|
| 1. | (10) | 4th or 5th somites not especially modified. | |
| 2. | (9) | No frontal processes on prostomium. | |
| 3. | (8) | Gills begin on 1st somite. | |
| 4. | (5) | Only 4 or 5 pairs of gills. | PRIONOSPIO Malmgren. (p. 43) |
| 5. | (4) | Gills continue to near caudal end of body. | |
| 6. | (7) | Anterior gill carries a central seta. | ETHOCLES Webster and Benedict. (p. 43) |
| 7. | (6) | No central seta in gill. | SPIO Fabricius. (p. 42) |
| 8. | (3) | Gills begin on 3rd somite. | SPIONIDES Webster and Benedict. (p. 42) |
| 9. | (2) | Frontal processes on prostomium. | |
| | | Gills on 1st somite. | SCOLECOLEPIS de Blainville. (p. 44) |
| 10. | (1) | 5th somite has tufts of paleae. | POLYDORA Bosc. (p. 44) |

Genus **PRIONOSPIO** Malmgren.
Characters as above.

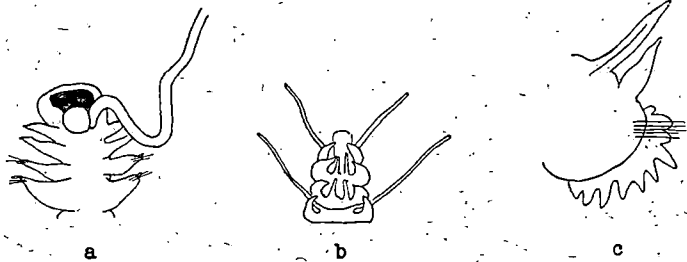


Fig. 27. a,—*Spiochaetopterus typicus* Sars. Head after Sars. b,—*Prionospio steenstrupii* Malmgren. Head after Malmgren. c,—*Ethocles typicus* Webster and Benedict. Part of cross section after W. and B.

P. steenstrupii Malmgren. 12, 18, 15, 52. (Fig. 27b).

Prostomium rectangular, the posterior end rounded. 2 pairs of long, slender tentacles not shown in fig. 27b. 1st parapodium has broad lateral lobe and long tentacle-like cirrus. 2nd and 3rd parapodia have short cirri, 4th like 1st, later ones short. Body of about 100 somites.

Gulf of St. Lawrence.

Genus **ETHOCLES** Webster and Benedict.

Characters as above.

E. typicus Webster and Benedict. 51. (Fig. 27c).

2 long tentacles on 1st somite. Parapodium uniramous. Beginning with 8th setigerous somite seta in dorsal cirrus disappears and setae arise from a cirrus-like lobe, similar in form to dorsal cirrus. A membrane, often frilled, behind the seta lobe.

Bay of Fundy.

Webster and Benedict listed this genus with doubt, among the Chaetopteridae. It is listed here with equal doubt as a spionid. It is reported as common in mud but not in tubes, which is not characteristic of the chaetopterids.

Genus **SPIO** Fabricius.

Characters as above.

KEY TO SPECIES

1. (2) Prostomium shoe-shaped, the heel forming anterior border.
2. (1) Prostomium oval.

flicornis Fabricius.
rathbuni Webster and Benedict.

S. flicornis (Fabricius). 30. (Fig. 28a).

Prostomium shoe-shaped, the heel forming the anterior border, the toe reaching posteriorly as far as the 2nd somite. 2 eyes. Peristomium a broad wing on either side of the prostomium. A long tentacle on either side attached at the level of the eyes. Parapodia have long cirrus-like gills with vertical lamellae at their bases. Smaller lamellae on neuropodia. Notozetæ slender capillary. In notopodia behind 13th hooks with terminal hoods appear.

Provincetown Mass. Bay of Fundy (W. H. T. Baillie, unpub.).

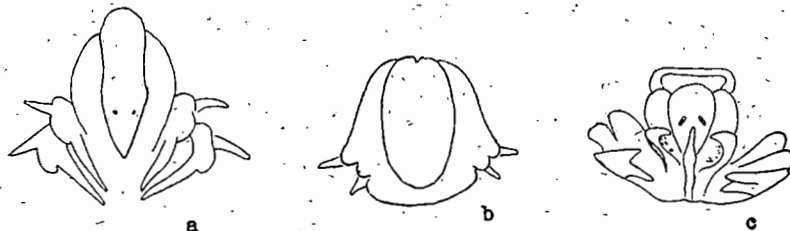


Fig. 28. a,—*Spio flicornis* Fabricius. Head after M'Intosh. b,—*S. rathbuni* Webster and Benedict. Head after W. and B. c,—*Scolecólæpis cirrata* Sars. Head after M'Intosh.

S. rathbuni Webster and Benedict. 51. (Fig. 28b).

Prostomium oval, anterior margin notched. Eyes small, variable in number and distribution. Tentacles stout, reaching 8th somite. Peristomium extends to anterior border of prostomium. (Figure seems to make no distinction between peristomium and 1st setigerous somite). Gills begin on 3rd somite, apices rounded, inner margin with long cilia. On largest specimen were 23 pairs of gills. Hooks begin on 9th somite.

Provincetown Mass. Bay of Fundy.

Genus **SPIONIDES** Webster and Benedict.

Characters as above.

S. cirratus Webster and Benedict. 51.

Prostomium conical, its base at anterior end, a small median tentacle attached at its apex. "After the first few segments" a membrane appears on either side running longitudinally on the ventral surface. This has a free upper edge which curves outward between neuropodia, forming a series of pouches. Length 25 mm., width 0.8 mm. No satisfactory figures given.

Bay of Fundy.

Genus **SCOLECOLEPIS** de Blainville.

Characters as above.

S. cirrata (Sars). 15, 30, 52. (Fig. 28c).

Prostomium rounded anteriorly, a triangular ridge on dorsum, apex posterior. A small median tentacle attached at apex of ridge. 2 eyes just in front of tentacle. 2 long tentacles (not drawn) a lamella at base of each, 1st parapodium has hatchet-shaped lamella on notopodium and a gill and a vertical lamella on neuropodium. Gills extend to 25th somite. Anterior setae all capillary, hooks begin on 25th somite.

Length 25 to 50 mm.

Gulf of St. Lawrence.

Genus **POLYDORA** Bosc.

Characters as above.

KEY TO SPECIES

1. (4) Prostomium pointed posteriorly.
2. (3) About 6 large special setae on 5th somite.
3. (2) 4 distinct groups of setae on 5th somite.
4. (1) Prostomium not pointed posteriorly.

gracilis Verrill.
concharum Verrill.
ciliata Agassiz.

P. gracilis Verrill. 48.

Body 3 to 4 mm. long. Tentacles stout, 6 times as long as body width. Dorso-median portion of prostomium oblong, acute posteriorly. 4 eyes, anterior ones the larger. 1st 4 somites have small rounded dorsal papillae, 6th and following somites have uncini in notopodium. Gills begin on 7th somite. Caudal appendage sucker-like. Not figured.

Off Block Id. (Verrill). Bay of Fundy (W. H. T. Baillie, unpub.).

P. concharum Verrill. 15, 48, 52. (Fig. 29a).

Prostomium narrow in front, divided into lanceolate lateral lobes. (Not shown in Verrill's figure). Tentacles 15 to 20 times as long as body width. Somite 5 almost as long as the 3 preceding ones. Gills begin as a small papilla on 6th somite. Notosetae on somites behind this are uncini.

Cape Cod to Nova Scotia (Verrill). Gulf of St. Lawrence (Whiteaves).

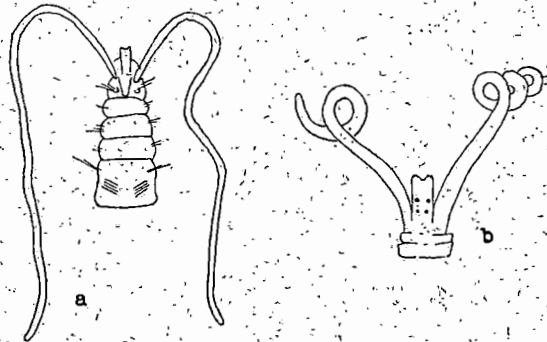


Fig. 29. a,—*Polydora concharum* Verrill. Head after Verrill. b,—*P. ciliata* Agassiz. Head after McIntosh.

P. ciliata Agassiz. 30. (Fig. 29b).

Prostomium with anterior median notch, median ridge extending to dorsum of 3rd somite. Tentacles rather heavy, with ciliated groove on inner face. Gills begin on 7th setigerous somite, 28 to 31 in number.

New England coast. Bay of Fundy (W. H. T. Baillie, unpub.).

CIRRATULIDAE

No prostomial appendages. 1st 2 somites achaetous. Gills as cirri on dorso-lateral surfaces of more or fewer somites.

KEY TO GENERA.

1. (2) No tentacle-like appendages on any anterior somites. **CIRRATULUS** O. F. Müller. (p. 00)
2. (1) Tentacle-like appendages on some anterior somite. **CHAETOZONE** Malmgren. (p. 00)

Genus **CIRRATULUS** O. F. Müller.

Characters as above.

C. cirratus (Fabr.). 15, 30, 36, 37. (Fig. 30a).

Prostomium hoof-shaped. 2 rows of eyes on prostomium sloping outward and backward. On either side of dorsum in somite 4 is a transverse row of gills. 13 or 14 of following somites have each a single gill situated just behind each seta tuft. Occasional gills may appear in other somites.

Bay of Fundy. Gulf of St. Lawrence. Labrador.

Genus **CHAETOZONE** Malmgren.

Characters as above.



Fig. 30. a,—*Cirratulus cirratus* O. F. Müller. Cross section, after Rathke. b,—*Chaetozone setosa* Malmgren. Head after Malmgren.

KEY TO SPECIES.

1. (4) Crochets in seta tufts on posterior somites.
2. (3) Capillary setae straight, very narrow wings. **setosa** Malmgren.
3. (2) Capillary setae curved, wings wider. **setosa** Malmgren, var. **canadensis** M'Intosh.
4. (1) No crochets in seta tufts of posterior somites. **whiteavesii** M'Intosh.

C. setosa Malmgren. 15, 18, 28, 30. (Fig. 30b).

Body small, elongate-fusiform in outline. Somite number 70 to 90. Prostomium bluntly conical, without eyes. Gills filiform, 8 to 16 on either side of body. Capillary setae slender, acute, nearly straight.

Bay of Fundy, Labrador, Greenland.

C. setosa Malmgren, var **canadensis** M'Intosh. 15, 28.

Differs from *setosa* in that capillary setae are wider and crochets larger. No other differences noted by M'Intosh.

Gulf of St. Lawrence.

C. whiteavesii M'Intosh. 15, 28.

General bodily characters similar to *setosa*. Chief difference is that *setosa* has crochets in posterior somites while none occur in *whiteavesii*.

Gulf of St. Lawrence.

OPHELIIDAE

Body short, convex dorsally, ventral surface flat or grooved. No prostomial appendages. Prostomium more or less conical. More or less superficial annulations on surface of cuticle. Gills cirriform if present.

KEY TO GENERA

1. (2) Lateral gills. Ventral groove in posterior part of body. **OPHELIA** Savigny. (p. 46)
2. (1) Well marked ventral groove throughout body. **AMMOTRYPANE** Rathke. (p. 46)

Genus **OPHELIA** Savigny.

Characters as above.

KEY TO SPECIES

1. (2) More than 20 pairs of gills. **limacina** Rathke.
2. (1) Fewer than 20 pairs of gills. **radiata** Delle Chiaje.

O. limacina Rathke. (*O. glabra* Stimpson). 15, 18, 30. (Fig. 31a).

Prostomium a pointed cone. Anterior third of body enlarged, remainder of body deeply grooved along ventral surface. Beginning on 11th somite (M'Intosh) are slender cirrus-like gills. Anterior somites 3 ringed, posterior ones 2 ringed.

Gulf of St. Lawrence.

O. radiata Delle Chiaje. 15, 26:

Prostomium short, a very slender cone. Anterior 10 somites without gills. 14 pairs of gills, the last often reduced. 8 posterior setigerous, abbranchiate somites have elongated setae.

Gulf of St. Lawrence.

Genus **AMMOTRYPANE** Rathke.

Characters as above.

KEY TO SPECIES

1. (2) Gills lacking in median body region. **cylindrocaudatus** Hansen.
2. (1) Gills throughout body.
3. (4) Prostomium sharp-pointed without terminal button. **fimbriata** Verrill.
4. (3) Prostomium conical with a terminal button. **aulogaster** Rathke.

A. cylindricaudatus Hansen. 15, 30. (Fig. 31b).

Prostomium an acute cone, ending in a knob. Body long and slender, gills numerous. At base of tail are 4 lateral setigerous processes. Caudal region without cirri.

Gulf of St. Lawrence.

A. fimbriata Verrill. 15, 47, 52. (Fig. 31c).

Prostomium sharp pointed, without definite terminal knob. Body thickest in advance of middle, rounded dorsally, ventrally a deep groove. Caudal end spoon-shaped, with marginal short cirri. 3 long cirri attached to base of spoon.

Buzzards Bay, Mass., to Bay of Fundy.

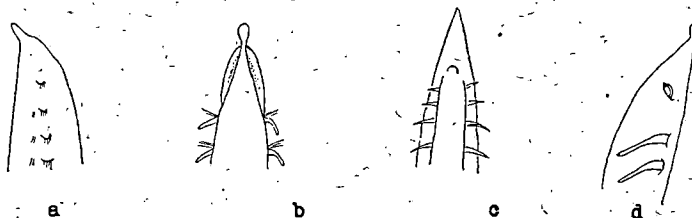


Fig. 31. a,—*Ophelia limacina* Rathke. Anterior end after M'Intosh. b,—*Ammotrypane cylindricaudatus* Hansen. Anterior end after M'Intosh. c,—*A. fimbriata* Verrill. Anterior end after Verrill. d,—*A. aulogaster* Rathke. Anterior end after M'Intosh.

A. aulogaster Rathke. 15, 18, 52. (Fig. 31d).

Prostomium pointed, with terminal knob. Parapodia very small, large gill and small ventral cirrus. Anal region similar to *A. fimbriata*.

Gulf of St. Lawrence.

SCALIBREGMIDAE

Body short, often fusiform. Skin frequently tessellated. Prostomium small, with or without tentacles. Gills present or absent.

KEY TO GENERA

- | | |
|---|--|
| 1. (2) With frontal horns. Gills on anterior somites. | SCALIBREGMA Rathke. (p. 47) |
| 2. (1) No frontal horns. | |
| 3. (4) No cephalic ridge. | POLYPHYSIA Quatrefages. (p. 47) |
| 4. (3) Cephalic ridge present. | NEVAYA M'Intosh. (p. 48) |

Genus **SCALIBREGMA** Rathke.

Characters as above.

S. inflatum Rathke. 5, 15, 30, 52. (Fig. 32a).

Body largest in anterior third, tapering from here in both directions, 60 or more somites closely ringed and tessellated. Except for the first 4, somites 4 ringed.

Circumpolar. Gulf of St. Lawrence. Bay of Fundy.

Genus **POLYPHYSIA** Quatrefages. (*Eumenia* prec.).

Characters as above.

P. crassa (Oersted). 15, 30, 52. (Fig. 32b)

Body short. Prostomium bilobed, without frontal tentacles. Somites triannulate. No eyes or cirri. Branched gills on anterior somites.

Gulf of St. Lawrence. Bay of Fundy.

Genus **LIPOBRANCHIUS** Cunningham and Ramage.

Characters as above.

L. longisetosa Théel. (*Eumenia longisetosa*). 42.

Anterior third of body swollen, oval in outline, posterior two-thirds narrow, uniform in diameter. Somites biannulate, tessellated in swollen portion. No cirri or gills.

Bay of Fundy (W. H. T. Baillie, unpub.).

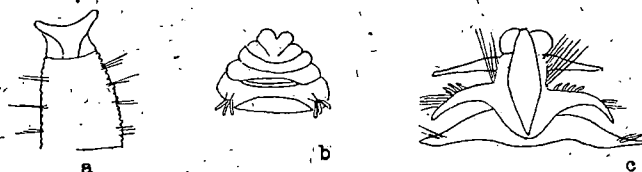


Fig. 32. a,—*Scalibregma inflatum* Rathke. Anterior end after M'Intosh. b,—*Polyphysia crassa* Oersted. Head, after Fauvel. c,—*Nevaya whiteavesii*. Anterior end after M'Intosh.

Genus **NEVAYA** M'Intosh.**N. whiteavesii** M'Intosh. 15, 28. (Fig. 32c).

Prominent median cephalic ridge extending to 2nd somite, on either side of this 2 lamellae with setae. At base of 2nd parapodium 4 stout golden setae on either side.

Gulf of St. Lawrence.

M'Intosh gave no diagnosis of the genus *Nevaya* and Chamberlin listed this species with *Lipobranchius*. It evidently does not belong there and possibly not in the Scalibregmidae. It is given here because so located by M'Intosh.

ARENICOLIDAE

Body elongate, 2 or 3 more or less distinct regions. No head appendages. Gills absent from first 6 somites, prominent elsewhere. Notosetae capillary, neurosetae stout crochets.

Genus **ARENICOLA** Lamarck.

Characters of the family.

KEY TO SPECIES

1. (2) 19 or 20 setigerous somites.
2. (1) 17 setigerous somites.

marina Linnaeus.
cristata Stimpson.

A. marina (Linnaeus). (*A. piscatorum* Lamarck). 4, 15, 30, 52. (Fig. 33a)
19 or 20 setigerous somites. 13 pairs of gills, the 1st pair on 7th somite, but

this pair may be small or absent. 3 prostomial lobes nearly equal in size. Neuro-podia in posterior gill region form long ridges.

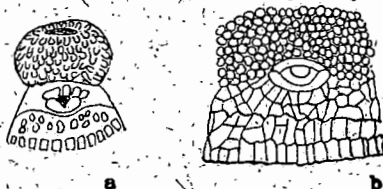
Atlantic and Pacific N.A. coasts. Grand Manan. Gulf of St. Lawrence.

A. cristata Stimpson. 4, 41. (Fig. 33b)

17 setigerous somites. 11 pairs of gills, the 1st on 7th setigerous somite. Gills large. Median lobe of prostomium larger than lateral. Neuro-podia in posterior gilled region form long ridges reaching almost to mid-ventral line. Length up to 385 mm.

Ranges from Curacao, S.A., to bay of Fundy.

Fig. 33. a.—*Arenicola marina* Linnaeus.
Anterior end after Ashworth. b.—*Arenicola*
cristata Stimpson. Anterior end after Ashworth.



CHLORHAEMIDAE

Body generally more or less enclosed in a gelatinous covering formed by a secretion from surface papillae. In some genera, anterior setae form a distinct "cage" in front of the head.

KEY TO GENERA

1. (2) Anterior setae not forming a distinct cage. **BRADA** Stimpson. (p. 49)
2. (1) Anterior setae forming a distinct cage.
3. (4) Body densely covered with long filamentous papillae. **FLABELLIGERA** Sars. (p. 50)
4. (3) Papillae not filamentous. Crochets in neuropodia. **STYLARIOIDES** Delle Chiaje. (**SEMIODERA** Chamberlin?) (p. 50)

Genus **BRADA** Stimpson.

Body short, cylindrical, composed of few somites. Setae short. 2 large palps and 2 tufts of gills. A pair of nephridial papillae on 4th or 5th somite.

KEY TO SPECIES

1. (2, 3) Body covered with minute papillae. **granosa** Stimpson.
2. (1, 3) Body almost smooth. **sublaevis** Stimpson.
3. (1, 2) Body papillae clavate, longest on dorsum. **villosa** Rathke.

B. granosa Stimpson. 19, 41, 52.

Body covered with minute papillae. Colour dark brown. Length 15 mm., width 3 mm. Not figured.

Grand Manan. Gulf of St. Lawrence.

B. sublaevis Stimpson. 15, 41.

Body nearly smooth, colour light reddish-brown. Length 25 mm., width 3 mm. Not figured.

Grand Manan. Gulf of St. Lawrence.

B. villosa (Rathke). 12, 15, 30. (Fig. 34a).

Body fusiform, convex dorsally. 12 to 35 setigerous somites. 2 palps. 30 to 100 gills in 2 groups. Claviform papillae, longest on dorsum.

Gulf of St. Lawrence.

Genus **FLABELLIGERA** Sars.

Prostomium short, often drawn into peristomium. 2 palps. Filamentous gills dorsal to palps. Long setae on either side form a cage around anterior end.

F. affinis Sars. 15, 12, 36. (Fig. 34b).

Body of 30 to 45 somites, covered with gelatinous investment so that only ends of setae protrude. Long papillae on surface. A single strong hook in neuropodium of 2nd setigerous somite. Setae annulated. Length 75 mm.

Labrador. Cape Sable, Nova Scotia.

Genus **STYLARIOIDES** Delle Chiaje.

Characters as above.

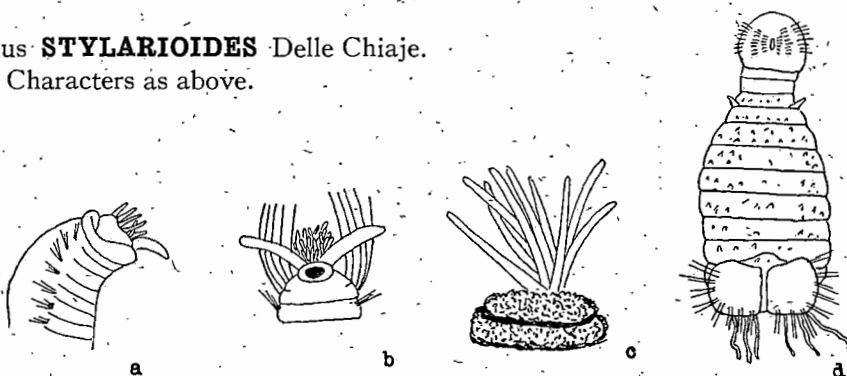


Fig. 34. a,—*Brada villosa* Rathke. Anterior end after Fauvel. b,—*Flabelligera affinis* Sars. Anterior end after Fauvel. c,—*Stylarioides plumosa*. Anterior end after M'Intosh. d,—*Sternaspis fossor* Stimpson. Ventral view entire animal. (Courtesy Amer. Mus. Nat. Hist.)

KEY TO SPECIES

1. (2) Longest notosetae on first 3 somites.
2. (1) Longest notosetae on first 5 somites.

plumosa Müller.
aspera Stimpson.

S. plumosa O. F. Müller. (*Trophonia plumosa* Johnston). 15, 30. (Fig. 34c).

Body to 130 mm. long, 60 to 70 somites, rounded but slightly flattened ventrally. Surface rugose with numerous papillae, these largest anteriorly and often with attached sand grains. 2 large wrinkled palps, 8 to 10 gills. Long slender setae on first 3 somites. In most neuropodia a single stout hook.

Atlantic coast of United States to gulf of St. Lawrence.

S. aspera Stimpson. (*Siphonostomum asperum* Stimpson). 36, 41.

Body covered with dark-coloured granular papillae. Notosetae longest on first 5 somites. About 40 somites.

Bay of Fundy. Labrador.

Data as given in literature make very few distinctions between these species.

STERNASPIDAE

Body short, not more than 15 somites anterior to the ventral shields. Long spines on somites 2, 3 and 4. No setae on somites 5, 6 and 7. Setae of somites 8 to 15 do not penetrate the skin. Somites behind the 15th have long seta-fascicles. 2 ventral shields and gills at posterior end.

Genus **STERNASPIS** Otto.

Characters as above.

S. fossor (Stimpson). 15, 41. (Fig. 34d).

Body sub-globular. Surface covered with papillae. Sternal plates nearly square. Groups of spines around margins of plates and dense tufts of gills behind them.

Grand Manan.

S. fossor has been listed as the only species of *Sternaspis* on the Atlantic coast. It seems certain (Moore) that the New England form is *S. scutata* Ranzani.

MALDANIDAE

Body generally cylindrical, parapodia quite obscure, no head appendages and gills very rarely present. Prostomium may or may not form a definite "cephalic plate". No cirri on parapodia.

KEY TO GENERA

- | | |
|--|-------------------------------------|
| 1. (4) No cephalic plate. | |
| 2. (3) Nuchal furrows form semicircular bands. | RHODINE Malmgren. (p. 51) |
| 3. (2) Nuchal furrows form open bows, or are straight. | NICOMACHE Malmgren. (p. 51) |
| 4. (1) Cephalic plate present. | |
| 5. (8) Anus terminal. | |
| 6. (7) Funnel-shaped anal depression. | PARAXIOTHEA Webster. (p. 52) |
| 7. (6) No funnel-shaped anal depression. | IPHIANISSA Kinberg. (p. 53) |
| 8. (5) Anus dorsal. High cephalic keel. | MALDANE Grube. (p. 53) |

Genus **RHODINE** Malmgren.

Characters as above.

R. loveni Malmgren. 3, 17. (Fig. 35a).

Prostomium rounded, not much beveled. 1st four somites progressively shorter, 5th and 6th like 4th, behind this a progressive increase. 16 setigerous somites. Setae near anterior end of somites in anterior region, in posterior end in those posterior to somite 10. Anal somite with rim around margin and a cup-shaped structure arising from the centre.

Bay of Fundy (W. H. T. Baillie, doubtful, unpub.).

Genus **NICOMACHE** Malmgren.

Characters as above.

KEY TO SPECIES

- | | |
|---|-----------------------------|
| (1) Prostomium with median ridge and lateral grooves. | |
| Body thick. | canadensis McIntosh. |
| (2) Prostomium rounded with short nuchal furrows. | |
| Body slender. | lumbricalis (Fabr.). |

N. canadensis M'Intosh. 15, 29. (Fig. 35b).

250 mm. long, tapering slightly at posterior end. Prostomium obliquely truncated with a median ridge and a groove on either side. Anterior borders of 1st five somites overlap posterior border of one in front. 6th somite longer than any in front of it. Anal funnel has a marginal row of equal, triangular lobes.

Gulf of St. Lawrence.

N. lumbricalis (Fabricius). 15, 17, 18. (Fig. 35c).

22 to 23 setigerous somites, 2 anteanal without setae. Prostomium in lateral view shows a rounded process, 2 short nuchal furrows arched anteriorly. Except in 7th and 8th somites a well-marked glandular area around parapodia. 15 to 20 equal triangular cirri around margin of anal somite.

Gulf of St. Lawrence. Bay of Fundy.

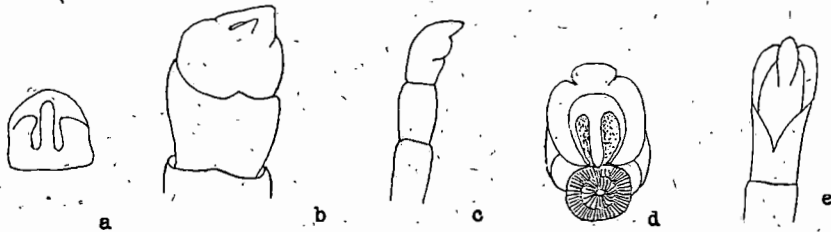


Fig. 35. a,—*Rhodine loveni* Malmgren. Head after Arwidssen. b,—*Nicomache canadensis* M'Intosh. Side view of head after M'Intosh. c,—*N. lumbricalis* Malmgren. Side view, anterior end after Malmgren. d,—*Paraxiothea torquata* Leidy. Dorsal view of head after Verrill. e,—*Iphianissa collaris* Claparède. Dorsal view of head after Fauvel.

Genus **PARAXIOTHEA** Webster.

Characters as above.

KEY TO SPECIES

- | | |
|--|---------------------------|
| 1. (2) 2 postero-lateral notches on prostomial border. | <i>torquata</i> Leidy. |
| 2. (1) 2 lateral notches on prostomial border. | <i>catenata</i> Malmgren. |

P. torquata (Leidy). (*Clymenella torquata*). 15, 47, 52. (Fig. 35d).

Body 85 mm. long, 2 mm. wide. Cephalic plate with 2 notches on posterior margin. Median ridge bluntly rounded anteriorly. Anal somite funnel-shaped with about 20 marginal crenulations.

New England coast. Bay of Fundy. Gulf of St. Lawrence.

P. catenata (Malmgren). (*Axiothea c.*). 5, 17, 52.

Prostomium almost flat, median ridge drawn out anteriorly into a subglobose process, the two sulci parallel. Anal somite infundibuliform with marginal row of alternately longer and shorter cirri. Anus at apex of cone at bottom of funnel. Not figured.

Bay of Fundy. Gulf of St. Lawrence.

Genus **IPHIANISSA** Kinberg. (*Praxillella* Verrill).

Characters as above.

KEY TO SPECIES

- | | |
|---|-------------------------------|
| 1. (2) Posterior prostomial border drawn out into a V. | collaris Claparède. |
| 2. (1) Not so. | |
| 3. (4) Anterior end of prostomium drawn out into a finger-shaped process. | gracilis Sars. |
| 4. (3) Anterior end of prostomium a blunt cone. | praetermissa Malmgren. |

I. collaris (Claparède). 12, 15, 29. (Fig. 35e).

19 to 20 setigerous and 3 anteanal achaetous somites. 4th setigerous somite short and large. Ocelli on sides of prostomium.
Gulf of St. Lawrence.

I. gracilis (Sars). 15, 30, 36. (Fig. 36a).

Anterior border of prostomium drawn out into a filiform tip. Lateral prostomial borders broad flaps. 19 setigerous, 4 anteanal achaetous somites. Anal funnel with 1 long ventral marginal cirrus and about 25 smaller ones.
New England coast to St. Lawrence river. Labrador.



Fig. 36. a,—*Iphianissa gracilis* Sars. Side view of head after M'Intosh. b,—*I. praetermissa* Malmgren. Dorsal view of head after Fauvel. c,—*Maldane sarisi* Malmgren. Anterior end after M'Intosh.

I. praetermissa (Malmgren). 12, 15, 17. (Fig. 36b).

Anterior end of prostomium not filamentous. Posterior prostomial border notched. 19 setigerous, 4 achaetous somites. 22 or 23 marginal cirri on anal funnel.

Off Pugwash, Nova Scotia.

Genus **MALDANE** Grube.

Characters as above.

M. sarisi Malmgren. 15, 30, 36, 52. (Fig. 36c).

Prostomial border smooth, lateral notches of moderate depth. Median ridge prominent. Glandular thickenings on ventral surface as far back as 6th somite, behind that only on setigerous elevations.

Gulf of St. Lawrence. Labrador.

AMMOCHARIDAE

Body short, rounded, somites few. Notosetae capillary, neurosetae uncini-form.

KEY TO GENERA

1. (2) Gills at outer anterior angles of prostomium. **OWENIA** Delle Chiaje. (p. 54)
 2. (1) No appendages on prostomium. **MYRIOCHELE** Malmgren. (p. 54)

Genus **OWENIA** Delle Chiaje.

Prostomium truncated; a lobe on either side. Gills at antero-lateral corners.

O. fusiformis Delle Chiaje. (*O. filiformis*): 13, 30, 52. (Fig. 37a).

3 pairs of gills on either side of prostomium, these dichotomously branched. Body 30 to 40 mm. long, 23 to 30 somites. Anterior region of 3 somites has only notosetae; posterior region has capillary notosetae and uncini in neuropodium.

Gulf of St. Lawrence.

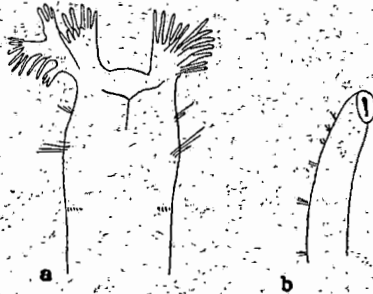


Fig. 37. a,—*Owenia fusiformis* Delle Chiaje. Anterior end after Gilson. b,—*Myriochele heeri* Malmgren. Anterior end after McIntosh.

Genus **MYRIOCHELE** Malmgren.

Prostomium blunt or truncated, no eyes or appendages. Mouth ventral oblique.

M. heeri Malmgren. 15, 30. (Fig. 37b).

2 body regions, anterior of 3 somites with capillary notosetae. Posterior region has uncini in neuropodium. Somite boundaries obscure.

Gulf of St. Lawrence. Bay of Fundy.

TEREBELLIDAE

Numerous tentacles carried on a ridge dorsal to the mouth. Gills on dorsum of 1 to 3 anterior somites. Capillary setae in tufts in a definite number of somites, uncini in tori on all but a few of the most anterior.

KEY TO GENERA

1. (19) Ventral plates present. **ARTACAMA** Malmgren. (p. 55)
 2. (3) Prostomium forms a long proboscis.
 3. (2) Prostomium does not form a long proboscis.
 4. (18) Prostomium short, with numerous tentacles.

5. (8) No gills.
6. (7) Capillary setae with smooth tips. **LEAENA** Malmgren. (p. 55)
7. (6) Capillary setae with denticulated tips. **LANASSA** Malmgren. (p. 56)
8. (5) Gills present.
9. (17, 16) Capillary setae begin on 4th somite.
10. (13) Setae with denticulate apices.
11. (12) Gill filaments arise independently or from a very low base. **AMPHITRITE** Müller. (p. 56)
12. (11) Gills branching, arising from a definite stalk. **TEREBELLA** Linnaeus. (p. 56)
13. (10) Setae with apices entire.
14. (15) Some anterior uncini have long basal stalks. **PISTA** Malmgren. (p. 57)
15. (14) Uncini without basal prolongations. 1 to 3 pairs of gills. **SCIONE** Malmgren. (p. 57)
16. (17, 9) Capillary setae begin on 2nd somite. 3 pairs of cirriform gills. **STREBLOSOMA** Sars. (p. 58)
17. (9, 16) Capillary setae begin on 3rd somite. **THELEPUS** Leuckart. (p. 58)
18. (4) Prostomium forms large upper lip carrying numerous tentacles. **POLYCIRRUS** Grube. (p. 59)
19. (1) No ventral plates.
20. (21) 3 pairs of separate gills. **TRICHOBRANCHUS** Malmgren. (p. 59)
21. (20) Gills grown together into one mass. **TEREBELLIDES** Sars. (p. 60)

Genus **ARTACAMA** Malmgren.

Characters as above.

KEY TO SPECIES

1. (2) Cephalic plate produced posteriorly into 2 lobes. **canadensis** M'Intosh.
2. (1) Cephalic plate not so produced. **proboscidea** Malmgren.

A. canadensis M'Intosh. 15, 31. (Fig. 38a).

Cephalic plate has a distinct dorsal collar and is prolonged anteriorly into 2 lobes. Its ventral margin a frilled funnel, considerably elevated above the mouth. Proboscis a globular mass with conspicuous cone at apex. Head not figured. Uncinus with only 3 fangs, one basal very large, one apical very small, one of intermediate size between them.

Gulf of St. Lawrence.

A. proboscidea Malmgren. 15, 17, 52. (Fig. 38b).

Body of 70 to 95 triannulate somites. Proboscis round to sub-conical, surface densely papillated. Tentacles not numerous. Gills shorter than body diameter. Length 80 mm. width 5 mm. Uncinus with 4 or 5 subequal slender teeth.

Gulf of St. Lawrence.

Genus **LEAENA** Malmgren.

Characters as above.

L. abbranchiata Malmgren. 15, 17, 36. (Fig. 38c).

Body subcylindrical anteriorly, narrowed and somewhat depressed posteriorly. Somite number 50 to 60. Buccal somite produced anteriorly into a short, truncated lip. On either side of 2nd and 3rd somite a free limb, inclined ventrally. Ventral scutes about 10. Length 75 mm. width 6 mm. Tube fragile, cylindrical, covered with lime.

Egg Harbour. Labrador.

Genus **LANASSA** Malmgren.

Characters as above.

L. nordenskiöldii Malmgren. 15, 17, 32.

Anteriorly body is subcylindrical. Posterior region narrower than anterior. Anterior somites shorter than posterior. Not figured.

Gulf of St. Lawrence.

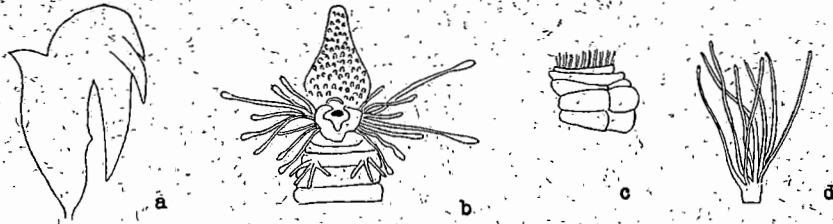


Fig. 38: a,—*Artacama canadensis* McIntosh. Seta after M'Intosh. b,—*A. proboscidea* Malmgren. Anterior end showing proboscis after Malmgren. c,—*Leaena abbranchiata* Malmgren. Anterior end after Malmgren. d,—*Amphitrite cirrata* O. F. Müller. Gill after Malmgren.

Genus **AMPHITRITE** O. F. Müller.

Characters as above. This paper follows Malmgren in separating *Amphitrite* from *Terebella* according to gill structure as noted in the key to genera. In the literature there is a good deal of confusion in this respect.

A. cirrata Müller. 15, 33, 41. (Fig. 38d).

Body of 75 to 85 somites. 17 setigerous somites. No lateral lobe on prostomium. 3 pairs of gills as subequal filaments carried on a low base. Uncini begin on 3rd somite. About 10 ventral plates.

M'Intosh considered this synonymous with *Terebella (Amphitrite) ornata* of Leidy and Verrill, but their descriptions do not agree with one another or with the above. There is no certain record of the occurrence of *ornata* in Canada.

Gulf of St. Lawrence.

Genus **TEREBELLA** Linnaeus.

Characters as above.

KEY TO SPECIES

- | | | |
|-----------|---|-------------------------------|
| 1. (4, 5) | 17 pairs of seta tufts. | |
| 2. (3) | Gills much branched dichotomously, branches elongated filiform. | <i>intermedia</i> Malmgren. |
| 3. (2) | Gills subflabelliform. Posterior much smaller than anterior ones. | <i>danielsseni</i> Malmgren. |
| 4. (1, 5) | 19 pairs of seta tufts. | <i>groenlandica</i> Malmgren. |
| 5. (1, 4) | 24 pairs of seta tufts. | <i>figula</i> Dalzell. |

T. intermedia (Malmgren). (*Amphitrite* i.). 15, 17, 36.

Body of about 55 somites. 17 setigerous somites, 12 or more ventral plates. 3 pairs of dichotomously branched gills. Terminal branches filiform. Not figured.

40 miles S. of Cape Sable, Nova Scotia.

T. danielsseni Malmgren. 17. (Fig. 39a).

Body of about 60 somites. Posterior gills much smaller than anterior, dichotomously divided, final branches small. Uncini with large hook and increasingly smaller teeth above this toward apex.

Bay of Fundy (W. H. T. Baillie, unpub.).

T. groenlandica (Malmgren). (*Amphitrite* g.). 15, 17, 33. (Fig. 39b).

Body of 90 to 100 somites, much enlarged anteriorly and narrowed posteriorly. 19 seta tufts. Prostomium on either side with a vertical lobe. Gills arise from heavy stalks, dichotomously branched. About 10 ventral scutes.

Gulf of St. Lawrence.

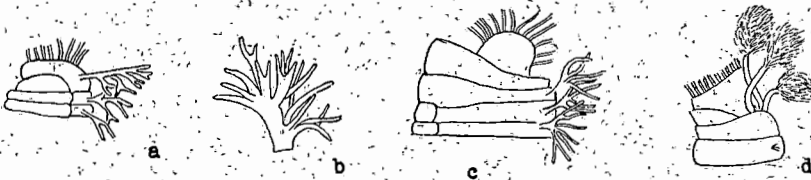


Fig. 39. a,—*Terebella danielsseni* Malmgren. Anterior end after Malmgren. b,—*T. groenlandica* Malmgren. Gill after Malmgren. c,—*T. figulus* Dalzell. Anterior end after Malmgren. d,—*Pista cristata* Malmgren. Anterior end after Malmgren.

T. figulus Dalyell. (*Amphitrite johnstoni* Montagu, *T. brunnea* Stimpson). 15, 33. (Fig. 39c).

Body of 90 to 100 somites, 24 setigerous somites. A vertical rounded lobe on either side of prostomium. 3 pairs of subequal gills arising from rather stout bases. Gills all of about the same size.

Gulf of St. Lawrence.

Genus **PISTA** Malmgren.

Characters as above.

P. cristata (Müller). 15, 17, 33. (Fig. 39d).

Collar thick, no eyes. Body 120 to 150 mm. long, with 12 ventral shields (M'Intosh). Somites 2, 3 and 4 with lateral lappets. 2 pairs of gills on long stems, filaments much branched, forming dense tufts.

Gulf of St. Lawrence.

Genus **SCIONE** Malmgren. (*Nicolea* Malmgren).

Characters as above.

KEY TO SPECIES.

1. (2). 1 pair of gills.
2. (1). 2 pairs of gills.
3. (4). 17 setigerous somites.
4. (3). 15 setigerous somites.

lobata Malmgren.**venustula** Montagu.
simplex (Verrill).**S. lobata** Malmgren. 17. (Fig. 40a).

Body inflated anteriorly, narrowed posteriorly, 100 to 120 or more somites. Setigerous tubercles confluent with tori. 1 pair of gills. Buccal somite emarginate anteroventrally. On either side of 3rd somite an erect rounded lobe. About 14 ventral plates.

Bay of Fundy (W. H. T. Baillie, unpub.).

S. venustula Montagu. (*S. zostericola* Malmgren). 33, 36. (Fig. 40b).

Body form similar to that of *lobata*. Somites 40 to 50 in number. 2 pairs of gills, anterior much larger than posterior, on somites 2 and 3. About 14 ventral plates, 17 somites with capillary setae. Length 25 mm., width 5 mm. In lime tube.

Bay of Fundy. Labrador.

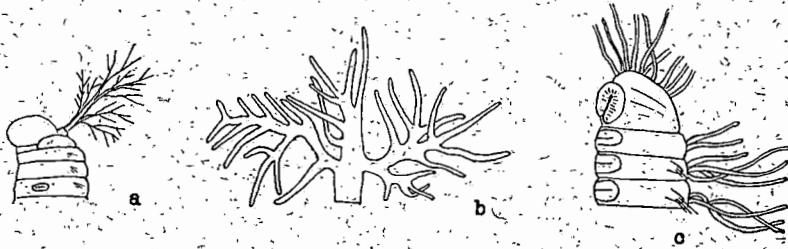


Fig. 40. a,—*Scione lobata* Malmgren. Anterior end after Malmgren. b,—*S. venustula* Montagu. Gill after McIntosh. c,—*Streblosoma spiralis* Verrill. Anterior end after Verrill.

S. simplex (Verrill). 5, 47.

Form of body similar to that of *venustula*. Tentacles numerous. 2 pairs of gills, anterior ones the larger. 15 seta tufts. 3rd and 4th setigerous somites of male have small, slender, lateral cirri.

Grand Harbour, Grand Manan.

Genus **STREBLOSOMA** Verrill.

Characters as above.

S. spiralis (Verrill). (*Grymaea* s.). 45, 52. (Fig. 40c).

Body long and slender, spirally coiled. 3 pairs of long, filiform gills. Setae begin on somite 2, uncini on somite 5.

Gulf of St. Lawrence.

Genus **THELEPUS** Leuckart.

Characters as above.

T. cincinnatus Fabricius, var. **andreanae** M'Intosh. (*Lunara flava* Stimpson, *T. cincinnatus*). 15, 17, 33. (Fig. 41a).

Body enlarged anteriorly, tapering gently to posterior end. About 100 somites. Ventral plates as far as setigerous somite 30. Eyes on posterior face of collar. Gills simple filaments on 2nd and 3rd somites, anterior gills the larger. Fig. 41a is of the species and is not recorded from Canada. M'Intosh gave only figure of uncini of the variety.

Bay of Fundy. Gulf of St. Lawrence. Labrador.

Genus **POLYCIRRUS** Grube.

Characters as above.

KEY TO SPECIES

- | | |
|--------------------------------|-----------------------------|
| 1. (2) 13 pairs of seta tufts. | medusa Grube. |
| 2. (1) 24 pairs of seta tufts. | phosphoreus Verrill. |

P. medusa Grube. (*Ereutho smitti* Malmgren). 15, 32, 33. (Fig. 41b).

Numerous tentacles on ventral face of horseshoe shaped fold on anterior end of prostomium. Body 50 to 100 mm. long. A large ventral plate behind mouth. 15 pairs of seta tufts.

Gulf of St. Lawrence.



Fig. 41. a,—*Thelepus cincinnatus* Fabricius. Anterior end after Malmgren. b,—*Polycirrus medusa* Grube. Ventral view, anterior end after Malmgren. c,—*Terebellick stroemi* Sars. Anterior end after M'Intosh.

P. phosphoreus Verrill. 48.

24 seta tufts. Uncini begin on 10th setigerous somite. Conspicuous ventral plates on 9 anterior somites and on these somites are thickened glandular areas just ventral to seta tuft. Body soft, changeable in shape, usually swollen anteriorly. Not figured.

From Connecticut shore to bay of Fundy (W. H. T. Baillie, unpub.).

Genus **TRICHOBRANCHUS** Malmgren.

Characters as above.

T. glacialis Malmgren. 15, 31, 33.

Cephalic lobe small, bifid. Small lappets on sides of 2nd and 3rd somites. 2 eye spots on prostomium. Tentacles filiform and fusiform, 1st gill on 2nd somite, others on the two following. Gills distinct filaments, relatively thick and tapering toward ends.

Gulf of St. Lawrence.

Genus **TEREBELLIDES** Sars.

T. stroemi Sars. 15, 33, 52. (Fig. 41c).

Dorsum of prostomium forms a cephalic plate whose margins meet ventrally in midline to form a channel behind mouth. Tentacles on posterior edges of this plate. Body 60 mm. long; somite number 50 to 56. Gills arise from a single heavy stem on 2nd and 3rd somites. Gills of 4 divisions, 2 larger dorsal and 2 smaller ventral. Each has a smooth basal process with above this a dense series of lamellae.

Gulf of St. Lawrence. Bay of Fundy.

AMPHARETIDAE

Body composed of broad thoracic and narrow abdominal regions. Thoracic parapodia biramous, having capillary setae and uncini. In abdomen only uncini, parapodium uniramous. Prostomium a distinct lobe, tentacles ventral to it. 2, 3 or 4 pairs of gills on 3rd to 6th somites.

KEY TO GENERA

1. (2) Paleae present. 4 pairs of gills. **AMPHARETE** Malmgren. (p. 60)
2. (1) No paleae.
3. (4) Stout dorsal spines behind gills. 4 pairs of gills. **MELINNA** Malmgren. (p. 61)
4. (3) Not such spines.
5. (6) 14 somites with capillary setae. Tentacles ciliated. **SABELLIDES** Milne-Edwards. (p. 61)
6. (5) 17 somites with capillary setae. **SAMYTHA** Malmgren. (p. 62)

Genus **AMPHARETE** Malmgren.

Characters as above.

KEY TO SPECIES

1. (4) Gills heavy.
2. (3) Prostomium elongated, anterior end rounded. **goesii** Malmgren.
3. (2) Prostomium pentagonal, anterior end only slightly rounded. **acutifrons** Grube.
4. (1) Gills long and slender. **gracilis** Malmgren.

A. goesii Malmgren. 5, 17. (Fig. 42a).

Prostomium elongated, anterior end rounded. 17 to 19 sharp paleae on either side. Gills rather heavy, length about equal to body diameter. Length 50 mm., width 7 mm.

Bay of Fundy.

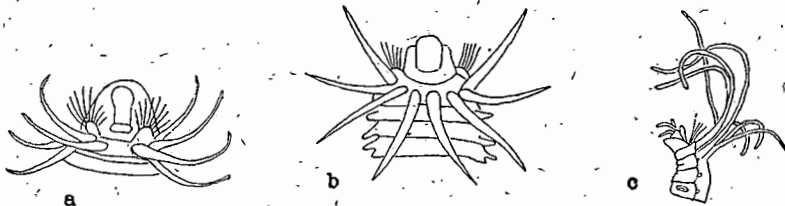


Fig. 42. a,—*Ampharete goesii* Malmgren. Dorsal view anterior end after Malmgren. b,—*A. acutifrons* Grube. Dorsal view anterior end after Malmgren. c,—*A. gracilis* Malmgren. Lateral view anterior end after Malmgren.

A. acutifrons (Grube). (*A. grubei*). 17, 52. (Fig. 42b).

Prostomium more or less pentagonal, its anterior end a blunt cone. Paleae have long slender apices. Gills rather heavy, longer than body diameter. Length 25 mm.

Gulf of St. Lawrence.

A. gracilis Malmgren. 15, 17, 47. (Fig. 42c).

12 to 14 paleae on either side. Gills filiform, slender, anterior ones longer than posterior, much longer than body diameter. Length 25 mm., width 3 mm.

Bay of Fundy. Gulf of St. Lawrence.

Genus **MELINNA** Malmgren:

Characters as above.

M. cristata (Sars). 15, 17, 52. (Fig. 43a).

Prostomium a short, bluntly rounded process with eye spots on either side. 4 pairs of gills arising from short basal processes on 3rd somite, each giving rise to an anterior and a posterior pair. Dorsal collar with regular conical processes on margin. 18 anterior setigerous somites.

Bay of Fundy. Gulf of St. Lawrence.

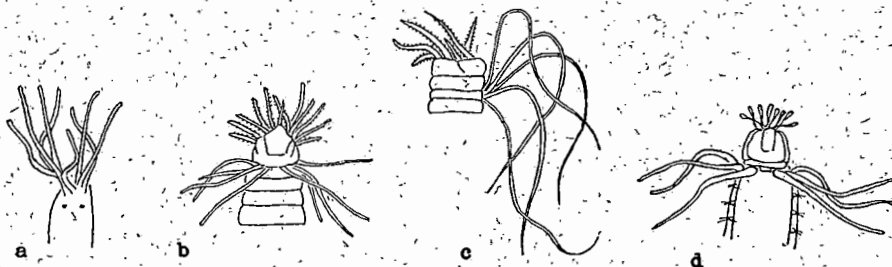


Fig. 43. a,—*Melinna cristata* Sars. Dorsal view anterior end after Malmgren. b,—*Sabellides borealis* Sars. Dorsal view anterior end after Malmgren. c,—*S. octocirrata* Sars. Lateral view anterior end after M'Intosh. d,—*Samytha sexcirrata* Sars. Dorsal view anterior end after Malmgren.

Genus **SABELLIDES** Milne-Edwards.

Characters as above.

KEY TO SPECIES

- | | |
|---|--------------------------|
| 1. (2) Posterior region with 12 uncingerous tori. | borealis Sars. |
| 2. (1) Posterior region with 15 uncingerous tori. | octocirrata Sars. |

S. borealis Sars. 15, 17, 36. (Fig. 43b).

Gills filiform, attenuate, longer than body diameter. Prostomium 5 sided, tentacles numerous, ciliated. Length 48 mm., width 4 mm.

Labrador. Canada (M'Intosh).

S. octocirrata Sars. 17. (Fig. 43c).

Prostomium conical. 20 ciliated, unequal tentacles. 2 eyes. Gills filiform. Bay of Fundy (W. H. T. Baillie, doubtful, unpub.).

Genus **SAMYTHA** Malmgren.

Characters as above.

S. sexcirrata (Sars). 5, 33. (Fig. 43d).

Prostomium a broad anterior median process with peristomium showing on either side. Posterior lip when viewed laterally projects as a spout under mouth. 6 gills on 3rd and 4th somite. Dorsum smoothly rounded. Clavate tentacles on ventral face of prostomium.

Passamaquoddy bay.

AMPHICTENIDAE

Prostomium truncate with a row of golden-brown paleae on either side. A veil dorsal and one ventral, to paleae. Contractile tentacles just above mouth. 2 pairs of lateral tentacles. Tube of cemented sand grains, both ends open, one end larger than the other.

KEY TO GENERA

1. (2) Dorsal collar has entire edge.
2. (1) Dorsal-collar has cirri along edge.

CISTENIDES Malmgren.

AMPHICTENE Savigny.

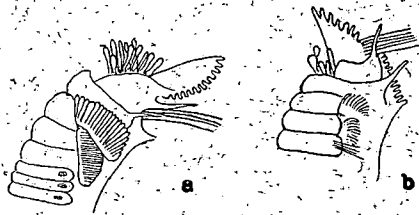


Fig. 44. a.—*Cistenides hyperborea* Malmgren. Lateral view anterior end after Malmgren. b.—*Amphictene auricoma* O. F. Müller. Lateral view anterior end after Malmgren.

Genus **CISTENIDES** Malmgren.

Characters as above.

C. hyperborea Malmgren. 15, 17, 36. (Fig. 44a).

12 to 14 paleae on either side, their apices very slender, flexible. 17 pairs of seta tufts. Anal "ligula" short, broad-ovate. Length 23 to 28 mm., width 6 to 9 mm.

Anticosti. Labrador.

Genus **AMPHICTENE** Savigny.

Characters as above.

A. auricoma (Müller). (*Cistenides granulata* Malmgren). 15, 17. (Fig. 44b).

9 (rarely 10) paleae on either side, apices not at all attenuated. Length 24 to 28 mm., width 7 to 7 mm. Tubes of sand, mostly round, sometimes flat or angular.

Common in entire region. (Whiteaves).

Stimpson recorded *Pectinaria groenlandica* (*P. koreni* M'Intosh) from Grand Manan but it is probable that his provisional identification was incorrect.

SABELLIDAE

Body of 2 distinct regions, the thorax having capillary setae dorsal to tori. In abdomen the relative positions of the setae are reversed. Gill a lobe on either side of the prostomium divided distally into filaments which may carry eye spots. 2 rows of short pinnae along the main filament, sometimes leaving the apex naked.

KEY TO GENERA

- | | | |
|--------|--|------------------------------------|
| 1. (4) | 2 kinds of setae, usually in 2 rows, on thoracic tori. | |
| 2. (3) | Collar with 4 lobes. | SABELLA Linnaeus. (p. 63) |
| 3. (2) | Collar with 2 lobes. | POTAMILLA Malmgren. (p. 64) |
| 4. (1) | Only 1 kind of seta on thoracic tori. | |
| 5. (6) | No collar. Girdle of uncini on abdomen. | MYXICOLA Koch. (p. 64) |
| 6. (5) | No girdle of uncini on abdomen. Collar present. | |
| 7. (8) | Ventral groove on posterior somites. | EUCHONE Malmgren. (p. 65) |
| 8. (7) | No ventral groove on posterior somites. | CHONE Malmgren. (p. 66) |

Genus **SABELLA** Linnaeus.

Characters as above.

KEY TO SPECIES

- | | | |
|--------|---|---------------------------------|
| 1. (2) | No eye spots on gills. | pavonina Savigny. |
| 2. (1) | Eye spots on gills. | |
| 3. (4) | Collar large, small lateral incisions. | crassicornis Sars. |
| 4. (3) | Collar low, ventral lappets open or reflexed. | spetzbergensis Malmgren. |

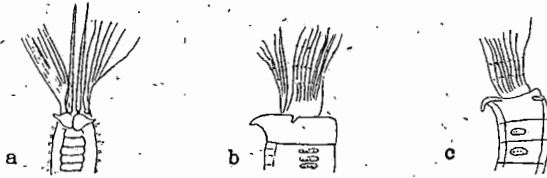


Fig. 45. a,—*Sabella pavonina* Savigny. Ventral view anterior end after Malmgren. b,—*S. crassicornis* Sars. Lateral view anterior end after Malmgren. c,—*S. spetzbergensis* Malmgren. Lateral view anterior end after Malmgren.

S. pavonina Savigny. (*S. penicillus*). 15, 33, 41. (Fig. 45a).

Collar low dorsally and laterally, large and bilobed ventrally. Anterior ventral shields usually 8, sometimes 9 to 12. Gill filaments slender, elongated, terminal naked portion very short. Body 115 mm. long, 6 mm. wide.

Gulf of St. Lawrence. Bay of Fundy.

S. crassicornis Sars. 5, 15, 17, 36. (Fig. 45b).

Collar large, small lateral depressions on either side, ventral points reflexed. 14 to 16 gill filaments on either side, their apices naked. Black eye spots on filaments.

Outer Nova Scotia. Bay of Fundy.

S. spetzbergensis Malmgren. (*S. fabricii* Fauvel). 17. (Fig. 45c).

Collar low with deep depression on either side. (Not shown in Malmgren's figure). 16 to 20 gill filaments on either side, 3 to 6 eye spots on each. Short terminal naked portion. Body length 50 mm., width 4 mm.

Bay of Fundy (W. H. T. Baillie, unpub.).

Genus **POTAMILLA** Malmgren.

Characters as above.

KEY TO SPECIES

- | | |
|--|-----------------------------|
| 1. (2) No eyes on gills. | torelli Malmgren. |
| 2. (1) Eyes on gills. | |
| 3. (4) Collar low, ventral points reflexed. | neglecta Sars. |
| 4. (3) Collar rather high. Ventral points overlap. | reniformis Leuckart. |

P. torelli Malmgren. 5, 15, 17, 52. (Fig. 46a).

Gill filaments 2 to 9 in number, rarely 15 to 20. 2 eye spots on 1st thoracic somite and 6 to 8 others on pygidium. Capillary setae only on 1st thoracic somite. Other thoracic somites have in addition to these, spatulate ones with fine points. Body length 65 mm., width 2 mm. Opaque white when alive.

Gulf of St. Lawrence. Bay of Fundy.

P. neglecta (Sars). (*Sabella neglecta* Sars; *S. zonalis* Stimpson). 5, 15, 17, 52. (Fig. 46b).

Body about 30 mm. long, 3 mm. wide. About 12 gill filaments on either side, apices naked and pinnae very small. 2 triangular tentacles. Tube membranous, covered with fragments of shells, foraminifera, etc.

Bay of Fundy. Gulf of St. Lawrence.

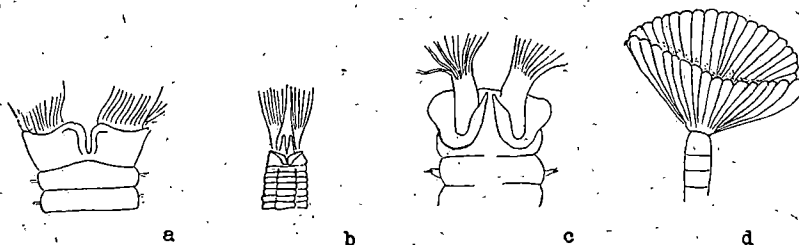


Fig. 46. a,—*Potamilla torelli* Malmgren. Dorsal view after M'Intosh. b,—*P. neglecta* Sars. Ventral view anterior end after Malmgren. c,—*P. reniformis* Leuckart. Dorsal view after M'Intosh. d,—*Myxicola infundibulum*. Anterior end after M'Intosh.

P. reniformis (Leuckart). (*P. oculifera*). 15, 33, 52. (Fig. 46c).

10 to 12 short gills on either side, their pinnae long. Most filaments carry 2 eye spots. 16 thoracic somites.

Bay of Fundy. Gulf of St. Lawrence.

Genus **MYXICOLA** Koch.

Characters as above.

M. infundibulum Montagu. (*M. steenstrupi*). 15, 34, 36. (Fig. 46d).

Gills 2 semicircular masses, the filaments united nearly to their ends by a membrane, their apices naked. 8 or 9 thoracic somites. Body 50 to 250 mm. long, 45 to 160 biannulate somites. Uncini few and difficult to see and may disappear with age. (Fauvel).

Brown's bank off cape Sable.

A large specimen of this genus was sent to the writer by Dr. Leim, it having been found in the stomach of a haddock taken at St. Andrews. All uncini except a few in the last somites had disappeared. These were different from *infundibulum* and this is possibly a new species.

Genus **EUCHONE** Malmgren.

Characters as above.

KEY TO SPECIES

- | | |
|---|----------------------------|
| 1. (2, 3) Collar entire ventrally. | <i>rubrocincta</i> Sars. |
| 2. (1, 3) Collar with ventral ends separated by a narrow space. | <i>tuberculosa</i> Kroyer. |
| 3. (1, 2) Collar with ventral ends widely separated. | <i>princei</i> M'Intosh. |

E. rubrocincta (Sars). 5, 15, 17, 34, 36. (Fig. 47a).

8 somites in thorax. Somites biannulate. 12 to 16 gill filaments on either side, with on either side, 5 to 7 tentacular filaments without pinnae. A red band in anterior region of each somite.

Bay of Fundy. Labrador.

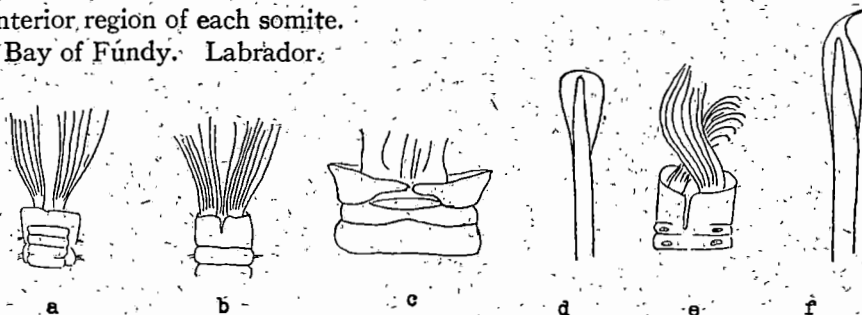


Fig. 47. a,—*Euchone rubrocincta* Malmgren. Anterior end ventral view after Malmgren. b,—*Eucone tuberculosa* Kroyer. Anterior end ventral view after Malmgren. c,—*E. princei* M'Intosh. Anterior end ventral view after M'Intosh. d,—*Chone fauveli* M'Intosh. Spatulate seta after M'Intosh. e,—*C. dumeri* Malmgren. Anterior end after Malmgren. f,—Spatulate seta after Malmgren.

E. tuberculosa (Kroyer). 15, 17, 36. (Fig. 47b).

10 to 14 gills on either side. 33 to 35 somites, in median region of body hardly wider than long. 2 to 4 tentacular filaments without pinnae, on either side. Body-length 24 to 30 mm., width 2 to 2.5 mm.

Labrador.

E. princei M'Intosh. 32. (Fig. 47c).

Gills long, not webbed, with long terminal processes. In anterior somites setae usually conspicuous. Anterior uncini have long curved shafts and one large fang with several small ones above it. Posterior uncini have shafts more curved, fang relatively larger and apical teeth mere serrations.

Gulf of St. Lawrence.

(As "*Euchone?*" *lawrencii* M'Intosh described with *E. princei* an incomplete form lacking gills whose exact position is uncertain. Its anterior uncini were quite similar to *E. princei*, posterior ones had much heavier shafts and relatively larger principal fangs. Gulf of St. Lawrence.)

Genus **CHONE** Malmgren.

Characters as above.

KEY TO SPECIES

- | | |
|--|--------------------------|
| 1. (2) Spatulate setae in thorax smoothly rounded at ends. | fauveli M'Intosh. |
| 2. (1) Spatulate setae in thorax with pointed apices. | duneri Malmgren. |

C. fauveli M'Intosh. 15, 32. (Fig. 47d).

Collar cleft only on dorsum. 50 to 90 somites. 12 to 36 gills on either side; filaments united by membrane nearly to tips. Spatulate setae in thorax smoothly rounded at ends.

Nova Scotia.

C. duneri Malmgren. 15, 18, 34. (Figs. 47e and f).

Collar similar to *fauveli*. Gills 6 to 22 on either side, filaments united by membrane, naked tips long. Spatulate thoracic setae with acuminate apices.

C. fauveli was separated from *C. infundibuliformis* Kroyer by M'Intosh (32) who thought it differs from the latter species found in Greenland. The two are still regarded as synonymous by Fauvel (12).

Gulf of St. Lawrence. Bay of Fundy.

SERPULIDAE

Tube dwellers. Usually a prominent collar which may cover the entire thorax. Gills filamentous, supported on a common base on either side of the head. Usually one filament lacks pinnae and carries an operculum at its apex. Tube usually calcareous and irregular in form, but spirally coiled in *Spirorbis*.

KEY TO GENERA

- | | |
|---|----------------------------------|
| 1. (2) No operculum. Branchial lobes spiral. | PROTULA Risso. (p. 66) |
| 2. (1) Operculum present. | |
| 3. (6) Special setae on 1st somite (collar setae). | |
| 4. (5) Tube small, calcareous, in nautiloid spiral. | SPIRORBIS Daudin. (p. 67) |
| 5. (4) Tube not so. | FILOGRANA Oken. (p. 69) |
| 6. (3) No special setae on 1st somite. | VERMILIA Lamarck. (p. 69) |

Genus **PROTULA** Risso.

Characters as above.

KEY TO SPECIES

- | | |
|--|----------------------------|
| 1. (2) Thoracic collar does not extend beyond ends of setae. | americana M'Intosh. |
| 2. (1) Thoracic collar extends beyond ends of setae. | media Stimpson. |

P. americana M'Intosh. 5, 15, 20, 52. (Fig. 48a).

28 mm. long, 2 mm. in diameter. Each gill a slightly twisted structure. Collar with lateral notches. (Not shown in M'Intosh's fig.). Anterior setae pale yellow, with gently tapering tips and narrow wings. Tube smooth, coiled. South of Halifax, Nova Scotia.

P. media Stimpson: 15, 40, 41. (Fig. 48b).

Thoracic collar large, extending beyond ends of setae. 7 thoracic somites, 40 to 50 abdominal. About 36 filaments on each gill forming a spiral of $1\frac{1}{4}$ turns.

Grand Manan.

Genus **SPIRORBIS** Daudin.

Partly because of incomplete or inaccurate diagnoses and partly because some species diagnoses have been based on shell structure which may change with age, the taxonomy of this genus is much confused. Probably the genus should be subdivided but following M'Intosh, the generic name *Spirorbis* is here retained.

4 to 5 gills on either side, 3 or 4 setigerous somites in thorax. 8 to 40 at posterior end of abdomen, achaetous somites between. Shell coiled. Operculum sometimes functions as a brood pouch. Collar setae characteristic, geniculate, sometimes with a toothed "fin" at the bend separated by a notch from the terminal toothed "blade", fig. 49c. In other species the row of teeth is continuous, fig. 48c.

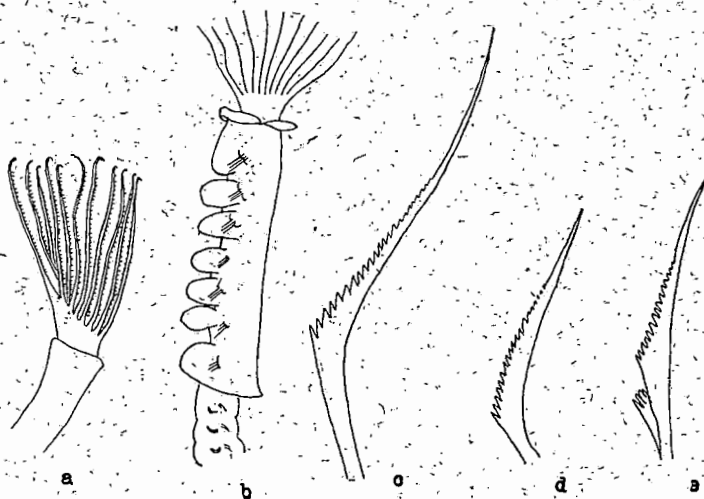


Fig. 48. a,—*Protula americana* M'Intosh. Anterior end lateral view after M'Intosh. b,—*P. media* Stimpson. Lateral view anterior end after Verrill. c,—*Spirorbis spirillum* Linnaeus. Collar seta after M'Intosh. d,—*S. violaceus* Levinsen. Collar seta after Fauvel. e,—*S. vitreus* Fabricius. Collar seta after Fauvel.

KEY TO SPECIES

- | | | |
|----|--|-------------------------------|
| 1. | (8) Shell dextral. | |
| 2. | (3) 3 setigerous thoracic somites. | spirillum Linnaeus. |
| 3. | (2) 4 thoracic setigerous somites. | |
| 4. | (5) Collar setae not notched. | violaceus Levinsen. |
| 5. | (4) Collar setae notched. | |
| 6. | (7) Operculum a rounded terminal plate, more or less concave. | vitreus Fabricius. |
| 7. | (6) Operculum funnel-shaped, a calcareous plate filling opening. | cancellatus Fabricius. |

8. (1) Shell sinistral.
 9. (13, 14) Notch between fin and blade on collar setae.
 10. (11, 12) Operculum saucer-shaped, on a short, thick peduncle.
 11. (10, 12) Operculum infundibuliform or an ovoid ampulla.
 12. (10, 11) Operculum a brood pouch.
 13. (9, 14) 2 kinds of collar setae, one with and one without, notch.
 14. (9, 13) No notch between fin and blade.

borealis Daudin.
granulatus Linnaeus.
mörchi Levinsen.

verruca Fabricius.
validus Verrill.

S. spirillum Linnaeus. (*S. lucidus* Fleming). 7, 15, 34. (Fig. 48c).

4 gills on either side. Terminal process of filament not longer than pinna. Operculum a shallow vase, of which lower edge is crenate. No gap in row of teeth in row on edge of collar setae.

Outer Nova Scotia. Labrador.

S. violaceus Levinsen. (*S. granulatus* Fabricius (Fauvel and Bush)). 7. (Fig. 48d).

Shell strongly grooved and carinated. 20 to 30 setigerous somites. Operculum a rounded plate. Collar large. Eggs incubated in tube.

Grand Banks.

S. vitreus (Fabricius). 18, 41, 52. (Fig. 48e).

Body of about 24 somites. 6 or 7 gill filaments. Collar large. Operculum a rounded plate, more or less concave. Tube glassy, in adult with longitudinal striations. About 2 mm. in diameter.

Grand Manan. Gulf of St. Lawrence.

S. cancellatus (Fabricius). 15, 34, 52. (Fig. 49a).

Shell carinated. Operculum funnel-shaped, with a large calcareous plate filling shell aperture.

Gulf of St. Lawrence. Bay of Fundy. Labrador.

S. borealis Daudin. (*S. simpsoni* Verrill, *S. nautiloides* Lamarck). 15, 34, 52. (Fig. 49b).

Collar open dorsally, continuous ventrally, fused with membrane of 1st setigerous somite. 4 or 5 filaments in each gill, naked region at end of filament very short. Operculum funnel-shaped, rounded or oval, excentric, with calcareous plate at end.

Gulf of St. Lawrence. Newfoundland. Bay of Fundy.

S. granulatus (Linnaeus). 7, 15, 41, 52. (Fig. 49c).

Body of about 23 somites. 4 or 5 filaments in each gill, each filament with a long, naked terminal portion. Operculum funnel-shaped or oval, with terminal calcareous plate. Collar open dorsally, its border entire. Shell with 3 conspicuous lamella-like carinae.

Gulf of St. Lawrence. Newfoundland.

S. mörchi Levinsen. 7, 15. (Fig. 49d).

Shell verruciform, umbilicus absent or small. Only 1 whorl visible. Collar

setae as in fig. 49d, "keels" on opposite margin crossing one another, giving the appearance of strong teeth (Levinsen).

Grand Banks.

S. verruca Fabricius. 7. (Not Levinsen or Moore). (Fig. 49e).

Tube with spreading base and small cavity. Surface ornamented with 1 or 2 rounded spiral threads. Operculum a brood pouch.

Grand Banks.

S. validus Verrill. 7, 36, 52.

A very large species, 8 gills on left, 7 on right. (Verrill. Probably this may vary). Operculum large, white, calcareous, irregularly obconic, obliquely truncated. Tube thick, opaque, transversely wrinkled.

La Have bank, Nova Scotia. Labrador.

Whiteaves listed *S. carinatus* Monet from the Gulf of St. Lawrence. M'Intosh discarded this as a valid record for this species.

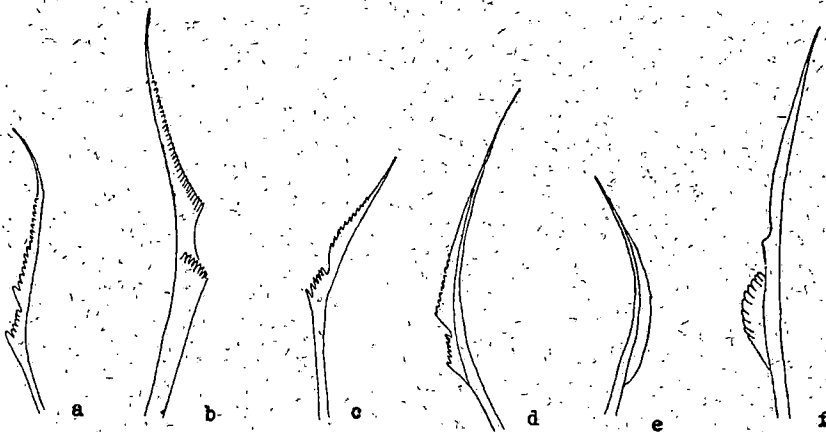


Fig. 49. a,—*Spirorbis cancellatus* Fabricius. Collar seta after Bush; b,—*S. borealis* Daudin. Collar seta after M'Intosh; c,—*S. granulatus* Linnaeus. Collar seta after Fauvel; d,—*S. morchi* Levinsen. Collar seta after Bush; e,—*S. verruca* Fabricius. Collar seta after Bush; f,—*Filograna implexa* Berkeley. Collar seta after Fauvel.

Genus **FILOGRANA** Oken.

4 gills. Collar open dorsally, 4 fan-shaped flaps on either side. Operculum thin ovate, or none. 7 or 8 setigerous somites behind the 3rd, then an achaetous region, then a setigerous. Anal region achaetous.

F. implexa Berkeley. (*F. filograna*). 34, 36. (Fig. 49f).

Characters of the genus. Tubes small, white.

Bay of Fundy. Outer Nova Scotia.

Genus **VERMILIA** Lamarck.

Characters as above.

V. serrula Stimpson. 15, 41.

Tubes small, straight or slightly undulated, dorsal carina prominent. Verrill figured the shell as having a secondary tube on either side of the opening.

Grand Manan.