CANADIAN PACIFIC FAUNA

9. ANNELIDA

9b(1). POLYCHAETA ERRANTIA

BY
EDITH BERKELEY AND CYRIL BERKELEY

WITH FIGURES

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POLYCHAETA ERRANTIA

INTRODUCTION

The Polychaeta constitute a large group of the Chaetopoda characterised by the presence of highly-developed parapodia carrying numerous setae, a definite head frequently with eyes and tentacles and other appendages, and often cirri and branchiae on various segments. The sexes are distinct. They may be microscopic or anything up to several feet in length. The large majority of species are marine. They may be free-living, passing their lives crawling on, or buried in, the bottom material, or swimming, or sedentary, living in tubes or burrows. They are found between tide-marks and at all depths and on every kind of bottom. Many species are cosmopolitan.

Classification is mainly based on external characters, but size, markings, and coloration vary enormously in many species and can be used only with extreme caution. The group is divided for convenience into two sections, Errantia and Sedentaria. The present paper deals with the Errantia which have all the segments approximately similar with the exception of the few around the mouth and the last segment, or pygidium. The Errantia are usually free-living.

The application of the keys given is limited to the families, genera, and species dealt with herein.

A number of the illustrations are taken, or adapted, from Fauvel's "Polychètes Errantes" in the "Faune de France", others from various papers which are referred to in the text. We wish to acknowledge our indebtedness to the authors of all these publications.

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KEY TO FAMILIES

1. (7) Body with true elytra.
2. (5, 6) Elytra on segments 2, 4, 5, and thereafter elytrigerous segments alternating regularly with cirrigerous ones anteriorly. Posteriorly two cirrigerous segments between successive elytrigerous ones (except in *Hololepida*, *Lepidametria*, and *Arctonoe*). No compound setae.
3. (4) Jaws absent or rudimentary. A median tentacle only. APHRODITIDAE (p. 6)
4. (3) Pharynx with jaws. Three tentacles. POLYNOIDAE (p. 8)
5. (2, 6) Elytra on segments 2, 4, 5, and thereafter elytrigerous segments alternating regularly with cirrigerous ones anteriorly. Posteriorly all segments elytrigerous, these, at the same time, bearing cirri or cirriform branchiae (except in *Pholoe*). Compound setae present. SIGALIONIDAE (p. 22)
6. (2, 5) Elytra on segments 2, 4, 5, and thereafter elytrigerous segments alternating with cirrigerous, or bare, ones throughout body. ACOETIDAE (p. 23)
7. (1) Body without true elytra.
8. (9) A fan-shaped group of broad, flattened bristles (paleae) dorsally on all segments. CHRYSOPETALIDAE (p. 24)
9. (8) Dorsal paleae absent.
10. (11, 12) Prostomium fused with two succeeding segments, the whole bearing two or four tentacular cirri containing acicula; the other segments with biramous and achaetous parapodia. Pelagic. TOMOPTERIDAE (p. 25)
11. (10, 12) Prostomium not fused with succeeding segments, but indistinct. Barrel-shaped gizzard. Skin with globular capsules. SPHAERODORIDAE (p. 27)
12. (10, 11) Prostomium not fused with succeeding segments and distinct.
13. (16) Prostomium small.
14. (15) Tentacles present; caruncle usually present. Bifurcate setae, cirriform cirri. AMPHINOMIDAE (p. 28)
15. (14) Tentacles absent. Acicular setae, foliaceous cirri. Pelagic. TYPHLOSCOLECIDAE (p. 30)
16. (13) Prostomium well developed.
17. (18) Prostomium long, conical, annulated. Four short terminal tentacles. GLYCERIDAE (p. 31)
18. (17) Prostomium not thus; with or without true tentacles or palps or both.
19. (26) Evertible part of proboscis without chitinous teeth.
20. (23) Parapodia usually uniramous, cirri flattened and foliaceous.
21. (22) A pair of enormous globular eyes at the sides of the prostomium. Pelagic. ALCIOPIDAE (p. 40)
22. (21) Eyes small, normal. PHYLLODOCIDAE (p. 41)
23. (20) Parapodia biramous or sesquiramous.
24. (25) Parapodia biramous; sickle-shaped branchiae between the rami. NEPHTHYDIDAE (p. 49)
25. (24) Parapodia sesquiramous; no branchiae. HESIONIDAE (p. 55)
26. (19) Evertible part of proboscis with chitinous teeth.
27. (28, 29) Proboscis with a terminal pair of heavy, curved, toothed jaws and, usually, with paragnaths on both dorsal and ventral surfaces. NEREIDAE (p. 58)
28. (27, 29) Proboscis with simple armature consisting of a tooth or crown of teeth or both. SYLLIDAE (p. 67)
29. (27, 28) Proboscis with a complex system of jaws consisting of two smooth lower pieces (labrum) and two or more series of toothed upper pieces. EUNICIDAE (p. 85)

NOTE. The numbers placed after the specific names in the text refer to the numbered articles in the list of literature. The number given in heavy type refers to the article containing the fullest description of the species.

APHRODITIDAE

Few segments, body oval, depressed. Two long palps. Eyes stalked or sessile. Facial tubercle conspicuous. Two kinds of notosetae; heavy spines dorsally, very fine capillaries ventrally, often forming a felt. Neurosetae few, heavy, short, simple or forked; sometimes fringed.

Genus **APHRODITE** Linné

Thick dorsal felt completely covering elytra. Eyes, when present, sessile. Dorsal notosetae with smooth tips, straight or hooked, usually piercing the felt.

KEY TO SPECIES

1. (2)	Palps 9 to 11 times length of prostomium.	**longipalpa**
2. (1)	Palps 4 to 7 times length of prostomium.	
3. (4)	Body of about 27 segments.	**parva**
4. (3)	Body of 37 segments or more.	
5. (6)	Dorsal notosetae smooth, long median tentacle.	**japonica**
6. (5)	Dorsal notosetae with asperities, short median tentacle.	**negligens**

A. longipalpa Essenberg 10, **13** (Fig. 1).

Body narrow, to 38 mm. long. About 33 segments. Prostomium slightly wider than long. Two ocular prominences anteriorly, but no eye-spots. Tentacle

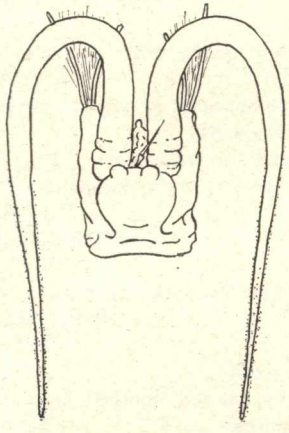

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Fig. 1. *A. longipalpa* Essenberg, head.

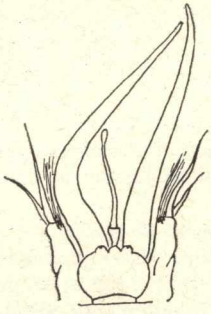

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Fig. 2. *A. parva* Moore, head (after Moore).

with short ceratophore and slender style about three times as long. Palps unusually long, stout at base, covered with minute papillae. Facial tubercle large,

compressed between palps, ending in long projection over mouth. Heavy notosetae long, slightly curved, with asperities, the tips colourless and only slightly hooked, sometimes piercing felt and meeting, or overlapping over the dorsum. Lateral fringe short, coarse, colourless and spare. Neurosetae very dark, all with pilose tips; the six in ventral series finer than others and with subterminal enlargement.

Apparently rare and only at considerable depths. In 200 and 220 fathoms in Nanaimo region and in 292 fathoms off coast of California.

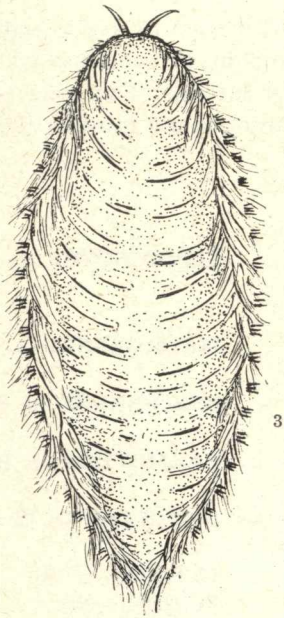
A. parva Moore 19, **39** (Fig. 2).

Body broadly elliptical, to 24 mm. long. Prostomium breadth about one and a half times length. Two pairs minute eyes on well-defined anterior ocular prominences. Tentacle about two and a half times length of prostomium on anterior median prominence with stout ceratophore and slender tapering style with terminal knob. Palps almost smooth, about five times length of prostomium. Heavy notosetae brown, polished, with asperities, gradually tapered to delicate terminal hook, scarcely piercing felt. Lateral fringe grey, inconspicuous. Dorsal series of neurosetae nearly straight with pilose tips; those of median and ventral series often with spur at base of hooked end; only three or four in latter series.

Gulf of Georgia and south to Mexico at very varied depths (3 to 667 fathoms).

A. japonica Marenzeller 19, **33**, 41 (Figs. 3 and 4).

Body oval, to 220 mm. long. About 40 segments. Prostomium circular. Two pairs of minute eyes, the anterior pair the larger, on ocular areas on the dorsal



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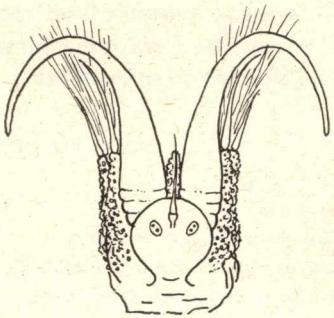

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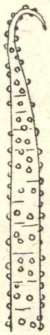

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Fig. 3. *A. japonica* Marenzeller, dorsal view.
" 4. *A. japonica* Marenzeller, head.
" 5. *A. negligens* Moore, end of notoseta from posterior region.

surface behind the anterior face and very slightly raised. Tentacle with conspicuous ceratophore and tapering style somewhat longer than prostomium. Palps about seven times length of prostomium, almost smooth. Heavy notosetae brown, slender, curved, with terminal hook, piercing the felt. Lateral fringe with copper-coloured metallic sheen. Neurosetae brown, their tips sometimes pilose in juveniles, but smooth and up to fifteen in ventral series in adults.

The commonest species on the coast. Usually in moderate depths on muddy bottoms. Known from Japan, Alaska, and south to Ecuador.

A. negligens Moore **39** (Fig. 5).

Body narrowly ovate, to 80 mm. long. About 40 segments. Prostomium slightly broader than long. Two pairs of conspicuous eyes on slightly raised prominences on anterior face. Tentacle short, clavate. Palps about four and a half times length of prostomium, covered with minute prickles. Heavy facial caruncle with long fingerlike process on ventral margin over mouth. Heavy notosetae varying from clay-coloured to bright brown (especially in posterior region of body) with asperities, coarse at base and abruptly contracted to terminal hook; arched over dorsum lifting the felt irregularly and sometimes penetrating it. Lateral fringe slightly iridescent. Neurosetae slightly curved, hooked, only occasionally very slightly pilose in adults, not more than five in ventral series.

East and west coasts Vancouver island in moderate depths.

POLYNOIDAE

Body elongated, vermiform, more or less flattened. Elytra twelve to eighteen pairs or very numerous, wholly or partly covering dorsum. Prostomium bilobed; four sessile eyes. A median tentacle and two shorter laterals. Two long palps. Ventral cirri on all segments. Parapodia biramous, notopodium more or less developed. Notosetae different to neurosetae.

KEY TO GENERA

1.	(2, 19, 20)	12 pairs of elytra.	**LEPIDONOTUS** (p. 9)
2.	(1, 19, 20)	15 pairs of elytra.	
3.	(14)	Dorsum completely covered by elytra.	
4.	(5)	Lateral tentacles inserted subterminally (fig. 24).	**MALMGRENIA** (p. 9)
5.	(4)	Lateral tentacles inserted ventrally (fig. 9).	
6.	(7)	Two kinds of setae in each ramus.	**HESPERONOE** (p. 10)
7.	(6)	One kind of setae in ventral ramus.	
8.	(9)	Some neurosetae bidentate.	**HARMOTHOE** (p. 10)
9.	(8)	Neurosetae all unidentate.	
10.	(11)	Notosetae finer than neurosetae, mostly fringed capillaries.	**GATTYANA** (p. 12)
11.	(10)	Notosetae coarser than neurosetae.	
12.	(13)	Tips of neurosetae hair-like.	**ANTINOE** (p. 13)
13.	(12)	Tips of neurosetae short, not hair-like.	**EUNOE** (p. 14)

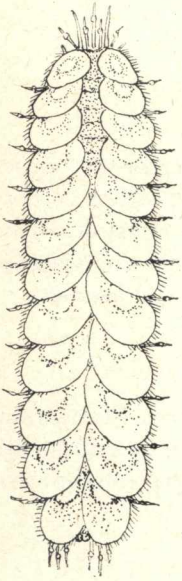
14. (3)	Dorsum uncovered at posterior end.	
15. (16)	Prostomium with peaks (fig. 18).	**LAGISCA** (p. 15)
16. (15)	Prostomium without peaks (fig. 20).	
17. (18)	Elytra small, not meeting across the dorsum.	**ENIPO** (p. 16)
18. (17)	Elytra overlapping across the dorsum.	**HERMADION** (p. 17)
19. (1, 2, 20)	18 pairs of elytra.	**HALOSYDNA** (p. 17)
20. (1, 2, 19)	Elytra numerous.	
21. (22)	With facial tubercle and occipital flap.	**HOLOLEPIDA** (p. 17)
22. (21)	With neither facial tubercle nor occipital flap.	
23. (24, 25)	Lateral tentacles inserted terminally (fig. 7).	**LEPIDAMETRIA** (p. 18)
24. (23, 25)	Lateral tentacles inserted ventrally (fig. 9).	**POLYEUNOA** (p. 19)
25. (23, 24)	Lateral tentacles inserted subterminally (fig. 24).	**ARCTONOE** (p. 20)

Genus **LEPIDONOTUS** Leach

Body short, broad, not tapered. Twelve pairs of elytra. Prostomial lobes extended forward to base of lateral tentacles which are inserted terminally. Notosetae shorter and much finer than neurosetae, almost capillary and finely denticulated. Neurosetae with swollen subterminal region, coarse pectinae and long bare hooked tip, usually unidentate.

L. caelorus Moore 19, **37** (Figs. 6 and 7).

Length to 25 mm., width over setae to 8 mm., 27 segments. Prostomium as



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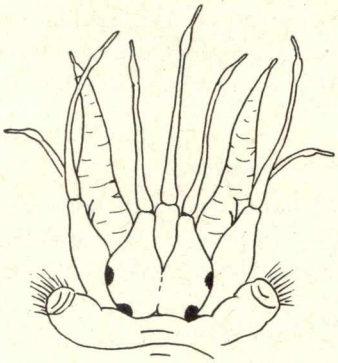

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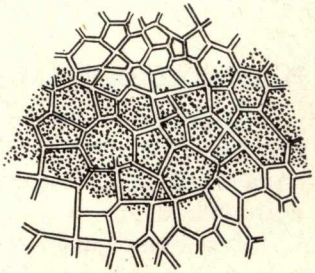

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Fig. 6. *L. caelorus* Moore, dorsal view. Fig. 7. *L. caelorus* Moore, head.
Fig. 8. *M. nigralba* Berkeley, detail of elytron.

described for the genus. Both pairs of eyes on lateral edge of prostomium, the anterior pair on the transverse median line, the posterior pair near the posterior margin. Elytra, covering dorsum, thickly beset with conical papillae of various sizes, largest on the exposed portion, where many are blunt and some may be very large, globular and roughened; marginal fringe long and heavy. Neurosetae unidentate.

Gulf of Georgia, dredged in about 25 fathoms. Alaska. California.

Genus **MALMGRENIA** McIntosh

Fifteen pairs of elytra. Anterior border of prostomium supporting base of lateral tentacles. Palps smooth. Notosetae short and almost smooth. Neurosetae longer, with short spinous region and smooth, hooked, unidentate or bidentate tips.

M. nigralba Berkeley **2**, 8 (Fig. 8).

Length about 18 mm. Greatest width over setae 4 mm., at 20th segment. About 39 segments. Colour scheme of body strikingly black and white. Elytra white with a heavy black ring, the surface embossed with a reticular pattern, a group of papillae near the anterior edge, no marginal fringe. Notosetae with minute serrations and short, bare, blunt, tips. Most neurosetae unidentate, a few in median region bidentate. Usually commensal with the synaptid *Leptosynapta clarki* Heding.

East and west coasts Vancouver is. California.

Genus **HESPERONOE** Chamberlin

Fifteen pairs of elytra. Two kinds of notosetae, the more numerous stouter than any neurosetae, straight, with closely set rows of fine spines ending a short distance from the tip; the others slender fringed capillaries. Two kinds of neurosetae, the majority moderately heavy, slightly hooked, with pectinae and smooth, simple tips; the others resembling the slender notosetae, but a little heavier.

H. complanata (Johnson) **25** (as *Harmothoe*).

Length to 15 mm. width over setae to 5 mm. 36 to 38 segments. Elytra thin, translucent, covered with minute tubercles, no marginal fringe. Prostomium with pronounced peaks and minute eyes, the posterior pair dorsal, the anterior pair dorso-lateral.

East coast Vancouver is. California.

Genus **HARMOTHOE** Kinberg

Fifteen pairs of elytra, typically covering dorsum completely. Prostomium

with or without peaks. Notosetae heavier than neurosetae, short, curved, with numerous close rows of pectinae. Neurosetae curved at tip, mostly bidentate.

KEY TO SPECIES

1. (2)	Anterior eyes at peaks and ventral.	**imbricata**
2. (1)	Anterior eyes near transverse median line of prostomium.	
3. (4)	Elytra with very few papillae and with a ring of dark pigment; no fringe.	**lunulata**
4. (3)	Elytra covered with papillae, irregularly mottled brown; a short fringe.	**triannulata**

H. imbricata Linné **14** (Fig. 9).

Not known from Canadian Pacific area larger than 30 mm. long and 8 mm. wide over setae, but recorded up to 50 mm. long elsewhere. About 37 segments. Prostomium with well-defined peaks. The anterior eyes situated ventrally beneath the peaks; the posterior pair near the posterior margin. Elytra appearing smooth, but covered with small conical and blunt papillae and sometimes, marginally, a few larger ones; the margin lightly fringed. Colour and patterning very variable.

Free-living, and commensal with the terebellid *Neoamphitrite robusta* (Johnson). Dredged and littoral. Gulf of Georgia and west coast Vancouver id. Queen Charlotte ids. Canadian arctic. Alaska. Hudson bay. California.

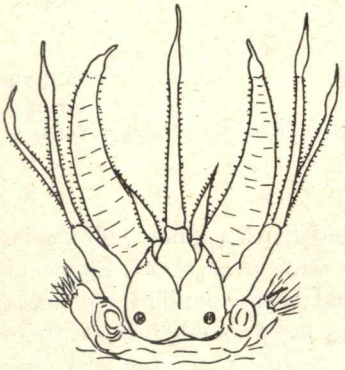

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Fig. 9. *H. imbricata* Linné, head.

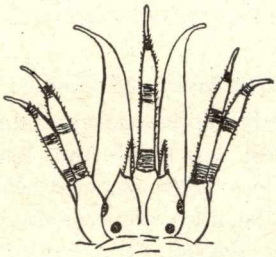

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Fig. 10. *H. triannulata* Moore, head.

H. lunulata (Delle Chiaje). 8, **14.**

Length to 35 mm. 36 to 39 segments. Prostomium with no definite peaks. The anterior pair of eyes on extreme lateral border of prostomium just in advance of transverse median line. Elytra smooth, excepting a few small papillae near the anterior edge, decorated with a broken or unbroken ring of dark pigment and a central dark spot. No marginal fringe. Notosetae with very fine ciliated fringes or almost smooth. Some neurosetae may have knobbed ends. Frequently commensal with other Polychaeta.

Mittelnatch id., gulf of Georgia, in 100 fathoms.

H. triannulata Moore **44** (Fig. 10).

Length to 17 mm., width over setae 4.8 mm. About 39 segments. Prostomium with well defined peaks. Anterior eyes dorso-lateral and just behind transverse median line. Elytra mottled brown on light ground, covered with small, horny, cones, some larger softer papillae near margin; a fringe of short cilia. The dorsum usually completely covered, but occasionally a few anal segments exposed.

East and west coasts Vancouver id. Queen Charlotte ids. Alaska. California. Dredged in 15 to 250 fathoms.

Genus **GATTYANA** McIntosh

About 36 segments. Body completely covered with rough elytra. Prostomium with or without peaks. Anterior eyes more or less lateral, posterior pair the smaller, dorsal, and near posterior border of prostomium. Long palps with longitudinal rows of fine papillae. Notosetae very numerous, delicate, the majority with extensive spinous region and fine straight tips, a few short, bent, with fine pectinae. Neurosetae heavier and less numerous, with rows of pectinae and simple hooked tips.

KEY TO SPECIES

1. (2)	Notosetae with very long capillary tips.	**ciliata**
2. (1)	Notosetae without very long tips.	
3. (4)	Elytra with raised tubercles.	
4. (3)	Elytra with flat plates as tubercles.	**iphionelloides**
5. (6)	Elytral tubercles small bifid or quadrifid cones.	**cirrosa**
6. (5)	Elytral tubercles varying from simple cones to large antler-like processes.	**senta**

G. ciliata Moore **36** (Fig. 11).

Body depressed, increasing in width to about tenth segment, then decreasing gradually. Up to 45 mm. long and 16.5 mm. wide over setae. Elytra covered with coarse cilia amongst which are distributed horny papillae varying in size and shape, a few towards the outer margin being large rounded cones; the margin heavily ciliated. Prostomium without distinct peaks. Notosetae with very long whip-like tips.

Nanaimo region in 15 to 25 fathoms. West coast Vancouver island in 40 fathoms. Alaska.

G. iphionelloides (Johnson) 10, **27** (as *Harmothoe*). (Fig. 12).

Body short and broad; no appreciable decrease in width until near end. Length to 23 mm., width to about 10 mm. over setae. Elytra thick with large, rough, irregularly polygonal, flattened (or, occasionally, spiny) tubercles, forming a pattern like alligator skin; the outer margin densely ciliated. Only the elytra retain any colour (as preserved), these red-brown. Prostomium without peaks. Dorsal cirri heavy, with thick cilia towards the tip.

Nanaimo region, littoral and dredged. Alaska.

G. cirrosa (Pallas) **14,** 29 (Fig. 13).

Body long and little tapered. Up to 50 mm. long, 10 mm. wide over setae. Elytra imbricated, appearing smooth to naked eye, but actually covered with numerous minute conical tubercles with bifid or quadrifid tips; the margin ciliated. Prostomium with well marked peaks.

Nanaimo region. Alaska. Hudson bay. Dredged in about 15 fathoms in each case.

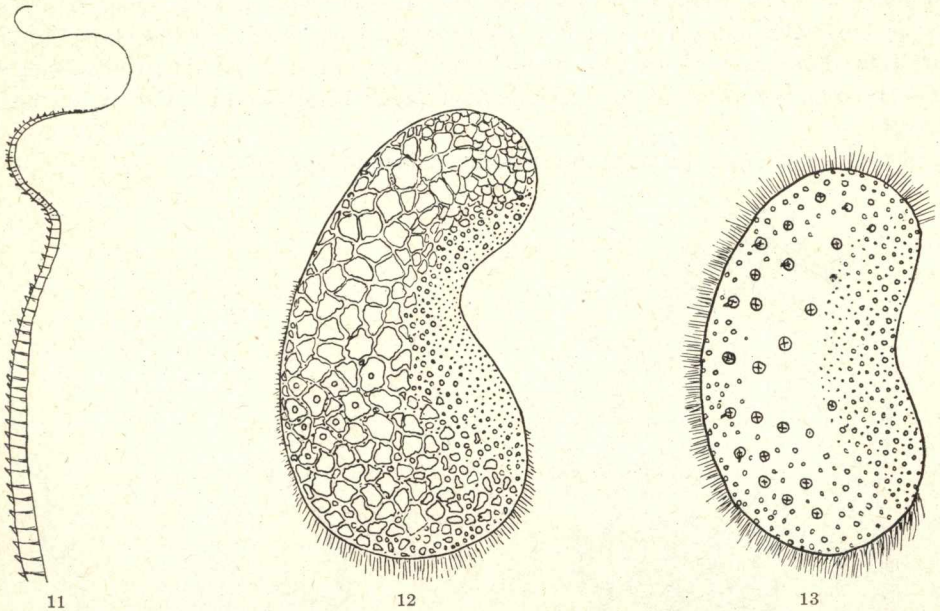

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Fig. 11. *G. ciliata* Moore, notoseta (after Moore).
" 12. *G. iphionelloides* (Johnson), elytron (after Johnson).
" 13. *G. cirrosa* (Pallas), elytron.

G. senta Moore 19 (as *Eunoe*), **36** (Fig. 14).

Body shape as in *G. ciliata*. Up to 32 mm. long and 10 mm. wide over setae. General appearance rough and with little colour (as preserved) except a dark spot on each elytron. Elytra soft and membranous, but covered with hard, horny, spines increasing in number and complexity from the anterior and internal border to the posterior and external one; the margin strongly ciliated. Prostomium without peaks. Notopodium and neuropodium terminating in acicular lobes with acicula projecting. Dorsal cirri heavily ciliated.

Gulf of Georgia to Alaska in 15 to 230 fathoms.

Genus **ANTINOE** Kinberg

As *Harmothoe*, but neurosetae long and slender with elongated spinous region and hair-like tips.

A. macrolepida Moore **39** (Fig. 15).

Length to 45 mm., breadth to 18 mm. over setae. 39 segments. Prostomium short and broad, the lobes swollen and rounded anteriorly almost eliminating the peaks. The anterior eyes very large, occupying almost all the anterior part of the prostomium; the posterior pair relatively very small and on the posterior edge. Elytra pale with brown mottlings, very large, overlapping broadly in the median line; smooth to the naked eye, but actually covered with small, curved, conical spines and a few slender clavate cilia; the margin very sparsely ciliated. Notosetae few with many rows of fine spines extending nearly to the short, blunt, straight, bare tips. Neurosetae very numerous, long and slender, the elongated distal region with rows of fine hairs throughout its length and with a long terminal bristle.

Gulf of Georgia in 20 to 30 fathoms. Alaska. California.

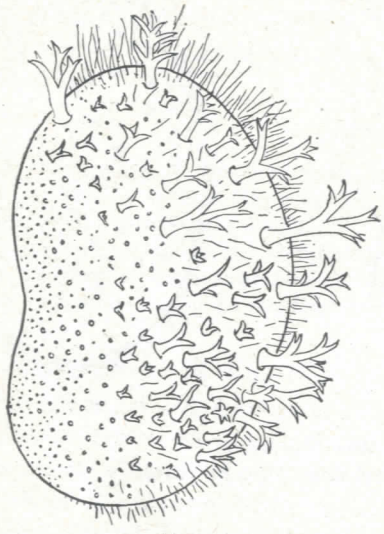

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Fig. 14. *G. senta* Moore, elytron.

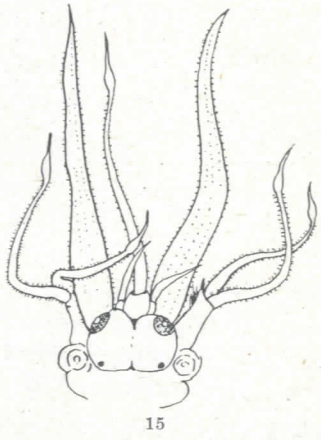

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Fig. 15. *A. macrolepida* Moore, head (after Moore).

Genus **EUNOE** Malmgren

As *Harmothoe*, but all neurosetae unidentate.

E. barbata Moore **44** (Fig. 16).

Length to 50 mm. Greatest width, over setae, to 20 mm. About 39 segments. Body robust, thick in anterior region, tapering and adpressed posteriorly. Prostomium small, peaks inconspicuous. Eyes large, the anterior pair just anterior to transverse median line of prostomium and ventro-lateral, the posterior pair dorsal and near the posterior border. Elytra mottled with grey, brown and white, covered with hard tubercles, small and numerous on the covered portion, larger,

fewer, and more complex on exposed portion, where numerous cilia also occur; a few very large tubercles studded with spines near to the posterior border and to the point of attachment; marginal fringe long and extensive. Notosetae only slightly heavier than neurosetae, with rather coarse pectinae to near the short, straight, bare tip. Neurosetae with well developed unidentate hooks and heavy pectinae.

Dredged off Berry point, near Vancouver. Alaska. California

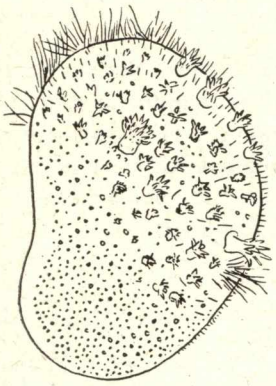

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Fig. 16. *E. barbata* Moore, elytron (after Moore).

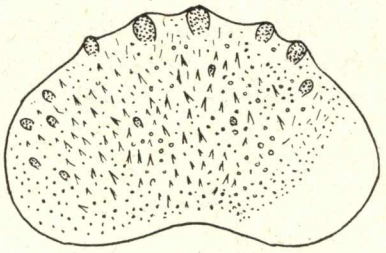

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Fig. 17. *L. multisetosa* Moore, elytron.

Genus **LAGISCA** Malmgren

Body elongate, attenuated posteriorly. 40 to 50 setigers. Elytra covering greater part of body, but (typically) some segments left entirely uncovered at posterior end. Prostomium with well defined peaks. Notosetae heavy with many close transversal rows of spinules and straight bare tips. Neurosetae with rows of pinnae and bare tips, curved, but hardly hooked, mostly bidentate in juveniles, but secondary process absent in older forms.

KEY TO SPECIES

1. (2) Neuropodium with fine cirrus at end of acicular lobe; elytra with some large, blunt, rounded papillae. **multisetosa**
2. (1) Neuropodium without marked terminal cirrus; elytra with rod-like processes. **rarispina**

L. multisetosa Moore **36** (Fig. 17).

Body slender, widest at about sixth segment. Length to 45 mm., width over setae to 10 mm., but commonly only half that size. Elytra brown with darker mottlings, thin and membranous, the greater part covered with spines of various sizes, some low and nipple-shaped, others sharply conical; a row of large, blunt, rounded papillae just anterior to posterior margin which is bare or very sparsely ciliated. Number of segments uncovered in anal region varies from fifteen or

more to six or less. (Specimens with few or no uncovered segments approximate closely to *Harmothoe*). Anterior eyes large, on ventro-lateral face of prostomium, very near to posterior pair which are only half their size. Setae long and numerous in both rami.

East and west coasts of Vancouver is. north to Queen Charlotte islands and Canadian Arctic. Alaska. Lower California. Usually dredged in moderate depths; occasionally littoral.

L. rarispina Malmgren **31** (Figs 18 and 19).

Length to 65 mm., width over setae to 20 mm. Elytra similar to those of *L. multisetosa* except that the spines are all small and uniform and the large rounded papillae are replaced by long rods; the margin very sparsely ciliated. Eight to fifteen segments left uncovered in anal region. Anterior and posterior eyes same size and the pairs well separated. Setae as in *L. multisetosa*.

Gulf of Georgia in 18-230 fathoms. Alaska. Hudson bay.

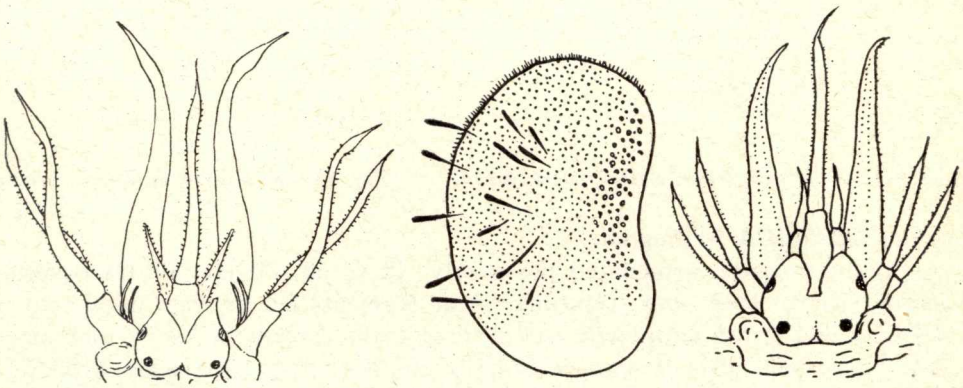

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Fig. 18. *L. rarispina* Malmgren, head (after Malmgren).
Fig. 19. *L. rarispina* Malmgren, elytron. Fig. 20. *E. cirrata* Treadwell, head.

Genus **ENIPO** Malmgren

Fifteen pairs of elytra, all on anterior region of body. Lobes of prostomium rounded anteriorly Notopodium reduced, bearing only few setae.

E. cirrata Treadwell 9, 10, **53** (Fig. 20).

Length more than 50 mm., width over setae 8 mm. Elytra small, orbicular, smooth and brown; no marginal fringe. Eyes large and equal, posterior pair dorsal, anterior pair lateral. Notosetae few, short, curved, and finely pectinate. Neurosetae more numerous, longer, slightly thicker, more heavily pectinate, and with curved sharp tips.

Occurring both free and commensally with the maldanid *Nicomache lumbricalis* (Fabricius).

Deep bay, east coast Vancouver id., dredged in 20 fath. (free-living). Alaska, dredged in 60-70 fath. (commensal).

Genus **HERMADION** Kinberg

Fifteen pairs of elytra. Posterior end of body uncovered. Notosetae stout, almost smooth or with numerous rows of very fine teeth. Neurosetae, typically, unidentate.

H. truncata Moore **36** (as *Harmothoe*) 41 (Fig. 21).

Body widest at fifth or sixth segment, tapering gradually to attenuated caudal region. Length to 80 mm., width about 14 mm. over setae. About 63 segments. Elytra brown, the outer half lighter than the inner, soft, flexible, and covered with insignificant tubercles, no cilia or papillae. Up to about twenty-five terminal segments left uncovered. Prostomium without peaks. Palps seven to

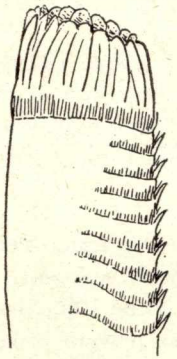

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Fig. 21. *H. truncata* Moore, end of notoseta (after Moore).

eight times length of prostomium. Lateral tentacles inserted subterminally, very short. Notosetae long, stout, slightly curved, with numerous close and long rows of excessively fine teeth and with truncate tips. Neurosetae with rows of pectinae, slightly hooked, unidentate in adults, but some juveniles with bifid tips.

Gulf of Georgia and north to Alaska. Dredged in 18 to 107 fathoms; occasionally littoral (False narrows, Nanaimo region).

Genus **HALOSYDNA** Kinberg

Eighteen pairs of elytra. Lateral tentacles inserted as in *Lepidonotus*. Notosetae short and slender. Neurosetae longer, with heavy subterminal pectinae and bare, curved tips, unidentate or bidentate.

H. brevisetosa Kinberg 8 (as *H. insignis*), 19, **26** (as *Polynoe*) 44.

Body short and robust, in free-living forms, to long and slender in commensals. Up to 80 mm. long and 13 mm. wide over setae and with 37 segments in free-living forms. Dimensions and number of segments variable in commensals. Prostomium as broad as long. Both pairs of eyes strictly dorsal, the anterior pair at the widest point of prostomium, posterior pair near posterior margin. Coloration varying from yellow to orange, through brown and iron-grey, to almost black. Elytra correspondingly variable; more or less mottled with spots of general body colour on lighter ground. Anterior elytra frequently with large rounded tubercles, the remainder with minute tubercles; usually a conspicuous white spot over elytrophore; a light marginal fringe, which may be absent in commensals. Notopodium very small with short serrated setae. Neuropodium robust with stout setae much longer than notosetae with heavy pectinae and scarcely hooked, blunt, unidentate tips. Free-living and commensal with the terebellids *Neoamphitrite robusta* (Johnson) and *Pista pacifica* Berkeley.

Common throughout region, littoral and dredged. Gulf of Georgia. West coast Vancouver is. Alaska. California.

Genus **HOLOLEPIDA** Moore

Body very elongated; up to about 120 segments. Elytra arranged as usual in the family in anterior region, but on every segment in posterior region. Notosetae fine smooth capillaries. Upper neurosetae slenderly lanceolate and finely denticulate, lower neurosetae frilled and with bidentate tips.

H. magna Moore **39**.

Length to 250 mm., width to 20 mm. over setae. Body depressed, increasing in width to about the twenty-fifth segment, then remaining uniform until the last few. Elytra very numerous, some 100 pairs on larger specimens. Elytra large, soft, smooth, and gelatinous, the margin broadly lobed. They are drawn downward at the central point of attachment, giving them a flat funnel shape; all overlap those adjacent to them in both directions. Dorsal surface of body and elytra raisin-red. Prostomium twice as wide as long. Lateral tentacles inserted terminally. Eyes very large, black, covering the sides of the posterior region of the prostomium and more or less hidden by a membranous extension of the peristomium (occipital flap). Palps stout, reaching back to 5th setiger. The three tentacles and the tentacular cirri all about the same length, approximately two-thirds that of the palps. The setae as described for the genus.

Not common. Dredged on gravel bottom in 8 to 50 fathoms in Nanaimo region. Gulf of Georgia. Alaska.

Genus **LEPIDAMETRIA** Webster

Up to 150 segments and 50 pairs of elytra, in pairs on alternate segments anteriorly, but irregularly distributed posteriorly. Notopodium represented by an aciculum and, sometimes, a few setae.

L. longicirrata (Berkeley) **2** (as *Lepidasthenia*) (Fig. 22).

Length to 55 mm., width to 7 mm. over setae. General body colour brown with darker markings. Elytra thin, flexible, semi-transparent, smooth, with brown markings; may be large and overlap in median line or smaller, leaving a considerable portion of dorsum uncovered. Thirty or forty elytra on either side, borne as usual in the family until the forty-sixth segment, after that the elytra of the right side continue on every third segment until about the ninety-first, while, on the left side, they are on 47, 50, 53 . . . . . 92. Prostomium wider than long. The anterior pair of eyes, the larger, at the edge of the prostomium at its widest point, the posterior pair close to the posterior edge. Style of median tentacle nearly five times the length of prostomium; palps almost as long. No notosetae. Neurosetae of three kinds, only the heavy median ones with bifid ends; all with subterminal rows of pectinae. In specimens with small elytra few or no lighter neurosetae.

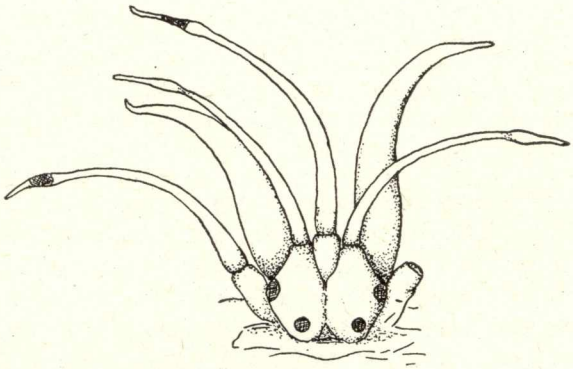

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Fig. 22. *L. longicirrata* (Berkeley), head.

Specimens with small elytra, fewer neurosetae, and very long palps, commensals. Commensalism known with *Praxillella affinis* (Sars) var. *pacifica*. Commensals and free-living forms from both coasts of Vancouver island. Littoral and dredged in 15 to 20 fathoms.

Genus **POLYEUNOA** McIntosh

Up to 100 segments and 40 pairs of elytra, on alternate segments anteriorly, but at wider intervals and irregularly distributed posteriorly. Notosetae stout, smooth, or very slightly striated. Neurosetae unidentate.

P. tuta (Grube) 9, **27** (as *Harmothoe*).

Length to 85 mm. Width over setae to 12 mm. Elytra thin, translucent, smooth, nearly circular, imbricated and suffused with brown pigment, particularly on inside edge, where they overlap forming a dark median dorsal line, and

on the posterior edge. Thirty-five to forty elytra on each side distributed somewhat irregularly, particularly posteriorly. Eyes black, equal in size, the anterior pair dorso-lateral, the posterior pair dorsal. Palps and tentacles short. Setae numerous, notosetae short, curved, and rather coarsely serrated near the tips; neurosetae heavier with about 12 rows of pectinae.

Commensal with the terrebellid *Neoamphitrite robusta* (Johnson). Gulf of Georgia north to Queen Charlotte islands. Alaska.

Genus **ARCTONOE** Chamberlin

Up to about 60 segments. Elytra on alternate segments anteriorly, but more or less irregular posteriorly; continued to end of body, but often leaving a broad median dorsal area exposed. Notosetae present on at least a few anterior segments; neurosetae typically without pectinae. Usually commensals.

KEY TO SPECIES

1. (2) External margins of elytra ruffled or folded. **fragilis**
2. (1) External margins of elytra flat or almost so.
3. (4) In setigers posterior to the third some superior neurosetae with almost straight bifid tips. Dorsum usually with dark band across segments 7 and 8. **vittata**
4. (3) In setigers posterior to the third all superior neurosetae with hooks like inferior ones. **pulchra**

A. fragilis (Baird) 9 (synonymy), **26** (as *Polynoe*) (Fig. 23).

Body tapering gradually to posterior end. Length to 55 mm., width over setae to 10 mm. Up to 60-70 segments. Not conspicuously coloured. Elytra thin, membranous; up to thirty-four pairs or more. Broad longitudinal area of dorsum uncovered. Prostomium wider than long. Tentacles shorter than prostomium, stout, with fine terminal filaments. Parapodia rather long; dorsal cirrus short and thick, abruptly reduced to terminal filament; ventral cirrus rudimentary or absent. Notosetae few, with serrated bifid tips. Neurosetae stout, almost smooth, hooks (a few with bifid tips may occur in segments 1 to 3).

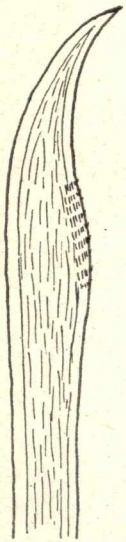
Commensal with the starfish *Evasterias troschelii* Stimpson, *Luidia foliolata* Grube, *Stylasterias forreri* (de Loriol). Littoral and dredged. Gulf of Georgia to Queen Charlotte islands. Alaska. Lower California.

A. vittata (Grube). 19 (synonymy), **26** (as *Polynoe lordi*) (Figs. 24 and 25).

Body shape as in other members of genus. Length to 55 mm., width over setae to 8 mm. Up to 78 segments. Little colour. Elytra small, smooth, sometimes with undulate margin; colourless or with a few black markings; up to 40 pairs. Dorsum broadly exposed between elytra. Prostomium broader than long; posterior eyes at extreme base of prostomium. Tentacles short and stumpy with long filiform tips. Parapodia short, notopodium rudimentary, achaetous (rarely a few small setae); neuropodium stout with some superior setae with almost straight, blunt, bifid tips and the usual heavy hooks inferiorly, the latter occasionally with traces of pectinae on the concave surface of the hook.

Commensal with the molluscs *Diadora aspera* Eschscholtz, *Puncturella multistriata* Dall, *Cidarina cidaris* Adams, *Cryptochiton stelleri* Middendorff, and with the terebellid *Neoamphitrite robusta* (Johnson).

Littoral and dredged. Gulf of Georgia and west coast Vancouver island to Alaska. South to Ecuador.



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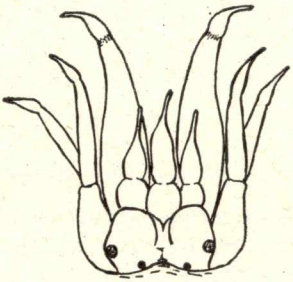

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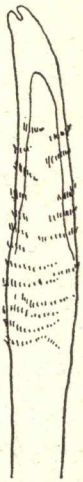

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Fig. 23. *A. fragilis* (Baird), end of neuroseta (after Johnson).
" 24. *A. vittata* (Grube), head.
" 25. *A. vittata* (Grube), neuroseta with bifid tip.

A. pulchra (Johnson) 9 (synonymy), **26** (as *Polynoe*).

Body shape as in other members of genus. Length to 50 mm., width over setae to 10 mm. Frequently with conspicuous colour to conform with that of host, or may be uncoloured. Most commonly amber to red. Up to sixty-five segments. Elytra slightly undulate at margin, spotted or unspotted, very smooth, thirty-three pairs or more. Uncovered dorsal area usually rather narrow. Prostomium wide and short; eyes close to posterior edge. Tentacles about same length as prostomium, thick; rather long and coarse terminal filaments. Parapodia long; dorsal cirrus long with thickened base and filamentous tip; ventral cirrus small and pointed. Setae as in *A. fragilis*.

Commensal with the starfish *Luidia foliolata* Grube, *Solaster stimpsoni* Verrill, *Pteraster tesselatus* Ives, and the holothurian *Stichopus californicus* (Stimpson). Littoral and dredged.

Gulf of Georgia; west coast Vancouver is. to Queen Charlotte islands. Alaska. South to Lower California.

SIGALIONIDAE

Body elongate and vermiform. Segments and elytra numerous. Prostomium rounded or oval; four sessile eyes. One to three tentacles and two palps. Proboscis evertible, with a border of papillae and four chitinous jaws. Two pairs of tentacular cirri. Ventral cirri on all segments. Parapodia biramous. Notosetae simple; neurosetae both simple and compound or all compound.

KEY TO GENERA

1. (2) No branchiae; a single tentacle. **PHOLOE**
2. (1) A cirriform branchia on every parapodium except the first; three tentacles (the laterals partly fused with the first setiger). **STHENELAIS**

Genus **PHOLOE** Johnston

Body small, linear, tapered posteriorly. Elytra on every segment posterior to the twenty-third. No dorsal cirri. Notosetae fine denticulated capillaries; neurosetae much heavier, compound, the terminal piece with unidentate hook and serrated edge.

P. tuberculata Southern 2 (as *P. minuta*), 10, **48** (Fig. 26).

Length to 21 mm., 68 setigerous segments. Body tapering rapidly at both ends. Prostomium with a deep cleft in front in which the tentacle is placed. Two pairs of large black eyes, the pair on each side merging. A large facial tubercle beneath, and extending beyond, the tentacle. Ventral surface of body and parapodia covered with small papillae. Fifty-six pairs of elytra, covering the dorsum excepting a narrow median space in the anterior region. Elytra with or without irregular pigmented areas and with marginal papillae; the first pair small and rounded with a few surface papillae, the remainder irregularly oval without surface papillae. Parapodia distinctly biramous, the notopodium forming a flattened hood-like expansion above the neuropodium. Notosetae of two kinds; long straight slender capillaries, serrate for a great part of their length, and short, sharply bent capillaries, serrate only at the bend. Neurosetae as defined for the genus.

Nanaimo region, littoral and dredged in 10-25 fathoms. West coast Vancouver island, littoral. Ireland.

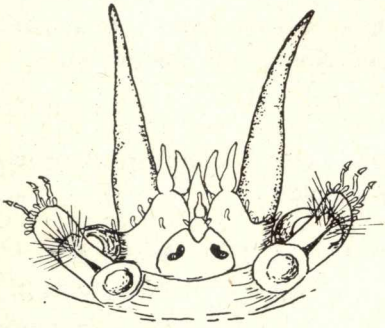
Genus **STHENELAIS** Kinberg

Median tentacle stout, a pair of cirriform ctenidia at the base of the ceratophore. Two lateral tentacles fused to first pair of setigers which also bear the tentacular cirri and are carried forward above the palps. Palps long. Ciliated ctenidia between branchiae and notopodia. Notosetae serrated on one or both edges or almost smooth. Neurosetae compound with bidentate terminal pieces, the secondary hook articulated or pseudoarticulated, often some simple pinnate spines.

S. articulata Kinberg 19 (as *S. hancocki*), 21, **44** (as *S. tertiaglabra*) (Fig. 27).

Length to 70 mm.; greatest width, over parapodia (excluding setae) 5 mm. Up to 81 segments. Prostomium somewhat wider than long. Eyes black, the anterior pair concealed from dorsal view by tentacular ctenidia and smaller than the posterior pair which are situated slightly posterior to the base of the median tentacle. Palps slender, white and smooth, about five and a half times the length of the prostomium. Elytra completely covering the dorsum and overlapping posteriorly and medially, thin and devoid of markings except a few dark patches on some anterior ones; a considerable area of surface covered with small trihedral spines and a sparse fringe of rather long marginal papillae. Frequently a rusty deposit on the elytra in the posterior region. Notosetae long, slender, very finely fringed capillaries. A few superior neurosetae in some anterior segments compound with slender, articulated end-pieces with bifid tips and spinose shafts; these are replaced by simple spinose setae further back. Median and inferior neurosetae with smooth shafts and slender, articulated, bifid end-pieces. A few heavy bifid falcigers in posterior segments.

East and west coasts Vancouver island. California.



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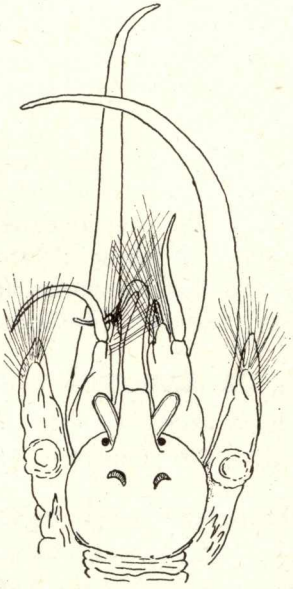

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Fig. 26. *P. tuberculata* Southern, head (after Southern).
" 27. *S. articulata* Kinberg, head (after Moore).

ACOETIDAE

Body usually long with many segments. Prostomium bilobed or globular, with ommatophores or sessile eyes or both. A median tentacle and usually two

laterals. One or two pairs of tentacular cirri. Parapodia biramous. Several kinds of setae; rarely compound.

Genus **PEISIDICE** Johnson

Body small, segments few. A median tentacle and one pair of tentacular cirri. No dorsal cirri. All neurosetae compound.

P. aspera Johnson **26** (Fig. 28).

Body elongate-elliptical, equally rounded at both ends. Length to 10 mm.; greatest width 2-3 mm. 35-38 setigerous segments. Prostomium and parapodia completely covered by elytra, but a wide median strip of the dorsum exposed for nearly the entire length. Prostomium globular, extended into the heavy-based median tentacle which has a filiform tip and long papillae subterminally. A pair of tentacular cirri similar to the tentacle. Palps short and grooved. Seventeen to nineteen pairs of elytra marked with concentric lines and dark central spot; a heavy fringe of knobbed papillae. Elytra and exposed surface of dorsum coated with fine sand grains. Notosetae simple serrated capillaries; neurosetae with falcate, unidentate, serrated end-pieces.

Nanaimo region and west coast Vancouver island, dredged in about 25 fathoms. Princess Louise inlet in 20 fathoms. Alaska. California. Galapagos.

CHRYSOPETALIDAE

Body short or elongated. Few or many segments, each carrying dorsally a fan, or row, of paleae. Prostomium with four eyes and three tentacles. One, two, or four pairs of tentacular cirri. Two palps. Parapodia biramous with dorsal cirri on every segment. Notosetae in form of paleae. Neurosetae compound.

Genus **PALEANOTUS** Schmarda

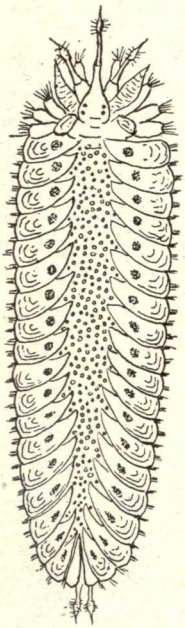
Body short, few segments. Prostomium and peristomium fused. One pair of tentacular cirri. Notopodium with two kinds of paleae.

P. chrysolepis Schmarda **26** (as *Heteropale bellis*), 34 (Figs. 29 and 30).

Body elongate-elliptical, slightly and equally tapered at both ends. Up to 10 mm. long and 1 mm. wide; usually smaller. Twenty-seven to thirty-nine segments. Dorsum almost completely covered by paleae. Prostomium rounded and fused with peristomium. The anterior eyes much larger than the posterior. Median tentacle unjointed, lateral tentacles two-jointed, tentacular cirri three-jointed; all rather short and stumpy. Palps globular. Dorsal cirri in anterior segments three-jointed, the length and number of joints becoming greater in more posterior segments. Ventral cirri very short and jointed. Paleae of two kinds, the superior broad and spatulate, the inferior narrower and pointed. Neurosetae with long

unidentate serrated end-pieces which are straight in the superior setae, hooked in the remainder.

Nanaimo region, littoral and dredged in 15 fathoms. Alaska. California. Panama. S. Africa.



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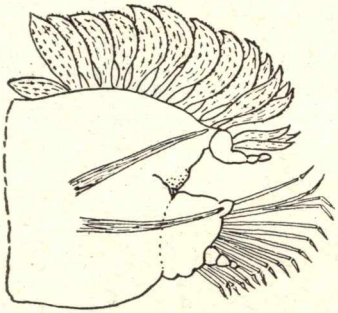

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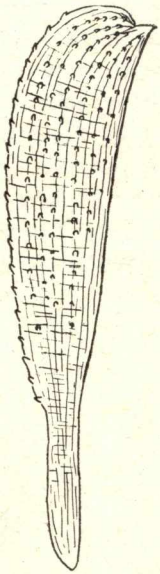

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Fig. 28. *P. aspera* Johnson, dorsal view (anterior elytra removed to show head).
" 29. *P. chrysolepis* Schmarda, parapodium (after Johnson).
" 30. *P. chrysolepis* Schmarda, superior palea (after Johnson).

TOMOPTERIDAE

Body short, flattened, transparent; divided into two or three distinct regions, head, trunk and sometimes, tail. Two divergent, more or less flattened, heavy tentacles, about as long as the head region. Two pairs of tentacular cirri; the first pair small or sometimes absent, the second pair with long trailing acicular processes. Two eyes. Proboscis unarmed. Parapodia terminating in lammelar expansions (pinnules) containing chromophile glands and either hyaline glands or rosettes.

Genus **TOMOPTERIS** Eschscholtz

Parapodial rami more or less conical, bordered all round by flattened pinnules usually containing hyaline glands.

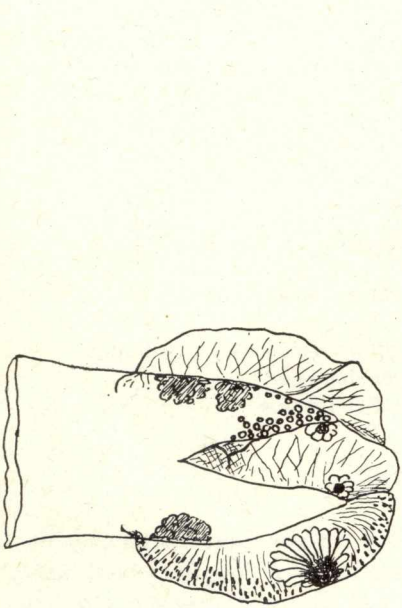
KEY TO SPECIES

1. (2) Tail present. **renata**
2. (1) Tail absent. **septentrionalis**

T. renata Berkeley **3** (as *T. elegans*), 5 (Figs. 31 and 32).

Up to 35 mm. long, excluding tail. 23 pairs of parapodia. Usually two pairs of tentacular cirri, the first pair about half as long as the tentacles, the second pair decidedly longer than the body excluding the tail. The first pair sometimes absent. Rosettes present on first two pairs of parapodia on anterior side of trunk. Succeeding parapodia with a rosette on the pinnules of both rami, but none on the trunks. Chromophile glands begin on third parapodia and are present on the ventral pinnules of these and all succeeding parapodia. The tail may be more than half as long as the body region; it tapers very gradually to a rounded tip and is divided into twelve elongate segments.

Departure bay, Nanaimo; in plankton.



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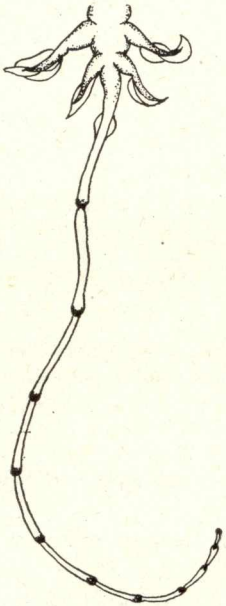

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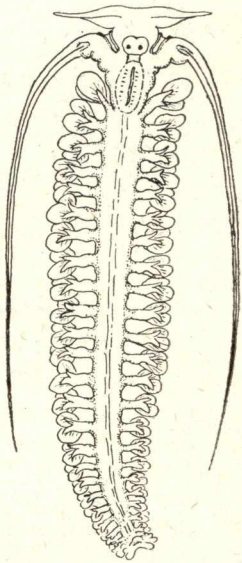

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Fig. 31. *T. renata* Berkeley, median parapodium. Fig. 32. *T. renata* Berkeley, tail.
Fig. 33. *T. septentrionalis* Quatrefages, dorsal view.

T. septentrionalis Quatrefages **14** (Fig. 33).

Up to 15 mm. long; 20-23 pairs of parapodia. An anterior pair of tentacular cirri absent; the posterior pair extending half to four-fifths the length of the body. Chromophile glands in the ventral pinnules only, beginning on the fourth pair of parapodia and continuing to the end of the body, sometimes poorly developed.

Hyaline glands, often small and indistinct, above and behind the chromophile glands. No rosettes.

Widely distributed in plankton. Atlantic. Mediterranean.

SPHAERODORIDAE

Body short and broad, or elongated and narrow; covered with papillae, two or more rows of larger spherical capsules. Prostomium indistinct; tentacles represented by papillae. Two or four eyes posterior to the prostomium. Achaetous peristomium with a pair of large papillae as tentacular cirri. Proboscis unarmed; cylindrical or globular. Parapodia uniramous, large papillae representing the cirri. Setae simple or compound. An unpaired anal cirrus.

KEY TO GENERA

1. (2) Body elongated, two longitudinal rows of capsules. **EPHESIA**
2' (1) Body short and broad, more than two longitudinal rows of capsules. **SPHAERODORUM**

Genus **EPHESIA** Rathke

Capsules spherical with short terminal processes. Pygidium with two capsules and an anal cirrus.

E. papillifer (Moore) **43** (as *Sphaerodorum*).

Up to 38 mm. long, 1 mm. wide, about 100 segments. Body filiform. Prostomium very small, often invaginated in anterior segments, a rounded lobe with four filiform tentacular papillae not easily seen. Peristomium also very small and indistinctly differentiated, achaetous, but with small globular dorsal cirri. Two groups of eye-spots. Parapodia inconspicuous, uniramous, conical, covered with conical papillae, a large one of which at the distal end forms a postsetal lip. Dorsal cirri represented by spherical capsules each with a minute, blunt, terminal process; ventral cirri by large, biarticulate papillae. Setae few in each parapodium; rather stout, with straight shafts expanded subterminally and ending in gently curved, hooked blades. Coloration, as preserved, fawn to grey.

East coast Vancouver island, dredged in about 25 fathoms. California.

Genus **SPHAERODORUM** Oersted

Capsules spherical on short stems, with no terminal process. Pygidium with small papillae and anal cirrus.

S. minutum (Webster and Benedict) **14**, 48 (Fig. 34).

Body thick and short. Up to 5 mm. long, 1 mm. wide; about 30 setigers. Prostomium, retractile into anterior segments, covered with small papillae and with five elongated ones simulating tentacles. Peristomium with two long cirri-

form dorsal papillae as tentacular cirri. Two eyes. Ten to fourteen spherical capsules approximately equidistant from one another across the dorsum of each segment, making as many longitudinal rows the length of the body. Ventrally, only small, scattered spherical papillae. Parapodia small, cylindrical, bearing pyriform papillae and terminating in two long elongated papillae, one of which serves as a ventral cirrus. The outermost of the rows of capsules represent dorsal cirri. In each parapodium four to nine compound setae with widened and roughened ends to the shafts and more or less elongated, curved end-pieces. Coloration, as preserved, grey to white.

Queen Charlotte sound (depth unrecorded). Alaska. Arctic.

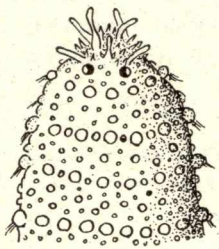

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Fig. 34. *S. minutum* (Webster and Benedict), anterior region.

AMPHINOMIDAE

Body elongated and tetragonal, or depressed and oval. Small prostomium set between anterior parapodia. Two palps. Proboscis entirely unarmed. Parapodia usually biramous. Branchiae well developed.

Genus **EUPHROSYNE** Savigny

Body oval, depressed, dorsum bristly; segments few. Prostomium bent over anterior end of body, partly dorsal, partly ventral. Caruncle with three parallel longitudinal lobes. A median tentacle and a pair of small lateral tentacles on ventral surface. Palps much reduced. Parapodial lobes barely separated. Two dorsal cirri; one ventral cirrus. Notosetae forked, in transverse rows across dorsum. Neurosetae forked, in lateral bundles. Branchiae in transverse rows.

KEY TO SPECIES

1. (2)	Dorsum completely covered by notosetae.	**bicirrata**
2. (1)	Dorsum with longitudinal-median area uncovered.	
3. (4)	5 pairs of branchiae.	**arctia**
4. (3)	11 to 13 pairs of branchiae.	**hortensis**

E. bicirrata Moore 20, **39**, 45 (Figs. 35 and 36).

Length to 30 mm.; width to 12 mm. 25-26 segments. Body robust, depressed, the anterior end broadly rounded, the posterior narrower and more tapering. Dorsum completely covered by notosetae. Caruncle reaching to fifth segment.

Two pairs of black eyes, dorsal and ventral respectively; the dorsal pair the larger, situated at anterior end of caruncle. Median tentacle, arising between them, about two-thirds the length of caruncle. Palps ovoid. Six or seven pairs of bi- or tripartite branchiae on most segments, their filaments, as also the dorsal cirri, long, slender and tapering. Notosetae glistening white and very long, concealing the branchiae and cirri; all bifurcate, some coarsely dentate. Neurosetae bifurcate, smooth.

Nanaimo region in 20-30 fathoms; Baynes sound in 100 fathoms. Jervis inlet, B.C., littoral. Alaska to California.

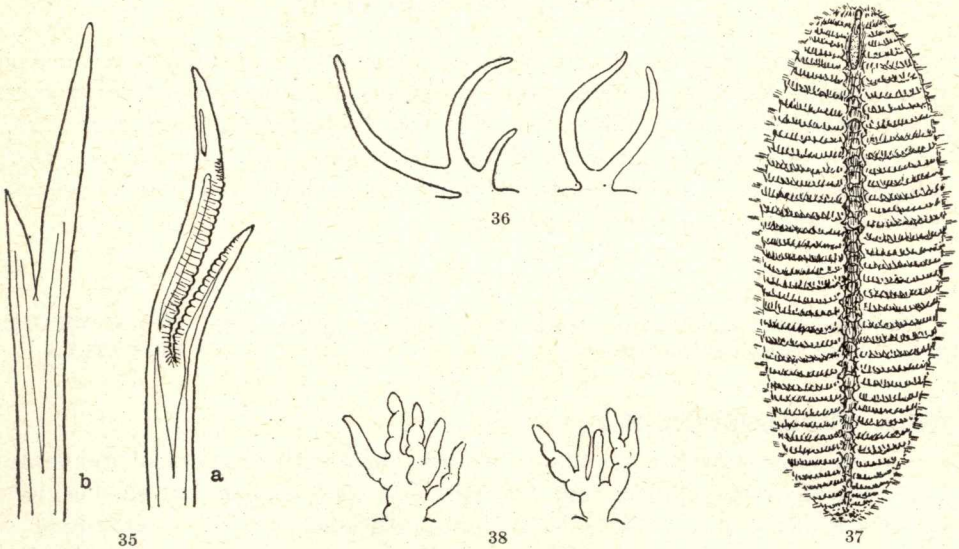


Fig. 35. *E. bicirrata* Moore, (*a*) dentate notoseta, (*b*) neuroseta (after Moore).
" 36. *E. bicirrata* Moore, branchiae (after Moore).
" 37. *E. hortensis* Moore, dorsal view.
" 38. *E. hortensis* Moore, branchiae (after Moore).

E. arctia Johnson **26**, 41.

Length about 10 mm. About 22 segments. Body equally rounded anteriorly and posteriorly. A median bare strip whole length of the dorsum, about a fifth its width. Caruncle reaches posterior edge of fifth segment. Median tentacle less than half the length of caruncle; two very large elongate eyes at its base. Ventral eyes and tentacles small. Branchiae with numerous spreading branches finely subdivided. Some notosetae dentate inside forked ends. Neurosetae forked and not dentate, secondary tooth small.

Nanaimo region in 15 fathoms. Alaska to California.

E. hortensis Moore **39** (Figs. 37 and 38).

Length to 60 mm., width to 20 mm., 35-40 segments. Ends of body rounded. A well-marked bare median dorsal area about a seventh the width of the body.

The rows of branchiae, setae, and cirri well defined and regular. Caruncle reaches posterior edge of sixth segment. A pair of small dorsal eyes, between which arises the very short median tentacle. Ventral eyes and lateral tentacles minute. Branchiae with six to ten branches, not concealed by setae. Some notosetae with dentate forked ends, others with smooth ends and well defined lateral spur. Neurosetae similar to the latter.

Nanaimo region in 20-30 fathoms. Alaska to California.

TYPHLOSCOLECIDAE

Body small, transparent, fusiform or cylindrical. Prostomium terminating in a palpode. No eyes. Prominent nuchal organs. Prostomium and peristomium fused, bearing two large foliaceous cirri. Two following segments each with a single pair of foliaceous cirri; thereafter each segment with dorsal and ventral foliaceous cirri on each side. Parapodial processes much reduced, with an aciculum and some simple acicular setae. Pelagic.

KEY TO GENERA

1. (2) Head with large dorsal and ventral lobes with long retractile cilia. **TYPHLOSCOLEX**
2. (1) Head without ciliated lobes. **SAGITELLA**

Genus **TYPHLOSCOLEX** Busch

Body short, tapering, circular in section. Head with large dorsal and ventral lobes bearing long, vibratile and retractile cilia, two similar, but smaller, lobes either side of the main dorsal lobe, and two foliaceous cirri. Setae starting at the fifth segment. Two long anal cirri.

T. mulleri Busch **14** (Fig. 39).

Up to 5 mm. long, uncoloured. 15-25 segments. Body wide anteriorly, gradually narrowed to a pointed end. Prostomial palpode filiform, placed ventrally on a large, swollen, cylindrical base. Dorsal and ventral cephalic lobes of same width. Under the dorsal lobe, on each side, a ciliated knob. A large foliaceous cirrus on each side of head. Cirri disposed thereafter as described for the family. From the fifth segment back there are small parapodia, each with two acicular setae.

West coast Vancouver island in plankton. Atlantic. Mediterranean. Adriatic.

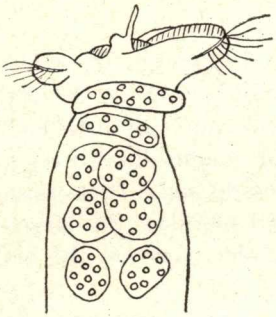
Genus **SAGITELLA** Wagner

Body slender, elongate, fusiform. Prostomium conical, with nuchal organs more or less distinct and foliaceous lateral cirri well developed. Setae starting at the third segment. Two large foliaceous anal cirri.

S. kowalewskii Wagner **14** (Fig. 40).

Up to 17 mm. long; 25-50 clearly defined segments. Two ciliated nuchal organs. Foliaceous cirri, well developed and disposed as described for the family, with characteristic sieve-plates. Parapodia much reduced, with two or three aciculiform setae in all except the first few.

West coast Vancouver island in plankton. Atlantic. Mediterranean.



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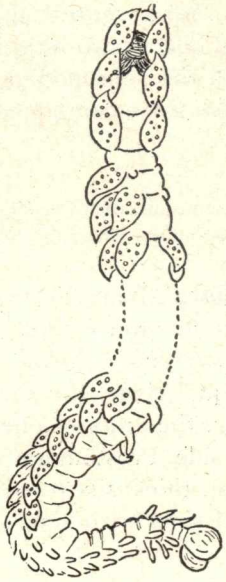

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Fig. 39. *T. mülleri* Busch, anterior region, lateral view (cephalic cirri removed) (after Fauvel).
" 40. *S. kowalewskii* Wagner, dorsal view (some cirri removed to show reduced parapodia).

GLYCERIDAE

Body elongate, more or less attenuated at extremities. Numerous segments, often bi- or tri-annulate. Prostomium conical, annulated, terminating in four small tentacles. Proboscis evertible, cylindrical or clavate, covered with small papillae and sometimes terminating in a ring of large ones; with or without complex paragnaths and with two or four hooked, chitinous jaws. Parapodia uniramous or biramous. Setae compound, or both simple and compound. Branchiae simple, complex, or absent. Two anal cirri.

KEY TO GENERA

1. (2) Body divided into two regions, an anterior with uniramous, a posterior with biramous, parapodia.
2. (1) Body not divided into two regions.
3. (4) Proboscis with two rows of V-shaped denticles (chevrons) near base. (Fig. 44). **GONIADA** (p. 32)
4. (3) Proboscis with no chevrons. **GLYCINDE** (p. 34)
5. (6) Parapodia all uniramous. **HEMIPODUS** (p. 36)
6. (5) Parapodia all biramous, except the first two. **GLYCERA** (p. 36)

Genus **GONIADA** Audouin and Milne-Edwards

Posterior region of body wider and flatter than anterior. Eyes sometimes present. Proboscis cylindrical, covered with papillae and terminating in a ring of large soft ones. Two large multidentate, chitinous, hooked jaws and several complex paragnaths making with them a more or less complete terminal circlet. Uniramous parapodia of anterior region with a dorsal cirrus, one, two, or three setal lips and a ventral cirrus; biramous parapodia of posterior region with a cirrus and one or two setal lips in the notopodium, and with three setal lips and a cirrus in the neuropodium. No branchiae. Notopodial setae simple capillaries; neuropodial setae compound.

KEY TO SPECIES

1. (2) Prostomium with five rings and lateral grooves. **annulàta**
2. (1) Prostomium with more than five rings and no lateral grooves. **brunnea**

G. annulata Moore 10, 15, **39** (Figs. 41, 42 and 43).

Up to 90 mm. long, 3 mm. wide, and about 160 segments. Anterior region consisting of thrity-three or thirty-four segments. Prostomium divided into five very unequal rings, the posterior one longer than the combined lengths of the other four, the anterior one very small; a lateral, longitudinal, irregular groove on either side. Prostomium and peristomium fused dorsally. Proboscis very long, cylindrical, thickly covered with pointed, hooked papillae, the larger ones, on the dorsal side, with single bent spines, the smaller ones, on the ventral side,

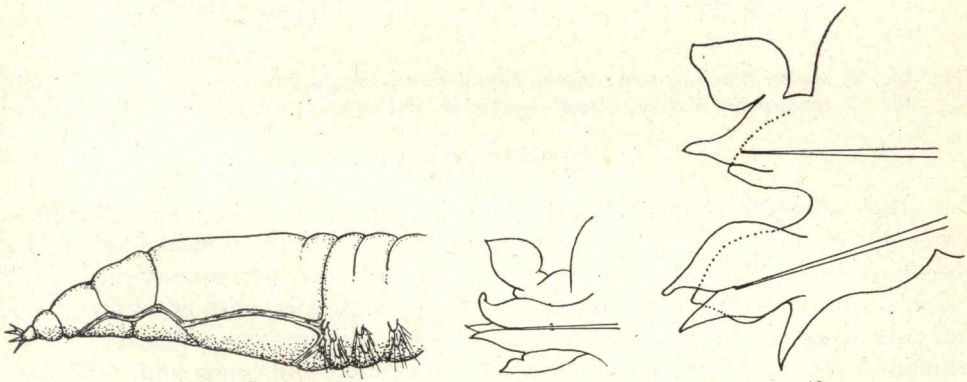

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Fig. 41. *G. annulata* Moore, head, lateral view.
" 42. *G. annulata* Moore, anterior parapodium (setae omitted) (after Moore).
" 43. *G. annulata* Moore, posterior parapodium (setae omitted) (after Moore).

often bifid. Jaws with large terminal teeth and three or four smaller ones, five or six large X-shaped paragnaths ventrally and about fifteen smaller ones dorsally. About twenty chevrons on each side. Parapodia in anterior region with three conical, subequal lips, dorsal cirri prominent, broadly ovate and foliaceous;

thick, conical ventral cirri. Those in posterior region with a foliaceous cirrus and two acutely conical lips, the presetal the longer, in the notopodium; the neuropodium with three conical, foliaceous lips, the two presetal ones equal in length and both longer and more pointed than the postsetal, an acute conical cirrus. Setae in the anterior region and the neuropodium of the posterior region all compound with long, slender blades; notosetae in posterior region simple, thicker, shorter, finely serrated and abruptly tapered to acute tips. Coloration purplish-brown with lighter intersegmental lines, iridescent.

East coast Vancouver island, dredged in 200 to 250 fathoms. Alaska. California. Ceylon.

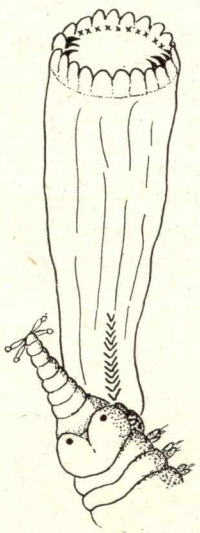

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Fig. 44. *G. brunnea* Treadwell, head with extended proboscis.

G. brunnea Treadwell 45, **49** (Fig. 44).

Up to about 160 mm. long, 5 mm. wide over setae at widest point; very numerous segments, 40 to 50 in the anterior region. Prostomium with seven or eight equal rings and a wider basal one bearing two indistinct eyes. Apical tentacles biarticulate. Proboscis very long, cylindrical, covered with minute hemispherical papillae; each of the two jaws with four large claw-like teeth, no dorsal paragnaths, about nine ventral ones. From nine to eighteen chevrons in each row, varying with the size of the individual. Parapodia in anterior region with three lips, a broad, foliaceous dorsal cirrus and a ventral cirrus closely resembling the lips. In the posterior region the neuropodium is very similar to this, whilst the notopodium has two lips and a cirrus similar to the notocirrus in the anterior region. Setae as described for *G. annulata*. Coloration pale to dark brown, paler intersegmentally.

East and west coasts Vancouver island. California. Hawaii.

Genus **GLYCINDE** Müller

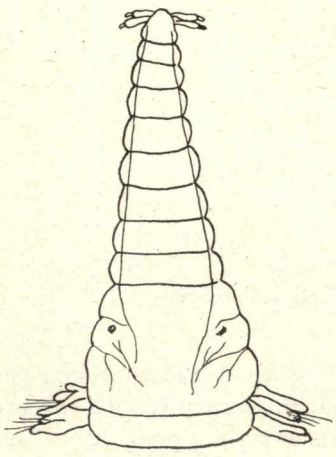
As *Goniada*, except that there are no chevrons on the proboscis and the notosetae have a knob-like prominence on one side with an acute tip beyond it.

KEY TO SPECIES

1. (2)	In the region of the 25th parapodium, presetal lip obcordate (Fig. 46).	**armigera**
2. (1)	No parapodium with obcordate presetal lip (Fig. 48).	
3. (4)	25-27 setigers in anterior region; 4 eyes.	**picta**
4. (3)	31 setigers in anterior region; 2 eyes.	**wireni**

G. armigera Moore **45** (Figs. 45, 46 and 47).

Up to 118 mm. long, 4 mm. wide over parapodia, 190 segments; 29-30 segments in anterior region. Prostomium as long as the first seven segments, slender and acute, consisting of eight or nine equal rings and a wider basal one which is coalesced with the peristomium and carries a pair of minute black eyes, not always discernible. Proboscis very long, cylindrical, with two dorsal and two ventral longitudinal bands of horny papillae. Many of the papillae are acutely conical, frequently bifid, and some have a terminal, or subterminal, pore; they are carried erect when the proboscis is everted. Two large, black jaws, each with



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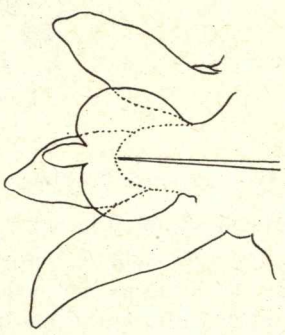

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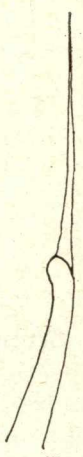

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Fig. 45. *G. armigera* Moore, head (after Moore).
" 46. *G. armigera* Moore, twenty-fifth parapodium (setae omitted) (after Moore).
" 47. *G. armigera* Moore, tip of notoseta (after Moore).

our or five teeth. A dorsal arc of about thirty quadridentate paragnaths, no ventral ones. The first few parapodia of the anterior region have two lips about equal in length, the postsetal narrow and tapered, the presetal broad with an axial prolongation; dorsal and ventral cirri a little longer than the lips. In more posterior parapodia of this region the form gradually changes until, at about the twenty-fourth or twenty-fifth, all the parts have become more compressed and

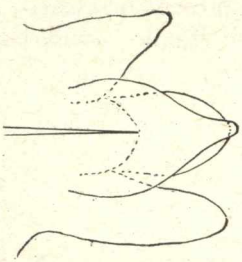
foliaceous, the postsetal lip extends beyond the presetal and is at least as long as the cirri and the presetal lip is broadly obcordate with a tongue-shaped prolongation arising from the sinus. At about the thirtieth setiger a small notopodium appears, otherwise there is little change until about the seventieth when the neuropodium is considerably longer than the notopodium and has lips much as in the first few parapodia of the anterior region, whilst the notopodium has a wide, but rather short, blunt postsetal lip and a small presetal one. Both cirri are heavy and conical. Neurosetae with very slender, finely toothed end-pieces; notosetae few, small and as described for the genus. Coloration variable; pale yellow to brown, often with bluish iridescence. Dark brown neural eye-spots, in the form of short lines crossing the intersegmental furrows, usually very marked in the posterior region, but not always distinguishable.

East and west coasts Vancouver island, dredged in 4 to 60 fathoms. Queen Charlotte islands. California.

G. picta Berkeley **4** (Fig. 48).

Up to 50 mm. long, 2 mm. wide, 120 segments; 25-28 in anterior region. Prostomium as long as first five segments, with eight equal rings and a wider basal one carrying two eyes on ocular lobes; both the lobes and eyes often indistinct. A pair of smaller, but more distinct, eyes on the subapical ring. Characters of proboscis much as in *G. armigera* except that the ventral rows of papillae are less conspicuous and there are about twenty paragnaths in the dorsal arc and three or four in the ventral. Parapodia and setae also resemble those of *G. armigera* except that the presetal lips in the anterior region, and in the neuropodium in the posterior region, are never obcordate and the most posterior parapodia differ in the relative lengths of the rami. Coloration light buff to deep yellow-brown with dark brown markings on both dorsal and ventral surfaces and on parapodia.

East coast Vancouver island, littoral. West coast Vancouver island. Queen Charlotte islands. Alaska. Dredged in 8 to 30 fathoms.



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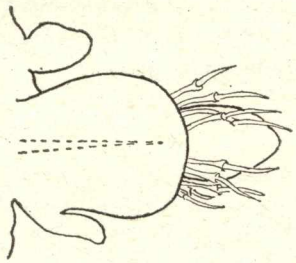

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Fig. 48. *G. picta* Berkeley, twenty-fifth parapodium (setae omitted).
" 49. *H. borealis* (Johnson), parapodium (after Johnson).

G. wireni Arwidsson **1**.

Closely resembling *G. picta*, but smaller and with 31 segments in the anterior region. Two eyes and no ventral proboscideal paragnaths. Typically arctic or sub-

arctic, but recorded (41) from the gulf of Georgia and Alaska. It has not been taken in recent years and is unknown to the writers.

Genus **HEMIPODUS** Quatrefages

Proboscis with small papillae, four simple hooked jaws each with an attachment (aileron) in the form of a straight bar; no paragnaths. Parapodia uniramous; all setae compound. No branchiae.

H. borealis (Johnson) 4, **27** (Fig. 49).

Up to 75 mm. long, 3 mm. wide over setae, about 140 segments. Segments bi- or tri-annulate. Body slender and linear, tapering only posteriorly. Prostomium with six or seven rings (sometimes indistinctly separated) above the base. No eyes. Proboscis broadly clavate, about four or five times length of prostomium, densely covered with minute conical papillae. Jaws black, falcate, with the aileron a simple rod. Parapodia with an elongated presetal lip and a rounded postsetal one about as long as wide, a short ovate to digitate dorsal cirrus, a little above the lips, and a narrower ventral cirrus. Setae compound spinigers with long, slender blades. Coloration in life reddish; colourless to fawn as preserved.

East coast Vancouver island, littoral. West coast Vancouver island, littoral and dredged in 25 fathoms. Queen Charlotte islands. Alaska, California. Mexico. Japan.

Genus **GLYCERA** Savigny

Body rounded and tapered at both ends. Segments bi- or tri-annulate. Proboscis covered with papillae of varying sizes, one or more kinds. Four hooked jaws with wing-shaped attachments (ailerons); no paragnaths. Two first setigers uniramous with no dorsal cirri; remainder biramous, each with a globular dorsal cirrus and a ventral cirrus. Two presetal and one or two postsetal parapodial lips which may jointly surround both rami. Branchiae present or absent, simple or branched, retractile or non-retractile. Dorsal setae simple capillaries; ventral setae compound spinigers.

KEY TO SPECIES

1.	(2)	Prostomium very long and slender, more than 20-ringed.	**gigantea**
2.	(1)	Prostomium shorter, less than 20-ringed.	
3.	(6)	Parapodium with one postsetal lip. (Fig. 51).	
4.	(5)	Segments bi-annulate throughout; prostomium 10-ringed.	**nana**
5.	(4)	Segments tri-annulate, except the first few; prostomium 8-ringed.	**capitata**
6.	(3)	Parapodium with two postsetal lips. (Fig. 53).	
7.	(8, 11)	With no branchiae or branchial areas.	**tesselata**
8.	(7, 11)	With branchiae.	
9.	(10)	Branchiae compound and retractile.	**americana**
10.	(9)	Branchiae simple and non-retractile.	**convoluta**
11.	(7, 8)	With branchial areas only.	**robusta**

G. gigantea Quatrefages 11, **14**.

Mature forms up to 350 mm. long, but known only as a juvenile, about 110 mm. long, from British Columbia. Segments biannulate. Prostomium as described in key. Proboscis very long, with numerous small papillae. Aileron triangular with a prolongation on one side. Parapodia short with long digitiform presetal lips and the two short, rounded postsetal lips (which are well separated in adult forms) fused into a single lobe or separated by no more than a shallow notch. Dorsal cirrus oval, a little posterior to the base of the parapodium. Ventral cirrus short, wide, and blunt. Branchiae simple sacs, retractile into slits on anterior surface of parapodia; rudimentary or absent in juveniles. Coloration, as preserved, pale fawn or colourless.

Young form from west coast Vancouver island, dredged in 35 fathoms. California. Panama. Mature form from Japan. N. Atlantic. Mediterranean.

G. nana Johnson **27** (Figs. 50 and 51).

Up to 140 mm. long, 5 mm. wide, about 150 segments. Segments biannulate. Prostomium ten-ringed. Proboscis clavate, densely covered with small papillae. Aileron wide V-shaped with unequal arms connected by a thin plate. Parapodia with two presetal lips, the dorsal small and conical, the ventral considerably larger and triangular or, more commonly, rounded with a pointed axial prolongation. Postsetal lip rounded, as wide as the joint widths of the presetal lips and much shorter. The lips jointly surround both rami. Dorsal cirrus a rounded tubercle placed high above the parapodium; ventral cirrus conical. No branchiae. Coloration light to dark brown with darker markings dorsally and ventrally on parapodial lips; frequently a blue iridescence. The epitokous form longer and more slender than the atokous, with parapodia and setae considerably extended.

East coast Vancouver island littoral, dredged in 10-25 fathoms, and swarming, in autumn months, in shallow waters. West coast Vancouver island dredged

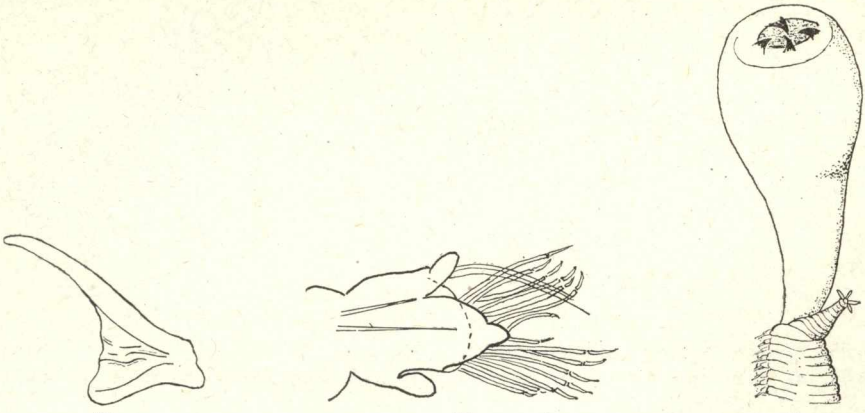

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Fig. 50. *G. nana* Johnson, aileron (after Johnson). Fig. 51. *G. nana* Johnson, parapodium. Fig. 52. *G. capitata* Oersted, head with extended proboscis.

in 8-36 fathoms. Queen Charlotte islands, littoral. Princess Louise inlet, dredged in 20 fathoms. Alaska. California.

G. capitata Oersted 11, **14** (Fig. 52).

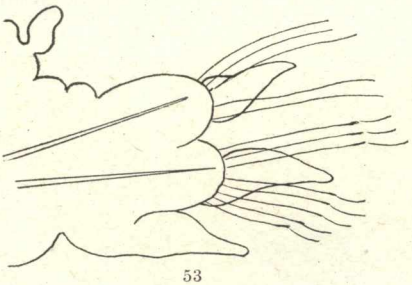
Up to 100 mm. long and 4 mm. wide; about 140 segments. Segments triannulate, except the first few. Prostomium short; eight-ringed. Proboscis long, clavate, with two sorts of papillae, some short and ovoid, others long and cylindrical. Other characters similar to those of *G. nana*, excepting that the parapodia are longer and the presetal lips acutely triangular. Coloration grey-white to light brown.

East coast Vancouver island, dredged in about 25 fathoms. West coast Vancouver island, littoral and dredged in 18-80 fathoms. Princess Louise inlet, dredged in 20 fathoms. Queen Charlotte islands, littoral. Alaska, California. Japan. N. Atlantic. Arctic.

G. tesselata Grube **14** (Fig. 53).

Up to 110 mm. long, 7 mm. wide, about 140 segments. (Considerably larger on this coast than commonly recorded elsewhere.) Segments bi-annulate. Prostomium long, with twelve to fourteen rings on an enlarged base. Proboscis short, globular, thickly covered with long, filiform papillae. Aileron V-shaped, the arms almost equal, no connecting plate and an angular prominence on the inner side of one arm. Parapodia with presetal lips long, straight, and subequal; two postsetal lips much shorter, rounded, and equal. Dorsal cirrus rounded and constricted at the base above the parapodium. Ventral cirrus rather long, sharply conical. No branchiae. Coloration brown with white markings; a dark pigment spot on the dorsal surface of the terminal ring of the prostomium.

East coast Vancouver island, dredged in 20-25 fathoms. California. Japan. N. Atlantic. Mediterranean.



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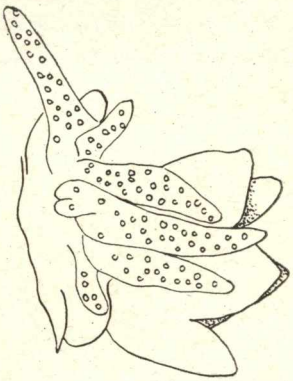

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" 53. *G. tesselata* Grube, parapodium (after Fauvel).

" 54. *G. americana* Leidy, parapodium with branchiae extended (setae omitted) (after Johnson).

G. americana Leidy **11**, 20, 27 (as *G. rugosa*) (Fig. 54).

Up to 350 mm. long, 13 mm. wide over parapodia; 300, or more, segments.

Body heavy, widest about one third of length from prostomium, slightly tapered anteriorly; considerably, but very gradually, posteriorly. Segments biannulate, the rings equal in width, but the ring which carries the parapodium often raised, giving the body a corrugated aspect. Prostomium twelve-ringed above the basal portion which merges with the peristomium. Proboscis very long, clavate, with two kinds of minute papillae; some tongue-shaped with acute tips, others more or less globose. Aileron a triangular concave plate with a long rod-like extension at one angle. Tentacles very short and thick. Parapodia with all four lips sharply conical, the presetal slightly longer than the postsetal. Dorsal cirrus small, rounded, constricted at the point of attachment, above the parapodium; ventral cirrus larger and conical, resembling the lips. Branchiae on posterior face of base of parapodia, beginning at the sixteenth or seventeenth and extending to near the end of the body; they are completely retractile. When fully developed and extended they are ramose on stout basal stems; often only tips of the branches are everted. Coloration, as preserved, tawny to olive-brown with dark tips to parapodial lips.

East coast Vancouver island, littoral, common. West coast Vancouver island, littoral, and dredged in 20-30 fathoms. Jervis inlet, B.C., littoral. California. New Zealand.

G. convoluta Keferstein **6** (as *G. alba*), 14, 20 (synonymy).

Up to 100 mm. long; 180 segments. Body transparent, considerably tapered posteriorly. Segments biannulate. Prostomium fourteen- to sixteen-ringed. Proboscis rather short, clavate, covered with fine cylindrical papillae with oblique chitinous tips, together with a few much smaller rounded ones. Aileron as in *G. nana* (fig. 50). Parapodia with two presetal lips, conical and subequal, the superior postsetal lip similar to these, the inferior postsetal a rounded lobe. All the lips are longer in the posterior region of the body. Dorsal cirrus a small rounded process above the base of the parapodium. Ventral cirrus large, conical, very similar to the presetal lips. Branchiae simple, cylindrical, non-retractile, placed dorsally at the end of the parapodium and considerably exceeding it in length. They may start anywhere from the twelfth to the twenty-fifth setiger and extend to near the end of the body. Coloration pink to red.

West coast Vancouver island, littoral. California. Atlantic. Mediterranean.

G. robusta Ehlers **11** (Fig. 55).

Up to 750 mm. long, 22 mm. wide over parapodia, very numerous segments. Body very heavy, thick, and rounded. Segments biannulate, the rings equal in width. Prostomium short and thick, the base about a third of the whole length, the remainder nine- or ten-ringed. Proboscis clavate, short relative to body-length, the surface covered with characteristic, pear-shaped papillae divided by fine depressed lines into surface areas. Aileron as in *G. americana*. Tentacles very short. Parapodia with the two presetal lips conical and subequal; the two postsetal shallow and rounded. Dorsal cirrus a small button above the para-

podium; ventral cirrus an elongate rounded lobe. Dilatable, clear branchial areas on dorsal surface of parapodia, between the dorsal cirrus and the base of the lips from about the twentieth setiger to the posterior region. Coloration, as preserved, chestnut brown with darker longitudinal median dorsal line and lighter parapodia.

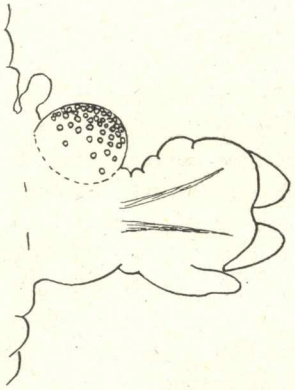
West coast Vancouver island, littoral. Queen Charlotte islands, littoral. California. Japan.

ALCIOPIDAE

Body elongate, more or less transparent. Prostomium compressed between a pair of large spherical lateral eyes. Usually five short, simple, tentacles. Three to five pairs of tentacular cirri. Setae simple or compound. Pigmented segmentary glands at base of parapodia. Pelagic.

Genus **CALLIZONA** Greeff

Body with numerous segments. Prostomium extended beyond the eyes. Five tentacles. Five pairs of tentacular cirri. Parapodia terminating in a cirriform process. Setae of two kinds; short acicular bristles, simple or compound, and long compound bristles with delicate end-pieces.



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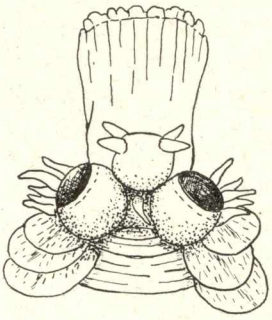

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Fig. 55. *G. robusta* Ehlers, parapodium showing branchial area (setae omitted).
" 56. *C. angelini* (Kinberg), head with extended proboscis.

C. angelini (Kinberg) **14**, 41 (Fig. 56).

Up to 120 mm. long and 10 mm. wide. 100-150 segments. Body pale yellow to brown, tapered to slender posterior end. Prostomium with short fusiform median tentacle between the eyes and two pairs of similar lateral tentacles on anterior border. Tentacular cirri short, digitiform, the first pair on the first segment, two pairs on each of two succeeding segments. Dorsal cirri imbricated, completely covering parapodia; in anterior region of body rounded or cordiform,

more posteriorly lanceolate. Ventral cirri oval to lanceolate, not extending beyond the cirriform process of parapodia. Setae all compound. In anterior region a bunch of long, fine superior setae with long, slender, terminal blades and a number of shorter, thick and curved inferior setae with short and very fine end-pieces. In median and posterior regions the inferior setae are reduced to one or two.

East coast Vancouver island, in plankton. Alaska. Atlantic. Mediterranean. Indian ocean.

PHYLLODOCIDAE

Body usually long and slender with many segments. Prostomium with four or five tentacles and, usually, two eyes. Two, three, or four pairs of tentacular cirri. Setae usually compound. Two anal cirri. No pelagic forms known in the Canadian Pacific area.

KEY TO GENERA

1. (2)	2 pairs of tentacular cirri.	**ETEONE** (p. 41)
2. (1)	4 pairs of tentacular cirri.	
3. (4)	Parapodia biramous.	**NOTOPHYLLUM** (p. 42)
4. (3)	Parapodia uniramous.	
5. (6)	4 tentacles.	**PHYLLODOCE** (p. 43)
6. (5)	5 tentacles.	**EULALIA** (p. 47)

Genus **ETEONE** Savigny

Body linear. Prostomium triangular with four small tentacles on truncated apex. Proboscis with or without terminal papillae and with smooth or finely denticulated surface. First segment achaetous bearing two pairs of tentacular cirri.

KEY TO SPECIES

1. (2)	Dorsal cirri thick, blunt, flattened cones, as long as wide, almost symmetrical.	**longa**
2. (1)	Dorsal cirri thin, sub-cordate, much shorter than wide, asymmetrical.	**spetsbergensis**

E. longa Fabricius 10, **14** (Figs. 57 and 58).

Body flattened; up to 160 mm. long and 2 mm. wide over setae. Colour yellowish, but brown markings, usually rather faint, may be heavy and unite to give dark appearance. Prostomium as long as wide; an occipital tubercle sometimes present. Eyes distinct in life, but not easily distinguished in preserved material. Proboscis smooth or wrinkled, with papillae at orifice only. Setae and ventral cirri on second segment, but no dorsal cirri. Thereafter dorsal and ventral cirri on every segment. Dorsal cirri blunt, flattened, cones. Ventral cirri much more slender, more pointed, and extending a little beyond the end of the parapodium. Setae with long shaft, swollen and denticulated at articulation; the end-piece a rather short, slender blade. Anal cirri very short and thick, almost spherical.

Nanaimo region, littoral. North Atlantic. Hudson bay. Arctic.

E. spetsbergensis Malmgren 30, **31**.

Up to 80 mm. long and 4 mm. wide over setae. Somewhat flattened, equally tapered at both ends. Pale fawn to yellow with no conspicuous markings. Prostomium longer than wide, somewhat contracted and rounded anteriorly. Eyes inconspicuous or absent in preserved material. Dorsal cirri sub-cordate, spread, apex very blunt or rounded. Setae with ends of shafts only slightly swollen; end-pieces wide at base, gradually tapering, long and slender. Anal cirri fusiform.

Grenville channel, near Prince Rupert. Bering sea. North Atlantic. S. Africa.

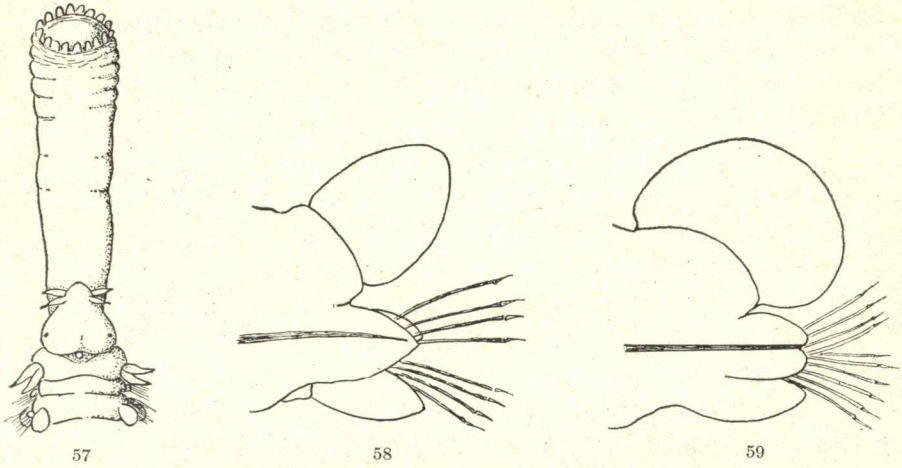

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Fig. 57. *E. longa* Fabricius, head with extended proboscis.
" 58. *E. longa* Fabricius, parapodium.
" 59. *E. spetsbergensis* Malmgren var. *pacifica*, parapodium.

E. spetsbergensis Malmgren var. **pacifica** 9, **52** (as *E. maculata*) (Fig. 59).

As stem species except in that there are irregularly distributed dark spots on dorsum.

East and west Vancouver island. Friday harbour, Washington. California.

Genus **NOTOPHYLLUM** Oersted

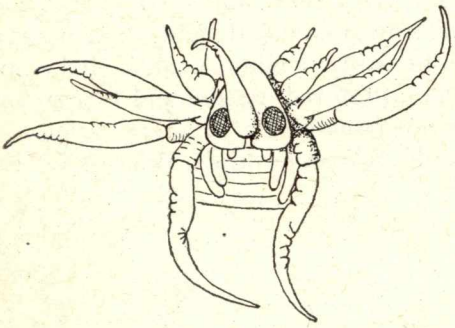
Body rather thick. Prostomium oval or bluntly triangular. Five tentacles. Dorsal cirri wide and foliaceous. Proboscis with diffuse soft papillae. Notosetae simple; neurosetae compound.

N. imbricatum Moore **40** (Figs. 60 and 61).

Body depressed and tapered at both ends. Up to 100 mm. long and 8 mm. wide over setae at widest point. Dorsum largely covered by dorsal cirri suggesting a member of the *Polynoidae*. Prostomium bluntly triangular. Lateral tentacles equal to prostomium in length; median tentacle, arising between the eyes, longer. Eyes large; in posterior half of prostomium. Two or three pairs of

nuchal processes arising from beneath the posterior dorsal margin of prostomium and extending posteriorly; variable in size and may be retracted. Peristomium bearing a ventral tentacular cirrus, the second segment a dorsal and a ventral pair (the former the longer), and the third segment a dorsal one. Thereafter each segment bearing a foliaceous, imbricated, reniform dorsal cirrus lying horizontally and covering the dorsum completely in the median region. Ventral cirrus similar, but smaller, curving upward behind the neuropodium. Notopodium small, supported by an aciculum and, usually, with one or two curved, simple capillary setae. Neuropodium heavier and prominent, with numerous compound setae with gently curved shafts, slightly enlarged and denticulated at the articulation, and long, curved, lightly serrated blades.

East and west coasts Vancouver island, littoral. Alaska. California. Japan.



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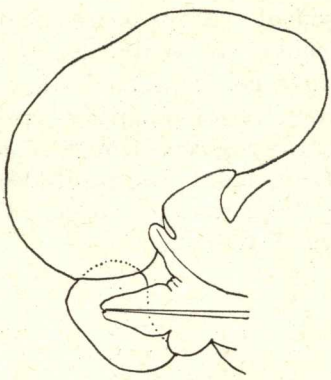

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Fig. 60. *N. imbricatum* Moore, head (after Moore).
" 61. *N. imbricatum* Moore, parapodium (setae omitted) (after Moore).

Genus **PHYLLODOCE** Savigny

Body usually very long with many segments. Prostomium oval or cordiform. Often an occipital tubercle. Proboscis with papillae at its base either diffuse and crowded or arranged in longitudinal rows. One pair of tentacular cirri on peristomium, two pairs on second segment and one pair on third. Setae compound, the shafts somewhat curved and more or less enlarged and spinous at the articulation; the blades usually long and lightly serrated.

KEY TO SPECIES

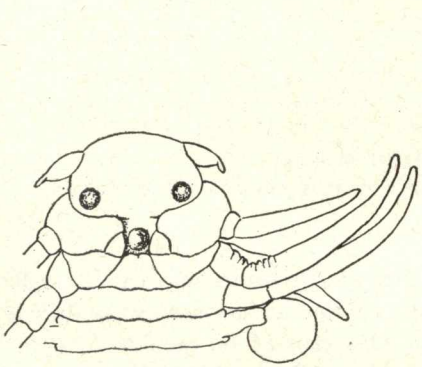
1. (2) Prostomium with a median posterior prolongation into peristomium. (S-G *Paranaitis*). (Fig. 62). **polynoides**
2. (1) Prostomium without such prolongation.
3. (4) Prostomium oval. (S-G *Genetyllis*). **castanea**
4. (3) Prostomium cordiform; proboscis with papillae in longitudinal rows proximally. (S-G *Anaitides*).
5. (6) 8 rows of papillae at base of proboscis. **citrina**

6. (5) 12 rows of papillae at base of proboscis. (Fig. 64).
7. (8) Dorsal cirri in median region usually pointed (rarely truncate); no setae on 3rd segment. **madeirensis**
8. (7) Dorsal cirri in median region truncate; setae on 3rd segment.
9. (10, 11) Ventral cirri long, oval, with ventral acuminate projection; pointed upward. Body heavily pigmented. **groenlandica**
10. (9, 11) Ventral cirri oval. Three longitudinal rows of brown markings. **maculata**
11. (9, 10) Ventral cirri lanceolate, incurved. White markings on dorsum. **mucosa**

P. (Paranaitis) polynoides (Moore) 9, **42** (as *Anaitis*) Fig. 62).

Body slender, depressed. Up to 44 mm. long and 3.8 mm. wide over setae. About 88 segments. Prostomium broadly oval with a posterior prolongation carrying a knob-like nuchal cirrus about the size of the eyes. Eyes conspicuous, about a fifth the width of the prostomium. Tentacles short and thick, with small terminal articles; length of the dorsal pair about one third the width of prostomium, the ventral pair longer. Tentacular cirri short and thick. Parapodia prominent. Dorsal cirri thin, broadly reniform, imbricated, lying horizontally concealing the parapodia and, posteriorly, the entire dorsum. Ventral cirri elliptical. In life considerable colour, iridescent purplish-red dorsum and two broad, longitudinal, brown bands, but only the bands remaining after preservation.

Nanaimo region. Queen Charlotte islands. Johnstone strait. Princess Louise inlet. California.



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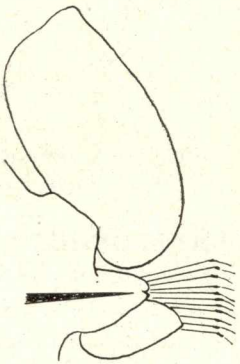

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Fig. 62. *P. polynoides* (Moore), head (after Moore).
" 63. *P. citrina* Malmgren, parapodium (after Fauvel).

P. (Genetyllis) castanea (Marenzeller) 10, **33** (as *Carobia*), 42.

Up to 35 mm. long and 2 mm. wide over setae. Prostomium oval. Eyes very large. Tentacles subulate. Tentacular cirri very crowded, flattened, short; three pairs on the long segment resulting from the fusion of the first and second segments, the fourth pair as usual. Dorsal cirri asymmetrically cordate, carried erect. Ventral cirri broad and oval. Setae with curved shafts abruptly enlarged and with

long hairs at articulation; blade short, rapidly tapering to a fine point. General body colour reddish brown, persisting on preservation.

East and west coasts Vancouver island. California. Indian ocean. Australia.

P. (Anaitides) citrina Malmgren 14, **31** (Fig. 63).

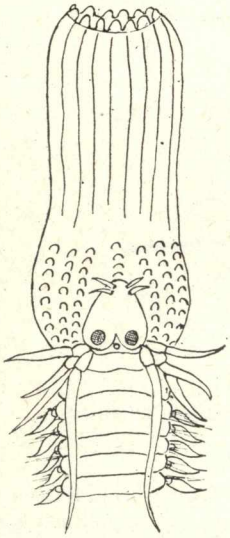
Up to 10 cm. long and 6 mm. wide. Prostomium cordiform; an occipital tubercle in the posterior notch. Eyes small. Tentacles small, clyindrical. Tentacular cirri long and slender. Dorsal cirri sub-rectangular above and rounded below the cirrophore. Ventral cirri oval and tapering to a point which extends beyond the parapodium. Colour greenish yellow with variable markings.

Comox harbour, dredged in 20 fathoms. Alaska. North Atlantic. Arctic.

P. (Anaitides) madeirensis Langerhans **14** (Figs. 64 and 65).

Up to 15 cm. long, but usually not more than half this length. Prostomium cordiform; an occipital tubercle. Eyes large. Tentacles small, cylindrical. First three pairs of tentacular cirri rather short, the fourth pair longer. Dorsal cirri usually pointed throughout, but in an occasional individual truncate in the median region. Ventral cirri oval, short, pointed, extending beyond the parapodium. Colour as preserved very variable. Iridescent.

East and west coasts Vancouver island. California. Mexico. Mediterranean. Indian ocean. Southern Pacific.



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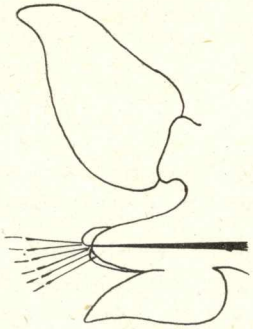

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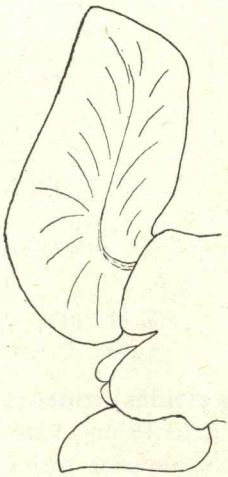

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Fig. 64. *P. madeirensis* Langerhans, anterior region with extended proboscis (after Fauvel).
" 65. *P. madeirensis* Langerhans, parapodium (after Fauvel).
" 66. *P. groenlandica* Oersted, parapodium (setae omitted) (after Fauvel).

P. (**Anaitides**) **groenlandica** Oersted **14** (Fig. 66).

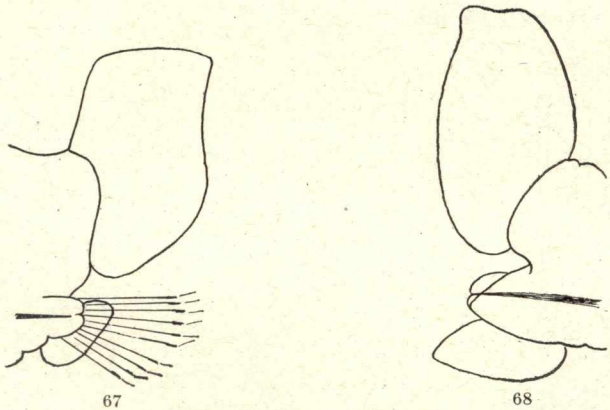
Body thick, flattened, attenuated posteriorly. Up to 30 cm. long, but usually shorter. Segments very numerous. Prostomium cordiform with deep posterior cleft; an occipital tubercle. Eyes medium sized, dark. Tentacles short, subulate. Tentacular cirri cylindrical, unequal, the longest reaching the tenth segment. Dorsal cirri widely oval anteriorly, sub-quadrangular and wide in median region, and asymmetrically lanceolate posteriorly. General body colour, largely retained on preservation, dark metallic green; dorsal cirri rusty brown with clear margins.

East and west coasts Vancouver island, littoral and dredged. Alaska. Japan. North Atlantic. Hudson bay. Arctic.

P. (**Anaitides**) **maculata** Linné **14** (Fig. 67).

Up to 10 cm. long. Prostomium cordiform; an occipital tubercle. Eyes of medium size. Tentacles subulate, sub-equal. Tentacular cirri cylindrical, unequal. Dorsal cirri obtuse and oval in anterior region, sub-rectangular, wide, and rather short in median region, more elongated posteriorly. General colour yellowish or greenish. Only the colour-variety with a brown spot on each dorsal cirrus and in centre of dorsum, making jointly three longitudinal bands, is known from British Columbia.

Nanaimo region, littoral. Trincomali channel in 25-30 fathoms. North Atlantic. Hudson bay. Arctic.



67 68

Fig. 67 *P. maculata* Linné, parapodium (after Fauvel).
" 68. *P. mucosa* Oersted, parapodium (setae omitted) (after Fauvel).

P. (**Anaitides**) **mucosa** Oersted. **14** (Fig. 68).

Up to 15 cm. long. General body-colour a dirty white with clearer white spots in anterior region and longitudinal white bands on posterior region of dorsum. Otherwise, except in shape of ventral cirrus (see key), closely resembling *P.* (*Anaitides*) *maculata*.

East coast Vancouver island, dredged in 25-30 fathoms. Alaska. California. North Atlantic. Hudson bay.

Genus **EULALIA** Oersted

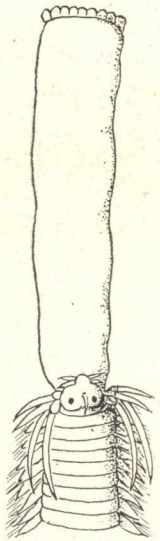
Body linear, very numerous segments. Prostomium conical, oval, or pyriform. Proboscis long, either smooth or with diffuse papillae. Tentacular cirri disposed as in *Phyllodoce*. Dorsal cirri oval, lanceolate, or cordiform. Setae as in *Phyllodoce*.

KEY TO SPECIES

1. (2)	Proboscis smooth when fully extended. (S-G. *Eumida*).	**sanguinea**
2. (1)	Proboscis covered with small papillae.	
3. (4)	Ventral tentacular cirrus of 2nd segment cylindrical or only slightly flattened. (Fig. 71).	
4. (3)	Ventral tentacular cirrus of 2nd segment distinctly flattened and wide. (S-G. *Sige*). (Fig. 70).	**macroceros**
5. (6, 7)	Dorsal cirri oval.	**bilineata**
6. (5, 7)	Dorsal cirri lanceolate.	**viridis**
7. (5, 6)	Dorsal cirri cordiform.	**nigrimaculata**

E. (**Eumida**) **sanguinea** (Oersted) **14** (Fig. 69).

Body thick and short; 60-140 segments. Up to 60 mm. long. Prostomium wider than long, cordiform, only slightly notched posteriorly. Eyes conspicuous, near posterior margin of prostomium. All five tentacles short, the median inserted in front of the eyes. Proboscis smooth, excepting a certain amount of crumpling when not fully extended and the papillae at the orifice. Peristomium more or less fused with the prostomium and indistinct dorsally. Dorsal cirri cordiform. Ven-



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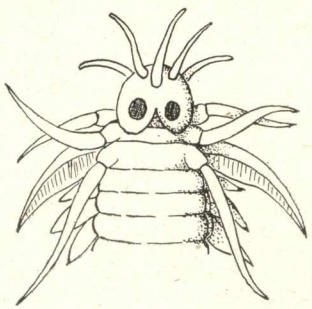

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Fig. 69. *E. sanguinea* (Oersted), anterior region with extended proboscis (after Fauvel).
" 70. *E. macroceros* Grube, anterior region.

tral cirri oval-lanceolate. Coloration very variable; the first two segments usually white.

East and west coasts Vancouver island. Queen Charlotte islands. California. Japan. North Atlantic. Mediterranean. Persian gulf. New Zealand.

E. (Sige) macroceros Grube **14** (as *Pterocirrus*) (Fig. 70).

Body wide, attenuated at extremities. Up to 40 mm. long and 2 mm. wide over setae. Prostomium oval, deeply notched posteriorly. Eyes very large, brown, round or oval, rarely reniform, usually with lenses. Tentacles longer than prostomium; the median, and longest, inserted in front of the eyes. Peristomium distinct and clearly defined. Tentacular cirri cylindrical except the ventral pair of the second segment which have a wide, foliaceous border. Dorsal cirri lanceolate. Ventral cirri similar, but smaller. Anal cirri long and thick. Coloration, variable combinations of green and brown.

Nanaimo region, littoral and dredged. North Atlantic. Mediterranean.

E. bilineata Johnston **14** (Fig. 71).

Up to 90 mm. long and 2 mm. wide over setae. Prostomium pyriform. Eyes rather large, near posterior edge of prostomium. Tentacles very short, subulate; the median tentacle inserted just in front of the eyes. Peristomium distinct, but partially fused with prostomium on dorsal surface. Tentacular cirri fusiform, rather short. Dorsal cirri thick, oval-obtuse. Ventral cirri similar, but smaller. Anal cirri subulate. Coloration deep ivory to brown with two, more or less well marked, dark brown longitudinal lines on the dorsum.

East coast Vancouver island, littoral and dredged in 25-100 fathoms. West coast Vancouver island, littoral. North Atlantic. Mediterranean.

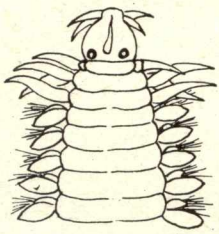

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Fig. 71. *E. bilineata* Johnston, anterior region (after Fauvel).

E. viridis (Müller) 14, **30.**

Up to 150 mm. long and 3 mm. wide over setae. Prostomium very bluntly conical, rounded anteriorly, a little wider than long. Eyes rather large. Frontal tentacles short, subulate; median tentacle longer, inserted between the eyes. Tentacular cirri cylindrical or fusiform, rather short; the ventral pair of the second segment shorter and thicker than the dorsal pair, often a little flattened and

slightly asymmetric. Dorsal cirri elongated-lanceolate. Ventral cirri much smaller, oval. Setae with short end-pieces. Anal cirri thick, fusiform.

Coloration variable, usually pale to dark green with dark intersegmental lines, greenish-brown dorsal cirri.

East and west coasts Vancouver island, littoral and dredged. Alaska. North Atlantic. Mediterranean. Arctic.

E. nigrimaculata Moore **42.**

Body broad. Up to 36 mm. long and 3 mm. wide over setae. About 90 segments. Prostomium nearly spherical. Eyes large, on transverse median line of prostomium near lateral margins. Frontal tentacles about as long as width of prostomium; fusiform at base, with filiform tips. Median tentacle slightly longer and regularly tapered, inserted between the eyes. Peristomium fused with second segment. Tentacular cirri much crowded, acuminate with filiform tips, the longest (dorsal of the second segment) reaching the twelfth setiger. Dorsal cirri thin, large, and held erect; asymmetrically cordiform. Ventral cirri rather thick, long, and oval. Anal cirri long, fusiform, with filiform tips. Setae very numerous. Coloration, as preserved, bright cinnamon brown, with a bluish tint when distended with eggs; dorsal cirri uniform orange yellow, ventral cirri yellowish with black lines and nodular inclusions.

East coast Vancouver island, dredged in 25-30 fathoms and west coast, littoral. California.

NEPHTHYDIDAE

Body elongate, more or less quadrangular in section; numerous short segments. Prostomium small. Proboscis evertible, usually with small papillae in rows and a ring of longer ones terminally. A pair of chitinous jaws within the pharynx. First setiger rudimentary. Parapodia biramous, the rami well separated and bearing lamellae; a branchia between the rami. Setae simple. A single anal cirrus.

Genus **NEPHTHYS** Cuvier

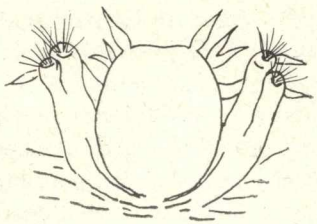
Prostomium polygonal. Four short tentacles, the anterior pair at the anterior angles of prostomium, the posterior pair lateral. Two nuchal organs. Proboscis cylindrical or ovoid with longitudinal rows of soft papillae and a crown of terminal double papillae. First setiger (peristomium) with subulate ventral tentacular cirrus; dorsal tentacular cirrus more or less developed. Parapodial rami each with a simple or bilobed termination and a presetal and postsetal lamella. A more or less curved cirriform branchia between the rami with a small cirrus at its base. A short conical ventral cirrus. Setae in two fans in each ramus, the anterior group short, subulate, barred transversely, the posterior long and fine with minute, denticulated, transverse plates.

KEY TO SPECIES

1.	(2)	Posterior tentacles bifurcate.	**cornuta**
2.	(1)	Posterior tentacles simple.	
3.	(4)	Branchiae involute. (Fig. 74).	**rubella**
4.	(3)	Branchiae not involute.	
5.	(6)	Branchiae flattened.	**ferruginea**
6.	(5)	Branchiae not flattened.	
7.	(8)	Branchiae begin on 10th or 11th setiger.	**punctata**
8.	(7)	Branchiae begin on 3rd to 6th setiger.	
9.	(10)	Peaks of notopodia rounded.	**longosetosa**
10.	(9)	Peaks of notopodia bilobed. (Fig. 79).	
11.	(14)	Proboscis proximally smooth.	
12.	(13)	Proboscis with median dorsal papilla (Fig. 82); no union of neuropodial lamellae.	**caecoides**
13.	(12)	Proboscis usually with no median dorsal papilla; a collar-like union of neuropodial lamellae. (Fig. 79).	**californiensis**
14.	(11)	Proboscis proximally rough. (Fig. 82).	
15.	(16)	Proboscis without median dorsal papilla; postsetal lamellae large.	**caeca**
16.	(15)	Proboscis with median dorsal papilla; postsetal lamellae not large.	**ciliata**

N. cornuta Berkeley **10** (Figs. 72 and 73).

Up to 16 mm. long, 2 mm. wide, and 32 segments. Prostomium approximately oval, longer than broad. No eyes or nuchal organs identifiable in preserved material. Anterior tentacles longer than posterior. The latter split longitudinally, the two halves meeting only at the base, thus giving the appearance of three tentacles on either side of the prostomium. Parapodia of first setiger carried pointing forward and extending to anterior edge of prostomium. Rami of subsequent parapodia long and well divided with conical ends and short inconspicuous lamellae. Branchiae long, almost straight or slightly revolute. They begin at the fifth setiger and extend almost to the end of the body. They are heavily ciliated. Patches of



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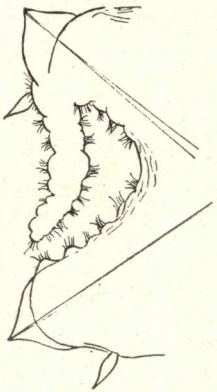

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Fig. 72. *N. cornuta* Berkeley, head.
" 73. *N. cornuta* Berkeley, parapodium (setae omitted).

cilia also occur between the rami. Barred setae only in anterior parapodia, the remainder capillaries. No coloration as preserved.

Princess Louise inlet, dredged in 20 fathoms. Friday harbour, Washington, dredged in 10-12 fathoms.

N. rubella Michaelsen 10, **14** (Fig. 74).

Body considerably attenuated posteriorly. Described up to 80 mm. long, but longest specimen known from western Canadian waters not more than 25 mm. long; about 60 segments. Prostomium as wide as long. Tentacles conical, the anterior pair the longer. Ventral tentacular cirrus, on first setiger, longer than the posterior tentacle, dorsal tentacular cirrus very small. Proboscis with fourteen rows, each of thirty or forty, papillae, covering it almost entirely; no unpaired, anterior dorsal papilla. Parapodial rami close together and of equal length, their peaks conical. The presetal lamellae in both rami divided into two unequal, oval lobes by a deep notch. The postsetal dorsal lamella also divided into two rounded lobes, the superior large and conspicuous, the inferior much smaller. The postsetal ventral lamella, oval or triangular, extending a little beyond the peak of the foot and carrying a small cirriform spur at the base of its superior edge. Ventral cirrus large. Branchiae long, thin, spirally rolled inwards, and with a rather large, conical, dorsal cirrus at the base; starting on the third setiger and persisting to the end of the body. Setae long. Coloration red-brown.

East coast Vancouver island, dredged in 20 to 250 fathoms. N. Atlantic. Mediterranean.

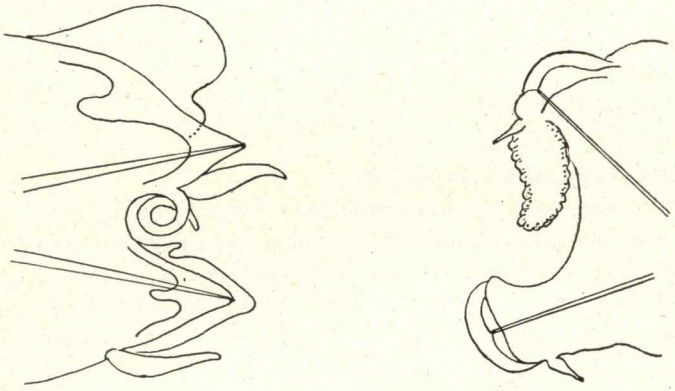

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Fig. 74. *N. rubella* Michaelson, parapodium (setae omitted) (after Fauvel.)
" 75. *N. ferruginea* (Hartman), anterior parapodium (setae omitted).

N. ferruginea (Hartman) 10, **20** (as *N. caecoides* subsp. *ferruginea*) (Fig. 75).

Up to 40 mm. long, 4 mm. wide, and about 70 setigers. Prostomium almost square. Tentacles short, fusiform, and sub-equal. Ventral tentacular cirri larger. Proboscis with twenty-two rows, each of five to seven, papillae and a median

dorsal one; smooth proximally. Peaks of both parapodial rami bilobed in anterior segments; those of neuropodia conical in posterior segments. Postsetal lamellae in both rami short. Branchiae start on third setiger and continue almost to the end of the body. They are wide, flattened and straight, or slightly revolute, throughout; in part almost foliaceous and with slightly frilled edges. Coloration generally red-brown with more or less conspicuous rust-coloured pattern of broad longitudinal bars laterally on each of about the first fifteen segments. A conspicuous, large, round, white spot on postsetal lamella of neuropodium.

East coast Vancouver island, dredged in 15 to 75 fathoms. S. California. Peru.

N. punctata Hartman **18.**

Up to 120 mm. long, 7 mm. wide, 110 segments. Prostomium rectangular, slightly longer than wide. Nuchal papillae prominent. Posterior tentacles more than twice as long as anterior pair. Both pairs of tentacular cirri about the same length as posterior tentacles. Proboscis with twenty-two rows of papillae, four or five in each row, and a conspicuous median dorsal papilla; proximally covered with minute prickly cones. Parapodia with peaks of both rami deeply bilobed in anterior region, only weakly bilobed in median region, conical in posterior region. Postsetal lamellae generally short and rounded, but elongated and more acute in neuropodium in anterior region. Branchiae begin at about the tenth setiger, reach full size at about the twentieth, remain at full size throughout the median region and then decrease again, totally disappearing in the posterior region. At full development the branchiae are thick, sickle-shaped, and definitely revolute with large dorsal cirri at the base. Coloration, as preserved, grey-brown.

East coast Vancouver island, dredged in 30 to 90 fathoms. Alaska, in 15 to 483 fathoms. Central California in 68 to 382 fathoms.

N. longosetosa Oersted 9, **14** (Fig. 76).

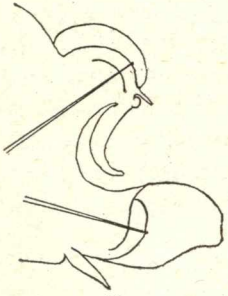
Up to 100 mm. long, 4 mm. wide over setae, 120 segments. Prostomium pentagonal, convex anteriorly. Tentacles subulate, sub-equal. Ventral tentacular cirrus, on first setiger, broad and flattened, as long as, or longer than, the posterior tentacles; dorsal tentacular cirrus smaller and narrow. Proboscis with twenty-two rows of papillae, five to seven in each row, the posterior papillae very small, a long unpaired anterior dorsal papilla; the proximal portion covered with rough ridges. Parapodial peaks all rounded. All dorsal lamellae rounded. Ventral postsetal lamellae in median and posterior regions large, extending well beyond the peaks, directed obliquely, bilobed or irregularly sinuous; in anterior region shorter, entire, and triangular. Branchiae starting at the fourth setiger, rather short, slender, and revolute. Dorsal cirrus insignificant; ventral cirrus rather large, conical. No coloration as preserved.

West coast Vancouver island, dredged in 8 to 25 fathoms. Lower California. Panama. N. Atlantic.

N. caecoides Hartman 10, **18** (Fig. 77).

Up to 100 mm. long, 5 mm. wide over setae, 120 segments. Prostomium quadrangular, longer than wide, slightly convex anteriorly, nuchal papillae prominent. Tentacles fusiform, the posterior pair the longer. Ventral tentacular cirri still longer. Proboscis with twenty-two rows of papillae, five or six in each row, an unpaired anterior dorsal papilla; proximally smooth. Peaks of parapodial rami all bilobed. Postsetal neuropodial lamellae in anterior and median regions project well beyond peaks. Branchiae sickle-shaped, swollen at the base, revolute; usually beginning on the fourth setiger, but, in rare instances, on the third. Dorsal cirrus insignificant; ventral cirrus considerably larger in median region. Setae short and stiff in median and posterior regions. Coloration, as preserved, grey-brown with characteristic dusky brown patterning on prostomium and first few segments more or less clearly shown.

East coast Vancouver island, littoral and dredged in moderate depths. West coast Vancouver island, littoral. Queen Charlotte islands. California.



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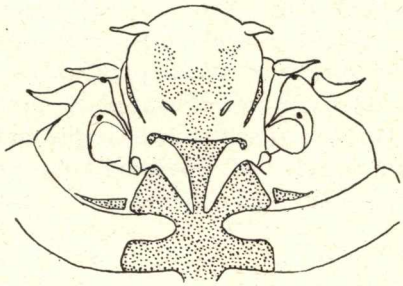

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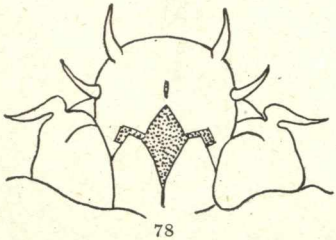
Fig. 76. *N. longosetosa* Oersted, median parapodium (setae omitted).
" 77. *N. caecoides* Hartman, head (after Hartman).

N. californiensis Hartman **18** (Figs. 78 and 79).

Up to 300 mm. long, 10 mm. wide, 160 segments. Prostomium roughly trapezoidal, widest anteriorly. Tentacles sub-equal; ventral tentacular cirri larger.



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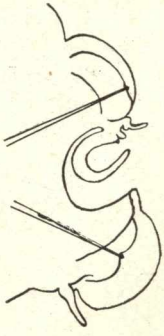

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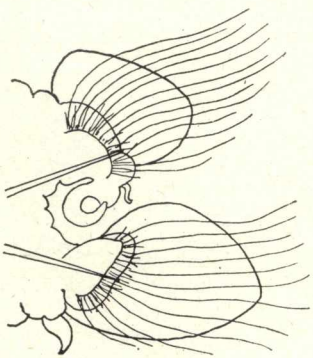
Fig. 78. *N. californiensis* Hartman, head (after Hartman).
" 79. *N. californiensis* Hartman, anterior parapodium (setae omitted) (after Hartman).

Proboscis large, clavate, with twenty-two rows of papillae, six to eight in each row, the more distal ones very long; usually without an anterior median dorsal papilla. Proximal portion of proboscis smooth. Peaks of all parapodial rami bilobed. Postsetal neuropodial lamellae in anterior region project well beyond peaks, but in median region scarcely at all. They are joined dorsally to the presetal lamellae by arched collar-like extensions. Branchiae rather slender and distinctly revolute; beginning on third setiger and extending to end of body. Dorsal and ventral cirri thickened at their bases and prominent. Coloration in life iridescent pearl-grey to white, darkening on preservation, with a more or less prominent characteristic dark mark on the base of the prostomium.

West coast Vancouver island, littoral. California.

N. caeca Fabricius **14** (Figs. 80 and 81).

Up to 250 mm. long, 10 mm. wide, 150 segments. Prostomium pentagonal, longer than wide, with rounded anterior border. Posterior tentacles close to anterior pair and a little larger. Tentacular cirri on first setiger, approximately equal in length to one another and to posterior tentacles. Proboscis ovoid, with twenty-two rows of conical papillae, five or six in each row; no unpaired anterior dorsal papilla. Rami of parapodia not widely separated and nearly the same length, the peaks sometimes simple and rounded, but usually, especially in the notopodium, bilobed. Postsetal lamellae large and foliaceous; that of the notopodium rounded and extending some distance beyond the peak, that of the neuro-



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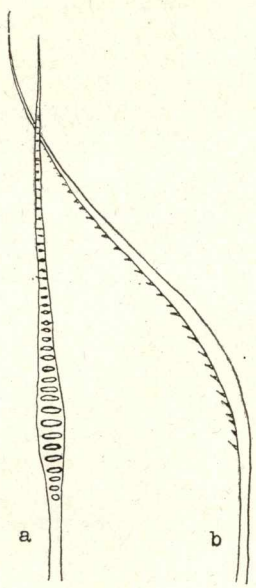

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Fig. 80. *N. caeca* Fabricius, parapodium (after Fauvel).
" 81. *N. caeca* Fabricius, setae. (*a*) anterior, (*b*) posterior (after Fauvel).

podium acute-oval and extending even farther. Branchiae beginning at the fourth to the sixth setiger and extending to the end of the body. They are large and strongly revolute. Dorsal cirrus insignificant, ventral cirrus larger. Coloration yellowish, iridescent.

Common throughout the Canadian Pacific region, littoral, in clean sand. Alaska. Bering sea. Japan. California. N. Atlantic. Arctic.

N. ciliata (O. F. Müller) **14** (Fig. 82).

Up to 200 mm. long, 10 mm. wide, 140 segments. Prostomium pentagonal, a little longer than wide, anterior border straight. Tentacles sub-equal, short. Tentacular cirri, on first setiger, broad, thick, and pointed; same length as tentacles. Proboscis cylindrical, twenty-two rows of papillae, four to seven in each row; a long unpaired anterior dorsal papilla. Neuropodium longer than notopodium; peaks of both rami bilobed. All lamellae short. Branchiae heavy, revolute, occupying almost the entire space between the rami in median parapodia. They begin on the fourth or fifth setiger and become rudimentary on the last thirty. Dorsal cirrus long and fine; ventral cirrus heavier and conical. Coloration, as preserved, buff.

East coast Vancouver island, dredged in 15 to 170 fathoms. Alaska. Queen Charlotte islands. Bering sea. Hudson bay. Japan. N. Atlantic.

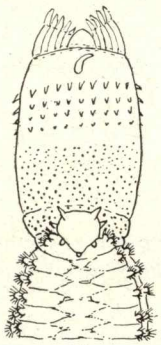

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Fig. 82. *N. ciliata* (O. F. Müller), anterior region with extended proboscis (after Malmgren).

HESIONIDAE

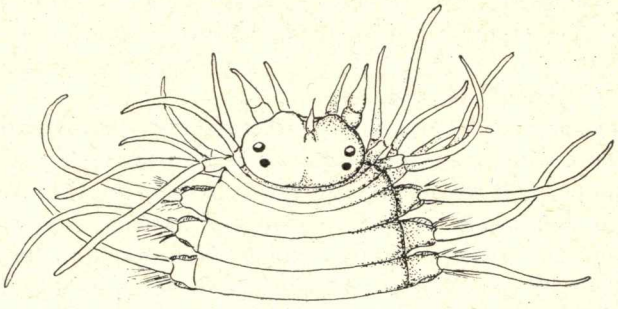
Prostomium simple or bilobed. Eyes present or absent. Two to three tentacles. Two biarticulate palps. From two to eight pairs of tentacular cirri. Two anal cirri. Notosetae simple, few, or absent. Neurosetae simple or compound.

KEY TO GENERA

1. (2) Three tentacles. **PODARKE** (p. 56)
2. (1) Two tentacles.
3. (4) Two pairs of tentacular cirri; body long. **PILARGIS** (p. 57)
4. (3) More than two pairs of tentacular cirri; body short. **KEFERSTEINIA** (p. 58)

Genus **PODARKE** Ehlers

Body stout. Prostomium oval or quadrangular. Four eyes. Six pairs of tentacular cirri. Parapodia sesquiramous. Notosetae few, simple. Neurosetae numerous, compound.



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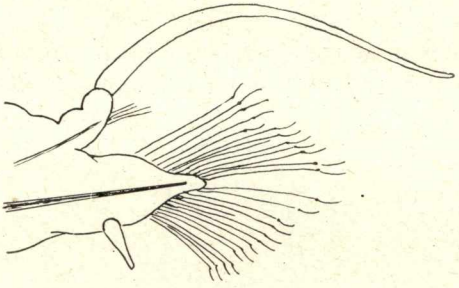


84

Fig, 83. *P. pugettensis* Johnson, anterior region.
" 84. *P pugettensis* Johnson, parapodium.

P. pugettensis Johnson 20 (bibliography), **27** (Figs. 83 and 84).

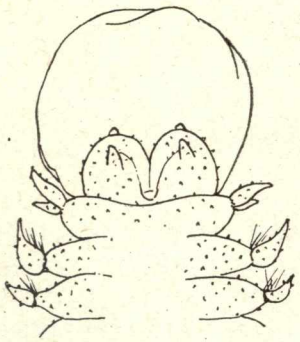
Up to 40 mm. long and 5 mm. wide over setae; up to 65 setigers. Prostomium oval, wider than long, notched anteriorly. Two pairs of eyes with lenses, the anterior pair the larger and farther apart. Three tentacles, all smooth, the median very small, carried on a short ceratophore in the anterior median notch of the prostomium, the laterals considerably longer, on anterior margin of prostomium. Palps heavy, with long, distinct palpostyles. A pair of tentacular cirri each side of peristomium and each side of the following two achaetous segments. All long and tapering and in each case the dorsal longer than the ventral. Dorsal cirri of first few anterior setigers even longer. All cirri quite smooth. In median and posterior regions dorsal cirri shorter, long and short approximately alternately. Parapodia elongate, longer than half the body width, sesquiramous; the notopodium rudimentary, with one or two acicula, the neuropodium long, with two or three

acicula, and terminating in a conical lobe. Ventral cirrus short, subulate. Notosetae few, slender, simple, with delicate, lyrate tips and the stems finely denticulate subterminally. Neurosetae numerous, all compound, the blades varying in both length and breadth, some very long and narrow, none short, all finely serrate and bidentate. Coloration fawn to dark brown; adjusted to background in commensals.

East coast Vancouver island, free living, littoral, and commensal with the starfish *Luidia foliolata* Grube and *Pteraster tesselatus* Ives; also, together with *Nereis cyclurus* Harrington, commensal with hermit-crabs inhabiting vacated shells of *Polinices lewisii* Gould. West coast Vancouver island, littoral. Queen Charlotte islands. Princess Louise inlet, dredged in 20 fathoms. California. Mexico. Peru. Japan.

Genus **PILARGIS** Saint-Joseph

Body long, flattened, numerous segments. Prostomium reduced or fused with peristomium. No eyes. No median tentacle. Two short lateral tentacles. Two large ovoid palps terminating in small palpostyles. No notosetae. Neurosetae simple.



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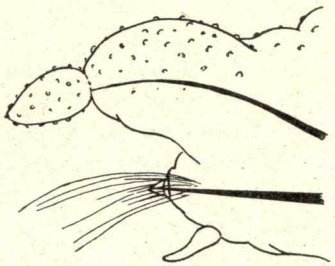


86

Fig. 85. *P. berkeleyi* Monro, head with extended proboscis.
" 86. *P. berkeleyi* Monro, median parapodium.

P. berkeleyi Monro 6, **23**, 35 (Figs. 85 and 86).

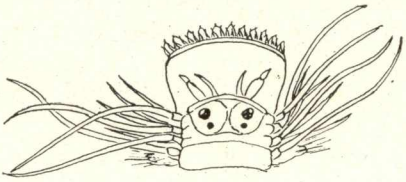
Up to 30 cm. long and 4 mm. wide. Body flat, ribbon-like, narrowed only at extremities. Dorsal surface and all appendages with scattered small papillae. Prostomium a pair of large lateral lobes united only by a small basal triangular area, each lobe bearing a thickened tentacle. Peristomium wider than the prostomium carrying a pair of heavy palps which extend forward beneath and beyond, and are fused to, the prostomial lobes. Each palp bears a minute palpostyle. Two pairs of heavy, fusiform tentacular cirri, the dorsal pair the heavier and both larger than the tentacles. The proboscis is soft, translucent, thin-walled and more or less globular. First three setigers with fusiform dorsal cirri, heaviest and longest on the first. At the fourth setiger the fusiform cirrus is supported by an enlarged

notopodium and this enlargement increases in more posterior setigers. In some individuals this enlargement is very extreme. Neuropodia and ventral cirri relatively small and insignificant. Notosetae absent. Neurosetae with serrated edges and ending in bifid hooks, some long and very fine, others shorter and broader. Pygidium a stout ring with central anus and two fusiform cirri about as long as the pygidium is broad.

Not known from Canadian waters, but the type locality, Friday harbour, Washington, being immediately adjacent, occurrence may be anticipated. Dredged in about 15 fathoms. California.

Genus **KEFERSTEINIA** Quatrefages.

Body slender, fragile, flattened. Prostomium bilobed. Four eyes. No median tentacle. Parapodia sesquiramous. Notocirri articulated, with acicula at base. No notosetae. Neurosetae compound with long, bidentate blades.



87

Fig. 87. *K. cirrata* (Keferstein), head (after Fauvel).

K. cirrata (Keferstein), 9, **14** (Fig. 87).

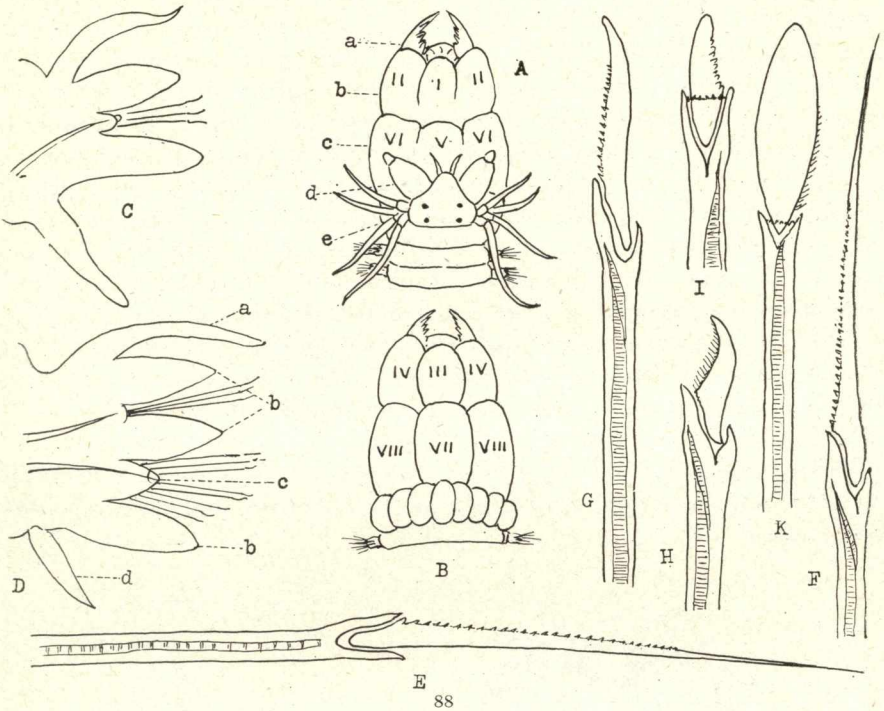
Recorded up to 75 mm. long, but only much smaller examples known from Canadian Pacific waters; up to about 20 mm. long, about 50 setigers. Prostomium almost square. Anterior eyes larger than posterior, with lenses. Lateral tentacles filiform, a little longer than prostomium. Palps somewhat heavier and longer than the tentacles, with small palpostyles. Proboscis bordered with about twenty oval, finely spinous papillae. Two pairs of tentacular cirri on peristomium and two or three pairs on each of the two succeeding segments. Dorsal cirri long, articulated, on prominent cylindrical cirrophores supported by two or three acicula. Neuropodium long and well developed. Ventral cirri small, slender. Neurosetae in a spread fan, the shafts striated, the blades moderately long, all denticulate, the denticulations varying from fine to coarse. Coloration variable in life; grey-brown as preserved.

Nanaimo region and Queen Charlotte islands, littoral. N. Atlantic. Mediterranean.

NEREIDAE

Body vermiform, numerous segments. Two subulate tentacles. Two ovoid palps terminating in palpostyles. (*Micronereis* forms an exception to all the foregoing characters). Four pairs of tentacular cirri. Four eyes. Proboscis evertible,

with a pair of heavy jaws and, usually, with chitinous denticles (paragnaths) arranged in eight groups upon two rings (oral and maxillary). Parapodia biramous excepting the first two pairs, which are uniramous. One or more ligules, in addition to setal lobes, in dorsal ramus, one in ventral ramus. Setae all compound, except swimming setae in heteronereid forms. Typically only homogomph spinigers in notopodium; homogomph and heterogomph spinigers in neuropodium together with heterogomph falcigers. At maturity usually a pelagic, sexually dimorphic stage (heteronereis), in which the median parapodia acquire large lamellae and swimming setae. (fig. 88, A to K).



88

Fig. 88. *Nereis.* Taxonomic characters (after Fauvel).
A and B. Anterior region with everted proboscis, dorsal and ventral views respectively; (*a*) jaws, (*b*) maxillary ring, (*c*) oral ring (the roman numerals indicate the positions of the groups of paragnaths), (*d*) palps, (*e*) tentacular cirri. C. First parapodium. D. Median parapodium, (*a*) dorsal cirrus, (*b*) ligules, (*c*) setal lips, (*d*) ventral cirrus. E. Homogomph spiniger. F. Heterogomph spiniger. G and H. Heterogomph falcigers. I. Homogomph falciger. K. Swimming seta of heteronereis.

KEY TO GENERA

1. (2, 3) Proboscis without paragnaths. **MICRONEREIS** (p. 60)
2. (1, 3) Proboscis with paragnaths all discrete. (Fig. 96).
3. (1, 2) Proboscis with some groups of paragnaths in pectinate rows. **PLATYNEREIS** (p. 60)

4. (5) Peristomium enlarged and produced, forming a collar around and under the prostomium; usually commensal with hermit-crabs. **CHEILONEREIS** (p. 61)
5. (4) Peristomium not thus enlarged. **NEREIS** (p. 62)

Genus **MICRONEREIS** Claparède

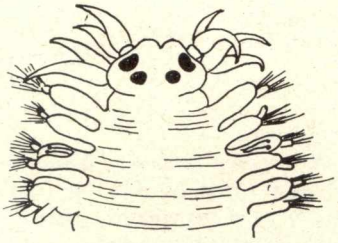
Body small. No tentacles. Palps rudimentary or absent. Proboscis with a pair of chitinous jaws, but no paragnaths. Parapodial rami with cirri, but no ligules. Setae all homogomph spinigers. Sexually dimorphic.

M. variegata Claparède **14** (Fig. 89).

Female up to 13 mm. long and 26 setigers; male up to 10 mm. long and 23 setigers. Body tapered posteriorly. Prostomium and peristomium fused, the resulting head rounded anteriorly, weakly bilobed, bearing four pairs of fusiform tentacular cirri, the posterior two pairs the longer. Eyes large, the anterior pair farther apart and considerably the larger. Palps rudimentary, pointing downward. Jaws with five or six teeth. Rami of parapodia well separated and terminally expanded, each with a subulate cirrus. All setae homogomph spinigers excepting a group of specialised crested crotchets in the ventral ramus of the third setiger in males. Two anal cirri. Coloration conspicuous in life; red to orange-brown patterning on cream ground, or green when animal is distended with eggs. Tentacular cirri banded orange-brown; anal cirri and pygidium purple-brown. Usually found (the female) in small globular masses of clear viscous material attached to various large algae or to eel-grass; occasionally free in like situations.

Nanaimo region. N. Atlantic. Mediterranean.

(The specimens on this coast differ considerably in size and several other particulars from the descriptions given in the literature and may represent a distinct species).



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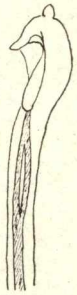


90

Fig. 89. *M. variegata* Claparède, anterior region of male.
" 90. *P. dumerilii* (Audouin and Milne-Edwards) var. *agassizi*, specialised simple notoseta (after Johnson).

Genus **PLATYNEREIS** Kinberg

Paragnaths very small, arranged in pectinate rows; groups I, II, V, absent (and sometimes VI, VII, VIII).

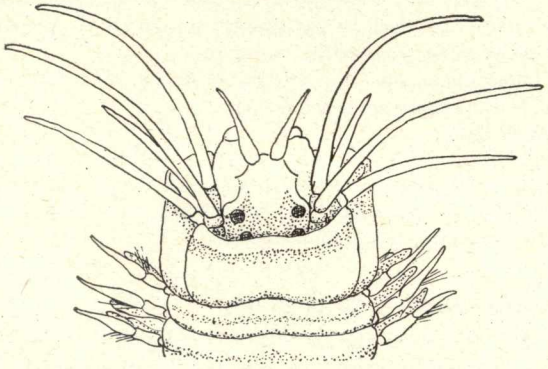
P. dumerilii (Audouin and Milne-Edwards) var. *agassizi* 6, 11 (as *N. agassizi*) **14** (stem species) (Fig. 90).

Up to 115 mm. long and 7 mm. wide over setae, but usually not so large. Prostomium a truncated cone. Eyes large. Tentacles almost as long as the large divergent palps. Tentacular cirri very long, the dorsal posterior pair reaching to the fifteenth setiger. Paragnaths very small and pale, sometimes difficult to see; groups I, II, and V absent, the remaining groups in more or less continuous pectinate rows. Notopodium with two long conical ligules; neuropodium with a single, more obtuse and shorter ligule. The ligules all shorter and blunter in the anterior body region. Dorsal cirrus longer than the superior ligule of the notopodium. Setae as described for the family except that in every parapodium posterior to about the tenth there is at least one specialised simple notoseta with a dark hooked crest (fig. 90). Two long anal cirri. Coloration variable; commonly spotted red-brown with white spots intersegmentally and on mid-dorsal line. In the notomacula phase (*N. notomacula* Treadwell) the anterior region is dusky with dark areas on the prostomium and there are black transverse lines and dorsolateral spots on each segment; the bases of the dorsal cirri and the lobes of the parapodia are also darkly pigmented. Usually found in a tough, membranous tube.

Atokous and epitokous forms from east coast Vancouver island, littoral and swarming in shallow water, respectively. Atokous forms from west coast Vancouver island and Queen Charlotte islands, littoral. Alaska. California. Mexico. Japan.

Genus **CHEILONEREIS** Benham

As defined in key. Group V, of paragnaths absent.



91

Fig. 91. *C. cyclurus* (Harrington), head (after Johnson).

C. cyclurus (Harrington) 3, **16** (Fig. 91).

Commensals up to 150 mm. long and 10 mm. wide over setae. Free-living forms not so large. Body rapidly tapering and degenerate in posterior region in

commensals, gently tapering in free-living forms. Prostomium longer than broad. Tentacles nearly as long as prostomium. Eyes with lenses, anterior and posterior pairs close together. Palps heavy, divergent, almost as long as tentacles. Peristomium forming the collar characteristic of the genus, smooth dorsally, longitudinally wrinkled laterally and ventrally, twice as long as first setiger. Tentacular cirri rather short, the longest reaching to about the third setiger. Dorsal ligule of notopodium, in median and posterior regions, very large and bilobed, bearing in the indentation a long tapered dorsal cirrus. Setae as described for the family excepting the presence of specialised heavy homogomph notosetae, with blunt, falcate, end-pieces in the median and posterior regions. Coloration, in commensals, yellowish with transverse lines of colour more or less conforming with that of the hermit-crab host. In free-living forms there are often black spots on the parapodia. Both atokous and epitokous females frequently have a blue tinge due to eggs.

East and west coasts Vancouver island both commensal with hermit-crabs in various gastropod shells and free-living, usually dredged in 15 to 30 fathoms. Crescent bay, B.C., under the carapace of the crab *Cancer magister* Dana. Queen Charlotte sound. Alaska. California.

Genus **NEREIS** Cuvier

Paragnaths usually well developed cones in distinct groups.

KEY TO SPECIES

1.	(4, 5)	All groups of paragnaths represented. (S-G *Neanthes*).	
2.	(3)	Superior ligule of median notopodia broad and foliaceous.	**virens**
3.	(2)	Superior ligule of median notopodia neither broad nor foliaceous.	**eakini**
4.	(1, 5)	Groups I, V, VI, VII, VIII, of paragnaths, absent. (S-G. *Ceratonereis*).	**paucidentata**
5.	(1, 4)	Group I, or group V, or both, of paragnaths, absent. (S-G. *Nereis*).	
6.	(7)	Specialised heavy setae in posterior neuropodia.	**japonica**
7.	(6)	Specialised homogomph setae in posterior notopodia. (Fig. 95).	
8.	(11)	Superior ligule of notopodium much enlarged.	
9.	(10)	Peristomium elongate.	**callaona**
10.	(9)	Peristomium normal.	**vexillosa**
11.	(8)	Superior ligule of notopodium not much enlarged.	
12.	(13)	Posterior dorsal tentacular cirri longer than others.	**procera**
13.	(12)	All tentacular cirri approximately one length.	**pelagica**

N. (Neanthes) virens (Sars) 3, **14** (Fig. 92).

Body very long and thick. Up to 90 cm. long and 45 mm. wide. Very numerous setigers. Prostomium roughly an equilateral triangle in outline, rounded anteriorly. Anterior eyes on median line, posterior pair near posterior margin of prostomium. Tentacles short. Palps thick and heavy, longer than tentacles. Peristomium twice as long as first setiger. Posterior dorsal tentacular cirri reaching the eighth setiger. Notopodium in median body-region with superior ligule enlarged into a spread, pointed, lamella and surmounted by the small conical dorsal

cirrus; the inferior ligule much smaller and lanceolate. The neuropodium much less developed than the notopodium, with an elongated setigerous lobe with two lips, an inferior ligule of about the same length, and a very small neurocirrus. Notosetae homogomph spinigers. Neurosetae a mixture of homogomph and heterogomph spinigers. No falcigers. Coloration iridescent blue, the parapodial lamellae green bordered with yellow.

East and west coasts Vancouver island, atokous and epitokous forms, littoral and pelagic respectively. Alaska. California. Japan. N. Atlantic.

92

Fig. 92. *N. virens* (Sars), median parapodium (after Fauvel).

N. (Neanthes) eakini Hartman **17.**

Up to 100 mm. long, 7 mm. wide over setae, and 78 segments. Prostomium sharply narrowed anteriorly, widest in posterior third, in which the large brown eyes are symmetrically placed. Tentacles about half as long as prostomium. Palps heavy, with globular palpostyles. Paragnaths very numerous, the oral ring a complete band. Tentacular cirri short, the longest reaching the third setiger. Peristomium nearly twice as long as the first setigerous segment. Median parapodia with rather long conical notopodial ligules; the ventral ligule somewhat shorter and blunter. The dorsal cirrus slender and twice as long as the notopodial ligules; the ventral cirrus shorter. Notosetae, anteriorly, homogomph spinigers. These are replaced by homogomph falcigers with blunt ends at about the twentieth setiger. Coloration, as preserved, pale fawn with brown mottlings on prostomium and peristomium.

East and west coasts Vancouver island, littoral. Queen Charlotte islands. California.

N. (Ceratonereis) paucidentata Moore **37**, 51 (as *N. alaskensis*).

Type specimen 95 mm. long, maximum width 6 mm., 118 setigers. Prostomium slightly broader than long, broadly rounded anteriorly. Eyes large, with lenses, the anterior pair slightly the larger and farther apart. Tentacles short, fusiform. Palps stout. Peristomium nearly half the length of prostomium. Paragnaths very small and sparse; group 1 and most of the oral ring absent. Tentacular cirri rather short, the posterior dorsal pair reaching the sixth setiger. Median parapodial ligules long, conical, nearly uniform. Notocirrus slender, about twice

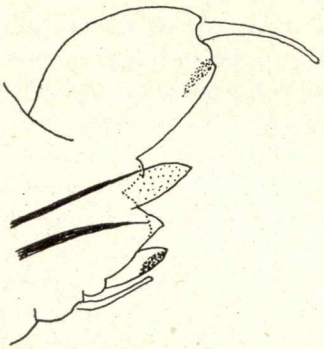
the length of the ligules, arising from the swollen region near the middle of the dorsal margin of the parapodium. Notosetae homogomph spinigers: neurosetae homogomph spinigers and heterogomph falcigers with long and short blades.

Gulf of Georgia. Alaska. Bering sea. California. Not taken in Canadian waters since 1903 and unknown to the authors.

N. (Nereis) japonica Izuka, 10, **25**, 33 (as *N. diversicolor*).

Up to 120 mm. long, 8 mm. wide, 120 segments. Prostomium much broader than long. Eyes large, black, with lenses. Tentacles very short. Palps heavy, with very small palpostyles. All groups of paragnaths, except V, and sometimes 1, represented; groups VII and VIII a single, continuous row. Tentacular cirri short, the longest reaching only a little beyond the tentacles. Parapodia short and thick. Notopodia with two conical ligules and a prominent setal lobe; the superior ligule the longer, but neither very long. Neuropodia a little shorter, with two thick setal lobes in addition to the short ligule. Notocirrus and neurocirrus small. Setae as described for the family with the addition of some heavy specialised falcigers with end-pieces wholly or partially fused to the shafts in posterior neuropodia. Coloration light brown, as preserved.

"Lost Lagoon," Vancouver, B.C. Japan.



93

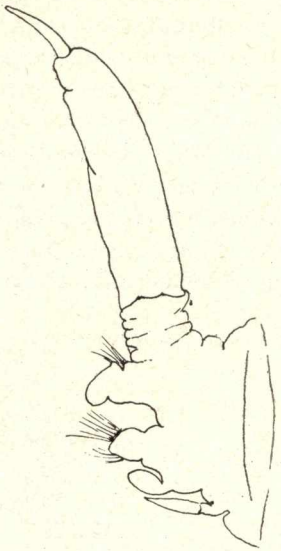
Fig. 93. *N. callaona* (Grube), posterior parapodium (setae omitted) (after Hartman).

N. (Nereis) callaona (Grube). **17** (as *N. eucapitis*) 20 (Fig. 93).

Up to 65 mm. long, 5 mm. wide, 75 segments. Prostomium broad, anterior region elongated and ill-defined marginally; eyes in posterior, and widest, region. Tentacles short, divergent. Palps long, heavy; wide, almost spherical, palpostyles. Peristomium at least two and a half times length of first setiger and slightly narrower. All paragnaths of maxillary ring small; those of oral ring all large except a few of group VII. Tentacular cirri short, the longest not reaching beyond the first setiger; the anterior ventral short and stout, the posterior ventral fine and insignificant. Anterior parapodia with ligules and lobes short and of fairly uniform

size. Posterior parapodia with superior notopodial ligule greatly enlarged, particularly in width, with convex upper edge. Dorsal and ventral cirri long relative to ligules and rather heavy in anterior region. In posterior region dorsal and ventral cirri thin and not longer than half the length of the superior notopodial ligule. Setae of the usual three types with homogomph falcigers, with slightly asymmetric end-pieces, replacing the notopodial spinigers at about the twentieth setiger. No coloration remains in preserved material.

West coast Vancouver island. California. Japan.



94

Fig. 94. *N. vexillosa* Grube, posterior parapodium (after Johnson).

N. (**Nereis**) **vexillosa** Grube **11**, 27 (Fig. 94).

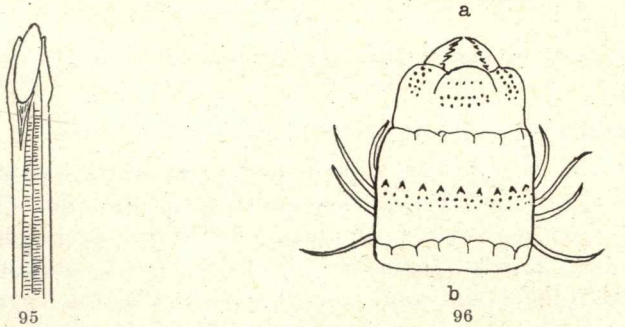
Up to 200 mm. long, 12 mm. wide; numerous segments. Prostomium as broad as long; eyes medium sized. Tentacles shorter than prostomium, widely separated. Palps heavy, extending beyond the tentacles. Tentacular cirri short. Parapodia with short, blunt, uniform, ligules in anterior region. In median and posterior regions the dorsal notopodial ligule considerably enlarged in length and breadth, bearing the relatively short notocirrus terminally. Setae as in the family with the addition of one or more homogomph falcigers with long oval end-pieces, which gradually replace the spinigers in the median and posterior notopodia. Coloration varying from an olive-green to brown.

Common throughout the region amongst mussels and barnacles, and in similar localities, between tide-marks. Heteronereids swarming inshore in summer months. Queen Charlotte islands. Alaska. California.

N. (Nereis) procera Ehlers 6, 10, **11**, 27, (Fig. 95).

Up to 150 mm. long, 4 mm. wide, and 180 segments; rarely so large. Prostomium somewhat longer than broad, the anterior half narrower than the posterior. Eyes small, the anterior pair only a little farther apart than the posterior pair. Tentacles half the length of prostomium, meeting on median line. Palps with heavy bases and large rounded palpostyles, reaching to near the end of the tentacles. Peristomium twice as long as first setiger. Posterior dorsal tentacular cirri three or four times the length of prostomium, the anterior dorsal about half that length, and the other two quite short. Paragnaths small and pale, group I absent and, usually, group V. Median parapodia with all ligules rather short, conical, and uniform. The superior notopodial ligule somewhat longer than the others in posterior parapodia. Dorsal cirrus a little longer than superior notopodial ligule. Setae as in the family except that the notopodial spinigers are replaced by homogomph falcigers with oval end-pieces deeply imbedded in the shafts at, or about, the fortieth setiger. Coloration red to brown or straw-colour, sometimes with green iridescence. Often found in frail tubes.

East coast Vancouver island, littoral. A single example from Nanoose bay is an epitoke. Friday harbour, Washington. Alaska. California.



95 96

Fig. 95. *N. procera* Ehlers, homogomph notopodial falciger from posterior parapodium (after Johnson).

" 96. *N. pelagica* Linné, head with extended proboscis. (*a*) dorsal view, (*b*) ventral view (after McIntosh).

N. (Nereis) pelagica Linné **14** (Fig. 96, a and b).

Up to 120 mm. long, 5 mm. wide, and 100 setigers. Body thick and smooth. Prostomium the typical nereid form; eyes black, the anterior pair the larger and

slightly the farther apart. Tentacles half as long as prostomium. Palps about as long as prostomium. Peristomium not much longer than first setiger. Tentacular cirri short and fairly uniform in length. Parapodial ligules short, rounded, and uniform, anteriorly; longer and more pointed in the median and posterior regions. Notocirri slender, about twice the length of the ligules anteriorly; considerably longer in median and posterior regions. Setae as usual in the family, with large homogomph falcigers with blunt asymmetric end-pieces in posterior notopodia. Coloration variable, usually iridescent olive-green. Iridescent red-brown as preserved.

East coast Vancouver island; atokous forms littoral and dredged in moderate depths, epitokes swarming in shallow waters. West coast Vancouver island; atokous form dredged in about 250 fathoms. Queen Charlotte islands and Alaska; atokous forms, littoral. Jervis inlet, littoral. Bering sea, dredged in 15 fathoms. Hudson bay. California. Panama. Japan. N. Atlantic. Mediterranean. Arctic.

SYLLIDAE

Body generally slender, elongate, of small size. Prostomium usually rounded and with four eyes. Two palps. Three tentacles. One or two pairs of tentacular cirri on the achaetous peristomium. Proboscis evertible; the inner portion (pharynx) lined with chitin and armed with one or several chitinous teeth. Parapodia uniramous (when swimming setae develop a special aciculum appears with them). Dorsal and ventral cirri usually present. Setae rarely simple; usually compound with unidentate or bidentate end-piece, the articulation being heterogomph. Two anal cirri.

KEY TO GENERA

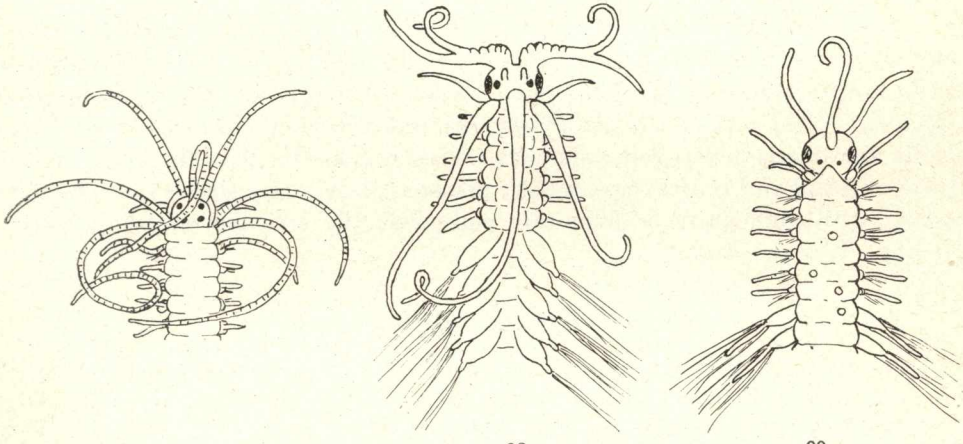
1.	(2)	Without ventral cirri. (S-F *Autolytinae*).	**AUTOLYTUS** (p. 68)
2.	(1)	With ventral cirri.	
3.	(6)	Dorsal cirri distinctly moniliform. (S-F *Syllinae*).	
4.	(5)	Pharynx armed with a chitinous and coarsely denticulate crown. (trepan). (Fig. 103).	**TRYPANOSYLLIS** (p. 71)
5.	(4)	Pharynx armed with a large anterior tooth. (Fig. 107).	**SYLLIS** (p. 71)
6.	(3)	Dorsal cirri smooth or indistinctly articulate.	
7.	(10)	Palps fused for entire length. (S-F *Exogoninae*).	
8.	(9)	Prostomium and peristomium distinct.	**EXOGONE** (p. 78)
9.	(8)	Prostomium and peristomium fused.	**SPHAEROSYLLIS** (p. 80)
10.	(7)	Palps not fused, or at base only. (S-F *Eusyllinae*).	
11.	(12)	Proboscis sinuous; conspicuous ciliated nuchal processes.	**AMBLYOSYLLIS** (p. 81)
12.	(11)	Proboscis straight; no conspicuous nuchal processes.	
13.	(14)	Prostomium partially covered by occipital flap.	**ODONTOSYLLIS** (p. 81)
14.	(13)	No occipital flap.	
15.	(16)	Termination of pharynx smooth. (Fig. 124).	**PIONOSYLLIS** (p. 83)
16.	(15)	Termination of pharynx denticulate. (Fig. 126).	**EUSYLLIS** (p. 84)

Genus **AUTOLYTUS** Grube

Palps fused and depressed anteriorly so that they extend very little beyond the prostomium. Proboscis long and more or less sinuous; pharynx with a crown of teeth. Cirriform appendages smooth or faintly annulated. Reproduction by stolons which differ from the stock and are sexually dimorphic. The male (*Polybostrichus*) with three tentacles, two bifurcate palps, one or two pairs of tentacular cirri, and a pair of long cirri on the second segment. No proboscis. Swimming setae on some segments. The female (*Sacconereis*) with three tentacles, palps fused, much reduced, and entirely ventral; one or two pairs of tentacular cirri. No proboscis. Swimming setae and a large ventral egg-case.

KEY TO SPECIES

1. (4)	Body slender (about 1 mm. wide over parapodia).		
2. (3)	No conspicuous markings.		**prismaticus**
3. (2)	Three broad, dark, longitudinal dorsal bands.		**trilineatus**
4. (1)	Body heavier (about 5-6 mm. wide over parapodia).		
5. (6)	Dorsal lobe of parapodium (in *Sacconereis*) longer than ventral.		**magnus**
6. (5)	Lobes of parapodium (in *Sacconereis*) equal in length.		**varius**



97 98 99

Fig, 97. *A. prismaticus* (Fabricius), anterior region.
" 98. *A. prismaticus* (Fabricius), anterior region of *polybostrichus*.
" 99. *A. prismaticus* (Fabricius), anterior region of *sacconereis*.

A. prismaticus (Fabricius) **2** (Figs. 97, 98, and 99).

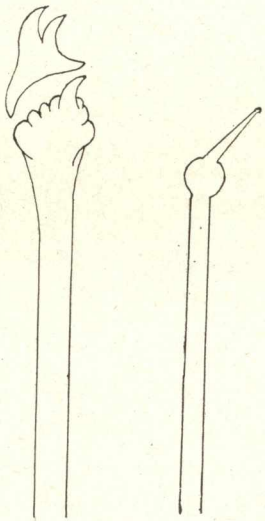
Up to 25 mm. long. Prostomium subcordate, rounded anteriorly. Tentacles, dorsal tentacular cirri, and dorsal cirri of second segment very long and slender. Length of lateral tentacles and dorsal tentacular cirri about five times the body width, that of the median tentacle and cirri of second segment considerably longer. Length of cirri of third segment about twice body width and, thereafter, only a quarter that length. Both sexual phases with six anterior setigerous segments fol-

lowed by fourteen to twenty-two segments with long swimming setae and a caudal region of about twenty segments which tapers more sharply in the male than in the female. A single bayonet seta, together with four to six compound setae with swollen denticulate ends to the shafts and bidentate terminal blades, in each parapodium.

East and west coasts Vancouver island, littoral. Stolons of both sexes in plankton off east coast. Alaska. North Atlantic. Arctic.

A. trilineatus Berkeley **10** (Fig. 100).

Up to 20 mm. long. 84-85 setigers. Prostomium rounded anteriorly, slightly longer than wide. Eyes reddish, subequal. Median tentacle extending back to ninth segment; laterals and dorsal tentacular cirri about half that length. Ventral tentacular cirri about a third the length of the dorsals. Cirri of first parapodium as long as the median tentacle, those of the second parapodium only a quarter that length. All appendages smooth when fully extended. Proboscis making an S-curve between proventriculus and mouth; with ten large and equal teeth. Cirri short, subulate. A bunch of setae with enlarged and coarsely toothed ends to the shafts and bidentate end-pieces, together with a single bayonet seta, in each parapodium. General body-colour creamy white. Markings, consisting of three broad, longitudinal dark brown bands running the whole length of the dorsum, very conspicuous.



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Fig, 100. *A. trilineatus* Berkeley, setae.

Polybostrichus phase with six setigers in anterior region, median region with twenty-three to twenty-nine parapodia with swimming setae, caudal region inconspicuous. Sacconereis phase unknown.

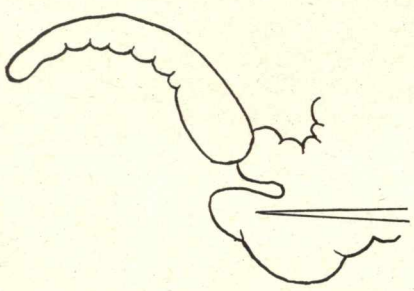
Nanaimo region, littoral and dredged in 10-25 fathoms. Polybostrichus in plankton.

A. magnus Berkeley **2**, 7, 10, 24 (Fig. 101).

Prostomium widest anteriorly, longer than wide. Four red eyes. Tentacles thick, long and wrinkled, the median longer than the laterals and all longer than the tentacular cirri. Long nuchal lappets extend from the posterior margin of the prostomium as far as the fifth setiger. Dorsal cirri of anterior setigers about half as long as lateral tentacles. Parapodial lobes thick. Setae in dense bundles in anterior and median regions, sparser in posterior region.

Polybostrichus phase from 5 to 38 mm. long and up to 4 mm. wide excluding setae. Base of palps very large and concave. Anterior region with about fourteen setigers, median region with about forty-three and posterior region with about forty-six. Sacconereis phase up to 50 mm. long and 7 mm. wide. Anterior region with fourteen setigers, median with thirty four, posterior with about fifty, tapering to a fine point. Median tentacle longer than laterals. Two pairs of tentacular cirri, the dorsal pair five or six times as long as the prostomium, the ventral about a third of that length. Cirri of first setiger twice as long as the dorsal tentacular cirri. Subsequent cirri much shorter. Preserved material colourless or with a few dark lines on cirri and dorsum.

Atokous phase known only from Alaska, dredged in 15 to 40 fathoms. Epitokes (both sexes) from east and west coasts Vancouver island and cape Mudge, in plankton.



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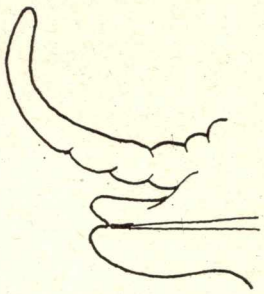

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Fig, 101. *A. magnus* Berkeley, tenth parapodium (setae omitted).
" 102. *A. varius* Treadwell, tenth parapodium (setae omitted) (after Treadwell).

A. varius Treadwell 7, **50**, 52 (Fig. 102).

Only Sacconereis phase known. Up to 30 mm. long. Prostomium about twice as broad as long. Anterior eyes very large, posterior pair only a quarter their size. Tentacles, tentacular cirri, and cirri of first few setigers all approximately equal in length, about twice the width of the body in anterior region. Anterior region with fourteen setigers, median with about thirty, and a long posterior region (about sixty setigers).

Nanaimo region and Burrard inlet; in plankton.

Genus **TRYPANOSYLLIS** Claparède

Body flattened, ribbon-like. Palps well separated. Tentacles and cirri moniliform. Two pairs of tentacular cirri. Setae with hooked end-pieces. Reproduction by stolons.

T. gemmipara Johnson **27** (Fig. 103).

Up to 94 mm. long and 3 mm. wide; up to 356 segments. Prostomium distinctly bilobed. Anterior eyes larger and farther apart than posterior pair. Lateral tentacles about two-thirds the length of the median tentacle. Dorsal tentacular cirri about the same length as the median tentacle; the ventrals considerably shorter. Dorsal cirri longer than median tentacle. All the cirriform appendages heavy and with very short articles. The extended proboscis terminating in a circlet of elongated papillae. Ventral cirrus short, thick, and smooth. Parapodia not prominent. Three or four acicula and a bundle of about nine compound setae with coarsely bidentate, rather long, terminal blades in each parapodium. Coloration yellowish with two red to brown transverse bands on each segment and cirri of same colour. Reproduction by collateral budding of stolons resembling the stock. Frequently associated with sponges.

East and west coasts Vancouver island, littoral. Friday harbour (Washington). Alaska. California. Mexico.

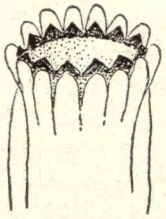

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Fig. 103. *T. gemmipara* Johnson, end of proboscis.

Genus **SYLLIS** Savigny

Palps ovoid or subtriangular, typically not fused, but sometimes partially fused. Proboscis terminating in a crown of soft papillae. Two pairs of tentacular cirri. Ventral cirri not articulated. Compound setae unidentate or bidentate, sometimes some simple setae. Anal cirri articulate. Reproduction direct or by stolons, the stolons having capillary dorsal setae and only one rudimentary pair of tentacular cirri.

KEY TO SPECIES

1. (4, 5)	Dorsal cirri in median region with 7-12 articles.	
2. (3)	Palps fused for more than half their length.	**stewarti**
3. (2)	Palps not fused.	**armillaris**
4. (1, 5)	Dorsal cirri in median region with 50-70 articles.	**pulchra**

5.	(4, 1)	Dorsal cirri in median region with 10-50 articles.	
6.	(13)	All setae similar.	
7.	(8)	Setae with end-pieces partially, or wholly, fused to shafts. (Fig. 106).	**sclerolaema**
8.	(7)	Setae without end-pieces fused to shafts.	
9.	(10)	Setae all bidentate.	**hyalina**
10.	(9)	Some, or all, setae unidentate.	
11.	(12)	Dorsal cirri in median region slender, little tapered, more than 20 articles.	**fasciata**
12.	(11)	Dorsal cirri in median region not slender, fusiform, 14-20 articles.	**elongata**
13.	(6)	A few setae in each bundle dissimilar.	
14.	(15, 16)	Dorsalmost setae in each bundle with very oblique ends to shafts. (Fig. 112).	**spenceri**
15.	(14, 16)	One or two setae with very long, straight end-pieces in each bundle. (S-G. *Ehlersia*). (Fig. 113).	**heterochaeta**
16.	(14, 15)	Dorsalmost setae in each bundle with long, hooked end-pieces. (Fig. 115).	
17.	(18)	Dorsal cirri in median region twice as long as body width.	**harti**
18.	(17)	Dorsal cirri in median region barely as long as body width.	**alternata**

S. stewarti Berkeley 9.

Up to 115 mm. long and 1.5 mm. wide. Body slender and arched dorsally. Prostomium about three times as wide as long. Eyes reddish, about equal in size, the anterior pair only slightly in advance of the posterior pair. Tentacles and tentacular cirri all of about equal length. The median tentacle arising between the posterior eyes. Dorsal cirri of first few parapodia longer, with about twelve articles, thereafter shorter and with only seven to nine articles. (As many as fifteen may occur in commensals.) Ventral cirri slender and tapering. All setae with very oblique ends to shafts and unidentate end-pieces with long base and hirsute edge, similar to those of *S. spenceri* (fig. 112). Coloration as preserved light brown with no definite markings.

West coast Vancouver island, littoral. Queen Charlotte islands. Alaska.

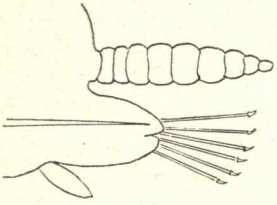
S. armillaris (Müller) **14**, 41 (Fig. 104).

Up to 50 mm. long. Prostomium broader than long. Eyes red, the anterior pair wider apart; sometimes accompanied by two oculiform spots. Palps oval, very near together. Tentacles longer than palps, the median the longest. Dorsal tentacular cirri as long as the median tentacle. Dorsal cirri relatively long for the first few segments; thereafter short and fusiform. Setae in the anterior region with longer end-pieces than those in the posterior region; in both cases bidentate. In the median region they are more hooked and unidentate. A simple straight spine in posterior segments. Anal cirri moniliform. Coloration as preserved yellowish white with two conspicuous dark transverse lines on each anterior segment.

East and west coasts Vancouver island, littoral. Alaska. California. North Atlantic. Mediterranean. Arctic.

S. pulchra Berkeley **7** (Fig. 105).

Up to 30 mm. long and 1.5 mm. wide over setae. Prostomium about twice as wide as long, sub-rectangular; notched behind with a small dark papilla in the notch. Eyes large, the anterior and posterior pairs on either side close together. Palps large, well separated, curled longitudinally. Tentacles short, the laterals



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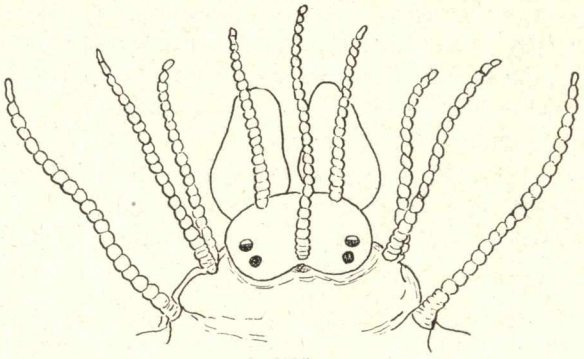

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Fig. 104. *S. armillaris* (Müller), parapodium (after Fauvel).
" 105 *S. pulchra* Berkeley, head.

only slightly longer than the combined lengths of prostomium and palps; the median, half as long again. Dorsal tentacular cirri about the same length as median tentacle. Dorsal cirri of first setiger still longer, but long and short alternately on adjacent segments thereafter, the long ones with fifty to seventy articles. Setae with rather long unidentate end-pieces with the base short and the hirsute edge relatively long. Coloration in life chocolate brown, the cirriform processes strikingly ivory-white by contrast. The colour retained in varying degree on preservation.

Nanaimo region, littoral and dredged in 15-25 fathoms. West coast Vancouver island, littoral. Queen Charlotte islands. Alaska. California.

S. sclerolaema Ehlers **7, 12** (Fig. 106, a and b).

Up to 35 mm. long. Prostomium about twice as broad as long. Two conspicuous pairs of eyes of which the anterior are larger and farther apart. Palps almost semi-circular and hollowed ventrally, conical in contraction. Median tentacle only slightly longer than laterals. Dorsal tentacular cirri and dorsal cirri of first setiger about the same length. Thereafter dorsal cirri somewhat shorter and alternately long and short on adjacent segments. Setae few, with rather thick shafts and bidentate end-pieces with smooth edge; the articulation between shaft and end-piece obscure or absent. Coloration in life pink with white appendages; colour largely lost on preservation.

Nanaimo region dredged in 8-50 fathoms; both free-living and in the sponge *Ectyodoryx parasitica* growing on the shell of *Pecten hindsi*. West coast Vancouver island, littoral. Friday harbour, Washington. S. Atlantic.

S. hyalina Grube **14** (Figs. 107 and 108).

Up to 35 mm. long. Prostomium sub-pentagonal, broader than long. Anterior eyes larger and farther apart than posterior pair; sometimes two oculiform spots near the anterior edge of prostomium. Palps heavy. Tentacles rather short, the median only slightly longer than the laterals. Dorsal tentacular cirri about as long as the median tentacle. Dorsal cirri not so long and with only a few articles. Except in the last setigers, in which one or two simple spines occur, all setae bidentate, the blades varying a little in length, all with hirsute edges. Coloration creamy white with segmental and intersegmental broken brown lines; persisting more or less on preservation.

Nanaimo region, in the sponge *Ectyodoryx parasitica* growing on the shell of *Pecten hindsi* dredged in 30-50 fathoms. Hudson bay. California. Panama. Galapagos. N. Atlantic. Mediterranean.

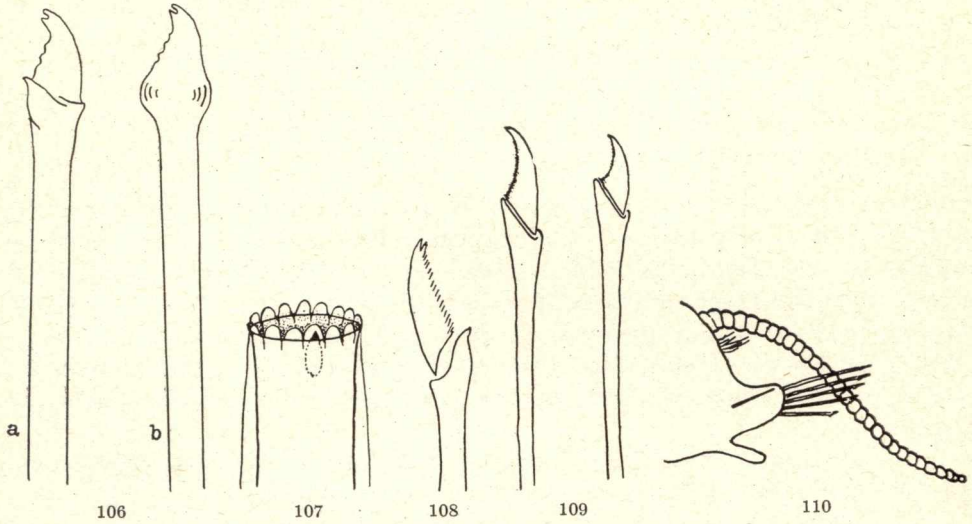


Fig. 106. *S. sclerolaema* Ehlers, setae. (*a*) with partially fused end-piece, (*b*) with complete fusion.
" 107. *S. hyalina* Grube, end of proboscis.
" 108. *S. hyalina* Grube, seta (after Fauvel).
" 109. *S. fasciata* Malmgren, setae (after Malmgren).
" 110. *S. fasciata* Malmgren, parapodium (after Malmgren).

S. fasciata Malmgren 8, **32** (Figs. 109 and 110).

Up to 20 mm. long. Prostomium oval, wider than long. Eyes inconspicuous. Palps long and well separated. A narrow fold covering the posterior edge of the prostomium. Median tentacle and dorsal tentacular cirri more or less of one length; lateral tentacles and ventral tentacular cirri somewhat shorter. Dorsal cirri longer and slightly heavier than all the cephalic processes, approximately equal throughout, with about twenty-four articles. Setae all unidentate in the

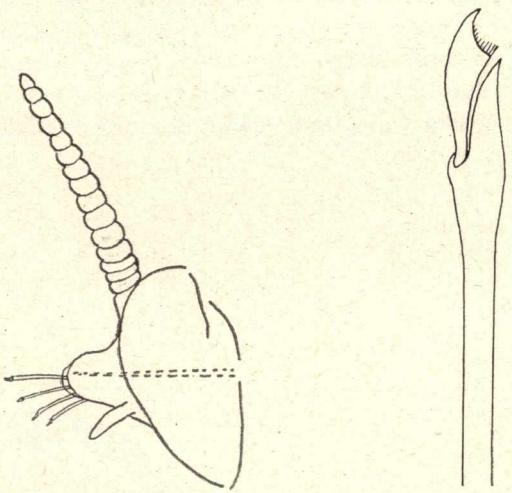
median region, the edges of the blades almost smooth. A straight, heavy spine in each posterior parapodium. Coloration a uniform brown mottling over the anterior third of dorsum.

East and west coasts Vancouver island, littoral. Queen Charlotte islands. California. Japan. Arctic.

S. elongata (Johnson) 7, **27** (as *Pionosyllis*), 46 (Fig. 111).

Up to 90 mm. long and 2 mm. wide over setae. Prostomium twice as wide as long, rounded anteriorly. Anterior eyes twice as large as posterior pair and considerably farther apart. Palps prominent and fused for half their length. Cephalic appendages rather short and slender; all more or less of one length. Dorsal cirri longer and tapered for about the first twenty setigers, thereafter shorter, heavier, and fusiform. Anal cirri longer than dorsal cirri, cylindrical. Parapodia with three blunt acicula and a small bundle of unidentate setae with end-pieces of varying length. Genital products developed in posterior segments only. Coloration in life red to nearly white; ova mauve or yellow.

East coast Vancouver island, littoral and dredged. West coast, littoral; free and commensal with *Dodecaceria pacifica* (Fewkes). Queen Charlotte islands, littoral. Alaska. California. Mexico.



111 112

Fig. 111. *S. elongata* (Johnson), parapodium (after Johnson).
" 112. *S. spenceri* Berkeley, dorsal seta from median region.

S. spenceri Berkeley **7** (Fig. 112).

Up to 30 mm. long and 2 mm. wide. Prostomium twice as wide as long. Eyes of uniform size. Palps broad and fused for half their length. Median tentacle, inserted between, or slightly behind, posterior eyes, slightly longer than the

laterals. The remaining cephalic appendages all more or less of one length, not more than one-third the width of the body and with ten to twenty articles. All setae compound, the unidentate end-pieces with coarsely hairy edge, the majority with short bases, but a few in each bundle, particularly in the median region, of characteristic shape. Coloration creamy-white covered with brown spots excepting a clear circular area at the centre of each segment. The bare spots coalesce on the first few segments making a broad median band.

Nanaimo region, littoral.

S. (Ehlersia) heterochaeta Moore **42** (Fig. 113).

Up to 18 mm. long. Prostomium irregularly sub-pentagonal, about twice as wide as long. Anterior eyes the larger and with lenses; sometimes a pair of oculiform specks in front of the anterior eyes. Palps prominent and separate to the base. Median tentacle, arising slightly posterior to the anterior eyes, slightly heavier and longer than the laterals. Dorsal tentacular cirri about the same length as tentacles; ventrals about two-thirds as long. Dorsal cirri of second segment about one and a half times length of tentacles. Thereafter all shorter, and alternately long and short. Anal cirri very long and moniliform. Parapodia with three to seven acicula, blunt, slightly knobbed and bent. Setae all compound, in several rows, the majority with rather long curved shafts with slightly enlarged roughened ends and short, coarsely toothed, unidentate or bidentate end-pieces; those of the most dorsal row more slender and with straight delicate end-pieces at least four times as long as those of the other setae, finely dentate and with slightly knobbed tips. No coloration remains in preserved specimens.

East and west coasts Vancouver island, dredged in 25-100 fathoms.

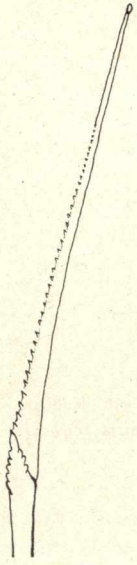


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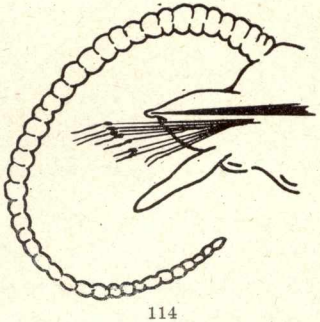
Fig. 113. *S. heterochaeta* Moore, dorsal seta.



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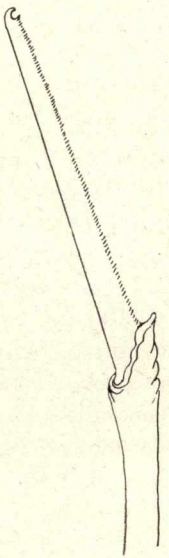
Fig, 114. *S. harti* Berkeley, parapodium.

S. harti Berkeley **7** (Fig. 114).

About 28 mm. long. Prostomium very short, more than twice as wide as long. Eyes small, black, and of uniform size; the anterior pair considerably farther apart than the posterior pair. Palps long and divergent. Tentacles extending well beyond the palps; the median tentacle inserted between the posterior eyes, the laterals at anterior border of prostomium. Tentacles, tentacular cirri and dorsal cirri in anterior segments all approximately the same length. Farther back dorsal cirri alternately long and short, the longer ones about twice the greatest body width and with thirty to forty articles, the shorter with twenty to thirty. Ventral cirrus very prominent, smooth, cylindrical, and extending beyond the setae. Setae with long, bidentate, hooked blades, those of the most dorsal in each bundle exceptionally long, especially in the anterior region. Anal cirri very long and tapering. No coloration in preserved specimens.

East and west coasts Vancouver island, dredged in 20-45 fathoms. Princess Louise inlet, B.C., dredged in 20 fathoms.



115

Fig. 115. *S. alternata* Moore, dorsal seta from anterior region.

S. alternata Moore 7, **41**, 46 (Fig. 115).

Up to 44 mm. long, but commonly not so long. Prostomium about one and a half times as wide as long. Eyes small, reddish brown, the anterior larger and much the farther apart. (In specimens dredged from considerable depths the eyes may be much larger.) Palps prominent, about twice the length of prostomium and fused at the base. Median tentacle arising between the posterior eyes and about six times the length of the prostomium, laterals about two-thirds as

long. Dorsal tentacular cirri about equal to median tentacle and ventral tentacular cirri to lateral tentacles. Dorsal cirri of first setiger longer than median tentacle. Farther back dorsal cirri alternately long and short, but never as long as the cephalic appendages and never exceeding the body width in length. Ventral cirrus slender, smooth, and little tapered; extending only a little beyond the parapodium. Setae much as in *S. harti* except that they are heavier, the blades of the dorsal ones somewhat shorter and those of the ventral ones much shorter. No coloration in preserved specimens.

Nanaimo region dredged in 25 fathoms. Alaska. California. Mexico.

Genus **EXOGONE** Oersted

Body very small. Palps well developed and fused. One pair of tentacular cirri. Pharynx with a single anterior tooth. Parapodial cirri small, oval or, sometimes, pyriform. Both simple and compound setae. Swimming setae at maturity.

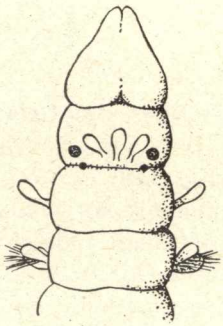
KEY TO SPECIES

1. (2)	Median tentacle short and thick.	**verugera**
2. (1)	Median tentacle long and well developed.	
3. (4)	Lateral tentacles short and thick.	**lourei**
4. (3)	Lateral tentacles long and well developed.	**gemmifera**

E. verugera (Claparède) 7, **47** (Fig. 116).

Up to 8 mm. long. Prostomium sub-rectangular, wider than long. Eyes large, with lenses, the anterior and slightly larger pair on the line passing through the bases of the tentacles, the posterior pair on the posterior edge of the prostomium. All three tentacles equal in size and reduced to pyriform papillae much shorter than the prostomium. Tentacular cirri ovoid and longer than the tentacles. Dorsal cirri on every segment; similar to, but smaller than, tentacular cirri. Anteriorly in each parapodium a simple, bent, and truncated dorsal seta and one or two compound setae with long awl-shaped end-pieces. Posteriorly a rather heavy, bent, simple hooked seta ventrally.

West coast Vancouver island, littoral. Mexico. Japan. Atlantic. Mediterranean. Arctic.



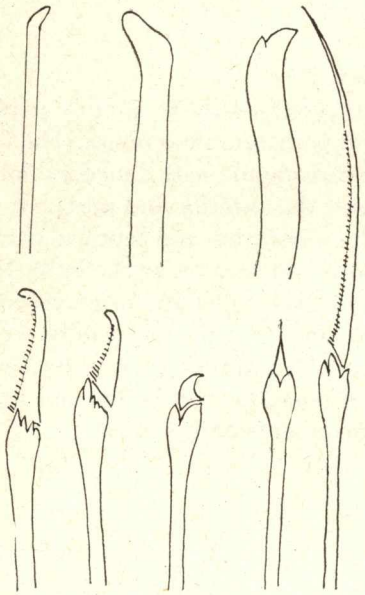
116

Fig. 116. *E. verugera* (Claparède), head.

E. lourei Berkeley 7, **46** (Fig. 117).

Up to 8 mm. long; 45 setigers. Prostomium wider than long, sub-rectangular. Two pairs of eyes, the anterior pair, with lenses, on the median line of the prostomium, the posterior pair, close behind them, without lenses. Tentacles inserted on a straight line in front of the eyes. Median tentacle fusiform, nearly reaching the end of the palps; laterals short and ovoid. Tentacular cirri similar to lateral tentacles, but a little smaller. A simple seta in each parapodium accompanied, in the anterior region, by one or two compound ones with very long, finely denticulate, curved blades dorsally and others, with blades of the usual *Syllis* form, ventrally. In the posterior region the dorsal compound setae have much shorter, straight and acute end-pieces; the ventral ones short, hooked blades.

East and west coasts Vancouver island. Mexico.



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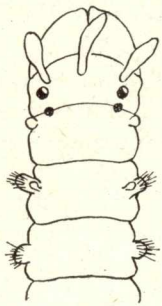


118

Fig. 117. *E lourei* Berkeley, setae.
" 118. *E. gemmifera* (Pagenstecher), head (after Rioja).

E. gemmifera (Pagenstecher) **14**, 47 (Fig. 118).

2-4 mm. long. 24-33 setigers. Prostomium wider than long. Four eyes, all with lenses; the anterior, and larger, pair the wider apart, but close to the posterior pair. Tentacles clavate, inserted in front of the eyes on an almost straight line; the median longer than the laterals, but scarcely reaching beyond the fused palps. Tentacular cirri reduced to small knobs. Dorsal cirri ovoid, shorter than parapodia; none present on second setiger. In each parapodium a single, simple dorsal seta with blunt end, a compound seta with long, slender, awl-shaped end-

piece, and some compound setae with very small, hooked end-pieces. Two long anal cirri. Eggs and embryos carried on the ventral surface. Uncoloured or yellowish. Eggs orange red.

East coast Vancouver island, littoral and dredged. Mexico.

Genus **SPHAEROSYLLIS** Claparède

Body very small. One pair of tentacular cirri. Prostomium and peristomium coalesced. Palps fused. Pharynx armed with a single, large, anterior tooth. Tentacles and dorsal cirri short, swollen at the base, and terminating in a sharp tip. Swimming setae at maturity. Reproduction direct.

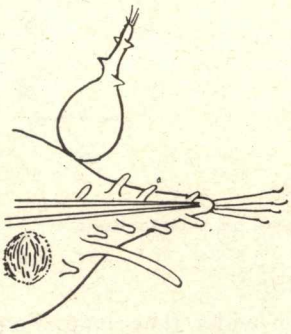
KEY TO SPECIES

1. (2) A capsule of small rods (rhabdites) in each parapodium posterior to the third. (Fig. 119). **hystrix**
2. (1) No such capsules. **pirifera**

S. hystrix Claparède 7, **14**, 47 (Fig. 119).

3-5 mm. long; 30-40 setigers. Body covered with minute papillae. Prostomium wider than long; separation from peristomium obscure. The fused palps longer than the united prostomium and peristomium, with a median dorsal groove running the whole length. Eyes with lenses; the anterior and posterior pairs close together, but each pair widely separated. Tentacles and tentacular cirri almost equal in length, shorter than palps, smooth and swollen at the base. Dorsal cirri pyriform, swollen at the base, the tips elongated and acute; often absent from the second setiger. Ventral cirri very small, smooth and not swollen at the base. Setae with slender, unidentate end-pieces, all rather long, but varying in length. Heavy simple spines in some median and posterior parapodia. No coloration.

Nanaimo region and west coast Vancouver island, littoral.



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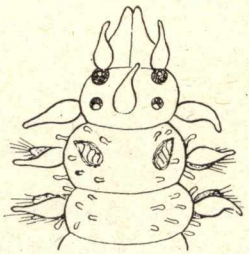


120

Fig. 119. *S. hystrix* Claparède, parapodium, showing capsule of rhabdites (after Claparède).
" 120. *S. pirifera* Claparède, anterior region, showing yellow glands.

S. pirifera Claparède **14** (Fig. 120).

Closely resembling *S. hystrix* except that there are no capsules of rhabdites and small yellow glands occur near the base of the parapodia of the first setiger.

Nanaimo region, dredged in 30-50 fathoms and west coast Vancouver island, littoral.

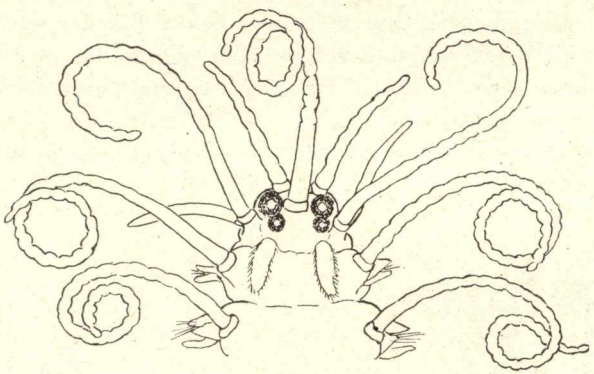
Genus **AMBLYOSYLLIS** Grube

Body short, flattened, composed of a few trapeziform segments with deep intersegmental constrictions. Palps not fused. Two pairs of tentacular cirri. Proboscis very long and coiled, pharynx armed with a complete circlet of bicuspid or tricuspid teeth. Penultimate segment achaetous. Reproduction direct.

A. lineata Grube var. *alba* Berkeley 2, (variety), **30**, (stem species), (Fig. 121).

Body wide and thick. Up to 35 mm. long; about fourteen segments. Prostomium small, oval, wider than long. Eyes rather large, red, with lenses; the anterior pair the larger and very close to the posterior pair. The anterior eyes sometimes partially covered by conical processes. Nuchal processes long ciliated flaps extending back from posterior edge of prostomium. Palps conical, bent abruptly downwards and outwards. Tentacles, tentacular and dorsal cirri, all very long. The median tentacle some fifteen or sixteen times as long as the prostomium; the laterals about one-third its length. Dorsal tentacular cirri as long as the median tentacle and dorsal cirri of first setiger even longer. Thereafter dorsal cirri maintaining considerable length throughout the body and often rolled spirally. All cephalic and dorsal processes indistinctly articulated. Proboscis armed with a circlet of about six large, blunt, tricuspid teeth. Setae with long, bidentate blades with almost smooth edge. Conspicuously devoid of all coloration except a slightly yellowish prostomium and the red eyes.

Nanaimo region. Known only as a commensal in the cavity of the siliceous sponge *Rhabdocalyptus dawsoni* (Lambe), dredged in 20-25 fathoms.



121

Fig. 121. *A. lineata* Grube, var. *alba*, head.

Genus **ODONTOSYLLIS** Claparède

Body fragile. Palps fused at base. Pharynx with a semi-circle of large recurved anterior teeth. Two pairs of tentacular cirri. Swimming setae at maturity.

KEY TO SPECIES

1. (2) Dorsal cirri in median region long, slender, and tapered to a fine tip. **phosphorea**
2. (1) Dorsal cirri in median region short and fusiform. **parva**

O. phosphorea Moore **42.**

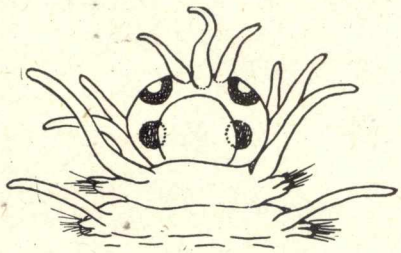
Up to 30 mm. long. Prostomium short, about two-thirds as long as wide, bent downward, making the depth greater than the length. Eyes rather large, brown, subequal. Occipital flap, arising from the peristomium, a deeply pigmented free membrane covering the posterior eyes. Palps joined at the base, the free portion directed downwards and outwards. Tentacles unjointed, subequal, somewhat exceeding length of prostomium, arising close together on the frontal face of prostomium, the median somewhat more dorsal than the laterals. Tentacular cirri unjointed, but transversely wrinkled, the ventral about as long as the width of the prostomium, the dorsal one and a half times as long. Dorsal cirri in median region similar, but shorter, alternately long and short. Setae rather numerous and heavy, the shafts curved and with oblique roughened ends, the blades hooked, bidentate. Coloration yellow with conspicuous spot on prostomium; occipital flap and intersegmental lines black.

Atokous forms from east and west coasts Vancouver island, littoral. Epitokous forms unknown from the region. California.

O. phosphorea Moore var. **nanaimoensis** Berkeley 2, (variety), **42**, (stem species), (Fig. 122).

Differs from stem species chiefly in coloration. The prostomium and occipital flap are entirely unpigmented and there is a heavy black spot in the centre of every third or fourth intersegmental line. The tentacular and dorsal cirri are shorter and the setae differ in that the blades are longer and the secondary tooth is much closer to the main hook.

East coast Vancouver island, both atokous and epitokous forms, the former dredged in 25-100 fathoms.



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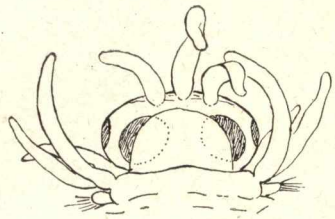


123

Fig, 122. *O. phosphorea* Moore, var. *nanaimoensis*, head.
" 123. *O. parva* Berkeley, head.

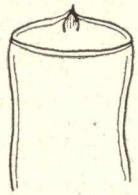
O. parva Berkeley **2** (Fig. 123).

Up to 15 mm. long and less than 1 mm. wide over setae. Prostomium twice as broad as long, rounded laterally and nearly straight anteriorly. Eyes very large, brown, with lenses; anterior pair latero-ventral, posterior pair dorsal, the latter half covered by the occipital flap. Palps small, folded downwards, invisible from the dorsum. Tentacles thick, rounded, unjointed, on anterior edge of prostomium; the median about twice the length of the prostomium, the laterals not so long. Dorsal tentacular cirri same length as lateral tentacles, ventrals shorter. Dorsal cirri of first setiger longer than median tentacle. Thereafter dorsal cirri reduced in length and becoming fusiform. Setae with both straight and curved shafts, enlarged and roughened terminally, and short, bidentate end-pieces. Coloration yellowish with no distinct markings.

Nanaimo region and west coast Vancouver island, atokous and epitokous forms, littoral. California.

Genus **PIONOSYLLIS** Malmgren

Tentacles and cirri smooth. Palps fused at base. Two pairs of tentacular cirri. Some setae with long, bidentate end-pieces. Reproduction direct.



124

Fig. 124. *P. gigantea* Moore, end of pharynx.

P. gigantea Moore **41** (Fig. 124).

Complete specimen unknown. Largest fragment 16 mm. long for 40 segments; 7 mm. wide over setae. Prostomium sub-quadrangular, convex anteriorly, bilobed posteriorly. Eyes reddish brown, equal in size. Palps broad, flattened, slightly longer than prostomium, fused at base, but divergent and curved downward distally. Median tentacle, arising from centre of prostomium, about three and a half times length of prostomium; laterals, arising from the anterior margin, about two-thirds that length. Dorsal tentacular cirri about five times length of prostomium, ventrals less than half their length. Dorsal cirri of anterior segments very long, sharply tapered. Farther back they are alternately long and short, the longer two to two and a half times the body width, the shorter little exceeding the body width. Ventral cirri large, swollen and blunt on anterior parapodia, farther back reduced in size and slenderer. Parapodia with five or six acicula and a bundle of fifteen or sixteen setae with bidentate, coarsely serrate blades of varying length, but none short. Coloration chocolate brown with colourless prostomium, peristomium, and dorsal cirri.

Nanaimo region, dredged in 20-25 fathoms. West coast Vancouver island in 20 fathoms. Fort Rupert, Vancouver island, in 68-107 fathoms. Alaska. California.

Genus **EUSYLLIS** Malmgren

Tentacles and cirri indistinctly articulate. Two pairs of tentacular cirri. Palps fused at base. Pharynx with a denticulated edge and a single large tooth. Swimming setae at maturity. Reproduction direct.

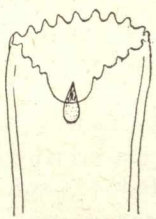
KEY TO SPECIES

1. (2) Crown of pharyngeal teeth incomplete. **assimilis**
2. (1) Crown of pharyngeal teeth complete. **blomstrandi**

E. assimilis Marenzeller 7, **14** (Fig. 125).

Up to 20 mm. long; up to 70 setigers. Prostomium sub-rectangular, wider than long. Eyes fairly large, both pairs on anterior region of prostomium. Median tentacle more than twice as long as prostomium; laterals considerably shorter. Dorsal tentacular cirri as long as median tentacle; ventral shorter. Dorsal cirri of first setiger much longer than any of the cephalic processes; thereafter shortening and becoming smoother. In median region alternately long and short and all shorter than width of body. Ventral cirri wide, oval, shorter than the parapodia. Acicula coarsely hooked. Setae all with bidentate blades. These are long in the anterior region, short in the posterior region; setae with blades of both kinds in the same parapodium in the median region. No coloration as preserved.

Nanaimo region, littoral. Mexico. N. Atlantic. Mediterranean.



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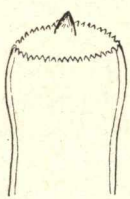


126

Fig. 125. *E. assimilis* Marenzeller, end of pharynx.
" 126. *E. blomstrandi* Malmgren, end of pharynx.

E. blomstrandi Malmgren 10, **14** (Fig. 126).

Up to 10 mm. long; about 50 setigers. Prostomium sub-rectangular. Eyes fairly large, equal in size, arranged in a rectangle. Median tentacle about three times as long as prostomium, laterals about half its length. Palps oval, well separated distally. Proboscis with two rows of soft papillae adjacent to the pharyngeal teeth. Dorsal tentacular cirri as long as median tentacle, ventrals much shorter. Dorsal cirri of first setiger a little longer than median tentacle. All cephalic processes annulated. Dorsal cirri much smoother, and not longer than body width in

median and posterior regions. Ventral cirri oval, about equal to length of parapodium. Setae all with bidentate end-pieces only slightly differing in length. Coloration yellowish except when distended with scarlet eggs.

East coast Vancouver island in 25-100 fathoms, both free and in the sponge *Ectyodoryx parasitica* growing on the shells of *Pecten hindsi*. N. Atlantic. Mediterranean. Arctic.

EUNICIDAE

Body usually elongated. Prostomium distinct, with or without tentacles. Palps present or absent. Proboscis with jaws as noted in key to families. Two first segments usually apodous and achaetous. Sometimes a pair of nuchal cirri on first or second segment. Parapodia uni- or sesquiramous. Dorsal cirri present or absent, sometimes bearing branchiae which may be simple or compound. Ventral cirri sometimes absent. Setae of very varied forms, simple or compound. Pygidium with two or four anal cirri. Frequently tubicolous.

KEY TO GENERA

1.	(7)	Prostomium with tentacles. Palps present.	
2.	(3, 4)	Two tentacles.	**DORVILLEA** (p. 85)
3.	(2, 4)	Five tentacles.	**EUNICE** (p. 88)
4.	(2, 3)	Seven tentacles.	
5.	(6)	Branchiae simple.	**ONUPHIS** (p. 90)
6.	(5)	Branchiae spiral. (Fig. 142).	**DIOPATRA** (p. 94)
7.	(1)	Prostomium without tentacles. No palps.	
8.	(9)	With branchiae.	**NINOE** (p. 95)
9.	(8)	Without branchiae.	
10.	(11)	With all setae winged bristles.	**ARABELLA** (p. 96)
11.	(10)	With simple or compound crotchets as well as winged bristles.	**LUMBRINEREIS** (p. 97)

Genus **DORVILLEA** Parfitt

Prostomium rounded anteriorly. Two articulated tentacles. Two or four eyes. Palps long, often articulated terminally. Lower jaw (labrum) consisting of two pieces denticulated on the anterior edge. Each side of the upper jaw consisting of two curved rows of many small denticles, the rows meeting posteriorly. Dorsal cirri usually articulated, with an aciculum in the cirrophore. Ventral cirri simple. Superior setae simple; denticulated capillaries and either cultriform or forked bristles. Inferior setae compound; usually heterogomph falcigers, rarely spinigers. Four anal cirri.

KEY TO SPECIES

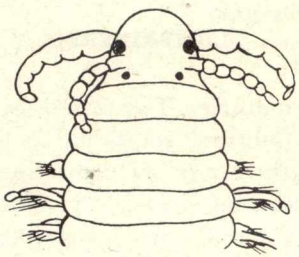
1.	(2, 5)	Simple forked setae present throughout body. (Fig. 128).	**neglecta**
2.	(1, 5)	Simple forked setae present in all parapodia except the first one or two.	
3.	(4)	Prostomium not annulated; no inferior setae with very long blades.	**rudolphii**
4.	(3)	Prostomium annulated; some inferior setae with very long blades.	**annulata**

5. (1, 2) Simple forked setae absent.
6. (7) Tentacles longer than palps; two kinds of superior setae throughout. **pseudorubrovittata**
7. (6) Palps longer than tentacles; one kind of superior setae in median setigers. **moniloceras**

D. rudolphii (Delle Chiaje) **11**, (as *Staurocephalus*), 14, (as *Staurocephalus*) (Figs. 127, 128 and 129).

Up to about 45 mm. long, 3 mm. wide over parapodia, 80 segments. Prostomium conical, rounded anteriorly. Four eyes. Palps wrinkled, bent, with ovoid palpostyles. Tentacles cylindrical, with six to eleven articles, sometimes longer, sometimes shorter, than the palps. First parapodium without dorsal cirrus. Subsequent parapodia with dorsal cirrus having a long basal portion widened towards the large conical style and supported by a slender aciculum, two setal lips, and an unarticulated ventral cirrus. Superior setae denticulated capillaries and forks with unequal branches, except in the first one or two parapodia, in which the latter are replaced by very small, flattened, denticulate bristles with bidentate tips. In the inferior group bidentate falcigers with end-pieces of varying length throughout. Pygidium with two long articulated cirri and two short and unarticulated. Coloration in life orange; uncoloured as preserved.

Nanaimo region, littoral. N. Atlantic. Mediterranean.



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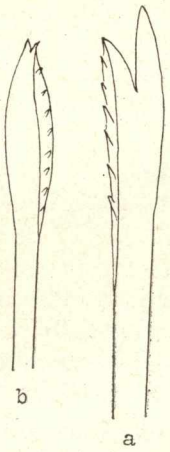

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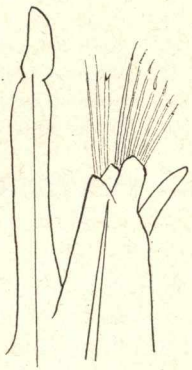


129

Fig. 127. *D. rudolphii* (Delle Chiaje), anterior region (after Fauvel).
" 128. *D. rudolphii* (Delle Chiaje), (*a*) forked seta, (*b*) small seta from first parapodium (after Fauvel).
" 129. *D. rudolphii* (Delle Chiaje), parapodium (after Fauvel).

D. neglecta (Fauvel) 10, **14** (as *Staurocephalus*).

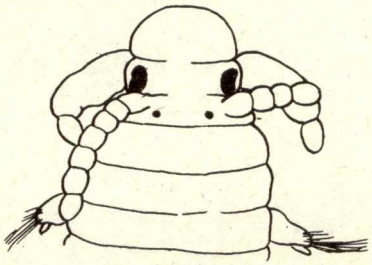
Similar in every respect to *D. rudolphii* except that the small, flattened bristles of the first setigers are absent and forked setae are present throughout.

Nanaimo region, littoral. California. N. Atlantic.

D. annulata (Moore) **40** (as *Stauronereis*) (Fig. 130).

Up to 13 mm. long, 1 mm. wide, and 72 segments. Prostomium divided into three parts; the anterior a semicircular flap, the median a smooth annulus bearing a pair of large eyes and a pair of heavy palps with short palpostyles, the posterior an annulus bearing a pair of smaller eyes and a pair of articulated tentacles longer than the palps. First parapodium with no dorsal cirrus. Subsequent parapodia with a dorsal cirrus with an almost cylindrical cirrophore about as long as the parapodium bearing a slender conical style about half its length, two setal lips, the presetal bilobed, and a small, smooth ventral cirrus. The dorsal cirrus ciliated ventrally and the parapodium dorsally. Superior setae delicate, acute capillaries rather strongly serrated on one side, and forks with unequal branches heavily serrated on one edge. Inferior setae mostly bidentate falcigers with end-pieces of varying, but not extreme, length. Together with these, in all but the first few setigers, there are from one to three very slender setae with very long, thin end-pieces with minute, bifid tips. Coloration bright, but delicate, green; colourless as preserved.

Nanaimo region, dredged in about 25 fathoms. Washington.



130

Fig. 130. *D. annulata* (Moore), anterior region (after Moore).

D. pseudorubrovittata Berkeley **4.**

Up to 25 mm. long, 1 mm. wide, 95 segments. Prostomium as wide as long, rounded anteriorly. Two pairs of eyes, the anterior pair the larger. A pair of smooth palps with well developed terminal articles and a pair of longer, distinctly moniliform, tentacles with about twelve articles. The first segment twice as wide as those which follow. First parapodium with no dorsal cirrus. The remainder similar to those of *D. rudolphii* except that both the dorsal cirri and the parapodia themselves are thicker and shorter. No forked setae. Superior setae consisting of flattened spines denticulated on one edge and terminating abruptly in an obtuse, obscurely bifid, tip, together with long finely denticulated capillaries. The inferior setae bidentate falcigers. Four anal cirri; two dorsal with eight to ten articles, two ventral unarticulated. Coloration clear yellow with transverse bands of orange-red. Colourless as preserved.

East coast Vancouver island; common in material dredged in 8-25 fathoms. Alaska.

D. moniloceras (Moore) **43** (as *Stauronereis*) (Fig. 131).

Up to 70 mm. long, 3 mm. wide at widest point, 110 segments. Prostomium longer than broad, rounded anteriorly, united to peristomium by a small ridge on either side of which are nuchal pits. Two pairs of conspicuous eyes; anterior pair dorso-lateral on median line, posterior pair dorsal and close to posterior border. Tentacles about as long as prostomium, six to eight short joints. Palps heavy, about twice the length of tentacles and undivided. Peristomium very large, three times width of prostomium and almost as long as the three succeeding segments. First parapodium with no dorsal cirrus. Subsequent parapodia with broad, rounded postsetal, shorter subdivided presetal, and small subsetal lips. A long cylindrical dorsal cirrus with a stout cirrophore ciliated on its ventral side and bearing a long, heavy, conical style, and a simple, conical, or sub-cylindrical, ventral cirrus reaching to the end of parapodium. Superior setae of one kind, gently curved, slightly tapered spines, faintly fringed on the convex side and terminating abruptly in a small, blunt hook. Inferior setae falcigers. Coloration cream with transverse bands of red. Colourless as preserved.

West coast Vancouver island, littoral. California.

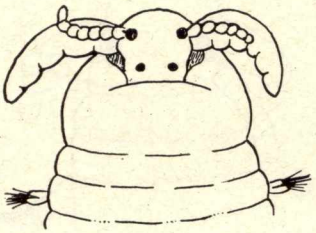


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Fig. 131. *D. moniloceras* (Moore), anterior region.

Genus **EUNICE** Cuvier

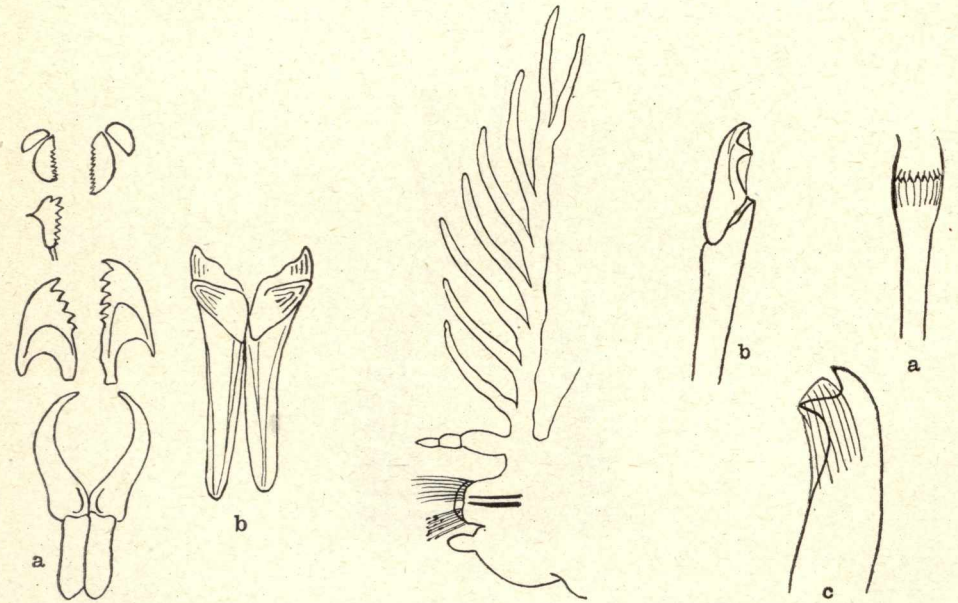
Prostomium crowded anteriorly by, and more or less fused with, large globular palps. Two eyes. Tentacles smooth or articulated. A pair of nuchal cirri on second segment. Upper jaw consisting of a pair of large hooks (forceps), two or three pairs of toothed plates, an unpaired plate on the left side, and, sometimes, some additional teeth. Parapodia sesquiramous. Dorsal cirri with bundle of fine acicula at the base; bearing simple or, more often, pectinate branchiae. Ventral cirri often swollen. Setae may be simple capillaries, crotchets, combs, or compound hooks.

KEY TO SPECIES

1. (2) One or more anterior segments white. Tentacles articulate or moniliform. **biannulata**
2. (1) No segments white. Tentacles smooth or irregularly and obscurely annulated. **kobiensis**

E. biannulata Moore 4 (as *Leodice*), **38** (Figs. 132, 133 and 134).

Up to 152 mm. long, 7 mm. wide over parapodia, about 175 segments. Prostomium very short, almost covered by peristomium posteriorly and fused with projecting, rounded palps anteriorly. Tentacles arising on a slightly curved line, probably marking the anterior edge of prostomium, from low ceratophores covered by the peristomium; the styles moniliform, at least terminally. Peristomium cylindrical, longer than the three or four following segments and wide enough to envelop the prostomium. Second segment only half the length of succeeding ones, bearing faintly articulated nuchal cirri a little longer than the peristomium. Dorsal cirri in anterior region short and stout with two or three articles; a quarter, or less, of the body width in length. Branchiae begin at the third setiger with one filament, attain maximum development (six to twelve filaments) at the sixth to tenth setiger, and remain at maximum until about the thirtieth; thereafter the number of filaments gradually declining until the branchiae cease at about the sixtieth setiger. The superior setae simple capillaries and delicate combs; the inferior compound and bidentate. In the posterior region a single heavy simple, bidentate crotchet appears ventral to the compound setae. Coloration rich brown in transverse bands on a cream ground, the prostomium and peristomium brown, the tentacles banded with same; some anterior segments



132 133 134

Fig. 132. *E. biannulata* Moore, (*a*) upper jaw, (*b*) labrum (after Moore).
" 133. *E. biannulata* Moore, anterior parapodium.
" 134. *E. biannulata* Moore, (*a*) comb seta, (*b*) compound seta, (*c*) posterior crotchet (after Moore).

(usually either the second, third, fifth or ninth, or any combination of them) pearly white, others mottled. Little colour as preserved.

Nanaimo region in 20 fathoms. West coast Vancouver island, littoral. Queen Charlotte islands, littoral. California.

E. kobiensis McIntosh **28** (Fig. 135).

Up to 270 mm. long, 10 mm. wide and 240 segments. Prostomium and tentacles as in *E. biannulata* except that the tentacles are smooth or just perceptibly and irregularly annulated. Peristomium barely as long as the three succeeding segments. Second segment only a little shorter than the rest with nuchal cirri somewhat articulated and about the same length as the peristomium. Dorsal cirri slender, almost smooth, about a quarter the body width in length. Branchiae begin at the third setiger with one filament, attain a maximum number of filaments (eight to twelve) at the sixteenth to the twenty-third setiger; the number of filaments begins to decrease almost immediately thereafter, but branchiae do not cease entirely until the seventieth or eightieth setiger. Setae as in *E. biannulata*. Coloration uniformly red-brown as preserved.

West coast Vancouver island, littoral. Queen Charlotte islands. Alaska. California. Japan.

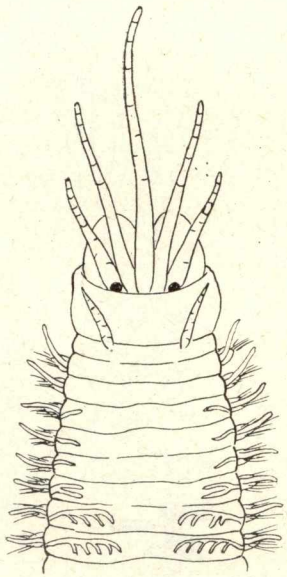


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Fig. 135. *E. kobiensis* McIntosh, anterior region.

Genus **ONUPHIS** Audouin and Milne-Edwards

Prostomium with two small, simple frontal tentacles and five occipital tentacles on annulated ceratophores; swollen palps ventrally. Only the peristomium

apodous and achaetous, bearing a pair of nuchal cirri. Eyes present or absent. Jaws as in *Eunice*. Dorsal cirri well defined, bearing simple or pectinate branchiae. Ventral cirri subulate in anterior parapodia only, thickened pads subsequently. Pseudo-compound setae in anterior parapodia only; thereafter capillaries, crotchets or combs.

KEY TO SPECIES

1. (2, 3)	Branchiae begin at 10th to 20th setiger.	**conchylega**
2. (1, 3)	Branchiae begin at 3rd to 6th setiger.	**geophiliformis**
3. (1, 2)	Branchiae begin at 1st setiger.	
4. (5)	In typical parapodia (20th to 30th) branchiae and dorsal cirri filiform. (Fig. 140).	**iridescens**
5. (4)	In typical parapodia (20th to 30th) branchiae thick, abruptly tapered, and dorsal cirri thick, short, subulate. (Fig. 141).	**elegans**

O. conchylega Sars **14** (Figs. 136, 137 and 138).

Recorded up to 150 mm. long and more than 150 setigers, but locally much smaller. Prostomium a blunt cone bearing a pair of ovoid frontal tentacles and five occipital tentacles with short, annulated ceratophores and long, smooth styles; the posterior laterals reaching the fifth setiger, the median a little longer, and the anterior laterals much shorter. Four eyes, the anterior pair very small. Peristomium shorter than the first setiger. The first two pairs of parapodia project forward, have long, subulate dorsal and ventral cirri and terminate in two setal lips, one cirriform and the other a thin, rounded flap. Subsequent parapodia directed laterally; cirriform setal lip present until the fourteenth setiger. Dorsal cirri become gradually shorter, being equal to the branchiae at about the twentieth setiger and disappearing at the thirtieth. Branchiae starting on the tenth to the twentieth setiger and continuing to the end of the body. Setae heavy, simple, hooks in first setiger, partially replaced by pseudo-compound, unidentate hooks, flattened capillaries and combs in the second, and entirely thus replaced thereafter. Bidentate, hooded crotchets appear at the ninth to the twelfth. Coloration very variable; often broad, transverse brown bands on anterior segments, becoming narrower posteriorly, on a yellowish ground. Tubes flattened, covered with small stones and shell particles; carried by the animal.

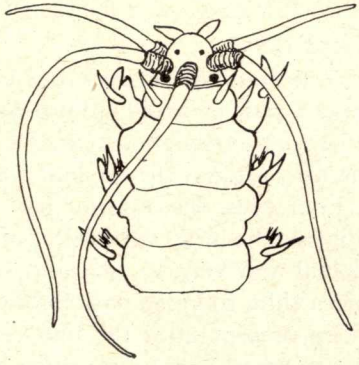
Prince Rupert region, probably dredged, depth unknown. Alaska. California. Japan. N. Atlantic. Arctic. Mediterranean.

O. geophiliformis (Moore) **37** (as *Northia*) (Fig. 139).

Maximum measurements uncertain. Prostomium small, narrow, inconspicuous, closely united to peristomium. No eyes. Occipital tentacles with long, annulated ceratophores; the posterior laterals quite short. Palps long, projecting laterally. Peristomium shorter than first setiger, nuchal cirri slender and rather long. First four setigers longer than others, the parapodia well separated, the first pair pointing slightly forward. All bear long dorsal and ventral cirri and long,

cirriform setal lips. Subsequent parapodia have dorsal cirri reduced whilst the ventral cirri rapidly disappear and the setal lip more gradually. Pseudocompound, tridentate, hooded hooks, together with a few fine capillaries, present in the first two to four parapodia; thereafter bladed capillaries, which are accompanied by combs after the tenth. Simple, bidentate, hooded crotchets appear after the tenth or twelfth. Coloration dorsally, reddish-brown transverse bands shading into cream ground. The colour fairly well retained in preserved material.

Nanaimo region, dredged in 15 fathoms. Princess Louise inlet, dredged in 20 fathoms. Alaska. California. Japan.



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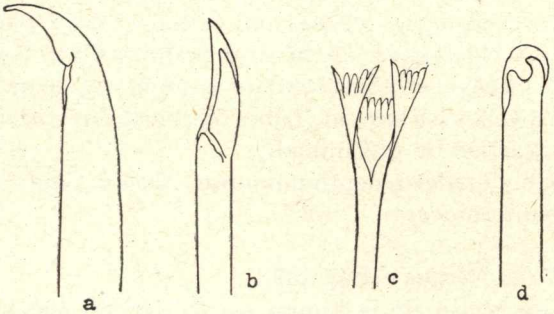

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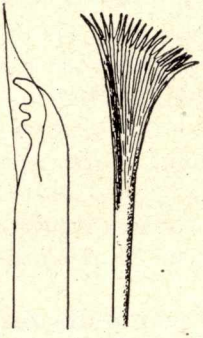

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Fig. 136. *O. conchylega* Sars, anterior region (after Fauvel).
" 137. *O. conchylega* Sars, tube.
" 138. *O. conchylega* Sars, setae, (*a*) simple hook from first setiger, (*b*) pseudo-compound hook, (*c*) comb, (*d*) hooded crotchet (after Fauvel).
" 139. *O. geophiliformis* (Moore), setae, (*a*) tip of tridentate hook, (*b*) comb (after Moore).

O. iridescens (Johnson) **27** (as *Northia*) (Fig. 140).

Up to 170 mm. long, 5 mm. wide; but commonly about half that size. Body rounded dorsally. Prostomium small, hemispherical. Posterior lateral tentacles very long, often reaching the sixteenth to eighteenth segment, median tentacle somewhat shorter and anterior laterals relatively short. A pair of small eye-spots, sometimes obscure. Palps as in *O. geophiliformis*. Peristomium about as long as each of the following five segments, with minute nuchal cirri. First four or five setigerous segments much as in *O. geophiliformis* except that the first branchia appears on the first setiger. The postsetal lip disappears at the twelfth to the fourteenth setiger. From the sixth setiger rearwards the dorsal cirrus and branchia become increasingly attenuated until, between the twentieth and thirtieth, they are both long and filiform and they continue so until the end of the body. Setae as in *O. geophiliformis*. Tubes parchmenty, usually coated with a thick layer of fine mud. Coloration variable, usually more or less blotched with purplish brown and iridescent anteriorly.

East and west coasts Vancouver island, dredged in 25-50 fathoms. Alaska. California. Mexico.

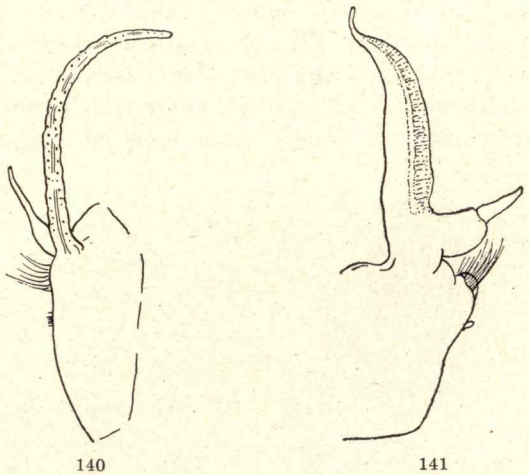

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Fig. 140. *O. iridescens* (Johnson), twenty-fifth parapodium.
" 141. *O. elegans* (Johnson), twenty-fifth parapodium.

O. elegans (Johnson) **27** (as *Northia*) (Fig. 141).

Up to 350 mm. long, 8 mm. wide. Body flattened dorsally. Prostomium blunt, conical, wider than long; almost entirely occupied by bases of large ceratophores. Tentacles much shorter than in *O. iridescens*, but the lengths bearing about the same relation to one another. Four small eyes. Peristomium slightly shorter and narrower than succeeding segments, with slender nuchal cirri longer than the peristomium. First four or five setigerous segments as in *O. iridescens*. Thereafter the parapodia becoming gradually modified, the typical parapodium having the

branchia as long, or longer than, half the body-width, heavy and tapered, the dorsal cirrus short, heavy and subulate. Towards the end of the body the cirri become long and filiform and the branchiae disappear. Setae as in *O. iridescens* except that some of the pseudo-compound hooks are bidentate. Tubes parchmenty, coated with sand. Coloration dorsally, red-brown spots near posterior edge and laterally on each segment, tending to coalesce into transverse stripes; most marked in anterior region.

East and west coasts Vancouver island, littoral. California.

Genus **DIOPATRA** Audouin and Milne-Edwards

As in *Onuphis* except that the branchial filaments are arranged spirally and eyes are absent.

D. ornata Moore, 8, 22, **45** (Figs. 142 and 143).

Up to 250 mm. long and 8 mm. wide. Prostomium almost entirely occupied by bases of tentacular ceratophores. Frontal tentacles conical, obscurely annulated, almost as long as prostomium. Posterior lateral tentacles the longest, reaching the fifteenth or sixteenth segment. Peristomium short, nuchal cirri slightly longer than prostomium. First two setigers about the same length as peristomium, carried forward at sides. Succeeding segments increasing in width, but not in length, until about the fifteenth, after which the width remains unchanged to the extreme posterior region. First four pairs of parapodia with long

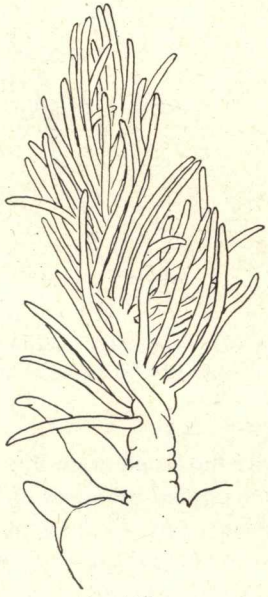

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Fig. 142. *D. ornata* Moore, fifteenth parapodium (setae omitted) (after Moore).
" 143. *D. ornata* Moore, comb seta.

dorsal cirri, shorter, subulate ventral cirri and cirriform postsetal lips; the first pair pointing slightly forward. In the fifth pair the ventral cirri are much shorter and bluntly rounded and in succeeding parapodia they are reduced to pads. Branchiae are carried erect, begin on the fifth or sixth segment, and extend to between the fiftieth and eightieth; the first few, the longest, being as long as the body-width. Three or four sharply pointed, projecting acicula in each parapodium. Setae of first four or five parapodia pseudo-compound, bidentate, hooded hooks with a few capillaries. Thereafter the hooks replaced by simple setae, accompanied by combs, with upwards of twenty very fine teeth. Stout, bidentate, simple, hooded crotchets appear in each parapodium anywhere from the sixth to the thirtieth. Coloration, as preserved, grey to brownish with some purplish markings dorsally at the anterior end. Tubes with parchmenty base, but usually covered roughly with sand, stones or fragments of shell, or anything else available to the animal, so that the appearance can be very varied.

East and west coasts Vancouver island, dredged in 10 to 140 fathoms. California. Mexico.

Genus **NINOE** Kinberg

Prostomium conical, without appendages. Upper jaw with forceps and three pairs of toothed plates symmetrically arranged. First two segments achaetous. Branchiae present in anterior region, usually part of postsetal lip of parapodium, but sometimes ventral to it. Dorsal cirri rudimentary or absent, no ventral cirri. Setae winged capillaries and simple crotchets.

N. gemmea Moore **45** (Figs. 144, 145 and 146).

Up to 104 mm. long, 2.4 mm. wide, 146 segments. Prostomium slightly longer than wide, very smooth. No eyes. Peristomium and second segment ventrally

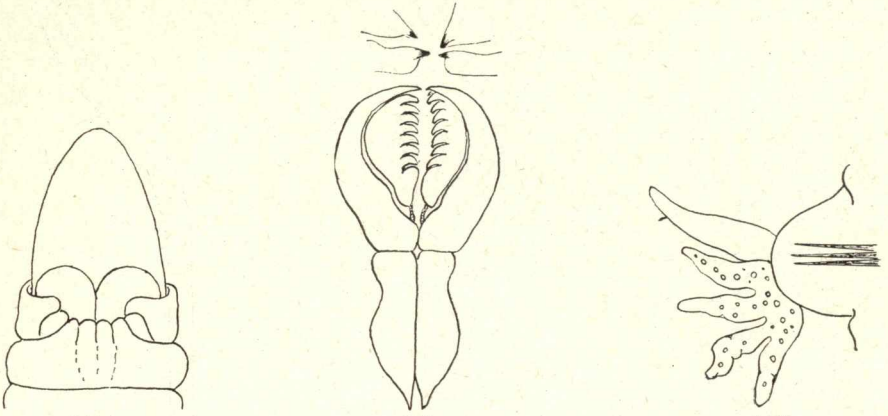

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Fig. 144. *N. gemmea* Moore, head, ventral aspect, showing lower lip of mouth.
" 145. *N. gemmea* Moore, upper jaw.
" 146. *N. gemmea* Moore, twenty-fifth parapodium (setae omitted).

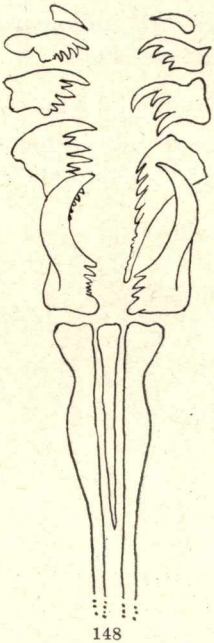
coalesced to form lower lip of mouth. Anterior parapodia very inconspicuous. At about the sixth segment the postsetal lip bifurcates and almost immediately posterior to this the more dorsal of the resulting two lobes becomes the longer and heavier and the more ventral lobe again divides. At about the twenty-fifth segment the ventral lobe is divided into three or four digits and the number of them remains at this maximum for several segments. The dorsal lobe remains longer and heavier throughout the branchial region. All the digitiform lobes are vascular and function as branchiae. Branchiae cease at about the fiftieth segment and the postsetal lip remains simple for the rest of the body length. Setae with black, or dark brown, shafts and pale tips; all simple. Both winged capillaries and hooded crotchets in all parapodia, the former more numerous anteriorly, the latter posteriorly. Crotchets slender and with narrow hoods anteriorly, heavier and with wider hoods posteriorly. No pigmentation, iridescent.

East and west coasts Vancouver island in 10 to 80 fathoms. California.

Genus **ARABELLA** Grube

Body long, cylindrical. Prostomium without appendages, eyes present. Upper jaw with two long filiform supports and, sometimes, a third short one, four or five pairs of toothed plates more or less asymmetrically arranged. First two segments achaetous. No branchiae. Dorsal cirri rudimentary, ventral cirri absent. Setae all tapering winged bristles.

147



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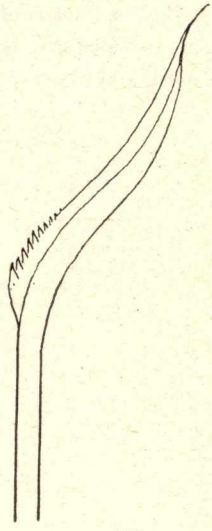

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Fig. 147. *A. iricolor* (Montagu), anterior region (after Fauvel).
" 148. *A. iricolor* (Montagu), upper jaw (after Fauvel).
" 149. *A. iricolor* (Montagu), seta.

A. iricolor (Montagu) **14** (Figs. 147, 148 and 149).

Up to 600 mm. long and 400 segments. Prostomium bluntly conical with four eyes in a transverse row on posterior border, sometimes obscure. Peristomium pleated longitudinally on ventral side to form lower lip. Parapodia with two lobes, the anterior short and rounded, the posterior obtuse, conical, cirriform. Dorsal cirri minute hooked processes, obscure in the posterior region and in juveniles. Acicula numerous, often with needle-like points penetrating the end of the parapodium. Setae all bladed bristles with bent shafts, the blades in some denticulated. Lower jaw black and heavy; upper jaw with two long and one short linear supports, a pair of forceps denticulated at the base, three pairs of coarsely toothed dissimilar plates, and a pair of simple teeth. Coloration grey to brown, usually iridescent.

East and west coasts Vancouver island, littoral. California. Mexico. Cosmopolitan.

Genus **LUMBRINEREIS** Blainville.

Body long, cylindrical; width uniform except at extremities. Prostomium conical or globular, without eyes or appendages. Two first segments apodous and achaetous, the second usually produced forward ventrally to form part of lower lip. Upper jaw usually as in *Ninoe*. Dorsal cirri absent or indistinct. Ventral cirri and branchiae absent. Setae tapering, winged bristles and simple or compound crotchets.

KEY TO SPECIES

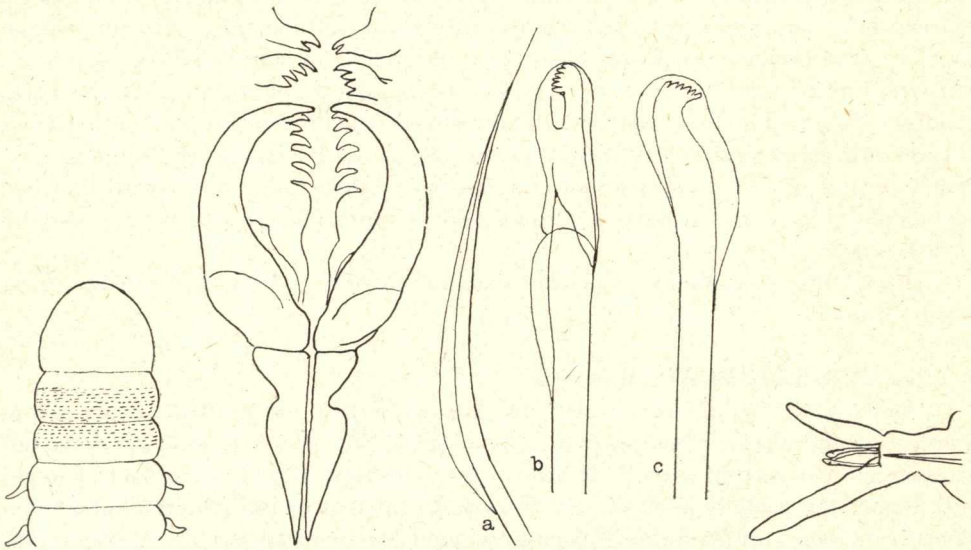
1.	(6)	With compound crotchets.	
2.	(3)	Prostomium rounded.	**inflata**
3.	(2)	Prostomium pointed.	
4.	(5)	Parapodial lobes in posterior region elongate.	**cruzensis**
5.	(4)	Parapodial lobes in posterior region not elongate.	**latreilli**
6.	(1)	Without compound crotchets.	
7.	(8)	Both parapodial lobes in posterior region elongate.	**bifurcata**
8.	(7)	One parapodial lobe in posterior region elongate.	
9.	(10)	The elongation of parapodial lobe very marked.	**luti**
10.	(9)	The elongation of parapodial lobe moderate.	
11.	(12)	Acicula yellow.	**brevicirra**
12.	(11)	Acicula black.	**similabris**

L. inflata Moore 22 (Synonymy), **45** (Figs. 150, 151, 152).

Up to 70 mm. long and 2 mm. wide. Prostomium thick, almost globular. Parapodia arising nearer ventral than dorsal surface; simple, uniform structure throughout. Presetal lobe short and blunt, postsetal longer, more conical and pointing laterally. Acicula two or three, yellow to amber. Setae all colourless. Crotchets in first eighteen to twenty-five parapodia imperfectly compound; thereafter simple with much inflated hoods. Winged bristles present as far as the fortieth setiger. Upper jaw peculiar in that the median pair of denticulated plates

have three or four teeth instead of the more usual one or two. Coloration varying from yellowish to brown; often a brown band across the first two segments.

East and west coasts Vancouver island, littoral and dredged. California.



150 151 152 153

Fig. 150. *L. inflata* Moore, anterior region (after Treadwell).
" 151. *L. inflata* Moore, upper jaw.
" 152. *L. inflata* Moore, setae, (*a*) winged bristle, (*b*) imperfectly compound crotchet, (*c*) simple crotchet.
" 153. *L. cruzensis* Hartman, posterior parapodium (after Hartman).

L. cruzensis Hartman 10, **22** (Fig. 153).

Up to 70 mm. long; width over parapodia about 2 mm. Prostomium short, bluntly conical. Anterior parapodia with short, blunt presetal and somewhat longer postsetal lobes. From about the sixtieth setiger both lobes slender and elongate, the postsetal the longer until quite near the posterior end where the relative lengths are reversed. Acicula yellow. Compound crotchets in first twelve to sixteen setigers. Simple crotchets thereafter. Winged bristles persist through about half the body length. Coloration uniform grey to grey-brown as preserved.

East coast Vancouver island, dredged in fine mud in about 20 fathoms. Washington. California.

L. latreilli Audouin and Milne-Edwards 9, **14** (Figs. 154, 155, 156).

Up to 150 mm. long and 5 mm. wide over parapodia. Prostomium long, conical. Peristomium longer than succeeding segments. Parapodia with short, rounded anterior lobes, the posterior somewhat longer and, in the median region, bluntly cirriform and pointing more or less obliquely upward. Acicula yellow to

amber. Compound crotchets in first eighteen to twenty-six setigers, gradually replaced by simple ones between the twentieth and thirtieth. Winged bristles extend to between the fortieth and sixtieth setiger. Coloration variable, sometimes transversely banded.

East and west coasts Vancouver island. Queen Charlotte islands. California. Mexico. Peru. Cosmopolitan.

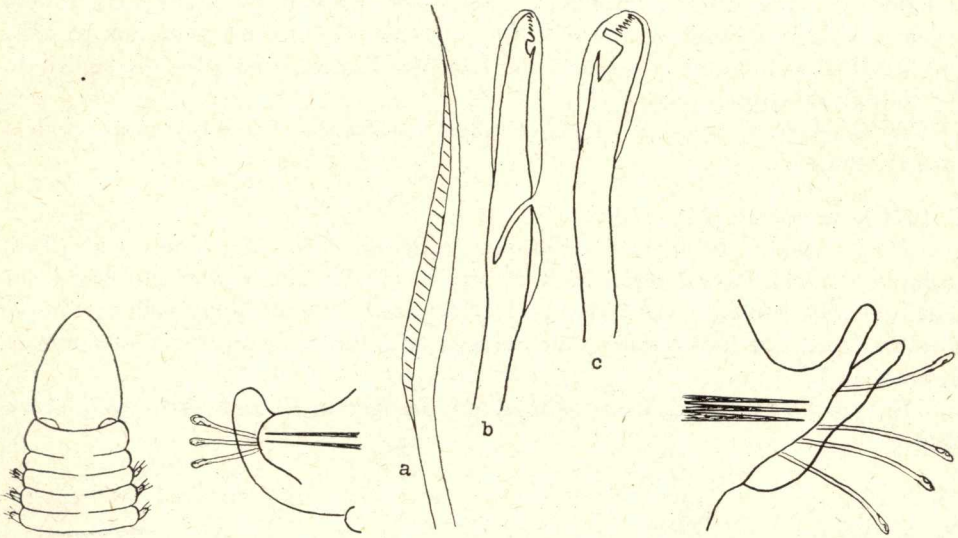


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Fig. 154. *L. latreilli* Audouin and Milne-Edwards, anterior region (after Fauvel).
" 155. *L. latreilli* Audouin and Milne-Edwards, median parapodium.
" 156. *L. latreilli* Audouin and Milne-Edwards, setae, (*a*) winged bristle, (*b*) compound crotchet (*c*) simple crotchet (after Fauvel).
" 157. *L. bifurcata* McIntosh, posterior parapodium (after McIntosh).

L. bifurcata McIntosh 22 (as *L. bicirrata*) (Synonymy), **28** (Fig. 157).

A stout form, up to 200 mm. long, 7 mm. wide. Prostomium a blunt cone, about as long as wide. Anterior parapodia bluntly truncate, the postsetal lobe the thinner and only slightly longer than the presetal. Around the hundredth segment both lobes elongate and become cirrus-like; thereafter they gradually increase, and approximate to one another, in length. At their longest they are almost equal to half the body-width. Acicula dark brown to black; three to five in each parapodium. Simple, slender crotchets may first occur anywhere from the sixth to the twenty-fifth setiger. Winged bristles present until about the ninetieth setiger; gradually replaced by crotchets which become heavier in posterior setigers. Coloration grey to brown as preserved; iridescent.

East coast Vancouver island, dredged in 20 to 30 fathoms. West coast Vancouver island, dredged in about 60 fathoms. Washington. California. Mexico.

L. brevicirra (Schmarda) 19 (Synonymy), **27** (as *L. zonata*), (Fig. 158).

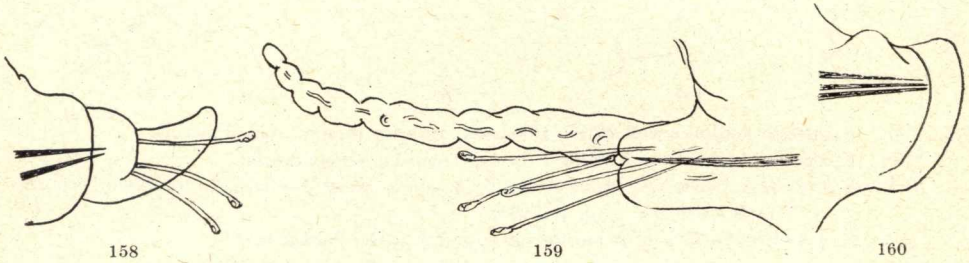
Up to 460 mm. long and 5 mm. wide; usually not so large. Prostomium a sharp cone. Peristomium longer than second segment. Parapodia with short, rounded presetal lobe and longer, more acute, postsetal one. The presetal lobe varying little throughout the body, but, in the median and posterior regions, the postsetal lobe becoming increasingly the longer. It is, however, never markedly elongate. Acicula yellow. Simple crotchets first present from the first to the seventh setiger, slender in the first forty-five or so, heavier posterior to this. Winged bristles in anterior setigers, more or less disappearing after the eightieth. No coloration as preserved.

West coast Vancouver island, littoral. California. Probably more or less cosmopolitan.

L. luti Berkeley **10** (Fig. 159).

A very slender form reaching 40 mm. in length, less than 1 mm. wide. Prostomium conical. Parapodia as in *L. brevicirra* until near the anal end where the postsetal lobe becomes very long and attenuated. Acicula light yellow. Simple crotchets from the first setiger, much elongated in anterior region. No coloration as preserved.

East and west coasts Vancouver island, dredged in 10 to 20 fathoms in dense mud.



158 159 160

Fig. 158. *L. brevicirra* (Schmarda), posterior parapodium.
" 159. *L. luti* Berkeley, posterior parapodium.
" 160. *L. similabris* Treadwell, anterior paradium (setae omitted).

L. similabris Treadwell 9, **54** (Fig. 160).

Up to 160 mm. long and 5 mm. wide. Prostomium conical, about as long as wide, apex rounded. Anterior parapodia with short, rounded presetal lobe; postsetal lobe little longer, but very deep, almost semicircular in outline. Median parapodia with both lobes much as in *L. brevicirra*. Posteriorly both lobes somewhat elongate (the postsetal the longer) and projecting laterally. Acicula black. Simple crotchets start at the seventh setiger. Coloration varying from pale grey to red-brown as preserved.

West coast Vancouver island, dredged in about 20 fathoms. Bering sea. Alaska.