No. 11

POLYCHAETOUS ANNELIDS FROM THE NANAIMO DISTRICT.

PART I. SYLLIDÆ TO SIGALIONIDÆ.

BY

EDITH BERKELEY.

Polychaetous Annelids from the Nanaimo District.

Part I. Syllidæ to Sigalionidæ.

By Edith Berkeley.

The polychaetous annelids comprised in the following list have all been collected within a radius of twenty miles of Nanaimo, Vancouver Island. I have collected all the species listed personally, though a few of them were already represented in the collection of the Marine Biological Station, Departure Bay, which was kindly placed at my disposal for study by Dr. C. Maclean Fraser, the Director of the station. I am also indebted to Dr. Fraser for the dredged material I have examined, for access to the resources of the station in the matter of literature, and for assistance in other directions.

The list cannot claim to be a complete record of the polychaetes occurring within the area, since sufficient dredged material, particularly from depths exceeding 25 fathoms, has not been examined, but it probably comprises most of the species occurring at this and lesser depths, and of the shore forms.

It is proposed to publish the list in instalments as work on the groups is completed. The present instalment comprises the Syllidae, Hesionidae, Aphroditidae, Amphinomidae, Palmyridae, Polynoidae, and Sigalionidae, and records 43 species.

Most of the species listed have been described from Pacific waters by Johnson, Moore, Treadwell, or others.

The following species have been previously recorded from both Alaska and California, but not from the intermediary region: *Syllis alternata*, *Syllis armillaris*, *Euphrosyne arctia*, *Euphrosyne hortensis*, *Peisidice aspera*.

The following from Alaska only: *Autolytus prismaticus*, *Hololepida magna*, *Gattayana ciliata*, *Pholoë minuta*.

The following from California only: *Heteropale bellis*, *Evarne triannulata*, *Sthenalais verruculosa*.

The species *Syllis borealis*, *Pionosyllis lamelligera*, *Pionosyllis prolifera*, *Amblyosyllis lineata*, *Castalia fusca*, *Halosydna gelatinosa*, have not previously been recorded on the Pacific coast of North America.

Odontosyllis parva, *Autolytus magnus*, *Malmgrenia nigralba*, and *Lepidasthenia longicirrata* are placed on record as new species, and *Odontosyllis phosphorea* var. *nanaimoensis* and *Amblyosyllis lineata* var. *alba* as new varieties.

Family Syllidæ.

Syllis borealis Malmgren.

Syllis borealis Malmgren (1867), Annul. Polych., p. 42.

Pionosyllis (*Syllis*) *hyalina* McIntosh, British Annelids. Vol. 2, Pt. 1, p. 166.

This form resembles *Syllis hyalina* Grube very closely, differing only in having a uniform brown mottling over the anterior third of the dorsum instead of brown bandings, and in the absence of bifid setæ. McIntosh places the

species in the genus Pionosyllis on account of the bifid setæ and considers it synonymous with Malmgren's *Syllis borealis*. He points out, however, that Malmgren figures setæ with simple tips.

The specimens in this collection are all characterized by setæ with simple tips and, though I have not had access to Malmgren's description, I have therefore placed the form, provisionally, in his species.

Collected at Newcastle Island.

Two specimens of an epitokous form, apparently of this species, were taken at night in August at the Station float.

Syllis alternata Moore.

Syllis alternata Moore (1908), p. 323; Treadwell (1914), p. 176.

Collected off Clarke Rock.

Syllis armillaris (Müller) Oersted.

Syllis armillaris McIntosh, British Annelids. Vol. 2, Pt. 1, p. 188; Moore (1908), p. 323; Treadwell (1914), p. 176.

The markings of the specimens correspond more closely to the description given by Moore than to that of McIntosh.

Collected at False Narrows and at Mudge Island.

A sexual form (female) collected at Cardale Point is probably that of this species. It corresponds with *Ioida macrophthalma* as described by McIntosh, except that the swimming bristles start on the third segment and the eyes are red. The eggs give the animal a strikingly golden appearance.

Syllis elongata Johnson.

Pionosyllis elongata Johnson (1901), p. 403.

Syllis elongata Moore (1909), p. 236.

Syllis (*Pionosyllis*) *elongata* Treadwell (1914), p. 176.

Collected at Mudge Island.

An epitokous form taken repeatedly at the Station float at night during the summer months possibly appertains to this species. The setæ and cirri agree. The body is broad anteriorly and tapers uniformly to a sharp point. It has 30 setigerous segments and the swimming bristles start on the second post-cephalic segment.

Johnson states that stolonization does not occur in this species, though the terminal segments become much enlarged at sexual maturity, but Moore thinks it probable that this enlarged region separates.

Pionosyllis gigantea Moore.

Pionosyllis gigantea Moore (1908), p. 325; Treadwell (1914), p. 176.

Dredged off N.East Newcastle Island in 20-25 fathoms.

Pionosyllis lamelligera De St. Joseph.

Pionosyllis lamelligera McIntosh, British Annelids. Vol. 2, Pt. 2, p. 236.

The specimens agree with McIntosh's description, except that (as preserved) they are devoid of colour.

Collected at False Narrows.

Pionosyllis prolifera Krohn.

Pionosyllis prolifera McIntosh, British Annelids. Vol. 2, Pt. 1, p. 161.

A single specimen, with an immature bud, seems to agree in the main with McIntosh's description. Anteriorly it has the dorsal cirri alternately long and short, as described by Marenzeller (McIntosh, p. 163) and the longer ones have as many as 40 articulations. The median tentacle is about the same length as the longer dorsal cirri and the lateral tentacles are about half as long. The bud starts at somite 32 and is twice as broad as the nurse-stock. The parapodia have each two acicula ending in small knobs, and the last 9 or 10 parapodia of the bud have each, in addition to the ordinary setæ, a simple straight spine. The anterior portion of the nurse-stock has a narrow simple brown band on each somite.

Collected at Horsewell Point.

Trypanosyllis gemmipara Johnson

Trypanosyllis gemmipara Johnson (1901), p. 405; Treadwell (1914), p. 177; Moore (1908), p. 328.

Collected at False Narrows.

Odontosyllis phosphorea Moore, var. *nanaimoensis*, var. nov.

Odontosyllis phosphorea Moore (1909), p. 327.

The swarming of this species has been discussed by Potts (Proc. of the Cambridge Philosophical Society, Vol. 17, Pt. 2, p. 193) and by Fraser (Trans. of the Royal Society of Canada, Vol. 9, Sect. 4, p. 43). In both cases it has been identified with *Odontosyllis phosphorea* Moore. Whilst resembling this species in many respects it has been found, by comparison with both Moore's description and a specimen obtained from San Diego Bay, to differ from it in the following particulars:

The prostomium is only slightly, or not at all, pigmented and the eyes are carried on it dorsally rather than laterally. The nuchal fold is entirely unpigmented. The intersegmental lines of black pigment are much thickened at the centre on every third or fourth segment, giving the appearance of a line of heavy spots along the middle of the dorsum; whereas in *O. phosphorea* Moore the lines, though heavier at every fourth segment, are broken in the centre and this spotted effect is absent. The neuropodium, with the attached ventral cirrus, projects more abruptly from the body than in *O. phosphorea* and the cirrus has no distinct distal piece. The notocirrus arises from a short but distinct cirrophore, is shorter than figured by Moore, and is lanceolate. The swimming bristles start on somite 21 instead of on somite 24. The secondary process of the bifid hooks of the blades of the neurosetae are closely adjacent to the main hook, not some distance below it as in *O. phosphorea*.

These differences seem sufficiently marked to necessitate the establishment of, at least, a new variety.

The average length of the sexually mature form is about 25 mm., but individuals are found running up to 35 mm.

Taken swarming in Departure Bay from July to November; dredged off Clarke Rock and at Porlier Pass.

Odontosyllis parva sp. nov. Pl. 1, Figs. 1-2.

A single incomplete specimen consisting of head and 36 anterior segments. Length about 15 mm. Less than 1 mm. wide.

Prostomium (Pl. 1, Fig. 1) twice as broad as long, rounded laterally and nearly straight anteriorly, bearing the three tentacles on the anterior edge. Median tentacle is about two and a half times the length of the prostomium and the lateral tentacles about one and a half times the length. Eyes four, large, brown, and with lenses; posterior pair dorsal, anterior pair latero-ventral. Palps small, folded downwards, not visible from dorsum.

Two pairs of peristomial cirri; the dorsal pair are as long as the lateral tentacles, the ventral pair are shorter. The nuchal fold arises from the dorsum of somite 2, is a semicircular flap and covers half the large posterior eyes. The dorsal cirri of somite 2 are as long as the median tentacle. The subsequent ones are much shorter and lanceolate.

The parapodia are not prominent; that of somite 24 (Pl. 1, Fig. 2) has the following characters: Beneath the notocirrus is a small prominence, the notopodium, covering the end of a curved aciculum. The neuropodium projects beyond the notopodium, but is short and blunt, terminating in two rounded lobes. The neuropodium has a single straight aciculum and about 12 compound setæ, all sub-acicular. The setæ have fairly stout shafts which are curved in the ventral part of the fascicle and straight in the dorsal part. The ends of the shafts are oblique, dilated, and slightly roughened. The terminal pieces are practically equilateral triangular in form, the length of the side being equal to the diameter of the shaft, and have boldly bifid tips. The ventral cirrus is a heavy rounded knob, larger than the neuropodium. A small tuft of rudimentary swimming bristles arises just dorsal of the notopodium.

The body (as preserved) is yellowish and has no distinctive markings.

Collected at False Narrows on Bryozoa.

Amblyosyllis lineata Grube, var. *alba*, var. nov.

Amblyosyllis lineata McIntosh, British Annelids. Vol. 2, Pt. 1, p. 225.

This form is entirely devoid of colour in the living condition, except a slightly yellowish head with red eyes. The palps are conical and are bent abruptly downwards and outwards and certain individuals have on each side of the prostomium a conical process partially covering the anterior eye. In all other respects it agrees closely with McIntosh's description of *Amblyosyllis lineata* Grube, and is therefore considered a variety of that species. It occurs fairly commonly in the cavity of siliceous sponges in the region and attains a length of as much as 35 mm.

Found in sponges dredged off Maude Island and off N.East Newcastle Island in 20-25 fathoms.

Sphaerosyllis sp.

Several specimens of this interesting genus occur in the collection, both males and females, all collected at the same spot and probably of one species. They are too imperfectly preserved to describe fully. The occurrence is placed

on record here for reference in the hope of obtaining more material later. The following are characters of the male:

Length, 2 mm. 35 segments. Swimming bristles start on somite 11. Last four or five segments have no swimming bristles. Anal segment has two heavy cirri.

Eyes four, dark brown, anterior pair larger, wider apart and with lenses. Median and lateral tentacles broadly ellipsoid. Palps project straight forward, are fused, except at the tip, and are larger and more prominent than those figured by McIntosh (British Annelids. Vol. 2, Pt. 1, p. 156) for *Sphaerosyllis hystrix*. Proboscis has one large tooth, papillae insignificant or absent.

Parapodium has small globular dorsal cirrus and four or five compound setæ with extremely slender tapering terminal pieces (suggesting superficially the simple setæ of *Genetyllis*). In the posterior region a rather heavy simple seta also occurs in each parapodium.

The female seems to resemble the male in all particulars except that there are no swimming bristles, and green ova, two to each segment, carried ventrally, begin on somite 8 and extend for about 15 somites.

Collected amongst Bryozoa on rock at low tide mark at Horsewell Point.

Autolytus prismaticus Fabricius (?).

Nereis prismatica Fabricius (1780), Fauna Groenl, p. 302.

Proceraea gracilis Verril (1874), Amer. J. Sci., p. 132.

Autolytus prismaticus Chamberlin (1920), Rep. Can. Arctic Exp. Vol. 9, Pt. B, p. 12.

The nurse-stock of this *Autolytus* corresponds with Verrill's description of *Proceraea gracilis* in such particulars as are given by him. Chamberlin considers *Proceraea gracilis* synonymous with *Autolytus prismaticus*.

The sexual forms have been reared in captivity. Budding commences after somite 13 and only one bud, consisting of about 33 somites and pygidium, is produced at a time. All the buds produced from any one nurse-stock are of one sex. As first separated the sexual forms have the six anterior setigerous segments free from swimming bristles, then follow nineteen with swimming bristles. The caudal region tapers more sharply in the male than the female and is free from swimming bristles in both cases. The heads are typically those of *Polybostrichus* and *Sacconereis* respectively and have red eyes. Four to six setæ of the usual *Autolytus* type, and one simple seta with straight shaft dilated sub-terminally and having a finely pointed bent tip, occur on each parapodium. The females have not developed brood-sacks but are distended with ova. The males are a golden colour, the sperms making the first six (2-7) segments dense white.

The literature at my disposal has been insufficient to enable me to confirm the synonymy or to check the diagnosis by means of the sexual forms.

Nurse-stock collected in January amongst *Obelia* growing on buoy moored off Biological Station. Free sexual forms in May, August and November at the Station Float, and females with brood-sacks in tow taken below Dodd's Narrows in September.

Autolytus magnus sp. nov., *Sacconereis* phase (Pl. 1, Figs. 3-4).

A single specimen. Length, 40 mm. Width over parapodia at middle of median region 6 mm. Body divided into three regions. The anterior region, consisting of 15 somites, has no swimming bristles. The median region, on which all the swimming bristles are borne, begins at somite 16 and extends to somite 50; this region carries a large brood-sack filled with larvae. The posterior region tapers uniformly to a fine point.

Prostomium twice as broad as long. Eyes two pairs; the anterior pair, which are the wider apart, are very large, have prominent lenses, and look laterally and ventrally; the posterior pair, also with lenses, are about a quarter the size of the anterior and are completely dorsal. The median tentacle arises between the posterior eyes and is much longer than the lateral tentacles. The lateral tentacles arise together from the anterior margin of the prostomium and their bases entirely fill the space between the anterior eyes; they are five or six times as long as the prostomium. Palps not visible from the dorsum. They project very little from the ventral surface of the prostomium which they completely cover. They are bounded anteriorly by the bases of the lateral tentacles and laterally by the anterior eyes. They are completely coalesced in front, but the groove between them becomes distinct near the mouth.

Tentacular cirri two pairs; the dorsal ones closely resemble the lateral tentacles, the ventral ones are about one-third the length of the dorsal. The cirrus of the first setigerous somite is nearly twice as long as the lateral tentacle; subsequent cirri (after that of somite 4) tend to be alternately short and long throughout the anterior region, gradually becoming more uniform in length posteriorly.

Parapodia (Pl. 1, Figs 3-4) terminate in two heavy lips, both of which are postsetal. The cirrophores are strongly developed and carry coarse unjointed cirri. Four or five acicula are present in each parapodium. The setæ, which arise in a dense tuft, are slender and have straight shafts enlarged distally and roughened near the articulation. The appendages are relatively small and bidentate; the teeth are heavy and of about equal size.

The preserved specimen is colourless.

Taken swarming at the Station Float in February.

Autolytus sp.?, *Polybostrichus* phase.

Length, 5 mm. Head, of usual *Polybostrichus* type, followed by 14 narrow segments, form the anterior region of the body. The median region is broader than the anterior one, consists of 23 segments, and carries the swimming bristles. The caudal region consists of ten or eleven segments.

The cirri are longer and more slender on the anterior region of the body than on the median and posterior regions.

Each parapodium carries about six compound setæ, the shafts of which are curved, have dilated ends, and bear rather heavy, short terminal pieces with boldly bifid tips. After somite 30 each parapodium has, in addition, a single simple seta with a bent tip diminished to a fine point.

A single specimen taken in surface tow in Departure Bay in August.

Family HESIONIDÆ.

Castalia fusca Johnston.

Castalia fusca McIntosh, British Annelids. Vol. 2, Pt. 1, p. 127.

The specimens average about half an inch in length. McIntosh gives the length one to three inches. Otherwise the agreement with the description is good.

Collected on Station Flat.

Podarke pugettensis Johnson.

Podarke pugettensis Johnson (1901), p. 397.

Collected at False Narrows; Departure Bay Beach; Mudge Island; Nanoose Bay Beach. Dr. Willey found this species in the ambulacral grooves of *Luidia* sp.? and *Pteraster* sp.? collected at Porlier Pass.

Family APHRODITIDÆ.

Aphrodita japonica Marenzeller.

Aphrodita japonica Marenzeller (1879), p. 111; Moore (1908), p. 338.

Dredged between Norway and Hall Islands in 15-20 fathoms; Houston Passage in 15 fathoms; Pylades Channel in 30 fathoms.

Aphrodita negligens Moore.

Aphrodita negligens Moore (1905), p 526; Treadwell (1914), p. 178.

The eyes of the specimens in this collection are larger and the palps somewhat longer than Moore describes.

Dredged at Porlier Pass in 10-15 fathoms; Trincomalee Channel in 16 fathoms; between Round and Mudge Islands in 25 fathoms.

Aphrodita parva Moore.

Aphrodita parva Moore (1905), p. 529; Treadwell (1914), p. 178.

Dredged between Departure Bay and Clarke Rock in 25 fathoms; Trincomalee Channel in 16 fathoms.

Family AMPHINOMIDÆ.

Euphrosyne arctia Johnson.

Euphrosyne arctia Johnson (1897), p. 159.

Euphrosyne arctica Moore (1908), p. 340; Treadwell (1914), p. 178.

Dredged in Nanoose Bay in 15 fathoms.

Euphrosyne bicirrata Moore.

Euphrosyne bicirrata Moore (1905), p. 532.

Dredged S.E. Snake Island in 20-30 fathoms; off Grey Rocks; near Maude Island in 25 fathoms; Clarke Rocks; Halibut Bank; between Jesse and Newcastle Islands; between Round and Mudge Islands in 18 fathoms.

Euphrosyne hortensis Moore.

Euphrosyne hortensis Moore (1905), p. 534; Treadwell (1914), p. 178.

The spurred dorsal setæ tend to have longer spurs in the specimens in this collection than are figured by Moore.

Dredged S.E. Snake Island in 20-30 fathoms; off Grey Rocks; N.W. of Departure Bay; near Maude Island in 25 fathoms; off Clarke Rock.

Family PALMYRIDÆ.

Heteropale bellis Johnson.

Heteropale bellis Johnson (1897), p. 163.

Collected at Mudge Island in 15 fathoms; False Narrows (in shell of Giant Barnacle); Horsewell Point.

Family POLYNOIDÆ.

Halosydna pulchra Johnson.

Polynoe pulchra Johnson (1897), p. 177.

Halosydna pulchra Moore (1908), p. 329; Treadwell (1914), p. 179.

Collected off Jesse Island; off Gabriola Island; Houston Passage. Commensal with the following: *Stichopus californica*, *Asterias* sp.?, *Luidia* sp.?, *Solaster stimpsoni*, *Pteraster tessalatus*.

Halosydna insignis Baird.

Halosydna insignis Baird (1865), p. 188; Moore (1910), p. 329; Treadwell (1914), p. 180.

Polynoe brevisetosa Johnson (1897), p. 167.

Collected at Horsewell Point; False Narrows; Mudge Island; Newcastle Island; Nanoose Bay; Cardale Point. Found free under stones throughout the district. Also, with *Polynoe tuta*, both commensal with *Thelepus crispus*.

Halosydna lordi Baird.

Halosydna lordi Baird (1865), p. 190; Moore (1908), p. 330; Treadwell (1914), p. 181.

Polynoe lordi Johnson (1897), p. 175.

Collected at Mudge Island; False Narrows; off San Juan Island in 15-20 fathoms. Commensal with *Fissuridea aspera* and *Puncturella multifilosa*. One specimen found commensal with *Thelepus crispus* had 78 segments and 40 pairs of elytra, but agreed otherwise with Johnson's description.

Halosydna fragilis Baird.

Halosydna fragilis Baird (1865), p. 191.

Polynoe fragilis Johnson (1897), p. 179; Moore (1908), p. 332; Treadwell (1914), p. 181.

Collected at Rock Bay; Mudge Island; Jesse Island, and at many other localities throughout the district. Commensal with *Evasterias troschelii*, *Luidia* sp.?, *Orthasterias leptolena*, *Orthasterias columbiana*.

Halosydna gelatinosa Sars.

Halosydna gelatinosa McIntosh, British Annelids. Vol. 1, Part 2, p. 384.

Collected off Newcastle Island in 25 fathoms; off Round Island in 25 fathoms.

This species is represented in the collection by two specimens, one of which is immature. The larger specimen agrees closely with McIntosh's description except in that the palps are rather longer than figured and the segmental papillæ are not prominent. It has 39 bristled segments and a caudal regeneration cone. McIntosh describes 43 bristled segments.

Lepidonotus caeloris Moore.

Lepidonotus caeloris Moore (1903), p. 412; Treadwell (1914), p. 182.

Collected off Maude Island in 25 fathoms; Cardale Point; off Newcastle Island in 25-30 fathoms.

Malmgrenia nigralba sp. nov. (Pl. 1, Figs. 5-7).

Body about 18 mm. in length. Tapers anteriorly and posteriorly. Greatest width about 4 mm. at somite 20. There are 39 bristled segments. The colour scheme of the body is strikingly black and white. The dorsal surface is pearly white anteriorly. Posteriorly there are touches of black pigment gradually increasing in density until the last few segments, which are exposed and entirely black. Styles of dorsal cirri are black with white tips. Elytra are white, each bearing a heavy black ring. The ventral surface anteriorly is white with touches of black at the base of the ventral cirri and on the segmental papillæ. Posteriorly there are also pigmented areas distributed over the surface of each segment.

Prostomium (Pl. 1, Fig. 5) broader at base than in front. The anterior border runs into the base of the lateral tentacles (as in *Halosydna*). Anterior eyes are wider apart than the posterior pair and are only just visible from the dorsum. Median tentacle has dark brown, well-developed ceratophore. Its style has a few small clavate papillæ and it tapers evenly to a point; the basal two-thirds is heavily pigmented and it is about the same length as the prostomium. The lateral tentacles have distinct basal joints and styles about one-third the length of the median tentacle; they are slightly pigmented throughout. The palpi are white, smooth, uniformly tapering and about twice the length of the prostomium. The tentacular cirri are very similar to the median tentacle. The caruncle is heavily pigmented.

Parapodia are short and blunt. The notopodium is very small and bears about a dozen short, slightly curved, finely serrated, tapering setæ. Both these and the neurosetæ agree very closely with those described by McIntosh for *Malmgrenia andreapolis* (British Annelids. Vol. 1, Part 2, p. 383).

The dorsal cirri extend nearly to the end of the setæ. They are uniformly tapered and bear a few small clavate papillæ. The ventral cirri are slender, reach just beyond the base of the nearest setæ and bear clavate papillæ.

There are fifteen pairs of elytra. The first pair are small and circular, the next two or three pairs reniform and the remainder large and irregularly rounded. Each of the anterior elytra bears the well-defined group of anterior papillæ

characteristic of the genus (Pl. 1, Fig. 6). Posteriorly these become increasingly less conspicuous and the rings of black pigment more broken. The posterior portion of the dorsal surface of all the elytra is embossed with a reticular pattern of white lines in very slight relief (Pl. 1, Fig. 7).

Collected on sand-bed at very low tide at Piper's Lagoon.

Hololepida magna Moore.

Hololepida magna Moore (1905), p. 541; Moore (1908), p. 329.

This remarkable species has been represented hitherto by a single specimen taken at Kasaan Bay, Prince of Wales' Island, Alaska, in 95-114 fathoms. Two complete specimens occur in this collection, both dredged in 15-20 fathoms between Round Island and Mudge Island.

Lepidasthenia logicirrata sp. nov. (Pl. 1, Figs. 8-13).

Body is flattened, tapers anteriorly; widest portion at somite 8. The type is in three portions and has a regenerated tail. Length 55 mm. Width at somite 8 over setæ 7 mm. There are 92 segments. General body colour (as preserved) pale brown with areas of darker brown pigmentation at the base of the parapodia, elytrophores and cirrophores, especially in the anterior portion of the body. The dorsum is conspicuously marked with groups of 12, or more, fine dark lines across the centre of each segment.

Prostomium (Pl. 1, Fig. 8) wider than long with lateral protuberances. Eyes two pairs. Anterior pair large, on lateral protuberances, looking forward; posterior pair half the size of the anterior pair, closer together and a little forward of the posterior margin of the prostomium. Well marked suture. Median tentacle has large ceratophore and style nearly five times the length of the prostomium. It is smooth, delicate and tapered gradually to a filamentous tip and has only a slight sub-terminal enlargement, immediately beyond which is a dark band. The styles of the lateral tentacles arise a little below the level of that of the median tentacle; they are about three times the length of the prostomium and taper uniformly to filamentous tips. The sub-terminal enlargement is barely perceptible and there is no pigmented band. The palps are almost as long as the median tentacle; they are about one-third of the width of the prostomium at the base; they taper smoothly and end abruptly in filamentous tips. The peristomial cirri arise from strong cirrophores, are the same length as the palps and exactly resemble the median tentacle.

Parapodia (Pl. 1, Fig. 9) are rather long. The notopodium is slender, pointed and achætous. The neuropodium has a very stout aciculum and bears two kinds of setæ. Dorsally are 5 or 6, long, slender and unhooked (Pl. 1, Fig. 13). Medially are 20 or 30 stout setæ with strong bifid ends (Pl. 1, Figs. 11 and 12), and ventrally there are about 3 of the same type as the dorsal ones, but smaller and curved back more sharply (Pl. 1, Fig. 10). The dorsal cirri are smooth. In the anterior region of the body they are more than twice the length of the parapodium, including the setæ; posteriorly they are shorter, but still extend well beyond the setæ. The ventral cirrus of somite 2 resembles the peristomial cirri in form and size; on other parapodia it is simple, small and

slender. On the ventral surface of each parapodium a row of conspicuous, globose papillæ extends from the base of the ventral cirrus to the body.

Elytra are broadly oval, thin, flexible, semi-transparent and blotched with pale brown. They are perfectly smooth on both surface and edge and fine venations radiate from the elytrophore. They are symmetrically borne on the anterior portion of the body on somites 2, 4, 5, 7, 9 . . . 19, 21, 23, 26, 29, 32, 34, 37, 40, 43. Posteriorly they are asymmetrically borne. On the right side (looking forward) on somites 46, 49, 52 . . . 85, 88, 91, and on the left side on somites 47, 50, 53 . . . 86, 89, 92.

Dredged in 15 fathoms from sponge-bed off Jesse Island.

Hermadion truncata Moore.

Hermadion truncata Moore (1902), p. 272.

The specimens differ from Moore's description only in that the ends of the notosetæ are not so definitely frayed out as figured.

Collected at False Narrows; off Round Island and off Newcastle Island.

Polynoe tuta Grube.

Polynoe tuta Grube (1855), p. 82; Moore (1908), p. 331.

Halosydna tuta Baird (1865), p. 188.

Harmothoe tuta Johnson (1901), p. 394.

Collected on Station Flat and at Mudge Island. Commensal, together with *Halosydna insignis*, with *Thelepus crispus*.

Lagisca multisetosa Moore.

Lagisca multisetosa Moore (1902), p. 267.

The specimens in the collection agree with Moore's description except in respect of the markings. They are more heavily pigmented and more definitely patterned than he describes.

Harmothoe imbricata Linnaeus.

Harmothoe imbricata Johnson (1897), p. 181; McIntosh (1900), Vol. 1, Part 2, p. 314; Moore (1908), p. 334; Treadwell (1914), p. 182.

Collected at Horsewell Point; False Narrows; Mudge Island; Cardale Point; Station Flat; Nanoose Bay. Common throughout the region. Occurs at Mudge Island with *Halosydna insignis*, both commensal with *Thelepus crispus*.

Evarne triannulata Moore.

Harmothoe triannulata Moore (1910), p. 346.

This species has been previously recorded only from Southern California (San Nicolas and Santa Rosa Islands) dredged from considerable depths; nevertheless the specimens agree closely with Moore's description and there seems little doubt of their identity.

Dredged off Mudge Island in 15-20 fathoms; off Newcastle Island in 15-20 fathoms; False Narrows.

Gattayana ciliata Moore.

Gattayana ciliata Moore (1902), p. 263.

Collected at Houston Passage; off Round Island in 15 fathoms; off Newcastle Island in 25 fathoms; off Piper's Lagoon in 15-20 fathoms.

Gattayana senta Moore.

Gattayana senta Moore (1902), p. 259.

Dredged in 20-25 fathoms off Newcastle Island.

Family SIGALIONIDÆ.

Peisidice aspera Johnson.

Peisidice aspera Johnson (1897), p. 184; Moore (1908), p. 338; Treadwell (1914), p. 183.

Collected at Nanoose Bay.

Pholoë minuta Fabricius.

Pholoë minuta Moore (1908), p. 338; McIntosh, Vol. 1, Part 2, p. 437.

Collected off Newcastle Island in 25 fathoms.

Sthenalais verruculosa Johnson.

Sthenalais verruculosa Johnson (1897), p. 187; Treadwell (1914), p. 184.

Collected off Newcastle Island in 25 fathoms.

REFERENCES.

CHAMBERLIN, R. V.

1920. Annelids. *Report of the Canadian Arctic Expedition*, 1913-1918, Vol. 9, Pt. B.

JOHNSON, H. P.

1897. A preliminary account of the Marine Annelids of the Pacific Coast, with descriptions of new species. *Proc. Calif. Acad. Sci.* (3), Vol. 1, 153-198.

1901. The Polychaeta of the Puget Sound Region. *Proc. Boston Soc. Nat. Hist.*, Vol. 29, 381-437.

MCINTOSH, W. C.

The British Annelids. Vol. 1, Pt. 2; Vol. 2, Pts. 1 and 2. Ray Society. London.

MOORE, J. P.

1902. Descriptions of some new Polynoidae, with a list of other Polychaeta from North Greenland Waters. *Proc. Acad. Nat. Sci. Philadelphia*, Vol. 54, 258-278.

1903. Polychaeta from the Coastal Slope of Japan and from Kamtchatka and Behring Sea. *Ibid.*, Vol. 55, 401-490.

1905. New Species of Polychaeta from the North Pacific, chiefly Alaskan waters. *Ibid.*, Vol. 57, 525-554.

1908. Some Polychaetous Annelids of the North Pacific Coast of North America. *Ibid.*, Vol. 60, 321-364.

1909. Polychaetous Annelids from Monterey Bay and San Diego, California. *Ibid.*, Vol. 61, 235-295.

1909. The Polychaetous Annelids dredged by the U.S.S. *Albatross* off the Coast of Southern California in 1904. 1. Syllidæ, Sphaerodoridæ, Hesionidæ and Phyllodocidæ. *Ibid.*, Vol. 61, 321-351.

1910. *Idem.*, 2. Polynoidæ, Aphroditidæ and Sigalionidæ. *Ibid.*, Vol. 62, 328-402.

TREADWELL, A. L.

1914. Polychaetous Annelids of the Pacific Coast in the Collections of the Zoological Museum of the University of California. *University of California Publications in Zoology*. Vol. 13, No. 8, 175-234.

VERRILL, A. E.

1874. Results of recent Dredging Expeditions on the Coast of New England. *Amer. Jour. Sci.*, p. 132.

EXPLANATION OF PLATE.

PLATE 1

Fig. 1. Head of *Odontosyllis parva*. ×45.
Fig. 2. Twenty-fourth parapodium of *Odontosyllis parva*. ×75.
Fig. 3. Tenth parapodium of *Autolytus magnus*. ×18.
Fig. 4. Parapodium from median region of *Autolytus magnus*. ×18.
The prostomium is fore-shortened in the drawing; in reality it is longer and more pyriform.
Fig. 5. Head of *Malmgrenia nigralba*. ×15.
Fig. 6. Elytron of *Malmgrenia nigralba*. ×18.
Fig. 7. Portion of elytron of *Malmgrenia nigralba* showing detail of pigment ring. ×80.
Fig. 8. Head of *Lepidasthenia longicirrata*. ×10.
Fig. 9. Twelfth parapodium of *Lepidasthenia longicirrata*. ×15.
Fig. 10. Ventral neuroseta of *Lepidasthenia longicirrata*. ×190.
Fig. 11. Short median neuroseta of *Lepidasthenia longicirrata*. ×190.
Fig. 12. Long median neuroseta of *Lepidasthenia longicirrata*. ×190.
Fig. 13. Dorsal neuroseta of *Lepidasthenia longicirrata*. ×190.

PLATE I