

List of Nemerteans collected in the Neighbourhood of Plymouth from May-September, 1910.

By

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With Figure 1 in the Text.

THE following list is one of the results of my work during a stay of nearly four months at the Plymouth Laboratory of the Marine Biological Association. I desire to express my thanks to the Director and the Staff of the Laboratory for the interest they took in my work and for their kind assistance.

A few of the Nemerteans, recorded in the list of the Plymouth Marine Invertebrate Fauna, published in 1904, were not found. For example, *Cephalothrix linearis*, which was dredged by Riches outside the Breakwater, has never been found again, notwithstanding all the trouble taken in searching for it. *Amphiporus bioculatus*, McIntosh, known from one specimen only from a dredging in Millbay Channel, I have not seen, nor the two new species of the genus *Oerstedia* described by Riches as *O. nigra* and *O. immutabilis*. To the forms missing in my list I must add *Malacobdella grossa*, *Baseodiscus curtus*, *Oxypolia beaumontiana*, *Micrella rufa*, and *Cerebratulus pantherinus*. With the exception of the two *Oerstedia* species each of the above species has been found in single specimens on rare occasions. Instead of these nine species however, I can add nineteen which have not yet been recorded from Plymouth; the greater part of these are new to England or the Atlantic Ocean, and four are new species.

As to the system accepted in this list, I have followed neither Bürger nor Coe. Bergendal's investigations on *Carinoma* and my own studies on the family *Cephalotrichidae* resulted in the breaking up of Bürger's ordo *Mesonemertini*. Bergendal's work has revealed many peculiarities in *Carinoma*, which prove its near relationship to the *Tubulanidae*. Moreover certain anatomical features remind us very much of the *Heteronemerteans*. The *Cephalotrichidae* are quite typical *Protonemerteans*, but do not possess any character suggesting an intermediate position between the other members of this group and the *Metanemerteans*. Both genera have therefore been replaced in Bürger's ordo *Protonemertini*, which means the restoration of Hubrecht's *Palaeonemertini*.

Certainly *Hetero-* and *Palaeonemertini* are much more closely related

to each other than the *Metanemertans* with either of them. The position of the mouth behind the brain, the structure of the alimentary canal, the tendency to a complicated structure of the body wall, the development of an outer longitudinal muscle layer, the presence of an inner circular muscle layer of which traces may be found at least in every family, the structure and position of the cerebral organs and the position of the nervous system, which only secondarily migrates through the outer circular muscle layer, together with the absence of any structure in the proboscis, which reminds us of its peculiar complication in the ordo *Metanemertans*, are so many points of resemblance, that I do not hesitate to join *Palaeonemertini* and *Heteronemertini* together in one order, the ordo *Anopla* of Max Schultze.

Bürger's *Metanemertini* = Hubrecht's *Hoplonemertini* constitute my second order, for which Max Schultze's name *Enopla* ought to be restored. They are characterised by the situation of the mouth in front of the brain, the presence of an oesophageal diverticulum, the structure of the body-wall, the peculiar structure of the proboscis and the presence of stylets, the position of the nervous system in the parenchyma of the body, the situation and structure of the cerebral organs, the uniformly built vascular system.

Palaeonemertini and *Heteronemertini* have been reduced to the rank of suborders. The nomenclature of "Das Tierreich" has been adopted.

As iconographical works I have everywhere referred to:

1. Bürger, O. Die Nemertinen des Golfes von Neapel. Fauna und Flora. Monogr. 22, 1895.
2. Joubin, L. Les Némertiens. Faune française par R. Blanchard et J. de Guerne. Paris, 1894.
3. McIntosh. A Monograph of British Annelids. Part I. Nemer-teans. Ray Society, London, 1873-1874.

ORDO I. ANOPLA.

In addition to the outer circular and the inner longitudinal muscle layers an outer longitudinal and an inner circular muscle layer may be present. The nervous system is situated in the body wall. Mouth always behind the brain. No diverticulum of the oesophagus. No stylets and no peculiarly built proboscis.

SUBORDO I. PALAEONEMERTINI.

Lateral nerves and brain nearly always situated outside the muscular body-wall. The body-wall consists of an epithelium, a circular muscle layer and an inner longitudinal muscle layer; the inner circular muscle layer may be absent.

I. FAM. TUBULANIDAE, Bürger.

Cerebral organs nearly always present; the cephalic furrows merely consist of epithelial grooves. Often with lateral sense-organs. Nervous system situated between the epithelium and the basal membrane or between the basal membrane and the outer circular muscle layer. The epithelium is very thick and contains many clusters of secretory cells. Inner circular muscle layer present. A median dorsal blood-vessel is not present.

GENUS *Tubulanus*.

The nervous system is situated between the basal membrane and the muscular body-wall. Cerebral organs present.

1. *Tubulanus polymorphus* (*Ren.*). (Bürger. Monogr. Taf. I, Fig. 4; Joubin. Les Némertiens, Pl. I, Fig. 8 et 9.)

Locality: Eddystone and Rame-Eddystone Grounds; once off the Breakwater.

A few specimens of this Nemertean were always dredged in the deep water near the Eddystone or on the Rame-Eddystone Grounds, at a depth of 45 m. or more. No external markings are present; the body has a uniform orange colour and is rather soft. The head is separated from the body; it is much broader and rounded. Lateral organs are present.

Geographical distribution: Norway, England, France (both coasts), Mediterranean coasts.

2. *Tubulanus linearis* (*McIntosh*). (Bürger. Monogr. Taf. I, Fig. 2.)

Locality: Several specimens known from different localities inside the Breakwater (Queen's Grounds, Asia Shoal, Millbay Pit, Duke Rock). Shallow-water form.

The head and oesophageal region of this Nemertean are milk-white; the other part has an orange-brown tint. This is due to the intestine. The head is very flat, and in the living animal very often makes a burrowing movement. Notwithstanding the perfect transparency of this part I have not been able to distinguish the cerebral organs or cephalic slits. The rhynchodaeum is conspicuous as a milk-white line in front of the brain commissures, which are very long; the brain lobes are but small and do not approach each other at all. The proboscis sheath does not extend into the hinder part of the body; it is, however, present at the beginning of the intestinal region.

Geographical distribution: Southern coast of England, Wimereux, Naples.

3. **Tubulanus miniatus** (Bürger). (Bürger. Monogr. Taf. I, Fig. 8.)

Three individuals of a Nemertean which I consider identical with the one specimen described by Bürger from Naples, were dredged on the Rame-Eddystone Grounds on July 11th. Depth 45-55 m.

By its size this species is easily distinguished from *T. polymorphus*, the length of the biggest specimen being 3 cm., at a breadth of $1\frac{1}{2}$ mm. Moreover, the colour of the body is a darker orange than *T. polymorphus* possesses at Plymouth; the rounded head is not so broad, and is not so sharply separated from the body; it has a white patch at its tip. Generally the dorsum has a more intense colour than the ventral side; the dorsal and ventral regions are sharply separated by a line which is particularly well seen in preserved specimens. Alcohol specimens do not take the peculiar marking described by Hubrecht for *T. polymorphus*. Side organs are probably present.

Geographical distribution: One specimen known from Naples (Bürger).

4. **Tubulanus nothus** (Bürger). (Bürger. Monogr. Taf. I, Fig. 12.)

Locality: Rum Bay, Bridge and Queen's Grounds, each one specimen; from Asia Shoal and Millbay Pit, each three specimens.

This species, which resembles *T. annulatus* very closely, but is of smaller size, is a shallow-water form at Plymouth. The colour is darker, especially on the back. The ventral side has an orange-brown tint, which continues in a dirty yellow at the head and the tail. On the dorsum a black pigment seems to be developed, which gives the whole animal a dirty brown appearance. The head is colourless with two characteristic black, semicircular pigment spots. It is not broader than the body. The first white ring is present directly behind the colourless head; the median dorsal line takes its origin from it; it is one of the broader belts which very often quite characteristically break up into two thin rings. The lateral lines originate from the second belt; a ventral longitudinal line was present in most of my specimens. Side organs exist; they are to be found as small orange pits at the dorsal side of the lateral lines, just in front of the fourth circular line. Forty rings or more are present, which show in part the arrangement described by Bürger.

The presence of a median ventral line is the only difference between the Naples specimens and my species. Sometimes the ventral line, however, was very inconspicuous, even invisible in the living specimens, while all alcohol material, even those specimens I collected as undoubtedly *T. nothus*, show clearly the presence of this line. Therefore I do not hesitate to regard my species as identical with *T. nothus*, Bürger.

Geographical distribution: It has only been described from Naples by Bürger.

5. *Tubulanus superbis* (Köll). (Bürger. Monogr. Taf. I, Figs. 5, 7, 9, 11.)

Locality: On the Eddystone and Rame-Eddystone Grounds; often met with. One specimen from Asia Shoal.

This Nemertean seems to be common on all grounds outside the Breakwater at a depth of 45 m. or more. A small number of individuals has been recorded from more shallow water; both Punnett and Beaumont found it in a sandbank in the river Yealm. Joubin and Bürger give a depth of 30–80 m., which agrees with the ordinary habitat of this worm at Plymouth. The colour of this big Nemertean is a reddish brown. There are four longitudinal white lines and a great number of white rings. The head is broader than the body. Pigment spots are not to be seen. The median dorsal line continues to the tip of the snout, which itself is surrounded by white lines. The cephalic grooves are situated at a short distance behind the first transverse dorsal line. Side organs are present.

Geographical distribution: Mediterranean coasts, Sweden, Great Britain, French coasts of the Channel.

6. *Tubulanus annulatus* (Mont.). (Joubin. Les Némertiens, Pl. I, Fig. 2 et 3. McIntosh. Monogr. Pt. I, Pl. 8, Fig. 1.)

Locality: This Nemertean has been recorded from nearly all dredging grounds inside and outside the Breakwater; more commonly it is met with near the Mewstone and the Eddystone, at a depth of at least 18 m.

T. annulatus can easily be distinguished from *T. superbis* by the absence of a median ventral line, its much smaller size and the bright orange-red colour. The white median dorsal line continues on the head and bifurcates at the tip, enclosing a patch of the same colour as the body. The head is coloured both on its dorsal and ventral side; the lateral lines originate from the first white belt, which is situated at a short distance behind the cephalic grooves and just behind the mouth. The cephalic grooves reveal exactly the same features as in *Carinella aragoi*, Joubin. "Ils occupent le fond du cou, et sont, non en creux, mais en relief; ils sont teintés en jaune. Sur la face ventrale, ils commencent audessus de la bouche, de chaque côté, mais sans se rejoindre sur la ligne médiane. Ils sont, dans toute cette portion, à peu près droits. Arrivés sur le bord latéral, dans le prolongement des lignes blanches dont il a été question plus haut, on aperçoit un petit orifice. Au delà, ils passent sur la face dorsale et forment des sinuosités tout à fait caractéristiques. La terminaison des deux sillons

forme deux lignes séparées par la bande blanche dorsale" (Joubin. 1890. "Archives de Zoöl. expér. Ser. II, T. VIII, p. 495).

As far as I can judge from the description and the figures given, *T. annulatus*, Montagu, which is doubtless the same species which I found at Plymouth, agrees completely with *C. aragoi*, Joubin, in external features. However, we cannot at present consider the species identical, as their anatomy is not at all the same. This seems to be a case like the one described by Bergendal for *Carinella linearis* and *C. groenlandica*. Neither do the Plymouth specimens agree with the description and figures of Bürger's species in the Naples monograph.

C. annulata, Bergendal, however, seems to exhibit the same internal structure as the Plymouth specimen; but this species differs externally from *C. aragoi* as Bergendal states. This complicates the question still more. Only the study of sections of all these Nemertean can throw more light on this interesting question. At any rate there can be little doubt as to the identity of *T. annulatus* (Mont.) with the Nemertine described above.

7. *Tubulanus albocapitatus*. Nov. spec.

Locality: Rame-Eddystone Grounds.



Fig. 1.
Tubulanus
albocapitatus.

In 3 different dredgings, each time one specimen of this small Nemertean, which can easily be mistaken for a young *T. annulatus*, was collected. On closer inspection it differs considerably from that form. A complete individual had a length of $1\frac{1}{2}$ cm. and was $\frac{1}{2}$ mm. broad in the oesophageal region. The head is not sharply separated from the body, nor is it much broader. Pigment spots are absent. The perfectly white head is followed by a brown-red belt of the same breadth, which is the darkest part of the whole body. A yellow pigment is distributed all over this region. The cephalic furrows are situated in this ring; they are rather deep and reach half-way to the dorsum; they are not lined with white or yellow, as is the case in *T. annulatus*, and are quite differently shaped. The first circular white line separates this region from the body. The median dorsal line, which is white too, passes through this belt into the dark region described above, but does not reach the white head. At both sides of this median longitudinal line, separated from it by a translucent region, a reddish-brown stripe of a fainter tint is present. These stripes do not even reach the lateral lines, as a transparent region is developed between them too; the white pigment patches, which are dispersed at the sides, constitute a very inconspicuous and incomplete lateral line. The ventral side is also trans-

parent. Eleven white belts are present; the first constituting the separation between the intense coloured and the oesophageal region. Just in front of the second ring one pair of white patches is conspicuous; they are connected with this belt and are situated in the dorsal red stripes. I have not found any trace of side organs.

II. FAM. CALLINERIDAE.

Cerebral organs absent. Nervous system situated between the basal membrane and the outer circular muscle layer. A thick nervous layer is present in the head. Inner circular muscle layer present. A median dorsal blood-vessel fails; four blood-vessels in the head. Rhynchodaeum with a separate layer of longitudinal muscle fibres. Proboscis anteriorly, with four longitudinal muscle bundles, followed by a diaphragm.

GENUS *Carinesta*.

No composite gland cells in the epithelium. Oesophageal nerves paired; no lateral sense organs. Diagonal muscle layer absent. Proboscis attached behind the mouth. Proboscis sheath without any peculiarities of musculature.

1. *Carinesta anglica*. *Nov. spec.*

Locality: one specimen was collected from the river Yealm at low tide by digging in a muddy sandbank; and one fragment crawling about in sand from Whitsand Bay.

This white nemertine somewhat resembled Punnett's description of *Oxyptolia beaumontiana*. The snout is elongated and pointed; when contracted the wrinkling is obvious. Colour a watery milk-white anteriorly; the gonads give the posterior part a rosy-brown tint. The mouth had been protruded obviously in the fragment from Whitsand Bay. No sense organs are present, nor could I distinguish the proboscis pore. The proboscis itself and the intestine are easily visible because of the transparency of the animal.

The posterior part of the body was much swollen and contracted at irregular intervals when the animal was first examined; on touching it broke into pieces.

Sectioning revealed the very interesting structure of this animal, which I was able to identify as a *Carinesta* species. From Punnett's type specimen, however, which was collected at New Britain, it differs in the total absence of that part of the inner circular muscle layer, which is already disappearing in *C. orientalis*. Moreover, a head gland exists in *C. anglica* and fails in Punnett's specimens. I could not find any traces of a dorsal decussation of fibres, nor is there any special longitudinal muscle sheath at the ventral side of the oesophagus.

III. FAM. CEPHALOTRICHIDAE.

Bodywall composed of an epithelium in which a separate layer of gland-cells does not exist, the basal membrane, the outer circular and the inner longitudinal muscle layer. The inner circular muscle layer often fails. The nervous system is situated in the middle of the inner longitudinal muscle layer. Sense organs are not developed. Four thick cephalic nerves. Vascular system consisting of a pair of lateral blood-vessels only. A great number of nephridial organs.

GENUS *Cephalothrix*.

Mouth widely separated from the brain. Body thread-like. No sense organs. The oesophageal nerves are not paired. No bifurcation of the continuation of the dorsal brain lobes. An inner circular muscle layer fails. The genital sacs are not developed in the oesophageal region.

1. *Cephalothrix ruffrons* (*Johnston*). (Bürger. Monogr. Taf. II, Fig. 24.)

Locality: Common between tidemarks at Rum Bay, Mount Edgcumbe, Drake's Island, the Mewstone; in clean sand, between corallines, under stones, etc. Very thin, colourless or white species, with two small red or orange spots on the tip of the head. Length, 30-40 mm.; breadth, $\frac{1}{2}$ mm.

Geographical distribution: Coasts of Norway, Denmark, Great Britain, France, and Italy.

SUBORDO II. HETERONEMERTINI.

The body-wall is composed of the epithelium, cutis, outer longitudinal, outer circular and inner longitudinal muscle layers. The nervous system is situated between these muscle layers. The lateral nerves are always found outside the circular muscle layer.

I. FAM. BASEODISCIDAE (= Eupolidae, Bergendal).

Proboscis pore near the tip of the snout. The inner muscular layers are not developed in the head. Cerebral organs large, close to the brain. A thick layer of connective tissue separates the epithelium with its gland cells from the outer longitudinal muscle layer. Proboscis with two layers, an outer circular and an inner longitudinal. Proboscis without muscular crosses. The proboscis sheath is short. Head more or less rounded; usually with eyes.

GENUS *Poliopsis*.

Head sharply separated from the body by a deep furrow. A dorsal and a ventral median longitudinal cephalic furrow are present.

1. *P. lacazei*, Joubin. (Joubin. Les Némertiens. Pl. I, Fig. 15 et 16.)

Locality: One specimen from the Eddystone.

On the 26th of May I got this single specimen, together with *Tubulanus superbis* and *T. polymorphus*, from the Eddystone Grounds. As the position of the eyes, the bright pink colour and the two cephalic slits agreed perfectly with Joubin's description, I did not hesitate to identify my specimen as *P. lacazei*. The internal structure proved the correctness of this identification.

Geographical distribution: Joubin found this species at Banyuls, Bürger at Mauritius, Hallez near Calais.

II. FAM. LINEIDAE.

Usually with a pair of deep horizontal cephalic furrows. Proboscis with three muscular coats and mostly with two muscular crosses. Cephalic gland consisting of very slender tubes, situated anterior to the brain.

SUB-FAMILY A. LINEINAE.

Without caudal cirrus. Proboscis sheath usually much shorter than the body.

GENUS *Lineus*.

Body rounded or flattened, unusually long, very contractile. Head mostly somewhat broadened and spathulate. The worms are not able to swim; as a rule they coil themselves up and make knots. Ocelli present in most species. Proboscis sheath short.

1. *Lineus longissimus* (Gunn.) (McIntosh. Monogr. Pl. IX.)

Locality: Rather common in dredgings from the Sound, Mewstone, and the Yealm.

The colour is a blackish brown relieved throughout by the fine purplish "iridescence of the cilia." With darker and lighter stripes on the head and part of the body. Eyes numerous, arranged in a marginal row on each side of the head, which is somewhat broadened and spathulate, not separated from the body.

Geographical distribution: Atlantic and Baltic coasts of Europe.

2. *Lineus bilineatus* (Ren.). (Joubin. Les Némertiens, Pl. II, Fig. 26 et 27.)

Locality: Very common, especially in dredgings from the Sound; from the Rame-Eddystone Grounds, the Mewstone neighbourhood, but also from the Cattewater and between tidemarks at the Yealm and Rum Bay.

Colour a pale brown, sometimes with a reddish shade, or nearly white. With a pair of longitudinal white streaks, passing on from the

tail to the tip of the head, where they usually join together in a broader white patch. Head ending bluntly, somewhat spatulate. Eyes wanting.

Geographical distribution: Sweden, Great Britain, France, Italy, Madeira.

3. **Lineus lacteus** (*H. Rathke*). (Joubin. Les Némertiens. Pl. II, Fig. 23; and McIntosh, Monogr. Pl. V, Fig. 3.)

Locality: Two specimens from Asia Shoal, on one occasion.

Body slender, threadlike, white, anteriorly pinkish. Head broadened, spatulate, not distinctly separated from the body. Eyes about fifteen, arranged in a row on each side of the snout. Mouth removed from the brain. Length 100 mm., breadth 1 mm.

Geographical distribution: The Channel, Sweden (?), Mediterranean, and Pontic coasts.

4. **Lineus ruber** (*Mill.*). (McIntosh. Monogr. Pl. V, Fig. 2.)

Locality: Between tidemarks very common in Cawsand and Rum Bay, at Drake's Island; from New Grounds in dredgings.

Body flattened, 3 mm. broad, diminishing towards the tail. Colour usually bright red. Head spatulate, separated from the body. With four to twelve eyes. Length 150–200 mm.

Geographical distribution: Coasts of the Northern Atlantic, with Baltic, Mediterranean, and Madeira coasts.

GENUS **Euborlasia**.

Body very thick, biconvex in section and usually not flattened ventrally. Lateral margins absent after preservation. Head not separated from the body. In animals not perfectly extended the posterior part of the body is much thicker (3–6 times) than the anterior region. Proboscis sheath short. Without eyes.

1. **Euborlasia spec.**

To this genus I refer two fragments of Nemerteans, which were collected from a sandbank in the river Yealm. As in both fragments the anterior portion of the body is wanting, I have not been able to identify the species, or even the genus with certainty. One fragment came living into my possession. It had been dug up in the sandbank, high up the river Yealm, at a place where the water is nearly fresh. A great deal of sand has been removed from this sandbank during the last ten years, and it is now very muddy. This Nemertean, which was formerly rather common at this place, has since become quite rare. The other fragments, which also lack a head, were collected at the same place in 1898. After preservation the body is deeply furrowed

and wrinkled, much as in *Cerebratulus corrugatus*. The anterior part of my specimen got very thin by preservation (breadth 5 mm.); the following region suddenly broadens till it has a breadth of 16 mm. The living specimen had a brownish colour, with more whitish margins. No markings were present.

The sections revealed some features which decided my classification of this species as a *Euborlasia*; I regard it, however, as a separate species from both *E. elisabethae* and *immaculata*.

The proboscis sheath is very short, as already in the thinner portion of the body it is devoid of its muscular coats. The intestinal caeca are richly developed and branched. The gonads are placed in rows between the caeca, alternating with their diverticula. They all open dorsally. Muscular septa are entirely absent. The intestinum with its diverticula and the gonads are surrounded by a thick layer of connective tissue, in which a great number of very narrow blood-vessels are imbedded. The structure of the epithelium agrees perfectly with Bürger's description; the large gland cells are especially conspicuous (Bürger. Monograph Naples, T. 22, Fig. 39).

SUB-FAMILY B. MICRURINAE.

Caudal cirrus present; proboscis sheath usually extends nearly or quite to the posterior end of the body.

GENUS *Micrura*.

Small, thin, mostly flattened and soft nemertines; head spatulate, ending bluntly, not separated from the body. Lateral margins of the body not remarkably thin; incapable of swimming. Often with a great many eyes. The mouth is circular. Proboscis sheath short.

1. *Micrura fasciolata* (*Ehrbg.*). (McIntosh. Monogr. Pl. VI, Fig. 2.)

Locality: Common in the dredgings from the Sound, Eddystone, Mewstone, and from the Rame-Eddystone Grounds.

General colour red or red-brown, head and ventral side white. 10-24 slender white transverse stripes across the dorsum. With 4-6 small eyes. Length 120-200 mm., breadth 1-2 mm.

Geographical distribution: Sweden, Great Britain, Northern coast of France, Mediterranean.

2. *Micrura aurantiaca* (*Grube*). (McIntosh. Monogr. Pl. VII, Fig. 4.)

Among some tubes of preserved nemertines I found one containing two nemertines from the Breakwater. They were supposed to belong

to the same species, and must therefore have been very much alike in the living state. After preservation, however, the difference was very obvious, the one being rather flattened with lateral margins and the other being circular anteriorly and showing no margins even at the more flattened and weaker posterior part of the body. The colour of the more rounded nemertine was moreover brownish, while the bright yellowish colour of the flattened specimen at once proved it to be a small specimen of *Cerebratulus roseus*. So I suppose the colour of the other specimen to have been a very faint red or rose. The internal structure, however, makes it quite certain that this specimen must have been an abnormally faint coloured and rather large individual of *Micrura aurantiaca*. All traces of the original colour or of any markings had disappeared. Eyes are absent. The cutis is as thick as the epithelium. There are no traces of a connective tissue layer separating the cutis from the external longitudinal muscle layer, which is much thicker than the circular or inner longitudinal muscle layer. The latter layer has been very much reduced. The cerebral organs are placed above the lateral nerves. The dorsal part of the dorsal brain lobe is situated laterally to the ventral part; it ends anteriorly to the cerebral organs. The cephalic slits end where the cerebral canal originates from them. They reach as deep as the brain. The mouth is situated beneath the hinder end of the cerebral organs.

Geographical distribution: Both coasts of France and the Mediterranean.

3. *Micrura purpurea* (Dalyell). (McIntosh. Monogr. Pl. VII, Fig. 3.)

Locality: Rather common in dredgings from the Sound; occasionally a specimen from the Rame-Eddystone and the Mewstone Amphioxus Grounds.

Colour brown; head white, with a bright yellow transverse bar; eyes absent. Length 100–200 mm., breadth 2–3 mm.

Geographical distribution: Sweden, Great Britain, North coast of France, and Mediterranean.

4. *Micrura candida*, Bürger (= *Micrura lactea*, Hubrecht). (Joubin. Les Némertiens, T. 2, Fig. 23 bis.)

Locality: Two specimens from the Mewstone and two from the Mewstone Ledge.

Perfectly white. Eyes absent.

Geographical distribution: Channel and Mediterranean.

Two specimens are known from England, one from Stoke Point near Plymouth, and one from Halfway Rock.

GENUS *Cerebratulus*.

Body usually long and ribbon-like, much flattened, with very thin lateral margins; well adapted for swimming. Head pointed, lancet-like. Eyes are usually absent. Mouth mostly a long slit.

1. *Cerebratulus fuscus* (*McIntosh*). (*McIntosh*. Monogr. Pl. VI, Fig. 3.)

Locality: In dredgings from Asia Shoal, Queen's and New Grounds, Millbay Channel, and once from Mewstone Ledge.

General colour usually pale yellow, only pigmented on the head; sometimes, however, especially in bigger worms, a brown pigment was distributed all over the dorsum. Brain transparent. No eyes. Head spathulate, not separated from the body.

Geographical distribution: Sweden, Great Britain, France, Portugal, Mediterranean.

2. *Cerebratulus roseus* (*Chiaje*). (*Bürger*. Monogr. Taf. VI, Fig. 12.)

Locality: Specimens were collected from the Breakwater, May, 1910; from Salcombe (Millbay) by Mr. Potts, in 1908; from the sand under Batten Castle, May, 1902; each time one complete specimen. A fourth specimen, collected from the Breakwater, was found in a tube of preserved specimens with *Micrura aurantiaca*.

The colour of the only living specimen I have seen was a dirty flesh colour; this individual was a female, which whilst being brought in broke into several pieces; however, no parts, not even the appendix, had been lost. The uncoloured margins were very conspicuous. The centre of the body probably took its darker colour from the eggs, which had an orange-brown tint and were partly deposited through the genital pores, situated in two rows on the dorsum. The mouth is large; the cephalic slits even reach the region of the mouth. The preserved specimens show the bright yellowish tint characteristic of *Cerebratulus roseus*. *Bürger's* figure moreover leaves no doubt as to the identity of my specimen with his *C. roseus*.

Geographical distribution: The French coast of the Channel and the Mediterranean.

3. *Cerebratulus alleni*. *Nov. spec.*

Locality: Yealm sandbank.

This Nemertine was collected on the 7th of November, 1907. The single specimen was given to me last summer. It had been preserved in corrosive sublimate and was then in alcohol. The only description I could get of the living animal was: colour, light flesh with white

snout. It was supposed to belong to the same species as the individual described as *Micrura aurantiaca* and a small specimen of *Cerebratulus roseus*. From both, however, it differs in the shape of the head, which is conspicuously swollen at its hinder part and not separated from the body, so that it is best described as fig- or pear-like. The colour is a greyish brown anteriorly, which is replaced by a yellowish grey in the greater part of the body. These two colours are sharply separated from each other, just as in *Tubulanus polymorphus*. Sections revealed the following peculiarities, which made me create a new species for this single individual.

The cephalic slits are rather long, extending nearly to the beginning of the mouth, and farther than the cerebral organs themselves. They are not very deep, and reach only half-way to the brain. The cerebral pit, however, is deeper. The cerebral canal originates behind the dorsal brain lobe; this bifurcates into two lobes, the dorsal of which ends quite free in the longitudinal musculature in the region of the cerebral canal, separated from the ventral lobe by a thick band of tissue. The ventral lobe continues directly as the cerebral organ. This is never in contact with any blood-vessel, but lies internally to the circular muscle layer. The dorsal lobe of the dorsal brain, the cerebral organ, and the ventral brain lobe are situated above each other. The blood-vessels form one large dorsal anastomose in the head; the very short cephalic blood-vessels unite again within the brain; from this ventral anastomose an unpaired oesophageal blood-vessel takes its origin. This unpaired vessel divides into two in the region of the oesophageal nerve commissure. These two communicate often with the lateral blood-vessels situated on both sides of the proboscis sheath. In this region large gland cells are also conspicuous. They are buccal glands, which are enormously developed all round the mouth and the oesophagus. They are placed in clusters, and freely protrude into the blood-vessels, both into the lateral and into the oesophageal vessels, which frequently communicate with each other and form a network all round the oesophagus. They are even more richly developed than in *Micrura alaskensis*, Coe; they do not, however, extend outside the circular musculature.

The epithelium is not very thick. A separate cutis layer cannot be distinguished. The cutis glands are situated in the outer longitudinal muscle layer. A small layer of longitudinal muscle fibres, as thick as the epithelium itself, and traversed by the gland ducts, separates the layer of glands from the epithelium. These are themselves surrounded by muscle fibres, and do not form a compact layer. They are some two or three times as high as the epithelium. The bases of the

cutis glands are situated not quite half-way between the outer bodywall and the circular muscle layer, laterally at a third of that distance only. The circular muscle layer is separated from the outer longitudinal by a thick nervous layer. Diagonal muscle fibres are absent. The circular muscle layer is rather feebly developed, and has twice the thickness of the epithelium, while the inner longitudinal muscle layer is twice to three times as thick as the circular layer in the oesophageal region. Longitudinal muscle fibres are not present between the oesophagus and proboscis sheath.

The gonads alternate regularly with the intestinal caeca; the genital pores are situated above the proboscis sheath. In the intestinal region the outer longitudinal and circular muscle layers are very much reduced. This is especially the case with the outer longitudinal muscle fibres which form a layer of the same thickness as the cutis glands dorsally and ventrally, so that the latter reach the circular muscle layer; laterally, however, the layer of longitudinal fibres is thicker. The circular muscle layer is as thick as the epithelium, but the inner longitudinal muscle layer, which is five to six times as thick as the circular, has the same breadth as in the oesophageal region.

On the 1st of June part of a Nemertine was collected in dredging materials from the New Grounds. It turned out to be the posterior part of a very thin (1 mm.) nemertine, completely white, and long in comparison with the uniform breadth. The head failed, but an appendix was present. The structure of the body-wall reveals the characteristics of a Heteronemertean, as the outer longitudinal muscle layer is present. As with all the layers of the body-wall, this longitudinal muscle coat is very much reduced in size when compared with other nemertines. There are no traces of a cutis nor of any clusters of composite gland cells. Epithelium and outer longitudinal muscular coat have about the same breadth and are separated by the thin basement membrane only. The epithelial cells constitute a single layer. The circular and inner longitudinal muscle layers together have but one-third of the thickness of the outer muscular coat. They have about the same breadth. The longitudinal muscle fibres surround the wide enteron and the proboscis sheath, which ends just before the point where the tail is attached. The intestinal pouches are very shallow, and I have not been able to discern any septa. The gonads alternate with the intestinal pouches, or perhaps they are the cause of the appearance of these unreal diverticula. The position of the lateral nerve cords is the usual lateral situation. I have not been able to detect a median dorsal blood-vessel.

The point of greatest interest is the structure of the tail, which differs widely from any structure of this kind yet described. The epithelium has about the same height as in the body; many gland cells are present. I have not found any traces of the outer longitudinal muscle layer. Circular and inner longitudinal muscle coat are present as a single layer of muscle fibres. In the tail itself I have not been able to trace the nervous system; from the posterior commissure of the body, however, nervous tissue is seen to reach the basis of the tail. The centre of the tail is occupied by the intestine, which is seen to communicate widely with the intestine of the body and opens to the exterior by the anal aperture at the tip of the appendix. There are no intestinal pouches, nor gonads nor rhynchocoelom in the tail, which moreover lacks all connective tissue. Even the basement membrane could not be distinguished. If any nervous tissue is present it must be still epithelial.

As to the vascular system, I have not been able to find the anal anastomose nor anything like vessels in the appendix.

Certainly there can be no doubt that this specimen belongs to the sub-family Micrurinae. Had it not been for the tail, I should have felt inclined to identify the fragment as *Lineus niveus*, Punnett, which lives at the much greater depth of 100–140 m. near Bergen in Norway. As, however, Punnett describes the total absence of a tail in half a dozen specimens he collected, and as I can only judge their relationship by the hinder part of the body, I do not feel justified in considering them identical. If my supposition is right, I am inclined to think that a new genus ought to be created, on account of the structure of the appendix and the very primitive features which *Lineus niveus* reveals. The presence of an appendix certainly would approximate *Lineus niveus* still closer to *Zygeupolia* and *Micrella*.

ORDO II. ENOPLA.

The body-wall consists of a single-layered epithelium, a basal membrane, the outer circular and the inner longitudinal muscle layer. Mouth anterior to the brain, or the oesophagus opens into the rhynchodaeum. An oesophageal diverticulum is present. The nervous system is not situated in the body-wall, but in the central connective tissue.

SUBORDO A. PRORHYNCHOCOELOMIA.

Worms with a very long and slender body; they like to coil themselves up and to form knots. The proboscis is much shorter than the body. The proboscis sheath never extends into the posterior third

part of the body, and exists usually in the anterior third only. Neurochords or neurochord cells fail.

I. FAM. EMPECTONEMATIDAE.

Mostly very long and flat forms. Proboscis short and rather stout, with one very differently shaped central stylet only. Very often with many small eyes; seldom two or four eyes. No statocysts.

GENUS *Emplectonema*.

Very long and slender. Alimentary tract and proboscis open together. Cerebral organs very small, generally situated a long distance in front of the brain. Mostly with many small eyes. The proboscis sheath does not quite extend to the second third of the body. Sexes separate.

1. *Emplectonema gracile* (*Johnst.*). (McIntosh. Monogr., Pl. II, Fig. 5.)

Locality: In dredgings from the Mewstone; between tidemarks at Breakwater, Drake's Island, Cawsand Bay. Far less common than the next species.

The colour of this Nemertean is usually a more greyish green than the figure in McIntosh's monograph indicates; ventral surface white. The head is lined with white and possesses a faint yellow transverse bar. It is broader than the body, but not sharply separated. Cerebral organs a long distance in front of the brain. 20-30 eyes in two groups at both sides of the head. The handle of the central stylet is twice the length of the stylet itself; all stylets are curved. With two pouches each containing 5-6 accessory stylets. Length 20 cm. or more, breadth 1 mm.

Geographical distribution: This species is widely distributed. It is known to occur on the West coast of North America as well as in Chile and the Aleutian Islands, the coasts of France and Germany, Madeira and the Mediterranean.

2. *Emplectonema neesi* (*Oerst.*). (McIntosh. Monogr. Pl. III, Fig. 6; and Joubin, Les Némertiens, Pl. III, Figs. 77-80.)

Locality: Common between tidemarks in the Sound; from Breakwater and the Mewstone; occasionally met with in dredgings at a depth of 10-15 fathoms.

This Nemertean is much more abundant than *E. gracile*. However, it is not so widely distributed. *E. neesi* has been recorded only from the Atlantic coasts of Europe. It ranges from Iceland to the Channel.

Head broadened and of a yellowish colour, paler than the body. The dorsum has a brown hue in which flesh-coloured stripes occur;

sometimes these stripes are broken up into patches, which give the animal a speckled appearance. The ventral surface is white. Cerebral organs at a great distance in front of the brain. Numerous small eyes arranged in four clusters. The oesophageal diverticulum sends two pouches to the brain. Both the central stylet and its basis are short and stout; they are of the same length. Two pouches, each with three accessory stylets. Length to 46 cm., breadth $\frac{1}{2}$ cm.

3. **Emplectonema echinoderma** (Mar.). (Bürger. Monogr. T. II, Fig. 3.)

Locality: One specimen from Millbay Pit.

Bürger's figure gives a very good idea of the Plymouth specimen; the head shows the same form and markings. The colour is generally a more orange-red. A number of very small eyes, arranged in a row, are situated on the margins of the head; they do not show very much, which is probably due to the want of clearness of the tissues of the head, and they certainly were not so numerous as those described by Bürger. The transparent hooks are quite characteristic. Length 120 mm., breadth $1\frac{1}{2}$ –2 mm.

Geographical distribution: Mediterranean, Madeira, and Plymouth.

GENUS **Carcinonemertes**.

Head without distinct lateral grooves, not demarcated from the body. Ocelli 2. Mouth and proboscis open together; oesophagus extremely short, opening broadly into the intestine through a large muscular chamber. Proboscis but little developed, very small in size and extremely short, without lateral pouches of reserve stylets, but armed with a central stylet and basis only.

1. **Carcinonemertes carcinophila** (Köll). (Joubin. Les Némertiens, Pl. III, Fig. 81. McIntosh. Monogr. Pl. I, Fig. 5.)

This parasitic Nemertean lives in self-secreted tubes between the egg masses of *Carcinus maenas* and *Portunus depurator*. Only two out of a great number of *Carcini* I examined were inhabited by this worm; one specimen in each. On *Portunus*, however, it was more common, especially in specimens from dredgings. If the crabs had been collected on shore I never found them inhabited by this parasite. The tube, in which the orange or pale reddish animal folds itself together, is attached to the axis of the feet that bear the eggs. I have not been able to find any nemertine on the gills either of *Portunus* or of *Carcinus* or *Galathea*.

This species was with certainty known only to occur on *Carcinus maenas*; probably *Galathea strigosa* and *Xantho floridus* may also be

infected with them. In New England they live on *Platyonychus ocellatus*.

Geographical distribution: *C. carcinophila* has not been found previously in England; it has been recorded from the Atlantic coasts of Belgium and France, from the Mediterranean and from New England.

GENUS *Nemertopsis*.

As *Emplectonema*, but instead of many, only four eyes, situated in a rectangle. The distance between the eyes of one pair is smaller than that between the eyes of one side.

1. *Nemertopsis flavida* (McIntosh), Beaumont. (McIntosh. Monogr. Pl. IV, Fig. 1; and Joubin, Les Némertiens, Pl. II, Fig. 61.)

Locality: Common in the Sound, both from dredgings and between tidemarks. Once from a dredging near the Mewstone.

Under this name I unite both the *Nemertopsis* species, described by Beaumont (1900, p. 817 and 818). It seems to me very doubtful whether *N. tenuis* must be distinguished from *N. flavida*. The only difference between the two so-called species is to be found in the colour, which is quite white in *N. flavida* and a very faint pink in *N. tenuis*. This, however, might be due to the colour of the blood, which is decidedly red in the last species and cannot be seen in the first. Moreover, the colour of *Tetrastemma flavida*, McIntosh, is pinkish or pale peach, which agrees with *Nemertopsis tenuis*, not with *N. flavida*. Beaumont states a difference in the extension of the proboscis sheath. This I have not been able to ascertain. A difference in body length of the animals might have caused this just as well, especially as the worms very easily break into pieces. No other difference between *N. flavida* and *tenuis* has been described. As to the value of the red-blood colour, this is not a character on which alone to base a new species. As long as no other difference between these two forms is known, we cannot regard them as separate species. Perhaps they are only varieties of one species, but even this seems questionable to me.

Moreover, Beaumont does not seem to be quite certain himself as to the value of his distinction. "The doubtful status of *Nemertopsis tenuis* as a species distinct from *N. flavida*, and the fact that they have rarely been distinguished with certainty, make it expedient to consider them together (W. I. B.)." (Plymouth Marine Invertebrate Fauna, 1904. Nemertea.)

In this case the name *Nemertopsis tenuis*, Bürger, has to be dropped; it must be replaced by *Nemertopsis flavida* (McIntosh), Beaumont, which

species is not to be regarded as synonymous with *Tetrastemma flavida*, Bürger.

Head attenuated; reddish or pale pink to white. With four minute eyes. The very small cerebral organs are situated in front of the brain. The central stylet and its base have nearly the same length. All stylets are slender. With two accessory pouches, containing each three accessory stylets. Length 4-5 cm., breadth $\frac{1}{2}$ mm.

Geographical distribution: Mediterranean, Channel coasts, Scotland.

SUBORDO B. HOLORHYNCHOCOELOMIA, Bürger.

Body usually short and stout; most species do not show any tendency to coil themselves up. Proboscis at least as long as the body. The proboscis sheath ends usually just in front of the anal aperture, and always extends into the last third part of the body.

I. FAM. AMPHIPORIDAE.

Worms of a length of some centimetres, even of 10 cm. sometimes; the smaller species are very stout, and the larger are rather stout too. The gonads do not alternate with the intestinal diverticula. They bifurcate. The oesophageal diverticulum sends long pouches to the brain. Proboscis sheath without lateral diverticula. Proboscis with one central stylet and conical handle. Cerebral organs large. Nearly always with many large eyes. Number of proboscis nerves variable.

GENUS *Amphiporus*.

Extremely contractile; in contraction the head is invisible as a rule. They cannot swim. Usually numerous eyes, sometimes failing, never four. One central stylet, but often many pouches, each containing a few accessory stylets. The handle is always conical. Mouth and proboscis pore join together. Proboscis sheath without pouches. Sexes separate.

1. *Amphiporus lactifloreus*, McIntosh. (McIntosh. Monogr. Pl. I, Fig. 1).

Locality: In shallow water, near the coast, and between tidemarks. From all dredging grounds in the Sound, and once from a dredging at the Mewstone Ledge (18-27 metres).

A flattened, very soft nemertine of a pale pink or white colour. The head is not sharply separated from the body. Cerebral organs in front of the brain. A number of small eyes present on the head; they are arranged in two groups on each side, "the posterior group generally forming a triangle, with one eye-speck (that most remote from the snout) much larger than the rest."

Geographical distribution: North Atlantic and Mediterranean coasts.

2. *Amphiporus dissimulans*, Riches. (Joubin. Les Némertiens, Pl. III, Fig. 42, and p. 129, Fig. 16.)

Locality: Dredged from all grounds in the Sound and near the Mewstone.

Length 5 cm. The colour is variable, most frequently a very pale pink. Head broadly spatulate, pointed, sharply separated from the body. The eyes are never divided into groups and are very numerous. Cephalic grooves as in Joubin's *A. roseus*. Tail oar-like.

I should not be surprised if the anatomy of the specimens described by Riches and Beaumont under the above-cited names proved them to belong to the same species, in this case *A. lactifloreus*.

As far as the internal structure is known every evidence of a difference fails. "The shape of the head and of the tail, the number and arrangement of the eyes, the position of the cephalic grooves, and the difference of habitat, *A. lactifloreus* being a shallow-water form, and these specimens being never obtained in less than 15 fathoms, are the distinguishing characters," says Riches.

As to the difference of habitat I cannot agree with Riches. Both *A. dissimulans* and *A. lactifloreus* have been recorded in dredgings from the same spot, as Asia Shoal, Queen's Grounds, Millbay Channel; moreover, *A. lactifloreus* proves not to be a shallow-water form alone, as I got quite a typical specimen from the Mewstone Ledge, at a depth of 10-15 fathoms; *A. dissimulans*, on the contrary, has been collected at Drake's Island between tidemarks (I cite from the Invertebrate list). But even if a difference in habitat exists, as Riches supposes, the distinguishing characters might be due simply to this. Certainly it is remarkable that both species are distributed alike in the neighbourhood of Plymouth. If *A. dissimulans* occurs in the deeper parts of the Sound, *A. lactifloreus* occupies the shores of the same parts (according to Riches). On the Mewstone it is the same; in shallow water *A. lactifloreus*, from the Mewstone Ledge *A. dissimulans*. To these spots both species seem to be confined.

As a distinguishing character the arrangement of the eyes does not hold good either. I met with several specimens of so-called *A. dissimulans*, the eyes of which were arranged in two groups as in *A. lactifloreus*. Other specimens had the *lactifloreus* habitus, but the eyes formed a continuous series on each side of the head. The characters of habitus and arrangement of eyes proved to be quite insufficient to distinguish between the two species. As to the only remaining character, the position of the cephalic grooves, I can only agree with

Beaumont, that their arrangement in *A. lactifloreus* is very similar to that in *A. dissimulans* (1895, p. 360). In fact, I have not been able to see the slightest difference between them; in both species the cephalic furrows are arranged as described by Beaumont.

All distinguishing characters given by Riches between *A. lactifloreus* and *A. dissimulans* fail. The varieties as described by him and by Beaumont certainly exist, but they are connected by a series of variations of their characters, which makes it very probable that they themselves are to be looked upon as varieties of one single species, in this case *Amphiporus lactifloreus*.

3. ***Amphiporus allucens* (Bürg.).** (Bürger. Monogr. Pl. IV, Fig. 35).

Locality: One specimen from the Mewstone Ledge (10–15 fathoms) and one from the Rame-Eddystone Grounds.

The specimens recorded by me under this name fully resemble *A. pulcher* var. *allucens*, Bürger. Colour bright salmon, as in *A. pulcher* described by Beaumont; the head is more yellow, with the central nervous system showing through as a pale pink-coloured spot. Head not separated from the body. The eyes are large and black and were arranged in a double continuous row on each side of the head. The last eye of the shorter row is larger and lies just in front of the brain. The cephalic grooves join ventrally in front of the brain. The absence of secondary cephalic grooves and of a reserve central stylet decided me to separate this species from *A. pulcher*, Bürger. As to its relations to *A. pulcher*, McIntosh, the number and arrangement of the eyes, the shape of the head and the whole habitus of the worm are so different, that it seems impossible to confuse them.

Geographical distribution: Naples.

II. FAM. DREPANOPHORIDAE.

GENUS *Drepanophorus*.

Broad and ventrally flattened worms of some centimetres length. Intestinal diverticula not bifurcated; the oesophageal diverticulum sends pouches in the direction of the brain. Gonads alternating regularly with the intestinal diverticula. Numerous eyes. Cerebral organs at the sides of or posterior to the brain. Proboscis sheath with metamerically arranged lateral pouches. Proboscis with many central stylets, situated on one crescent-shaped handle.

1. ***Drepanophorus spectabilis* (Quatr.).** (Bürger. Monogr., Taf. III, Figs. 28 and 28A.)

Locality: Queen's and New Grounds (5–6 fath.) and Mewstone Ledge (10–15 fath.).

The colour is yellowish pink, interrupted on the dorsal surface by six longitudinal brown stripes; the outer lines are confined to the body; they cease just before the cephalic furrows. On the head, which is narrower than the body and well separated, four dorsal stripes continue. Many eyes are present, arranged centrally in two rows on each side. The cephalic grooves are conspicuously branched and show a brown pigment on the transverse ridges.

Geographical distribution: Plymouth is the most Northern habitat of this species; it has not been recorded for any other place in England. *D. spectabilis* occurs on the Atlantic coasts of France and at the Cape Verde Islands as well as in the Mediterranean.

III. FAM. PROSTOMATIDAE.

Usually short and slender, somewhat flattened Nemertines with four eyes. Gonads alternating with the intestinal diverticula which are not bifurcated. The oesophageal diverticulum has no pouches. Cerebral organs anterior to the brain. Proboscis with ten nerves.

GENUS *Prostoma*.

Usually nearly cylindrical, ventrally somewhat flattened, soft worms. Head sometimes sharply, often however slightly or not at all separated from the body; spathulate or rounded, and often somewhat broader. Nearly always the head shows a characteristic pigmentation. Proboscis with ten nerves. The central stylet and its handle are of equal length; in the middle the base is narrowed. Only two stylet sacs, containing two to three accessory stylets each. Cerebral organs situated in front of the brain.

1. *Prostoma melanocephalum* (*Johnston*). (McIntosh. Monogr. T. 2, Fig. 1.)

Locality: In dredgings from Queen's Grounds and between stones from the Cattewater.

This species can be distinguished easily from all other *Prostomas* by the large, intense black spot on the head; this and the yellow colour of the body, in which no traces of brown are to be seen, make it quite impossible to confuse them with *P. coronatum*, as Beaumont and Riches have done. Moreover, a great difference in habitus exists between both forms, mature specimens of *melanocephalum* having a length of 30–60 mm. with a breadth of 2 or $2\frac{1}{2}$ mm., while *coronatum* is one of the slender species of this genus.

P. melanocephalum is a shallow-water form, not at all common near

Plymouth. I got it twice from Queen's Grounds, once from the Cattewater, on each occasion a few specimens.

Geographical distribution: Sweden, the Atlantic coasts of England, France and Madeira, the Mediterranean and the Pontic coasts.

2. *Prostoma coronatum* (Quatr.). (Bürger. Monogr. T. 3, Figs. 2, 8.)

Locality: Fairly common in all dredgings from the Sound; Mewstone and Cattewater; once between tidemarks at Rum Bay.

To this species must be referred the greater part of the nemertines described by Riches as *Tetrastemma melanocephalum*. *P. coronatum* never attains the size of *P. melanocephalum*, its average length being 12 mm. with a breadth of 0.5–1 mm. (even in sexually mature specimens). The shape of the brown pigment on the head, as indicated in Bürger's figure, is quite characteristic. It is the same as in *P. diadema*, Joubin (Les Némertiens, Pl. III, Fig. 66).

Geographical distribution: The Atlantic coasts of Norway and France and the Mediterranean are known as its habitat.

3. *Prostoma vermiculus* (Quatr.). (Joubin. Les Némertiens, Pl. III, Fig. 64.)

Locality: Rather common in dredgings from Asia Shoal; from some other dredging grounds in the Sound, near the Mewstone and Mewstone Ledge, and once between tidemarks at Rum Bay.

Joubin's figure gives by far the best idea of this species. However, the individual reproduced is a small one, as ripe specimens of *vermiculus* are very large in comparison with *P. coronatum*. They have the same size as *P. melanocephalum* and can be distinguished readily from both *coronatum* and *melanocephalum* by the shape and the colour of the pigment spots, constituting a pair of longitudinal brown stripes, connecting the eyes.

Geographical distribution: *P. vermiculus* has been recorded from several spots on the English coasts, and is distributed all over the Northern part of the Atlantic, from North America to Norway and Madeira and the Mediterranean.

4. *Prostoma peltatum* (Bürger). (Bürger. Monogr. Taf. III, Fig. 6.)

Locality: Two specimens from the Bridge.

This species is characterised by the presence of two pairs of eyes, of which the anterior pair is at least twice as large as the posterior. A transverse band of brown pigment is situated between the eyes; it does not hide them. Colour deer-brown. Both specimens were ♀. Length 40–50 mm., breadth 2 mm.

Geographical distribution: Naples.

5. *Prostoma longissimum* (Bürg.). (Bürger. Monogr. Taf. III, Fig. 15.)

Locality: One specimen in a dredging from the Mewstone.

The single individual which I describe under this name is identified only with hesitation with the Neapolitan species. The description Bürger gives in his Monograph agrees completely with the external features of my specimen, and so does the figure cited. The most striking characteristic is the transverse bar of bright red pigment on the head. However, a great difference of habitat exists between the Mediterranean and English forms, the latter living at a depth of 10 fathoms at least, the Naples specimens being very common on the beach together with *Emplectonema gracile*.

Geographical distribution: Naples.

6. *Prostoma robertianae* (McIntosh). (McIntosh. Monogr. Pl. III, Fig. 1, and p. 167, text Fig. 8.)

Locality: Rame-Eddystone.

Head separated from the body by a brown pigment ring, from which a pair of longitudinal brown stripes proceed towards the tail. A median white line is also present on the dorsum. Colour brownish pink. The anterior pair of eyes is decidedly larger than the posterior pair, which was not covered by the brown collar. Length 8 mm., breadth $\frac{1}{2}$ mm.

This rather characteristic Nemertean seems to live at a greater depth than most of its relatives. McIntosh describes it from the Hebrides and the Shetland Islands at a depth of 6-8 fathoms; Beaumont from the Isle of Man at 15 fathoms, and from Valencinia Harbour at 1-2 fathoms; Bergendal from Kristineberg at 15-20 fathoms; while the Plymouth specimen lived at a depth of 25-30 fathoms.

7. *Prostoma candidum* (Müller). (Bürger. Monogr. T. III, Figs. 13 and 19.)

Locality: Asia Shoal and Queen's Grounds.

A few specimens of this Nemertine were met with in dredgings from Asia Shoal and Queen's Grounds. A characteristic brown pigment is present at the cephalic grooves. The colour of my specimens was not as green as in Bürger's figure; it agreed better with that of McIntosh's figure, in which, however, the cephalic grooves have not been represented. These cephalic grooves, the shape of the head and the bright yellow colour distinguish *P. candidum* (Müll.) from the next species, to which probably the majority of *P. candidum*, Riches, belongs. He describes, however, a specimen from Redding Point which seems to be identical with *Prostoma candidum* (Müll.). Length 12 mm., breadth $\frac{1}{2}$ mm.

Geographical distribution: All coasts of the Northern part of the Atlantic, including the Channel, the North Sea and the Baltic, North America, Madeira, and the Mediterranean.

8. **Prostoma flavidum** (*Ehrbg.*). (Bürger. Monogr. Taf. III, Fig. 20.)

Locality: From Queen's and New Grounds, Cattewater and Rame-Eddystone in dredgings; between tidemarks at Rum Bay.

This species includes one of the most common Nemerteans of Plymouth Sound. The colour is a pale yellow or reddish tint, which may even be quite pink, as in a specimen dredged from the Rame-Eddystone Grounds. It can be distinguished from *P. candidum* by the colour and by the total absence of any pigment on the head. The reddish and yellow variety of *P. candidum*, *Riches*, probably belongs to this species, which is *not* synonymous with *T. flavidum* of McIntosh, *Riches*, and *Beaumont*. Length 12 mm., breadth $\frac{1}{2}$ –1 mm.

Geographical distribution: Sweden, Belgium, coasts of France, Madeira, Mediterranean, and Red Sea.

9. **Prostoma cephalophorum** (*Bürg.*). (Bürger. Monogr. Taf. III, Fig. 22.)

Locality: A few Nemertines belonging to this species have been found in dredgings from New Grounds and the Bridge, Asia Shoal, and Queen's Grounds.

Head rhomboid, broader than the body, sharply separated from it, with four rather large eyes. No markings. The general colour is brown; the head and the margins of the body, however, are less darkly coloured. My specimens agree fully with the description given by *Beaumont* (1900).

Geographical distribution: Ireland, Isle of Man, coast of Cornwall and Naples.

10. **Prostoma ambiguum**, *Riches*.

Locality: Common at all dredging and trawling grounds in the Sound, in the neighbourhood of the Mewstone, and on the Rame-Eddystone Grounds, at a depth of 25–30 fathoms.

My specimens perfectly resemble those described by *Riches*. Length 10–15 mm., breadth 1 mm. Four brown eyes, the anterior pair of which is at least twice as large as the posterior. Colour pale yellow, with a reddish brown pigment developed on the dorsum. Head broadened and separated from the body.

Geographical distribution: Plymouth.

11. **Prostoma helvolum** (*Bürg.*). (Bürger. Monogr. Taf. III, Fig. 16.)

Locality: Mewstone Ledge and Rame-Eddystone Grounds. Depth 10-30 fathoms.

This yellow Nemertine reminds one very much of *Prostoma candidum*; it is very slender, however, attaining a length of nearly 2 cm., at a breadth of less than 1 mm. This, the presence of a shining white glandular area on the tip of the head in which the anterior pair of eyes is situated, and of a similar very conspicuous glandular spot in the anal region, characterize *P. helvolum*.

Geographical distribution: Naples.

12. *Prostoma quatrefagesi*, Bürg.

Locality: One specimen from New Grounds.

This species has no external markings. The colour is a bright yellow and the animal was quite transparent. On account of these characteristics it reminds one very much of *P. candidum*. However, the proboscis sheath does not extend into the posterior third part of the body. Moreover the number of the stylet sacs is quite unique amongst English *Prostoma*'s. Four pouches, containing at least twelve accessory stylets, are present.

Geographical distribution: Sicily and Naples.

13. *Prostoma herouardi*, Owner. (Bull. Inst. Océanogr. Monaco, 1908, No. 127. Pl. I, Fig. 1.)

Locality: From hulks in Plymouth Sound.

Once I got quite a number of these Nemertines from between *Laminaria* roots. Their length did not exceed 5 mm. and they certainly were not broader than $\frac{3}{4}$ mm. The colour is a light flesh colour, with a dark wine-red stripe on the dorsal surface, which extends from the tip of the head to the end of the tail. Four eyes, arranged so as to form a trapezium if the head is contracted, are situated in front of the brain. Cephalic grooves are not present on the dorsal surface of the head. The cerebral organs, however, are in front of the brain and are funnel-shaped. The proboscis sheath continues to the end of the body; proboscis with two stylet pouches, each containing two reserve stylets. Central stylets as long as the handle, which is not narrowed in the middle. The median dorsal red stripe is due to epithelial pigment.

Geographical distribution: Roscoff en Finistère.

GENUS *Oerstedtia*.

Body cylindrical; head perfectly continuous with the body. Four small eyes.

1. *Oerstedtia dorsalis* (Abildg.). (Bürger. Monogr. Pl. III, Figs. 30 and 36.)

Locality: Abundant everywhere in Plymouth Sound; Rame-Eddystone Grounds, and between weeds in Whitsand Bay.

I found several varieties of the species in dredgings; of these *O. dorsalis* var. *marmorata* was the most common; I found it everywhere in Plymouth Sound, at Whitsand Bay and in the Rame-Eddystone dredgings. From the last spot, however, I several times collected the variety *viridis* (Bürger, Monogr., Pl. III, Figs. 34 and 34a), and on one occasion a single specimen of var. *cineta* (Bürger, Monogr., Pl. III, Fig. 27).

Geographical distribution: Atlantic Ocean, with the Baltic, North Sea, the Channel and the Mediterranean.

UTRECHT, September, 1911.