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UNDERSØGELSER I GRØNLAND

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BIANCO LUNOS BOGTRYKKERI
1912

DANMARK-EKSPEDITIONEN

TIL GRØNLANDS NORDØSTKYST 1906—1908

UNDER LEDELSE AF

L. MYLIUS-ERICHSEN

BIND V

INDHOLD

IX.

ANNELIDS FROM THE DANMARK EXPEDITION

BY

HJALMAR DITLEVSEN

1911

In all 43 species of polychaetous Annelids have been brought home by the Danmark Expedition. Of these the great majority consist of the ordinary arctic, coastal forms and give the well-known picture of the fauna, which is claracterized chiefly by such species as *Harmothoe imbricata and nodosa, Nychia cirrosa, Flabelligera affinis, Pectinaria hyperborea, Thelepus circinnatus* etc. — Further, from a few localities in deeper water the Danmark has brought home on the one hand some less known aud rarer forms, e. g. *Harmothoe multisetosa* Moore and *Trophonia hirsuta* G. Ar. Hansen, on the other hand a single new species of the genus *Harmothoe.*

Among the commoner forms interest is attached to the species *Nereis zonata,* which occurs in large numbers, some of the individuals in the epitokous form, and also to *Scalibregma inflatum,* of which the variety *corethrura* set up by MICHAELSEN is present in quantities. It appears on examination, as also from some notes by the zoologist of the Expedition in the Journal of the Danmark, that the form in question is not a variety, but must be the hitherto unknown, epitokous form of *Scalibregma inflatum.*

Polynoidæ.

Nychia cirrosa Pall.

1865 Malmgren p. 58.
1883 Levinsen p. 195.
Localities:

St. 18.	Danmarks Havn		ca. 8 m	$^{24}/_{6}$ 06.
„ 45.	„	„	6—12 „	$^{8}/_{7}$ 06.
„ 57.	„	„	15—20 „	$^{8}/_{8}$ 07.
„ 62.	Stormbugt		10—20 „	$^{20}/_{8}$ 07.
„ 72.	„		30 „	$^{10}/_{9}$ 07.

A number of individuals and some fragments; all typical specimens.

Harmothoe multisetosa Moore.

Pl. XXVII, figs. 2, 5. Pl. XXX, figs. 16, 17, 19, 20.
1902 Moore p. 267, *Lagisca multisetosa.*
Locality: St. 104. 76° 6′ N.L., 13° 26′ W. L.; 200—250 m. $^{28}/_{7}$ 08.

From the above locality there are 3 fragments of a Polynoid, belonging in all probability to one individual and in this case certainly composing the whole animal. Thus, the elytra-bearing segments correspond with the rule: 1, 3, 4, 6 etc. up to segment 22, then the elytra are again found on the segments 25, 28 and 31. The whole animal consists of 39 bristle-bearing segments, with no elytra on the last 7 of these. From the measurements of the three available fragments the animal has a length of 26 mm.; the greatest breadth, which falls about the 10th segment, has been ca. 8. mm., including the parapodia; without parapodia the breadth measured at the same place is ca. 4 mm. The cephalic lobe is very deeply incised anteriorly, the projecting lateral portions are strongly arched and run out into a small, thin point. The form of these lateral portions most nearly resembles a couple of Nereid palps, but here the point is not detached as an independent joint. The two hindmost eyes lie relatively far from one another, near the posterior margin of the cephalic lobe, medially from the basal part of the lateral lobes. The

front eyes, which are somewhat larger than the posterior, lie more to the side on the boundary line of the dorsal surface of the cephalic lobe towards the sides. The median antenna is almost of the same length as the palps and ends, like these and the tentacular cirri, in a short, thread-like filament; the paired antennae are as nearly as possible double as long as the unpaired antenna's basal part and decrease evenly in thickness towards the point. The unpaired antenna and the tentacular cirri are sparsely beset with small, scattered cilia.

The elytra are partly of a triangular form with rounded corners, partly more elongated, reniform to egg-shaped. The surface is densely beset with small, conical bodies with a broad base; between these are long, pointed spines, which under a stronger magnifying power show an extremely fine, often slightly curved point. Along the posterior and outer margins of the elytra are a few scattered cilia. The arrangement of the spines is not the same in all the elytra; on the anterior they are to a great extent evenly scattered over the whole surface of the elytron, yet in such a way that they are largest and densest towards the posterior margin, as is shown in fig. 5. In the elytra further back they are restricted more to the middle, where they are arranged, as MOORE l. c. p. 268 writes, "notably in a broad irregular band, which passes across the middle of the scale in its long direction". In the specimen of the Danmark Expedition, however, it has not been possible to follow this condition in the elytra further back, as most of the elytra are wanting and almost all those present have fallen off and lie loose in the bottle.

The notopodial part of the parapodium is much less prominent than the neuropodial, which forms a vertical leaf with rounded margin and running out in the niddle into a sharply marked, cirrus-like prominence surrounding the ventral acicle. The dorsal cirrus is fairly long with long end-filament and thinly beset with cilia.

The bristles of the dorsum have the usual sword shape with transverse rows of spines, which increase evenly in length from the tip of the bristle downwards and again become successively smaller towards the basal part of the bristle. The uppermost dorsal bristles (most dorsal) are more strongly bent than the others; those in the middle are the straightest. — The ventral bristles are slender, with long shaft, beset with very long spines; the point of the bristle is somewhat strongly curved, with a long tooth under the point which bends somewhat outwards, away from the point of the bristle. The most ventral of these bristles have a comparatively short terminal leaf and seem all to have no tooth under the point; those nearest the notopodium have a long, narrow terminal leaf and their point is alnost straight (fig. 19).

As the present species shows a rather great resemblance in essential points to a form described by MOORE from Mc Cormick Bay under the name of *Lagisca multisetosa*, I have thought it best, even though there are distinct differences present, to refer it to this species, the more so as MOORE also seems to have had only one, by no means perfect specimen at his disposal. The difference in size is inconsiderable; MOORE's specimen measured 11 mm. (20 anterior segments); the corresponding piece of the present specimen measured ca. 10 mm. The dorsal plates resemble each other, being as MOORE writes: "thin, membranous, translucent and fairly adherent". The small, microscopic bodies on the scales seem to be quite the same in both forms, as will appear from a comparison of MOORE's figures with mine. In addition to these small bodies there are in both forms some larger pointed spines, which in the specimen of the Danmark Expedition, however, seem somewhat more prominent than in the species from Mc Cormick Bay; they are pretty well scattered over the whole upper surface of the elytra, most numerous on the hind margin, and the belt running across the scale in its long direction, which MOORE describes, is not so distinctly marked here; the single spines are very large and give the scale a characteristic appearance, which seems rather different from MOORE's form. I may add here, however, that these spines are not so numerous on all the scales, nor so long in proportion to the size of the scale, as in the example I have figured, which is one of the anterior. The "twelve or fifteen prominent soft papillae of various heights and with rounded summits", which MOORE mentions and figures in his form, are not at all present in the specimen of the Danmark Expedition. I do not attach much weight to this last feature, however; these papillae in MOORE's figure greatly ressemble those that are found in larger or smaller quantity in *Harmothoe imbricata* and *Harmothoe rarispina*, which are often quite wanting and occur on the whole so capriciously and in varying forms, that it is a question whether they really belong to the normal animal or are rather pathological formations of some kind or other, possibly of a parasitic origin.

With regard to the bristles, the resemblance is unmistakable. The remarkable form especially of the tooth under the point of the dorsal bristles, which I have described above, seems to me to speak for the specific identity of the two forms; the condition or relation will be seen distinctly on comparing MOORE's and my figures, and MOORE also refers to it in his description. He says: "the accessory process far out, running first parallel to the principal point and then diverging from it, very slender, sharp-pointed and long". — That MOORE calls the dorsal bristles "rather long and slender", whilst I

find the same bristles in the Danmark Expedition's specimen strong and too heavy to suit the description "slender", can hardly be ascribed very great importance. Altogether, I find the resemblances so great, that it is reasonable and justifiable to regard the two forms as specifically identical, so long as the material is no greater than it is.

Harmothoe imbricata (L.).

1865. Malmgren p. 66.

Localities:

St. 16b	Danmarks Havn	ca. 10 m.	17/8 06.
„ 18ea	„ „	ca. 8 „	24/8 06.
„ 20e	„ „	ca. 10—20 „	19/9 06.
„ 21	„ „	6—10 „	20/9 06.
„ 23	„ „	0—ca. 10 „	22/9 06.
„ 31	„ „		7/10 06.
„ 33	„ „	ca. 10 „	13/10 06.
„ 43	„ „	6—10 „	1/7 07.
„ 45	„ „	6—12 „	8/7 07.
„ 50	„ „	8—12 „	22/7 07.
„ 57	„ „	15—20 „	8/8 07.
„ 62	Stormbugt	10—20 „	20/8 07.
„ 65	Danmarks Havn	10—20 „	25/8 07.
„ 66	Stormbugt	30 „	28/8 07.
„ 68	Off Cape Bismarck	40—60 „	2/9 07.
„ 72	Stormbugt	30 „	10/9 07.

Numerous specimens are present from the above stations of the usual, well-known varieties which occur in this species.

Harmothoe rarispina (Sars).

1860. *Polynoe rarispina* Sars p. 60.

1865. *Lagisca rarispina* Mgrn. p. 65.

Localities:

St. 65	Danmarks Havn	10—20 m.	25/8 07.
„ 72	Stormbugt	30 „	10/9 07.
„ 72c	„	16—20 „	9/9 07.

This form is relatively scarce, only 4 specimens in all occurring. One individual is remarkable for its size, being 60 mm., not including the extended proboscis.

Harmothoe Sarsi (Kinb).

1865 Malmgren p. 75.

Locality:

From St. 31, Danmarks Havn, there is a defective, badly preserved specimen.

Harmothoe nodosa (Sars).

1865 Malmgren p. 61, *Eunoe Oerstedi.*
1865 Malmgren p. 64, *Eunoe nodosa.*
1879 Théel p. 7, *Polynoe scabra.*
Locality:
St. 63, Stormbugt, 10—20 m. $^{20}/_{8}$ 07.
Some fragments of rather large specimens.

Harmothoe villosa Mgrn.

1865 Malmgren pp. 79—80.
Locality:
St. 15. 76° 35′ N.L., 18° 26′ W. L. 150 m. $^{14}/_{8}$ 06.

Of this species there is a fragment consisting of the first 9 segments. It is badly preserved and all the elytra are wanting. That it belongs to this species, however, is shown sufficiently clearly by the bristles, the form of which is very characteristic and agrees exactly with the description and figures of MALMGREN.

Harmothoe capitulifera n. sp.

Pl. XXVII, figs. 1, 3, 4, Pl. XXXI, figs. 25, 26, 27, 28, 29.

So far as I can see, this species has not hitherto been described. It seems to me to show most resemblance to a form described by AUGENER under the name of *Eunoe Dybowskyia (Eunoe nodosa* M. Sars var. *Dybowskyi)*, but close examination shows that it cannot be referred to this form. I obtained certainty of this through friendly information from Mr. AUGENER, to whom I sent a preparation of an elytron and a parapodium.

The material available consists of three fragments, which all, so far as I can see, belong to one individual.

The cephalic lobe is somewhat broader than long, the proportion of length to breadth being as 7 to 9. Anteriorly it has a broad and very deep incision; each of the two lateral halves run out into a rounded, papilla-like terminal part which is strongly curved out to the side. The hindmost eyes are close to the posterior margin of the head, widely separated from one another, each of them almost in a straight line from the points of the lateral lobes, so that lines drawn from these and touching the outer periphery of the two eyes would be almost parallel. The front eyes lie on the sides of the head, so that both are not fully visible at the same time, when the head is viewed from above. The unpaired antenna is wanting; its basal part, which is present, is fairly thick and has almost the same length as the two paired antennae, not including the terminal filament of the latter, which is just as long as the antenna itself. The

palps are very thick and plump and end in quite a short filament. Each of the tentacular cirri ends with a filament which is almost a third part of the whole length of the cirrus. Antennae and tentacular cirri are densely beset with large, thread-shaped papillae, each of which is slightly swollen at the tip.

The few elytra present are regularly reniform; their surface is beset with rather large, head-shaped bodies, distributed in the following manner: The largest form a dense group on the hindmost lobe of the scale. They are here so dense that they almost touch one another. There is also a dense row along the whole outer margin of the scale, the hindmost bodies in which are the largest, becoming successively smaller towards the front end of scale. On the remaining part of the surface of the scale the bodies are to some extent evenly distributed; they are largest nearest to the outer margin of the scale and become gradually smaller in towards the middle, until those towards the inner margin are quite small. — Examining these head-shaped bodies under a higher magnification we find, that they are more or less globular and attached to the surface of the scale by a short, thick neck. They are beset with conical prominences, which are nowhere pointed however, but everywhere abruptly truncated. How far these prominences have originally been true spines, is difficult to determine with certainty; if so, they have everywhere been broken off in the elytra present, as they do not run out to a point at any place; there is one feature, however, which might indicate that they are not broken or rubbed spines, namely, that in the outermost end of several of these prominences there is a hook, by which the point becomes slightly double. This condition recalls the manner in which the small bodies end in *Nychia Amondseni* Mgrn. (Malmgren 1867, T. I, fig. 4E). In other words, the point of the prominences mentioned does not resemble a broken surface (see fig. 3).

The parapodium is low, the notopodial part being very little prominent; the acicles lie close to one another and are comparatively heavy in their proximal half; the cirri are short and beset with papillae. — The ventral bristles have no tooth under the point, with exception of some few — probably only two on the whole — nearest the dorsum, which run out into a straight point; the end-leaf of these is also rather different in form from the remaining ventral bristles, being much longer and narrower (fig. 29). The central, ventral bristles have a rather long, slightly bent point; where the tooth-equipment of the end-leaf begins, there is uppermost a single tooth or a couple of single, large, pointed teeth; just under these begin the usual transverse rows of spines, which decrease more or less evenly

in length downwards towards the proximal part of the end-leaf; they terminate a little above the place where the latter has its greatest breadth (fig. 28). — The dorsal bristles, all of which are sword-shaped, are somewhat different according to their position in the parapodium. The most ventral are the least bent, and in regard to the tooth-equipment these are rather different from the others; on each side they are provided with two rows of long, straight, pointed spines, which as it were conclude the ordinary tooth-equipment in transverse rows (fig. 25). In the remaining dorsal bristles these spines are bent teeth, which are curved up towards the point of the bristle (fig. 27). The bristles highest up on the dorsum are very strongly bent; in this regard they recall some of the bristles which are found in *Nychia cirrosa;* in *Nychia,* however, there are also very thin bristles running out into an almost thread-like, long, flexible point, which is not the case in this form, which is a typical *Harmothoe* (*sensu* LEVINSEN).

Sigalionidæ.

Pholoe minuta (Fabr.).

1865. Malmgren p. 89.

Locality:

St. 18.	Danmarks Havn	ca. 8 m.	$^{24}/_{8}$	06.
„ 23.	„ „	0—10 „	$^{22}/_{9}$	06.
„ 45.	„ „	6—12 „	$^{8}/_{7}$	07.
„ 59 b.	„ „	upper layers	$^{14}/_{8}$	07.
„ 69.	Stormbugt	20—30 m.	$^{2}/_{9}$	07.

Only a single specimen is present from each of the stations mentioned.

Phyllodocidæ.

Eteone arctica Mgrn.

1867. Malmgren p. 27.

Localites:

St. 23.	Danmarks Havn	0—10 m.	$^{22}/_{9}$	06.
„ 31.	„ „	0—10 „	$^{7}/_{10}$	06.

Some few specimens are present from these stations.

Eteone flava Fabr.

1865. Malmgren p. 102.

Locality:

St. 18.	Danmarks Havn	ca. 8 m.	$^{24}/_{8}$	06.

Two specimens.

Nephthydæ.

Nephthys Malmgreni Théel.

1879. Théel, p. 26.

Locality:

St. 98 d. 77° N. L., 28½° W. L. 300 m. $^{22}/_{7}$ 08.

One specimen. So far as I can see, this form has not hitherto been met with at Greenland. According to Théel it is very common in the Kara Sea, where it is said to occur at least just as commonly as *N. ciliata*. It is also known from Spitzbergen, Finmark and Bering Sea, and thus seems to have a wide distribution within the arctic region.

Glyceridæ.

Glycera capitata Ørst.

1843. Ørsted p. 196.

1883. Levinsen p. 62.

Locality:

St. 96. 76¾° N. L., 18° W. L. (off Maroussia) 160—178 m. $^{22}/_{7}$ 08.

One specimen.

Onuphidæ.

Onuphis conchylega Sars.

1867. Malmgren p. 66.

Localities:

St. 15. 76° 8′ N. L., 18° 26′ W. L. ca. 10 m. $^{17}/_{8}$ 06.
„ 99. 77° — 18½° — 300 „ $^{22}/_{7}$ 08.
„ 104. 76° 6′ — 13° 26′ — 200—250 „ $^{28}/_{7}$ 08.

One specimen is present from each of the above localities. — In the specimen from St. 99 the tube is beset — instead of the ordinary stones — with a species of conical Foraminifer; here and there is a single stone and at one place there is a branch of a Bryozoa colony, which is so long that it reaches outside the tube to both sides.

Lycoridæ.

Nereis zonata Mgrn.

Pl. XXVIII, fig. 6. Pl. XXX, figs. 18, 22.

1867. Malmgren p. 46.

1898. Michaelsen p. 124. *Nereis arctica*.

Localities:

St. 48. Danmarks Havn 6—12 m. $^{18}/_{2}$ 07.
„ 56. „ „ 10—15 „ $^{28}/_{7}$ 07.

St. 62.	Stormbugt	10—20 m.	$^{20}/_{8}$ 07.
„ 63.	„	10—20 „	$^{20}/_{8}$ 07.
„ 70.	Danmarks Havn	20—30 „	$^{4}/_{9}$ 07.
„ 71.	Off Cape Bismarck	15—20 „	$^{4}/_{9}$ 07.
„ 72.	Stormbugt	30 „	$^{10}/_{9}$ 07.

This species is very abundantly represented; there are specimens from all the stations mentioned, several from some of them and many from one, namely St. 63. There are large and small individuals and among them 4 epitokous forms, 3 of which were taken in July, the 4th in August. Two come from Danmarks Havn and were taken respectively on the 18th and 21st of July 1907 among the Laminaria at a depth of ca. 8—16 m. The third specimen was taken in Stormbugt, pelagic among the drift-ice on the surface of the water, 0—1 m., and the fourth lastly comes from Hvalrosodden, where it was taken near the beach drifting past in the current on August 20th 1906. Two are females and the other two males. The two females measure respectively 89 and 72 mm. in length; both lack some of the last segments and have perhaps been about 1 cm. longer. The length of the one male is 53 mm. and is complete, the second, which like the females lacks some segments, measures 38 mm. The material is naturally too small to be able to draw conclusions with regard to a difference in size between the two sexes. Counting the untransformed parapodia I found 21 in both the females; MICHAELSEN has 20, stating that "21te Ruder zeigt die Umbildung fast vollendet". It is possible that this feature varies somewhat in different individuals, as the transition is not very abrupt between the untransformed and transformed parapodia but extends over ca. 2—3 segments. In the males I count 17 untransformed parapodia and find the 18th practically completely transformed. The male individuals are more strongly coloured than the females; how far this will prove to be the rule, I can naturally not say. A second difference between the sexes seems to lie in the size of the eyes, these in the males seeming larger and more prominent. The first pair of eyes seem to be on the whole larger in both sexes. The ventral margin of the dorsal cirrus is toothed in the male, but not in the female. This, which seems to be the general rule in the epitokous forms of the *Nereis* species, thus applies also to this form.

In my report on the polychaetous Annelids of the "Fram" I have stated, that it would possibly prove, that the two nearly allied forms *N. zonata* and *N. pelagica* "durch Zwischenformen allmälich in einander übergehen", and I based this statement, among other things, on some individuals in which the light transverse belts were very indistinct. After going through the more copious material of *N. zonata*

of the Danmark Expedition, I must confess to having no longer any doubt, that the two forms mentioned are separate species, though they are very closely related. On well-preserved specimens they are in general very easily distinguished even from the habit; badly preserved specimens may offer some difficulty, but in such cases a close examination of the bristles will lead to a definite result.

In his work on the Greenland Annelids, W. MICHAELSEN mentions a female, epitokous specimen of *N. zonata* and is of the opinion that it is the same as *Heteronereis arctica* Ørsted. It is not easy to say, how far MICHAELSEN is right here; there are not many points of support for such a view in ØRSTED's description, to my mind. ØRSTED writes that "the head is relatively very large". This does not seem to me to agree; rather large we might admit; in any case it is indeed a relative expression based on an estimate, but ØRSTED gives a measure: the head should be "just as long as the four following rings". This at any rate does not agree with the individuals brought home by the Danmark Expedition, in which the length of the cephalic lobe is as nearly as possible equal to the total length of the first two rings. Comparing this with MALMGREN's figure of the atokous *N. zonata* the length of the cephalic lobe proves to be shorter than the length of the two first segments together. Comparing the size of the head in the atokous and epitokous individuals of *N. zonata*, I can find no noteworthy difference. — ØRSTED's figure of the parapodium does not agree with the condition in *N. zonata*, especially not in the case of the untransformed parapodia (ØRSTED l. c. fig. 65). All four parapodial lobes are here evenly and uniformly rounded; this does not appear in my specimens, where the lobes are pointed, triangular in form. Even if there is the possibility that ØRSTED's drawing is not very correct, yet the resemblance between his figure and the condition in *N. zonata* is far too slight to give any support to MICHAELSEN's view. It seems to me, that ØRSTED's figure agrees far better with the condition in *Nereis pelagica*, of which I have a large material from the Færoes. In the case of this form I have also used the opportunity for a comparison of the pigmentation — having in mind the question of the specific identity of *N. zonata* epit. and *Heteronereis arctica* Ørsted — and I have found great individual differences, both in regard to the tone of colour, which may vary from pale reddish to a strong blue-violet, and to the distribution. I believe, that we should be careful in drawing conclusions with regard to similarity or dissimilarity in this connection. For me the matter stands as follows. There is very little probability, that *Heteronereis arctica* Ørsted and *N. zonata* epitok. are identical, and it is impossible to prove that they are. MALMGREN's name *N. zonata* should therefore

be retained. The only thing which in my opinion could definitely settle the quéstion, would be ØRSTED's original specimens, but these are unfortunately quite lost.

Regarding the relation between the two species *N. pelagica* and *N. zonata*, I am of the opinion after close comparison, that the following differences may be regarded as constant. *N. pelagica* never has light transverse bands, which are more or less conspicuous in *N. zonata*. In *N. pelagica* the parapodial lobes are evenly rounded, in *N. zonata* triangular, running out to a broad point. In *N. pelagica* the end-leaf of the bristles provided with a short terminal joint are shorter and more curved than in *N. zonata*.

Hesionidæ.

Castalia Fabricii (Mgrn.).

1867. Malmgren p. 32, *C. arctica*.

1878. Théel p. 37.

Localities:

St. 18.	Danmarks Havn	ca. 8 m.	$^{24}/_{8}$	06.
„ 23.	„ „	0—10 „	$^{22}/_{9}$	06.
„ 31.	„ „	0—10 „	$^{7}/_{10}$	06.
„ 45.	„ „	6—12 „	$^{8}/_{7}$	07.

Several specimens are present from these stations.

Syllidæ.

Syllis Fabricii Mgrn.

1867. Malmgren p. 44.

Locality:

St, 91. Stormbugt 2—12 m. $^{12}/_{6}$ 08.

There is only one specimen of this species, which was also found by the Sverdrup Expedition and which I determined as belonging to *Syllis Fabricii* Mgrn. I have learnt later, that there is no specimen of this species in the Stockholm Museum and that it would thus be impossible to make certain of the identity. I follow LEVINSEN here however, at least provisionally, who has retained MALMGREN's *S. Fabricii* for the same Greenland species (LEVINSEN I p. 248).

Syllis incisa Fabr.

1867. Malmgren p. 44.

Locality:

St. 57 a. Danmarks Havn 16—20 m. $^{8}/_{8}$ 07.

There is one specimen from this locality.

Spionidæ.

Spio filicornis Fab.

1867. Malmgren p. 91.

Locality:

St. 31 Danmarks Havn 0—10 m. $^{7}/_{10}$ 06.

One specimen.

Ariciidæ.

Aricia Cuvieri Aud. & Edw.

1833. Annales des sc. nat., Vol. 19 p. 397.

1873. Sars p. 31.

Localities:

St. 23. Danmarks Havn 0—10 m. $^{22}/_{9}$ 06.

„ 42. „ „ 0—4 „ $^{29}/_{6}$ 07.

A number of specimens.

Aricia armiger Mull.

1867. Malmgren p. 72.

Localities:

St. 18. Danmarks Havn ca. 8 m. $^{24}/_{8}$ 06.

„ 45. „ „ 6—12 „ $^{8}/_{7}$ 07.

A number of specimens.

Scalibregmidæ.

Scalibregma inflatum Rathke.

Pl. XXVIII, fig. 7, 8, 9. Pl. XXX, fig. 21.

1843. Rathke H.

1844. Ørsted A. S.

1846. Sars M. p. 91.

1859. Danielssen D. C.

1867. Malmgren p. 186.

1879. Théel Hj. p. 51.

1883. Levinsen p. 133.

1885. Mc Intosh p. 359.

1892. Marenzeller E. von.

1894. St. Joseph de p. 103.

1898. Michaelsen, W. p. 127.

1902. Moore p. 275.

1904. Ashworth.

1908. Mc Intosh p. 379.

Between 20 and 30 specimens of this form are present in the material. On comparing these individuals with the other material of *Scalibregma* in the Museum, I have found that they are in every

respect typical *Scalibregma inflatum;* only the bristles are extremely long, silky and soft. In this regard they agree with MICHAELSEN's var. *corethrura.* They are all large individuals, of about 40 mm. in length on an average. The only specimens of this species in the Museum, which exceed these in size, are some individuals from the Kara Sea, taken by TH. HOLM on the Dijmphna; the largest of the latter has a length of 85 mm., a size which surpasses all the statements I have seen. In his paper on the anatomy of the *Scalibregma* ASHWORTH states, that his largest specimen, which measured 56 mm., "is one of the largest specimens yet recorded". Compared with this the specimen from the Kara Sea is a perfect giant. I may remark, however, that my measurements do not pretend to be completely accurate, as the state of preservation of the animal did not permit of exactness; a portion of the posterior region for ca. 1 cm. is thin and pulpy, but I have taken account of this and measured the length in such a way, that my statement by no means exceeds the actual length. The greatest thickness of the same individuals is ca. 15 mm. The second specimen from the Kara Sea is a good deal smaller, but an exact measurement can still less be given here, as a large piece of the posterior part of the animal is wanting, probably some cm. The part remaining is ca. 40 mm. That the size of this species varies within very wide limits, as ASHWORTH l. c. p. 245 notes, I can confirm to the fullest extent from the material in the Museum here, as also that the species seems to have a surprising power to adapt itself to different conditions. In the smaller, enclosed waters with slight salinity the individuals seem to be very small. Specimens are present from the Danish waters, the Skagerak, Kattegat, Hellebæk and Baltic, and of these the Skagerak individuals are the largest whilst the smallest come from the Baltic.

In the Danmark Expedition's material there are some well-preserved specimens, which seem also to have kept their colour very well. This in all individuals is distinctly yellow, a mixture of sulphur yellow and light ochre. On the distended parts of the body the colour is lighter, to almost whitish, and the males are on the whole lighter than the females, especially on the parts where the genital products shine through. The spermatozoa are white, namely, whilst the eggs are distinctly yellow, in colour perhaps a little darker and a little more reddish that the outer skin. The projecting proboscis shows a characteristic, bluish-gray colour, which is also found on the anal cirri.

Of greatest interest, however, to my mind, in the specimens brought home by the Danmark Expedition, is the manner in which they were taken. In two cases it is stated, that they were taken

pelagically at the side of the ship on the 12th and 13th of September 1907, and for the rest, that they were taken *pelagically* under the ice or frozen-in in this, on the 24th of September 1906. On looking through the Danmark's Journal, further, I find the following remarks by the zoologist of the Expedition, which I cite *in extenso*.

"Many bristle-worms are met with frozen-in in the ice; they lie right on the top or as much as ca. 3 inches down; in the first case they are as a rule dead, in the last case the water round about them is not frozen, even though it may be so above them; they then lie and twist about in a hole with water or broken ice when the overlying ice is removed; the same worms are also seen very commonly wriggling about in all layers of water under the ice, or they are attached to the underside of this by their one end; they collect especially at places where refuse from the ship is frozen-in in the ice; or they attach themselves in the same manner to the body of the ship and wriggle along this".

This account of these animals in no way agrees with the pictures we are accustomed to form regarding the mode of life of the *Scalibregma;* they live usually in the sea-bottom, in a similar manner to *Arenicola* and dig down to a depth of ca. "2 feet", as DANIELSSEN already remarked. That they are able to swim, however, is also noted by the same author, as he writes, that they swim "with the greatest activity and move about whilst swimming exactly like a leech".

The phenomenon described by the zoologist of the Danmark Expedition cannot, naturally, be regarded as an ordinary chance case of swimming. We have here innumerable individuals leaving their usual abode and moving up into the upper water-layers, and on examining them we find, in the first place, that they are found to be streaming full of sexual products, and in the second place to be transformed in a suitable manner, as they are provided with long, swimming bristles. The phenomenon is thus similar to what we know already in the epitokous forms of other Annelid groups. That no eyes seem to be formed in *Scalibregma*, is probably not so important and possibly something characteristic of this form; I may just mention, however, that some pigment spots occur in a straight row on the upper side of the dorsal cirri, spots which however are also found in the typical, untransformed form of *S. inflatum*.

It is my belief, therefore, that MICHAELSEN's var. *corethrura* is not a variety, but the epitokous, sexually altered form of *Scalibregma inflatum*.

The phenomenon the zoologist of the Danmark Expedition has observed, indicates that the sexual transformation and spawning

migration in this species takes place at a definite time of the year, that is, in the regions discussed here, in the month of September.

Chloræmidæ.

Brada granulata Mgrn.

1867. Malmgren p. 85.

Locality:

St. 99. 77° N. L., 18½° W. L. 300 m. $^{22}/_{7}$ 08.

One specimen.

Flabelligera affinis Sars.

Localities:

St. 46.	Danmarks Havn	8—12 m.	$^{15}/_{7}$	07.
„ 48.	„ „	8—12 „	$^{18}/_{7}$	07.
„ 49.	„ „	8—12 „	$^{21}/_{7}$	07.
„ 50.	„ „	8—12 „	$^{22}/_{7}$	07.
„ 57.	„ „	15—20 „	$^{8}/_{8}$	07.
„ 65.	„ „	10—20 „	$^{25}/_{8}$	07.
„ 71.	Off Cape Bismarck	15—20 „	$^{4}/_{9}$	07.

One or several specimens from the above localities. They are large animals on the whole, about 50 mm. long, a few reach a length of 60—70 mm.

Trophonia hirsuta Ar. H.

Pl. XXIX, fig. 11, Pl. XXXI, figs. 23, 24.

1879 Ar. Hansen p. 9.

1908 Mc Intosh p. 541.

There is a very small specimen in the collection, ca. 6 mm long. To make certain of the identity of the species, I have had material on loan from the Christiania Museum aud there is scarcely any doubt, that the specimen belongs to the species mentioned. The differences from the Norwegian specimens, which come from Vadsø, are not greater than might be due to the small size of the individual, perhaps also the locality. The red and reddish-yellow colour, which is distinct in the Norwegian specimens and which is also mentioned by Mc Intosh, is not conspicuous in the individual of the Danmark Expedition, which is a uniform muddy gray over the whole. The dorsal, filiform papillæ seem also somewhat longer in proportion to the size of the animal than in the Norwegian specimens. The bristles agree very well with the figures given by Mc Intosh and G. Ar. Hansen, but the indications of the joints in the ventral bristles are scarcely so conspicuous. Mc Intosh figures a fragment of a specimen from Finmark; I have taken the opportunity to give a figure of the form of the specimen of the Danmark Expedition, Pl. XXIX, fig. 11.

Capitellidæ.

Capitella capitata Fabr.

1867. Malmgren p. 97.

Locality:

St. 23. Danmarks Havn 0—10 m. $^{22}/_{9}$ 06.

A single specimen.

Maldanidæ.

Clymene affinis Sars.

1871. G. O. Sars p. 412.

1906. Ivar Arwidsson p. 177. *Praxitella affinis.*

Locality:

St. 18. 76° 47′ N.L., 18° 45′ W.L. 0—4 m. $^{25}/_{8}$ 06.

There is a single specimen, which seems to agree with the present species. It has not hitherto been known however from arctic waters. The northernmost place from which it has been recorded is Bergen (Arwidsson); it also occurs as far south as Aarhus Bay (Tauber, Ann. Dan. p. 124). The depths given range from 25—250 m. The specimen of the Danmark Expedition was taken in 0—4 m. The bottom is given as "mud with algae".

Amphictenidæ.

Pectinaria hyperborea Mgrn.

1865. Malmgren p. 360.

Localities:

St. 62. Stormbugt 10—20 m. $^{20}/_{8}$ 07.
„ 66. „ 10—20 „ $^{20}/_{8}$ 07.
„ 70. Danmarks Havn 20—30 „ $^{4}/_{9}$ 07.

There are 5 very large specimens in the collection; the tubes have an average length of 60 mm.; further, there is a single, empty tube, which reaches a length of 86 mm.

Ampharetidæ.

Ampharete Goësi Mgrn.

1865. Malmgren p. 364.

Localities:

St. 18. Danmarks Havn ca. 8 m. $^{24}/_{8}$ 06.
„ 21. „ „ 6—10 „ $^{20}/_{9}$ 06.
„ 62. Stormbugt 10—20 „ $^{20}/_{8}$ 07.

7 specimens in all. A couple of specimens were *in situ* in their tubes, which were composed of parts of plants and to a certain

extent resembled the tubes of certain spring fly larvae, which occur in freshwater.

Terebellidæ.

Scione lobata Mgrn.

1865. Malmgren p. 383.

Localities:

St. 63. Stormbugt 10—20 m. $^{20}/_{8}$ 07.
„ 95a. Sound between Renskaer and Maroussia ca. 50—100 „ $^{19}/_{7}$ 08.
„ 96. $76\frac{3}{4}°$ N. L., 18° W. L. (off Maroussia) 160—178 „ $^{22}/_{7}$ 08.

A number of specimens are present from the above localities; but the number is comparatively small when we consider that this species, under favourable conditions, may occur in large quantities. Nor are the individuals large.

Terebellides Stroemi Sars.

1865. Malmgren p. 398.

Localities:

St. 31. Danmarks Havn 0—10 m. $^{7}/_{10}$ 06.
„ 42. „ „ 0—4 „ $^{29}/_{6}$ 07.

3 specimens from St. 42, a fragment from St. 31.

Thelepus circinnatus (Fabr.).

1865. Malmgren p. 387.

Localities:

St. 46. Danmarks Havn 8—12 m. $^{15}/_{7}$ 07.
„ 48. „ „ 8—12 „ $^{18}/_{7}$ 07.
„ 49. „ „ 8—12 „ $^{21}/_{7}$ 07.
„ 50. „ „ ca. 10 „ $^{22}/_{7}$ 07.
„ 57. „ „ 15—20 „ $^{8}/_{8}$ 07.
„ 65. „ „ 10—20 „ $^{25}/_{8}$ 07.
„ 71. Off Cape Bismarck 15—20 „ $^{4}/_{9}$ 07.

This species is present in great quantities. A couple of large bottles have been brought home quite full with this species. The tubes, which are made of sand and Foraminifera, are all twisted about amongst each other and seem to have covered the bottom in a thick layer at the places where they were found. The Sverdrup Expedition brought home a couple of bottles with quite similar material of this species from "Gaasefjorden" and adjacent regions.

Amphitrite cirrata Müll.

1865. Malmgren p. 375.

Locality:

St. 60. Danmarks Havn 5—20 m. $^{14}/_{8}$ 07.

A single specimen from this locality.

Laphania Boecki Mgrn.

Pl. XXIX, figs. 10, 12, 13, 14, 15.

1865. Malmgren p. 386.

Locality:

St. 18. 76° 47′ N.L., 18° 45′ W.L. 0—4 m. $^{25}/_{8}$ 06.

There is only one specimen, which lacks the hindmost rings. There is no doubt regarding its identity; through the kindness of Prof. Théel I have had on loan the single specimen preserved in Riksmuseet of Stockholm, presumably the "specimen unicum mancum", which Malmgren mentions from the Finmark. A few months ago Dr. Wollebæk from Christiania Museum was here and asked permission to examine the animal. The drawings he then made of it have been given me with the greatest friendliness for publication in the present paper.

The Danmark Expedition's specimen is a good deal smaller than Malmgren's; it is only 35 mm. in length. Owing to its state of preservation it is not possible to state with certainty the number of the segments present; they are about 45. — The cephalic lobe, the dorsal aspect of which is slightly arched, is provided with a somewhat prominent margin, which has a straight edge and is beset with ca. 8 small rounded papillae, which give it a slightly wrinkled appearance. The mouth segment is rather large and prominent. On the second to the fifth bristle-bearing rings there are rudimentary ventral parapodia, which, so far as I can see, contain no bristles. These rudimentary parapodia are not mentioned by Malmgren in his description, but they are distinct in his figure (1867. Pl. XII, fig. 68). Ventral bristles begin on the 7th bristle-bearing ring.

Sabellidæ.

Chone infundibuliformis Kr.

1865. Malmgren p. 404.

Localities:

St. 63. Stormbugt 10—20 m. $^{20}/_{8}$ 07.

„ 69. „ 20—30 „ $^{2}/_{9}$ 07.

„ 95. Sound between Renskær and Maroussia ca. 50—100 „ $^{19}/_{7}$ 08.

Several specimens from the stations mentioned; unfortunately almost all lack the tentacular crown, only two individuals are entire.

Dasychone infarcta (Kr.).

1865. Malmgren l. c. p. 403.

1856. Kröyer p. 21.

1909. Hj. Ditlevsen p. 19.

Only one specimen has been brought home; it agrees well with the specimens obtained by the Sverdrup Expedition in "Gaasefjorden". The size however is very different; whilst some of the Sverdrup Expedition's specimens measured 115 mm. in length, that of the Danmark Expedition is only 52 mm. A feature on which in this case no great weight can be laid, as it probably comes from the difference in size, is that whilst the tentacular crown in the large individuals from Gaasefjorden is contained 3 to 4 times in the length of the animal, here in this specimen of 52 mm. it measures 24 mm.

Serpulidæ.

Apomatus globifer Théel.

1879. Théel p. 66.

Localities:

St. 15. 76° 35′ N. L., 18° 26′ W. L. 150 m. $^{14}/_{8}$ 06.
„ 16b. 76° 47′ N. L., 18° 45′ W. L. $^{17}/_{8}$ 06.
„ 96. 76$\frac{3}{4}$° N. L., 18° W. L. Off Maroussia 160—178 „ $^{22}/_{7}$ 08.
„ 103. 77° 8′ N. L., 16° W. L. 220—280 „ $^{27}/_{7}$ 08.

Single specimens; but from the last two stations only empty tubes.

Serpula vermicularis L.

1867. Malmgren p. 120.

Locality:

St. 103. 77° 8′ N. L., 16° W. L. 220—280 m. $^{27}/_{7}$ 08.

A single specimen, attached to a hydroid branch; on the *Serpula* tube again a couple of specimens of *Spirorbis borealis*.

Pomatocerus triqueter L.

1867. Malmgren p. 121.
1884. Levinsen p. 200.

Localty:

St. 72. Stormbugt 30 m. $^{10}/_{9}$ 07.

A single empty tube.

Spirorbis spirillum L.

1863. Mørch p. 92.
1884. Levinsen p. 204.

Localities:

St. 16. 76° 47′ N. L., 18° 45′ W. L. ca. 10 m. $^{17}/_{8}$ 06.
„ 35. Danmarks Havn 10—15 „ $^{11}/_{10}$ 06.
„ 36. „ „ 10—15 „ $^{13}/_{10}$ 06.

Many specimens attached to Laminaria and other algae.

Spirorbis Verruca Fabr.

1863. Mørch p. 85.

1884. Levinsen p. 203.

Locality:

St. 103. 77° 8′ N. L., 16° W. L. 220—280 m. $^{27}/_{7}$ 08.

A single specimen from this locality.

Spirorbis borealis D.

1863. Mørch p. 83.

1884. Levinsen p. 203.

Locality:

St. 18. Danmarks Havn ca. 8 m. $^{24}/_{8}$ 06.

Numerous specimens on algae.

Hydroides norvegica Gunn.

1867. Malmgren p. 120.

1884. Levinsen p. 201.

Locality:

St. 103. 77° 8′ N. L., 16° W. L. 220—280 m. $^{27}/_{7}$ 08.

A couple of specimens from this locality.

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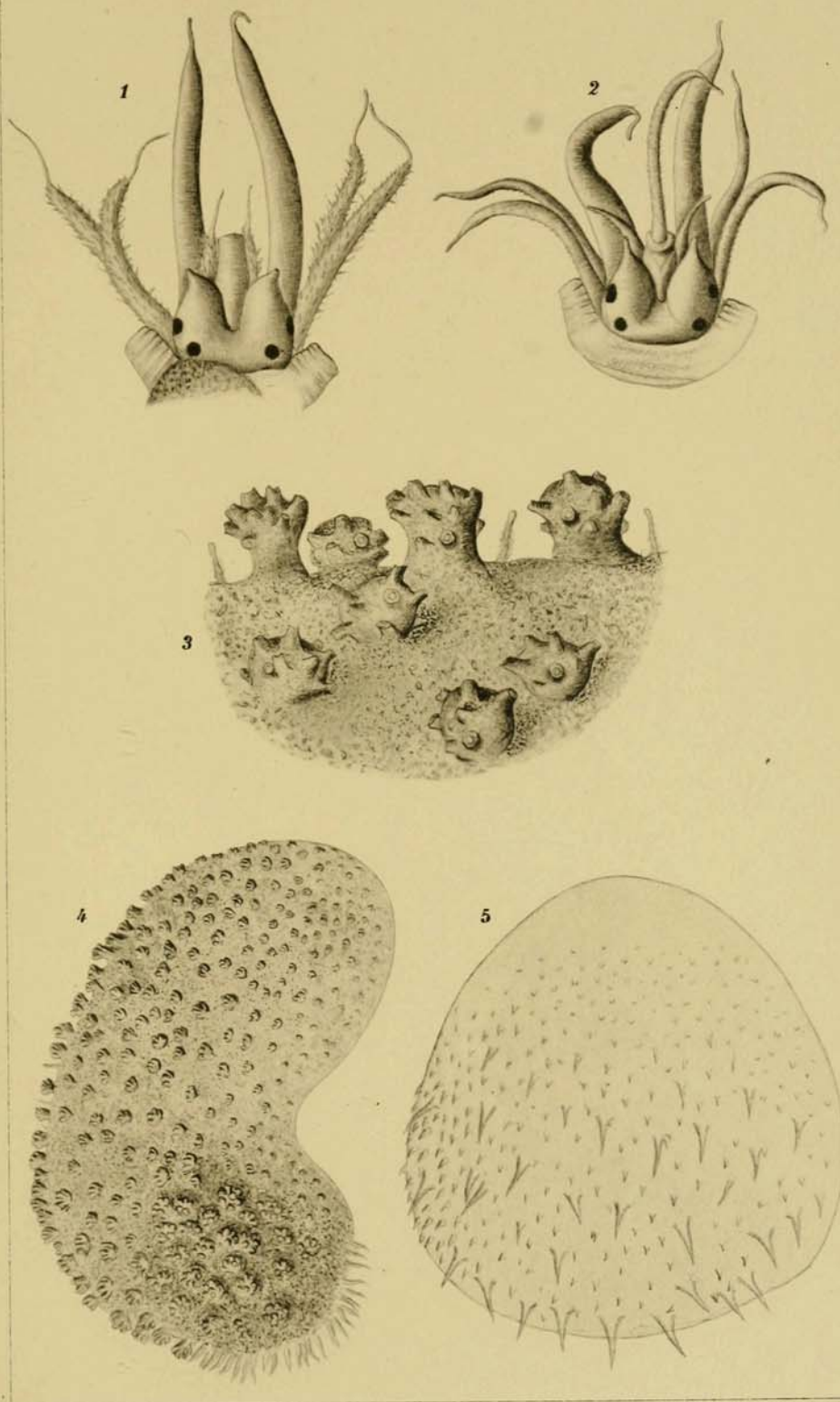
Plate XXVII.

PLATE XXVII.

Fig. 1. Harmothoe capitulifera n. sp. Head.
— 2. Harmothoe multisetosa, Moore. Head.
— 3. Harmothoe capitulifera n. sp. Part of an Elytron, showing the head-shaped bodies.
— 4. Harmothoe capitulifera n. sp. Elytron.
— 5. Harmothoe multisetosa, Moore. Elytron.

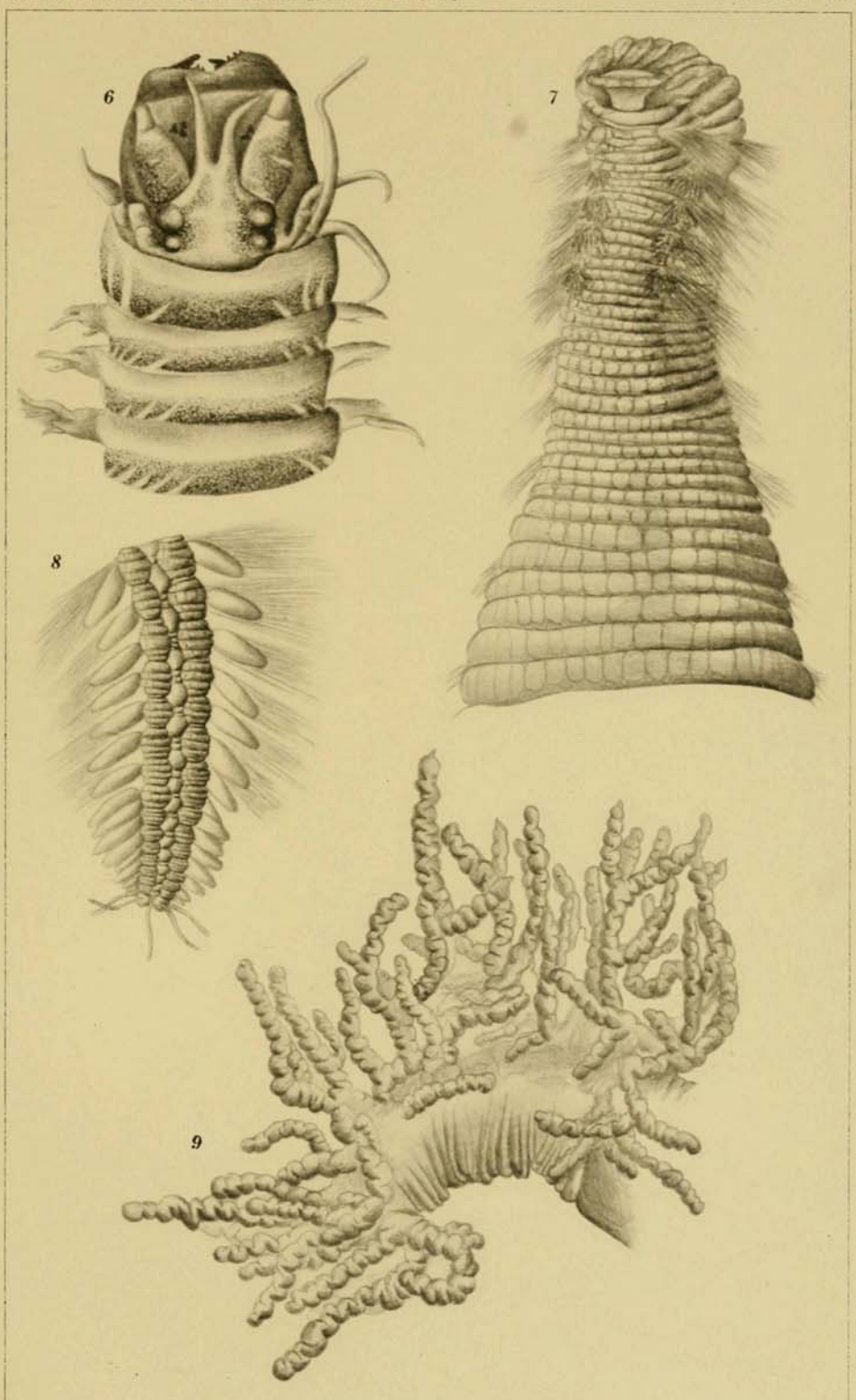


Hj Ditlevsen del. *Pacht & Crone phototyp.*

Plate XXVIII.

PLATE XXVIII.

Fig. 6. Nereis zonata, Malmgren. ♂ Front part.
— 7. Scalibregma inflatum Rathke. Epitokous form. Front part.
— 8. Scalibregma inflatum Rathke. Epitokous form. Tail of the same specimen.
— 9. Scalibregma inflatum Rathke. Epitokous form. Gill.

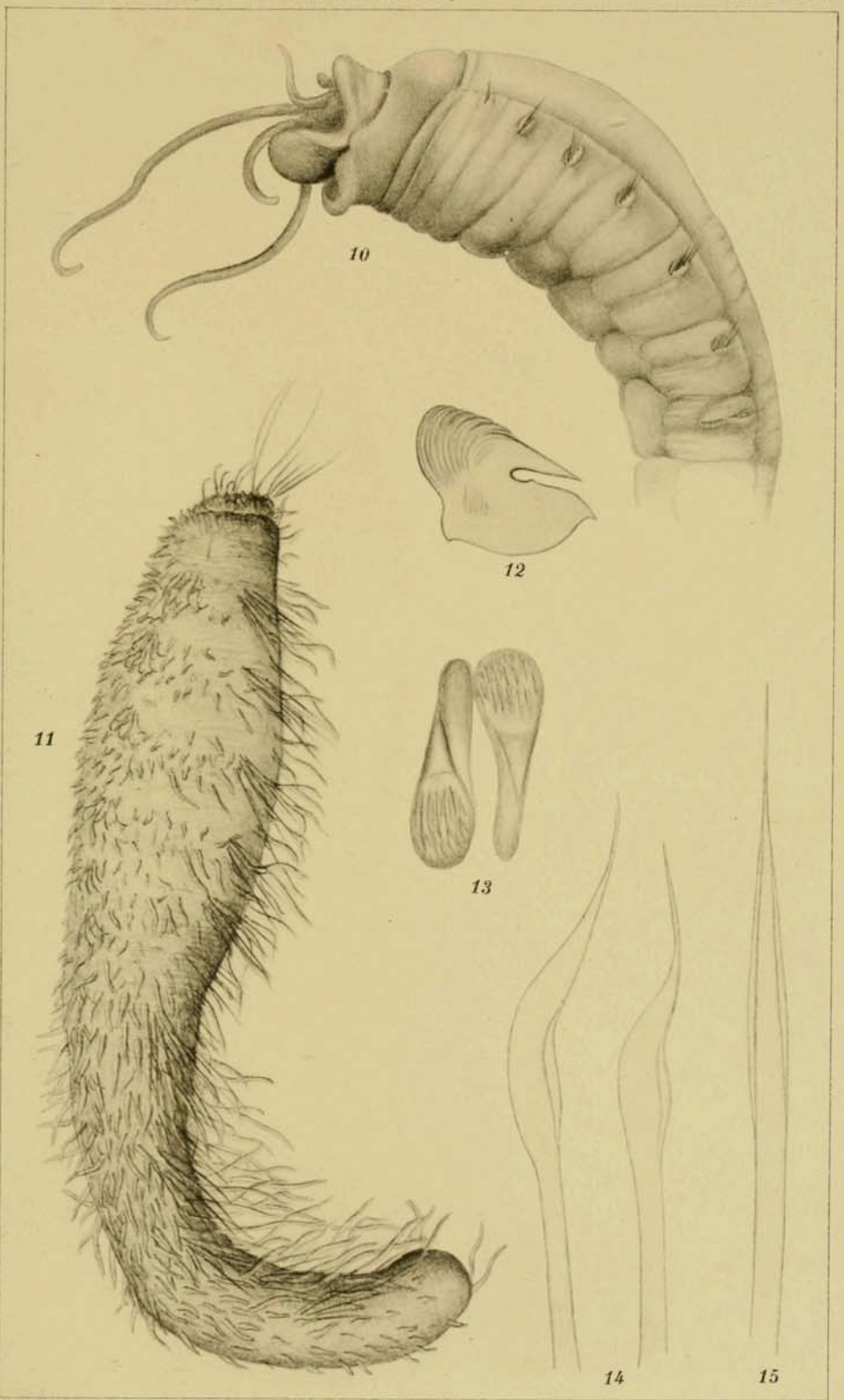


Hj Ditlevsen del. *Pacht & Crone phototyp.*

Plate XXIX.

PLATE XXIX.

Fig. 10. Laphania Boecki Malmgren. Front part.
— 11. Trophonia hirsuta Arm. Hansen.
— 12. Laphania Boecki Malmgren. Uncinus avicularis. $^{640}/_{1}$
— 13. Laphania Boecki Malmgren. Uncini aviculares, from above. $^{640}/_{1}$
— 14. — 15. Laphania Boecki. Setæ copillares. $^{465}/_{1}$

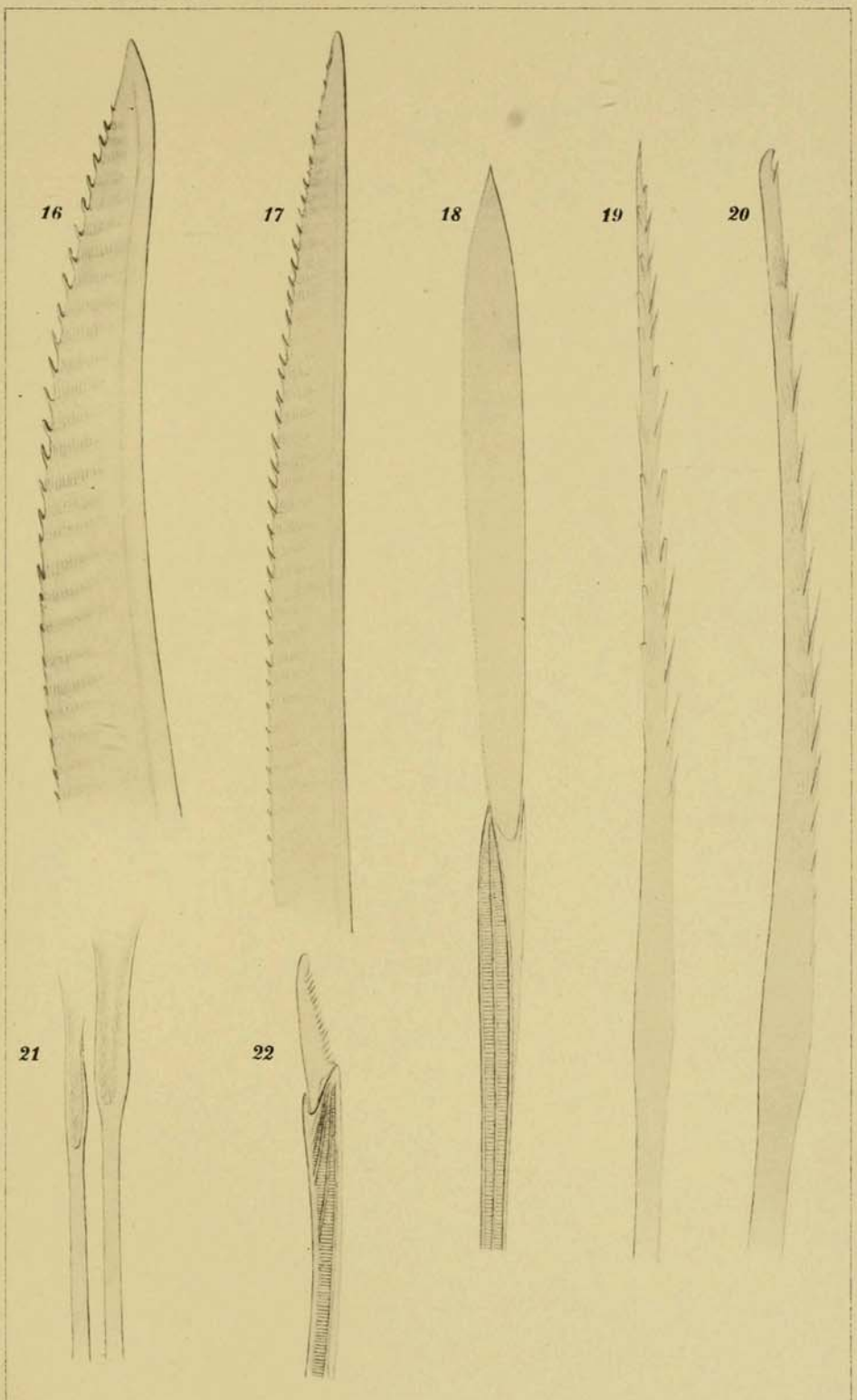


Wollebæk og Hj. Ditlevsen del. Pacht & Crone phototyp.

Plate XXX.

PLATE XXX.

Fig. 16. ⎫ Harmothoe multisetosa Moore, Dorsal bristles. Zeiss Obj.
— 17. ⎭ DD. Oc. 2.
— 18. Nereis zonata, Malmgren. Epitokous form. Dorsal bristle. Zeis Obj. DD. Oc. 3.
— 19. ⎫ Harmothoe multisetosa Moore. Ventral bristles. Zeiss Obj.
— 20. ⎭ DD. Oc. 2.
— 21. Scalibregma inflatum Rathke. Epitokous form. Furcated bristles. Zeiss Apochr. 3^{mm}. Comp. 4.
— 22. Nereis zonata Malmgren. Bristle with short end-blade. Zeiss Obj. DD. Oc. 3.

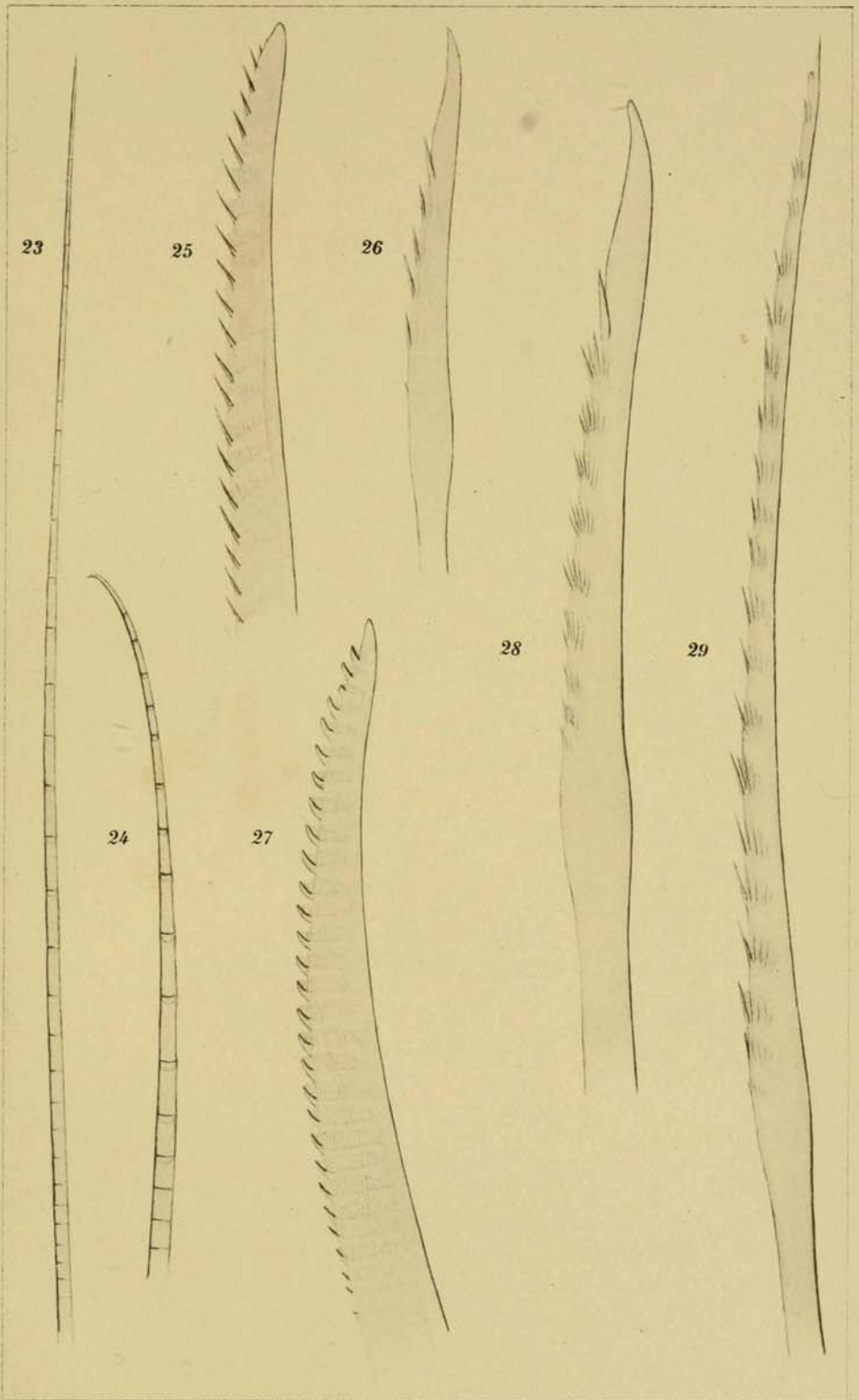


Hj Ditlevsen del. *Pacht & Crone phototyp.*

Plate XXXI.

PLATE XXXI.

Fig. 23. Trophonia hirsuta Arm. Hansen. Dorsal bristle. Zeis Obj. E. Oc. 2.
— 24. Trophonia hirsuta Arm. Hansen. Ventral bristle. Zeiss Obj. E. Oc. 2.
— 25. Harmothoe capitulifera n. sp. Dorsal bristle. Zeiss Obj. DD. Oc. 2.
— 26. Harmothoe capitulifera n. sp. Ventral bristle. Zeiss Obj. DD. Oc. 2.
— 27. Harmothoe capitulifera n. sp. Dorsal bristle. Zeiss Obj. DD. Oc. 2.
— 28.) Harmothoe capitulifera n. sp. Ventral bristles. Zeiss Obj.
— 29. ∫ DD. Oc. 2.



Hj Ditlevsen del. Pacht & Crone phototyp.