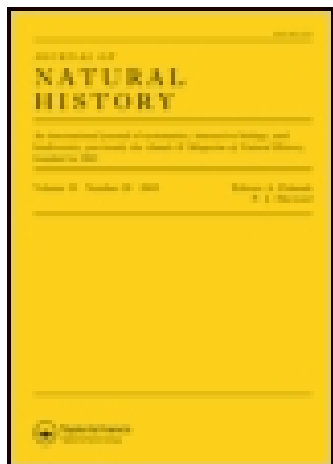


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VII.—On the vermes collected by M. von Heuglin in the sea of Spitzbergen

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On comparing the above measurements with those of the European species, it appears that the latter has a longer bill and tarsus. The females of the two species, as might be expected, do not differ very conspicuously; but that of the American bird is much larger in size, and exhibits the same difference in the nasal ridges.

VII.—On the *Vermes* collected by M. von Heuglin in the Sea of Spitzbergen. By Prof. EHLERS*.

THE catalogue here given, as regards the Chaetophorous Annelides, supplements Malmgren's admirable memoirs ("Nordiska Hafs-Annulater," *Cefvers. af K. Vet. Akad. Förhandl.* 1865, and 'Annulata polychæta,' Helsingfors, 1867), which have disclosed to us the Annelidan fauna of the Arctic Sea. The names employed by Malmgren are therefore retained here, without, however, any intention of thus expressing an unconditional acceptance of the numerous genera established by Malmgren.

ANNELIDA POLYCHÆTA.

Nychia cirrosa (Pall.). Storfjord (Wybe Jans Water).

Harmothoë imbricata (L., Malmgr.). Storfjord.

Numerous examples and many colour-varieties.

Antinoë Sarsii (Kinb.). Storfjord. Zweigletscherbucht (Mohn Bay).

This species, of which there are numerous specimens, occurs in two races definitely separated by difference of colour; and as Malmgren only mentions one of these, both of them may be here briefly described. The more abundant form presents the coloration which, according to Malmgren, distinguishes the Spitzbergen form from the Baltic one; the inner margins of the elytra are broadly chestnut-brown; the dorsal (and sometimes also the ventral) surface exhibits a light ground-colour, upon which there are light brownish band-like markings; sometimes the whole coloration is uniform; in other cases the elytra were of a deeper brown colour. The largest animals of this form were of the size given also by Malmgren for the Spitzbergen form, viz. 35 millims. in length and 17 millims. in breadth, including the setæ.

The other race possesses a clearly marked coloration and pattern. The elytra are broadly bordered with greenish grey on the inner and hinder margins, and usually bear, at the

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point where the inner marginal part passes into the hinder, a darker spot of the same colour projecting a little towards the light central surface; the ground-surface of the elytra is in other respects of the same pearl-grey as in the preceding race. The ventral surface and the rami are colourless; the dorsal surface of each segment bears a sharply bounded banded marking of dark greyish-green colour, the arrangement of which in general is such that a broad transverse band runs in the middle of each segment, and is continued, either of the same width or becoming narrower, to the apices of the dark-coloured elytophora; before and behind this band there is a concolorous narrower one, which is separated from the main band by a fine line of the pale ground-colour, and bounded anteriorly or posteriorly by the colourless margin of the segment. If the pigmentation extends further, the whole dorsal surface of the segment may appear coloured, with the exception of a fine pale line, running in front and behind, near and parallel to the colourless margins of the segment. If the pattern is less distinctly marked, it resembles the dorsal pattern of an *Harmothoë imbricata*; if it is strong, it reminds one of the coloration of *Melænis Loveni* (Malmgr.). Two large specimens with strong coloration, now before me, were so much the more like *Melænis Loveni*, because they bore quite small, and evidently newly formed, elytra, and the number of setæ in the upper branch of the ramus was considerably diminished. The animals of this form attained larger dimensions than the brown ones; the largest was 46 millims. in length, and, with the setæ, 24 millims. in breadth.

These varieties of *Antinoë Sarsii* from the Spitzbergen Sea acquire a special interest when we compare them with the variety living in the Baltic. According to Malmgren, this smaller Baltic form possesses a greenish dorsal coloration and elytra with brownish margins; it thus occupies a middle place between the two races from Spitzbergen now before me, of which one possesses only greenish-grey, and the other only brownish pigment.

Malmgren has already shown that *Antinoë Sarsii*, which occurs only in the northern part of the Gulf of Bothnia, is to be numbered among those animals the limited diffusion of which here is explained by Lovén's view, according to which the Baltic was united with the Arctic Sea, in the glacial period, through the White Sea and Bay of Ladoga. If the present form of *Antinoë Sarsii* in the Baltic differs from its relatives at Spitzbergen by its smaller size, this is in accordance with the observation repeatedly made that marine animals diminish in size during adaptation to less saline water, as in the present case the water of the Baltic is; but with regard to the pecu-

liar coloration of the Baltic form, it seems probable that this has retained, since the glacial period, the original coloration, from which the two races of the Spitzbergen Sea have subsequently been developed by differentiation.

I may remark, further, that I found in the intestine of one of the largest greyish-green animals a perfectly preserved bivalve shell (*Nucula*, sp.) 8 millims. in length, 4 millims. in thickness, and 6 millims. in depth, an evidence of the large size of the animals which these worms are able to seize upon for their nourishment.

Melenis Loveni (Malmg.). Advent Bay, Zweigletscherbucht.

Nephtys longisetosa (Erst., Malmg.). Storfjord.

Phyllodoce grönlandica (Erst., Malmg.). Storfjord.

Mysta barbata (Malmg.). Storfjord.

New to the arctic fauna. Malmgren knew the animal only from the shore of Bohuslän.

Eteone arctica (Malmg.). Advent Bay.

Nereis zonata (Malmg.). Zweigletscherbucht.

Lumbriconereis fragilis (O. F. Müll.). Storfjord, Zweigletscherbucht.

Scoloplos armiger (Müll.). Storfjord.

Travisia Forbesi (Johnst.). Storfjord.

Brada inhabilis (H. R.). Storfjord.

Brada granulata (Malmg.). Zweigletscherbucht.

Amphitrite cirrata (Müll.). Storfjord.

Scione lobata (Malmg.). Storfjord.

Of this species I found a large specimen, which agreed in all points, except a peculiarity which will be mentioned immediately, with the description given by Malmgren. The worm was enclosed in its tube, which consists of a fine smooth membrane, the outer surface of which was coated by a dense mass of mud, to which various kinds of foreign matters adhered. It was very remarkable that a little way behind the orifice of the anterior, wider portion of the tube, the wide entrance into it was closed by a transversely placed plate, as if by an operculum; for a closure of this kind, such as occurs in the tubes of Serpulaceæ, has not, so far as I know, been hitherto observed in a tube which evidently belonged to a Terebellacean. I therefore split up the tube longitudinally with care, exposing its inmate, the *Scione lobata*, and ascertained that in reality the closure of the tube was effected by an operculum which was formed by a tentacle of the worm. Immediately behind the operculum was the worm, and nearest to it the closely compressed cirlet of tentacles. On examining the worm after its removal, I was able to ascertain with certainty

that one of the tentacles bore the disciform operculum; but during my endeavours to ascertain precisely the position of this specialized tentacle among the rest, it separated, with a number of the neighbouring filaments, and I could only make out with certainty that it had its place not in the median line but in the right half of the bundle of tentacles. On the isolated tentacle there could be distinguished the piece (11 millims. in length) by which the filament was attached to the cephalic lobe among the others, the operculiform circular plate effecting the closure (with a superficial diameter of 3 millims.), and a filiform piece (2.5 millims. in length) which projected freely from the centre of the outer surface of the operculum. With the aid of the microscope it was ascertained that the operculum was composed of the same tissues as the filament; but the mode in which the opercular disk may be formed from the filament is not quite clear to me. On the surfaces of the disk there was a chitinous cuticle, such as occurs on the tentacles; and this was evidently in connexion with the above-mentioned sections of the tentacular filament on each surface in the centre of the disk; and thus it might seem as if the disk were formed by a duplicature of the wall of the tentacle, perhaps by a portion of the tentacle being compressed discoidally by a pressure acting in the direction of its longitudinal axis. In the space between the two lamellæ forming the disk there were, besides a small quantity of connective tissue, a number of spherical bodies, which, perhaps, are to be regarded as corpuscles of the body-fluids. The point in connexion with the structure of the disk into which I could not get a clear insight was, that in the interior of the disk and closely approximated to its margin there was a short filament, which fell out when I removed the chitinous cuticle of one of the surfaces: in its appearance the filament resembled a piece of tentacle; one of its extremities was apparently intact, and the other evidently injured, as if the little filament had been here torn away. I must leave the more accurate investigation of this opercular disk to others, who may have more abundant material at their command. Here I would only call attention to one or two points. In the first place the evident homology which exists between this operculum of a Terebellacean and that of a Serpulacean; in both cases one of the appendages issuing from the cephalic part is modified in such a manner as to form an operculum; and although the thin opercular disk of our *Sciome* does not attain the development of the strong operculum of the Serpulaceæ, on the other hand it displays the peculiarity of possessing, in the little filament which springs from the outward wall, a

structure which evidently represents the variously formed processes of many Serpulacean opercula. Future observers will also have to take into consideration whether the operculum of *Sciøne*, like that of many Serpulaceæ, plays any part in the business of reproduction.

It still remains to be noticed as remarkable that this structure is not mentioned by Malmgren, who is so circumspect, especially as it is evident that he had before him numerous specimens of the worm from various localities. I cannot suppose that in my case we have to do with a structure produced by accident, or one which is to be regarded as a singular malformation, which has led, in this instance, to the formation of an organ analogous and homologous with the operculum of the Serpulaceæ. Here, also, the examination of more abundant material will decide whether the occurrence of the operculum in this worm is unexceptional, or on what conditions it depends.

Ereutho Smithi (Malmg.). Storfjord.

Terebellides Strömii (Sars). Storfjord.

Sabella spetsbergensis (Malmg.). Zweigletscherbucht.

Potamilla, sp. Zweigletscherbucht.

Of this genus, established by Malmgren, of which no Spitzbergen species has hitherto been known, I have an animal before me which I cannot identify with any of the described species. The description given by Malmgren of *Potamilla neglecta* (Sars) suited it best; and I should probably have entertained no doubt of having to do with that species, had not the proportions of the body been quite different from those of the above-mentioned species. For whilst in the latter the branchiæ are nearly half as long as the rest of the body, they are considerably smaller here; for the body, consisting of 30 segments, measuring 20 millims. in length, whilst even the last segments are deficient, bears a branchia only 4 millims. long. The tube consists of a membrane which is for the most part coated with sand-grains and fragments of various kinds, and also in part possesses a muddy coat. The single specimen before me, which, moreover, is not uninjured, does not suffice to make sure whether we have to do with a new species or what its characters are.

Euchone rubella, n. sp. Advent Bay.

Body colourless, stout, of uniform thickness throughout its length, consisting of 34 segments, 30 millims. in length, 2 millims. in breadth, with short branchiæ 3 millims. in length. First segment with the straightly extended gorget, which is but slightly emarginate on the ventral surface, nearly as long as the four following, concave in the middle of the ventral

surface, on the dorsal surface convex, emarginate towards the following segment; the next segments three times, and those of the middle of the body once and a half as broad as long; extremity of the body linguiform, depressed, with greatly abbreviated segments, and a broad anal furrow, which extends for a distance of 2·5 millims. over nine segments. Ventral furrow sharp on the ventral surface of the posterior part, deviating to the left on the ninth segment; on the back of the first eight segments a distinct faint longitudinal furrow. Ventral scutes broad, rectangular, contiguous. Setæ yellowish red, especially on the hinder part of the body, slender, with a narrow wing-like border, and shorter and rendered almost spatuliform by a broad wing-border; the bundles formed by them increase considerably in length on the hinder segments, and are directed forwards, lying close to the body. Uncini of the anterior segments with a long shaft and the point bent at a right angle, its edge being finely serrated; those of the posterior segments short, with a broadly dilated base and a strong terminal hook, the edge of which is serrately denticulated. Each half branchia formed of 9 rays, which are united for more than half their length by a membrane; with fine, slender branchial filaments, which extend to the apex of the bordered branchial ray, but here become very short. On each side four slender tentacular cirri. The tube of the worm clothed with a black coat of mud.

As I cannot identify this animal with any of the described species, I propose for it the above name, and remark further that the remarkable shortness of the branchiæ and the very striking coloration of the setæ suffice for its recognition at the first glance. In habit the animal most closely resembles the *Euchone rubrocincta* (Sars), figured by Malmgren, from which it is distinguished by the two forms of straight setæ and by the number of branchial filaments and tentacular cirri. It is equally easy to distinguish from *Euchone analis* (Kr.) and *E. tuberculosa* (Kr.), which are found near Spitzbergen—from the former by its general habit, as well as the form and number of the branchial filaments and tentacular cirri, and from the latter essentially by the different nature of the ventral scutes.

GEPHYREA.

Phascolosoma Erstedii (Kef.). Zweigletscherbucht.

There is one specimen which agrees, within a few details, with the description of *P. Erstedii* given by Keferstein (Zeitschr. für wiss. Zool. xv. 1865, p. 436). From the end of the body to the anus the animal is 17 millims. in length, and in this portion it has a thickness of 4 millims., whilst the

thinner proboscis is 15 millims. long. The smooth surface is of a pearl-grey colour, with faint yellowish pigment-spots. On the intestine I found three suspensors, whilst Keferstein gives only one, and moreover the convolutions of the intestine were twisted round one of the retractors—a character which is probably to be regarded as a malformation caused by disturbance of development. The species was previously known only from Greenland.

Halicryptus spinulosus (V. Sieb.). Storfjord.

The occurrence of this animal in the sea of Spitzbergen was made known by a note of Keferstein's (*Zeitschr. für wiss. Zool.* 1865, xv. p. 441), who saw large specimens, collected by Malmgren, in the Museum of Stockholm. As, to my knowledge, the worm has never been found in the North Sea; but its occurrence beyond the Arctic Ocean is limited to the Baltic (Reval, Riga, Danzig, Hiddensee, and the harbour of Kiel), there appears to be a similar condition for its distribution as for that of *Antinoë Sarsii*, except that the *Halicryptus* occurs also in the southern part of the Baltic, where *Antinoë Sarsii* is wanting. That *Halicryptus* is consequently to be regarded as an originally widely diffused inhabitant of the Northern Ocean, which has been displaced from the Norwegian coast, since the glacial period, by the invasion of the gulf-stream, but has maintained its existence in the Baltic, may probably be affirmed, although its distribution cannot be accepted as a proof that the icy sea was formerly united with the Baltic through the White Sea and Ladoga Bay; for as it occurs also in the southern part of the Baltic, it cannot be denied that the combination of Baltic and Spitzbergen forms may have taken place, in the glacial period, through water-passages, such as the Sound and the Belt, which now unite the North Sea and the Baltic. But this renders more remarkable the peculiar distribution of *Antinoë Sarsii*, the Baltic forms of which, as above mentioned, are so shut off in the Baltic that their diffusion cannot have taken place in this way. Säger has stated (according to Leuckart's Report on the Progress of the Natural History of the Lower Animals in 1868–69, in *Arch. für Naturg.* xxxv. part 2, p. 281) that the *Halicrypti* of the Bay of Kiel and those occurring near Danzig and Reval exhibit differences in the œsophageal teeth, the Kiel variety having 8 series of œsophageal teeth each with 8–12 lateral teeth, and the Danzig variety only 5 series of œsophageal teeth, each with 4–8 lateral teeth. We do not know whether differences in the general size of the animals are combined with this. It would be interesting to ascertain whether local races have been developed in this case, and in what propor-

tion these stand to the Spitzbergen form; and I may mention that, with regard to the structure of the œsophageal teeth, the animal now before me occupies a middle place between the forms from Kiel and Danzig; for in this animal, which is 19 millims. long, I count, as in the Kiel variety, 8 series of large, readily recognizable œsophageal teeth, which bear on each side near the principal point 2-4 subsidiary teeth, and therefore in all, like the Danzig form, 8-10 subsidiary teeth. But as I have only a single small specimen from the coast of Spitzbergen, no great importance is probably to be attached to this observation.

NEMERTINA.

The few Nemertina found I have been unable to identify with those already described; but here we must take into consideration that many of the existing descriptions are by no means of such a kind that determinations can be made by them with certainty, especially when, as in the present case, we have to do with worms which are preserved in spirit. It is to be hoped that the Arctic *Platyelmia* may soon find a worker as trustworthy as the Annelides have done, and to him it must be left to decide whether I am in the right in proposing new names here. The generic division has been made in accordance with Keferstein's work.

Nemertes maculosa (mihi). Zweigletscherbucht.

Worms 25-40 millims. in length, nearly cylindrical, thickest in the anterior half of the body (2-4 millims.), scarcely narrowed towards the anterior end, gradually and but slightly narrowed towards the posterior end. Colour dirty whitish, more or less reddish brown, generally pigmented in spots; surface in strongly contracted parts of the body closely transversely ringed. The short acutely conical cephalic extremity without eyes, with a longitudinal fissure on each side running from the buccal orifice nearly to the apex, but not attaining the orifice for the proboscis; orifice for the proboscis terminal; proboscis longer than the body, cylindrical, filiform (0.5 millim. in thickness), without armature, with low papillæ arranged in rows.

The animals differ from *Nemertes fusca* (Fab., Leuck. Arch. für Naturg. 1849, xv. part 1, p. 152) by the lateral fissures of the head not reaching so far.

Nemertes teres (mihi). Zweigletscherbucht.

Worm 50 millims. in length (although, perhaps, a piece of the caudal end is wanting), cylindrical, thicker in the anterior third of the body (4 millims.) than in the portion towards the caudal extremity, which is of nearly uniform thickness

(1.5 millim.). Surface smooth, uniformly dark greenish grey. Cephalic extremity obtusely conical, shorter than broad, somewhat separated from the rest of the body by an indistinct constriction at the base, with a longitudinal fissure on each side reaching almost to the apex, without eyes; orifice for the proboscis terminal; proboscis cylindrical, filiform, without armature, with broad, low papillæ arranged in rows, lying in numerous loops in the anterior thickened part of the body.

Borlasia incompta (mihi). Zweigletscherbucht.

Worm 30 millims. long, cylindrical, of uniform thickness (2 millims.), with the exception of the pointed cephalic and caudal extremities; surface smooth, whitish. Cephalic extremity not separated from the body, very shortly conical, without eyes or lateral fissures; orifice for proboscis ventral, close behind the apex of the head, and with the buccal orifice immediately behind it; the extended proboscis shorter than the body (18 millims. long), but almost of equal thickness, cylindrical, without papillæ on its surface; immediately behind the orifice a principal stylet upon a long brown basal piece, and on each side of this a pouch with three subordinate stylets.

VIII.—*On a new Species of Humming-bird belonging to the Genus Spathura.* By J. GOULD, F.R.S.

COMPARATIVELY speaking, it was but the other day that only a single species was known of this form, respecting the generic designation of which much confusion exists. In 1846 I proposed the term *Ocreatus*, which I subsequently discovered had been previously employed. I therefore, in 1850, substituted that of *Spathura*. In the meanwhile, 1849, Dr. Reichenbach employed that of *Steganurus*, which he changed in 1853 to *Steganura*. I have here given preference to my own term; but, of course, ornithologists may adopt which they please, so long as they give me credit for discriminating the new species.

The bird alluded to as the only one originally known is the *Ornismya Underwoodi* of Lesson, published by him in 1831. Since that date three or four others have been discovered and named; and I now propose to characterize a fifth—thus raising the number of species now known to six, all of which possess specific characters whereby they may be at once distinguished from each other. These Racket-tails, as they have been familiarly termed, are denizens of the Andes and the Cordilleras, from New Granada to Bolivia, including the great spur which juts off into the Caraccas. I find that the