

## VIII.

### MARINE TURBELLARIA

BY

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In the literature we find only three notes as regards the occurrence of marine Turbellarians at the Faroes. The first information we owe to O. Schmidt (cfr. these papers IX) in: "Neue Beiträge zur Naturgeschichte der Würmer gesammelt auf einer Reise nach den Färöer im Frühjahr 1848", completed by him later on (O. Schmidt, 1852). This author speaks of 9 turbellarian species including *Dinophilus vorticoides* O. Schmidt. As the latter animal proved to be an Archiannelid, there remain only 8: *Proporus cyclops* O. Schmidt, *Convoluta paradoxa* Ørsted (1852 = *C. convoluta* [Abildg.]), *Mesostomum lenticulatum* O. Schmidt (1852 = *Promesostoma lenticulatum* [O. Schmidt]), *Prostomum* sp. (= *Astrotrhynchus bifidus* [M-Int.]), *Prostomum croceum* Ørsted ? (1852 = *P. steenstrupii* O. Schmidt = *Polycystis crocea* [O. Fabricius]), *Plagiostomum boreale* O. Schmidt (= *P. vittatum* [Leuckart]), *Pseudostomum faeroense* O. Schmidt (1852 = *P. quadrioculatum* [Leuckart]), *Monocelis fusca* Ørsted. Whether the last mentioned species has actually been found at the Faroes does not clearly appear from the paper (1848). The third note in literature about marine Turbellarians of the Faroes we find in a paper by Bock (1913, p. 199), who states the occurrence of *Notoplana atomata* (O. F. Müller).

The number of marine Turbellarians found by the present author between the 22nd of June and the 19th of July 1928 amounts to 39 certain and 7 uncertain species, among which 2 species had already been found by Danish collectors.

The localities in the Islands are given from the South northwards.

A detailed bibliography we may find in Graaff (Tierreich 1905 and 1913). Besides these references to Graaff the most important new literature is mentioned at the different species.

#### I. SYNOPSIS OF THE SPECIES

##### A. Acoela.

The system of *Acoela* approbated nowadays (Graaff 1905, 1911, Luther 1912) is in urgent need of a reconstruction as it is founded on

numerous fundamental errors. The necessary limitation of this paper precludes such a reconstruction, wherefore the system of Graff, given in "Tierreich 23. Lieferung" 1905, is taken as foundation.

1. *Childia groenlandica* (Levinsen).

*Convoluta groenlandica* G. M. R. Levinsen 1879, p. 168.

*Convoluta groenlandica* L. v. Graff 1882, p. 232.

*Convoluta groenlandica* L. v. Graff 1905, p. 25.

*Childia spinosa* L. v. Graff 1911, p. 21.

*Childia baltica* A. Luther 1912, p. 4.

*Childia groenlandica* J. Meixner 1925, p. 333.

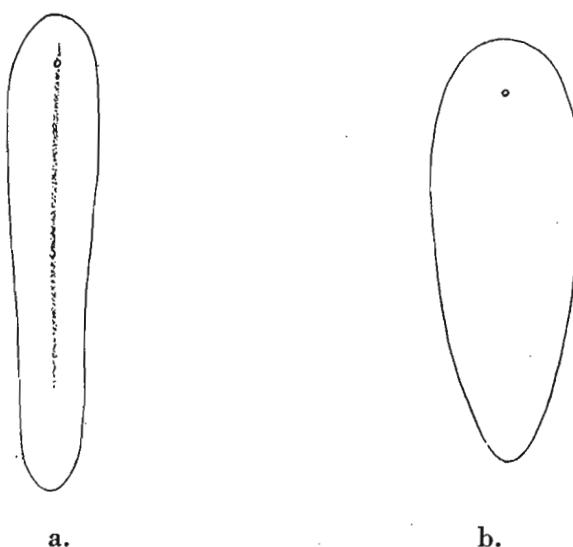


Fig. 1. *Childia groenlandica*.

a. Sketch of the live specimen of the Faroes. b. Sketch of the live specimen of Woods Hole. (After Graff 1911).

Occurrence at the Faroes: 1 specimen in the sound between Strømø and Østerø between Ejde and Haldersvig in a depth of 10 m; sand.

No doubt Meixner (1925, p. 333) is right when he identifies *Convoluta groenlandica* Levinsen with *Childia spinosa* Graff and *Ch. baltica* Luther. Meixner proved the identity of *Ch. spinosa* and *Ch. baltica* by referring to Graff's original microscopical slides and to the paper of Luther, and the present author, who collected this specimen in Greenland, is able to prove the identity of this latter with the two above mentioned species. The only difference between *C. groenlandica* and *Ch. spinosa* viz. *baltica* is the size, the Greenland animals being much the larger (2—2.5 mm to 1.4 mm), a feature likewise observed in other groups of animals in Greenland. According to a proposal from Meixner (ibid.) the spe-

cies must be called *Childia groenlandica* (Levinsen). The only specimen from the Faroes has another body shape (fig. 1) than that described by Graff (1911, tab. 2 Fig. 5), it is true, but the microscopical section shows no difference worth mentioning when compared with *Childia groenlandica*. Still it must not be left unnoticed that the animal began decaying before it was conserved and that the microscopical sections are objectionable. The animal had a distinct dark stripe in the median line, which is not so clearly drawn by Graff, yet in the original text (p. 22/23) he states that there are darker coloured pigment cells in the central parenchyma than in the sides of the body. On account of the above mentioned fact there is no cogent reason to regard the animal as a new species.

Distribution: Greenland (Diskobay, Egedesminde); the Faroes; Tärminne, Gulf of Finland; Woods Hole, U. S. A.

#### 2. *Aphanostoma diversicolor* Ørsted.

*Aphanostoma diversicolor* L. v. Graff 1905, p. 11.

*Aphanostoma diversicolor* H. Micoletzky 1910, p. 2.

*Aphanostoma diversicolor* L. v. Graff 1911, p. 6.

Occurrence at the Faroes: Low-tide zone N. of Ejde (Østerø). Several specimens.

Distribution: The White Sea (Isle Solowetzk); the Faroes; the North Sea at Bergen; Oslofjord; Narragansett-Bay (Newport [North America, Rhode Island]).

#### 3. *Aphanostoma rhomboides* Jensen.

*Aphanostoma rhomboides* L. v. Graff 1905, p. 12.

Occurrence at the Faroes: Low-tide zone N. of Ejde. Some specimens. [*Proporus cyclops* O. Schmidt is probably identical with *Aphanostoma rhomboides* (cfr. p. 20)].

Distribution: Barents Sea (Alexandrowsk, Pala Guba); the Faroes; the North Sea (Bergen and surroundings, Heligoland); Oslofjord (Drøbak); the Channel (Plymouth).

#### 4. *Convoluta saliens* (Graff).

*Cyrtomorpha saliens* L. v. Graff 1882, p. 224.

*Convoluta saliens* L. v. Graff 1905, p. 16.

Occurrence at the Faroes: Low-tide zone N. of Ejde (Østerø). 1 specimen.

This animal was only determined as *Convoluta saliens* when microscopical sections had been made of it. It was first conserved with specimens of not sexually developed *Acoela* (cfr. p. 20).

Distribution: The Faroes; Firth of Clyde (Millport); the Channel (Plymouth); the North Sea (Heligoland); White Sea?

5. *Convoluta convoluta* (Abildgaard).

*Planaria convoluta* P. C. Abildgaard 1806, p. 26.

*Convoluta convoluta* L. v. Graff 1905, p. 18.

*Convoluta convoluta* H. Micoletzky 1910, p. 4.

Faroe records:

*Convoluta paradoxa* O. Schmidt 1852, p. 492.

Occurrence at the Faroes: Stangarnes Tangi (Vaag Fjord, Suderø); Bay of Thorshavn (Strømø, collected by O. Schmidt); low-tide zone N. of Ejde in great numbers; in sand in a depth of 10 m in the sound between Strømø and Østerø, between Ejde and Haldersvig.

Distribution: Barents Sea (Pala Guba near Alexandrowsk); the eastern part of the North Atlantic (the Faroes, Skye, Valencia Harbour in Ireland, Concarneau, Puerto Orotava on Tenerife); the North Sea (Bergen and surroundings, St. Andrew's, Firth of Forth, Berwick-Bay, Heligoland); Oslofjord (Drøbak); Baltic Sea (Mönchgut on Rügen, Tvärminne in the Gulf of Finland); Irish Sea (Port Erin on the Isle of Man); Firth of Clyde (Millport); the Channel (Plymouth, Weymouth, Guernsey, Roscoff); the Mediterranean (Villefranche s. m., Naples, Messina); the Adriatic Sea (Triest, Lissa, Lesina, Meleda, Ancona); the Black Sea (Sewastopol, Ialta, Suchum, Varna).

6. *Convoluta macroposthia* nov. spec.

Occurrence at the Faroes: Vaagfjord (Suderø) in mud at a depth of 10 m; in the sound between Thorsvig and Selletræ (Strømø-Østerø) in mud, 50 m; in the sound between Kvalvig and Øre (Strømø-Østerø) in mud, 31 m.

The body shape is seen on fig. 2. When conserved the length of the animal amounts to 0,9 mm. The animals were all colourless, eyes not visible. The statocyst is at the end of the first sixth of the body. Remarkable is the strongly developed dermo-muscular sac, because the greater part of the longitudinal fibres (3—5 layers) are situated outwards, the circular fibres (5 and more layers) inwards. In some places the fibres are intermixed or arranged in inverse succession. Also diagonal fibres are found. This is the first case where the longitudinal fibres in the dermo-muscular of the turbellarians are found outwards and the circular fibres inwards. Graff (1904—08 p. 2053) speaks of two such cases but his statement for *Prorhynchus stagnalis* M. Schultze is wrong (cfr. Steinböck 1927, p. 552), and *Sanguinicola inermis* Plehn is no turbellaria but a trematode. The nuclei of the epithelium are found under the dermo-muscular sac. The opening of the mouth is somewhat

behind the middle of the body (fig. 4), the female sexual orifice a little behind the opening of the mouth (pgf), whereas the male genital opening (pgm) is quite near the posterior end of the body. The female genital aperture leads into a vagina (v) which leads directly into the parenchyma. On this spot there is a bursa (b) with a cuticular "mouth-piece" (mp) whose structure could not be solved. Striking is the long

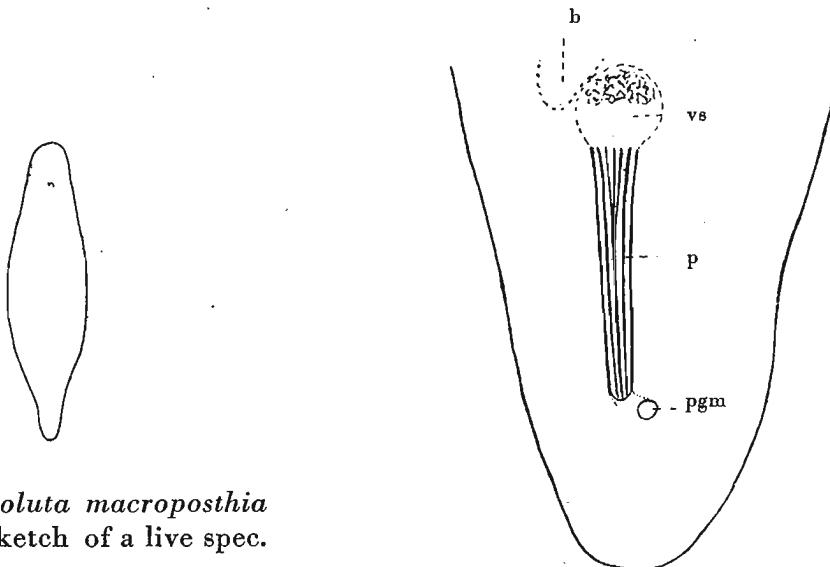


Fig. 2. *Convoluta macroposthia*  
nov. spec. Sketch of a live spec.

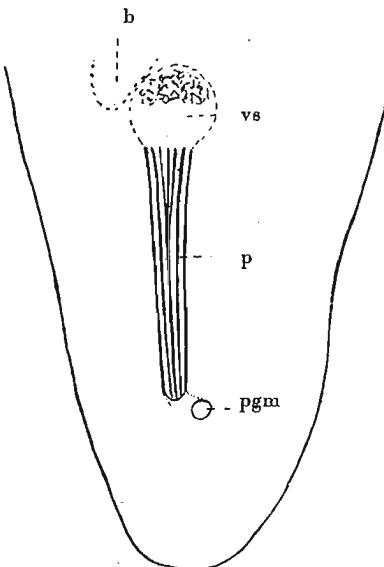


Fig. 3. *Convoluta macroposthia* nov.  
spec. Genital apparatus. After a squeezed  
preparation.

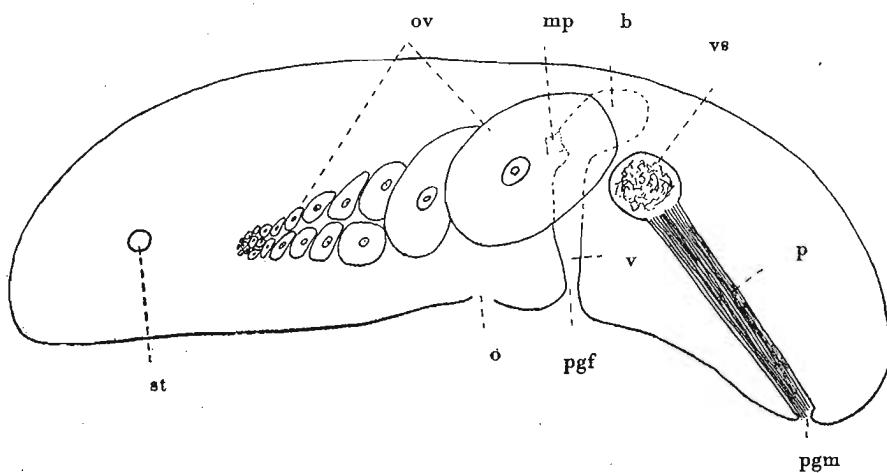


Fig. 4. *Convoluta macroposthia* nov. spec. Diagrammatic figure. b = bursa intestinalis; mp = mouth-piece; o = opening of the mouth; ov = ovarium; p = penis; pgf = porus genitalis femininus; pgm = porus genitalis masculinus; st = statocystis; v = vagina; vs = vesicula seminalis.

penis (Fig. 5, p.), the length of which the seminal vesicle (vs) included amounts to almost one third of the body. The penis consists of thin,  $1 \mu$  thick, bendable cuticular rods, whose cells with nuclei are attached on the outside of the penis. Muscular layers surround the vesicula semi-

nalis and the penis; visible are also protractors and retractors of the penis.

7. *Convoluta diploposthia* nov. spec.

**Occurrence at the Faroes:** Low-tide zone N. of Ejde (Østerø). Some specimens. The body shape is seen on fig. 5. The rhabdites, are situated in rows, the body is colourless. The cuticular part of the mouth piece of the bursa (mp) is a slender, straight rod, the bursa itself a comparatively large sac (b). Two male apparatus (ma) are found, but only one genital opening. The proximal part of the appara-

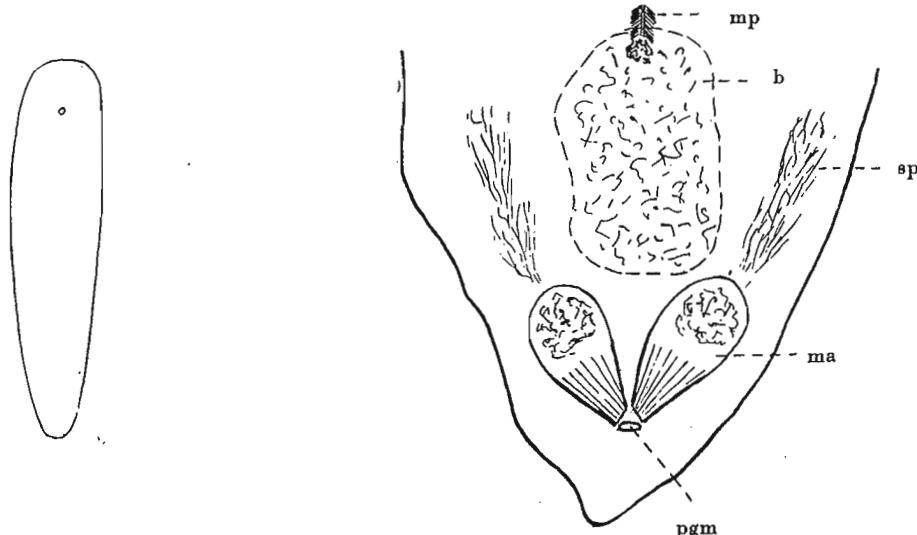


Fig. 5. *Convoluta diploposthia* nov. spec. Sketch of a live specimen.

Fig. 6. *Convoluta diploposthia* nov. spce. Genital apparatus. After a squeezed preparation. b = bursa; ma = male apparatus; mp = „mouth-piece“ of the bursa; pgm = porus genitalis masculinus; sp = sperms.

tus, into which the spermatozoa enter in big streams, acts as vesicula seminalis, on the distal part longitudinal stripes, probably cuticular rods are seen. The female genital aperture is not visible. No microscopical sections of the animal were made, as with exception of the squeezed specimen none were sexually developed. The double male apparatus recalls that of the genus *Childia*, but the missing of a bursa is characteristic of this genus. For the present the new species is therefore most correctly referred to the genus *Convoluta*.

8. *Amphiscolops virescens* (Ørsted).

*Aphanostoma virescens* A. Ørsted 1845, p. 417.

*Amphiscolops virescens* L. v. Graff 1905, p. 27.

**Occurrence at the Faroes:** Low-tide zone N. of Ejde.

*Amphiscolops viriscens* clearly shows the insufficiency of the pre-

sent system of *Acoela*. Graff (1905) refers the species to the family of *Convolutidae*. Two sexual openings are among other features characteristic of this group. But in the literature we find no statements at all from which the existence of two sexual openings may be concluded. Jensen (1878), Levin sen (1879), Graff (1904) saw a bursa seminalis, but no female sexual aperture. The specimens from Greenland 1926 (cfr. Reisinger & Steinböck 1927) as well as those from the Faroes have only one sexual opening, as fig. 2 shows. The porus genitalis is a transverse split, whose proximal part may be

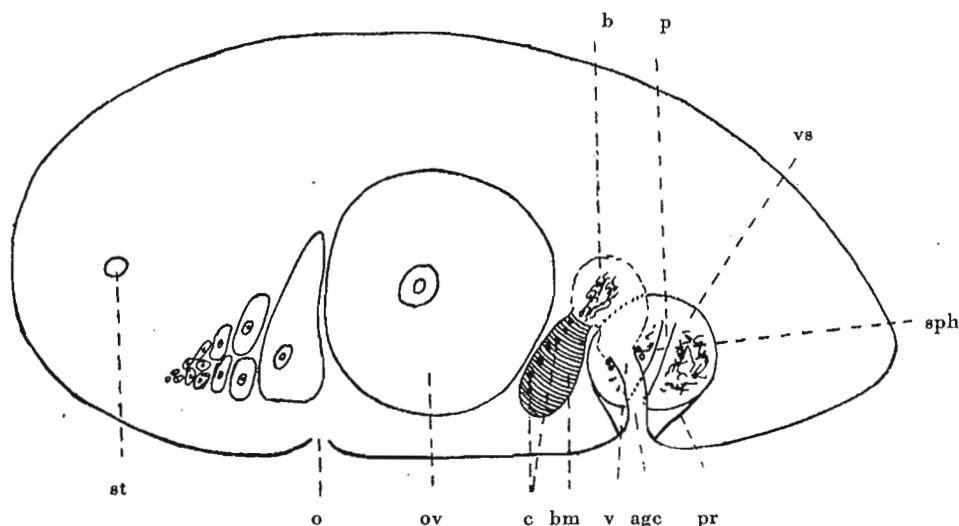


Fig. 7. *Amphiscolops virescens*. Diagrammatic figure. age = atrium genitale commune; b = bursa intestinalis; bm = „Bursamundstück“; c = corpuscula cuticularia; o = opening of the mouth; ov = ovum; p = penis; pr = musculus protractor; sph = sphincter; st = statocystis; v = vagina; vs = vesicula seminalis.

taken as atrium genitale commune (age). Into this open the sexual apparatus *side by side*, to the left the female, to the right the male. The atrium genitale is constructed by a high, ciliated epithelium of cubical cells. This epithelium continues on the vagina (v) which ends in a strong sphincter (sph). Next to the vagina is the bursa (b), forming no strict boundary, but representing only a hollow space in the parenchyma full of sperms. Vagina and bursa lie in rostrate direction, the attached "Bursamundstück" on the other hand in rostroventrate. Contrary to the hitherto known bursa mouth-pieces the one under discussion is constructed by lamellae, it is true, but is not pierced by any canal. At the anterior part 6—8 cuticular corpuscles (c) are attached to the bursa, as seen on the microscopic slides at hand; according to Graff (1911, p. 232, tab. 11, fig. 22) they represent curved thorns. Graff counted 14 such thorns and supposed them to be bursa mouthpieces. But fig. 7 (bm, c) makes it evident that this part of the body, designated as bm, is struc-

turally to be regarded as the bursa mouth-piece and that the cuticular corpuscles (c) are attached to it. If this bursa mouth-piece is compared with the figure of Graff (1904, tab. 11, fig. 22), the conformity is seen at once. What Graff qualifies as bursa seminalis (bs) is here the bursa mouth-piece, and his bursa mouth-pieces are here the cuticular corpuscles. In which way the fecundation takes place is not clear in this case. Neither from the microscopic sections, nor from Graff's figure 23 is it evident, whether the cuticular corpuscles are (bursa mouth-piece, Graff) hollow or sperms can pass. In any case the sperms are sure to enter the bursa mouth-piece when needed, i. e. when an egg is to be fecundated; they will wander — through the cuticular thorns if they are hollow — to the ripening egg, or they will pass through the whole bursa mouth-piece and leave it at the proximal end of it. From the material at hand this question is not to be solved. It may seem strange that there is no well developed way for the sperms, but the acoelous turbellarians are a very good example of the fact, that appropriate organs may be formed when needed. The simply organised animals, for instance, never have a preformed bursa, which is only formed by the digesting parenchyma under the influence of the sperms entering through the vagina. Consequently there is no "selbstständig sich differenzierende Bursa" (Meixner 1926, p. 600) but a bursa is only developed after the reception of sperms from the partner, the latter surely being the direct cause of its appearance. The number of cuticular thorns seems to vary strongly; 6—8 in the microscopic slide at hand, 14 on the single animal found by Graff. First the notion of "Bursamundstück" must indubitably be stated, only then the construction of a system is possible. The material at hand is insufficient to verify the existing systematic, which is not based on solid ground-work.

**Distribution:** The White Sea (Isle Solowetzk); Greenland (Godthaab, Diskobay); the Faroes; the North Sea (Bergen and its surroundings); Oslofjord (Drøbak).

## B. Rhabdozoa.

### 9. *Microstomum rubromaculatum* (Graff).

*Microstoma rubromaculatum* L. v. Graff 1882, p. 251.

*Microstomum rubromaculatum* L. v. Graff 1913, p. 41.

**Occurrence at the Faroes:** Vaagfjord (Suderø), mud 10 m deep. Some specimens. In the specimens found at the Faroes the eyespot (Graff 1913, fig. 45) was not spread over the whole dorsalside of the animal, but showed interruptions. But no systematic importance is attributable to this variation as the formation of eyes at the back-zooïdes

begins with eyespots at the sides, which are not yet in connection with each other. (Graff 1882, tab 15, fig. 15).

**Distribution:** The Faroes; northwestern France (Concarneau); the Mediterranean (Naples).

10. *Microstomum lucidum* (Fuhrmann).

*Microstoma lucidum* F. Fuhrmann 1898, p. 256.

*Microstomum lucidum* L. v. Graff 1913, p. 44.

**Occurrence at the Faroes:** Vaagfjord (Suderø), in mud 10 m deep. A few specimens. Sexual organs were just as little seen by the present author as by Fuhrmann.

**Distribution:** The Faroes; northwestern France (Concarneau).

11. *Macrostomum ophiocephalum* nov. spec.

**Occurrence at the Faroes:** Low-tide zone N. of Ejde (Østerø). One specimen. The head is snake-like, well limited against the body. (Fig. 8). The animal is broadest at the beginning of the last third of its body, the tail-end is spade-like widened as is the case in



Fig. 8. *Macrostomum ophiocephalum* nov. spec. Sketch of a live specimen.



Fig. 9. *Macrostomum ophiocephalum* nov. spec. Male apparatus. After a squeezed preparation.

almost all *Macrostomum* species. The opening of the mouth is found where the anterior part is the broadest, the intestine is provided with very distinct diverticules, from which it may be concluded that the animal has a well developed dorso-ventral muscular system. (cfr. Steinböck 1927, p. 554/56). Eyes are lacking. The cuticular tube of the male copulation organ is a short, thick tube, bent off a little at the end. (Fig. 9). In the known *Macrostomum* species eyes are only wanting in *Macrostomum lineare* Uljanin (Graff 1913, p. 54), with which species *Macrostomum ophiocephalum* shares neither the body shape nor the shape of the cuticular apparatus. Therefore we have to do with a new species. It must be mentioned, that also the family of *Microstomidae* is in ur-

gent need of a revision, as the shape of the cuticular part of the male copulation apparatus seems to be of great variety in this family, so that it is very well possible that one and the same species has been described several times, on account of this cuticular apparatus.

12. *Provortex balticus* (M. Schultze).

*Vortex balticus* M. Schultze 1851, p. 48.

*Provortex balticus* L. v. Graff 1913, p. 75.

Occurrence at the Faroes: Low-tide zone S. of Ejde ( $\varnothing$ sterø).

Distribution: Greenland (Godthaab, Holstensborg, Diskobay); the White Sea (Solowetzk); Barents Sea (Alexandrowsk); the Faroes; the North Sea (Bergen, lower course of the Elbe); Irish Sea (Port Erin on the Isle of Man) the Sound; the Baltic Sea; the Channel; north-western France (Concarneau).

13. *Provortex affinis* (O. Jensen).

*Vortex affinis* O. Jensen 1878, p. 43.

*Provortex affinis* L. v. Graff 1913, p. 76.

Occurrence at the Faroes: Low-tide zone N. of Ejde ( $\varnothing$ sterø).

Distribution: The White Sea (Solowetzk); the Faroes; the North Sea (Bergen); the Sound; the Irish Sea (Port Erin on the Isle of Man); Firth of Clyde (Millport); the Channel, (Plymouth Sound).

14. *Provortex punctatus* (Levinsen).

*Vortex punctatus* G. M. R. Levinsen 1879, p. 179.

*Provortex punctatus* L. v. Graff 1913, p. 78.

Occurrence at the Faroes: Low-tide zone S. of Ejde ( $\varnothing$ sterø).

Distribution: Greenland (Egedesminde, Diskobay).

15. *Byrsophlebs graffi* O. Jensen.

*Byrsophlebs graffi* L. v. Graff 1913, p. 173.

Occurrence at the Faroes: Low-tide zone Stangarness Tangi (Suderø); S. of Ejde ( $\varnothing$ sterø); N. of Ejde. Very numerous.

Distribution: Greenland (Godthaab, Diskobay); the White Sea (Solowetzk); the Faroes; the North Sea (Bergen, Heligoland); the Irish Sea (Port Erin on the Isle of Man, Drake's Island); Firth of Forth (Millport); the Channel (Plymouth).

16. *Astrotrhynchus bifidus* (M'Intosh).

*Mesostomum bifidum* M'Intosh 1874, p. 151.

*Astrotrhynchus bifidus* L. v. Graff 1913, p. 177.

a.) *Astrotrhynchus bifidus bifidus* (M'Intosh).

*Astrotrhynchus bifidus bifidus* L. v. Graff 1913, p. 179.

Faroe records:

*Prostomum* sp. O. Schmidt 1848, p. 16.

Occurrence at the Faroes: Thorshavn (Strømø).

According to the drawing of O. Schmidt (1848, tab. 1, fig. 5 and p. 16) there is no doubt that the sub-species *A. bifidus bifidus* is identical with his specimen. The present author never found this sub-species.

Distribution: Greenland (Godthaab, Holstensborg, Diskobay, Prøven); the White Sea (Solowetzk); the Faroes; the North Sea (Bergen); Irish Sea, (Port Erin on the Isle of Man, Liverpool Bay); Firth of Clyde (Millport); the Channel (Wimereux, Boulogne); coast of N. America between Cape Cord and St. Lawrence Bay.

b.) *Astrotrhynchus bifidus regulatus* Graff.

*Astrotrhynchus bifidus regulatus* L. v. Graff 1913, p. 179.

Occurrence at the Faroes: Low-tide zone of Vaag and Stangarness Tangi (Suderø); S. of Ejde, Østerø; N. of Ejde.

All investigated specimens were certainly *A. bifidus regulatus* Graff 1913, Fig. 167), while O. Schmidt determined the species at the Faroes as *A. bifidus bifidus* (ibid.), Fig. 166).

17. *Proxenetes gracilis* Graff.

*Proxenetes gracilis* L. v. Graff 1913, p. 184.

Occurrence at the Faroes: Vaagfjord (Suderø). The only finding-places of this species were as yet stated to be the quite shallow water at the beach. The few specimens found by the present author were however dredged in mud at a depth of about 10 m.

Distribution: Greenland (Godthaab, Holstensborg, Disko); the White Sea (Solowetzk); Barents Sea (Alexandrowsk, Pala Guba); the Faroes; the Irish coast (Valencia); Northwestern France (Concarneau); the North Sea (Bergen, Heligoland); Kattegat; the Sound; Irish Sea (Millport Port Erin on Man); the Channel (Plymouth, Roscoff); the Black Sea (Sebastopol).

19. *Proxenetes cochlear* Graff.

*Proxenetes cochlear* L. v. Graff 1913, p. 189.

Occurrence at the Faroes: Vaagfjord (Suderø), in a depth of 10 m. The specimen at hand belongs to the subspecies *Proxenetes cochlear cochlear* L. v. Graff 1913, p. 189.

Distribution: Greenland (Godthaab); the White Sea (Sologwetzk); the Faroes; the North Sea (Bergen); Irish Sea (Millport); the Channel (Roscoff); the Canaries (Puerto Orotava).

20. *Promesostoma marmoratum* (Max Schultze).

*Mesostomum marmoratum* M. Schultze 1851, p. 51.

*Promesostoma marmoratum* L. v. Graff 1913, p. 191.

Occurrence at the Faroes: Vaagfjord, in a depth of 10 m (Suderø); low-tide zone N. of Ejde (Østerø).

The species belongs to the sub-species *Promesostoma marmoratum nudum* L. v. Graff 1913, p. 194.

Distribution: Greenland (Godthaab, Disko); the Faroes; the North Sea (Bergen, Heligoland, Kattegat); Irish Sea (Millport); Firth of Clyde; the Mediterranean (Naples), the Black Sea (Sewastopol); Woods Hole.

21. *Promesostoma lenticulatum* (O. Schmidt).

*Mesostomum lenticulatum* O. Schmidt 1852, p. 497.

*Promesostoma lenticulatum* L. v. Graff 1913, p. 196.

Faroe records:

*Mesostomum lenticulatum* O. Schmidt 1952, p. 497.

Occurrence at the Faroes: Thorshavn (Strømø), O. Schmidt; low-tide zone S. of Ejde (Østerø).

Distribution: Greenland (Godthaab, Upernivik); the Faroes; Irish Sea (Port Erin on Man); the Channel (Plymouth).

22. *Paromesostoma neapolitanum* (Graff).

*Mesostoma neapolitanum* L. v. Graff 1882, p. 310.

*Paromesostoma neapolitanum* L. v. Graff 1913, p. 198.

Occurrence at the Faroes: Vaag to a depth of 10 m; low-tide zone of Stangarness Tangi (Suderø).

Distribution: The Faroes; Irish Sea (Port St. Mary on Man); the Channel (Plymouth); the Mediterranean (Naples); the Adriatic (Trieste, Lesina), the Black Sea (Sewastopol).

23. *Trigonostomum venenosum* (Uljanin).

*Orcus venenosus* W. Uljanin 1870, p. 19.

*Hyporcus venenosus* L. v. Graff 1913, p. 299.

*Trigonostomum venenosum* J. Meixner 1924, p. 1.

Occurrence at the Faroes: Low-tide zone N. of Ejde (Østerø).

Distribution: The Faroes; the North Sea (Heligoland); the Mediterranean (Messina); the Black Sea (Sewastopol).

24. *Trigonostomum armatum* (O. Jensen).

*Kylosphaera armata* O. Jensen 1878, p. 45.

*Trigonostomum armatum* L. v. Graff 1913, p. 305.

Occurrence at the Faroes: Low-tide zone N. of Ejde ( $\varnothing$ sterø).

Distribution: The Faroes; the Irish West coast (Valencia in Ireland); the North Sea (Bergen, Heligoland); Irish Sea (Port Erin on Man); the Channel (Plymouth).

25. *Proschizorhynchus faeroeensis* nov. spec.

*Proschizorhynchus faeroeensis* J. Meixner 1929, p. 766; nomen nudum.

Occurrence at the Faroes: Stangarness Tangi (Suderø); N. of Ejde ( $\varnothing$ sterø), in coarse sand of the low-tide zone. Numerous.

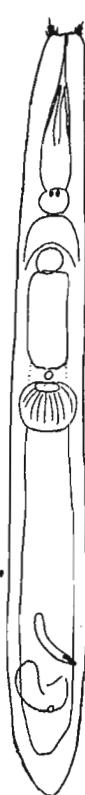


Fig. 10. *Proschizorhynchus faeroeensis* nov. spec. Sketch of a live specimen.



Fig. 11. *Proschizorhynchus faeroeensis* nov. spec. Proboscis after a squeezed preparation.



Fig. 12. *Proschizorhynchus faeroeensis* nov. spec. Male apparatus. After a squeezed preparation.

As Meixner (cfr. 1929, p. 766) will give an exhaustive comparative-anatomical description of this animal, only the most important features are cited, so that it may be possible to recognize the species.

The body shape is seen on fig. 10, the size is 4—5 mm. The anterior

end is transversally truncated and set with numerous large sensitive bristles. (Cfr. J. Meixner 1928, p. 230, Fig. 6). The two parts of the "Salt-rüssel" are not next to each other as seen on fig. 10 and 11, but above one another (cfr. J. Meixner, ibid., p. 231). The position, as it appears in the two figures, is brought about by the pressure of the cover-glass. The two reniform eyes are resting on the brain. The pharynx is found at the middle of the body, whereas in *Proschizorhynchus oculatus* J. Meixner the pharynx is at the end of the first third of its body. The cuticular part of the male copulation apparatus is a softly curved cane (fig. 12, c). The sexual apertures are separated, the male orifice is before the female one. *Proschizorhynchus faeroensis* belongs systematically to the *Kalyptorhynchia*, which J. Meixner divides into two groups (ibid., p. 230) the *Eukalyptorhynchia* and the *Schizorhynchia*. This animal, of course, belongs to the second group, to the first family of *Schizorhynchidae* Graff, and to the genus *Proschizorhynchus* J. Meixner, of which it is the second species described. *P. faeroensis* is like *P. oculatus* a marked inhabitant of the sand; the first was found in fine sand in the Bay of Kiel (Labö), the latter in coarse sand.

#### 26. *Polycystis crocea* (O. Fabricius).

*Planaria crocea* O. Fabricius 1826, p. 34.

*Polycystis crocea* L. v. Graff 1913, p. 330.

*Polycystis crocea* J. Meixner 1925, p. 316.

Faroe records:

*Prostomum croceum* O. Schmidt 1848, p. 14, tab. 1, fig. 4, 1852, p. 495.

Occurrence at the Faroes: Thorshavn (Strømø O. Schmidt). Low-tide zone N. of Ejde (Østerø).

Distribution: Greenland (Godthaab, Holstensborg, Egedesminde, Diskobay); the White Sea (Solowetzk); Barents Sea (Alexandrowsk, Pala Guba); the Faroes; the Irish West coast (Valencia in Ireland); the North Sea (Bergen); Skagerak; Kattegat (Copenhagen, Hofmannsgave, Øresund, Kallebodstrand); Irish Sea (Port Erin, Port St. Mary on Man); Firth of Clyde (Millport), the Channel (Plymouth, Roscoff, Wimereux); the Canaries (Puerto Orotava); the Adriatic (Trieste?).

#### 27. *Phonorhynchus helgolandicus* (Mecznikow).

*Prostomum helgolandicum* E. Mecznikow 1865, p. 176.

*Phonorhynchus helgolandicus* L. v. Graff 1913, p. 338.

*Phonorhynchus helgolandicus* J. Meixner 1924, p. 1.

*Phonorhynchus helgolandicus* J. Meixner 1925, p. 312.

Occurrence at the Faroes: Vaagfjord (Suderø); S. of Ejde (Østerø). Low-tide zone to a depth of 10 m.

Distribution: Greenland (Holstensborg, Jakobshavn, Diskobay);

the White Sea (Solowetzk); northwestern France (Concarneau), the North Sea (Bergen, Heligoland), Irish West coast and Irish Sea (Valencia in Ireland, Port Erin, Port St. Mary on Man); Firth of Clyde (Millport); the Channel (Plymouth, Wimereux); the Adriatic (Lesina); Woods Hole, U. S. A.

### C. Alloeoocoeila.

#### 28. *Plagiostomum dioicum* (Mecznikow).

*Acmostomum dioicum* E. Mecznikow 1865, p. 177.

*Plagiostomum dioicum* L. v. Graff 1913, p. 377.

Occurrence at the Faroes: Low-tide zone N. of Ejde ( $\varnothing$ sterø).

Distribution: The Faroes; northwestern France (Concarneau); the North Sea (Heligoland); the Channel (Plymouth).

#### 29. *Plagiostomum vittatum* (Leuckart).

*Vortex vittata* (H. Frey &) R. Leuckart 1847, p. 149.

*Plagiostomum vittatum* L. v. Graff 1913, p. 383.

Faroe records:

*Plagiostomum boreale* O. Schmidt 1852, p. 500.

Occurrence at the Faroes: Vaagfjord (Suderø), in mud in a depth of 10 m, Thorshavn (Strømø) coll. by O. Schmidt.

Distribution: The Faroes; Northwestern coast of Norway (Loppen); The West coast of Ireland (Valencia); northwestern France (Concarneau); the North Sea (Bergen, Heligoland, Ostende, Walcheren); Irish Sea (Port Erin on Man); Firth of Clyde (Millport); the Channel (Plymouth, Wimereux, Portel).

#### 30. *Vorticeros auriculatum* (O. F. Müller).

*Planaria auriculata* O. F. Müller 1784, p. 81.

*Vorticeros auriculatum* L. v. Graff 1913, p. 389.

Occurrence at the Faroes: Low-tide zone in Vaagfjord (Suderø).

Distribution: The Faroes; the West coast of Ireland (Valencia); the North Sea (Norway, Heligoland), Irish Sea (Port Erin on Man); Firth of Clyde (Millport); the Channel (Plymouth, Wimereux, Portel); the Mediterranean (Villefranche-sur-Mer, Naples, Messina); the Adriatic (Trieste, Lesina, Ancona).

#### 31. *Pseudostomum quadrioculatum* (Leuckart).

*Vortex quadrioculata* (H. Frey &) R. Leuckart 1847, p. 149.

*Plagiostomum quadrioculatum* L. v. Graff 1913, p. 395.

Faroe records:

*Pseudostomum faeroense* O. Schmidt 1852, p. 8.

Occurrence at the Faroes Thorshavn (Strømø), by O. Schmidt, Low-tide zone S. of Ejde, N. of Ejde.

Distribution: Greenland (Godthaab); Barents Sea (Alexandrowsk, Pala Guba); the Faroes; the West coast of the British Isles (Kilmore on Skye, Valencia in Ireland); the North Sea (Bergen, Heligoland, Ostende); Irish Sea (Port Erin on Man); Firth of Clyde (Millport); the Channel (Plymouth, Boulogne-sur-Mer); the Mediterranean (Villefranche-sur-Mer); the Adriatic (Trieste, Lesina; Meleda); the Black Sea (?Sewastopol).

### 32. *Monocelis fusca* Ørsted.

*Monocelis fusca* L. v. Graff 1913, p. 425.

Faroe records:

*Monocelis fusca* O. Schmidt 1848.

Occurrence at the Faroes: Thorshavn (Strømø) coll. by O. Schmidt?; low-tide zone S. and N. of Ejde (Østerø). This animal is most probably to be met with in the low-tide zone of Suderø, but, strange to say, it has not yet been found there.

Distribution: Greenland (Godthaab, Diskobay); the White Sea (Solowetzk); Barents Sea (Alexandrowsk, Pala Guba); the Faroes; the northwestern coast of Europe (Valencia in Ireland, Concarneau); the North Sea (Bergen, Ostende, Heligoland, Cuxhaven); Oslofjord (Drøbak); Kattegat (Hofmannsgave); Irish Sea (Port Erin, Port St. Mary on Man); Firth of Clyde (Millport); the Channel (Plymouth, Roscoff, Boulogne-sur-Mer, Wimereux, Portel); the Black Sea (Sewastopol, Varna); East coast of U. S. A. (Woods Hole).

### 33. *Monocelis lineata* (O. F. Müller).

*Fasciola lineata* O. F. Müller 1774, p. 60.

*Monocelis lineata* L. v. Graff 1913, p. 427.

Occurrence at the Faroes: Low-tide zone N. and S. of Ejde (Østerø). Very common.

Like *Monocelis fusca* *M. lineata* has not yet been found at Suderø, though its occurrence there is not to be doubted.

Distribution: Greenland (Godthaab, Diskobay); the White Sea (Solowetzk); the Faroes; the northwestern coast of Europe (Casco Bay, Hebrides, Valencia in Ireland, Concarneau); the North Sea (Westcoast of Norway, St. Andrews, Ostende, Heligoland, lower part of the Elbe); Oslofjord (Drøbak); the Sound; the Baltic Sea (Kiel, Lübeck, Wismar, Warnemünde, Greifswald); Irish Sea (Port Erin on Man); Firth of

Clyde (Millport); the Channel (Plymouth, Roscoff, Portel); the Mediterranean (Naples, Messina); the Adriatic (Trieste); the Black Sea (Odessa, Sewastopol, Jalta, Noworossijskaja, Suchum, Varna); Madeira and Tenerifa.

### 34. *Otoplana borealis* nov. spec.

**Occurrence at the Faroes:** Coarse sand of the low-tide zone N. of Ejde ( $\varnothing$ sterø).

The body shape is seen on fig. 13. The size of the animal is 1.5 mm. Peculiar are two long stiff bristles on each side of the anterior end. The intestine of *Otoplana borealis* like the Triclades is provided with diverticula, which may be ramulous. The animal is easily recognized on its

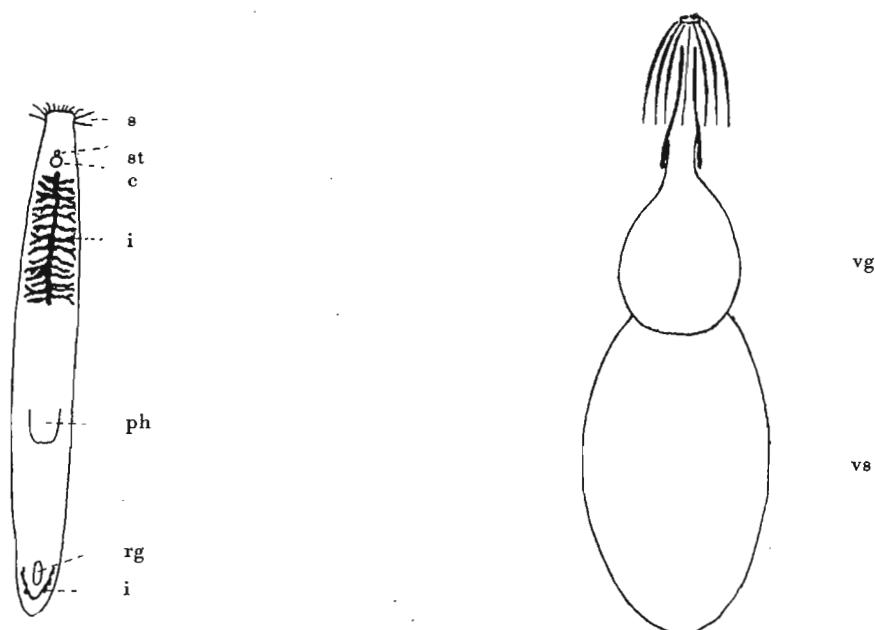


Fig. 13. *Otoplana borealis* nov. spec.  
Sketch of a live specimen. c = brain;  
i = intestine; ph = pharynx; rg =  
genital region; s = setae; st = statocystis.

Fig. 14. *Otoplana borealis* nov. spec.  
Male apparatus. After a squeezed prepara-  
tion. vg = vesicula granulorum; vs  
= vesicula seminalis.

male genital apparatus. There is a vesicula seminalis (vs) which is rostrately connected with a vesicula granulorum (vg). To the vesicula granulorum is attached a cuticular-pipe, which is surrounded by 6—8, sometimes even more, bent cuticular-rods; the latter are pointed at both ends. (Fig. 14). A detailed description of this species and a revision of the genus *Otoplana* will be published later on. The animal is a typical inhabitant of the sand.

**Distribution:** By the present author found — besides at the Faroes — in Greenland (Godthaab, Diskobay) and Heligoland.

35. *Coelogynopora gynocotyla* Steinböck.*Coelogynopora gynocotyla* Steinböck 1924, p. 469.

Occurrence at the Faroes: Fine sand S. of Ejde (Østerø).

Distribution: The Faroes; Heligoland.

## D. Tricladida.

36. *Procerodes lobata* var. *solowetzkiana* (Sabussow).*Procerodes* sp. H. Sabussow 1897, p. 8.*Procerodes solowetzkiana* H. Sabussow 1900, p. 49.*Procerodes solowetzkiana* L. Böhmig 1906, p. 355.*Procerodes solowetzkiana* J. Wilhelmi 1909, p. 327.*Procerodes solowetzkiana* J. Meixner 1928a, p. 575.

Occurrence at the Faroes: N. and S. of Ejde (Østerø). According to the Danish investigation, made in the years 1925, 1926, *Procerodes lobata* var. *solowetzkiana* is found in the following localities: Tjaldavik Holmur, Trangisvaag (Suderø), Vestmanhavn (Strømø), the sound between Strømø and Østerø, Svinaær (Østerø), Kvannesund (Viderø).

*Procerodes lobata* var. *solowetzkiana* outwardly completely resembles the main-form *Procerodes lobata* O. Schmidt, so that the present author took it for this species. But a careful examination revealed some differences which justify the statement of a varietas.

*Procerodes lobata*

colour milky white  
intestine 24 diverticiles  
testicles on an average 24 pair;  
according to Wilhelmi at best 27 pair on one side, mostly one follicle between 2 intestine diverticiles.

*Procerodes lobata* var. *solowetzkiana*

owing to pigment brown  
18—22 diverticiles  
on one side, up to 35 follicles  
2—3 close together.

The genital apparatus is conformable to that of *Procerodes lobata*, as sketched by Wilhelmi (1909), but some specimens have an essentially longer penis. If such a long penis was hanging down freely it would stand forth from the genital aperture (cfr. Wilhelmi 1909, T. 15, Fig. 14, 15, T. 16, Fig. 3). But on the author's microscopical sections the distal part of the penis is curved upwards in the atrium.

Sabussow (1897) inexactly describes a new *Procerodes* species as *Procerodes solowetzkiana*. The present form from the Faroes is certainly identical with it. Sabussow gives dark olive-green as the colour of his specimens, whereas the author's animals are brown to blackish; but colour is of little importance in water-turbellarians. The apical part of the penis of *Procerodes solowetzkiana* is arcuately curved, which agrees well with several of the present animals. The differences between *Proce-*

*rodes lobata* and *Procerodes solowetzkiana* are therefore so insignificant, that it does not seem advisable to create a new species, but only a variety, which, according to the laws of priority, is to be called *Procerodes lobata* var. *solowetzkiana* (Sabusow). If J. Meixner (1928a, p. 575 Footnote 2) supposes *P. solowetzkiana* to be identical with *Foviella affinis* (Ørsted), he is wrong.

Distribution: The White Sea (Solowetzk, Domaschnaja Korga); the Faroes.

### 37. *Procerodes ulvae* (Ørsted).

*Planaria ulvae* A. S. Ørsted 1844, p. 53.

*Procerodes ulvae* J. Wilhelmi 1909, p. 316.

*Procerodes littoralis* J. Meixner 1928a, p. 574.

Occurrence at the Faroes: Vaagfjord (Suderø); Stangarness Tangi (Suderø); low-tide zone Thorshavn (Strømø).

Distribution: the White Sea, the North Sea, the Baltic Sea, the North Atlantic (Boulogne, Firth of Clyde, Millport).

### 38. *Foviella affinis* (Ørsted).

*Planaria affinis* A. S. Ørsted 1843, p. 551.

*Fovia affinis* = (?) *Planaria torva* J. Wilhelmi 1907, p. 4.

*Fovia affinis* = (?) *Planaria torva* J. Wilhelmi 1908, p. 36.

*Foviella affinis* S. Bock 1925, p. 154.

*Foviella affinis* O. Steinböck 1926, p. 1.

*Foviella affinis* Reisinger & Steinböck 1927, p. 37.

*Foviella affinis* O. Steinböck 1928, p. 78.

*Foviella affinis* J. Meixner 1928a, p. 473.

Occurrence at the Faroes: Low-tide zone S. of Ejde (Østerø).

Distribution: Greenland (Kapisigdlit, Diskobay?); the Faroes; the North Sea (Bergen); Skagerak (Gullmarfjord); the Sound (Kallebodstrand).

### E. Polycladida.

#### 39. *Notoplana atomata* (O. F. Müller).

*Planaria atomata* (punctata) O. F. Müller 1777, p. 37.

*Leptoplana atomata* A. S. Ørsted 1843, p. 569.

*Leptoplana droebachensis* A. S. Ørsted 1845, p. 415.

?*Polycelis variabilis* Girard 1850.

*Leptoplana variabilis* Diesing 1862, p. 542.

*Leptoplana ellipsoides* Girard 1854, p. 27.

Faroe records:

*Notoplana atomata* S. Bock 1913, p. 195.

Occurrence at the Faroes: Vaagfjord at a depth of 10 m (Suderø); low-tide zone Thorshavn (Strømø); low-tide zone N. and S.

of Ejde (Østerø). According to the Danish investigation, made in the years 1925 and 1926, *Notoplana atomata* has been taken at the following localities: Tjaldavik Holmur (4—6 m), Ørdevig, Høddatangi, Trangisvaagfjord (Suderø); Kvalvig (Strømø); Skaalefjord (18—20 m) (Østerø); SO. of Kunø 10—15 m. Besides: Kvannesund (Bordø-Viderø) (according to S. B o e k 1913, p. 199).

Incertae species:

a. *Proporus cyclops* O. Schmidt.

*Proporus cyclops* L. v. Graff 1905, p. 6.

Faroe records:

*Proporus cyclops* O. Schmidt 1848, p. 9.

Occurrence at the Faroes: Thorshavn (Strømø).

*Proporus cyclops* certainly does not belong to the genus *Proporus*. What O. Schmidt (1848, t. 1, fig. 3, o) indicates as "Mundöffnung" is surely the frontal organ. The impression of a pharynx "eine einfache Röhre ohne besondere Muskeln" was most probably caused by the secretion duct of the frontal organ. The opinion of the present author is that it is the question of *Aphanostoma rhomboides* Jensen (cfr. p. 3; Jensen 1878, T. 1, Fig. 1).

b. *Mecynostomum agile* Jensen?

*Mecynostomum agile* O. S. Jensen 1878, p. 31.

*Aphanostoma rhomboides* L. v. Graff 1903, p. 12.

Occurrence at the Faroes: N. of Ejde (Østerø).

In the low-tide zone several specimens were collected which were in habitus in absolute accordance with the body shape of those which are reproduced in the paper of Jensen (1878, t. 1) in fig. 22. According to Jensen the colour is white, here it is yellowish. Jensen indicates the length of his animal as 1 · 36 mm, whereas the specimens at my disposal are up to 1—1.40 mm long. Unfortunately no sexually developed animals were found, therefore an exact determination of the genus is not possible. As regards the body shape (which is not systematically decisive in turbellarians) of the animal at my disposal it is only in accordance with *Mecynostomum agile* Jensen, which animal Attems (1897) and Graaff (1903) identify with *Aphanostoma rhomboides* (Jensen).

c. *Enterostomum fingalianum* Claparède.

*Enterostomum fingalianum* L. v. Graff 1913, p. 411.

Occurrence at the Faroes: Vaagfjord (Suderø) in fine sand.

The animal has been taken only once and perished before it was squeezed. According to habitus, position of the eyes and of the pharynx it is probably an *Enterostomum fingalianum* Claparède.

Distribution: Greenland (Godthaab); the White Sea (Tolstik);

the Faroes; the North Atlantic (Skye); the Channel (Plymouth, Pas de Calais [33—40 m]).

d. *Euxinia* ? sp.

Occurrence at the Faroes: The sound between Strømø and Østerø N. of Thorsvig in a depth of 50 m. 1 specimen.

The animal perished at squeezing before its identity could be determined. In all probability it belongs to the genus *Euxinia* Graff (L. v. Graaff 1913, p. 407), or at least to its affinity. At the anterior end there are two eyespots which come into contact with each other. *Euxinia corniculata* Graff lives in the Black Sea near Sewastopol (10 m) but a similar animal has been found in Greenland (by Reisinger & Steinböck).

e. *Otoplana (maculata* nov. spec. ?).

Occurrence at the Faroes: Stangarness Tangi, coarse sand of the low-tide zone (Suderø).

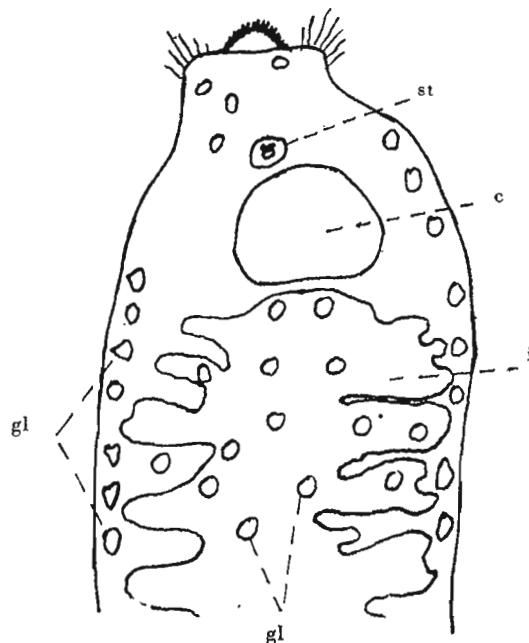


Fig. 15. *Otoplana maculata* nov. spec. anterior part. Sketch after a squeezed preparation. c = brain; gl = glands; i = intestine; st = statocysts.



Fig. 16.  
*Otoplana maculata* nov. spec. A gland after a squeezed preparation.

Where the species was found it was very common, but not a single sexually developed animal was among the collected ones. The anterior end is very characteristic (Fig. 15) so are the large glands (Fig. 16), which lend it a spotted aspect.

f. *Otoplana* sp.

Occurrence at the Faroes: Low-tide zone N. of Ejde (Østerø).

Only once a specimen of *Otoplana* has been taken which resembles in habitus *Otoplana borealis* nov. spec. (cfr. above p. 17) but is much smaller than the latter and in whose copulation apparatus the cuticular-pipe, so characteristic of *Otoplana borealis*, is missing. Whether it is the question of a new species in this case or this specimen (I found only one animal) is a deformity of *Otoplana borealis* could not be decided.

g. *Coelogynopora?* species.

## Occurrence at the Faroes: Low-tide zone N. of Ejde (Østerø).

The single animal was damaged at squeezing, the microscopical sections therefore are not good and a thorough description cannot be given. The animal is long-stretched, thread-shaped, when conserved 1.5 mm long. Fig. 17 shows the cuticular apparatus sketched from memory, which is,



Fig. 17. *Caelogynopora?* sp. Sketch from memory of cuticular apparatus after a squeezed preparation.

contrary to *Coelogynopora*, backwards directed. Probably there are two separate sexual orifices. The intestine forms a "praecerebralen Darm-blindsack" (Hofsten 1918) above the brain.

## II. THE ZOOGEOGRAPHICAL CHARACTER OF THE MARINE TURBELLARIA FAUNA OF THE FAROES

The zoogeographical character of the marine *Turbellaria* fauna of the Faroes becomes evident from the following table:

## *The distribution of the marine Turbellaria of the Faroes.*

	U. S. A.	Greenland	The White Sea	The North Sea	Atlantic 50° >	Atlantic 50° <	The Baltic Sea	Mediterran.	Adriatic Sea	The Black Sea	
7. <i>Convoluta diplopistia</i> n. sp..											Faroës
8. <i>Amphiscolops virescens</i> .....	1	1	1								
9. <i>Microstomum rubromaculatum</i>					1	1					
10. <i>Microstomum lucidum</i> .....											
11. <i>Macrostomum ophioceph.</i> n. sp.											Faroës
12. <i>Provortex balticus</i> .....	1	1	1	1	1*	1					* Concarneau
13. <i>Provortex affinis</i> .....		1	1	1							
14. <i>Provortex punctatus</i> .....	1										
15. <i>Byrsophlebs graffi</i> .....	1	1	1	1							
16. <i>Astrotrorhynchus bifidus</i> bifidus	1	1	1	1							
<i>Astrotrorhynchus bifidus regulat.</i>				1*	1						* Danish Seas
17. <i>Proxenetes gracilis</i> .....		1				1		1	1		
18. <i>Proxenetes flabellifer</i> .....	1	1	1	1					1		
19. <i>Proxenetes cochlear</i> .....	1	1	1	1	1*						* Teneriffe
20. <i>Promesostoma marmor. nudum</i>	1	1	1	1					1		
21. <i>Promesostoma lenticulatum</i> ...		1			1						
22. <i>Paramesostoma neapolitanum</i> .					1			1	1	1	
23. <i>Trigonostomum venenosum</i> ...				1				1		1	
24. <i>Trigonostomum armatum</i> .....				1	1						
25. <i>Proschorhynchus faeroeensis</i>											
n. sp. .....											Faroës
26. <i>Polycystis crocea</i> .....	1	1	1	1	1			1			
27. <i>Phonorhynchus helgolandicus</i> .	1	1	1	1	1	1		1			
28. <i>Plagiostomum dioicum</i> .....				1	1	1*					* Concarneau
29. <i>Plagiostomum vittatum</i> .....				1	1	1*					* Concarneau
30. <i>Vorticeros auriculatum</i> .....				1	1			1	1		
31. <i>Pseudostomum quadrioculatum</i>	1	1	1	1				1	1	1	
32. <i>Monocelis fusca</i> .....	*	1	1	1	1	1	*	*	*	1	* surely to be met with
33. <i>Monocelis lineata</i> .....	*	1	1	1	1	1	1	1	1	1	"
34. <i>Otoplana borealis</i> n. sp.....											Faroës
35. <i>Coelogynopora gynocotyla</i> ....				1							
36. <i>Procerodes lobata</i> var. solo-											
wetzkiana .....				1							
37. <i>Procerodes ulvae</i> .....		1	1	1			1				
38. <i>Foviella affinis</i> .....	1		1								
39. <i>Notoplana atomata</i> .....	1		1	1*							* Ireland, Shetland, Iceland
	6	17	17	26	24	12	5	8	8	8	

As was to be expected, the predominant arctic-boreal character of the marine turbellarians of the Faroes clearly appears from this table. The distribution of the 5 new species (*6 Otoplana maculata*) is surely not limited to the Faroes.

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