THE FOLDEN FIORD

REPORT ON THE SPONGES COLLECTED BY MR. SOOT-RYEN IN THE FOLDEN FIORD IN THE YEAR 1923

BY

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The collection, though small, contains representatives of thirty species, of which three are described here for the first time and three more are recorded for the first time from Norway. The sponge fauna of Norway has been dealt with at length by me (Proc. Zool. Soc. London, 1930, p. 487–546) and for this reason it has been thought sufficient to give merely the name of the species without reference to its distribution, or any other information, except where some point of especial interest has been found. Although some 202 species of sponge have already been recorded from the Norwegian coast, this small collection from the Folden Fiord shows that the list is not yet exhausted.

The spiculation of the holotype of the new species of *Geodia* has supplied some interesting data on the structure of abnormal spicules which I hope to deal with in a future work.

SYSTEMATIC NOTES

Order Calcarea.

Sycon ciliatum (Fabricius).

Stn. xviii e, 500–520 m., August 10.

Grantessa nitida (Arnesen).

Ebnerella nitida, Arnesen 1901, p. 24, pl. i, figs. 1–3; *Grantessa nitida,* Dendy and Row 1913, p. 752.

Stn. xii b, 250–285 m., August 3; stn. vii f, 550 m., July 20.

Order Tetraxonida

Suborder Streptastrosclerophora.

Thenea muricata (Bowerbank).

Stn. x a, 50—200 m., July 27; stn. xii a, 250—350 m., August 3; stn. xii b, 250—285 m., August 3; stn. xvi a, 200—290 m., August 9.

Poecillastra compressa (Bowerbank).

Stn. xii a, 250—350 m., August 3.

Suborder Astrosclerophora.

Stryphnus ponderosus (Bowerbank).

Stn. x a, 50—200 m., July 27.

Pachymatisma johnstonia Bowerbank.

Stn. v k, 50—100 m., July 18; stn. ix i, 10—75 m., July 26.

Remarks. — The second specimen is a large one, having the form and spiculation typical for the species. The first, from station v k, consists of a thin incrustation and represents the post larval stage. The dimensions of this specimen are 2 cms by 4 cms across and less than 1 mm. thick. The spicules are of typical form but their arrangement is somewhat different to that found in adult specimens. The megascleres are not radially-arranged but are scattered with no apparent order. The crust of sterrasters is represented by patches of these spicules scattered here and there in the dermis and by a large number of immature forms scattered in the choanosome. The oxyasters are few in number but the microrhabds are very abundant.

Geodia simplicissima sp.n.

(Text-figs. 1, 2.)

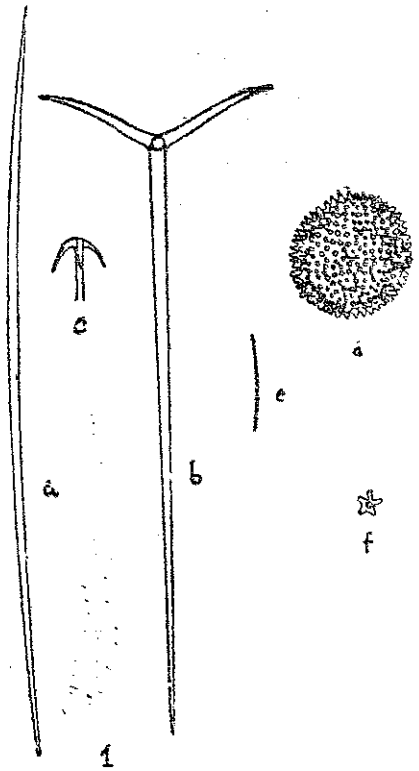
Holotype — in Tromsø Museum.

Occurrence. — Folden Fiord, stn. ix i, 10—75 m., July 26.

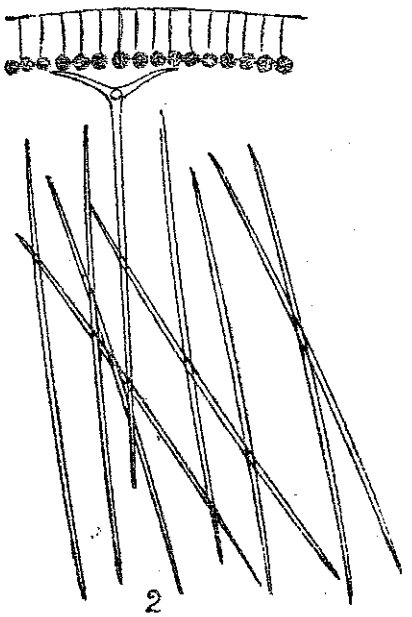
Diagnosis. — Form unknown; main skeleton irregularly radial, composed of oxea, orthotriaenes and anatriaenes; subdermal layer of sterrasters one to two spicules thick; dermis supported by a palisade of small oxea with proximal ends resting on layer of sterrasters; microsters are pycnasters.

Remarks. — The species is described from a few fragments only, but the spiculation is so characteristic that the recognition of a new species is justified. The oxea and triaenes

are subject to much distortion but the normal megascleres are assumed to be oxea and orthotriaenes. The distortion in the oxea results most frequently in the formation of irregular ends to the spicules, the most common modification being that in which both ends are rounded off. In the orthotriaenes, the shafts are almost invariably normal but the cladi are very frequently affected. These may be shortened or recurved, vermiform or bifurcated. Often secondary spurs are developed. In no case, however, are all the cladi of a single triaene



Text-fig. 1. — *Geodia simplicissima* sp.n. a. Oxeote of main skeleton, × 50; b. Orthotriaene, × 50; c. Anatriaene, × 50; d. Sterraster, × 150; e. microxeote, × 50; f. pycnaster, × 1,000.



Text-fig. 2. — *Geodia simplicissima* sp.n. Section at right angles to surface.

similarly modified. In a typical example, the first cladus was reduced to a mere knob, the second was bifurcated, and the third was vermiform. The microscleres, including the sterrasters and the small dermal oxea, are unaffected apparently and it is of interest to note here that this appears to be a rule, that if one category of megascleres is abnormal so are the remaining categories, but the microscleres are not necessarily affected in the same way. Similarly, the factors which produce abnormalities in one category of microscleres seem to affect all the other microscleres also, but do not necessarily affect the megascleres.

It has often been the custom in the past to describe at great length the abnormalities

in such a specimen as that here described, even when that specimen forms the type of a new species. The result of this is that the real characters of the species are obscured. In framing the diagnosis of the present species, the abnormalities have been disregarded for this reason.

The dimensions of the spicules are: — oxea of radial bundles, 2.2 by .032 mm.; orthotriaenes with shaft 1.7 mm. long and cladi .32 by .048 mm.; ectosomal microxea, .25 by .004 mm.; sterrasters, spherical, .07 mm. in diameter; pycnasters, .004 mm. in diameter.

In the spicule preparations, a single cladome of an anatriaene was found, with cladi .15 mm. long, so that, presumably, anatriaenes form part of the spiculation but are very rare.

Suborder Sigmatosclerophora.

Melonanchora elliptica Carter.

Stn. x a, 50—200 m., July 27.

Hamacantha johnstoni (Bowerbank).

Stn. x a, 50—200 m., July 27; stn. xii b, 250—285 m., August 3.

Biemna variantia (Bowerbank).

Stn. xii b, 250—285 m., August 3; stn. xvi a, 200—290 m., August 9; stn. xviii e, 500—520 m., August 10.

Amphilectus fucorum (Esper).

Stn. xiv e, 20—40 m., August 11.

Mycale lingua (Bowerbank).

Stn. xvi a, 200—290 m., August 9.

Myxilla incrustans (Johnston).

Stn. vii c, 10—25 m., July 7.

Myxilla rosacea (Lieberkühn).

Stn. xiv e, 20—40 m., August 11.

Myxilla inequitornota sp.n.

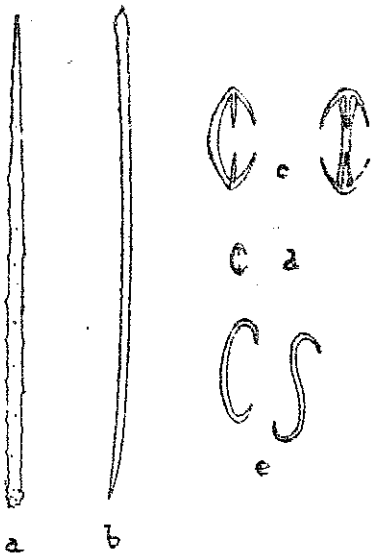
(Text-figs. 3.)

Dendoryx incrustans, Arnesen 1903, p. 14, pl. ii, fig. 3, pl. vii, fig. 3. Nec *Myxilla incrustans* (Johnston) Autt.

Holotype — in Tromsø Museum.

Occurrence. — Stn. xiv e, 20—40 m., August 11.

Diagnosis. — Sponge small, growing in interstices of a Nullipore; surface even, porose; oscules not apparent; skeleton irregularly sub-isodictyal; megascleres of main skeleton acantho-



Text-fig. 3. — *Myxilla inequitornota* sp.n. a. Acanthostyle of main skeleton; b. Tornote; c. Large isochelae; d. small isochela; e. Sigmata. × 350.

styli, .2 by .004 to .007 mm., sparingly spined; dermal tornota inequi-ended, .2 by .004 mm., slightly curved, typically mucronate at one end and oxeote at other, but both with ends strongylote or subtylostylote; chelae of 2 sizes but of similar form, measuring .04 and .017 mm. chord respectively; sigmata usually measuring .04 mm. chord, but varying from .024 to .04 mm.

Remarks. — The species differs from those hitherto recorded from the North Atlantic in the shape of the chelae and in the unequal ends of the tornota.

Lissodendoryx stipitata (Arnesen).

Stn. vii f, 550 m., July 20.

Artemisina arciger (Schmidt).

Stn. vii f, 550 m., July 20.

Dictyoclathria dichotoma (Esper).

Stn. x a, 50—200 m., July 27.

Tedania suctoria Schmidt.

Stn. x a, 50—200 m., July 27.

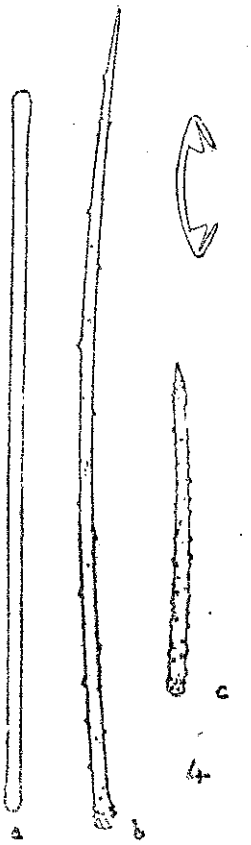
Crella basispinosa sp.n.

(Text-figs. 4, 5.)

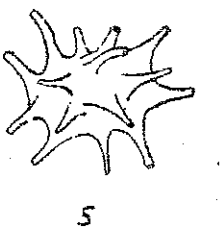
Holotype — in Tromsø Museum.

Occurrence. — Folden Fiord, stn. x a, 50—200 m., July 27.

Diagnosis. — Sponge subspherical to massive, papillate; dermis smooth, readily separable; colour, in spirit, ash-grey; skeleton composed of acanthostyli of two sizes, tornota and isochelae; dermal skeleton a dense layer, one spicule thick, of small acanthostyli; main skeleton



Text-fig. 4. — *Crella basispinosa* sp.n. a. Tornote, × 190; b, c. Acanthostyli of two sizes, × 190; d. Isochela, × 800.



Text-fig. 5. — *Crella basispinosa* sp.n. Holotype, natural size.

a coarse reticulation of tornota with acanthostyli, of both sizes, associated therewith and scattered in its interstices; small acanthostyli densely spined throughout, .25 by .007 mm.; large acanthostyli, with base densely spined but with remainder of length sparingly spined, .63 by .008 mm.; tornota smooth, with ends usually slightly unequal and varying from tylote to strongylote, or even mucronate, .56 by .007 mm.; isochelae spatuliferae, .025 mm. chord.

Remarks. — The single specimen is fragile in texture and slightly macerated, but the text-figure 5 gives a clear idea of the form of the sponge. The papillae are up to 5 or 6 mm. long. The dermis, which may be readily detached, is supported by a dense layer of small acanthostyli, and the inner tissues by a coarse and irregular reticulation of bundles of tornota, each bundle containing from 8 to 20 spicules. Associated with the meshes of the main skeleton are acanthostyli of two sizes, including smaller forms, similar in all respects to those of the dermal skeleton, and larger forms which are sparingly spined except at the base. Neither of these two forms appears to be in any sense echinating and, where they are associated with the bundles of tornota constituting the main skeleton, as opposed to being scattered in the meshes, the association is a very loose and haphazard.

Crella basispinosa sp.n. appears to differ from all previously described members of the genus in a number of features but above all in the possession of two sorts of acanthostyli.

Axinella vellerea Topsent.

A. vellerea Topsent 1904, p. 141, pl. xii, figs. 10, 11.

Stn. xvi a, 200—290 m., August 9.

Remarks. — This species has been recorded hitherto only from the Azores. The present specimen is large and massive, showing a tendency to the formation of vertical columns. These vertical columns are not separate but give the appearance of vertical branches which have fused with the main mass of the sponge. The remaining features of the exterior of the sponge are exactly as described by Topsent for the holotype. The spiculation is typical except that the styli are occasionally oxeote.

This species is not a typical *Axinella* but until we can be sure of the compass of that genus it would be idle to erect a new genus for the present species.

Axinella arctica (Vosmaer).

Stn. vii 1, 40—75 m., July 24.

Phakellia robusta Bowerbank.

Stn. vii 1, 40—75 m., July 24; stn. x a, 50—200 m., July 27.

Stn. xvi a. 200—290 m., August 9.

Phakellia rugosa (Bowerbank).

Stn. v f, 95—120 m., July 17; stn. vii 1, 40—75 m., July 24; stn. x a, 50—200 m., July 27; stn. xvi a, 200—290 m., August 9.

Phakellia ventilabrum (Johnston).

Stn. ix e, 70—80 m., July 26; stn. ix i, 10—75 m., July 26; stn. x a, 50—200 m., July 27; stn. xiii e, 60—85 m., August 3; stn. xvi a, 200—290 m., August 9.

Bubaris vermiculata (Bowerbank).

Stn. ix e, 70—80 m., July 26.

Quasillina ricardi Topsent.

Q. ricardi Topsent 1913, p. 19, pl. iii, fig. 7, pl. v, fig. 14.

Stn. xiii e, 60—85 m., August 3.

Remarks. — The species has been recorded once only hitherto, from near Bear Island.

Polymastia mammillaris (Müller).

Stn. x a, 50—200 m., July 27; stn. xii a, 250—350 m., August 3.

Radiella sol Schmidt.

Stn. vii 1, 40—75 m., July 24; stn. x a, 50—200 m., July 27; stn. xii a, b, d, 250—350 m., August 3.

Tethya aurantium (Pallas).

Stn. vii 1, 40—75 m., July 24; stn. xii b, 250—285 m., August 3; stn. xiii e, 60—85 m., August 3; stn. xiv e, 20—40 m., August 11.

Stylocordyla borealis (Lovén) subsp. **typica** Burton.

Stn. xii a, 250—350 m., Angust 3; stn. xii b, 250—285 m., August 3; stn. xvi a, 200—290 m., August 9; stn. xiv f. 100—130 m., August 11.

Order Euceratosa

Psammopemma finmarchica Hentschel.

Stn. x a, 50—200 m., July 27.

Remarks. — There are several thin encrustations which appear to belong to this species. A typical example is 2 cms. by 3 cms. in extent and is to 2 mm. thick, with oscules few in number and 1 mm. in diameter. The surface is faintly rugose and the tissues completely filled with sandgrains. There is no visible spongin nor are foreign sponge-spicules included in the skeleton.