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TWO SPONGES OBTAINED BY THE TRAINING SHIP "OSHORO MARU" IN THE EASTERN BERING SEA

By

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The sponges upon which this report is based were collected by the Training Ship "Oshoro Maru" of the Faculty of Fisheries, Hokkaido University during the course of the North Pacific Oceanographic Expeditions in 1955 and 1956 in the Northern Seas. This collection contains only two species, but affords an interesting addition to knowledge of the northern deep sea sponge-fauna. By the kindness of Mr. K. Kobayashi of Hokkaido University, the writer had the opportunity to examine and describe them. Here he wishes to express his hearty thanks to the "Oshoro Maru" extention committee, especially to Mr. Kobayashi for his kindness.

Class Demospongiae
Order Halichondrina
Family Axinellidae
1) *Phakellia ventilabrum* (JOHNSTON)
Family Halichondriidae
2) *Halichondria oshoro* n. sp.

Description of Species

1) *Phakellia ventilabrum* (JOHNSTON)

(Figs. 1 and 2)

Halichondria ventilabrum, JOHNSTON (1842) p. 107, Pl. 7.
Phakellia ventilabrum, BOWERBANK (1864) Vol. 1, p. 186; Vol. 2, p. 122; Vol. 3, p. 57, Pl. 22, figs. 1—7: SCHMIDT (1870) p. 61:RIDLEY and DENDY (1887) p. 170, Pl. 35, fig. 3: VERRILL (1873) Vol. 1, p. 440; Vol. 2, p. 413: WHITEAVES (1874) p. 9: LAMBE (1894) p. 124; (1896) p. 192, Pl. 2, fig. 3; (1900) p. 24; p. 161; p. 277: TOPSENT (1928) p. 174: HENTSCHEL (1929) p. 897; p. 974: ARNDT (1935) p. 90, fig. 191.
Phakellia robusta, BOWERBANK (1866) p. 120; p. 54, Pl. 21, figs. 13—17.

The sponge obtained by the trawl of the "Oshoro Maru" in the Bering Sea at 57° 32′ N., 171° 41′ W. is assigned to this species.

The specimen is cup-shaped with a short, rather slender stalk. It is composed of two individuals in contact side by side and attached on a carapace of a maiidaean crab, *Acanthophrys sp.*, with stalks. The larger individual is 85 mm high, 60 mm across while the smaller is 65 mm in height and 35 mm in diameter of the cup. The latter is strongly compressed laterally.

The wall of the larger sponge is about 10 mm in thickness; the upper margin of the body is strongly undulated and finely plicated. The surfaces of the outer and inner portions of the cup are nearly even, but not smooth to the touch because of the projections

Fig. 1. *Phakellia ventilabrum* (JOHNSTON) × 2/3

slightly elastic in the upper portion. Colour in spirit (after formalin) is pale grey, with external contamination with mud.

The skeleton is composed of spiculo-fibres; of them the primary lines are multispiculous, strongly developed, rather irregular and the secondary lines very irregular, mostly multispiculous, and very numerous.

Spicules (Fig. 2):— Smooth styles, of three kinds but not by any means sharply distinguished from one another. Large, stout styles (Fig. 2 a) are slightly curved, broadly and evenly rounded off at the base and more or less gradually and sharply pointed at the apex, 500—900μ in length and 18—20μ in thickness. Slender, long styles (Fig. 2 b) nearly straight or slightly curved, 200—800μ in length and average 5 μ in thickness.

of the terminations of the primary fibres of the skeleton. This hispidation is visible only when examined microscopically. It is produced by the extension of the primary spiculo-fibres of the skeleton, and partly by the projection of single spicules through the dermal membrane.

About ten oscula with diameters of 2~3 mm are arranged in a circle at the center of the inner portion of the cup. The inside of the cup is seen as an irregular reticulation resultant from the presence of numerous pores with diameters of less than 1 mm.

The texture of the sponge is rigid in the stalk portion and

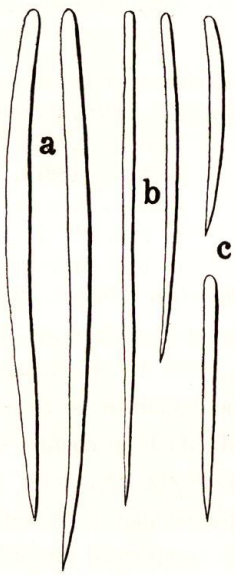

Fig. 2. Spicules of *Phakellia ventilabrum* (JOHNSTON) a: large stout styles, b: slender long styles, c: short stout styles. All × 100

Short, stout styles (Fig. 2 c) are the same in shape as the large stout ones but in size, measure 250~400×10~12μ.

Previously known Distributions:— British Sea (JOHNSTON, BOWERBANK); Iceland (JOHNSTON); Shetlands (BOWERBANK); between Scotland and Faröe Islands (CARTER); south-west coast of Norway (SCHMIDT); Arctic Ocean, off Norway (VOSMAER); Baltic Sea (FRISTEDT); Gulf of St. Lawrence (WHITEAVES, LAMBE); Florida, Gulf of Mexico and Barbados (SCHMIDT); Brazil and north-east of Falkland Islands (RIDLEY and DENDY); north-east coast of U. S. A. (VERRILL); Murray Bay, south-east of Bonaventure Island (LAMBE); Hudson Bay (LAMBE); Davis Strait (LAMBE); Parages de Belle Ile (TOPSENT).

Locality :— Bering Sea, 57° 32′ N., 171° 41′ W. Depth 105 m.

Remarks:— This remarkable species was originally described and figured by JOHNSTON in 1842 based on a specimen obtained from the British Seas under the name of *Halichondria ventilabrum*. Since that time it has hitherto been recorded by BOWERBANK, SCHMIDT, and other several investigators from various localities of the world. Judging from the distribution above mentioned, this species may be one of the cosmopolitan sponges. The species is an inhabitant of the deep sea as RIDLEY and DENDY (1887) have already pointed out, being common in depths over 100 fathoms.

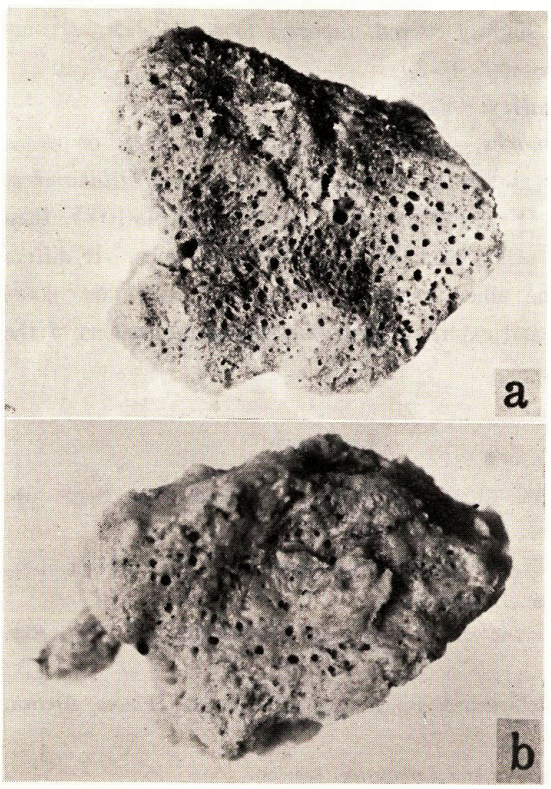

Fig. 3. *Halichondria oshoro* n. sp. × 2/3

2) *Halichondria oshoro* n. sp.
(Figs. 3 and 4)

This new species is represented by eighteen large and small fragments, all which probably belong to two or three specimens. They differ considerably from one another in external appearance; some of them are massive, some cylindrical and some amorphous but never encrusting in shape. All of them were obtained by the trawl from Bristol Bay in 1955.

The largest specimen (Fig. 3 a) which the writer selected as the type of the species has a slightly compressed, slightly concave upper surface, irregular massive body, and

measures 70 mm long, 55 mm broad by 15 mm thick. The surface of the sponge is uneven, very minutely hispid, with more or less circular oscula scattered irregularly over the surface. The oscula vary in diameter from 2 mm to less than 1 mm and are very abundant. The endosome of the sponge is typical of the genus, being somewhat like bread crumbs; small caverns or chambers are surrounded by spicules in confusion. The colour is yellowish green in formalin but changes to pale grey after being preserved in alcohol, the texture is soft and fragile.

The dermal skeleton is an irregular reticulation of tangentially disposed slender oxeas, associated with the outer ends of endosomal spicules whose meshes are abundantly filled with slender oxeas.

The main skeleton halichondroid, with loose, ill-defined fibre running more or less vertically to the surface, with a tendency to branch and anastomose. Between the bundles numerous loose spicules are scattered lying without order.

Spicules (Fig. 4):— Oxea of two distinct categories; large, stout and small, slender ones. Oxeas of endosome (Fig. 4 a) very slightly curved, sharply pointed at both ends, measuring 450～580×10～17μ. Oxeas of dermal portion (Fig. 4 b) slender, slightly curved, tapering to sharp ends, measuring 250～400×4～5μ.

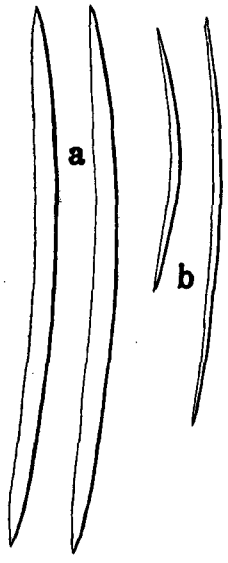

Fig.4. Spicules of *Halichondria oshoro* n. sp. a: endosomal oxeas, b: dermal oxeas. All × 140

Locality:—Bristol Bay.

Remarks:— This species has two kinds of oxeas and thus appears to be more closely allied to *Halichondria fibrosa* (FRISTEDT) or *H. genitrix* (SCHMIDT), than to any other members of the same genus. It differs from the allied forms, however, not only in colour, texture and external form but also in dimensions of the spicules.

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