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REPORT

OF THE

CANADIAN ARCTIC EXPEDITION 1913-18

VOLUME VIII:

MOLLUSKS, ECHINODERMS, COELENTERATES, Etc.

PART J: PORIFERA

By A. DENDY and L. M. FREDERICK



OTTAWA
F. A. ACLAND
PRINTER TO THE KING'S MOST EXCELLENT MAJESTY
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Report of the Canadian Arctic Expedition, 1913-18.

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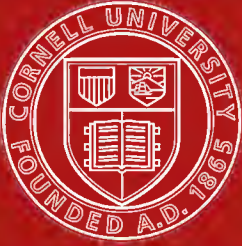
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Some Canadian and Alaskan Arctic Sponges

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and

LESLIE M. FREDERICK, M.Sc.,

Late Harold Row Research Student in King's College, London.

The collection of American Arctic Sponges submitted to us for examination and report contains little of very special interest, all the identifiable species being already well known arctic forms. Perhaps the most interesting point is the discovery of the fact that the common *Ficulina ficus* forms part of the food of the seal *Erignathus barbatus* (Erxleben).

LIST OF SPECIES REPRESENTED

Order CALCAREA

Family GRANTIIDAE

Leucandra sp.

Order TETRAXONIDA

Suborder SIGMATOTETRAXONIDA

Family HAPLOSCLERIDAE

Reniera gracilis (Miklucho-Maclay) Dybowski

Halichondria panicea Johnston

Family DESMACIDONIDAE

Phakellia variabilis (Vosmaer)

Family CLAVULIDAE

Ficulina ficus (Linné) Gray

Polymastia mammillaris (O. F. Mueller) Bwbk.

DESCRIPTIVE AND CRITICAL REMARKS

Leucandra sp.

The single specimen, which is rather badly preserved, is attached to branches of seaweed. It forms an erect, nearly straight, cylindrical tube, about 25 mm. long and 3.5 mm. in diameter, terminating above in an osculum provided with a short peristome; the wall of the tube is about 0.83 mm. in thickness. Colour in spirit light brownish-grey, texture soft and fragile.

There is a thin dermal cortex, about 0.065 mm. in thickness, and a very slight gastral cortex about 0.05 mm. in thickness. Thickly scattered dermal pores lead into wide, more or less lacunar, inhalant canals which penetrate

deep into the substance of the wall. The canal system is "syllébid;" the flagellate chambers, which are ovoid, measure about 0.13 mm. in longer diameter and open into wide exhalant canals which in their turn open into the central gastral cavity.

There is a dermal skeleton of tangential triradiates and a gastral skeleton of quadriradiates. The skeleton of the chamber layer consists of sagittal triradiates, rather irregularly arranged, but usually with the basal ray centrifugally directed, with a few sagittal quadriradiates and radial oxea, which are deeply imbedded in the wall and project beyond the surface.

Spicules.—(1) Gastral quadriradiates. The oral rays, which measure up to 0.2 by 0.013 mm. are slightly curved and gradually sharp-pointed; the straight, sharp-pointed, basal ray is slightly longer than the orals, measuring up to 0.22 by 0.013 mm.; the apical ray, which projects into the gastral cavity, is short, straight, sharp-pointed, measuring about 0.1 by 0.01 mm.

(2) Sagittal triradiates. Varying somewhat in size and form, but all with a very wide oral angle. In some the basal ray is very long, straight and sharp-pointed, measuring up to 0.5 by 0.013 mm.; while the orals, which measure about 0.26 by 0.013 mm., curve forward at their point of origin and then turn sharply outward. In others the rays are more or less the same length, measuring on an average 0.4 by 0.014 mm., the basal ray being straight while the orals are slightly curved.

(3) Sagittal quadriradiates. These are like the sagittal triradiates, with the addition of a small apical ray.

(4) Dermal triradiates. Slightly sagittal, with straight, gradually sharp-pointed rays; the orals measuring about 0.26 mm. in length and the basal slightly more.

(5) Oxea. Slightly curved, gradually sharp-pointed, measuring up to 1.2 by 0.02 mm.

(6) Small oxea. Found only in boiled out preparations; slightly curved or crooked, gradually sharp-pointed, the ends usually differing slightly; measuring up to 0.16 by 0.006 mm.

Because of the unsatisfactory state of the material we do not think it possible to identify the specimen specifically; it probably comes near to *Leucandra valida* Lambe (1900) or *Leucandra cylindrica* Fristedt (1887).

Register Number and Locality.—XIII; Richmond gulf (about 4 miles from the entrance), east coast of Hudson bay, 10-20 fathoms, August 24, 1920, F. Johansen coll.

Reniera gracilis (Miklucho-Maclay) Dybowski

Veluspa polymorpha, var. *gracilis* MIKLUCHO-MACLAY (1870).

Reniera gracili; Dybowski (1880).

There are twenty or more spirit specimens in the collection; some more or less whole, others in an extremely fragmentary condition; there is also one dry specimen (R.N. XXIII, 1).

The colour in life (R.N.V) was light rose grey; in spirit it varies from light yellowish brown to mud-grey; texture very soft and friable.

The skeleton arrangement and spiculation agree closely with those of specimens described and figured by Dybowski (1880). The short, sharp-pointed, stumpy oxea measure on an average 0.14 by 0.012 mm.

Register Numbers, Localities, etc.—V: Station 41f, Bernard harbour (outer harbour), Dolphin and Union strait, Northwest Territories, August 1, 1915, 2-3 fathoms.—XV, 1, 4 and XVIII, 1, 3: Station 20d, Beach at Teller, Alaska (Port Clarence), July, 1913.—XVII, 2, 3: Station 20b-c, Grantley harbour, Alaska, about 3 fathoms, sandy mud, July 30, 1913.—XXIII, 1: Station 20m, beach at Teller (Port Clarence), Alaska, August, 1913. (All Canadian Arctic Expedition, F. Johansen coll.)¹

¹For detail map of Port Clarence see Vol. VII, Part N, p. 25 of these reports.

Halichondria panicea Johnston

For literature, synonymy, etc., *vide* Ridley and Dendy (1887) and Dendy (1905).

There are about twenty-five specimens and a number of fragments of this very common species in the collection. The form varies from encrusting or massive to digitate.

The skeleton arrangement and spiculation are typical, so no further description is necessary.

Register Numbers, Localities, etc.—XI, XVI: Station 20*g*, Port Clarence, Alaska, 2-3 fathoms, sandy mud, August 4, 1913.—XIV, 1: Station 23, lat. 70° 24' N., long. 161° 25' W., 9-10 fathoms, grey mud with pebbles, August 19, 1913.—XV, 2, 3 and XVIII, 2: Station 20*d*, Teller Alaska, July, 1913.—XVII, 1: Station 20*b-c*, Grantley harbour, Alaska, July 30, 1913. (All Canadian Arctic Expedition, F. Johansen coll.)

Phakellia variabilis (Vosmaer)

- Cribrochalina variabilis* VOSMAER (1882).
Cribrochalina Sluiteri VOSMAER (1882, 1885).
Reniera infundibuliformis A. HANSEN (1885).
Cribrochalina Sluiteri LEVINSSEN (1887).
Cribrochalina variabilis FRISTEDT (1887).
Placochalina Sluiteri LENDENFELD (1887).
Cribrochalina Sluiteri SWARTSCHEWSKY (1906).
Tragosia Sluiteri LUNDBECK (1909).
Tragosia Sluiteri HENTSCHEL (1916).

There are three spirit and ten dried specimens in the collection. All are funnel-shaped, resembling closely specimens described and figured by Vosmaer and Levinsen, and ranging from 25 to 130 mm. in total height. The colour in spirit is brownish grey; that of the dried specimens varies from dark brown to almost white. Texture soft and flexible.

The skeleton arrangement and spiculation are typical.

Because of the absence of trichodragmata we propose to remove this sponge from the genus *Tragosia* [*vide* Dendy (1922)], and place it in the genus *Phakellia*.

Vosmaer (1882, 1885) makes two distinct species of "*Cribrochalina*," namely *C. variabilis* and *C. Sluiteri*. We can see nothing in his description to justify this and regard *C. Sluiteri* as identical with *C. variabilis*, the latter specific name being retained as it was the first given.

Register Numbers, Localities, etc.—XIV, 2: Station 23, lat. 70° 24' N., long. 161° 25' W., 9-10 fathoms, August 19, 1913.—XXI: Station 26, beach on Spy island (Thetis islands), Alaska, September 3, 1913.—XXIV, 1, 2, 3, 4: Station 24, beach at Point Barrow sandspit, Alaska, August 22-23, 1913.—XXV: Station 28, 1, *m*, beach at Collinson point (Camden bay), Alaska, June 1914. (All Canadian Arctic Expedition, F. Johansen coll.)

Ficulina ficus (Linné) Gray

For discussion and synonymy *vide* Topsent (1900.)

There are about a dozen specimens in the collection, and a number of fragments, R.N.X., which is yellowish grey in colour and has evidently been growing free, is ovoid and flattened in one plane, measuring 30 by 27 by 14 mm.; R.N. IV, which is dull greyish brown in colour, forms an irregular mass growing round a seaweed; R.N. XII consists of two minute, sub-spherical specimens,

grey in colour, growing on a small bivalve mollusc-shell; R.N. II, from the stomach of an *Erignathus barbatus* 73 inches long, consists of eight small specimens, yellow in colour (orange when first obtained), irregularly rounded and flattened in shape, the largest measuring 33 by 20 by 6 mm.; R.N. VIII consists of a number of greyish, semi-digested fragments from the stomach of an *Erignathus barbatus*; these were of a dark-green or orange-brown colour when first obtained.

The surface of all the specimens is smooth and even; neither inhalant pores nor oscula are visible. Texture firm, elastic and compact.

The skeleton consists of tylostyles, densely packed and arranged in great confusion; there is a very opaque outer layer in which the centrotylote microxea form an almost solid mass.

Spicules.—(1) Tylostyles. Usually slightly curved, varying little in size, and measuring up to 0.57 by 0.009 mm. In most cases the head is not very marked, and some of them tend to become stylote.

(2) Centrotylote microxea. Sometimes minutely spined or roughened; the typical ones measure up to 0.07 by 0.003 mm., but there are many smaller and more irregular forms.

Register Numbers, Localities, etc.—II: Station 370, Dolphin and Union strait at Bernard harbour, North West Territories, October 3, 1914.—IV: Station 41, Bernard harbour (outer harbour), 3-5 fathoms, sandy mud, July 20, 1915.—VIII: Station 37a, Bernard harbour, August 24, 1914.—XII: Station 43b, off Stapylton bay, Dolphin and Union strait, Northwest Territories, 25-30 fathoms, mud with pebbles, September 14, 1915. (All Canadian Arctic Expedition, F. Johansen coll.).—X: Whaler point, North Somerset island, Northwest Territories, August 17, 1904, (*Neptune* expedition, A. Halkett coll.).

***Polymastia mammillaris* (O. F. Mueller) Bwbk.**

(For discussion and synonymy *vide* Topsent (1900)).

There are two much flattened, disc-shaped specimens in the collection; *Trichostemma*-like, with marginal fringe of long spicules. The larger, (R.N.I. a), which has a small pebble attached to the middle of the under surface, and numerous teat-like projections on the upper surface, measures 63 mm. in diameter and 5 mm. in thickness. The smaller (R.N.I. b) is attached to a shell and measures only 25 mm. in diameter and 3 mm. in thickness.

The colour in spirit is dark yellowish grey; in life it was "grey-yellow, with the spine-brushes more strongly yellow-brown" (Johansen). The skeleton arrangement and spiculation agree closely with those of specimens described by Vosmaer and Topsent.

Register Numbers, Locality, etc.—I, a, b: Station 43a, off Cockburn point, Dolphin and Union strait, Northwest Territories, about 100 metres, mud with pebbles, September 13, 1915. (Canadian Arctic Expedition, F. Johansen coll.).

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APPENDIX

We have been asked to include in this report the following notes on some Sponges belonging to the United States National Museum, collected by the International Expedition to Point Barrow in 1883, and listed by John Murdoch in his report on the marine invertebrates of the expedition, p. 168. as quite indeterminable with the resources at his command.

These were sent to us by the Smithsonian Institution in three jars, bearing the catalogue numbers 1588, 1590 and 1591. They all came from "Ten miles west of Point Franklin, Alaska, August 31, 1883, 13½ fathoms." Only two common species are present in the collection.

Number 1588 contains a number of specimens of *Ficulina ficus*, showing great variation in the number of microxea present, which are small, sharply pointed at each end, roughened or microspined, and frequently centrotylote. In one specimen they are almost completely wanting.

The other jars contain several specimens of *Halichondria panicea*, massive or digitate in form, with scattered vents, and an often very distinctly reticulate dermal membrane.

Mr. F. Johansen also submits the following note: "Mr. Thomas Simpson, in his Narrative of the Discoveries on the North Coast of America, 1836-39, London, 1843, p. 125, states that on the beach west of Flaxman island, Alaskan arctic coast, his party 'picked up some pieces of delicate branched Sponge,' on July 21, 1837."

LONDON, ENGLAND, August, 1923.

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