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## REPORT ON THE MARINE POLYZOA OF CANSO, N.S.

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The following report embodies the results of about seven weeks' work done at the Marine Biological Station of Canada during July and August, 1902. I collected along the beaches, under wharfs, and on kelp washed on the shore. Some dredging was done in the neighbourhood in from 10-25 fathoms, and one of my best sources was stones, tunicates, sponges, &c., brought up on the trawl of the steamer *Active*, which went out a few miles daily to fish for cod and haddock in 20 to 25 fathoms.

My identification depends almost entirely on Hincks' British Marine Polyzoa, as it, the Challenger Reports and Verrill's Report on Invertebrate Fauna of Vineyard Sound were all the accessible literature at the station on this subject.

## FAMILY: ATEIDÆ.

*Aetea truncata* (Landsborough).—A colony intermingled with *Obelia commissuralis* growing on a mussel shell (*Mytilus edulis*) was found under a wharf. It is the branched variety, and is exactly like Hincks' illustration, Plate II., fig. 3, except that the tubular appendage is absent in every case and that it is considerably more branched.

## FAMILY: EUCRATIDÆ.

*Gemellaria loricata* (Linnæus).—A beautiful, bushy, white tuft, two and one-half inches high, attached to a stone, was taken by the trawler *Active*. There is a tinge of brown on the larger branches, but the greater part is pure white; the pits on the wall are extremely small. I have also seen the brown form in about 20 fathoms. In the form and proportion of parts it answers completely to *G. willisii*, Dawson, as described in Hincks' British Marine Polyzoa, p. 21.

*Scruparia clavata*, Hincks.—Branches on mussel shells (*Mytilus edulis*) were found under wharfs. Some in single file, some back to back, are found in the same branch.

## FAMILY: CELLULARIIDÆ.

*Menipea ternata* (Ellis and Solander).—The following are my notes on this species: July 20, a small patch found on an ascidian taken at Canso. I find no trace of anterior avicularia; lateral avicularia are very distinct, and there is always a large spine on the peristome just inside this avicularium. The operculum varies a good deal in size and shape, and in many is crenate on the free margin, having two or three rounded teeth; it has a thickened border surrounding a deep, flat centre; the tendrils are very long. August 1, specimens were taken from a stone taken by the trawler *Active* in Chedabucto Bay, in about 12-20 fathoms. There is no grouping in triplets, but about seven zoœcia occupy each internode; the anterior avicularium is quite distinct on the upper zoœcium of each internode, and also on some others. The lateral avicularia are not so prominent as in Hincks' illustrations. The operculum covers the greater part of the orifice, and is marked on the front surface. August 19, a tangle of this species mixed with an

hydroid was dredged in 20 fathoms. It answers in every respect to the one of August the first. The median avicularium is present on most of the cells, and some of them are of good size. Spines vary from one to three, and toward the upper part of the colony they are very long.

*Scrupocellaria elliptica* (Reuss).—A branch of this species about two centimetres high was taken from a stone brought up by a trawl from 30 to 50 fathoms. It is twice dichotomously branched; the vibracula are very long and serrated on one margin; the spines above the orifice vary greatly in length, and many are very long.

*Caberea ellisii* (Fleming).—This species is common. It was dredged in 30 to 50 fathoms, attached to a sponge and to *Terebratulina septentrionalis*; considerable quantities of it were also dredged in 20 fathoms attached to *Balanus*, stones, &c.

FAMILY: BICELLARIDÆ.

*Bugula* sp.—One specimen about one inch in length was found on a mussel shell (*Mytilus edulis*) taken just below low water under a wharf at Canso. The zoarium is ascending, racemose, regularly dichotomously branched, the branches being rather narrow, and composed regularly of two series of zoecia alternate with each other. The zoecia are long, slightly tapering toward the base, and have at the upper part of the orifice five spines. The largest spine is at the upper outer corner; right in front of the larger spine is another one; a pair of spines, one on each side of the peristome, arise just below the other spines and almost or quite overlap each other; the lower inner spine sometimes absent; the orifice is very large, occupying almost the whole front of the zoecium. Avicularia are entirely marginal in the form of bird's heads. They are pedunculated, and one is attached to the outer margin of each zoecium considerably above the middle; they are stout, being about two-thirds as broad as long, and have both beaks hooked; they are attached by a disk-like base; the oecia are almost globular, flattish at the lower end; they are raised, and attached by a narrow neck to the zoecium below. On one polypide I counted twelve tentacles, on another thirteen. This species differs from *B. avicularia* in the form of the zoarium, the number of spines, in the fact that the avicularia are not elongated but quite stout, and in the number of tentacles.

FAMILY: MEMBRANIPORIDÆ.

*Membranipora pilosa* (Linnæus).—This is found very commonly about Canso in depths of 10-15 fathoms. I found it on fronds of *Rhodymenia palmata*, *Ptilota plumosa*, and on the stipes of *Laminaria longicuris* washed up on the beach. It sometimes forms narrow patches one inch long and two to four cells wide on *Rhodymenia*, and in this case the basal spine is aborted, but the peristome is surrounded by about five rather short spines directed toward the centre of the peristome. Another peculiarity of this specimen is that on each side of the peristome there is an elliptical, transparent patch about one-fourth the diameter of the peristome. On *Laminaria* it forms encrusting masses, covering frequently the whole stipe. In these the basal spine is present but very short, and the marginal spines are often reduced to two lateral ones near the upper edge of the peristome. The peristome is very large, about one and one-half times the length of the tube below it. Specimens got on *Rhodymenia* and *Ptilota*, near Cranberry Light, in 15 fathoms, formed white encrusting masses, and had typical structure with very long basal spines.

*Membranipora lineata* (Linnæus).—Small patches were found quite frequently on *Laminaria* just below tide-mark. They are quite normal, except that some have as many as fourteen spines. A beautiful lace-like colony, two inches long, was found on a mussel shell. Every cell had a very prominent avicularium just below its orifice, which is raised greatly, and has its acute mandible never pointing down but always

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obliquely upward. Generally only one pair of spines is present, and these are erect and situated near the top of the orifice.

## FAMILY: CRIBRILINIDÆ

*Cribrilina punctata* (Hassall)?—I found two specimens, the identity of the first of which I am not sure. The first specimen was found encrusting a shell of *Litorina* which was inhabited by a hermit crab. The boundaries of the cells of the zoarium are not distinct; the whole front of the zoecium is perforated with punctures of large size, giving it a reticulated appearance; the peristome is not greatly thickened on the lower edge, and bears no mucro; it has two spines on the upper margin that are directed inwards. The avicularia are generally absent, but an occasional one is seen on the edge of the peristome. The oœcia are large, covered with punctures, and contain ova of a beautiful pink colour. The second specimen was found on a stone at low-water mark. The two lateral avicularia are present on almost every cell. The spines on the peristome are rather irregular in number, some cells having none, some two. The lower border of the peristome is very slightly thickened, but the mucro is absent.

*Cribrilina annulata* (Fabricius).—Several very small patches were found on a stone between tide-marks, and a small patch 5 mm. in diameter, together with several other small patches, consisting of from one to three cells, was obtained from the frond of *Rhodymenia palmata* dredged in 20 fathoms, near the entrance to Canso harbour. All the specimens are of a pure white colour. In the larger patch on *Rhodymenia* the marginal zoœcia retain a pair of transparent spots laterally, also two above the orifice.

## FAMILY: MYRIOZOIDÆ.

*Schizoporella sinuosa* (Busk).—A very old, encrusting mass was found on a stone taken by the trawler *Active*. The individuals can be distinguished by the naked eye. The orifice is orbicular, produced into an angle below. The wall is punctured, especially near the edge, where the punctures are large.

*Schizoporella hyalina* (Linnæus).—This species is very common about Canso. I have found it on *Laminaria longicuris*, *Fucus vesiculosus*, *Ascophyllum nodosum* and a red alga. In all cases it was found in very shallow water or just below tide-mark. The lateral denticles vary a good deal in size, sometimes being very conspicuous when the ventral sinus is deep, or very small when the ventral sinus is shallow.

## FAMILYS ESCHARIDÆ.

*Lepralia pallasiana* (Moll).—A colony was found on a stone taken from under a wharf. There is no umbo, avicularia nor oœcia present; the reticulation is very pronounced and beautiful, the margin of the peristome is not greatly raised and its lower margin is more strongly curved than is indicated in Hincks' drawings.

*Lepralia pertusa* (Esper).—Specimens were found encrusting an ascidian dredged by the trawler *Active*. As I am not at all sure of the identity of this specimen, I shall give my notes in full. July 13: Zoarium encrusting of a white colour in several small patches. Zoœcia are very distinct, separated by raised lines, and form radiating rows; they are mostly rectangular, a few having a pointed base; a very distinct line of large pores at each lateral edge border the dividing, raised lines; these pores are separated by ridges passing inward radially for a short distance; the orifice is transversely elliptical with a distinct sinus on the lower side; just below the lower lip is a raised, conical or tubular structure with an opening circular above, but prolonged into an angle below; this structure does not come out straight but runs obliquely toward the orifice, no avicularia are present. Every feature is very distinct. July 27: Another specimen taken which is younger. It has an orange appearance and the walls

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are translucent; the zoecia are rather less regular in shape but are arranged in regular lines.

*Porella concinna* (Busk).—One specimen was got from a stone taken by the trawler *Active*. The wall is thickly punctured, the cells are not distinctly divided, the cell-wall is much raised about the orifice; the avicularia are generally present on the lower lip.

*Escharoides rosacea* (Busk).—A single specimen 5.6 mm. high divided into two lobes was taken by the trawler *Active* in about 30 to 50 fathoms; it was attached to a stone.

*Mucronella* sp.—The specimen was found on an ascidian taken by the trawler *Active*. It resembles closely *M. coccinea*. It is an encrusting form; the zoecia are ovoid, narrowing below, quite flat, the outline of each is very distinct, the surface plainly granular; the orifice is almost terminal, it is rounded above and widest near the base; there are two lateral denticles near the base and a median, blunt denticle on the lower lip; two avicularia are present at the sides of the orifice, their lower edge is below the edge of the lower lip of the peristome; they point upward or inward or between the two positions; there are generally three spines present just above the orifice; the zoecium is yellowish and dim toward the base. In a second specimen got from a stone taken by trawler *Active*, each zoecium was punctured around the border very close to the raised, separating ridge. Avicularia are constantly present, only a few having a single avicularium.

## FAMILY: CRISIDÆ.

*Crisia eburnea*—(Linnæus).—Specimens of this were found on the base of red algae dredged in 20 fathoms; two small tufts, 1 cm. high from base of stem of *Boltenia*; several branches 2.5 cm. high from stone obtained in Chedabucto Bay; from a hydroid dredged in 20 fathoms at the entrance to Canso harbour; one small branch found attached to *Lafœa dumosa* dredged in 20 fathoms near Canso harbour; a magnificent branch 2.5 cm. high found growing on *Rhodymenia palmata* dredged in 20 fathoms. The joints are always horn-coloured, branches generally do not arise from lowest zoecium of the internodes but more frequently from the second, third, fourth or fifth. In one specimen oecia are present. They are always at the base of the branch and are very ventricose with orifice not projecting nor tubular, but transversely narrow elliptical.

## FAMILY: TUBULIPORIDÆ.

*Tubulipora flabellaris* (Fabricius).—Colonies were found on *Laminaria* dredged in 10 to 15 fathoms. The young colonies are fan-shaped, the adult are almost orbicular; there is no sign of lobation in either young or adult.

*Idmonea atlantica* (E. Forbes).—One colony 2.5 cm. long was got on a muddy bottom in 25-35 fathoms. The branching is fairly regularly dichotomous. There were no oecia present. Another colony .75 cm. high growing on *Lafœa dumosa* was got in the same locality.

*Idmonea serpens*, Linnæus.—Two small branches were found in an hydroid dredged in about 20 fathoms near the entrance to Canso harbour. Its colour is ivory white with no tinge of purple.

*Entalophora clavata* (Busk).—A small, erect colony less than 1 cm. high was found growing on an hydroid dredged at 20 fathoms. It sprang from the same base as a branch of *Idmonea*. It is unbranched but clavate at the end and resembles completely in form Hincks' illustration, Plate LXV., 8d. (Br. Mar. Polyzoa).

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## FAMILY: LICHENOPORIDÆ.

*Lichenopora*, sp.—I was unable to identify this specimen with any species described by Hincks in 'British Marine Polyzoa.' One small colony was taken off *Rhodymenia palmata* dredged in 20 fathoms near the entrance to Canso Harbour. The specimen is not more than 2 mm. in diameter. The zoarium is stipitate widening above into a shallow cup. There is a wide bordering lamina entirely free and curved up so as to make the edges of the cup. Zoecia are arranged irregularly with the intervening cavities, also arranged irregularly; many of the orifices have long acuminate projections, some of which are bifid. The characteristic feature of the specimen is the form of the zoarium.

*Lichenopora verrucaria* (Fabricius).—This is a common species at Canso. I found it on *Laminaria* fronds washed up on the beach, on a blade of dead *Zostera* that came up in the dredge from 30 to 40 fathoms and several colonies on *Ptilota plumosa* dredged from 15 fathoms.

## FAMILY: FLUSTRELLIDÆ.

*Flustrella hispida* (Fabricius).—This is very commonly found between tide marks coating the stems of *Ascophyllum nodosum*. It is always situated at the base of the stipe.

## FAMILY: VESICULARIIDÆ.

*Bowerbankia*, sp.—Specimens were found growing on hydroids attached to mussel shells taken under wharfs. The zoecia are in groups attached to both sides of a jointed stolon. The polypide has eight tentacles, the stomach is quite dark coloured, the gizzard conspicuous and many cells contain rounded, dark brown bodies.

*Bowerbankia imbricata* (Adams).—A small mass was found growing on the surface of *Membranipora lineata* attached to a mussel shell. The majority of the polypides have a large, red, oval larva in each, and this is the only distinct organ that can be seen. One had its tentacles projecting in a long, pointed mass, they seem to be more than ten, but I could not tell the exact number. I am not at all sure of the identity of this specimen.

## FAMILY: PEDICELLINIDÆ.

*Pedicellina cernua* (Pallas).—Both the smooth and spiny variety of this species occurred on mussel shells taken under wharfs. Variety *glabra* is the more common, only one specimen of the spiny form was found and the spines on this were long and hair-like, and were not confined to the peduncle, but also cover the polypides. I counted fourteen tentacles in several individuals.

*Pedicellina nutans*, Dalyell.—This was found intermingled with *Bowerbankia*, sp. on a mussel shell got from under a wharf, and also mixed with *Pedicellina nutans* growing on *Membranipora lineata* got from a mussel shell.

*Pedicellina gracilis*, Sars.—One specimen of this species was found spread over an encrusting mass of *Membranipora lineata* on a mussel shell, which was got under a wharf, it was intermingled with *Pedicellina nutans*, and the cells of the two were about the same size. The peduncle was very long and slender, the expanded, cylindrical part at the base being hardly one-eighth of the whole peduncle, but in a few cases as much as one-fourth. In some individuals the peduncle expands above to form a capitate head which contracts suddenly at the polypide. The polypides are plainly gibbous on the sides. The stolon is jointed.

## FAMILY : LOXOSOMIDÆ.

*Loxosoma singulare*, Keferstein.—Two specimens were found on *Schizoporella*. Both have two buds of different sizes on each side. The stalk is about one-half the length of the body, transversely marked, but the expanded disk below is hid from sight. It only varies from Hinck's description by having eight tentacles in one specimen. The number in the other could not be counted.

*Unidentified*.—A specimen was found on a stone taken by the trawler *Active*. It formed a very small, white, encrusting mass; the zoœcia are arranged in very irregular order and their boundaries are not distinct; the orifice is arched above and convex below, due to a tubercle arising just below the orifice; this tubercle has two lateral wing-like outgrowths below and in this way forms a crescent-shaped body on the front surface of the zoœcium; dim radial lines pass out from this to the margin; two spines arise from the upper side of the orifice. Many have globular oœcia above, and on these the spines are absent.

Another species was found on a stone and on the shell of *Balanus* taken by trawl of the *Active*. The zoarium is encrusting and of a greenish colour; zoœcia are of average size, very plainly marked off from one another and of irregular and various shapes, the whole surface is flat and covered with very large punctures giving it a reticulated appearance. The orifice is not terminal but at the upper end, not projecting, and almost perfectly orbicular; some have two lateral denticles near the lower edge; directly below the orifice is an avicularium with pointed mandible running nearly horizontal, or obliquely upward.