

BRYOZOA FROM LABRADOR, NEWFOUNDLAND, AND NOVA SCOTIA, COLLECTED BY DR. OWEN BRYANT.

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During the summer of 1908 Dr. Owen Bryant made a collection of marine animals off the northeastern coast of North America. Bryozoa were obtained at eighteen of the dredging stations, which extended from Cape Mugford, Labrador, about latitude 58°, to Cape Sable, Nova Scotia, in latitude about 43°. In depth the dredgings range from 5 to 110 fathoms. While the material in this group brought back by Doctor Bryant was small in amount it was fairly rich in species, as indicated by the list of 24 genera and 51 species.

To avoid constant repetition in the catalogue the depth and character of bottom of the dredging stations is given in the following table:

Position of station.	Depth.	Character of bottom.
	<i>Fathoms.</i>	
Egg Harbor, Labrador.....	7	Mud.
Near Egg Harbor, Labrador.....	20	Do.
Outside of Hebron, Labrador.....	60	Gravel.
Do.....	80	Do.
Halfway from Mugford to Hebron, Labrador.....	60	Mud and sand.
Off Beachy Island, between Flint Island and Cape Mugford, Labrador..	80	Do.
Shoal Tickle, 20 miles southeast of Nain, Labrador.....	25	Gravel.
20 miles northeast of Nain, Labrador.....		
St. Pierre, Newfoundland.....	5	Do.
St. Pierre Bank, Newfoundland.....	30	Pebbles.
St. Lawrence Harbor, Placentia Bay, Newfoundland.....	50	
Southeast of Burin, Placentia Bay, Newfoundland.....	110	
Off Cape Race, Newfoundland.....		
West-northwest 75 miles of Sable Island, Nova Scotia.....	75	Fine sand.
20 miles east of Cape Sable, Nova Scotia.....	70	Do.
Browns Bank, off Cape Sable, Nova Scotia.....	40	Rocks and sand.
14 miles south of Cape Sable, Nova Scotia.....	45	Rocks.
40 miles west by south from Cape Sable, Nova Scotia.....	75	Gravel.
43 miles west by south from Cape Sable, Nova Scotia.....	110	Do.

The nomenclature of the Bryozoa has undergone so much revision since the earlier work of Dawson, Stimpson, Packard, and Verrill that many of the specific names cited by these writers are now scarcely recognizable except to the specialist in this group. I have therefore included in the synonymy all the names that have been applied by writers on North American Bryozoa to the species mentioned in this list, whenever such names differ from the present usage.

Suborder CYCLOSTOMATA.

CRISIA CRIBRARIA Stimpson.

Crisia cribraria STIMPSON, 1853, p. 18.

Crisia eburnea var. *cribraria* VERRILL, 1879*b*, p. 28.—WHITEAVES, 1901, p. 110.

Locality.—Fourteen miles south of Cape Sable, several well-developed colonies with ovicells.

The validity of this species has been in doubt ever since Stimpson described it, and several authors have, apparently without studying the material, placed it under various others as a synonym. There can be no doubt, however, that it is a good species. The writer has re-described and figured it in a recent paper.¹

? CRISIA DENTICULATA (Lamarck).

Crisia eburnea var. *denticulata* VERRILL, 1879*b*, p. 28.

Along with the preceding species were some specimens that appear to belong to *denticulata*, but as no ovicells are present the identification can not be made with certainty.

CRISIA EBURNEA (Linnæus).

Localities.—Along with the two preceding and also at Browns Bank. Only a few small specimens were taken, but ovicells were present in both cases.

LICHENOPORA VERRUCARIA (Fabricius).

Madrepora verrucaria FABRICIUS, 1780, p. 430.

Diastopora patina VERRILL and SMITH, 1873, p. 707.

Discoporella verrucaria VERRILL, 1875*a*, p. 414; 1875*b*, p. 41; 1879*b*, p. 28.—RINK, 1877, p. 443.

Locality.—Fourteen miles south of Cape Sable, two colonies on hydroid stems.

LICHENOPORA REGULARIS (d'Orbigny).

Locality.—At Shoal Tickle, Labrador; there was found one complete colony and portions of two others. This seems to be d'Orbigny's species without doubt, though the size is larger than anywhere recorded (fully one-half inch across), the rays of zoœcial tubes are by no means regular and the zoarium is much warped. In all the Lichenopora the form of the zoarium is more or less adjusted to the substratum and the arrangement of the zoœcial tubes is modified accordingly. I have compared these specimens with one so named by Norman in the collection of the Geological Survey of Canada.

TUBULIPORA ATLANTICA (Johnston).

Idmonea atlantica SMITT, 1872, p. 6.—PACKARD, 1867, p. 270.—WHITEAVES, 1901, p. 111.

Idmonea pruinosa STIMPSON, 1853, p. 18.

Localities.—Browns Bank, rare; 14 miles off Cape Sable, common.

¹ Bryozoa of the Woods Hole Region, Bull. U. S. Fish Com. for 1910, p. 215, pl. 18, figs. 7, 7*a*, and 7*b*.

TUBULIPORA FLABELLARIS (Fabricius).

Tubipora flabellaris FABRICIUS, 1780, p. 430.

Diastopora verrucaria PACKARD, 1867, p. 269.

Locality.—A single colony of this species was taken at St. Pierre Bank.

Suborder CHEILOSTOMATA.

GEMELLARIA LORICATA (Linnæus).

Loricaria americana LAMOUREUX, 1816, p. 7.

Gemellaria dumosa STIMPSON, 1853, p. 19.

Gemellaria willisii DAWSON, 1865, p. 3.

Locality.—One colony taken halfway between Mugford and Hebron, Labrador.

MENIPEA TERNATA (Solander).

Cellularia densa DESOR, 1848, p. 66.

Cellularia ternata VERRILL and SMITH, 1873, p. 711.—VERRILL, 1879*a*, p. 53, and 1879*b*, p. 28.—RINK, 1877, p. 443.

Localities.—Forty-three miles west by south from Cape Sable, rare; 14 miles south of Cape Sable, common; St. Pierre Bank, rare.

SCRUPOCELLARIA SCABRA (Van Beneden).

Cellularia scabra RINK, 1877, p. 443.

Cellarina scabra VERRILL, 1879*a*, p. 53; 1879*b*, p. 29.

Localities.—Fourteen miles south of Cape Sable, common; St. Pierre, rare; St. Pierre Banks, rare; Egg Harbor, rare.

CABEREA ELLISII (Fleming).

Localities.—Forty-three miles west by south from Cape Sable, rare; Browns Bank off Cape Sable, rare; 14 miles off Cape Sable, common.

BICELLARIA CILIATA (Linnæus).

Locality.—Browns Bank off Cape Sable, not common.

BUGULA CUCULLIFERA Osburn.

Bugula cucullata VERRILL, 1879*a*, p. 53; 1879*b*, p. 29; and 1880, p. 188, is preoccupied by *B. cucullata* BUSK, 1867, p. 241.

Locality.—Shoal Tickle, 20 miles southeast of Nain, Labrador, one small colony. This record greatly extends the known range of this species, which has hitherto been recorded as occurring from Cape Cod to Jeffrey's Ledge, Maine.

BUGULA MURRAYANA (Johnston).

Flustra truncata DESOR, 1848, p. 66.—STIMPSON, 1853, p. 19.

Flustra murrayana PACKARD, 1863, p. 406.

Menipea fruticosa PACKARD, 1867, p. 273, for the narrow-branched variety.

Localities.—Forty-three miles southwest of Cape Sable, not common; 14 miles south of Cape Sable, not common; Browns Bank, not

common; Shoal Tickle, one colony; outside of Hebron, Labrador, not common; Egg Harbor, Labrador, not common.

The variety *fruticosa* Packard, characterized by narrow fronds, occurred along with the typical form at Shoal Tickle, Labrador, and at Browns Bank, off Cape Sable.

KINETOSKIAS ARBORESCENS (Koren and Danielssen).

Bugula umbella VERRILL, 1879a, p. 52, synonymy.

Localities.—Twenty miles east of Cape Sable and 75 miles west northwest from Sable Island, one colony at each station. Both colonies were symmetrically developed and bore ovicells with embryos. It is perhaps worthy of note that these stations were at considerable depth, 70 and 75 fathoms, respectively, and that the bottom sample was clean, fine sand in both cases.

FLUSTRA CARBASEA Solander.

Flustra digitata PACKARD, 1867, p. 274.

Flustra papyrea VERRILL, 1879b, p. 29.

Localities.—Egg Harbor, Labrador, one colony; near Egg Harbor, not common; Shoal Tickle, Labrador, one colony.

FLUSTRA SECURIFRONS (Pallas).

Carbasea papyrea DAWSON, 1859, p. 257.

Flustra truncata PACKARD, 1867, p. 274.

Locality.—St. Pierre Banks, one well-developed colony. Whit-eaves (1901) does not list this species because of doubt as to the records of Packard, saying that "Verrill states that Stimpson's *F. truncata* is *Bugula murrayana*, and it may be that Packard's is also." Packard was well acquainted with *Bugula murrayana*, however, as early as 1863 when he listed it under the name of *Flustra murrayana* for the region about Caribou Island, Labrador; and it is not likely that he would later mistake *F. securifrons* for it. However that may be, there can be no doubt concerning the present specimen, and the species is henceforth to be included in the list of Canadian Bryozoa.

MEMBRANIPORA CRATICULA Alder.

Membranipora lineata var. *craticula* VERRILL, 1879b, p. 29.

Localities.—St. Pierre Bank, Newfoundland, one colony on *Pecten* shell; near Egg Harbor, Labrador, one colony on the back of a colony of *Flustra carbasea*; Shoal Tickle, Labrador, one colony on the inside of a shell. The last-mentioned colony has the large vicarious avicularia abundantly developed. It is altogether likely that some of the earlier records of *M. lineata* (Linnæus) were based on this species which is much more common than *lineata* in American waters.

MEMBRANIPORA CYMBÆFORMIS Hincks.

Membranipora spinifera VERRILL, 1879b, p. 29.

Localities.—Fourteen miles south of Cape Sable, several colonies; Shoal Tickle, Labrador, rare. This species seldom grows attached to shells or stones, but is usually found on the stems of hydroids or on other Bryozoa. The dorsal side of the fronds of *Bugula murrayana* seems to be a favorite locality. The colonies are never large, seldom over one-fourth inch across.

MEMBRANIPORA SERRULATA (Busk).

Flustra serrulata WHITEAVES, 1901, p. 95.

Localities.—Southeast of Burin, Placentia Bay, Newfoundland, rare; outside of Hebron, Labrador, rare; halfway from Mugford to Hebron, Labrador, rare; Egg Harbor, Labrador, rare; Shoal Tickle, Labrador, several colonies.

This species was placed in the genus *Flustra* by Busk because of its habit of assuming an erect form. It is never flexible, however, and it often grows attached like other *Membraniporas*, and both conditions are frequently exhibited by the same colony. One specimen was found encrusting the back of a *Flustra carbacea* and others on erect colonies of *Escharoides* and *Porella*, encrusting as a single layer on the stems or reaching in a bilaminate form from one branch to another.

MEMBRANIPORA TRIFOLIUM (S. Wood).

Membranipora solida PACKARD, 1867, p. 272.

Mollia flemingii var. *solida* VERRILL, 1879b, p. 29.

Locality.—Shoal Tickle, Labrador, two colonies on pebbles.

MEMBRANIPORA UNICORNIS (Fleming).

Locality.—Shoal Tickle, Labrador, several small colonies.

MEMBRANIPORELLA CRASSICOSTA Hincks.

Locality.—Shoal Tickle, Labrador, several small colonies.

CRIBRILINA ANNULATA (Fabricius).

Cellepora annulata FABRICIUS, 1780, p. 436.

Lepralia annulata STIMPSON, 1853, p. 18.—PACKARD, 1867, p. 270.

Escharipora annulata WHITEAVES, 1874, p. 11.—RINK, 1877, p. 443.

Locality.—Fourteen miles south of Cape Sable, one colony on shell.

MICROPORELLA CILIATA (Pallas).

Lepralia ciliata PACKARD, 1867, p. 270.

Porina ciliata RINK, 1877, p. 443.

Porellina ciliata.—SMITT, 1873, p. 26.—VERRILL, 1879b, p. 29

Porellina stellata VERRILL, 1879a, p. 53; 1879b, p. 29; and 1880, p. 190 (=a variety of *M. ciliata*).

Locality.—Shoal Tickle, Labrador, one young colony on pebble.

HIPPOTHOA HYALINA (Linnæus).

Cellepora hyalina FABRICIUS, 1780, p. 435.—RINK, 1877, p. 444

Mollia hyalina VERRILL and SMITH, 1873, p. 713.

Celleporella hyalina BIDENKAP, 1905, p. 18.

Schizoporella hyalina WHITEAVES, 1901, p. 100.—CORNISH, 1907, p. 77.

Localities.—Fourteen miles south of Cape Sable, few; St. Pierre Banks, Newfoundland, several small colonies on *Pecten* shell; near Egg Harbor, Labrador, several small colonies on the back of *Flustra carbacea*.

This species has been much shifted about in various genera, especially in *Celleporella*, *Schizoporella*, and the above. While the character of the orifice might place it in any of these genera, I am convinced that its relations are particularly with *Hippothoa* with which it agrees in the texture of the ectocyst and in the dwarfed condition of the fertile zoœcia. The appearance of the colony is, to be sure, quite different from that of the common *Hippothoa divaricata* Lamouroux, but in this respect *Hippothoa expansa* Dawson is intermediate.

SCHIZOPORELLA AURICULATA (Hassall).

Lepralia globifera PACKARD, 1867, p. 408.

Escharella auriculata VERRILL, 1875a, p. 414.—RINK, 1877, p. 444.

Smittia globifera VERRILL, 1879b, p. 30; 1880, p. 192.—WHITEAVES, 1901, pp. 100 and 106, records the species under this name and also under *auriculata*.

Localities.—Fourteen miles south of Cape Sable, several colonies; St. Pierre Bank, Newfoundland, one colony.

SCHIZOPORELLA PLANA (Dawson).

Lepralia plana DAWSON, 1859, p. 256.

Myriozoum crustaceum RINK, 1877, p. 444.

Leieschara plana VERRILL, 1879b, p. 30.

Myriozoum planum HINCKS, 1892, p. 157.—WHITEAVES, 1901, p. 99.

Schizoporella crustacea BIDENKAP, 1905, p. 17.

Locality.—Shoal Tickle, Labrador, one colony encrusting stem of *Myriozoum coarctatum*.

After studying this species carefully with ample material I can see no valid reason for placing it in the genus *Myriozoum* as has been done by nearly all writers. The form of the zoœcial orifice, to be sure, is similar to that of *M. coarctatum*, but this structure varies as greatly in *Myriozoum* as it does in *Schizoporella*, and the zoœcial aperture in such species as *S. cecelii* and *S. spongites* has essentially the same character as that of *S. plana*. The formation of the colony, the character of the zoœcial wall and of the ovicell all seem to relate the species closely to *Schizoporella*. The species has generally been known under the name of *Myriozoum crustaceum* Smitt and later European authors have adhered to this in spite of the fact that Hincks (1892, p. 157) has shown that Dawson was the first to describe the species under the name *Lepralia plana*.

MYRIOZOUM COARCTATUM (Sars).

Myriozoum subgracile PACKARD, 1867, p. 276 and elsewhere.—WHITEAVES, 1869, p. 2; 1874, p. 5; 1901, p. 99 (two species).—RINK, 1875, p. 444, both *M. coarctatum* and *M. subgracile*.

Leieschara coarctatum and *L. subgracile* VERRILL, 1879*b*, p. 30.

Localities.—Outside of Hebron, Labrador, two colonies; Shoal Tickle, Labrador, common.

CELLEPORA CANALICULATA Busk.

Localities.—Fourteen miles south of Cape Sable, few; Browns Bank off Cape Sable, several colonies.

This species encrusts the stems of other Bryozoa or of Hydroids, forming pisiform or occasionally branched colonies with a diameter usually less than one-fourth inch. Busk described the species from the *Challenger* dredgings off Halifax, Nova Scotia. Hincks has recorded it for the Gulf of St. Lawrence, and the writer has obtained it off Cape Cod, Massachusetts. It seems to be common between Cape Cod and Newfoundland, judging by the collections of the United States Bureau of Fisheries, and there is no way of determining how much it has been confused with other species by earlier writers.

CELLEPORA CONTIGUA (Smitt).

Plate 34, fig. 1.

Locality.—Fourteen miles south of Cape Sable, one colony on shell of *Pecten tenuicostata*.

The specimen is in a very advanced stage of calcification. As far as can be judged from Smitt's description (1867, p. 31, figs. 198–201) and his very small figures the determination of the species is correct. Figure 1 shows a couple of zoecia near the edge of the colony. In the fully calcified condition the outlines of the zoecia are completely immersed in a continuous nodular crust.

CELLEPORA SURCULARIS (Packard).

Celleporaria surcularis PACKARD, 1863, p. 410, and 1867, p. 274.—VERRILL, 1879*b*, p. 30.

Celleporaria incrassata WHITEAVES, 1874, p. 5.—RINK, 1877, p. 444.

Porella surcularis WHITEAVES, 1901, p. 104.

Cellepora incrassata of AUTHORS, not of LAMARCK.

Localities.—Fourteen miles south of Cape Sable, two fine colonies; off Cape Race, one fragment; off St. Lawrence Harbor, Placentia Bay, one fragment; St. Pierre Bank, Newfoundland, one colony attached to shell; outside of Hebron, Labrador, one colony; Shoal Tickle, Labrador, several colonies; 20 miles northeast of Nain, Labrador, one fragment.

This is the *Cellepora incrassata* of authors, but the species described under this name by Lamarck is known to have been from the Mediterranean and is not identical with the present one. Busk seems to have had this species when he discussed and figured "*Cellepora cervi-*

cornis auctor. (pars),"¹ but he identified the specimen with Couch's *C. cervicornis*, which is *Porella compressa*.

The name *surcularis* given by Packard is therefore the oldest name of unquestioned validity and should stand as the name of the species. In naming the species Packard was aware that he was dealing with this common northern species of wide distribution for he states expressly that "European authors have confounded this arctic species with *Cellepora cervicornis* of the Mediterranean Sea."

LEPRALIA SPATHULIFERA Smitt.

Plate 34, figs. 2, 2a, and 2b.

Locality.—St. Pierre Bank, Newfoundland, three young colonies on the inside of a valve of *Pecten tenuicostata*.

This is a very striking species among the Lepralias on account of the spatulate spine situated on the midline of the front wall just behind the aperture. The species has been much misunderstood and has consequently been shifted about. Waters (1900, p. 87) placed it in the genus *Microporella* under the mistaken notion that it possessed a tubular median pore. Anderson (1902, p. 542) replaced it in *Lepralia* on the ground that "Bei den von mir untersuchten Colonien konnte ich niemals einen Porus beobachten." Norman (1903, p. 106) erected a new genus for it, characterized especially by the presence of a median pore behind the spatulate spine.

The small colonies collected by Doctor Bryant are in excellent condition for study, and there can be no doubt whatever that there is no median pore at all. Instead a small avicularium occupies the position of the supposed "pore" of Norman and Waters. The avicularium is raised upon a projection of the cell, and is minute but quite distinct. It is easy to understand how the loss of the avicularium in older stages might have caused the misconception of the relationships of the species. The spatulate frontal spine as well as the oral spines vary remarkably in size and form.

LEPRALIA HIPPOPUS Smitt.

Locality.—Shoal Tickle, Labrador, one well-developed colony on a pebble.

MUCRONELLA SPINULIFERA Hincks.

Mucronella spinulifera HINCKS, 1889, p. 431.

Monoporella spinulifera HINCKS, 1892, p. 152.—WHITEAVES, 1901, p. 108.

Locality.—Shoal Tickle, Labrador, one well-developed colony on a pebble.

Hincks, in his original description placed this species in the genus *Mucronella* but later² changed it over to *Monoporella*. All more recent writers have replaced it in *Mucronella*. After a careful study of the above specimen the present writer accepts this view.

¹ Ann. and Mag. Nat. Hist., ser. 2, vol. 18, p. 32.

² See Synonymy.

MUCRONELLA PRÆLUCIDA Hincks.

Plate 34, figs. 3, 3a, and 3c.

Localities.—Shoal Tickle, Labrador, one very young colony on the stem of *Myrionozoum coarctatum*; halfway from Mugford to Hebron, Labrador, one mature specimen with zoëcia and avicularia.

Hincks described this species in his Polyzoa of the Queen Charlotte Islands (1882, p. 255) and again commented on it in the Polyzoa of the St. Lawrence (1888, p. 225). He evidently had not seen the ovicells in either the Pacific or Atlantic specimens. One specimen in my possession has these well developed. They are subglobose, rather rough, punctured, prominent, and when adult the secondary raised peristome of the zoëcium is continued upon the front of it like a raised rib. In his original description Hincks states that there are no avicularia though the figure accompanying the description seems to indicate their presence. Later, in his St. Lawrence paper, he is careful to state in regard to these "peculiar projections placed one on each side of the cell at the base of the raised peristome," that "these have much the appearance of avicularia but really are not such." These structures he failed to find in the St. Lawrence specimens. In the specimens collected by Doctor Bryant these structures are sparingly represented, and some of them are undoubtedly avicularia with hinged mandibles, while others seem to have the mandibles suppressed. In fact, in some cases there are merely oblong membranous areas where the avicularia have failed to develop. In my preparations mounted in balsam the structure of the avicularium is unmistakable.

MUCRONELLA VENTRICOSA (Hassall).

Escharoides coccinea var. *ventricosa* VERRILL, 1879b, p. 31.

Locality.—Shoal Tickle, Labrador, rare, on shells.

PORELLA CONCINNA (Busk).

Lepralia rubens STIMPSON, 1853, p. 19.

Lepralia belli DAWSON, 1859, p. 256.—PACKARD, 1867, p. 271.

Discopora coccinea RINK, 1877, p. 444.

Porella lævis var. *concinna* VERRILL, 1879b, p. 30.

Localities.—Fourteen miles south of Cape Sable, scarce; St. Pierre Bank, Newfoundland, a few on *Pecten* shells; off Cape Race, Newfoundland, encrusting dead *Buccinum* shells; Shoal Tickle, Labrador, one small colony on a pebble.

PORELLA SACCATA (Busk).

Plate 34, fig. 4.

Eschara elegantula PACKARD, 1863, p. 411; 1867, p. 275.—RINK, 1877, p. 444.

Eschara papposa PACKARD, 1867, p. 270.

Porella elegantula VERRILL, 1879b, p. 30.—WHITEAVES, 1901, p. 104.

Localities.—South by east from Burin, Placentia Bay, Newfoundland, a few fragments; off Cape Race, Newfoundland, scarce; Shoal

Tickle, Labrador, several colonies; off Beachy Island, between Flint Island and Cape Mugford, Labrador, a few colonies representing the nominal variety *rostrata*; outside of Hebron, Labrador, several colonies.

This is the species commonly known as *Porella elegantula*. It is not the species described by d'Orbigny under that name, however, according to Waters (1900, p. 81) who examined the type-specimen of *elegantula* in Paris. Busk's name, *saccata*, therefore becomes the proper name for this species. The *Porella elegantula* of d'Orbigny (1851, p. 102) is an unrecognized species from Newfoundland, unless, as Waters (1900, p. 81) points out, *P. perpusilla* (Busk) should prove to be a synonym.

PORELLA PERPUSILLA (Busk).

Plate 34, figs. 5, 5a, and 5b.

Eschara perpusilla BUSK, 1881, p. 236, pl. 13.

Locality.—Outside of Hebron, Labrador, at 80 fathoms on gravel bottom, one specimen about three-fourths of an inch in height. The species has not been recorded since Busk described it.

The single specimen taken by Doctor Bryant agrees in all essentials with the description given by Busk. As the species has not heretofore been recorded in American waters, I quote Busk's description in a somewhat abbreviated form.

Zoarium diminutive, constituted of irregularly forked branches. Stem and lower part of branches cylindrical, toward the ends flattened. Zoecia fusiform elongate, mouth horizontal, anterior lip tridentate, the median denticle wide and expanding, the lateral pointed, conical; immediately in front of the median denticle an avicularium about half the length of the zoecium, with a circular mandible. At first sight this form might be regarded as a very dwarf variety of *E. elegantula*. The characters by which *E. perpusilla* may be recognized are:

1. The smaller size of the zoarium, which probably does not exceed an inch in height, and the cylindrical form, for the most part, of the stem and branches.
2. The smaller dimensions of the avicularium and more especially of its mandible.
3. The tripartite dentition of the anterior or inferior lip.
4. The immersion of the mouth and of the orifice of the avicularium in the older stages of growth, these parts in the stem and lower part of the branches being entirely overgrown and obliterated.

The median denticle is developed below the oral avicularium in the same manner as that of *P. concinna*, while the lateral denticles are merely lappet-like folds of the peristome. The species is evidently related to *P. saccata*, but is sufficiently different to rank as a distinct species. It was originally recorded from the Arctic Sea at 13 to 15 fathoms, Franklin-Pierce Bay and Smiths Sound.

The species should be carefully compared with the type of d'Orbigny's *elegantula*, which also has rounded branches, but until this is done it is better to record the species as above.

PORELLA PROBOSCIDEA Hincks.

Porella proboscidea HINCKS, 1888, p. 223.

Eschara verrucosa RINK, 1877, p. 444.

Porella verrucosa VERRILL, 1879*b*, p. 30.

Localities.—Fourteen miles south of Cape Sable, a few colonies on hydroid stems; Shoal Tickle, Labrador, several colonies. At the latter place occurred one colony the form of which resembled that of *Porella saccata*, but the zoecia were typical of *proboscidea*. This species usually grows on hydroid or other stems and seldom on rocks or shells, and assumes a more or less erect, irregularly folded, frill-like form. In the variation above mentioned the colony is branching and the divisions are ligulate.

PORELLA SKENEI (Solander).

Lepralia crassispina STIMPSON, 1853, p. 18.

Eschara skenei WHITEAVES, 1874, p. 11.

Discopora skenei RINK, 1877, p. 444.

Discopora skenei and var. *crassispina* VERRILL, 1879*b*, p. 30; 1880, p. 194.

Palmicellaria skenei BIDENKAP, 1905, p. 27.

Localities.—Forty miles west by south from Cape Sable, one colony; 14 miles south of Cape Sable, several; Browns Bank off Cape Sable, 1 colony.

This species is placed by many authors in the genus *Palmicellaria*, but its relations seem to the writer closer to *Porella*, in which genus Hincks has placed it. Both erect and encrusting stages of the species occur in the collections.

PORELLA STRUMA (Norman).

Localities.—Fourteen miles south of Cape Sable, several colonies; Browns Bank off Cape Sable, several colonies, some more than an inch across and all encrusting.

PORELLA PROPINQUA (Smitt).

Porella verrucosa var. *propinqua* VERRILL, 1879*b*, p. 30.

Smittia propinqua BIDENKAP, 1905, p. 26.

Localities.—Forty miles west by south from Cape Sable, one colony; 14 miles south of Cape Sable, several colonies; Browns Bank off Cape Sable, one colony.

This species is another that has been shifted about from *Porella* to *Smittia* and back again according to the opinion of the author. The present writer prefers to place it tentatively in the genus *Porella* on account of the round oral avicularium.

SMITTIA PORIFERA (Smitt).

Escharella porifera RINK, 1877, p. 444.

Smittia landsborovii var. *porifera* HINCKS, 1888, p. 225.

Localities.—Fourteen miles south of Cape Sable, rare; Shoal Tickle, Labrador, one colony encrusting a pebble.

SMITTIA RETICULATOPUNCTATA (Hincks).

Locality.—Fourteen miles south of Cape Sable, one colony attached to a hydroid stem.

SMITTIA TRISPINOSA (Johnston).

Lepralia trispinosa PACKARD, 1863, p. 406.

Escharella jacotini SMITT, 1873, p. 59.—RINK, 1877, p. 444.

Mucronella jacotini VERRILL, 1879*b*, p. 31; 1880, p. 195.

Localities.—Fourteen miles south of Cape Sable, common; Browns Bank off Cape Sable, abundant on Buccinum shells, on *Porella saccata* and on *Cellepora surcularis*; off Cape Race, Newfoundland, rare; Shoal Tickle, Labrador, one colony showing the characters of the variety *jeffreysi* on *Escharoides sarsii*. Some of the Cape Sable specimens approach the variety *nitida* of Verrill (see Osburn, 1912, p. 246) in some respects but all have the pointed avicularia at the side of the zoëcial aperture as in the typical form.

RHAMPHOSTOMELLA COSTATA Lorenz.

Cellepora scabra (part) VERRILL and SMITH, 1873, p. 714.—WHITEAVES, 1874, p. 5.—RINK, 1877, p. 444.

Mucronella scabra (part) VERRILL, 1879*b*, p. 30; 1880, p. 196.

Localities.—Fourteen miles south of Cape Sable, several colonies; half way from Mugford to Hebron, Labrador, scarce; off Beachy Island between Flint Island and Cape Mugford, Labrador, scarce; Shoal Tickle, Labrador, several small colonies. The last mentioned show the characters of the nominal variety *cristata* Hincks in some of the more highly calcified zoëcia.

RHAMPHOSTOMELLA OVATA (Smitt).

Mucronella ovata VERRILL, 1879*b*, p. 30; 1880, p. 195.

Localities.—Fourteen miles south of Cape Sable, several colonies; Shoal Tickle, Labrador, one young colony.

RHAMPHOSTOMELLA RADIATULA (Hincks).

Localities.—Fourteen miles south of Cape Sable, one small but well-developed colony.

This species has not previously been listed for North American waters, but has been taken at Iceland.

ESCHAROIDES SARSII (Smitt).

Eschara lobata PACKARD, 1863, p. 408; 1867, p. 68.

Escharopsis lobata VERRILL 1879*b*, p. 31; 1880, p. 196.

Localities.—Fourteen miles south of Cape Sable, a few colonies; Shoal Tickle, Labrador, one colony; outside of Hebron, Labrador, one colony. Both erect and encrusting stages were present.

Suborder CTENOSTOMATA.

BOWERBANKIA GRACILIS var. CAUDATA (Hincks).

Locality.—Browns Bank off Cape Sable, one small colony spreading on the stem of a hydroid.

As shown by the writer (Osburn, 1912, p. 253) the *caudata* of Hincks (1877, p. 215) intergrades with Leidy's *gracilis* (1855, p. 10) and is worthy only of varietal rank. The species with its variety is common on the North American coast as far south as Florida, but has not heretofore been recorded as far north as Canada.

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EXPLANATION OF PLATE 34.

- Fig. 1. *Cellepora contigua*, showing a young cell without avicularium at edge of colony and more fully developed cells with avicularia.
2. *Lepralia spathulifera*, mature cell denuded of spines and central avicularium.
- 2a. The same, showing central avicularium and spatulate spine and central avicularium (more enlarged) with open mandible.
- 2b. The same, showing variations in form of spatulate spine.
3. *Mucronella prælucida*, infertile cell with avicularium.
- 3a. The same, showing fertile cell, ovicell, and lateral spaces where avicularia have failed to develop.
- 3c. The same, showing avicularium with a partially detached mandible.
4. *Porella saccata*, aperture and oral avicularium seen partially from in front, drawn to the same scale as fig. 5a.
5. *Porella perpusilla*, cross-section of rounded stem showing manner of calcification.
- 5a. The same, aperture, oral avicularium and denticles, drawn to the same scale as fig. 4.
- 5b. The same, details of young cells with ovicells in different stages of development.

The figures are from camera lucida drawings by the author.



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